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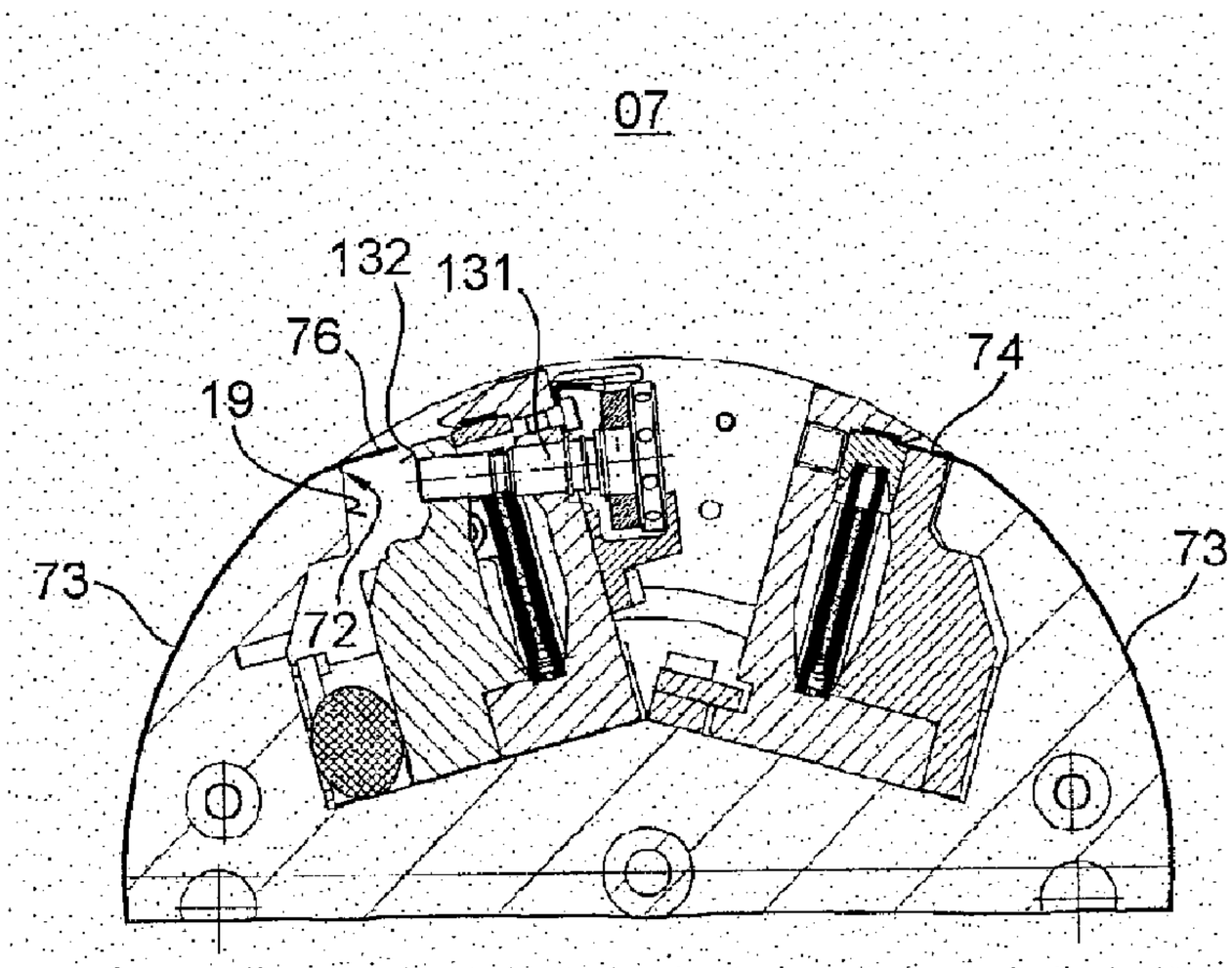

(57) Abrégé/Abstract:
The invention relates to a method for arranging a printing plate onto a plate cylinder that has a channel in which a front and a rear clamping device are arranged. The rear clamping device is part of a slide that is arranged so as to be movable towards the front clamping device along a clamping path. In a first phase of the clamping process, the slide together with a rear printing plate end that is clamped into the rear clamping device is to be moved towards a first channel wall, and the printing plate is thereby clamped. In a second phase of the clamping process, the printing plate is released again, wherein the at least one slide is to be moved away from the first channel wall and towards a second channel wall. In a third phase of the clamping process, the slide together with the rear printing plate end that is clamped into the rear clamping device is to be moved again towards the first channel wall, and the printing plate is thereby clamped.

Abstract

The invention relates to a method for arranging a printing plate onto a plate cylinder that has a channel in which a front and a rear clamping device are arranged. The rear clamping device is part of a slide that is arranged so as to be movable towards the front clamping device along a clamping path. In a first phase of the clamping process, the slide together with a rear printing plate end that is clamped into the rear clamping device is to be moved towards a first channel wall, and the printing plate is thereby clamped. In a second phase of the clamping process, the printing plate is released again, wherein the at least one slide is to be moved away from the first channel wall and towards a second channel wall. In a third phase of the clamping process, the slide together with the rear printing plate end that is clamped into the rear clamping device is to be moved again towards the first channel wall, and the printing plate is thereby clamped.

Description

METHOD FOR ARRANGING A PRINTING PLATE ON A PLATE CYLINDER

The invention relates to a method for arranging a printing plate on a plate cylinder.

In printing presses, forme cylinders are often used that are designed as plate cylinders and carry printing plate 73 in the form of printing plates. These printing plates can be exchanged. For this, a device is necessary that fixes the printing plate to the forme cylinder detachably. With increasing demands on the precision of the print products produced using the printing press, the demands on the precision with which the printing plate is arranged on the forme cylinder also increase. For example, in security document printing, demands are made that necessitate a precision of the position of the printing plates at least relative to one another in the region of micrometres. Such accuracies are not achievable using plate clamps of conventional sheet printing presses.

By means of DE 41 29 831 A1 and DE 195 11 956 A1, in each case a plate cylinder is known, the plate cylinder having a channel in which a clamping device is arranged that has a radially outer clamping element that is arranged immovably relative to a main body of the clamping device, and the clamping device having a pressure element that radially is arranged further inside than the radial outer clamping element and the clamping device having an adjusting element, by means of which the pressure element is at least partially movable at least in

and/or against a clamping device relative to the radially outer clamping element.

By means of DE 41 29 831 A1, it is furthermore known that the clamping device has a radially internal clamping element that is always held in a defined position by means at least of one front pressure element with respect to a circumferential direction.

By means of WO 93/03925 A1, a plate cylinder is known that has a channel, in which a tensioning device is arranged, that has a clamping device movable in a slide within the channel.

By means of DE 42 39 089 A1, EP 0 579 017 A1 and EP 0 711 664 A1, methods and devices for the tensioning and for the register correction of printing plates are known.

Some embodiments of the invention are based on the object of creating a method for arranging a printing plate on a plate cylinder.

According to one embodiment of the invention, there is provided a method for arranging a printing plate on a plate cylinder that has at least one channel, in which at least one front clamping device and at least one rear clamping device are arranged, the at least one rear clamping device being part of at least one slide that is arranged to be movable along a tensioning path towards the at least one front clamping device by means of at least one tensioning drive within the at least one channel, in a first section of a tensioning process the at least one slide together with a rear end of the printing plate tensioned in the at least one rear clamping device being moved

along the tensioning path towards the at least one front clamping device and a first channel wall whereby the printing plate is tensioned and subsequently in a second section of the tensioning process the printing plate being released again by the at least one slide being moved away from the first channel wall and towards a second channel wall and subsequently in a third section of the tensioning process the at least one slide together with the rear end of the printing plate tensioned in the at least one rear clamping device being moved again towards the at least one front clamping device and the first channel wall whereby the printing plate is tensioned.

The advantages achievable using the invention consist in particular in that applying a printing plate to a forme cylinder designed as a plate cylinder is feasible simply and with high precision. A high reproducibility of the position of the printing plate on the plate cylinder is also advantageous. In particular, in printing presses in which a number of forme cylinders interact with a common transfer cylinder, the advantage of particularly high precision results thereby, as here only one position is available at which the print substrate is provided with printing ink and therefore the precision of the print image depends exclusively on the

precision of the position of the printing inks on the common transfer cylinder and thus lastly on the precision with which the printing plates are arranged on the forme cylinders and with which the forme cylinders are arranged relative to each other.

Preferably, a plate cylinder, in particular a plate cylinder of a printing press, which preferably has at least one channel, in which preferably at least one clamping device is arranged, the at least one clamping device preferably having at least one radially outer clamping element, in particular at least one radially outer clamping strip, which is or are preferably arranged immovably relative to a main body of the at least one clamping device, preferably the at least one clamping device having at least one pressure element, which is arranged radially further inside than the at least one radially outer clamping element and preferably the at least one clamping device having at least one adjusting element, by means of which the at least one pressure element is at least partially movable relative to the at least one radially outer clamping element and further preferably relative to a cylinder barrel of the plate cylinder at least in and/or against a clamping device, has one or more of the features described below. The at least one adjusting element is, for example, preferably designed as a clamp release drive, in particular clamp release hose.

Preferably, the at least one clamping device has at least two pressure elements and the at least one adjusting element is arranged between the at least two pressure elements in the circumferential direction with respect to the plate cylinder. A clamping force of this clamping device is then doubled in contrast to only one pressure element of equal spring

stiffness. A force to be used by the adjusting element is, however, just as great, because instead of this an adjustment path of the at least one adjusting element is doubled, since the at least one adjusting element arranged between the at least two pressure elements can in each case be moved to both adjusting elements. If a release hose, in particular clamp release hose, is employed as an adjusting element, accordingly for a doubled control force in the clamp release hose no higher pressure must be achievable or be achieved than with only one adjusting element.

Preferably, at least one linear connecting line between the at least two pressure elements of the at least one clamping device intersects the at least one adjusting element of this at least one clamping device. Preferably, the at least one pressure element is movable at least in and/or against the clamping device at least partially relative to the cylinder barrel of the plate cylinder by means of the at least one adjusting element.

Preferably, the at least one clamping device has at least one radially inner clamping element and further preferably the at least one radially inner clamping element can be acted on and/or is acted on by means of the least one or the preferably at least two pressure elements in the clamping device towards the at least one radially outer clamping element with a force and preferably together with the at least one radially outer clamping element forming a clamping gap. Then, advantageously a clamping gap in its shape and/or its positioning is fixed by at least two clamping elements and is actuatable reproducibly and preferably without unwanted movements of a printing plate during its clamping. This applies in particular, if as

preferred, the at least one radially inner clamping element is arranged to be exclusively linearly movable.

Preferably, the at least one radially outer clamping element is at least one radially outer clamping strip, which extends in an axial direction with respect to an axis of rotation of the plate cylinder over at least 75% of an axial length of the at least one channel and/or the at least one radially inner clamping element is at least one radially inner clamping strip that extends in an axial direction with respect to the axis of rotation of the plate cylinder over at least 75% of the axial length of the at least one channel. Preferably, the at least two pressure elements are in each case designed as at least one leaf spring.

Preferably, the at least one adjusting element is designed as at least one clamp release hose, which further preferably can be acted on by a pressure for the release of a clamp. There is then an advantage therein that this clamp release hose is of simple design and is manufacturable and operable inexpensively. Moreover, such a clamping can be achieved with a deactivated adjusting element.

Preferably, the at least one radially inner clamping element is connected by means at least of one connecting element to the at least two pressure elements.

Preferably, at least one front clamping device designed in such a way and at least one rear clamping device designed in such a way is arranged in the at least one channel. The advantages mentioned are then preferably doubly exploited. Preferably, the at least one front clamping device is designed for the acceptance of one end of a printing plate running forward in the printing operation.

Preferably, at least one clamping device is designed as at least one rear clamping device and part at least of one slide of the at least one tensioning device and the at least one slide is arranged movably within the at least one channel along a tensioning path towards the at least one front clamping device by means at least of a tensioning drive within the at least one channel. Preferably, the tensioning path extends orthogonally to an axis of rotation of the plate cylinder. Preferably, the tensioning path extends within a plane, the surface normal of which is oriented parallel to the axis of rotation of the plate cylinder. This slide can then preferably be employed both for plate tensioning as well as for facilitation of a replacement of the printing plate.

Preferably, the tensioning path extends at least partially in and/or against the peripheral direction or in and/or against a tensioning direction tangential to the circumferential direction. Preferably, the at least one tensioning drive is designed as at least one tensioning hose. Then the same advantages preferably result as with the clamp release hose, in particular in that it can be of simple design and can be produced and operated inexpensively.

Preferably, a maximum displacement of the least one slide relative to the cylinder barrel of the plate cylinder in and/or opposite to the tensioning direction is at least as great as an extension measured in the tensioning direction of an intended or further preferred actual contact surface of a printing plate clamped in the at least one rear clamping device with the at least one radially external clamping element of the at least one rear clamping device.

Preferably, in the at least one channel is arranged at least one tensioning device that has at least one front clamping

device and at least one rear clamping device and preferably the at least one front clamping device has at least one front adjusting element, in particular at least one front clamp release drive for opening and closing at least one front clamp gap, and at least two pre-tensioning drives for adjusting in each case one front contact body aligned to a first channel wall to and preferably the at least one rear clamping device has at least one rear adjusting element, in particular at least one rear clamp release drive for opening and closing at least one rear clamping gap and at least one axial drive for adjusting a position of the at least one rear clamping device with respect to an axial direction parallel to an axis of rotation of the plate cylinder. A reproducible and rapid adjustment of the tensioning device is then possible.

Preferably, the at least one front clamp release drive and the least two pre-tensioning drives and the at least one rear clamp release drive and the at least one axial drive are controllable and/or controlled by means of a machine control and are of regulable and/or regulated design. Preferably, at least one rear clamping device has at least two distance drives in each case of a rear spacer or at least two rear stop drives in each case of a rear stop adjusting element for adjusting at least a distance of the at least one rear clamping device from a second channel wall and preferably the at least one front clamp release drive and the at least two pre-tensioning drives and the at least one rear clamp release drive and the at least one axial drive and at least two distance drives or rear stop drives are designed to be controllable and/or controlled and/or to be regulable and/or regulated by means of the machine control. Preferably, the at least one rear clamp device has at least one slide, which is preferably movable in at least one direction orthogonal to the

axis of rotation of the plate cylinder by means at least of one tensioning drive and preferably the at least one tensioning drive is likewise controllable and/or controlled and/or regulable and/or regulated by means of the machine control. By means of the machine control, a high precision and a remote adjustment of the tensioning device and/or of the at least one clamping device is possible.

Preferably, the at least one clamping device is supported by means of at least three support points in the circumferential direction against a cylinder barrel of the plate cylinder and preferably stands on a first support point of the at least one main body of the at least one front clamping device, or a component of the least one front clamping device arranged rigidly to the at least one main body is connected directly with the first channel wall or a component arranged rigidly to the cylinder barrel of the plate cylinder and preferably in each case a contact body of the at least one front clamping device adjustable relative to the at least one main body in its position and movable together with the at least one main body stands on at least two second support sites and together with the at least one main body is connected to the first channel wall or a component arranged rigidly to the cylinder barrel of the plate cylinder. Position corrections and tensioning corrections of the printing plate can then be adjusted particularly precisely and reproducibly.

Preferably, a method for arranging a printing plate on a plate cylinder that preferably has at least one channel, in which preferably at least one front clamping device and at least one rear clamping device are arranged, the rear clamping device preferably being part at least of one slide, comprises one or more of the process operations described below.

Preferably, in a front opening process the at least one front clamping device is opened. Preferably, in a front loading process, a front end of the printing plate is inserted into a front clamping gap of the at least one front clamping device. Preferably, in a front clamping process the at least one front clamping device is closed whereby the front end of the printing plate is clamped in the at least one front clamping device. Preferably, the printing plate is loaded onto a jacket surface of the plate cylinder in a support process.

Preferably, in a rear opening process the at least one rear clamping device is opened and beforehand and/or at the same time and/or thereafter the at least one slide is moved to a central or inner position along the tensioning path from an edge region around an insertion track towards the at least one front clamping device and a first channel wall. The concept of the central position serves here for differentiation in relation to the peripheral location and in particular does not imply that the position must be exactly in a centre. Preferably, in a rear opening process a rear end of the printing plate, which has meanwhile been located around the plate cylinder, is laid on the plate cylinder such that it projects at least with one component in the circumferential direction over an edge connecting a second channel wall with the lateral surface of the plate cylinder and the least one slide is then moved along the tensioning path from its central or inner position around the insertion position into its peripheral location towards the second channel wall. Preferably, the rear end of the printing plate is enclosed at least partially surrounded by at least one rear clamping gap of the at least one rear clamping device, whereas the at least one slide is moved along the tensioning path from its central or inner position towards the second channel wall into its

peripheral location. To enclose is to be understood here as meaning that then at least one linear connection of at least one radially inner clamping element of the at least one radially inner clamping element with at least one rear clamping device intersects the rear end of the printing plate with at least one radially outer clamping element of the at least one rear clamping device. Preferably, in a rear clamping process, the at least one rear clamping device is closed and here the rear end of the printing plate is clamped in the at least one rear clamping device.

Preferably, in a tensioning process the at least one slide is to be moved along the tensioning path to the at least one front clamping device and the first channel wall and the printing plate is hereby tensioned. Preferably, in a first section of a tensioning process the at least one slide is moved along the tensioning path to the at least one front clamping device and the first channel wall. Preferably, the printing plate is tensioned here with a first force. Preferably, the printing plate is additionally more greatly tensioned than is provided for the printing operation using this printing plate. Preferably, in a second section of the tensioning process the printing plate is relieved again by again moving the at least one slide to the second channel wall. Preferably, in a third section of the tensioning process the at least one slide is again to be moved to the at least one front clamping device and the first channel wall. Preferably, the printing plate is tensioned here with a second force. Preferably, the first force is equally as great as the second force. Preferably, the printing plate remains clamped in the rear clamping device at least from the start of the first section of the tensioning process up to the end of the third section of the tensioning process. Depending on the

embodiment of the at least one rear clamping device preferably employed, preferably one of the two embodiments of the tensioning process described below is used.

In a first embodiment of the tensioning process and in particular the third section of the tensioning process, preferably first the at least one slide is to be moved by means of the at least one tensioning drive together with the rear end of the printing plate tensioned in the at least one rear clamping device to the at least one front clamping device and the first channel wall and then preferably at least one rear spacer, which preferably is part of the at least one slide, is adjusted to a position relative to the at least one slide which establishes a certain distance of the least one rear clamping device from the second channel wall independently of the at least one tensioning device, and is deactivated subsequent to the at least one tensioning drive, and the at least one slide together with the at least one rear clamping device is held thereby in its position along the tensioning path, in that a force exerted by the tensioned printing plates presses the at least one slide against the second channel wall by means of its at least one rear spacer. Preferably, at the latest after deactivation of the at least one tensioning drive the at least one rear spacer is in contact with the second channel wall and at the same time with the at least one slide and the distance of the at least one rear clamping device from the second channel wall is thereby fixed independently of the at least one tensioning drive.

In a second embodiment of the tensioning process, preferably firstly at least one rear stop adjusting element, preferably supported in a bearing arranged stationary relative to the cylinder barrel, is moved relative to the cylinder barrel into

an intended stop position and then preferably the at least one slide is to be moved by means of the at least one tensioning drive together with the rear end of the printing plate tensioned in the at least one rear clamping device to the at least one front clamping device and the first channel wall until the at least one rear stop adjusting element touches at least one stop body and then preferably at least one fixing device is clamped and this at least one fixing device preferably holds the at least one slide in its position, for example by reducing a pressure in a slide releaser designed as a slide release hose and preferably to the extent that slide spring assemblies are relaxed and thereby preferably at least one slide clamping element is pressed against a first slide clamping surface and then preferably the at least one tensioning drive is deactivated, for example by reducing a pressure in a tensioning drive designed as a tensioning hose, for example to ambient pressure.

Advantages of this plate cylinder and/or this method consist, for example, in the fact that preferably a tensioning drive can also be used to bring a rear clamping device into such a position that an application of the rear end of the printing plate is facilitated and in particular is made possible in an essentially radial direction and without manual threading of the printing plate into the rear clamping device, as preferably the rear clamping device is moved such that it encloses the rear end of the printing plate, nevertheless the radially external clamping element being immovable relative to the slide and thus a particularly stable clamping being achievable.

A further advantage of a preferred embodiment of the plate cylinder and/or of the method consists, for example, in that

in a clamped and/or tensioned state of the printing plate no drive of a clamping device or tensioning device has to be activated.

A further advantage consists in the fact that on repeated use of the method with the same or a different printing plate very precise reproducible results of the position and tensioning of the printing plates are achievable.

Exemplary embodiments of the invention are shown in the drawings and are described more closely below.

