(12) PATENT
(19) AUSTRALIAN PATENT OFFICE

(11) Application No. **AU 200131556 B2**
(10) Patent No. **771401**

(54) Title
Twin-chambered container

(51)[7] International Patent Classification(s)
B65D 035/22 **B29D 023/20**
B29C 053/50 **B65B 051/26**

(21) Application No: **200131556**

(22) Application Date: **2000.12.05**

(87) WIPO No: **WO01/42091**

(30) Priority Data

(31) Number	(32) Date	(33) Country
19958920	**1999.12.07**	**DE**

(43) Publication Date : **2001.06.18**
(43) Publication Journal Date : **2001.08.30**
(44) Accepted Journal Date : **2004.03.18**

(71) Applicant(s)
AISA Automation Industrielle SA

(72) Inventor(s)
Gerhard Keller

(74) Agent/Attorney
SPRUSON and FERGUSON,GPO Box 3898,SYDNEY NSW 2001

(56) Related Art
US 2661870
US 5219373
US 4757668

AU 200131556

(12) NACH DEM VERTRAG ÜBER DIE INTERNATIONALE ZUSAMMENARBEIT AUF DEM GEBIET DES PATENTWESENS (PCT) VERÖFFENTLICHTE INTERNATIONALE ANMELDUNG

(19) Weltorganisation für geistiges Eigentum
Internationales Büro

(43) Internationales Veröffentlichungsdatum
14. Juni 2001 (14.06.2001)

PCT

(10) Internationale Veröffentlichungsnummer
WO 01/42091 A3

(51) Internationale Patentklassifikation[7]: B65D 35/22, B29D 23/20, B29C 53/50, B65B 51/26

(21) Internationales Aktenzeichen: PCT/EP00/12214

(22) Internationales Anmeldedatum:
5. Dezember 2000 (05.12.2000)

(25) Einreichungssprache: Deutsch

(26) Veröffentlichungssprache: Deutsch

(30) Angaben zur Priorität:
199 58 920.8 7. Dezember 1999 (07.12.1999) DE

(71) Anmelder *(für alle Bestimmungsstaaten mit Ausnahme von US)*: AISA AUTOMATION INDUSTRIELLE SA [CH/CH]; Route de Savoie, CH-1896 Vouvry (CH).

(72) Erfinder; und
(75) Erfinder/Anmelder *(nur für US)*: KELLER, Gerhard [CH/CH]; 19, chemin du Grammont, CH-1805 Jongny (CH).

(74) Anwalt: ZELLENTIN, Rüdiger; Zellentin & Partner, Zweibrückenstr. 15, 80331 München (DE).

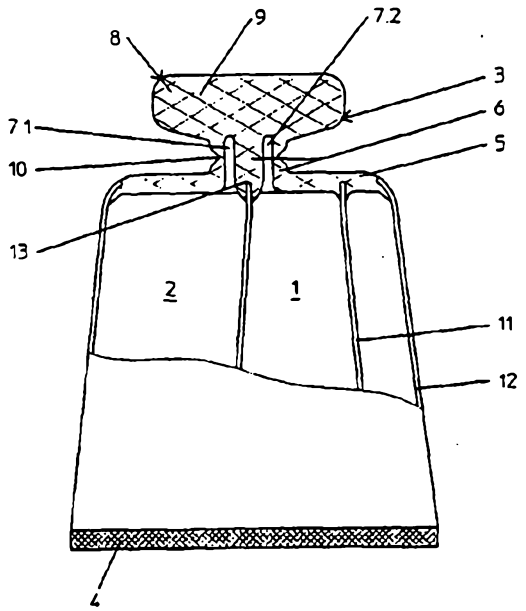
(81) Bestimmungsstaaten *(national)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.

(84) Bestimmungsstaaten *(regional)*: ARIPO-Patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), eurasisches Patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), europäisches Patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI-Patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

[Fortsetzung auf der nächsten Seite]

(54) Title: TWIN-CHAMBERED CONTAINER

(54) Bezeichnung: ZWEIKAMMERBEHÄLTER



(57) Abstract: The invention relates to a twin-chambered container, in particular, for use as a non-resealable single use packaging, whereby the twin-chambered container comprises an inner chamber (1), an outer chamber (2), which surrounds the inner chamber (1) and a head piece (3) produced by means of pressing plastic material, to which the upper edges of the wall of the inner chamber (1) and of the outer chamber (2) are rigidly fixed. Said head piece (3) comprises two separate channels (7_1, 7_2) and the inner chamber (1) is arranged asymmetrically within the outer chamber (2), such that a part of the wall of the two chambers is fixed to the head piece (3), between the two channels (7_1, 7_2), in such a way that each one of the channels (7_1, 7_2) is connected to one of the chambers (1 or 2).

