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Zahlaus

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[54] **PROCESS FOR CUTTING REINFORCING STEEL BARS FOR STEEL CONCRETE AND A BAR CUTTING MACHINE FOR EFFECTING THE PROCESS**

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[51] **Int. Cl.** **B23d 23/00**

[58] **Field of Search** 83/104–106, 83/209–212, 261, 269, 279–281, 564, 215, 80

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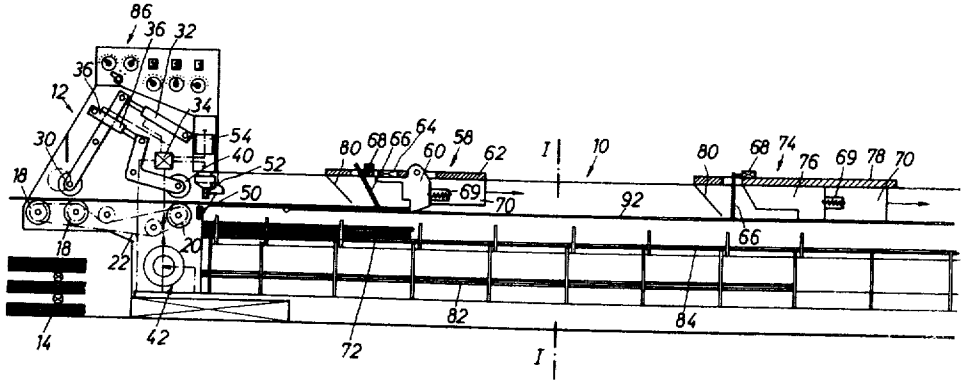
[57] **ABSTRACT**

A programmable conveying, cutting and sorting apparatus for concrete reinforcing steel bars (16). The bars are initially fed into the apparatus transversely, two at a time, by a reciprocating insertion device (17) whose movement automatically triggers the lowering of idler roller (30) against drive rollers (18). Cutting is initiated when the ends of the bars strike longitudinally adjustable stops (58) or end measuring devices (74) disposed-down the conveying path, with a vertically displaceable cutter (52) being forced down in shearing relation to a fixed cutter (50). Immediately after cutting the still-fed bars rotate cutter (52) about a pivot axis (56) to provide rapid, substantially continuous operation. Length sorting is implemented by a program controlled turnover grid (84).