The figures show:

Fig. 1 a schematic representation of an exemplary printing press;

Fig. 2 a schematic representation of a longitudinal section of a plate cylinder of a printing press;

Fig. 3 a schematic representation of a cross-section of a tensioning device of the plate cylinder shown in Fig. 2 with opened clamping devices and a first fixing device;

Fig. 4 a schematic representation of a cross-section of a tensioning device of the plate cylinder shown in Fig. 2 with opened clamping devices;

Fig. 5 a schematic representation of a tensioning device of the plate cylinder shown in Fig. 2 with a second fixing device;

Fig. 6 a schematic representation of a longitudinal section of a plate cylinder of a printing press;

Fig. 7 a schematic representation of a cross-section of a tensioning device of the plate cylinder shown in Fig. 6;

Fig. 8 a schematic representation of a cross-section of a tensioning device of the plate cylinder shown in Fig. 6;

Fig. 9 a schematic representation of a longitudinal section of a plate cylinder of a printing press;

Fig. 10a a schematic representation of a cross-section of a tensioning device of the plate cylinder with shifted slides shown in Fig. 2;

Fig. 10b a schematic representation of a cross-section of a tensioning device of the plate cylinder shown in Fig. 2 with shifted slides and loaded printing plate;

Fig. 11 a schematic representation of a cross-section of a tensioning device of the plate cylinder shown in Fig. 2 with shifted slides;

Fig. 12 a schematic representation of a front clamping device in a view orthogonal to an axis of rotation of the plate cylinder.

A printing press 01 designed as a rotary printing press 01, for example as a sheet-fed rotary printing press 01, is described by way of example below. The printing press 01 is,

for example, a printing press 01 used in security document printing. The printing press 01 is designed as a printing press 01 preferably printing a sheet-form print substrate 09, that is as a sheet-fed printing press 01. The printing press 01 has at least one printing unit 02 having at least one printing couple 08 and at least one inking unit, the at least one printing couple 08 having at least one forme cylinder 07. The at least one forme cylinder 07 is preferably designed as at least one plate cylinder 07. Preferably, a number of printing couples 08 and a number of inking units are provided in the at least one printing unit 02 to print different printing inks on the same print substrate 09 in one and the same production, for example corresponding to the number of these inking units. In one embodiment, in the same printing unit 02 are arranged printing couples 08, which preferably operate according to different printing principles. For example, at least one printing couple 08 is designed as a flat printing couple 08, for example an offset printing couple 08 and/or at least one other printing couple 08 is designed as a letterpress printing couple 08, in particular a letterset printing couple 08. These different printing couples 08 then print, for example, the one and the same print substrate 09 in one and the same production, further preferably by means at least of a common transfer cylinder 06. In one embodiment, at least one printing couple is designed as a steel intaglio printing couple 08.

The printing press 02 preferably has at least one print substrate source 03 in the form of a sheet feeder 03. The printing press 01 preferably has at least one sheet feeder 04, which preferably has at least one and further preferably at least three discard piles. Preferably, at least one dryer is arranged along a transport path of the print substrate 09

before the at least one discard pile, for example an infrared radiation dryer and/or an ultraviolet radiation dryer. For example, the printing press has ten forme cylinders 07, in particular plate cylinders 07. A sheet-fed rotary printing press 01 having a printing unit 02 having a number of printing couples 08 is also shown by way of example in Fig. 1. For example, the printing press 01 has at least one printing couple 08 and at least one dryer, which in each case are arranged on the print substrate 09 acting along a transport part of the print substrate 09 before transfer cylinders 06 described below.

Preferably, the at least one printing unit 02 has at least one pair of transfer cylinders 06 designed as rubber cloth cylinders 06, through the common contact area of which a printing gap 16 is established. Preferably, each of the at least two transfer cylinders 06 is in rolling contact with at least one plate cylinder 07 and further preferably more, for example four plate cylinders 07. Preferably, the printing unit 02 is designed as a multi-ink printing unit 02. At least one inking unit is preferably assigned to each of these plate cylinders 07. Preferably, at least one printing form 73 in the form of at least one and preferably exactly one printing plate 73 is arranged on the at least one plate cylinder 07. Preferably, exactly one printing plate 73 is arranged or provided on each plate cylinder 07, the extension of which in an axial direction A of the plate cylinder 07 preferably corresponds to at least 75% and further preferably at least 90% of an extension of a cylinder barrel 12 of the at least one plate cylinder 07 in this axial direction A. Preferably, the at least one transfer cylinder 06 has a circumference that corresponds to a whole number multiple of the circumference of the at least one plate cylinder 07, for example three times.

Preferably, each inking unit cooperating with a plate cylinder 07 is arranged to be movable away from this respective plate cylinder 07. Thereby, the corresponding plate cylinder 07 is accessible for maintenance work and in particular for a printing plate change. Further preferably, the inking units of all plate cylinders 07 interacting with a common transfer cylinder 06 are arranged to be movable away together from these plate cylinders 07 and to this end are further preferably stored in a common subframe. For example, with corresponding arrangement of the at least one plate cylinder 07 and of the assigned inking unit at least one printing plate store is moved towards at least one printing plate store on the at least one plate cylinder 07. This at least one printing plate store contains at least one printing plate 73 to be replaced on the at least one plate cylinder 07. The at least one printing plate store preferably contains a number of printing plates 73, which are assigned and/or to be assigned to a number of plate cylinders 07. The at least one printing plate 73 store in addition to a controlled positioning of the printing plate relative to the corresponding plate cylinder 07 also serves for a protection of the printing plate 73 to be replaced. Preferably, at least one pressing means, for example a pressure roller, is arranged that serves, on replacing the printing plate 73 on the plate cylinder 07, to press this printing plate 73 against the plate cylinder 07.

The printing plate 73 preferably has a dimensionally stable carrier plate and at least one plate coating. The dimensionally stable carrier plate consists, for example, of a metal or an alloy, for example aluminium or steel. In at least one dry offset printing couple or waterless offset printing couple, preferably at least one carrier plate of steel is used. In at least one wet offset printing couple, preferably

at least one carrier plate of aluminium is used. Preferably, the carrier plate has a thickness, thus a smallest dimension, of 0.25 mm to 0.3 mm. The at least one plate coating defines a print image of the printing plate 73. The print image can be specified, for example, in that parts of a surface of the printing plate 73 have hydrophobic properties, while other parts of the surface of the printing plate 73 have hydrophilic properties. Depending on properties of a printing ink to be employed, then only selected areas of the printing plate 73 transfer this printing ink. A printing plate 73 of this type transfers ink according to a flat printing process, in particular offset printing process. Here, a waterless offset printing process can be employed or a so-called "wet offset printing process" can be employed, for which the printing couple then contains at least one moistening unit.

Alternatively to this, the print image is fixed in that the plate coating is firstly applied over the entire surface and is cured selectively in an exposure process, while the uncured areas are washed, for example with water. Alternatively, a coating is applied only selectively or removed selectively in another manner, for example by etching or mechanically by engraving. Areas thereby result, for example areas not washed, which relative to the carrier plate are arranged raised and areas, for example washed areas, that lie lower and are formed, for example, by the exposed carrier plate. Such a printing plate 73 transfers printing ink according to a letterpress process, preferably to the corresponding transfer cylinder 06, from where it is transferred to the print substrate 09. As the printed image is only transferred from the transfer cylinder 06 to the print substrate 09, this is a letterset process.

The printing plate 73 is alternatively designed as a template printing plate 73. Such a template printing plate 73 has, for example, relatively coarse raised surfaces, which are completely inked and from which printing ink is transferred to a steel engraving cylinder. Such a steel engraving cylinder has fine engravings, in which printing ink is stored, while it is removed outside of the engravings, for example wiped off. Preferably, different printing inks are collected from a number of printing plates 73 on the steel engraving cylinder, further preferably the areas of different inks on the steel engraving cylinder at most minimally overlapping. By rolling contact and, for example, by pressure, the printing ink on the engravings is transferred to a print substrate. The printing plate 73 is alternatively designed as a flexographic printing plate 73 for direct or indirect flexographic printing. Independently of the design of the printing plate 73, the printing plate 73 serves for a transfer of printing ink and/or lacquer. Correspondingly, in the foregoing and in the following always when there is question of printing ink, alternatively also a lacquer is meant, in particular in the case of the flexographic printing plate 73.

Independently of the material used, the printing plate 73 preferably has a front end 74 and a rear end 76. The front end 74 of the printing plate 73 is preferably an end 74 of the printing plate 73 preceding in a printing operation. The rear end 76 of the printing plate 73 is preferably an end 76 of the printing plate 73 trailing in the printing operation. The front end 74 of the printing plate 73 preferably has a front contact area 74, which serves for clamping of the printing plate 73 to the plate cylinder 07. Preferably, this contact area has no plate coating transferring printing ink. The rear end 76 of the printing plate 73 preferably has a rear contact

area 76, which serves for clamping of the printing plate 73 to the plate cylinder 07. Preferably, this contact area has no plate coating transferring printing ink. Preferably, the printing plate 73 in the contact areas consists exclusively of the dimensionally stable carrier plate. Owing to the contact areas, a high reproducibility and a high reliability at least of a clamping contact of the printing plate 73 with parts of the plate cylinder 07 is guaranteed. The front end 74 and/or the rear end 76 of the printing plate 73 is or are preferably designed as clamping areas 74; 76 differently curved from a middle part of the printing plate 73. The clamping areas 74; 76 are preferably in each case angled between 15° and 40° compared to the middle part of the printing plate 73, further preferably between 17° and 22° at the front end 74 and between 35° and 40° at the rear end 76. Preferably, the front end 74 and the rear end 76 of the printing plate 73 in each case have an elongation in the circumferential direction D, which is between 10 mm and 30 mm, further preferably at least 15 mm and still further preferably between 15 mm and 20 mm. An application of the printing plate 73 to the plate cylinder 07 preferably takes place at lease partially by means of an application device, for example of an automatic plate feed.

In a printing operation of the printing press 01, at least one sheet 09 gripped by a sheet feeder 03, preferably a sequence of a number of sheets 09, is fed to the printing unit 02. The printing unit 02 preferably works in recto and verso printing, both sides of the print substrate 09 simultaneously being inked in the printing nip 16. Further preferably, in the printing nip 16 multicoloured print images are transferred to the print substrate 09 in a single printing step. These multicoloured print images are preferably composed of individual coloured partial print images, which have been

transferred beforehand from a number of plate cylinders 07 to the corresponding transfer cylinder 06 and collected there. The printing unit 02 preferably consists of two essentially identically constructed halves. Each of the halves has a transfer cylinder 06 preferably designed as a rubber cloth cylinder 06. The plate cylinder 07 and in particular printing plates 73 arranged thereon are preferably inked by one inking unit each with a different printing ink in each case. The plate cylinders 07 preferably in each case transfer at least one print image to the corresponding transfer cylinder 06 on which they are employed. Thereby, a multicoloured print image is preferably created on each transfer cylinder 06, which further preferably is transferred to the print substrate 09 in a single step.

As described, for example, a number of, preferably four, plate cylinders 07 are assigned to each transfer cylinder 06 in each case, on each of these plate cylinders 07 in each case a printing unit being employed or at least being employable, such that preferably the two transfer cylinders 06 together can print, for example, up to eight printing inks. Preferably, at least in each case a common counter-pressure cylinder 06 and the plate cylinder 07 employed thereon and/or interacting therewith are coupled to one another by means of at least one gear wheel drive and by at least one common drive motor. The inking units can be coupled or are couplable thereto, but preferably in each case have their own drive motors.

The at least one plate cylinder 07 of the printing press 01 is explained in greater detail below. At least the plate cylinders 07 interacting with the transfer cylinders 06 are preferably essentially designed to be structurally identical. Each plate cylinder preferably contains the cylinder barrel 12

and two cylinder journals 17. The cylinder barrel 12 preferably has at least one channel 13, which extends in the axial direction A with respect to an axis of rotation 11 of the plate cylinder 07 and which is open in the radial direction with respect to the axis of rotation 11 of the plate cylinder 07. The channel 13 preferably has a first channel wall 18 and a second channel wall 19, which at least partially restrict the channel 13 in the circumferential direction D. The first channel wall 18 is preferably a channel wall 18 of the at least one channel 13 trailing in the printing operation. The second channel wall 19 is preferably a channel wall 19 of the at least one channel 13 preceding in the printing operation. The cylinder journals 17 of the plate cylinder 07 concerned are preferably mounted in each case at least in a bearing preferably designed as a radial bearing, the respective bearing being arranged in or on a frame wall of the printing unit 02. A first end of the plate cylinder 07 relative to the axial direction A is designated as side I, a second end of the plate cylinder 07 relative to the axial direction A is designated as side II. On the side I of the plate cylinder 17 is preferably arranged a valve block 14 on a front side of the cylinder barrel 12 concerned. The cylinder journal 17 assigned to side II of the plate cylinder 17 is preferably connected or at least connectable to a rotational drive, by means of which the plate cylinder 07 concerned is driveable and/or driven to a rotational movement around the axis of rotation 11 of the plate cylinder 07. A connection of the cylinder journal 17 assigned to side II to the rotational drive assigned to the plate cylinder 07 concerned preferably has at least one obliquely toothed gear wheel. In a known manner, an adjustment of a circumferential register of the plate cylinder 07 concerned is thereby made possible. Alternatively, the at least one plate cylinder 07 has at least

one separate individual drive. Preferably, the plate cylinder 07 has at least one preferably axial bore 126, which can be flowed through and/or is flowed through for the temperature control of a fluid, for example of a temperature control fluid.

In the at least one channel 13 of the plate cylinder 07 is arranged at least one tensioning device 101 of the plate cylinder 07. The at least one tensioning device 101 has at least one clamping device 21; 61, preferably at least one front clamping device 21 and at least one rear clamping device 61. The at least one front clamping device 21 is preferably arranged more closely to the first channel wall 18 of the at least one channel 13 than the second channel wall 19 of the at least one channel 13. The at least one rear clamping device 61 is preferably arranged more closely to the second channel wall 19 of the at least one channel 13 than the first channel wall 18 of the at least one channel 13. The at least one front clamping device 21 serves for clamping of a front end 74 of a printing plate 73, which is rolled and/or rollable onto and/or applied and/or applicable to the jacket surface 124 of the cylinder barrel 12 of the plate cylinder 07. The at least one rear clamping device 61 serves for clamping of a rear end 76 of a printing plate 73 and preferably of the same printing plate 73. In particular, it is the same printing plates 73 if, as preferred, the plate cylinder 07 has precisely one channel 13, which has both a front clamping device 21 as well as a rear clamping device 61. The front end 74 of the printing plate 73 is preferably an end 74 of the printing plate 73 preceding in a printing operation. The rear end 76 of the printing plate 73 is preferably an end 76 of the printing plate 73 trailing in a printing operation. For arranging the at least one printing plates 73 on the at least one plate

cylinder 07, preferably the front end 74 of the printing plates 73 is first fixed in the at least one front clamping device 21 and subsequently this plate cylinder 07 is swivelled around its axis of rotation 11 to roll or to apply the printing plate 73 to the jacket surface 124 of the plate cylinder 07, and then the rear end 76 of the printing plate 73 is fixed in the rear clamping device 61. Subsequently, a tensioning of the at least one printing plates 73 preferably takes place.

Firstly, the at least one front clamping device 21 is described. The at least one front clamping device 21 has at least one radially outer front clamping element 22, which is arranged immovably relative to a front main body 37 of the at least one front clamping device 21. This front main body 37 is fixed to the cylinder barrel 12, but preferably for correction purposes arranged at least minimally movable relative to the cylinder barrel 12. The at least one radially outer front clamping element 22 is preferably designed as a radially outer front clamping strip 22, which extends in an axial direction A, preferably over at least 75% and further preferably at least 90% of an axial length of the at least one channel 13. This guarantees a uniform clamping and/or tensioning of the printing plate 73. The at least one front clamping device 21 has at least one front pressure element 23, which is arranged radially further inside than the at least one radially outer front clamping element 22. The at least one front pressure element 23 is preferably designed as at least one front leaf spring 23, further preferably as at least one front spring assembly 23, which consists of a number of leaf springs 23, in particular lying flat on each other. The at least one clamping device 21 has at least one front adjusting element 24, by means of which a relative movement of the at least one front

pressure element 23 is effectable relative to the at least one radially outer front clamping element 22 and thereby preferably at the same time relative to the cylinder barrel 12 of the plate cylinder 07. Preferably, the at least one front pressure element 23 is deformable per se by means of the at least one front adjusting element 24. Preferably, the at least one front pressure element 23 is shortenable per se by means of the at least one front adjusting element 24 with respect to an essentially radial direction. Preferably, the at least one front pressure element 23 extends over at least 75% and further preferably at least 90% of an axial length of the cylinder barrel 12.

Preferably, the at least one front clamping device 21 has at least two front pressure elements 23 and/or at least one radially inner front clamping element 26. The at least two front pressure element 23 are in turn preferably in each case designed as at least one leaf spring 23 and further preferably in each case as at least one spring assembly 23, which in each case consist of this a number of, in particular flat, leaf springs 23 lying on each other. The at least one radially inner front clamping element 26 is preferably designed as at least one radially inner front clamping strip 26, which extends in axial direction A, preferably over at least 75% and further preferably at least 90% of the axial length of the at least one channel 13. The at least one radially inner front clamping element 26 is preferably arranged movably in and/or contrary to a front clamping direction B, in particular towards the at least one radially outer front clamping element 22 and/or away from the at least one radially outer front clamping element 22. The front clamping direction B preferably points essentially in a radial direction. This means the front clamping direction B preferably has at least one component in

a radial direction, which is greater than an optionally present component in the circumferential direction D. The front clamping direction B is preferably aligned orthogonally to the axial direction A. The at least one radially inner front clamping element 26 is preferably arranged immovably with respect to the axial direction A. The at least one front pressure element 23 and preferably the at least two front pressure element 23 is or are preferably in contact with the at least one radially inner front clamping element 26. Radial directions B; C, the axial direction A and the circumferential direction D refer to the cylinder barrel 12 and/or the axis of rotation 11 of the plate cylinder 07.

Preferably, the at least one radially inner front clamping element 26 is applicable and/or applied with a force towards the least one radially outer front clamping element 22 by means of the least one front pressure element 23 and further preferably by means of the at least two front pressure elements 23 in the front clamping direction B. The at least one front adjusting element 24 is preferably in direct contact with the at least one front pressure element 23. Preferably, in the circumferential direction D with respect to the plate cylinder 07 the at least one front adjusting element 24 is arranged between at least two radially inner front pressure elements 23. The at least one front adjusting element 24 is preferably designed as at least one front clamp release drive 24, further preferably as at least one front release body 24 applicable and/or applied with a pressure means and even further preferably as at least one front release hose 24, in particular front clamp release hose 24, which further preferably is filled and/or fillable with a fluid, for example with compressed air. If, in the following, these is mention of the front clamp release hose 24, a front release body 24

applicable and/or applied with a pressure means is thus also generally meant.

Preferably, the compressed air is applicable and/or applied in an interior of the at least one front clamp release hose 24 with a pressure of up to 8 bar or more. The at least one front adjusting element 24, however, can also be designed as at least one hydraulic cylinder 24 and/or at least one pneumatic cylinder 24 and/or at least one electric motor 24. The simplicity of construction in the case of a clamp release hose 24, however, is advantageous.

Independently of the design of the at least one front adjusting element 24, an activation of the at least one front adjusting element 24 preferably brings about a shortening of the at least one front pressure element 23 and preferably of the at least two front pressure elements 23 in at least the front clamping direction B, further preferably at least by an extension of the at least one front adjusting element 24 in a direction orthogonal to the axial direction A and orthogonal to the front clamping direction B. This takes place, for example, in the form of a deflection of the at least one front pressure element 23 and preferably by means of deflections opposed to one another of the at least two front pressure elements 23. This brings about a movement of the at least one radially inner front clamping element 26 away from the at least one radially outer front clamping element 22 and thus an opening of a front clamp gap 27. The front clamp gap 27 is preferably formed by the at least one radially outer front clamping element 22 on the one hand and the at least one radially inner front clamping element 26 on the other hand. The at least two front pressure elements 23 are preferably flexibly connected to the front main body 37, further

preferably such that they cannot be removed from this, but nevertheless are movable relative to it, in particular during their deformation. The at least two front pressure elements 23 are preferably flexibly connected to the at least one radially inner front clamping element 26, further preferably such that they cannot be removed from this, but nevertheless are movable relative to it, in particular during their deformation. In particular, the at least one radially inner front clamping element 26 is thus flexibly connected to the at least two front pressure elements 23 such that a shortening of the at least one front pressure element 23 inevitably causes a movement of the at least one radially inner front clamping element 26 contrary to the front clamping direction B.

In a preferred embodiment, the at least two front pressure elements 23 are essentially, in particular apart from a deflection or curvature, arranged parallel to one another and extend in the axial direction A and essentially also in a second extension direction orthogonal thereto, which preferably has at least one radial component. Preferably, the second extension direction, however, is slightly curved and each front pressure element 23 is slightly curved, since the at least two front pressure elements 23 are continuously under a more or less great pre-tension. This is preferably also the case independently of a state of the front clamp release hose 24 caused in particular in that a construction space is dimensioned such that sufficient space is never available to the at least two front pressure elements 23, in particular not even with completely emptied front clamp release hose 24, to be completely relaxed. The at least one front clamp release hose 24 is preferably arranged between at least two front pressure elements 23 and preferably likewise extends in the axial direction A. The at least two front pressure elements 23

are movable, in particular swivellable with one another, by means of at least two front connecting elements, and/or connected to the main body 37 of the at least one front clamping device 21 and/or to the at least one front clamping element 22. The at least one front clamp release hose 24, at least considered from a preferably axial direction A, is arranged between the at least two front connecting elements.