(57) Zusammenfassung: Die Erfindung betrifft einen Zweikammerbehälter, insbesondere als nicht wiederverschließbare Einmalanwendungsverpackung, wobei der Zweikammerbehälter eine innere Kammer (1) und eine die innere Kammer (1) umgebende äußere Kammer (2), sowie ein durch Verpressen von Kunststoffmaterial hergestelltes Kopfstück (3) aufweist, mit dem die oberen Kanten der Wandung der inneren Kammer (1) als auch der der äußeren Kammer (2) fest verbunden sind, wobei das Kopfstück (3) zwei getrennte Kanäle (7_1, 7_2) aufweist, und die innere Kammer (1) innerhalb der äußeren Kammer (2) derart asymmetrisch angeordnet ist, daß ein Teil ihrer Wandung im Bereich zwischen den Kanälen (7_1, 7_2) derart am Kopfstück (3) befestigt ist, daß je ein Kanal (7_1, 7_2) mit einer der Kammern (1 oder 2) in Verbindung steht.

WO 01/42091 A3

Veröffentlicht:
— *mit internationalem Recherchenbericht*

(88) Veröffentlichungsdatum des internationalen Recherchenberichts: 1. November 2001

Zur Erklärung der Zweibuchstaben-Codes, und der anderen Abkürzungen wird auf die Erklärungen ("Guidance Notes on Codes and Abbreviations") am Anfang jeder regulären Ausgabe der PCT-Gazette verwiesen.

Device for producing two-chamber containers

The invention relates to a device for producing two-chamber containers, with an inner mandrel and an outer mandrel, wherein the inner mandrel can be inserted into and withdrawn from the outer mandrel, a die cavity for a cap and a material feeder for supplying a heated portion of a thermoplastic polymer material into the die cavity of a compression mould.

A device of this type is known from US-A-5 219 373. Here two separately produced one-piece tubes with different diameters are pushed onto their corresponding inner or outer mandrel respectively, so a cap with common outlet aperture is provided by means of injection moulding owing to a nozzle piece and is simultaneously connected to both tube ends. This method is time consuming as a result of the many individual steps and therefore does not allow a high number of pieces to be produced per unit of time, in particular as the tubes are initially produced individually and have to be introduced into the device in a coordinated manner.

Object of the Invention

It is an object of the present invention to substantially overcome or at least ameliorate one or more of the disadvantages of the prior art, or at least to provide a useful alternative.

Summary of the Invention

The invention provides an apparatus for manufacturing twin-chambered containers having an inner core and an outer core with a larger diameter, the inner core being disposed retractably and extensibly in the outer core, a mould cavity for a head piece and a material supply device for the supply of a heated portion of thermoplastic synthetic material into the mould cavity of a mould, said apparatus comprising:

a device for winding a foil around the extended inner core and a device for winding a foil around the outer core and also advanceable welding devices for producing lateral longitudinal seams for the production of tubes;

wherein the cores can be together withdrawn from and extended into the mould cavity of the mould for the production of the head piece with closure and for connection with the walls of the formed chambers; and

each core in the direction of the mould cavity comprises a protuberance for forming a channel, each connected to a chamber, in the head piece.

The preferred embodiment provides a device for producing two-chamber containers, in particular as non-resealable disposable packaging, which looks nice and can be produced simply and quickly.

The invention will be described in more detail below with the aid of an embodiment of a device for producing twin-chamber containers. In the drawings:

Fig. 1 shows a twin-chamber container in side view;

Fig. 2 shows the twin-chamber container illustrated in Fig. 1 in plan view from above;

Fig. 3 shows a device for producing the twin-chamber container in a schematic view;

Fig. 4a, b, c shows a core system and its interaction with a pressing tool;

Fig. 5 shows a view from above onto the core system with tubes;

Fig. 6 shows the supply of a strip of foil round a core for producing a side seam;

Fig. 7 shows the formation of a side seam on a foil wound round a core and its separation from the strip of foil.

The twin-chamber container illustrated in Fig. 1 in the form of a disposable packaging for two components which are to be stored separately from one another but are to be used together, has an inner chamber 1 and an outer chamber 2 surrounding it, a headpiece 3 and a fastening seam 4 produced only after filling of the chambers 1 and 2 with different filling components, which fastening seam seals the chambers 1, 2 at the end remote from the headpiece 3 while separating them from one another.

The headpiece 3 has a shoulder 5 which, according to Fig. 2, has a laterally flattened, rounded cross-section which can also be rounded so as to be circular or oval. The headpiece 3 also has a – in this case central – neck 6 in which two channels 7_1, 7_2 are formed, of which one in each case is connected to one of the chambers 1 or 2. A closure 8 is attached to the neck 6, which closure is designed in the embodiment as a twist-off closure 9. There is a predetermined breaking point 10 on part or all of the periphery of the neck 6 in order to facilitate twisting off. The twist-off closure 9 is preferably designed in such a way that when it is broken and thus exposes the openings of the channels 7_1, 7_2, it remains connected to the head piece 3, in other words, it does not have to be disposed of separately.

The chamber 1 is produced from a tubular foil 11 with smaller diameter and the outer surrounding chamber 2 from a tubular foil 12 with larger diameter. As shown clearly in Fig. 1 and 2, the tubular foil 11 is secured by a portion of its wall to the insert 13 arranged centrally in this case, in which the channels 7_1, 7_2 are formed, so as to separate them from one another in such a way that each chamber 1, 2 is connected to only one channel 7_1 of 7_2.

The workstations for producing a twin-chamber container, as is described above for example, can be seen in Fig. 3. In position I a foil is wound round an inner core and the foil is welded to form a tube to produce the inner chamber 1. At station II a

foil is wound round an outer core and welded to form a tube by the production of a side weld seam to produce the outer chamber 2. The inner tubular foil can also be produced at station II and the outer tubular foil at station I. This can optionally also take place at different heights, wherein both tubes must at least be transported into one plane. A portion of material, for example plastics material plasticised by heat, is supplied to a die cavity at station III. At station IV the inner core and the outer core are introduced, together with the inner and outer tube produced, into a die cavity where the headpiece is formed from the portion of material and is simultaneously connected to the two tube ends located in approximately one plane. Some or all of stations V to VII can be provided as cooling stations for curing and cooling of the headpiece. At station VIII the die is opened and the finished product removed and transported away. The described allocation of the production stages to the stations is to be considered as an example. Any other allocation of the processing stages is also possible.

Fig. 4 shows an outer core 14 in which an inner core 15 is arranged so it can be inserted and withdrawn. The outer die of the outer core 14 corresponds to the inner die of the outer chamber 2 and that of the inner core 15 to that of the inner chamber 1 (see Fig. 5 also). The inner core 15 and the outer core 14 have cylindrical core projections 16_1, 16_2 which are provided in the headpiece 3 to be attached to form the channels 7_1, 7_2 (see Fig. 1). When the inner core 15 has been driven in the direction of the arrow in Fig. 4a out of the outer core 14 into its external end position, a strip of foil or a portion thereof is wound round the driven-out inner core 15 to form a tube which is sealed by a side seam 17, preferably by welding. The side seam 17 can be produced as an overlapping seam or – as illustrated – as a parallel seam, wherein the start and the end of the foil winding round the core are aligned parallel to one another and then welded to one another for example by means of supplied welding tongs. With such an embodiment of the side seam 17 with parallel edges, the outer core has a recess 18 which serves to receive the side seam 17 projecting somewhat radially when the inner core 15 is retracted into the outer core 14 (see Fig. 4b).

In the position shown in Fig. 4b, both the inner core 15 and the outer core 14 provided with a side seam carry tubular foils 11, 12 which project slightly beyond the free ends of the respective cores 14 and 15. The cores 14, 15 equipped with tubular foils 11, 12 in this way are simultaneously fed with their free ends into a die cavity 19 which reproduces the external form of a headpiece 3 with closure 8 which is to be moulded on.

A portion of plasticised material, from which the headpiece 3 is to be produced, has previously been fed into the die cavity 19. Owing to a movement of the cores 14, 15 into the die cavity 19 or of the die cavity 19 towards the cores 14, 15 or a common movement of cores 14, 15 and die cavity 19 towards one another, the headpiece 3 is moulded on by compression of the portion of material. In the process, the channel 7_1 associated with the inner chamber 1 is formed by means of the projecting core projection 16_1 and accordingly the channel 7_2 of the outer chamber 2 is formed by the core projection 16_2.