At least one of the at least two front pressure elements 23 and preferably both front pressure elements 23 are preferably movably, further preferably swivellably, fixed to the main body 37 of the at least one front clamping device 21, further preferably by means at least of one of the least two front connecting elements. The at least two front pressure elements 23 are preferably movable, further preferably swivellably fixed to the at least one radially inner front clamping element 26, further preferably by means at least of the at least two connecting elements. In each case, on both sides of the at least one front clamp release hose 24 at least one clamping element is arranged preventing a removal of ends of the at least two front pressure elements 23 from one another above a maximum distance. This causes, in the case of an inflation of the at least one front clamp release hose 24, the at least two front pressure elements 23 not only to swing away from one another, but to curve outwards away from the at least one front clamp release hose 24, as their ends in each case cannot be removed from the ends of the adjacent pressure elements 23. Preferably, at least one clamping element is formed by the at least one radially inner front clamping element 26. Preferably, at least one clamping element is formed by the main body 37 of the at least one front clamping device 21.

As a result of the curvature formed, the at least two front pressure elements 23, however, shorten, for example with respect to a direction of a connecting element through the at least one front clamp release hose 24 to another connecting element, in particular with respect to the front clamping device B. In particular, a linear distance of two ends of one and the same front pressure element 23 is shortened. Thereby the at least one radial inner front clamping element 26 moves relative to the main body 37 of the at least one front clamping device 21 and in particular towards this and the clamping is released. For example, the at least two connecting elements are designed as connecting pins, which project through oblong holes of the at least two front pressure elements 23 and at their two ends are in each case connected to the main body 37 of the at least one front clamping device 21 or to the at least one radially inner front clamping element 26.

In the case of a deactivation of the at least one front adjusting element 24, a restoring force of the at least one front pressure element 23 causes a movement of the at least one radially inner front clamping element 26 towards the at least one radially outer front clamping element 22 and thus a closing of the front clamping gap 27. Such a deactivation of the least one front adjusting element 24 consists, for example, in a lowering of the pressure in the interior of the clamp release hose 24, for example down to an ambient pressure, in particular atmospheric pressure. Preferably, the at least one front pressure element 23 and further preferably the at least two front pressure elements 23 are at any time under an at least minimal pre-tension, independently of whether the at least one front clamping device 21 is opened or closed and independently of whether a printing plate 73 is

situated in the front clamping gap 27 or not. In particular, the front leaf springs 23, further preferably the at least one front spring assembly 23, are slightly curved and preloaded at any time.

The at least one radially inner front clamping element 26 is preferably always held in a defined position, for example pressed against a front alignment surface 29, preferably by means at least of a front pressure element 28, for example at least a front pressure spring 28, with respect to the circumferential direction D. The front alignment surface 29 is preferably arranged between the at least one front pressure element 28 and the first channel wall 18. The front alignment surface 29 is preferably a surface 29 of the at least one front main body 37. In particular, a force exerted by the at least one front pressure element 28 on the at least one radially inner front clamping element 22 acts in a direction towards the first channel wall 18. The force exerted by the at least one front pressure element 28 is preferably smaller than the force exerted by the at least one front pressure element 23 in the clamped state. It is thereby guaranteed that although the at least one radially inner front clamping element 26 is held in a defined position in a peripheral direction D, it is not adversely affected with respect to movements in the front clamping direction B of the at least one front pressure element 28. The defined position in the circumferential direction D guarantees that the printing plate 73 is not inadvertently moved in the clamping process. A high precision of the position of the printing plate 73 in its clamped state and in particular during the clamping process is thereby maintained.

The at least one radially inner front clamping element 26 and/or the at least one radially outer front clamping element 22 preferably has or have at least one surface consisting of a hardened material, for example hardened steel, which preferably is provided additionally or alternatively with a structure of regular and/or irregular elevations and/or indentations, for example criss-crossing linear grooves. In the case of a clamped printing plate 73, this improves a force closure between the printing plate 73 on the one hand and the at least one radially inner front clamping element 26 and/or the at least one radially outer front clamping element 22 on the other hand.

The at least one front clamping device 21 preferably has at least two register stops 31; 32. The at least two register stops 31; 32 serve as reference points in the case of an insertion of a printing plate 73 into the at least one front clamping device 21. The at least two register stops 31; 32 interact with corresponding counterparts of the printing plate 73 preferably designed as recesses. Preferably, the at least two register stops 31; 32 in each case have a sensor device in order to be able to check mechanically a correct position of the printing plate 73 relative to the at least two register stops 31; 32. These sensor devices are designed as electrical contacts in a preferred embodiment, further preferably at least one electric circuit being closed by means of the printing plate 73 as soon as this is correctly in contact with both register stops 31, 32. Preferably, these sensor devices are connected to a machine control. Further preferably, a closing of the at least one front clamping device 21 depends on a positive signal on the part of these sensor devices.

The counterparts preferably designed as recesses of the printing plate 73 are preferably applied to the printing plate 73 after an imaging and/or exposure of the printing plate 73, namely with high precision with respect to a position of the counterparts designed as recesses relative to respective print images of the printing plate 73. The accuracy of a position of the counterparts designed as recesses relative to respective print images is preferably in the range of a few micrometres.

The at least one front clamping device 21 is preferably stored by means of at least one anchorage, for example at least a rail extending along a first bottom face 42 of the channel 13 preferably essentially in a direction parallel to the axis of rotation 11. The entire front clamping device 21 is thereby at least minimally movable, in particular pivotable, relative to the cylinder barrel 12. The at least one front clamping device 21 is preferably pivotable parallel to the first bottom face 42 of the channel 13 around a compensation axis orthogonal to the first bottom face 42. Preferably, the at least one front clamping device 21 is pressed against a lateral stop wall in the axial direction A seen by means of an axial pressure means and therefore held in a defined position with respect to this axial direction A. The lateral abutment wall preferably limits the at least one channel 13 in the axial direction A. In particular, the at least one front clamping device 21 is preferably arranged immovably with respect to the axial direction A relative to the cylinder barrel 12 of the plate cylinder 07. The at least one front clamping device 21 preferably has at least a first support point 33 or first contact point 33 and at least two second support points 34; 36 or second contact points 34; 36, at which, at least in a tensioned state of a printing plate 73 and preferably always, the at least one front clamping device 21 is in contact with

the first channel wall 18. The first support point 33 is preferably an unalterable bulge of the at least one front clamping device 21 and/or the first channel wall 18. This means that preferably the first cylinder wall 18 has a bulge facing towards the front clamping device 21, with which the at least one first clamping device 21 is in contact and/or in that further preferably the at least one front clamping device 21 has a bulge facing towards the first cylinder wall 18, which is in contact with the first cylinder wall 18. As a result of the bulge, an essentially linear or punctiform contact results between front clamping device 21 and first channel wall 18 and in particular preferably no surface contact between front clamping device 21 and first channel wall 18. This guarantees a particularly precise and reproducible position of the at least one front clamping device 21 related to the cylinder barrel 12 of the plate cylinder 07.

The at least two second support points 34; 36 are preferably adjustable and further preferably fixed by at least two front contact bodies 39; 41 designed as front adjusting screws 39; 41. Preferably, the at least two front contact bodies 39; 41 are components of the at least one front clamping device 21. The at least two front contact bodies 39; 41 are preferably arranged adjustably in their position relative to the at least one main body 37 of the at least one front clamping device 21. Preferably, the at least two front contact bodies 39; 41 are connected by threads with the at least one front clamping device 21 and arranged movably relative to the at least one front clamping device 21 by rotation around a thread axis of this thread. In a preferred embodiment, the at least two front contact bodies 39; 41 are arranged adjustably in their position relative to the at least one front clamping device 21

by means of at least one and preferably in each case at least one drive 43; 44 designed as a front pre-tensioning drive 43; 44. The at least one pre-tensioning drive 43; 44 is preferably designed as at least one electric motor 43; 44, for example stepper motor 43; 44, which further preferably has a transmission. The at least one pre-tensioning drive 43; 44 can also be designed as a pneumatic and/or hydraulic drive 43; 44. The at least one pre-tensioning drive 43; 44 and/or the at least two front contact bodies 39; 41 further preferably has or have at least one pre-tensioning sensor, which records a position of the at least one pre-tensioning drive 43; 44, for example an angular position of the at least one electric motor 43; 44 and/or of the one position of the least two front contact bodies 39; 41. Preferably, the at least one pre-tensioning sensor is connected to the machine control and/or the at least one p pre-tensioning drive 43; 44 is connected to the machine control. Alternatively or additionally, a position of the at least two front contact bodies 39; 41 is adjustable manually.

Alternatively or additionally, the at least two front contact bodies 39; 41 are stored on the cylinder barrel 12 of the plate cylinder 07. The at least two front contact bodies 39; 41 are then preferably arranged adjustably in their position relative to the cylinder barrel 12. Preferably, the at least two front contact bodies 39; 41 are connected by thread to the at least one cylinder barrel 17 and are arranged movably relative to the cylinder barrel 17 by means of rotation around a thread axis of this thread. The at least two front contact bodies 39; 41 are then preferably connected at least temporarily and further preferably permanently with the at least one front clamping device 21, in particular at respective front contact sites. Preferably, the at least two

front contact bodies 39; 41 are in turn arranged adjustably in their position relative to the cylinder barrel 12 by means of at least one and preferably in each case at least one drive 43; 44 designed as a front pre-tensioning drive 43; 44. The at least one pre-tensioning drive 43; 44 is preferably designed, as described, as at least one electric motor 43; 44, for example step motor 43; 44, which further preferably has a transmission. The at least one pre-tensioning drive 43; 44 can, as described, also be designed as a pneumatic and/or hydraulic drive 43; 44. The at least one pre-tensioning drive 43; 44 and/or the at least two front contact bodies 39; 41 in turn further preferably has or have at least one pre-tensioning sensor, which records a position of the at least one pre-tensioning drive 43; 44, for example an angular position of the at least one electric motor 43; 44 and/or which records a position of the at least two front contact bodies 39; 41. Preferably, the at least one pre-tensioning sensor is in turn connected to the machine control and/or the at least one pre-tensioning drive 43; 44 is connected to the machine control. Alternatively or additionally, in turn the position of the at least two front contact bodies 39; 41 is manually adjustable.

The first and second support points 33; 34; 36 are preferably distributed in axial direction A along the at least one front clamping device 21, further preferably along a straight line. Preferably, the first support point 33 is arranged between the at least two second support sites 34; 36 with respect to the axial direction A. Preferably, the first channel wall 18 and the at least one front clamping device 21, in particular in the form of the bulge and the at least two front contact bodies 39; 41, are in contact with one another at any time on all support sites 33; 34; 36.

Further preferably, the tensioning device 101 has at least one support body 107, designed, for example, as a spring 107, which is supported both on the at least one first clamping device 21 as well as on the at least one second clamping device 61 and by means of which the at least one front clamping device 21 is pressed against the first channel wall 18 and by means of which the at least one rear clamping device 61 is pressed against the second channel wall 19. Preferably, four such support bodies 107 designed as springs 107 are arranged, which in each case exert a force of 600 N to 1000 N (six hundred newtons to one thousand newtons). By adjustment of the least two second support points 33; 34, a flexure of the at least one first clamping device 21 is optionally influenced.

Depending on the position of the front contact body 39; 41 relative to the front clamping device 21 and/or the cylinder barrel 12 and thus the support sites 33; 34; 36 to one another, the at least one radially outer front clamping element 22 and the at least one radially inner front clamping element 26 are either uniformly acted on by forces and designed to be designed to be linear and therefore curved convexly concavely if at least one force presses the front clamping device 21 against the first channel wall 18. This at least one force is preferably, as described above, at least a force exerted by the at least one support body 107, for example designed as a spring 107, and/or at least a tractive force exerted by tensioning of the printing plate 73. By appropriate selective adjustment of the position of the front contact body 39; 41 relative to the front clamping device 21 or the cylinder barrel 17 and thus the support points 33; 34; 36 to one another, a selective tensioning of the printing plate 73 can thus be achieved, for example for the correction

of a convex or concave distortion of a transmitted print image. Additionally or alternatively, for example, by in itself linear, but for the at least one front clamping device 21 overall oblique position of the support sites 33; 34; 36, an oblique position of the printing plate 73 on the plate cylinder 07 can be achieved, for example for the correction of an oblique position of the transmitted print image to the printing plate 73.

The at least one rear clamping device 61 is movable along a second bottom surface 108 of the channel 13 in and/or against the axial direction A and swivellable around at least one differential axle orthogonal to the second bottom surface 108. The arrangement with respect to the axial direction A preferably takes place by means of an axial drive 141. More details are described further below. Before a first tensioning of the printing plate 73, the front contact bodies 39; 41 are preferably adjusted such that equal forces prevail between the first channel wall 19 and the at least one front clamping device 21 at all support points 33; 34; 36.

The at least one rear clamping device 61 is described below. The at least one rear clamping device 61 has at least one radially outer rear clamping element 62, which is arranged immovably relative to a rear main body 71 of the at least one rear clamping device 61. This rear main body 71 is fixed to the cylinder barrel 12, but preferably arranged minimally movable relative to the cylinder barrel 12 for correction purposes. The at least one radially outer rear clamping element 62 is preferably designed as a radially outer rear clamping strip 62, which extends in the axial direction A, preferably over at least 75% and further preferably at least 90% of an axial length of the at least one channel 13. The at

least one rear clamping device 61 has at least one rear pressure element 63, which radially is arranged further inside than the at least one radially outer rear clamping element 62. The at least one rear pressure element 63 is preferably designed as at least one rear leaf spring 63, further preferably as at least one rear spring assembly 63, which consists of a number of leaf springs 63, in particular lying flat on each other. The at least one rear clamping device 61 has at least one rear adjusting element 64, by means of which the relative movement of the at least one rear pressure element 63 is effectible relative to the at least one radially outer rear clamping element 62 and thereby preferably at the same time relative to the cylinder barrel 12 of the plate cylinder 07. Preferably, the at least one rear pressure element 63 is deformable per se by means of the at least one rear adjusting element 64. Preferably, the at least one rear pressure element 63 is shortenable with respect to an essentially radial direction by means of the at least one rear adjusting element 64. Preferably, the at least one rear pressure element 63 extends over at least 75% and further preferably at least 90% of an axial length of the cylinder barrel 12.

Preferably, the at least one rear clamping device 61 has at least two rear pressure element 63 and/or at least one radially inner rear clamping element 66. The at least two rear pressure elements 63 are in turn preferably in each case designed as at least one leaf spring 63 and further preferably in each case as at least one spring assembly 63, which in each case consists of a number of leaf springs 63, in each case lying flat on each other. The at least one radially inner rear clamping element 66 is preferably designed as at least one radially inner rear clamping strip 66 which extends in the

axial direction A, preferably over at least 75% and further preferably at least 90% of the axial length of the at least one channel 13. The at least one radially inner rear clamping element 66 is preferably arranged movably in and/or against a rear clamping element C, in particular towards the at least one radially outer rear clamping element 62 and/or away from the at least one radially outer rear clamping element 62. The rear clamping direction C preferably points essentially in a radial direction. This means the rear clamping direction C preferably has at least one component in a radial direction that is greater than an optionally present components in a circumferential direction D. The rear clamping device C is preferably aligned orthogonally to the axial direction A. The at least one radially inner rear clamping element 66 is preferably arranged movably with respect to the axial direction A. The at least one rear pressure element 63 and preferably the at least two rear pressure elements 63 are or are preferably in contact with the at least one radially inner rear clamping element 66.

Preferably, the at least one radially inner rear clamping element 66 can be acted on and/or is acted on with a force by means of the at least one rear pressure element 63 and further preferably by means of the at least two rear pressure elements 63 in the rear clamping direction C towards the at least one radially outer rear clamping element 62. The at least one rear adjusting element 64 is preferably in direct contact with the at least one rear pressure element 63. Preferably, in the circumferential direction D with respect to the plate cylinder 07 the at least one rear adjusting element 64 is arranged between the at least two radially inner rear pressure elements 63. The at least one rear adjusting element 64 is preferably designed as at least one rear clamp release drive 64, further

preferably as a rear release body 64 which can be acted on and/or is acted on by a pressure means and even further preferably as at least one rear release hose 64, in particular rear clamp release hose 64, which further preferably is filled and/or fillable with a fluid, for example with compressed air. If the discussion below concerns the rear clamping hose 64, a rear release body 64 which can be acted on and/or is acted on by a pressure means is thus also generally meant. Preferably, the compressed air can be acted on and/or is acted on in an interior of the at least one rear clamp release hose 64 with a pressure of up to 8 bar or more. The at least one rear adjusting element 64 can, however, also be designed as at least one hydraulic cylinder 64 and/or at least one pneumatic cylinder 64 and/or at least one electric motor 64. The simplicity of construction in the case of a clamp release hose 64, however, is advantageous.

Independently of the design of the least one rear adjusting element 64, an activation of the at least one rear adjusting element 64 preferably causes a shortening of the at least one rear pressure element 63 and preferably of the at least two rear pressure elements 63 in at least the rear clamping direction C, further preferably at least by an extension of the at least one rear adjusting element 64 in a direction orthogonal to the axial direction A and orthogonal to the rear clamping device C. This takes place, for example, in the form of a deflection of the at least one rear pressure element 63 and preferably by means of deflections of the at least two rear pressure elements 63 opposed to one another. This causes a movement of the at least one radially inner rear clamping element 66 away from the at least one radially outer rear clamping element 62 and thus an opening of a rear clamping gap 67. The rear clamping gap 67 is preferably formed by the at

least one radially outer rear clamping element 62 on the one hand and the at least one radially inner rear clamping element 66 on the other hand. The at least two rear pressure elements 63 are preferably flexibly connected to the rear main body 71, further preferably such that they cannot be removed from this, but nevertheless are movable relative to it, in particular during their deformation. The at least two rear pressure elements 63 are preferably flexibly connected to the at least one radially inner rear clamping element 66, further preferably such that they cannot be removed from this, but nevertheless are movable relative to it, in particular during their deformation. In particular, preferably the at least one radially inner rear clamping element 66 is thus flexibly connected to the at least two rear pressure element 63 such that a shortening of the at least one rear pressure element 63 the at least one radially inner rear clamping element 66 inevitably causes a movement of the at least one radially inner rear clamping element 66 against the rear clamping direction C.

In a preferred embodiment, the at least two rear pressure elements 63 are essentially, in particular apart from a deflection or curvature, arranged parallel to one another and extend in the axial direction A and essentially also in a second extension direction orthogonal thereto, which preferably has at least one radial component. Preferably, the second extension direction, however, is slightly bent and each rear pressure element 63 is slightly curved, as the at least two rear pressure elements 63 are continuously under a more or less great pre-tension. This is preferably also the case independently of a state of the rear clamp release hose 64 and in particular caused in that an installation space is dimensioned such that sufficient space is never available to

the at least two rear pressure elements 63, in particular even not with a completely emptied rear clamp release hose 64, to be completely relaxed. The at least one rear clamp release hose 64 is arranged between the at least two rear pressure elements 63 and preferably likewise extends in the axial direction A. The at least two rear pressure elements 63 are movable by means of at least two rear connecting elements, in particular swivellably connected with one another and/or with the main body 71 of the at least one rear clamping device 61 and/or to the at least one rear clamping element 62. The at least one rear clamp release hose 64, at least considered from a preferably axial direction A, is arranged between the at least two rear connecting elements.

At least one of the at least two rear pressure elements 63 and preferably both rear pressure elements 63 are preferably fixed movably, further preferably swivellably on the main body 71 of the at least one rear clamping device 61, further preferably by means at least of one of the at least two rear connecting elements. The at least two rear pressure elements 63 are preferably fixed movably, further preferably swivellably, to the at least one radially inner rear clamping element 66, further preferably by means at least of one of the at least two connecting elements. In each case, on both sides of the at least one rear clamp release hose 64 is arranged at least one clamping element preventing a removal of ends of the at least two rear pressure elements 63 from each other beyond a maximum distance. This causes that in the case of an inflation of the at least one rear clamp release hose 64 the at least two rear pressure elements 63 not only swing away from each other, but curve outwards away from the at least one rear clamp release hose 64, as their ends can in each case not be removed from the ends of the adjacent pressure elements 63. Preferably, at

least one clamping element is formed by the at least one radially inner rear clamp element 66. Preferably, at least one clamping element is formed by the main body 71 of the at least one rear clamping device 61.

As a result of the curvature formed, the at least two rear pressure elements 63, however, shorten with respect to a direction from one connecting element through the at least one rear clamp release hose 64 to another connecting element, in particular with respect to the rear clamping direction C. In particular, a linear distance of two ends of one and the same rear pressure element 63 is shortened. The at least one radially inner rear clamping element 66 thereby moves relative to the main body 71 of the at least one rear clamping device 61 and in particular towards this and the clamping is released. For example, the at least two connecting elements are designed as connecting pins, which project through longitudinal holes of the at least two rear pressure elements 63 and are connected at their two ends in each case with the main body 71 of the at least one rear clamping device 61 or with the at least one radially inner rear clamping element 66.

In the case of a deactivation of the at least one rear adjusting element 64, a restoring force of the least one rear pressure element 63 causes a movement of the at least one radially inner rear clamping element 66 towards the at least one radially outer rear clamping element 62 and thus to a closing of the rear clamping gap 67. Such a deactivation of the at least one rear adjusting element 64 consists, for example, in a lowering of the pressure in the interior of the rear clamp release hose 64, for example down to an ambient pressure, in particular atmospheric pressure. Preferably, the at least one rear pressure element 63 and further preferably

the at least two rear pressure elements 63 are at any time under an at least minimal pre-tension, independently of whether the at least one rear clamping device 61 is opened or closed and independently of whether a printing plate 73 is situated in the rear clamping gap 67 or not. In particular, the rear leaf springs 63, further preferably the at least one rear spring assembly 63, is preferably slightly curved and pre-tensioned at any time.