Fig. 6 and 7 show schematically the production of a tube. The production process illustrated is suitable in particular for very thin foils, for example 75 micrometres (0.075 millimetres) thick. Such a strip of foil 21 arranged on a roller 20 is guided over two rotatable fixed deflecting rollers 22, 23 and the start of the strip is wound onto a spool 24. A core 14 or 15, arranged on a turntable, for example, can be inserted between the two deflection rollers 22, 23 in such a way that it deflects the strip of foil 21 (see Figure 6) and is partially covered by it. In a certain position of the core 14 and 15 with the deflected strip of foil 21, the two welding jaws 19 pivot inwards and, have a shape which is such that the core 14, 15 is completely covered by the strip of foil 21. Each welding jaw 19, 19' has jaw projections 26 which are separated, i.e. provided with a gap 25. The shape of the jaw projections 26 is chosen such that the strip of foil 21 covers the respective core 14 or 15 completely and lies with two lateral edges parallel to one another, which lateral edges project perpendicular to the core surface. A side seam 17' of the adjacent lateral edges of the strip of foil 21 is welded and formed by the welding jaws 19, 19' lying opposite one another. The side seam 17' formed between the opposing welding jaws 19, 19' is divided by means of a knife 27 which can be introduced into the gap 25 between the jaw projections 26 and 26' which are spaced apart from one another, in such a way that one portion produces the side seam itself and one portion remains connected to the strip of foil 21 and can be wound on the spool 24.

In the embodiment shown, in the inwardly pivoted state of the welding jaws 19, 19', the retaining device for the knife 27 can be introduced into a guide in one of the welding jaws 19, 19' and can be moved up and down in the gap 25 of both welding jaws 19, 19', the previously welded side seam 17' being divided, as described above.

When the welding jaws 19, 19' are pivoted away from the core 14, 15 the core 14, 15 now provided with a tube 11, 12 can be transported to the next workstation. The

connected strip of foil 21 can be clamped between the deflecting rollers 22, 23 (dashed line in Fig. 6) with separated side seam portions 28 by the drive of the spool 24. A further portion of the strip of foil 21 is unwound from the spool 20, which portion is then looped again – as described above – by the core 14' (Fig. 6) that follows on the turntable for example, and can be provided with a side weld seem 17'. By dividing the side seam 17' formed, a continuous strip remains which can be gradually wound onto the spool 24 and partially consists of the fresh strip of foil 21 and partially of a portion of strip which has been divided up and comprises the side seam portions 28.

The advantage of this solution lies in the face that despite the side seam 17' being cut by the knife 27 there is always a continuous strip which can be guided with a controllable tension by pulling (spool 24) and optionally with additional deceleration of the spool 20.

The corresponding welding devices and foil guides can be arranged at different heights to produce the inner tube and the outer tube, can be height adjustable and/or optionally arranged so as to also be axially displaceable or pivotable.

With sufficient rigidity, for example in a stronger, thicker foil, winding round a core can also take place in that an overlapping seam (not shown) can be provided which can be produced so as to be bonded, for example by applying an adhesive or a double-sided adhesive strip, or welded, for which purpose suitable supply and adhesion or welding devices and optionally cutting devices as well would have to be provided, which are all

so familiar to a person skilled in the art that they do not need to be described in more detail here.

The claims defining the invention are as follows:

1. An apparatus for manufacturing twin-chambered containers having an inner core and an outer core with a larger diameter, the inner core being disposed retractably and extensibly in the outer core, a mould cavity for a head piece and a material supply device for the supply of a heated portion of thermoplastic synthetic material into the mould cavity of a mould, said apparatus comprising:

a device for winding a foil around the extended inner core and a device for winding a foil around the outer core and also advanceable welding devices for producing lateral longitudinal seams for the production of tubes;

wherein the cores can be together withdrawn from and extended into the mould cavity of the mould for the production of the head piece with closure and for connection with the walls of the formed chambers; and

each core in the direction of the mould cavity comprises a protuberance for forming a channel, each connected to a chamber, in the head piece.

2. An apparatus according to claim 1, wherein the advanceable welding device(s) comprises two mutually opposite, swivelling welding jaws, which each comprise two jaw extensions divided by a gap, wherein a cutting device can be inserted into and withdrawn from the gap.

3. An apparatus for manufacturing twin chamber containers, said apparatus being substantially as hereinbefore described with reference to the accompanying drawings.

Dated 21 October, 2003

AISA Automation Industrielle SA

Patent Attorneys for the Applicant/Nominated Person

SPRUSON & FERGUSON

Fig.1

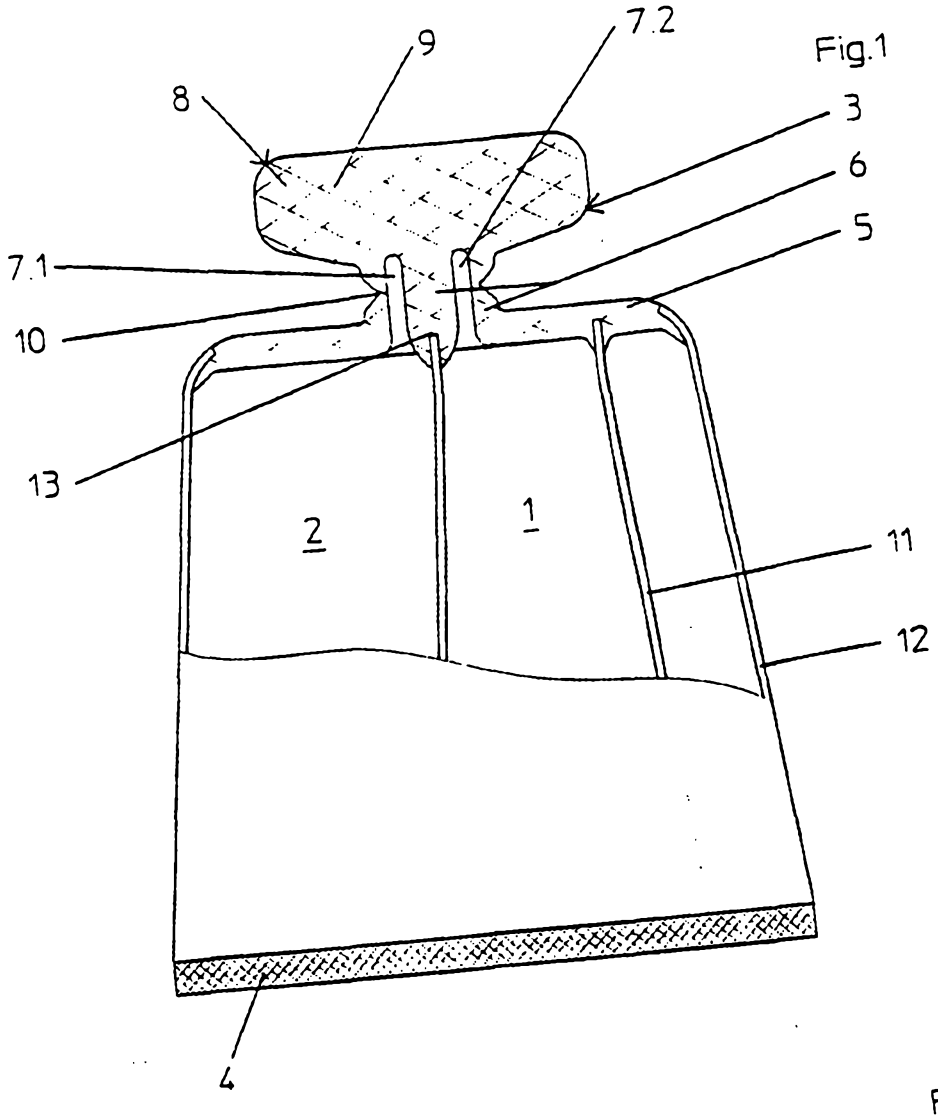