The at least one radially inner rear clamping element 66 is preferably always preferably held in a defined position by means of at least one rear pressure element 68, for example of at least one rear pressure spring 68 with respect to the circumferential direction D, for example against a rear alignment surface 69. The rear alignment surface 69 is preferably arranged between the at least one rear pressure element 68 and the second channel wall 19. The rear alignment surface 69 is preferably a surface 69 of the at least one rear main body 71. In particular, a force exerted by the at least one rear pressure element 68 on the at least one radially inner rear clamping element 62 acts in a direction towards the second channel wall 19. The force exerted by the at least one rear pressure element 68 is preferably smaller than the force exerted in the clamped state by the at least one rear pressure element 63. It is guaranteed thereby that although the at least one radially inner rear clamp element 66 is held in a defined position in the circumferential direction D, it is not adversely affected with respect to movements in the rear clamping direction C by the at least one rear pressure element 68. The position defined in the circumferential direction D guarantees that the printing plate 73 is not unintentionally moved in the clamping process. A high precision of the

position of the printing plate 73 in its clamped state and in particular during the clamping process is thereby maintained.

The at least one radially inner rear clamping element 66 and/or the at least one radially outer rear clamping element 62 preferably has or have at least one surface made from a hardened material, for example hardened steel, which preferably is additionally or alternatively provided with a structure of regular and/or irregular elevations and/or depressions, for example crossing linear grooves. In the case of a clamped printing plate 73, this improves a force closure between the printing plate 73 on the one hand and the at least one radially inner rear clamping element 66 and/or the at least one radially outer rear clamping element 62 on the other hand.

The at least one rear clamping device 61 is preferably part of at least one slide 102 of the at least one tensioning device 101. The at least one slide 102 and thus the at least one rear clamping device 61 is preferably arranged at least partly along a tensioning path and/or movably in a tensioning direction E. Preferably, the tensioning path extends orthogonally to the axis of rotation 11 of the plate cylinder 07. Preferably, the tensioning path extends within a plane whose surface normal is oriented parallel to the axis of rotation 11 of the plate cylinder 07. Preferably, the tensioning path extends essentially in and/or against the circumferential direction D or further preferably in and/or against a tensioning direction E preferably tangential to the circumferential direction D. Preferably, the at least one slide 102 is arranged to be movable along the tensioning path within the at least one channel 13 towards the at least one front clamping device 21. Preferably, at least one guide is

arranged that guides the at least one rear clamping device 61 along its tensioning path. A maximum tensioning path, that is a maximum adjustment path of the least one slide 102 in and/or against the tensioning direction E is preferably between 10 mm and 35 mm, further preferably at least 15 mm and even further preferably between 15 mm and 20 mm. A length of the tensioning path covered for tensioning is preferably between 0.1 mm and 2 mm long, further preferably between 0.5 mm and 1.2 mm. The tensioning direction E is preferably aligned parallel to the second bottom surface 108 of the channel 13 in the area of the rear clamping device 61. The maximum adjustment path of the at least one slide 102 is preferably at least as great relative to the cylinder barrel 12 of the plate cylinder 07 in and/or against the tensioning direction as an extension of an intended or actual contact surface of a printing plate 73 clamped in the at least one rear clamping device 61 measured in the tensioning direction E with the at least one radially outer clamping element 62 of the at least one rear clamping device 61.

The at least one rear clamping device 21 is preferably mounted by means of at least one anchorage, for example of at least one rail extending, for example, along this second bottom surface 108 of the channel 13 preferably essentially in a direction orthogonal to the axis of rotation 11 of the plate cylinder 07. The entire rear clamping device 61 is thereby movable preferably at least linearly relative to the cylinder barrel 12. This serves on the one hand for a simplified insertion of the rear end 76 of the printing plate 73 into the at least one rear clamping device 61 and on the other hand for a tensioning and/or an alignment of the printing plate 73 clamped in the at least one front clamping device 21 as well as the at least one rear clamping device 61.

At least one drive 104 designed as a tensioning drive 104 is arranged in connection with the at least one second clamping device 61. By means of the at least one tensioning drive 104, at least one preferably adjustable force is exertable and/or exerted on the at least one slide 102, which points in a direction from the second channel wall 19 towards the at least one slide 102. Preferably, the at least one tensioning drive 104 is arranged between a first supporting surface 103 of the at least one slide 102 and a second channel wall 19. The at least one tensioning drive 104 is preferably designed as at least one control body 104 that can be acted on and/or is acted on by a pressure means. Such a pressure means is, for example, a hydraulic medium or a pneumatic medium, in particular air. The at least one tensioning drive 104 is further preferably designed as at least one tensioning hose 104. The at least one control body 104 and preferably the at least one tensioning hose 104 can preferably be acted on by pressures of up to 10 bar and more. The at least one tensioning drive 104can, however, also be designed as at least one hydraulic cylinder 104 and/or at least one pneumatic cylinder 104 and/or at least one electric motor 104. The at least one tensioning drive 104 is preferably supported against a component arranged rigidly relative to the plate cylinder 07 or a constituent of the plate cylinder 07 itself, for example the second channel wall 19. If, in the preceding or in the following, there is mention of the at least one tensioning hose 104, then the least one control body 104 that can be acted on and/or that is acted on is thus likewise generally meant.

Preferably, at least one resetting element 106 is arranged, for example at least one spring 106; 107 designed as a resetting spring 106. The at least one resetting element 106

causes a resetting force on the at least one slide 102, which is oriented against the tensioning direction E. The at least one resetting element 106 is supported in one embodiment against a constituent arranged rigidly relative to the plate cylinder 07 or a component of the plate cylinder 07 itself. Preferably, however, the at least one resetting element 106 is identical to the supporting body 107 designed as a spring 107, which is supported both on the at least one first clamping device 21 as well as on the at least one second clamping device 61 and by means of which the at least one first clamping device 21 is pressed against the first channel wall 18. As long as the at least one tensioning drive 104 is deactivated, the at least one slide 102 is arranged in a first position, also called peripheral location, of the at least one slide 102 nearer to the second channel wall 19, in particular because of the resetting force exerted by the at least one resetting element 106 on the at least one slide.

The at least one tensioning device 101 preferably has at least one fixing device 109, by means of which the at least one second clamping device 61 is fixable in its position and in particular with maintenance of a tensioning of the printing plate 73, in particular at least with respect to movements of the at least one slide 102 towards the second channel wall 18. Below, two different embodiments of the fixing device 109 are described.

A first embodiment of the fixing device 109 is described below. In the first embodiment, the fixing device 109 has at least one preferably adjustable rear spacer 131, which is preferably designed as at least one rear adjustment screw 131. The at least one rear spacer 131 is mounted by means of a bearing, which preferably has at least one thread or is

designed as a thread, preferably in the at least one slide 102 and in the at least one rear clamping device 61, in particular in the rear main body 71. However, it is also possible to mount the at least one rear spacer 131 by means of a bearing in a constituent of the cylinder barrel 12 or a component arranged rigidly relative to the cylinder barrel 12. The at least one rear spacer 131 is movable relative to the at least one slide 102, in particular adjustable in its relative position to the at least one slide 102, for example by a screw movement in the at least one thread. The at least one rear spacer 131 is preferably movable together with the at least one slide 102. The at least one rear spacer 131 can in particular be arranged in at least one retracted position and in at least one and preferably a number of extended positions relative to the at least one slide 102. In the at least one extended position of the at least one rear spacer 131, the at least one rear spacer 131 preferably projects further in a direction pointing towards the second channel wall 19 over a rear edge surface 132 of the at least one slide 102 facing towards the second channel wall 13 than in the retracted position.

If the at least one rear spacer 131 is mounted in a component of the cylinder barrel 12 or a constituent arranged rigidly relative to the cylinder barrel 12, the at least one rear spacer 131 can in particular be arranged in at least one retracted position and in at least one and preferably a number of extended positions relative to the cylinder barrel 12. In the at least one extended position of the at least one rear spacer 131, the at least one rear spacer 131 then preferably projects further in a direction pointing towards the at least one slide 102 over at least one second channel wall 13 facing towards a slide 102, than in the retracted position.

The at least one resetting element 106 causes, as already described, a resetting force on the at least one slide 102, which is oriented contrary to the tensioning direction E. If no opposed forces act, the at least one slide 102 is thus pressed against the second channel wall 19. Depending on the position of the at least one rear spacer 131, the at least one slide 102, however, is prevented from coming maximally close to the second channel wall 19 and in particular into its peripheral location. If the at least one rear spacer 131 is situated in the retracted position and the at least one rear spacer 131 and/or the at least one slide 102 itself is in contact with the second channel wall 19, the at least one slide 102 is arranged further removed from the at least one front clamping device 21 than if the at least one rear spacer 131 is situated in an extended position and in contact with the second channel wall 13. The smallest differences between the at least one front clamp opening 27 and the at least one rear clamp opening 67 also behave correspondingly. A printing plate 73 clamped in the at least one front clamping device 21 and in the at least one rear clamping device 61 and placed around the cylinder barrel 12 is thus tensioned more or less with a deactivated tensioning drive 104 depending on the position of the at least one rear spacer 131. The fixing device 109 in the first embodiment thus counteracts the tensioning force of the printing plate 73 and/or the resetting force of the least one resetting element 106 and thus fixes the at least one slide 102 and thus the at least one rear clamping device 61.

The fixing device 109 in the first embodiment is preferably operated such that a printing plate 73 clamped both in the at least one front clamping device 21 as well as in the at least one rear clamping device 61 is firstly tensioned, by the at

least one tensioning drive 104 being activated, for example by the control body 104 that can be acted on and/or is acted on by a pressure means, in particular the tensioning hose 104, being acted on with a pressure and thus expanding such that it moves the at least one slide 102. Here, the at least one rear spacer 131 is firstly arranged in the retracted position relative to the at least one slide 102. The at least one slide 102 and thus the entire at least one rear clamping device 61 move towards the at least one front clamping device 21. The printing plate 73 wound around the plate cylinder 07 is thereby tensioned. The at least one slide 102 is preferably moved so far that a desired tensioning of the printing plate 73 is achieved or further preferably at least slightly exceeded. Subsequently, the at least one rear spacer 131 is moved from the retracted position to a defined extended position. Subsequently, the tensioning drive 104 is deactivated, for example by reducing the pressure in the tensioning hose 104, for example to ambient pressure, in particular atmospheric pressure. Optionally, the at least one slide 102 moves again towards the second channel wall 19, until the at least one rear spacer 131 touches the second channel wall 19 at in each case at least one and preferably exactly one distance contact point 133 and thereby the at least one slide 102 is stopped. Alternatively, the at least one slide 102 touches the at least one spacer 131 mounted in the cylinder barrel 12 to stop the at least one slide 102.

The rear clamping device 61 is held in this state, as already described, in its position in that the resetting force of the at least one resetting element 106 and/or the tensioning of the printing plate 73 presses the at least one slide 102 and thus the at least one rear clamping device 61 against the second channel wall 19, though at a distance determined by the

position of the at least one rear spacer 131. For this, no drive must remain permanently activated and in particular no hose must remain permanently acted on by pressure.

The at least one tensioning drive 104, the at least one rear spacer 131 and the at least one rear adjusting element 64 are preferably supported against an identical component of the slide 102 and the at least one rear clamping device 62, further preferably against the rear main body 71. Actuations of the at least one tensioning drive 104, of the at least one rear spacer 131 and of the at least one rear adjusting element 64 are preferably feasible independently of one another.

The exact position of the at least one rear spacer 131 defines the minimal distance of the at least one slide 102 from the second channel wall 19. By means of the exact position of the at least one rear spacer 131, a maximal tensioning force acting on the tensioned printing plate 73 thus is set. Preferably a number, further preferably at least four, of the described rear spacers 131 are arranged spaced from one another in the axial direction A. In a preferred embodiment, the at least one rear spacer 131 is adjustable in its position by means at of least one drive 134 designed as a spacing drive 134. The at least one spacing drive 134 is preferably designed as at least one electric motor 134. The at least one spacing drive 134 can also be designed as a pneumatic and/or hydraulic drive 134. The at least one spacing drive 134 and/or the at least one rear spacer 131 further preferably have at least one spacing sensor, which records a position of the at least one spacing drive 134, for example an angular position of the at least one electric motor and/or records a position of the least one rear spacer 131. Preferably, the at least one spacing sensor is connected to the machine control and/or the

at least one spacing drive 134 is connected to the machine control. Alternatively or additionally, a position of the at least one spacer 131 is manually adjustable.

A second embodiment of the fixing device 109 has at least one stop body 111 and at least one rear stop adjusting element 112 preferably selectively alterable in its position relative to the cylinder barrel 12 and/or the at least one slide 102, for example at least one rear stop screw 112. The at least one rear stop adjusting element 112 preferably has at least one stop transmission 113, for example to make possible a finer adjustment of the position of the at least one rear stop screw 112. The at least one rear stop screw 112 is preferably supported in at least one bearing 122, which is designed, for example, as a bearing block 122. Preferably, the at least one rear stop screw 112 is connected to the at least one bearing 122 by means of at least one thread. The at least one bearing 122 is preferably arranged stationary relative to the cylinder barrel 12, for example designed as part of the cylinder barrel 12. The at least one stop body 111 is preferably arranged on the at least one slide 102 and movable together with it. The at least one rear stop screw 112 is preferably arranged limiting the maximal adjustment path of the at least one slide 102. The maximal adjustment path of the at least one slide 102 is then preferably limited at one end by the at least one rear stop element 112 and at another end by the second channel wall 19. By alteration of the position of the at least one rear stop screw 112 with respect to the tensioning direction E, the maximal adjustment path of the at least one slide 102 is adjustable, in particular extendable and/or shortenable.

Preferably, at least one slide clamp element 114 is arranged on the at least one slide 102. The at least one slide clamp

element 114 is preferably arranged movably 114 by means of at least one drive 116 designed as a slide release drive 116 relative to the at least one slide 102. By means of the at least one slide release drive 116, the at least one slide clamping element 114 can be brought into and/or out of contact with a first slide clamp surface 117 of the at least one channel 13. In a fixed position of the at least one slide 102, the at least one slide release drive 116 is supported on the one hand on the at least one slide 102 and thus on the at least one rear clamping device 61 and the at least one slide release drive 116 on the other hand is supported by means of the at least one slide clamping element 114 on the first slide clamping surface 117 of the channel 13. The at least one slide 102 and thus the at least one second clamping device 61 are preferably supported in turn on a second slide clamp surface 118 of the channel 13 lying opposite to the first slide clamp surface 117 of the channel 13. The at least one slide 102 is thereby fixed in the channel 13. Preferably, the at least one slide release drive 116 is constructed analogously to the principle of the at least one front clamping device 21 and/or the at least one rear clamping device 61.

For this, the at least one slide release drive 116 preferably has at least one and further preferably at least two slide clinching elements 119. The at least one slide clinching element 119 is preferably designed as at least one slide leaf spring 119, further preferably as at least one front slide spring assembly 119, which consists of a number of leaf springs 119, in particular lying flat on one another. The at least one slide release drive 116 preferably has at least one slide releaser 121. The at least one slide releaser 121 is preferably designed as at least one slide release hose 121, which is filled and/or fillable with a fluid, for example with

compressed air. Preferably, the compressed air in an interior of the at least one slide release hose 121 can be charged and/or is charged with a pressure of up to 10 bar or more. The at least one slide releaser 121 can also be designed as at least one hydraulic cylinder 121 and/or at least one pneumatic cylinder 121 and/or at least one electric motor 121.

Independently of the design of the at least one slide releaser 121, an activation of the at least one slide releaser 121 preferably causes a shortening of the at least one slide clinching element 119 and preferably of the at least two slide clinching elements 119 in at least one slide clamping direction F, which is further oriented preferably parallel to the second clamping direction C. This takes place, for example, by means of a deflection of the at least one slide clinching element 119 and preferably by means of deflections opposed to one another of the at least two slide clinching elements 119. This causes a movement of the at least one slide clamping element 114 away from the first slide clamping surface 117 and thus a loosening of the at least one slide 102. The at least one and preferably the at least two slide clinching elements 119 are preferably flexibly connected to the at least one slide 102, further preferably such that they cannot be removed from it, but nevertheless are movable relative to it, in particular during their deformation. The at least one and preferably the at least two slide clinching elements 119 are preferably flexibly connected to the at least one slide clamping element 114, further preferably such that they cannot be removed from it, but nevertheless are movable relative to it, in particular during their deformation. In particular, preferably the at least one slide clamping element 114 is thus connected to the at least one slide clinching element 119 flexibly such that a shortening of the at least

one slide clinching element 119 the at least one slide clamping element 114 inevitably causes a movement of the at least one slide clamping element 114 against the slide clamping device F and thus a loosening of the at least one slide 102 and thus of the at least one fixing device 109.

The at least two slide clinching elements 119 are preferably, in particular apart from a deflection or curvature, parallel to one another and extend in the axial direction A and essentially also in a further, for example third, extension direction orthogonal to this, which preferably has at least one radial component. Preferably, the further, for example third, extension direction, however, is slightly curved and each slide clinching element 119 is slightly curved, as the at least two slide clinching elements 119 are continuously under a more or less great pre-tension. This is preferably also the case independently of a state of the slide release hose 121 and is in particular caused in that the installation space is dimensioned such that there is never enough space available to the at least two slide clinching elements 119, in particular not even with a completely emptied slide release hose 121, to be completely relaxed. The at least one slide release hose 121 is arranged between the at least two slide clinching elements 119 and preferably likewise extends in the axial direction A. The at least two slide clinching elements 119 are movably connected by means of at least two connecting elements, in particular swivellably connected to one another and/or to the main body 71 of the at least one rear clamping device 61 and/or to the at least one slide clamping element 114. The at least one slide release hose 121, at least considered from a preferably axial direction A, is arranged between the at least two connecting elements.

At least one of the at least two slide clinching elements 119 and preferably both slide clinching elements 119 are preferably fixed movably, further preferably swivellably, on the main body 71 of the at least one rear clamping device 61, further preferably by means of at least one of the at least two connecting elements. The at least two slide clinching elements 119 are preferably fixed movably, further preferably pivotably, on the slide clamping element 114, further preferably by means at least of one of the at least two connecting elements. In each case, on both sides of the slide release hose 121 is arranged at least one clamp element preventing a distance of ends of the at least two slide clinching elements 119 from one another above a maximal distance. This causes in the case of inflation of the slide release hose 121 that the at least two slide clinching elements 119 not only swing away from one another, but bend away from the hose outwards, as their ends cannot move away from the ends of the adjacent slide clinching elements 119. Preferably, at least one clamping element is formed by the at least one slide clamping element 114. Preferably, at least one clamping element is formed by the main body 71 of the at least one rear clamping device 61.

As a result of the curvature formed, the at least two slide clinching elements 119 shorten, however, for example with respect to a direction from a connecting element through the slide release hose 121 to another connecting element. In particular, a linear distance of two ends of one and the same slide clinching element 119 is shortened. Thereby, the at least one slide clamping element 114 moves relative to the main body 71 of the at least one rear clamping device 61 and in particular towards it and the clamping is released. For example, the at least two connecting elements are designed as

connecting pins, which project through longitudinal holes of the at least two slide clinching elements 119 and at their two ends are in each case connected to the main body 71 of the at least one rear clamping device 71 or to the at least one slide clamping element 114.

In the case of a deactivation of the at least one slide releaser 121, a restoring force of the least one front slide clinching element 119 causes a movement of the at least one slide clamping element 114 towards the first slide clamping surface 117 and thus a clamping of the at least one slide 102 and of the rear main body 71 and thus of the at least one fixing device 109. Such a deactivation of the at least one front slide releaser 121 consists, for example, in a lowering of the pressure in the interior of the slide release hose 121, for example down to an ambient pressure, in particular atmospheric pressure. Preferably, the at least one slide clinching element 119 and further preferably the at least two slide clinching elements 119 is/are at any time under an at least minimal pre-tension, independently of whether the at least one fixing device 109 is released or clamped and independently of where the at least one slide 102 is situated. In particular, the slide leaf springs 119, further preferably the at least one slide spring assembly 119, are slightly deflected and pre-tensioned at any time.

The fixing device 109 in the second embodiment is preferably operated such that a printing plate 73 clamped both in the at least one front clamping device 21 as well as in the at least one rear clamping device 61 is firstly clamped by pressurizing the at least one clamping drive 104, for example by acting on and thus expanding the clamping hose 104 with a pressure such that it moves the at least one slide 102. Here, the fixing

device 109 is firstly released, for example by pressurizing the slide release hose 121 with a pressure and thereby the two slide spring assemblies 119 are deformed such that the at least one slide clamping element 114 is pulled back. The at least one slide 102 and thus the entire at least one rear clamping device 61 moves towards the at least one front clamping device 21. The printing plate 73 wrapped around the plate cylinder 07 is thereby tensioned. The at least one slide 102 preferably moves so far until the at least one abutment body 111 touches the at least one rear abutment adjusting element 112 on an abutment contact 123 and thereby the at least one slide 102 is stopped. The at least one rear abutment adjusting element 112 is preferably already arranged in a position that guarantees an optimal position of the at least one slide 102 as soon as the at least one stop body 111 touches the at least one rear abutment adjusting element 112. The fixing device 109 is then clamped, for example by the pressure in the slide release hose 121 being reduced so far that the slide spring assemblies 119 relax and thereby press the at least one slide clamping element 114 is pressed against the first slide clamping surface 117. As soon as the fixing device 109 is clamped, the tensioning drive 104 is deactivated, for example by reducing the pressure in the tensioning hose 104, for example to ambient pressure, in particular atmospheric pressure.