Fig.2

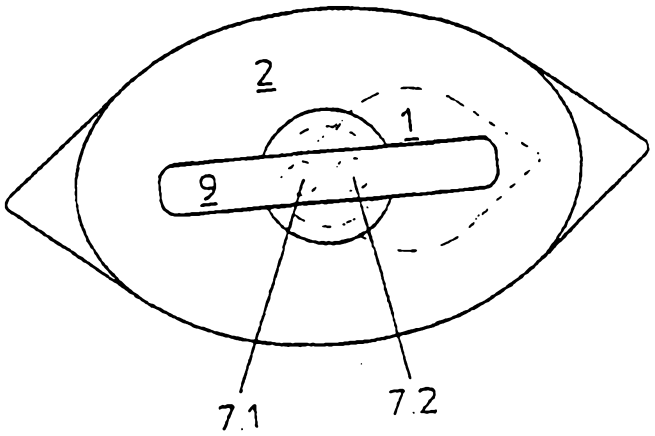


Fig.3

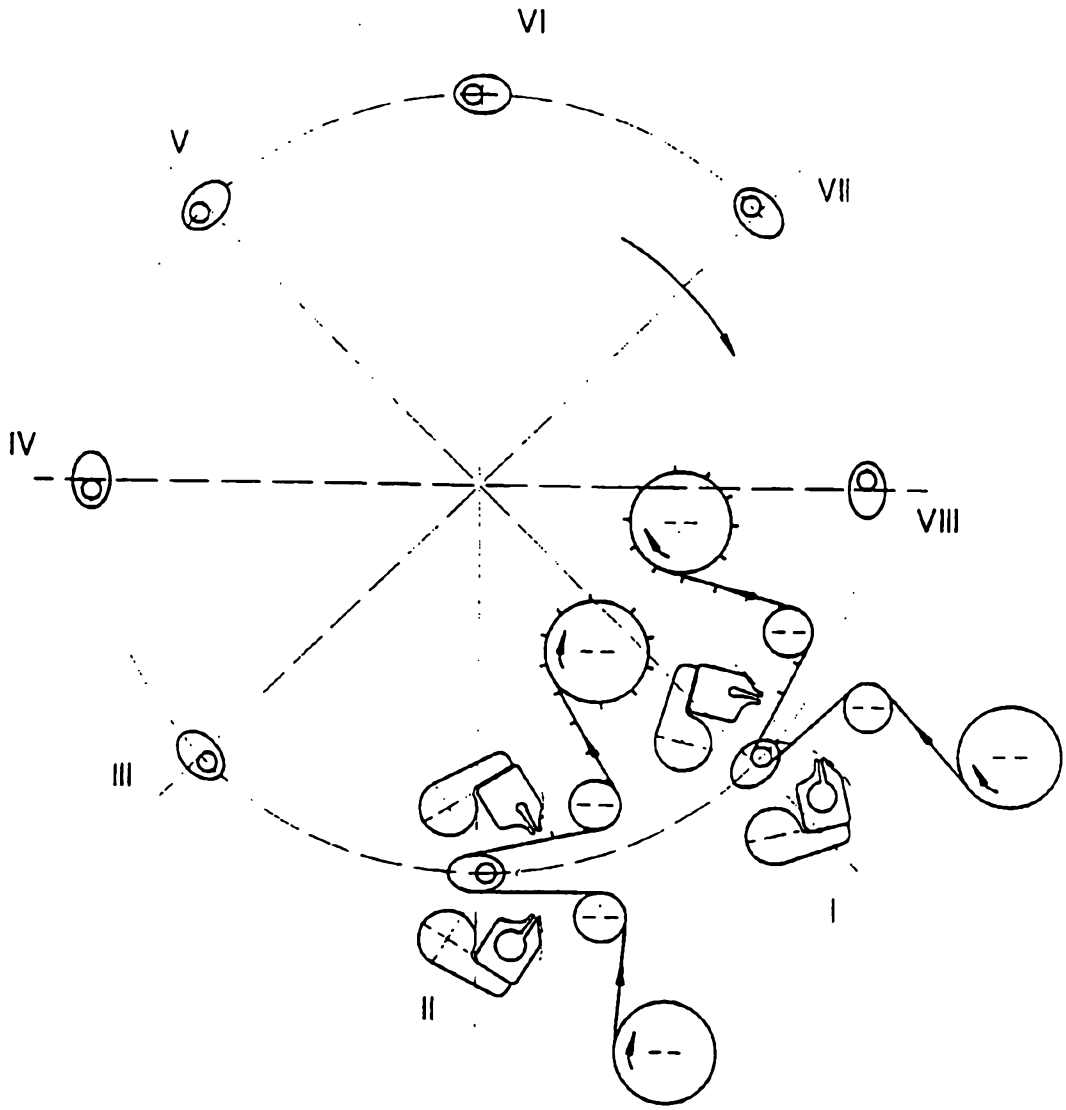


Fig.4 a

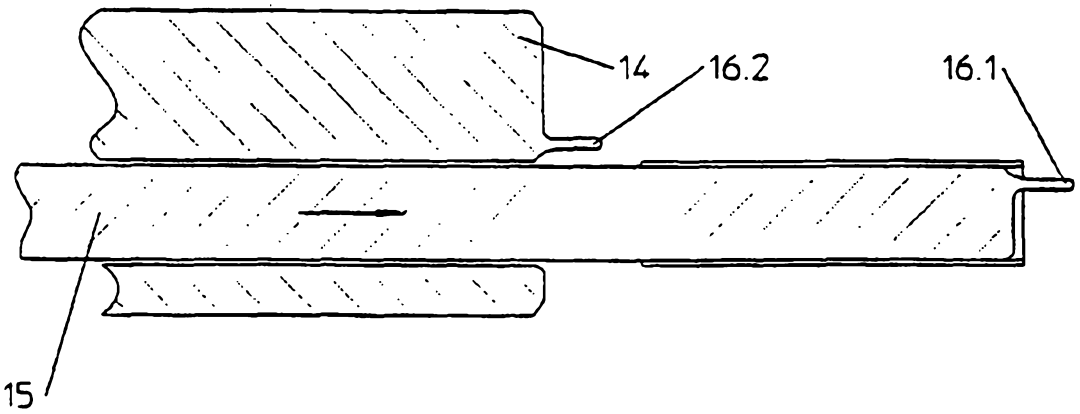


Fig.4 b

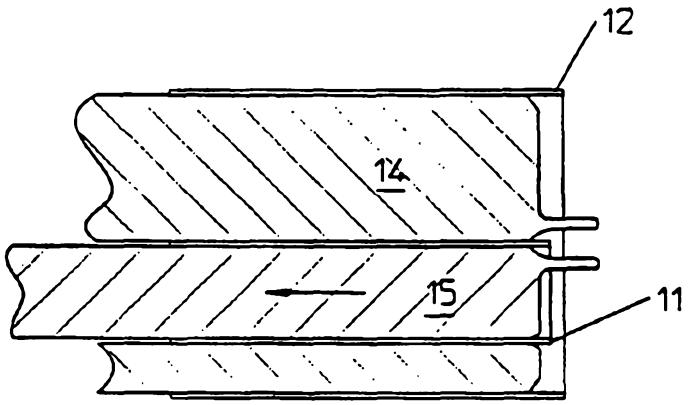


Fig.4 c

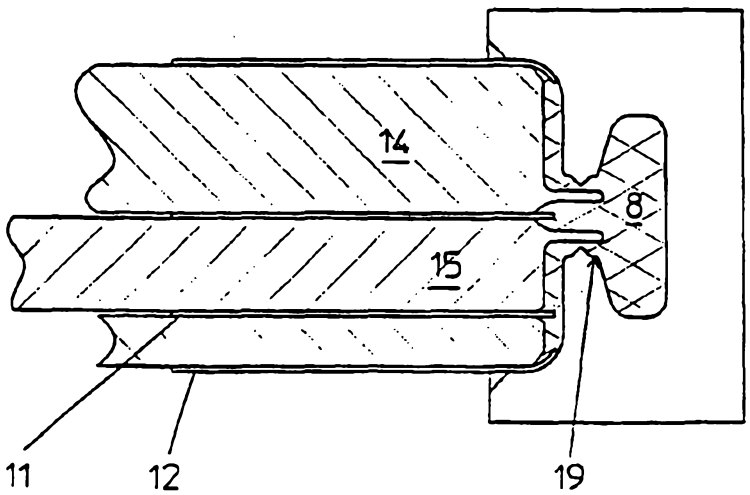


Fig.5

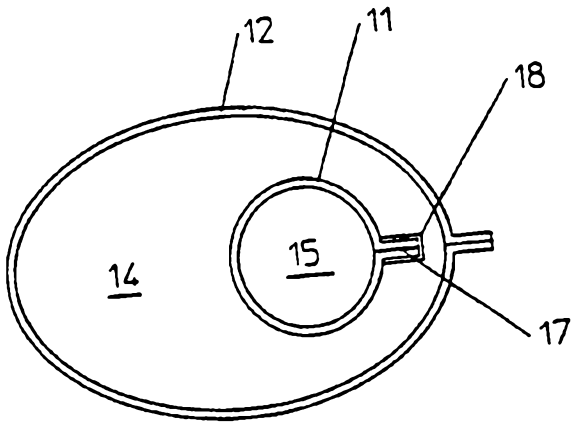
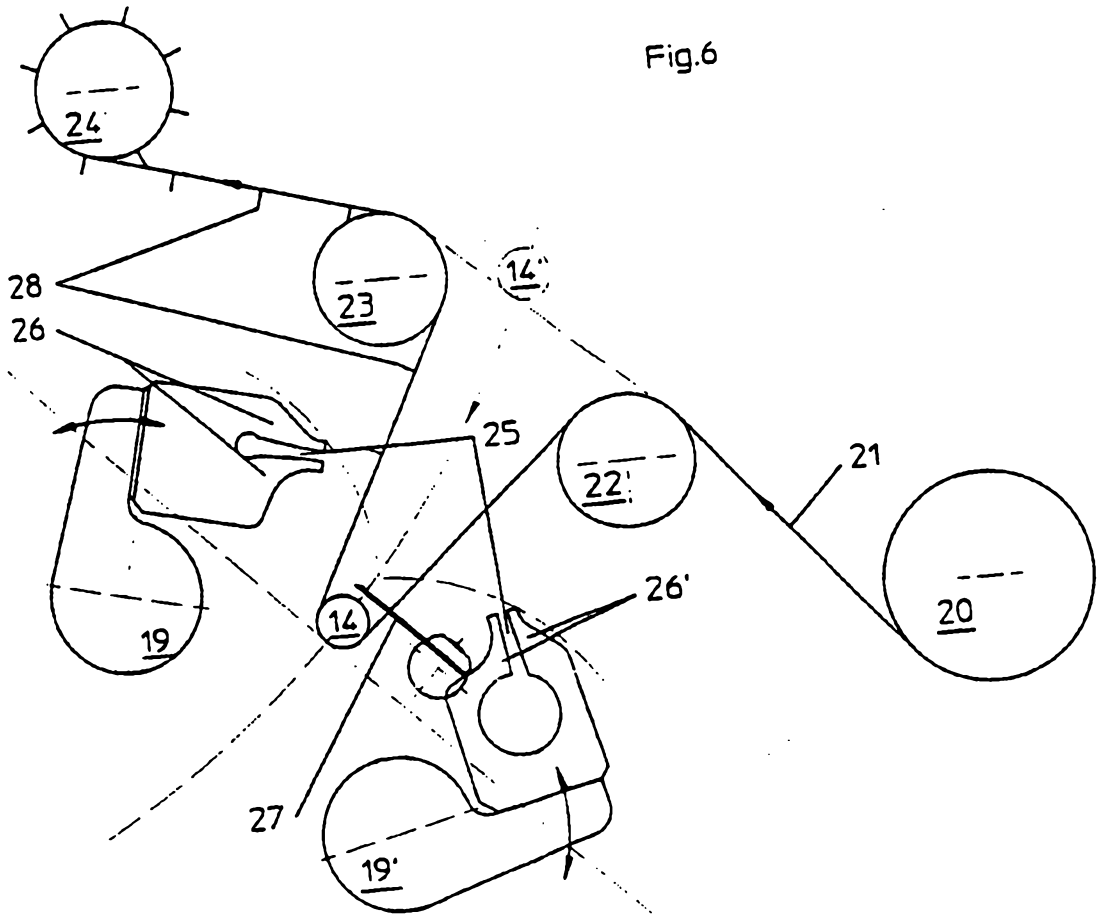