The rear clamping device 61 is held in its position in this state in that the fixing device 109 firmly clamps the at least one slide 102 and thus the at least one rear clamping device 61 in its position in the channel 13. For this, no drive must remain permanently activated and in particular no hose must remain permanently pressurized. The at least one tensioning drive 104, the at least one slide releaser 121 and the at

least one rear adjusting element 64 are preferably supported against a same component 71 of the slide 102 and of the at least one rear clamping device 62, further preferably against the rear main body 71. Actuations of the at least one tensioning drive 104, of the at least one slide releaser 121 and of the at least one rear adjusting element 64 are preferably feasible independently of one another.

The exact position of the at least one rear stop adjusting element 112 defines the maximal adjustment path of the least one slide 102. Owing to the exact position of the at least one rear stop adjusting element 112, a maximal tension acting on the tensioned printing plate 73 is thus fixed. Preferably, a number, further preferably at least two and even further preferably at least four, of the rear stop adjusting elements 112 described are arranged at a distance from one another in the axial direction A. In a preferred embodiment, the at least one rear stop adjusting element 112 is adjustable in its position by means at least of one drive designed as a stop drive. The at least one stop drive is preferably designed as at least one electric motor. The at least one stop drive can also be designed as a pneumatic and/or hydraulic drive. The at least one stop drive and/or at least one rear stop adjusting element 112 further preferably has at least one sensor, which records a position of the at least one stop drive, for example an angle of rotation position of the at least one electric motor and/or records a position of the at least one rear adjusting element 112. Preferably, the at least one sensor is connected to the machine control and/or the at least one stop drive is connected to the machine control. Alternatively or additionally, a position of the at least one rear stop adjusting element 112 is manually adjustable.

Preferably, the at least one stop body 111 is arranged movably between a stop position and a passing position, preferably in a direction orthogonal to the tensioning direction E, for example in the axial direction A. In the stop position, the at least one stop body 111 is situated opposite the at least one rear stop adjusting element 112 with respect to the tensioning direction E. The interaction then takes place as described above. In the passing position, the at least one stop body 111 is situated outside an extension of the at least one rear stop adjusting element 112 in the tensioning direction E. As long as the at least one stop body 111 is situated in the passing position, the at least one stop body 111 thus doesin particular not restrict the control part of the at least one slide 102. This allows a larger control path than the maximal control path of the at least one slide 102 set for tensioning processes without the at least one rear stop element 112 having to be adjusted differently for this. This facilitates a placement of the printing plate 73 on the plate cylinder 07 and thus allows a particularly effective introduction of the printing plate 73 into the at least one rear clamping device 61.

In a preferred embodiment, the at least one stop body 111 is adjustable in its position by means of at least one drive designed as a positioning drive, in particular movable between the stop position and the passing position. The at least one positioning drive is preferably designed as at least one electric motor. The at least one positioning drive can also be designed as a pneumatic and/or hydraulic drive. The at least one positioning drive and/or the at least one stop body 111 further preferably has at least one sensor, which records a position of the at least one positioning drive, for example an angle of rotation position of the at least one electric motor

and/or the one position of the at least one stop body 111. Preferably, the at least one sensor is connected to the machine control and/or the at least one positioning drive is connected to the machine control. Alternatively or additionally, the position of the at least one stop body 111 is manually adjustable.

Independently of the embodiment of the fixing device 109, the at least one rear clamping device 61 and further preferably the at least one slide 102 is preferably arranged movably in and/or opposite to the axial direction A relative to the cylinder barrel 13. By means at least of one side adjusting device 144, for example a side adjusting screw 144, the at least one rear clamping device 61 and further preferably the at least one slide 102 is adjustable in its position in the axial direction A. Preferably, the side adjusting device 144 is driveable and/or driven by means of at least one drive 141 designed as an axial drive 141. In one embodiment, the at least one rear clamping device 61 and further preferably the at least one slide 102 is already set in its axial position by the at least one side adjustment device 144. In a preferred embodiment, the at least one rear clamping device 61 and further preferably the at least one slide 102 is pressed against a preferably adjustable side stop 143 in the axial direction A on one side, for example the side I, by means of a lateral pressure element 142, for example a lateral spring 142 and/or a lateral hydraulic piston 142. The adjustable side stop 143 is preferably arranged on the opposite side, for example on the side II. The adjustable side stop 143 can be designed, for example, as the least one side adjustment device 144, in particular side adjustment screw 144, described beforehand. The at least one axial drive 141 is preferably arranged in a depression within the channel 13, for example

between the at least one tensioning device 101 and the axis of rotation 11 of the plate cylinder 07.

The at least one plate cylinder 07 preferably has at least one feed device, for example at least one rotary introduction. The at least one feed device is preferably designed as an air supply and/or air outlet and/or current feedthrough and/or liquid supply and/or liquid discharge. The at least one feed device preferably serves for a supply and/or removal of compressed air and/or current and/or electrical control signals and/or at least one temperature control liquid. Preferably, the at least one feed device is designed as at least one rotary feed. Preferably, the at least one supply device has at least two compressed air feeds, of which, for example, a first compressed air feed serves for the supply of compressed air for the actuation of the tensioning drive 104 preferably designed as a tensioning hose 104 and/or of which, for example, a second compressed air feed serves for the supply of compressed air for the actuation of the front adjusting element 24 preferably designed as a front clamp release hose 24 and/or of the rear adjusting element 64 preferably designed as a rear clamp release hose 64 and/or of the slide releaser 121 preferably designed as a slide release hose 121 and/or of the at least one positioning drive of the at least one stop body 111. Preferably, at least one transmitting unit and one receiving unit connected or connectable therewith is arranged, by means of which electrical control signals and/or measuring signals are being transmitted and/or transmissible between the rotating and/or rotatable plate cylinder 07 on the one hand and a stationary machine component, for example the frame of the printing unit 02 and in particular the machine control on the other hand. The at least one supply is preferably assigned to a cylinder

journal 17 of the plate cylinder 07, which is arranged on another side of the cylinder barrel 12 than a drive driving the plate cylinder 07. Such a drive driving the plate cylinder 07 can be present, for example, in the form of a motor or of a preferably helically toothed gear wheel.

Preferably, the plate cylinder 07 has at least one pneumatic control 127, which preferably has at least one valve. Preferably, the plate cylinder 07 has at least one electronic control 128. Preferably, the at least one pneumatic control 127 and/or the at least one electronic control 128 is/are arranged in at least one and further preferably precisely one control container 129, which is further preferably part of the plate cylinder 07. Preferably, the at least one control container 129 is arranged laterally to the cylinder barrel 12 in the area of a cylinder journal 17 with respect to the axial direction A.

A method for arranging, in particular for clamping and/or tensioning, the printing plate 73 on the plate cylinder 07 is described below.

In a first operating state of the plate cylinder 07 also designated as the starting state, preferably no printing plate 73 is in contact with the at least one tensioning device 101. The at least one front clamping device 21 and in particular the front clamping gap 27 is preferably closed. The at least one front adjusting element 24 is preferably deactivated. Further preferably, the at least one front clamp release hose 24 is under ambient pressure, in particular atmospheric pressure. The at least one rear clamping device 61 is preferably closed. The at least one rear adjusting element 64 is preferably deactivated. Further preferably, the at least one rear clamp release hose 64 is under ambient pressure, in

particular atmospheric pressure. The at least one slide 102 is preferably in contact with the second channel wall 19, in particular in its peripheral location. Preferably, the at least one rear spacer 131 is located in the retracted position.

In a first process operation, which is also designated as a front opening process, the at least one front clamping device 21 is opened. For this, the at least one front adjusting element 24 is preferably activated. Further preferably, the at least one front clamp release hose 24 is charged with compressed air, which is under a pressure of preferably between 3 bar and 10 bar, further preferably between 5 bar and 7 bar. The at least one front clamp release hose 24 thereby expands supports itself on the at least one and preferably on the two front pressure elements 23. The at least one front pressure element 23 is preferably deflected and the two front pressure elements 23 are preferably deflected in opposite direction. Preferably, the at least one radially inner front clamping element 26 is removed thereby from the at least one radially outer front clamping element 22, preferably by 0.9 mm to 1.5 mm, and the front clamping gap 27 is opened. Beforehand and/or during this and/or thereafter, the plate cylinder 07 is preferably brought with respect to its axis of rotation 11 into an angular position provided for an insertion of the printing plate 73. Preferably, in this intended angular position, the front clamping gap 27 is situated in immediate vicinity to the printing plate 73, which further preferably is arranged at least partially within the at least one printing plate store. Preferably, the printing plate 73 is arranged in the at least one printing plate store essentially along a tangent to the plate cylinder 07.

A second operating state, which is also referred to as forward opened operating state of the plate cylinder 07, differs from the first operating state preferably only in that the at least one front clamping device 21 and in particular the front clamping gap 27 is opened and the at least one front adjusting element 24 is activated and further preferably in that the at least one front clamp release hose 24 is under an increased pressure of preferably between 3 bar and 10 bar, further preferably between 5 bar and 7 bar and in that the at least one front pressure element 23 is more strongly deflected.

In a second process operation, which is also called front insertion method, a front end 74 of the printing plate 73 is inserted in the at least one front clamping device 21 and in particular in the front clamping gap 27. Beforehand, the printing plate 73 is preferably brought into a readiness position intended for this, in which further preferably a position and orientation relative to the front clamping gap 27 of the printing plate 73 on the subsequent insertion into the front clamping gap 27 is optimised, for example by means of the at least one printing plate store.

A third operating state, which is also called front insert state of the plate cylinder 07, differs from the second operating state preferably only in that the front end 74 of the printing plate 73 is inserted in the at least one front clamping device 21 and in particular in the front clamping gap 27.

In a third process operation, which is also called front clamping method, the at least one front clamping device 21 and in particular the front clamping gap 27 is closed and thereby the front end 74 of the printing plate 73 is clamped in the at least one front clamping device 21 and in particular in the

front clamping gap 27. For this, the at least one front adjusting element 24 is preferably deactivated. Further preferably, the pressure in the at least one front clamp release hose 24 is reduced, in particular until the at least one front clamp release hose 24 is under an ambient pressure, in particular atmospheric pressure. The at least one front clamp release hose 24 thereby shrinks. The at least one front pressure element 23 preferably uses the liberated space and extends and the two front pressure elements 23 preferably extend and move partially in the opposite direction towards one another. Preferably, the at least one radially inner front clamping element 26 thereby moves towards the at least one radially outer front clamping element 22 and the front clamping gap 27 is closed. In a support operation, which, for example, is part of the third process operation, the printing plate 73 is preferably laid on the lateral surface 124 of the plate cylinder 07. This takes place, for example, by swivelling the plate cylinder 07 around its axis of rotation 11 and here, preferably by means of a support device, for example a pressure roller, by the printing plate 73 being pressed onto the lateral surface 124 of the plate cylinder 07. Optionally, at least one underlay can be arranged between the lateral surface of the plate cylinder 07 and of the printing plate 73, for example to equalise deviations of the diameter from an ideal diameter.

A fourth operating state of the plate cylinder 07, which is also called front clamping state, differs from the third operating state preferably only in that the at least one front clamping device 21 and in particular the front clamping gap 27 is closed and in that the front end 74 of the printing plate 73 is clamped into the at least one front clamping device 21 and in particular into the front clamping gap 27 and in that

the at least one front adjusting element 24 is deactivated and further preferably in that the at least one front clamp release hose 24 is under an ambient pressure, in particular atmospheric pressure and in that the at least one front pressure element 23 is deflected less greatly and further preferably in that the printing plate 73 is pressed onto the lateral surface 124 of the plate cylinder 07.

In a fourth process operation, which is also called rear opening method, the at least one rear clamping device 61 is preferably opened. For this, the at least one rear adjusting element 64 is preferably activated. Further preferably, the at least one rear clamp release hose 64 is charged with compressed air, which is under a pressure of preferably between 3 bar and 10 bar, further preferably between 5 bar and 7 bar. Preferably, the at least one rear clamp release hose 64 expands thereby and supports itself on the at least one and preferably on the two rear pressure elements 63. The at least one rear pressure element 63 flexes and the two rear pressure elements 63 preferably flex in opposite direction. Preferably, the at least one radially inner rear clamping element 66 is removed from the at least one radially outer rear clamping element 62 thereby and the rear clamping gap 67 is opened. Beforehand and/or at the same time and/or thereafter, preferably the at least one slide 102 is moved by an insertion route from its peripheral location along the tensioning path into a central or inner position towards the at least one front clamping device 21 and the first channel wall 18. The insertion route is preferably between 10 mm and 30 mm, further preferably at least 15 mm and even further preferably between 15 mm and 25 mm long. For this, the at least one drive 104 designed as a tensioning drive 104 is activated. Further preferably, the at least one tensioning hose 104 is charged

with compressed air, which is under a pressure of preferably between 1 bar and 10 bar, further preferably between 4 bar and 6 bar. Since the at least one tensioning hose 104preferably supports itself both on the second channel wall 19 as well as along the at least one slide 102, preferably the at least one slide 102 is thus moved. Subsequently, the plate cylinder is preferably rotated around its axis of rotation 11 and thereby the printing plate 73 is placed on its lateral surface. Preferably, it is pressed thereby by means of at least one pressure means, for example a pressure roller, against this lateral surface of the at least one plate cylinder 07.

A fifth operating state, which is also called rear opened operating state of the plate cylinder 07, differs from the fourth operating state preferably only in that the at least one rear clamping device 61 and in particular the rear clamping gap 67 is opened and that at least one rear adjusting element 64 is activated and further preferably in that the at least one rear clamp release hose 64 is under an increased pressure of preferably between 3 bar and 10 bar, preferably between 5 bar and 7 bar and in that the at least one rear pressure element 63 is more strongly deflected and in that the at least one slide 102 is situated in the central or inner position.

In a fifth process operation, which is also called rear insertion method, preferably a rear end 76 of the printing plate 73, which meanwhile is situated around the plate cylinder 07, was pressed in particular by means of the pressure roller, placed on the plate cylinder 07 such that the rear end 76 of the printing plate 73 projects over an edge 72 connecting the second channel wall 19 with the lateral surface

124 of the plate cylinder 07. In other words, the rear end 76 of the printing plate 73 is brought into an effective range of the at least one rear clamping device 61 in its peripheral location. Subsequently, the at least one slide 102 is preferably moved from its central or inner position along the tensioning path by the insertion route into its peripheral location towards the second channel wall 19. For this, the at least one tensioning drive 104 is preferably deactivated. Further preferably, the pressure in the at least one tensioning hose 104 is reduced, in particular until the at least one front tensioning hose 104 is under an ambient pressure, in particular atmospheric pressure. Preferably, the at least one radially outer rear clamping element 62 and the at least one radially inner rear clamping element 66 here enclose the rear end 76 of the printing plate 73, further preferably the at least one radially outer rear clamping element 62 or the at least one radially inner clamping element 66 at most touching the rear end 76 of the printing plate 73. Preferably, the rear end 76 of the printing plate 73 is at least partially enclosed by the at least one rear clamping gap 67 of the at least one rear clamping device 61, while the at least one slide 102 is moved along the tensioning path from its inner position towards the second channel wall 19 into its peripheral location. It is equally well possible to change the sequence of the fourth process operation and the parts of the fifth process operation, for example to open the at least one rear clamping element 61 only when the slide 102 is already located in its central or inner position.

A sixth operating state, which is also called rear insertion state of the plate cylinder 07, differs from the fifth operating state preferably only in that the rear end 76 of the printing plate 73 is inserted in the at least one rear

clamping device 61 and in particular in the rear clamping gap 67 and in that the at least one slide 102 is located in the peripheral location.

In a sixth process operation, which is also called rear clamping process, the at least one rear clamping device 61 and in particular the rear clamping gap 67 is closed and thereby the rear end 76 of the printing plate 73 is clamped in the at least one rear clamping device 61 and in particular in the rear clamping gap 67. For this, the at least one rear adjusting element 64 is preferably deactivated. Further preferably, the pressure in the at least one rear clamp release hose 64 is reduced, in particular until the at least one rear clamp release hose 64 is under an ambient pressure, in particular atmospheric pressure. The at least one rear clamp release hose 64 thereby preferably shrinks. The at least one rear pressure element 63 preferably uses the liberated space and extends and the two rear pressure elements 63 preferably extend and at least partially move towards each other in opposite direction. Preferably thereby, the at least one radially inner rear clamping element 66 moves towards the at least one radially outer rear clamping element 62 and the rear clamping gap 67 is closed.

A seventh operating state of the plate cylinder 07, which is also called rear clamping state, differs from the sixth operating state preferably only in that the at least one rear clamping device 61 and in particular the rear clamping gap 67 is closed and in that the rear end 76 of the printing plate 73 is clamped into the at least one rear clamping device 61 and in particular into the rear clamping gap 67 and in that the at least one rear adjusting element 64 is deactivated and further preferably in that the at least one rear clamp release hose 64

is under an ambient pressure, in particular atmospheric pressure and in that the at least one rear pressure element 63 is less strongly deflected.

A seventh process operation, which is also called tensioning operation, depends on the embodiment of the fixing device 109. The seventh process operation is preferably carried out as described in the following in connection with the fixing device 109 in the first embodiment. Firstly, in a first section of the tensioning process the printing plate 73 is preferably prepared by moving the at least one slide 102 towards the at least one front clamping device 21 and the first channel wall 18, further preferably further than is provided for a printing operation with this printing plate 73. In particular, the at least one slide 102 is thereby moved away from the second channel wall 19. Preferably, the printing plate 73 is tensioned here with a first force. Preferably, the printing plate 73 is tensioned here more strongly than is provided for a printing operation with this printing plate 73. For this, the at least one tensioning drive 104 is activated. Further preferably, the at least one tensioning hose 104 is charged with compressed air that is under a pressure of preferably between 3 bar and 10 bar, further preferably between 6 bar and 8 bar. As the at least one tensioning hose 104 preferably supports itself both on the second channel wall 19 as well as on the at least one slide 102, the at least one slide 102 is thus moved. The pressure is preferably chosen to be higher than is provided in the rear insertion process, because it must be operated against the tension building up in the printing plate 73. Subsequently, in a second section of the tensioning process the printing plate 73 is again relieved by the at least one slide 102 being moved again towards the second channel wall 19, further preferably to its peripheral

position. For this, at least one tensioning drive 104 is deactivated. Further preferably, the pressure in the at least one tensioning hose 104 is reduced, in particular until the at least one front tensioning hose 104 is under a lower pressure, for example an ambient pressure, in particular atmospheric pressure.

Subsequently, in a third section of the tensioning process preferably the at least one slide 102 is moved again towards the at least one front clamping device 21 and the first channel wall 18, further preferably further than is provided for a printing operation. Preferably, the printing plate is tensioned here with a second force. Preferably, the second force is just as great as the first force. The preferred rapid tensioning exceeding the degree provided in the printing operation guarantees that a tensioning force can act on the printing plate 73 along the entire circumference of the printing plate 73 and not due to static friction only an edge region is influenced, in particular is stretched, by the tensioning force. For this, the at least one tensioning drive 104 is activated in turn. Further preferably, the at least one tensioning hose 104 is charged with compressed air, that is under a pressure of preferably between 2 bar and 8 bar, further preferably between 2 bar and 5 bar for a printing plate 73 with a backing plate of aluminium, and between 3 bar and 6 bar for a printing plate 73 with a backing plate of steel. Preferably, the printing plate 73 and in particular its rear end 76 remains clamped in the rear clamping device 61 at least from the beginning of the first section of the tensioning process up to the end of the third section of the tensioning process. The at least one slide 102 is firstly arranged in an intermediate state nearer to the first channel wall 18 and the at least one first clamping device 21 than

provided in the printing operation. Now the at least one rear spacer 131 is adjusted to a position relative to the at least one slide 102 that specifies a certain distance of the at least one rear clamping device 61 from the second channel wall 19, which guarantees a tensioning of the printing plate 73 provided in the printing operation. Preferably, for this the at least one rear adjusting screw 131 is rotated around its thread axis relative to the least one slide 102 and/or relative to the cylinder carriage 12, further preferably by means of the at least one drive 134 designed as a distance drive 134. Subsequently, the printing plate 73 is again partially relieved by moving the at least one slide 102 again towards the second channel wall 19, preferably until the at least one rear spacer 131 comes into contact with the second channel wall 19 at the at least one distance contact point 133. For this, at least one tensioning drive 104 is preferably at least partly deactivated. Further preferably, the pressure in the at least one tensioning hose 104 is reduced, in particular until the at least one tensioning hose 104 is under a lower pressure than beforehand, for example under an ambient pressure, in particular atmospheric pressure. The printing plate 73 is now tensioned and the plate cylinder 07 is located in an eighth operating state in a first embodiment. In particular, in the first section of the tensioning process and in the third section of the tensioning process at least temporarily the pressure within the tensioning hose 104 is in each case greater than in the second section of the tensioning process. Preferably, a third force, with which the printing plate 73 is tensioned in the eighth operating state, is smaller than the first force and/or the second force, with which the printing plate 73 is tensioned during the first section and/or during the third section of the tensioning process.

The eighth operating state in the first embodiment, which is also called tensioning state or printing operation state, differs in use of the fixing device 109 in the first embodiment from the seventh operating state preferably only in that the at least one slide 102 has a greater distance from the second channel wall 19 than in the seventh operating state and in that the at least one slide 102 has a smaller distance from the first channel wall 18 than in the seventh operating state and in that the at least one rear spacer 131 is changed in its position relative to the at least one slide 102 in that the at least one rear spacer 131 is to be arranged with respect to the circumferential direction D relative to the at least one slide 102 further in a direction towards the rear channel wall 19 than in the seventh operating state and in that the printing plate 73 is tensioned on the lateral surface 124 of the plate cylinder 07. In this eighth operating state, the plate cylinder 07 is ready for a printing operation and/or the plate cylinder is in the printing operation.

The seventh process operation, which is also called tensioning process, is, however, preferably carried out as described below in connection with the fixing device 109 in the second embodiment. Firstly, in a first step of the tensioning process, the printing plate 73 is preferably prepared by moving the at least one slide 102 towards the at least one front clamping device 21 and the first channel wall 18, further preferably further than is provided for a printing operation. In particular, here the at least one slide 102 is moved away from the second channel wall 19. For this, preferably the fixing device 109 is firstly detached by activating the at least one drive 116, preferably designed as a slide release drive 116. For this, for example, the pressure in the slide release hose 121 is increased so far that the

slide spring assemblies 119 deform and thereby the at least one slide clamping element 114 releases from the first slide clamping surface 117. Preferably, the at least one stop body 111 is moved in its passing position to facilitate the movements of the at least one slide 102 described below, further preferably by means of the at least one drive designed as at least one positioning drive. Now, the at least one tensioning drive 104 is activated. Further preferably, the at least one tensioning hose 104 is charged with compressed air, which is under a pressure of preferably between 3 bar and 10 bar, further preferably between 6 bar and 8 bar. Since the at least one tensioning hose 104 supports itself both on the second channel wall 19 as well as on the at least one slide 102, the at least one slide 102 is thus moved. The pressure is preferably chosen to be higher than provided in the rear insertion process, because it must be operated against the tension building up in the printing plate 73.

Subsequently, in a second section of the tensioning process the printing plate 73 is again relieved by moving the at least one slide 102 again to the second channel wall 19, further preferably into its peripheral position. For this, at least one tensioning drive 104 is deactivated. Further preferably, the pressure in the at least one tensioning hose 104 is reduced, in particular until the at least one front tensioning hose 104 is under a lower pressure, for example an ambient pressure, in particular atmospheric pressure. Then firstly the at least one stop body 111 is preferably moved into the stop position, further preferably by means of the at least one drive designed as a positioning drive. Beforehand and/or subsequently and/or at the same time, the at least one rear stop element 112 is moved relative to the cylinder barrel 12 into a stop setpoint position, further preferably by means of

the at least one drive designed as a stop drive. Further preferably, for this the at least one rear stop screw 112 is rotated around its thread axis. Thereby, as described, the maximum setting path of the at least one slide 102 and thus the maximal tensioning acting on the tensioned printing plate 73 is specified.

Now, preferably in a third section of the tensioning process the at least one slide 102 is moved towards the at least one front clamping device 21 and the first channel wall 18 and in particular away from the second channel wall 19 until the at least one rear stop adjusting element 112 touches the at least one stop body 111. A continuation of the movement of the at least one slide 102 is then not possible because of the contact of the at least one rear stop adjusting element 112 with the at least one stop body 111. For this, in turn the at least one tensioning drive 104 is activated. Further preferably, the at least one tensioning hose 104 is charged with compressed air which is under a pressure of preferably between 2 bar and 8 bar, further preferably between 2 bar and 5 bar for a printing plate 73 with a carrier plate of aluminium and between 3 bar and 6 bar for a printing plate 73 with a carrier plate of steel.

Subsequently, the fixing device 109 is clamped, for example by reducing the pressure in the slide release hose 121 so far that the slide spring assemblies 119 relax and thereby press the at least one slide clamping element 114 against the first slide clamping surface 117, for example at ambient pressure, in particular atmospheric pressure. As soon as the fixing device 109 is clamped, the tensioning drive 104 is deactivated, for example by reducing a pressure in the tensioning hose 104, for example to ambient pressure, in

particular atmospheric pressure. The rear clamping device 61 is held in its position in this state in that the fixing device 109 firmly clamps the at least one slide 102 and thus the at least one rear clamping device 61 in their position in the at least one channel 13. The printing plate 73 is now tensioned and the plate cylinder 07 is in an eighth operating state in a second embodiment.

The eighth operating state in the second embodiment, which is also called tensioning state or print operation state, differs in use of the fixing device 109 in the second embodiment from the seventh operating states preferably only in that the at least one slide 102 has a greater distance from the second channel wall 19 than in the seventh operating state and in that the at least one slide 102 has a smaller distance from the first channel wall 18 than in the seventh operating state and in that the at least one stop body 111 touches the at least one rear stop adjusting element 112 and in that the printing plate 73 is tensioned on the lateral surface 124 of the plate cylinder 07. In this eighth operating state, the plate cylinder 07 is ready for a printing operation and/or the plate cylinder is in the printing operation.

Independently of the embodiment of the tensioning process, the printing plate 73 and in particular its rear end 76 preferably remain clamped in the rear clamping device 61 at least from the start of the first section of the tensioning process up to the end of the third section of the tensioning process. Independently of the embodiment of the tensioning process, preferably in the first section of the tensioning process the at least one slide 102 is moved by means of a first force towards the at least one front clamping device 21 and the first channel wall 18 and thereby the printing plate 73 is

tensioned, which is preferably just as great as a second force, with which in the third section of the tensioning process the at least one slide 102 is to be moved towards the at least one front clamping device 21 and the first channel wall 18 and thereby the printing plate 73 is tensioned. Preferably, a first central or first inner position, in which the at least one slide 102 stops in the first section of the tensioning process, is closer here to the second channel wall 19 than a second central or second inner position, in which the at least one slide 102 stops in the third section of the tensioning process. This is based on the fact that the printing plate 73 settles in the first section of the tensioning process and thereby tensions are relaxed and any voids are reduced; the printing plate 73 is thus seated overall.

Preferably, independently of the embodiment of the fixing device 109, in at least an eighth process operation at least one sample print is carried out. A specimen of a printing product, for example of a sheet of paper 09, is printed for this sample print. With the aid of the resulting print image, it is evaluated whether and how far the plate tension should be changed and/or whether and how far a slant of the printing plate 73 on the plate cylinder 07 should be changed and/or whether and how far a convex and/or concave deformation of the front end 74 of the printing plate 73 and/or of the rear end 76 of the printing plate 73 should be changed. Should the print image already be perfect, all adjustments of the tensioning device 101 are maintained. This process is preferably repeated as often as necessary. Further preferably, not more than this one sample print is necessary to specify a complete and final adjustment of the plate cylinder 07 and

even further preferably all plate cylinders 07 interacting with a common transfer cylinder 06.

Otherwise, in at least a ninth process operation, adjustments to the settings of the tensioning device 101 corresponding to the evaluation in the eighth process operation are carried out. Independently of the type of adjustments, the fixing device 109 is firstly released again and the printing plate 73 is at least partly relieved.

When using the first embodiment of the fixing device 109 in the ninth process operation, firstly the at least one slide 102 is removed again from the second channel wall 19 and moved towards the first channel wall 18 and the at least one front clamping device 21. Preferably, for this the at least one tensioning drive 104 is activated. Further preferably, the at least one tensioning hose 104 is charged with compressed air, which is under a pressure of preferably between 3 bar and 10 bar, until the at least one slide 102 carries out the said movement. The at least one slide 102 is then stopped. Now, the at least one rear spacer 131 is adjusted to a position relative to the at least one slide 102 and/or relative to the cylinder barrel 12 which allows a smaller distance of the at least one rear clamping device 61 from the second channel wall 19. Preferably, here the at least one rear setting screw 131 is rotated around its thread axis relative to the at least one slide 102 and/or relative to the cylinder barrel 12, further preferably by means of the at least one distance drive 134. Subsequently, the printing plate 73 is again released by moving the at least one slide 102 again towards the second channel wall 19, preferably until the at least one slide 102 is again situated in its peripheral position and/or until the at least one rear spacer 131 comes into contact with the

second channel wall 19 and/or the at least one slide 102 at the at least one distance contact point 133. For this, the at least one tensioning drive 104 is preferably at least partly deactivated. Further preferably, the pressure in the at least one tensioning hose 104 is reduced, in particular until the at least one tensioning hose 104 is under a lower pressure than beforehand, for example under an ambient pressure, in particular atmospheric pressure.

When using the second embodiment of the fixing device 109, in the ninth process operation the at least one tensioning drive 104 is preferably first activated. Further preferably, the at least one tensioning hose 104 is charged with compressed air, which is under a pressure of preferably between 3 bar and 10 bar. The at least one slide 102 and in particular the least one rear stop adjusting element 112 is now pressed with sufficiently great force against the at least one stop body 111 by the at least one tensioning drive 104. Now the fixing device 109 is preferably firstly released, for example by increasing the pressure in the slide release hose 121 to the extent that the slide spring assembly 119 deform and thereby the at least one slide clamp element 114 releases from the first slide clamp surface 117. Subsequently, the printing plate 73 is again released by moving the at least one slide 102 again to the second channel wall 19, preferably until the at least one slide 102 is again situated in its peripheral position and/or until the at least one rear spacer 131 comes into contact with the second channel wall 19 at the at least one distance contact point 133. For this, at least one tensioning drive 104 is preferably at least partially deactivated. Further preferably, the pressure in the at least one tensioning hose 104 is reduced, in particular until the at least one tensioning hose 104 is under a lower pressure than

beforehand, for example under an ambient pressure, in particular atmospheric pressure.

Independently of the embodiment of the fixing device 109, one or more of the following partial processes are then carried out.

In a partial process for the correction of a slant position of the printing plate 73 and/or in a partial process for the correction of a convex and/or concave deformation of the front end 74 of the printing plate 73, at least one of the at least two and preferably the at least two second support sites 34; 36 are adjusted. For this, preferably the at least two front contact bodies 39; 41 preferably designed as front adjusting screws 39; 41 are adjusted in their position relative to the at least one front clamping device 21, in particular to the at least one radially outer front clamping element 22 and/or relative to the cylinder barrel 12. Further preferably, at least one and in particular the at least two front adjusting screws 39; 41 is/are rotated around their thread axis relative to the least one front clamping device 21 and/or relative to the cylinder barrel 12, even further preferably by means of the at least one drive 43; 44 designed as a front pre-tensioning drive 43; 44. As preferably at any time the first channel wall 18 and at least one front clamping device 21, in particular the at least one radially outer front clamping element 22, in particular in the form of the bulge and the at least two front contact bodies 39; 41, are in contact with one another at all support points 33; 34; 36, a deflection and/or a slanted position of the at least one first clamping device 21 relative to the first channel wall 18 is influenced by adjustment of the at least two second support sites 33; 34.

If, for example, the at least two front adjusting screws 39; 41 are moved away from the first channel wall 18 in their adjustment relative to the bulge of the at least one first tensioning device 21, ends of the at least two front adjusting screws 39; 41 facing towards the first channel wall 18 together with the bulge preferably arranged in between with respect to the axial direction A do not form a straight line. As a result of forces acting, for example, on account of the support body 170 designed as a spring 107 and/or the tensioned printing plate 73, then at least the at least one front clamping device 21 is deformed such that axially outer regions of the at least one front clamping device 21 and the clamped printing plate 73 are drawn more strongly to the first channel wall 18 than an axially middle region of the at least one first clamping device 21 and the clamped printing plate 73. The clamped printing plate 73 is thus deformed convexly on its front end 74. Such a complex deformation on the front end 74 of the printing plate 73 is preferably propagated through the entire printing plate 73 in the circumferential direction D and is further preferably adjusted such that it counteracts a concave deformation of the print image on the printing plate 73.

If, for example, the at least two front adjusting screws 39; 41 on their adjustment relative to the bulge of the at least one first tensioning device 21 are moved towards the first channel wall 18, the ends of the at least two front adjusting screws 39; 41 facing towards the first channel wall 18 together with the bulge arranged in between preferably with respect to the axial direction A do not form a straight line. As a result of forces acting, for example on account of the supporting bodies 107 designed as springs 107 and/or the tensioned printing plate 73, at least the at least one front

clamping device 21 is then deformed such that axially outer regions of the at least one front clamping device 21 and the tensioned printing plate 73 are pulled less strongly to the first channel wall 18 than an axially central region of the at least one first clamping device 21 and the tensioned printing plate 73. The tensioned printing plate 73 is thus concavely deformed on its front end 74. Such a concave deformation on the front end 74 of the printing plate 73 is preferably reproduced by the entire printing plate 73 in the circumferential direction D and is preferably adjusted such that it counteracts a convex deformation of the print image on the printing plate 73.

If, for example, the at least two front adjusting screws 39; 41 on their adjustment relative to the bulge of the at least one first tensioning device 21 are moved contrary to one another, the ends of the at least two front adjusting screws 39; 41 facing towards the first channel wall 18 together with the bulge arranged in between with respect to the axial direction A preferably furthermore form a straight line, which, however, is aligned obliquely relative to the front clamp gap. As a result of acting forces, for example on account of the support body 107 designed as a spring 107 and/or the tensioned printing plates 73, the at least one front clamping device 21 is then pressed on the front channel wall 18, preferably together with the tensioned printing plate 73, such that the at least one front clamping device 21 preferably rotates around an essentially radial alignment axis together with the tensioned printing plate 73 relative to the front channel wall 18. This alignment axis preferably runs through the first support site 33. This takes place in particular because a first axially outer region of the at least one front clamping device 21 and the tensioned printing

plate 73 are drawn further to the first channel wall 18 than a second axially outer region of the at least one front clamping device 21 and the tensioned printing plate 73, which is situated on another axial side of the first support site 33, than the first axially outer region. For example, the first axially outer region is assigned to side I and the second axially outer region is assigned to side II. The tensioned printing plate 73 is thus placed on its front end 74 diagonally to the plate cylinder 07. Such a diagonal position of the printing plate 73 is preferably reproduced by the entire printing plate 73 in the circumferential direction D and is further preferably adjusted such that it counteracts a diagonal position of the print image on the printing plate 73.

If necessary, that is in particular with a correspondingly deformed print image on the printing plate 73, the at least two front adjusting screws 39; 41 are adjusted such that in superposition of the above described effects a mixture of an oblique position of the printing plate 73 on the plate cylinder 07 results on the one hand and a convex and/or concave deformation of the printing plate 73 per se on the other hand.

An oblique position of the printing plate 73 by means of the at least one front clamping device 21 optionally at the same time requires an equalising oblique position and a movement in the axial direction A of the at least one slide 102 connected to the printing plate 73 by the at least one rear clamping device 61 and/or of the at least one rear clamping device 61 itself. As a result of the flexible mounting and/or anchorage of the at least one slide 102 and/or the at least one rear clamping device 61 on the one hand and as a result of the at least one side adjustment device 144, in particular the at

least one drive 141 designed as an axial drive 141 on the other hand, the at least one rear clamping device 61 and further preferably the at least one slide 102 are adjustable in the axial direction A in its position. A maximal offset of the at least one slide 102 and the at least one rear clamping device 61 in the axial direction A, in particular from end position to end position, is preferably between 1 mm and 10 mm, further preferably between 3 mm and 6 mm.

A subprocess for the correction of the plate tensioning is carried out depending on the embodiment of the fixing device 109 analogously to the respective seventh process operation. Here, however, on the one hand preferably the first tensioning and subsequent relieving of the printing plate 73 is omitted and on the other hand, depending on embodiment of the fixing device 109, the at least one rear stop adjusting element 112 of the at least one rear spacer 131 is adjusted according to the desired new plate tensioning. Should the plate tensioning already have assumed the ideal value in the sample printing in the eighth process operation, preferably, as described above, the seventh process operation for the tensioning of the printing plate 73 is performed again, but using the adjustment of the at least one rear stop adjusting element 112 or of the at least one rear spacer 131 already used beforehand. An advantage of the renewed tensioning of the printing plate 73 lies, for example, in that reproducible ratios prevail and the plate tensioning can be adjusted uniformly over the entire extent of the printing plate 73. Therefore in the case of any adjustment of the at least two front adjusting screws 39; 41 and/or the at least one rear stop adjusting element 112 or the at least one rear spacer 131 the printing plate 73 is completely re-tensioned.

After the register for all printing inks and/or printing plates 73 has been measured and compared with a reference print image, necessary corrections of the print image are preferably determined and converted to corrections of the adjustment of the at least one rear clamping device 61. Should a partial image originating from a certain printing plate 73 be too short, a revised adjustment of the at least one rear spacer 131 is preferably calculated therefrom, which causes a greater stretching of the corresponding printing plate 73. Should a partial image originating from a certain printing plate 73 be too long, a revised adjustment of the at least one rear spacer 131 is preferably calculated therefrom, which causes a weaker stretching of the corresponding printing plate 73. In one embodiment, these corrections are performed independently of one another and in particular differently from one another on different rear spacers 131 spaced apart from one another in the axial direction, further preferably on the basis of different correction values, which are determined for different axial positions.

For a correction of a circumferential register error and/or a page register error, a circumferential register adjustment and/or page register adjustment preferably arranged on a cylinder journal 17 of the plate cylinder 07 is preferably used. The printing plate 73 itself remains tensioned unchanged on the plate cylinder 07 in the case of such adjustment of the circumferential register and/or of the page register.

Preferably, the process for clamping and/or tensioning the printing plate 73 on the plate cylinder 07 proceeds in a machine-controlled manner. For this, preferably all drives 43; 44; 104; 116; 134; 141, in particular the at least one front pre-tensioning drive 43; 44 and/or the at least one tensioning

drive 104 and/or the at least one slide release drive 116 and/or the at least one distance drive 134 and/or the at least one axial drive 141 and/or the at least one stop drive are connected to the machine control and/or controlled and/or controllable by the machine control and further preferably regulated and/or regulatable by the machine control. Preferably, the at least one front adjusting element 24 and/or the at least one rear adjusting element 64 are also connected to the machine control and/or controlled and/or controllable by the machine control and further preferably regulated and/or regulatable by the machine control. In the case of tensioning drives 104 and/or adjusting elements 24; 64 designed as hoses and/or slide release hoses 121, a control and/or regulation by means of the machine control consists preferably in a control and/or regulation of the pressure prevailing thereon by means of the machine control.

A precision of the printing result can be increased still further if for each plate cylinder 07 a profile is created that represents deviations of the shape of this plate cylinder 07 from an ideal cylinder shape and if in the imaging and/or exposure of the printing plate 73 in each case this respective profile is then taken into consideration. In this manner, for example, errors in the print image can be avoided which would materialise in that a circumferential speed of the printing plate 73 varies on account of the shape of the plate cylinder 07, although an angular velocity of the plate cylinder 07 remains constant. The printing plate 73 can compensate such regular, geometrically caused variations, for example by at least partially stretched and/or compressed sections of the print image to be printed.

The process for arranging, in particular for clamping and/or tensioning, the printing plate 73 on the plate cylinder 07 thus preferably at least comprises that in one process operation the at least one front clamping device 21 and in particular the front clamping gap 27 is closed and thereby the front end 74 of the printing plate 73 is clamped into the at least one front clamping device 21 and in particular in the front clamping gap 27, in that in a process operation the plate cylinder is rotated around its axis of rotation 11 and thereby the printing plate 73 is placed on its lateral surface, in that in a process operation the rear end 76 of the printing plate 73 is brought into the effective range of the at least one rear clamping device 61 in its peripheral position and is laid on the plate cylinder 07, in that in one process operation the at least one rear clamping device 61 and in particular the rear clamping gap 67 is closed and thereby the rear end 76 of the printing plate 73 is clamped into the at least one rear clamping device 61 and in particular into the rear clamping gap 67, in that in one process operation the at least one slide 102 is moved in a central or inner position towards the at least one front clamping device 21 and the first channel wall 18, in that this central or inner position is specified as a reference position of the at least one slide 102, in that a sample print is carried out and here in particular a register sustainability of the printing inks of different plate cylinders is compared to one another and here a corrected central or inner position of the slide 102 is determined, then the printing plate 73 is again relieved, preferably by moving the at least one slide 102 again towards the second channel wall 19, further preferably in its peripheral position, in that then the at least one slide 102 is again moved towards the at least one front clamping device 21 and the first channel wall 18, specifically up to the

corrected central or inner position, which corresponds to a desired tensioning of the printing plate 73 and in that the processes from the carrying out of the printing test on are optionally repeated several times until the register sustainability turns out to be satisfactory.

Further preferably, the process additionally comprises that the at least one slide 102 is clamped, as soon as it is situated in the respective corresponding central or inner position and is detached before it is to be moved from the central or inner position towards the second channel wall 19.

Further preferably, the process additionally or alternatively comprises that the reference position of the at least one slide 102 is or becomes set by means of appropriate adjustment of the at least one rear spacer 131 or stop adjusting element 112.