Fig.6



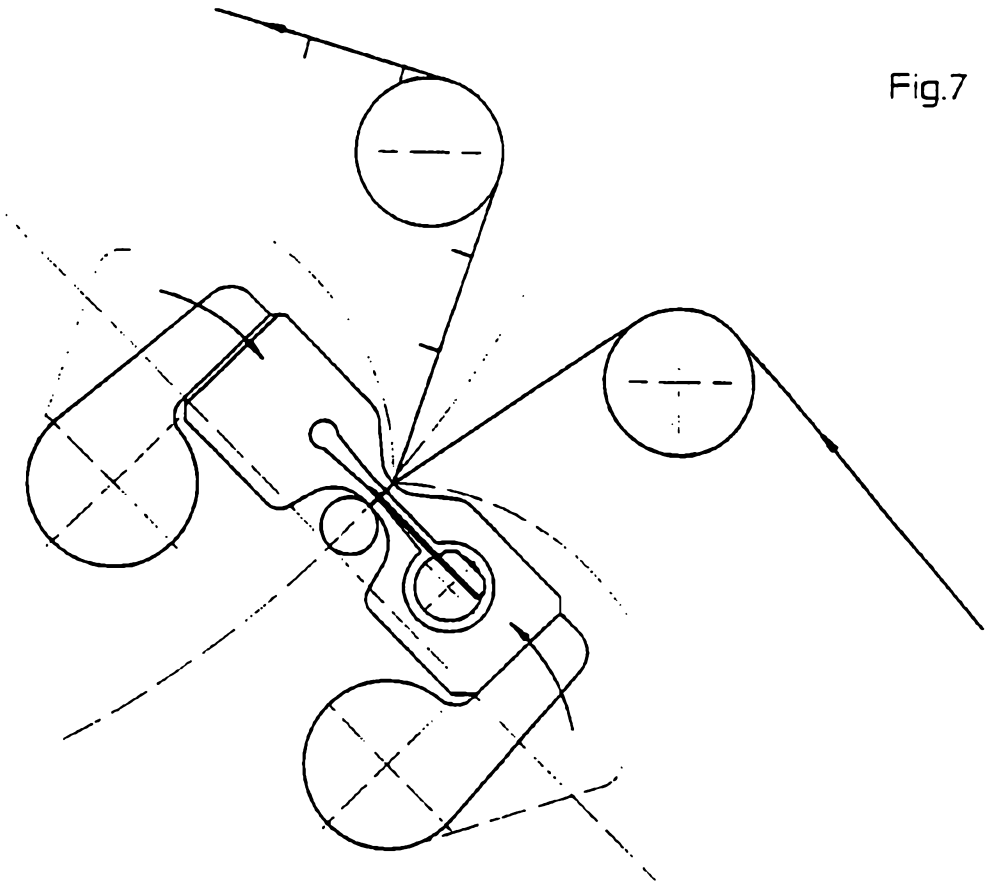


Fig.7