Further preferably, the process additionally or alternatively comprises that the at least one slide 102 is in each case moved pneumatically into a central or inner position towards the at least one front clamping device 21 and the first channel wall 18.

Further preferably, the process additionally or alternatively comprises that in the case of an insertion of the front end 74 of the printing plate 73 into the at least one front clamping device 21 recesses in the printing plate 73 are brought into contact with the at least two register stops 31; 32 and the at least one front clamping device 21 is closed when sensor devices signal a correct position of the printing plate 73 relative to the at least two register stops 31; 32.

Further preferably, the process additionally or alternatively comprises that the printing plate 73 out of a printing plate 73 store is placed around the lateral surface 124 of the plate cylinder 07 and/or in that the printing plate 73, while it is placed around the lateral surface 124 of the plate cylinder 07, is pressed against this lateral surface 124 by means of at least one pressing means.

Further preferably, the process additionally or alternatively comprises that the recesses of the printing plate 73 are applied to the printing plate 73 in register relative to a print image on the printing plate 73 after the printing plate 73 has been provided with the print image.

Further preferably, the process additionally or alternatively comprises that the clamping areas of the printing plate 73 are in each case angled away, before the placing of the printing plate 73 on the plate cylinder 07, in each case between 15° and 40° with respect to the middle part of the printing plate 73.

Further preferably, the process additionally or alternatively comprises that on a number of plate cylinders 07 in each case at least one and preferably exactly one printing plate 73 is placed so on the respective plate cylinder 07.

Reference numerals list

01 printing press, rotary printing press, sheet-fed rotary printing press, sheet-fed printing press

02 printing unit, multicolour printing unit

03 sheet feeder

04 sheet feeder

05 –

06 transfer cylinder, rubber cloth cylinder

07 forme cylinder, plate cylinder

08 printing couple, flat printing couple, offset printing couple, high-pressure couple, steel intaglio printing couple

09 print substrate, sheet

10 –

11 axis of rotation (07)

12 cylinder barrel (07)

13 channel

14 valve block

15 –

16 printing gap

17 cylinder journal (07)

18 channel wall, first (13)

19 channel wall, second (13)

20 –

21 clamping device, front

22 clamping element, clamping strip, radially outer, front

23 pressure element, leaf spring, spring assembly, front

24 adjusting element, clamp release drive, release body, release hose, clamp release hose, hydraulic cylinder, pneumatic cylinder, electric motor, front

25 –

26 clamp element, radial inner, front

27 clamp gap, front

28 pressure element, pressures spring, front

29 alignment face, face, front

30 –

31 register stop

32 register stop

33 support point, contact point, first (37)

34 support point, contact point, second (37)

35 –

36 support point, contact point, second (37)

37 main body, front (21)

38 –

39 contact body, adjusting screw, front

40 –

41 contact body, adjusting screw, front

42 bottom face, first (13)

43 drive, pre-tensioning drive, electric motor, step motor, pneumatic and/or hydraulic drive, front

44 drive, pre-tensioning drive, electric motor, step motor, pneumatic and/or hydraulic drive, front

61 clamping device, rear

62 clamp element, clamp strip, radially outer, rear

63 pressure element, leaf spring, spring assembly, rear

64 adjusting element, clamp release drive, release body, release hose, clamp release hose, hydraulic cylinder, pneumatic cylinder, electric motor, rear

65 –

66 clamp element, clamping strip, radially inner, rear

67 clamp gap, rear

68 pressure element, pressures spring, rear

69 alignment surface, surface, rear

70 –

71 main body, rear

72 edge

73 printing forme, printing plate, template printing plate, flexographic printing plate

74 end, contact area, clamping area, front, preceding (73)

75 –

76 end, contact area, clamping area, rear, running behind (73)

101 tensioning device

102 slide

103 supporting surface, first (102)

104 tensioning drive, control body, tensioning hose, hydraulic cylinder, pneumatic cylinder

105 –

106 restoring element, restoring spring, spring

107 support body, spring

108 bottom surface, second (13)

109 fixing device

110 –

111 stop body

112 stop adjusting element, stop screw, rear

113 stop drive

114 slide clamping element

115 –

116 drive, slide release drive

117 slide clamping surface, first

118 slide clamping surface, second

119 slide pressure element, slide leaf spring, slide spring assembly, leaf spring (116)

120 –

121 slide releaser, slide release hose, hydraulic cylinder, pneumatic cylinder electric motor, rear

122 bearing, bearing block (112)

123 stop contact

124 lateral surface (07; 12)

125 –

126 bore, axial

127 pneumatic control

128 control electronics

129 control container

130 –

131 spacer; adjusting screw, rear

132 edge surface, rear

133 distance contact point

134 drive, distance drive, electric motor, pneumatic, hydraulic

141 drive, axial drive

142 spring, pressure element, hydraulic piston, lateral

143 side stop

144 side adjustment device, side adjusting screw

A direction, axial

B clamping direction, front

C clamping direction, rear

D circumferential direction

E tensioning direction

F slide clamping direction

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CLAIMS:

1. Method for arranging a printing plate on a plate cylinder that has at least one channel, in which at least one front clamping device and at least one rear clamping device are arranged, the at least one rear clamping device being part of at least one slide that is arranged to be movable along a tensioning path towards the at least one front clamping device by means of at least one tensioning drive within the at least one channel, in a first section of a tensioning process the at least one slide together with a rear end of the printing plate tensioned in the at least one rear clamping device being moved along the tensioning path towards the at least one front clamping device and a first channel wall whereby the printing plate is tensioned and subsequently in a second section of the tensioning process the printing plate being released again by the at least one slide being moved away from the first channel wall and towards a second channel wall and subsequently in a third section of the tensioning process the at least one slide together with the rear end of the printing plate tensioned in the at least one rear clamping device being moved again towards the at least one front clamping device and the first channel wall whereby the printing plate is tensioned.

2. Method according to Claim 1, wherein the printing plate remains clamped in the rear clamping device at least from the beginning of the first section of the tensioning process up to the end of the third section of the tensioning process.

3. Method according to Claim 1, wherein in the third section of the tensioning process firstly the at least one

slide is moved towards the at least one front clamping device and the first channel wall by means of the at least one tensioning drive together with the rear end of the printing plate clamped in the at least one rear clamping device and wherein then at least one rear spacer is adjusted to a position relative to the at least one slide and/or relative to a cylinder barrel of the plate cylinder that at least in one region of this at least one rear spacer sets a certain distance of the at least one rear clamping device from the second channel wall independently of the at least one tensioning drive and wherein subsequently the at least one tensioning drive is deactivated and the at least one slide together with the at least one rear clamping device is thereby held in its position along the tensioning path, wherein a force exerted by the tensioned printing plate presses the at least one slide against the second channel wall by means of the at least one rear spacer.

4. Method according to Claim 3, wherein the at least one rear spacer is designed as at least one rear adjusting screw and is adjusted to the position relative to the at least one slide by rotating the at least one rear adjusting screw at least relative to the at least one slide around its thread axis.

5. Method according to Claim 3, wherein the at least one rear spacer is designed as at least one rear adjusting screw and is adjusted to the position relative to the cylinder barrel by rotating the at least one rear adjusting screw around its thread axis at least relative to the cylinder barrel.

6. Method according to Claim 4, wherein the at least one rear spacer is adjusted to the position relative to the cylinder barrel by rotating the at least one rear adjusting screw around its thread axis at least relative to the cylinder barrel.

7. Method according to Claim 3, wherein at the latest after deactivation of the at least one tensioning drive the at least one rear spacer is in contact with the second channel wall and simultaneously with the at least one slide and thereby the distance of the at least one rear clamping device from the second channel wall is set independently of the at least one tensioning drive.

8. Method according to Claim 3, wherein the at least one rear spacer is part of the at least one slide.

9. Method according to Claim 1, wherein the at least one tensioning drive is designed as at least one control body that is acted on by a pressure means and wherein in the first section of the tensioning process and in the third section of the tensioning process at least temporarily a pressure within the control body is in each case greater than in the second section of the tensioning process.

10. Method according to Claim 1, wherein during the entire tensioning process a pressure within a rear release body, which is acted on with a pressure means, of the least one rear clamping device is equal to an ambient pressure.

11. Method according to Claim 1, wherein in a preceding front clamping process, firstly the at least one front clamping device is closed and at the same time the front end of the printing plate is clamped into the at least one front clamping device.

12. Method according to Claim 1, wherein in a rear clamping operation the at least one rear clamping device is closed and at the same time the rear end of the printing plate is clamped into the at least one rear clamping device.

13. Method according to Claim 1, wherein in the first section of the tensioning process the at least one slide is moved towards the at least one front clamping device and the first channel wall whereby the printing plate is tensioned with a first force which is just as great as a second force, with which the at least one slide is moved towards the at least one front clamping device and the first channel wall in the third section of the tensioning process whereby the printing plate is tensioned.

14. Method according to Claim 13, wherein at the latest after conclusion of the third section of the tensioning process the printing plate is tensioned with a third force that is smaller than the first force and/or the second force.

15. Method according to Claim 13, wherein here a first internal position, in which the at least one slide stops in the first section of the tensioning process, is closer to the first channel wall than a second internal position, in which the at least one slide stops in the third section of the tensioning process.

16. Method according to Claim 1, wherein in the tensioning process, firstly, at least one rear stop adjusting element relative to the cylinder barrel, supported in a bearing arranged fixed relative to the cylinder barrel, is moved into a target stop position and wherein then the at least one slide is moved by means of the at least one tensioning drive together with the rear end of the printing plate tensioned in the at least one rear clamping device towards the at least one front clamping device and the first channel wall, until the at least one rear stop adjusting element touches at least one stop body and wherein then a fixing device is clamped and the least one slide is held in its position.

17. Method according to Claim 16, wherein then the at least one tensioning drive is deactivated.

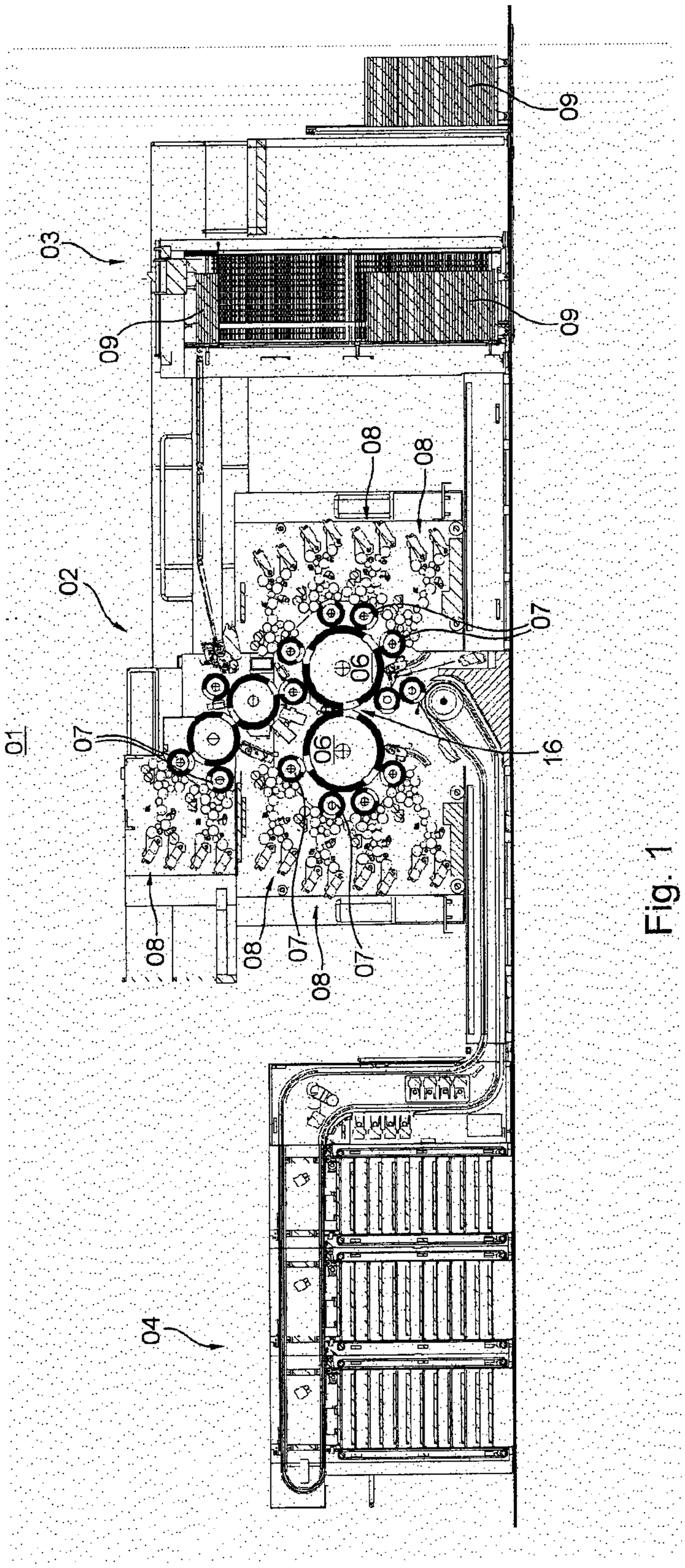

Fig. 1

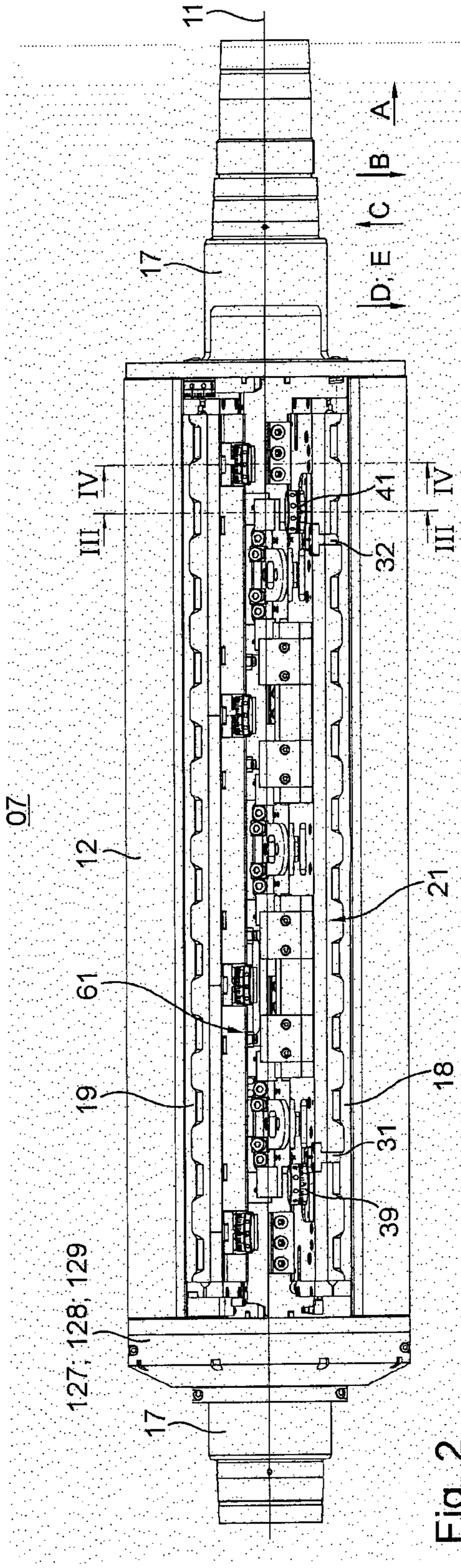

Fig. 2

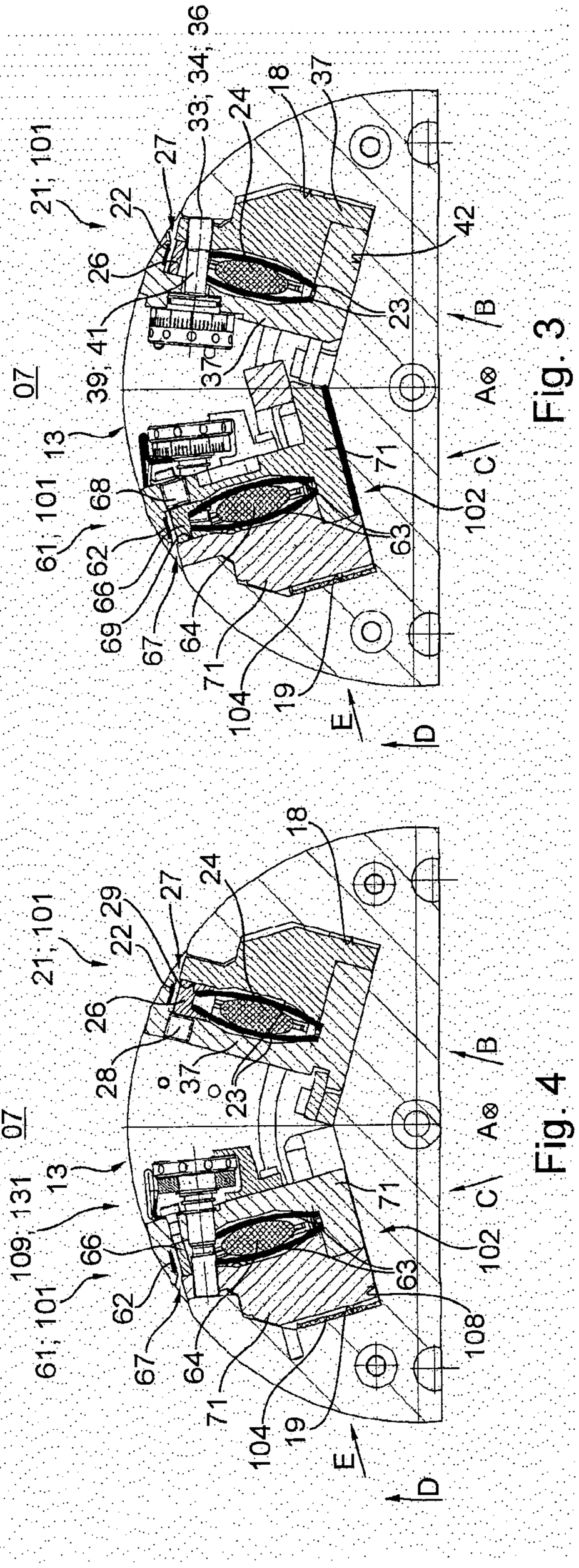

Fig. 3

Fig. 4

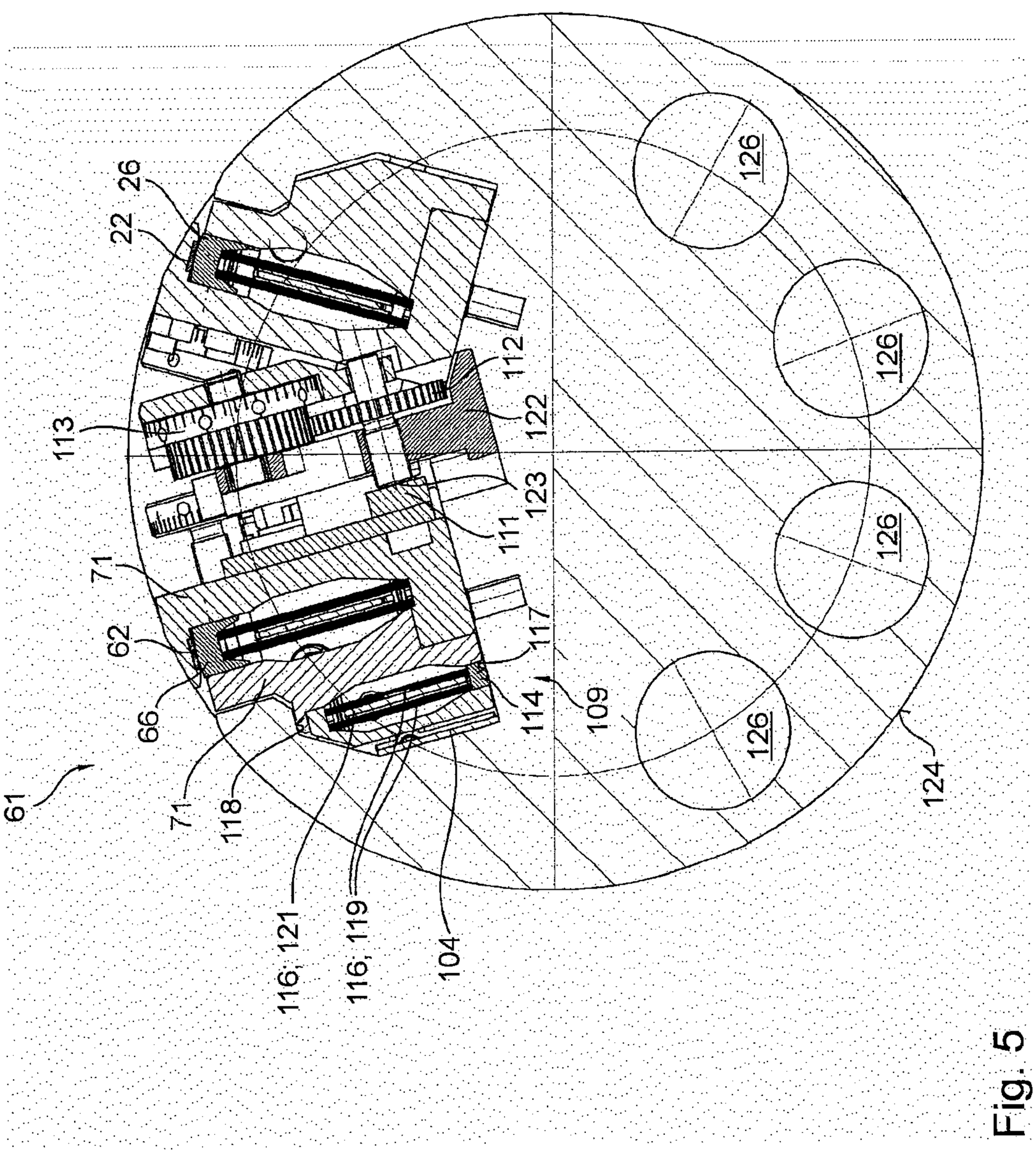
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Fig. 5

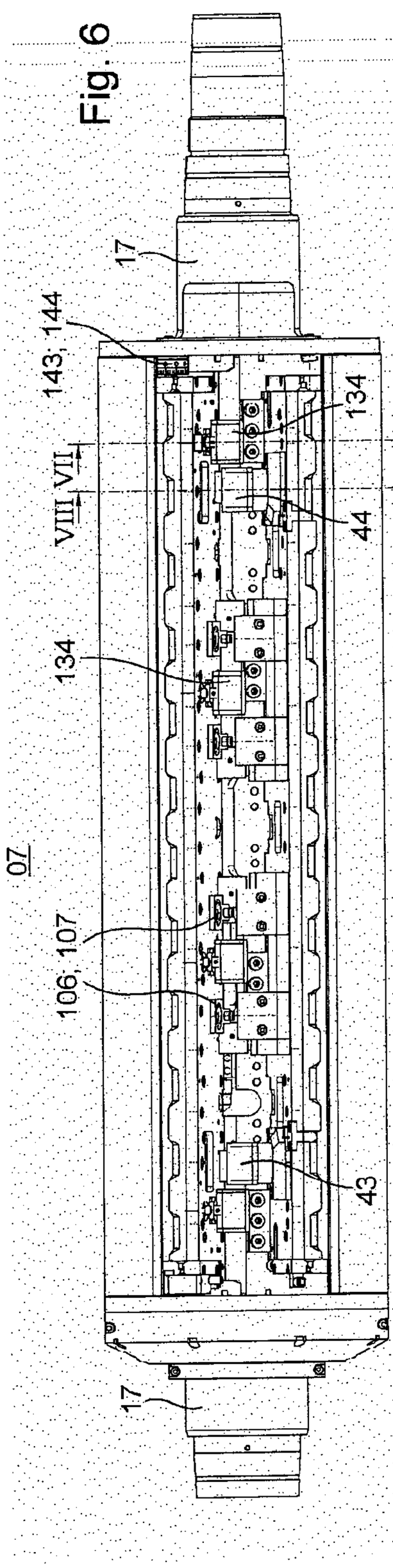
Fig. 6
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VIII VII
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VIII VII
134
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106; 107
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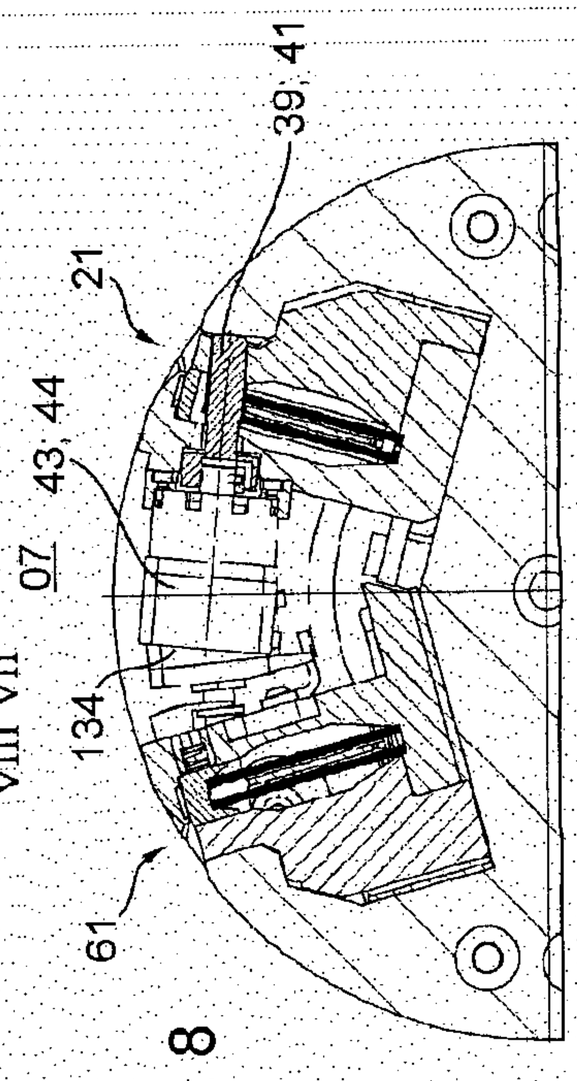
39; 41
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43; 44
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Fig. 8

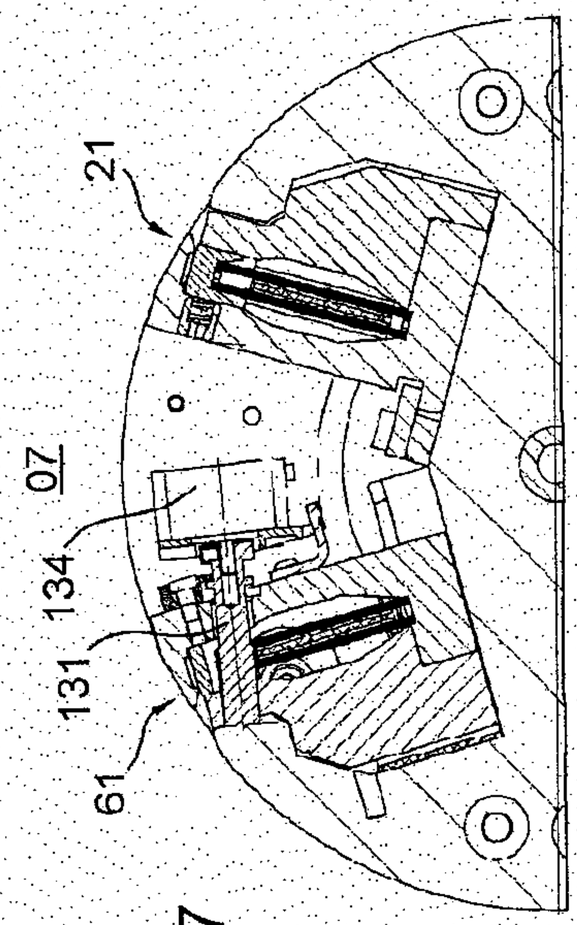
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Fig. 7

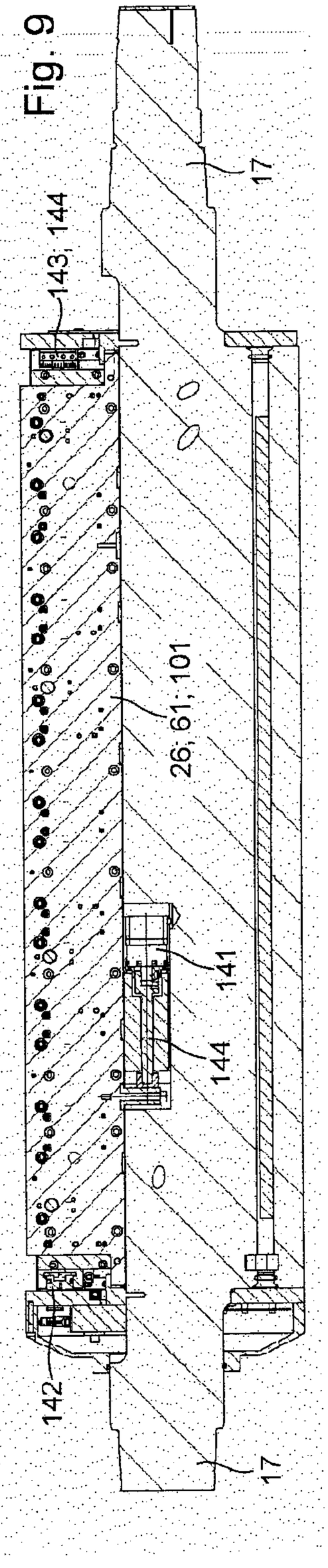
Fig. 9
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143; 144
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26; 61; 101
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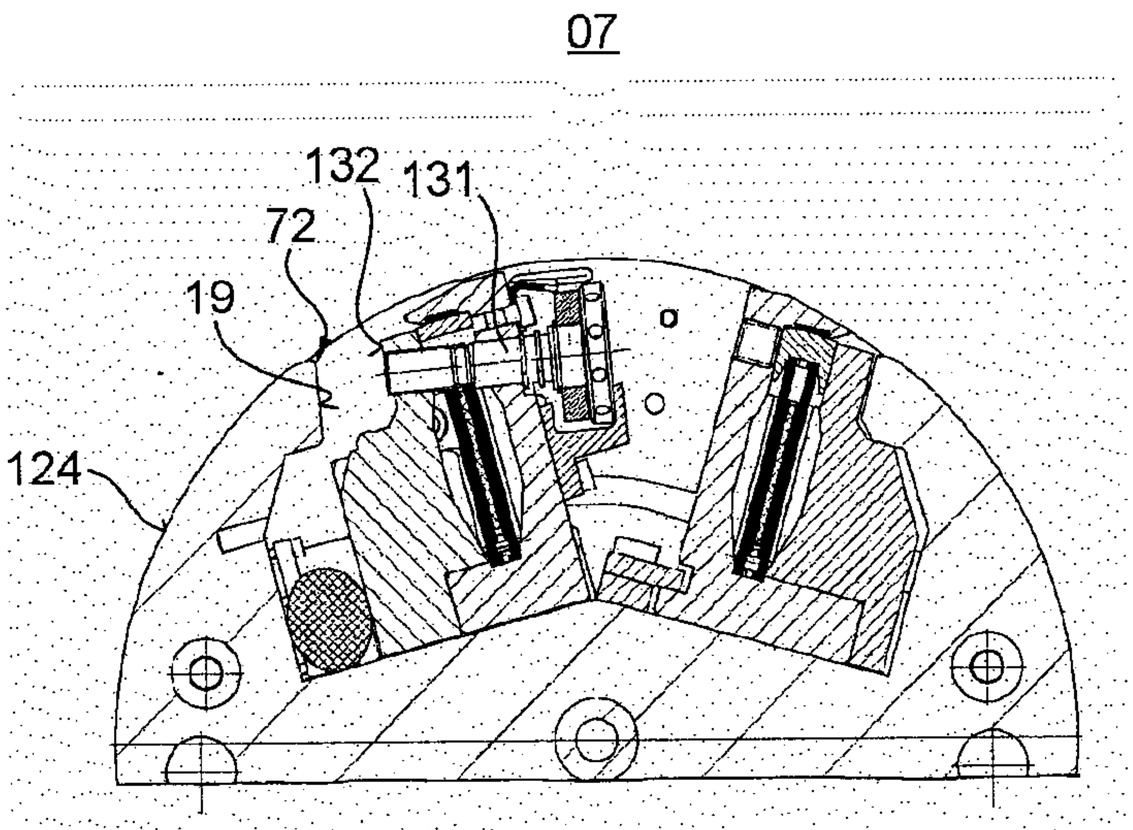

Fig. 10 a)

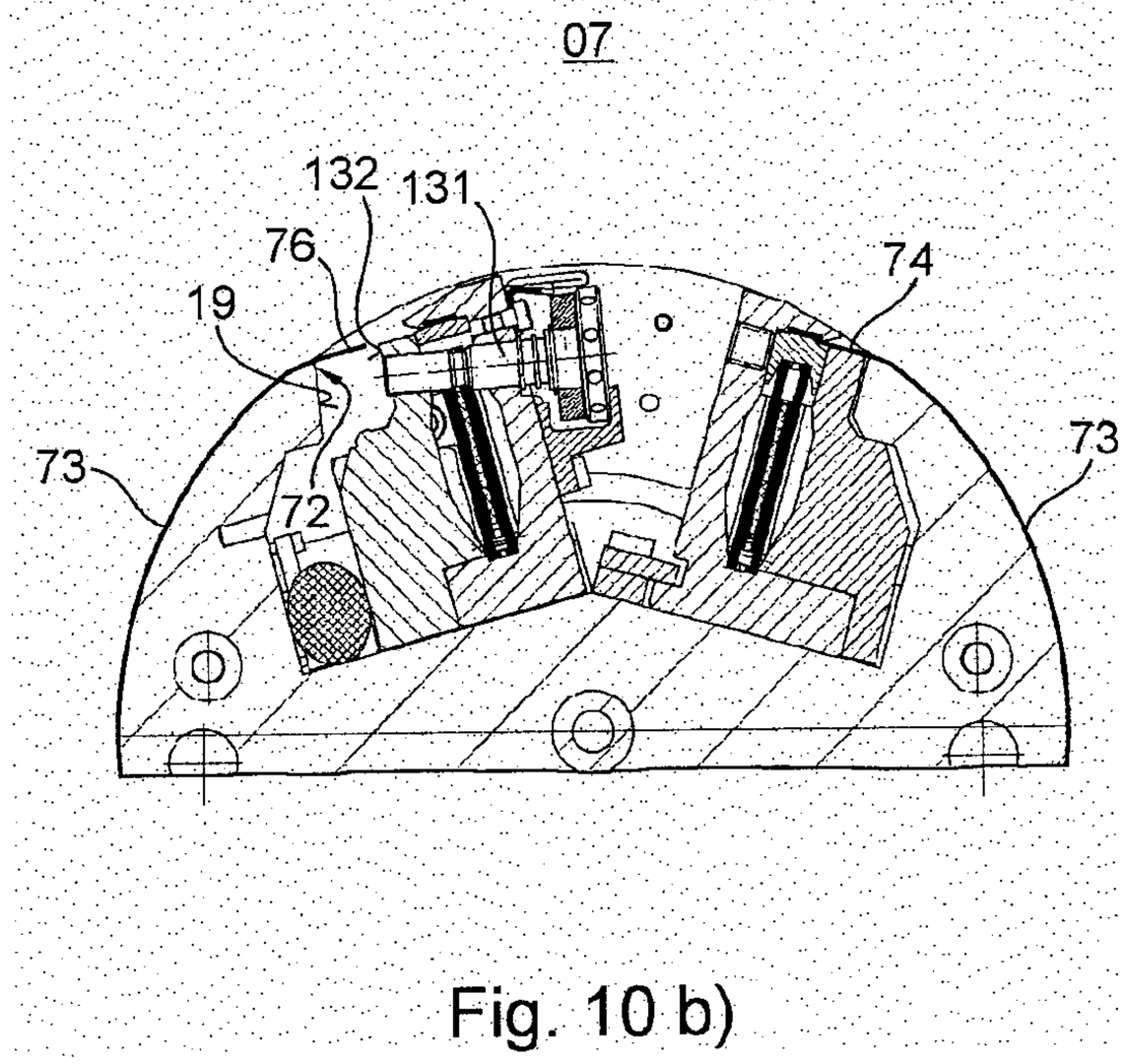

Fig. 10 b)

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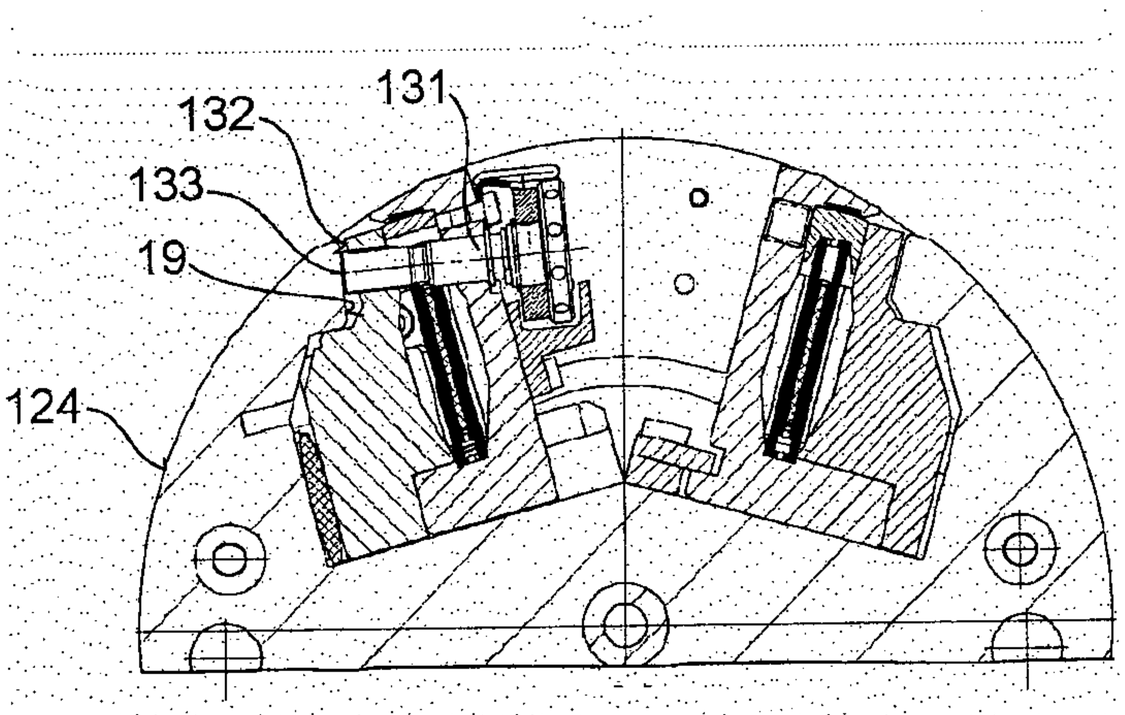

Fig. 11

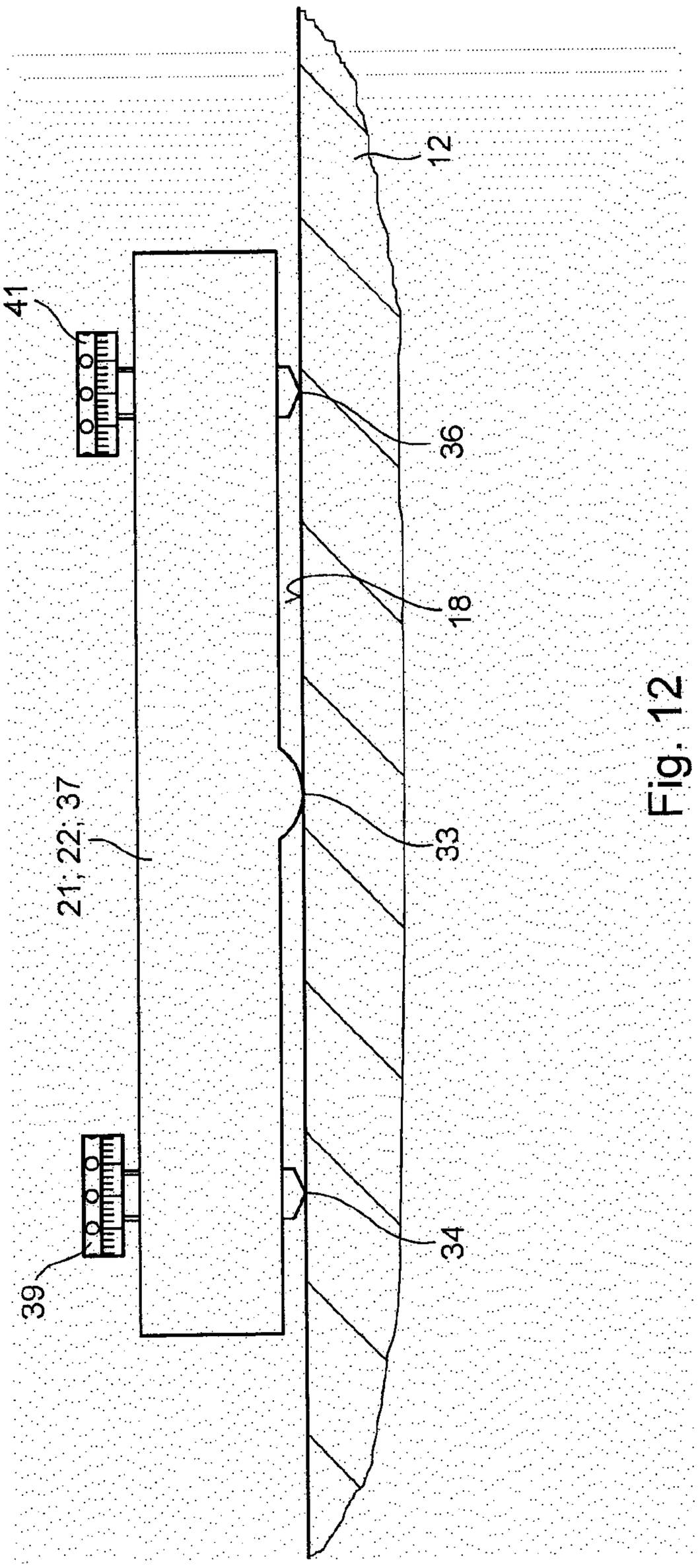

Fig. 12

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