19 Claims, 9 Drawing Figures



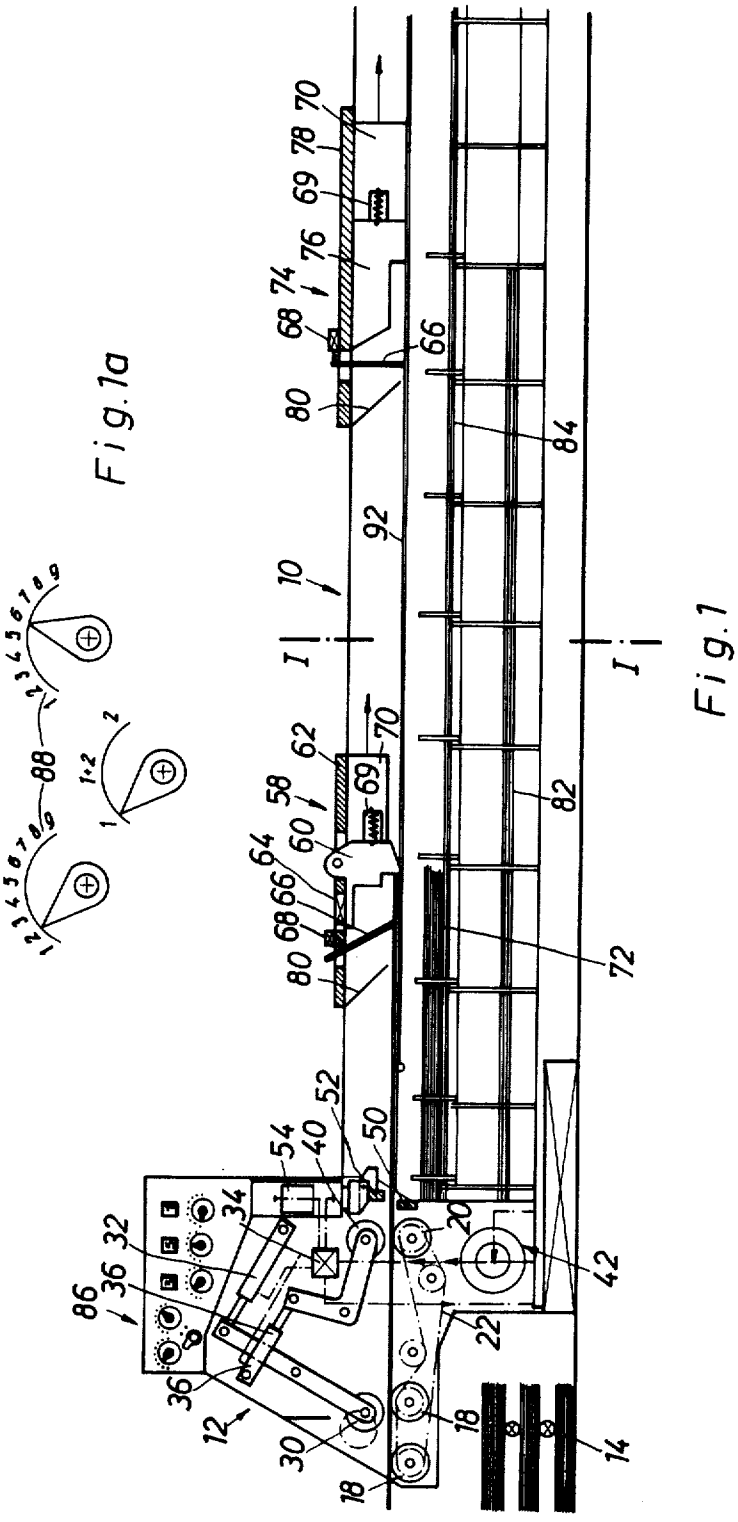


Fig.1

Fig.1a

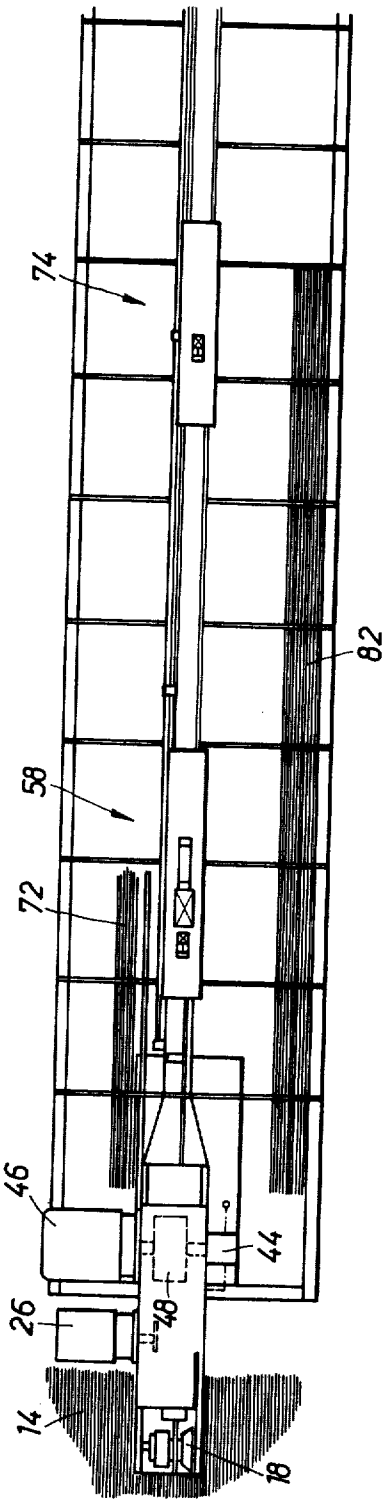


Fig. 2

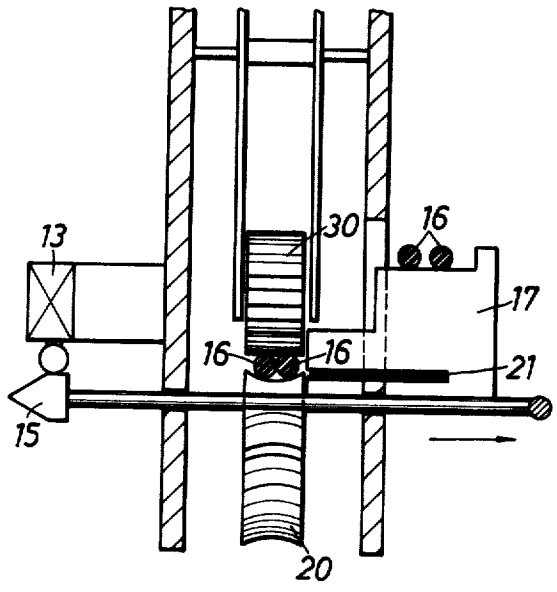


Fig.3

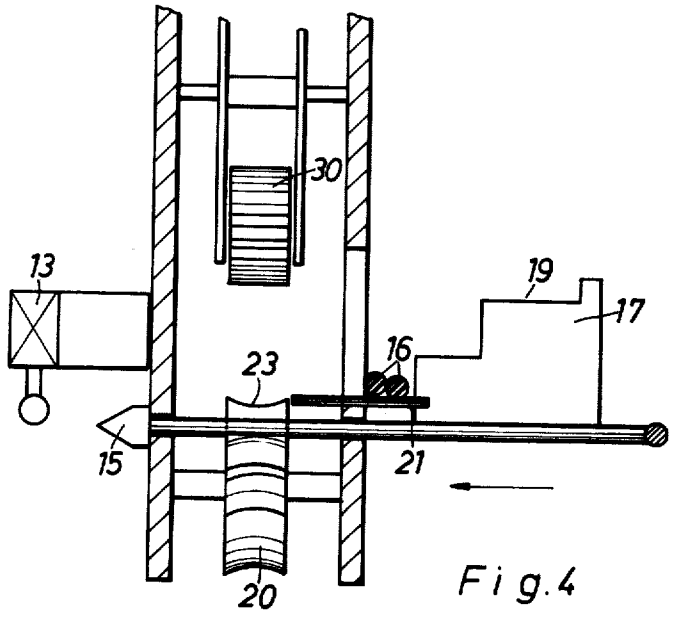


Fig.4

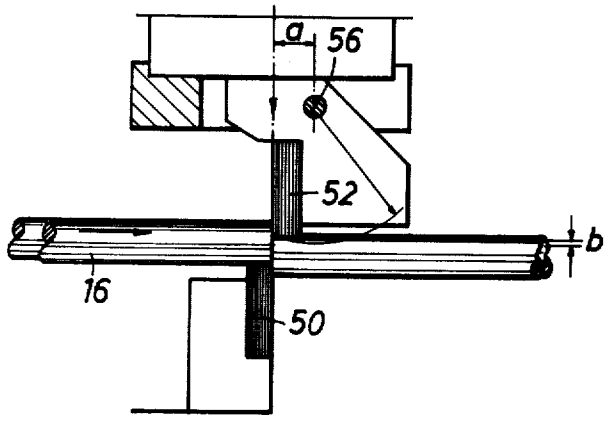


Fig.5a

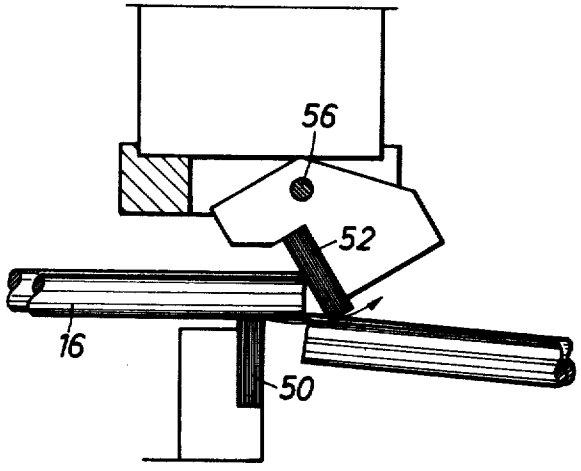
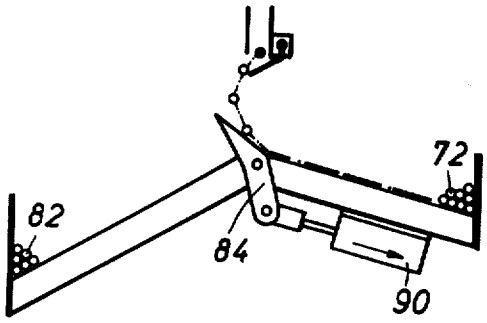


Fig.5b

Fig.6a



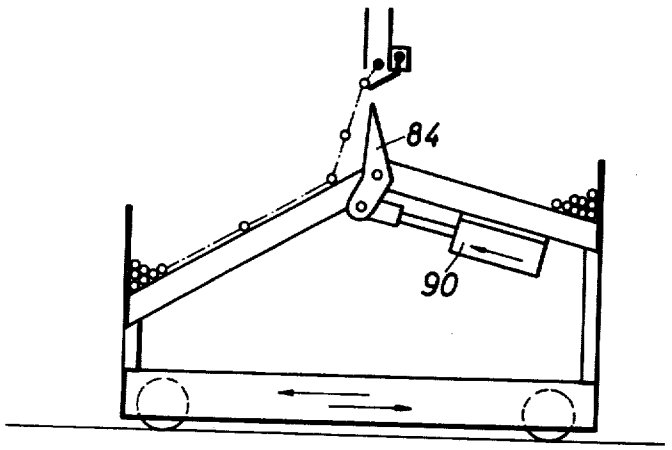


Fig.6b

PROCESS FOR CUTTING REINFORCING STEEL BARS FOR STEEL CONCRETE AND A BAR CUTTING MACHINE FOR EFFECTING THE PROCESS

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to a process for cutting reinforcing steel bars for steel concrete, wherein the bar material is conveyed from the crude steel storage area via a bar cutting machine and is prepared before the cutting process. The invention further relates to a bar cutting machine for effecting the process. This machine comprises a conveying and drawing frame secured to the base frame which is made of structural steel and is laterally movable by means of wheels. This cutting machine is further provided with a conveying and cutting unit and a longitudinally displaceable measuring device.

2. Description of the Prior Art

Bar cutting machines of this type are used, in particular, for cutting to size reinforcing steel bars for steel concrete. These machines form part of a full steel concrete processing plant. The steel bars to be cut are conveyed via the bar cutting machine from the crude steel storage area to the cut-steel area, and the bars to be bent are conveyed via the bending machine to the storage area for the finished reinforcing steel bars. The known bar cutting machines are provided with a drawing or conveying device, which, in several successive operating stages, transports the material from the crude steel storage area, in the form of bundles, and prepares it for the cutting process. Complete reinforcing steel items are prepared on the bar cutting machine, which is in the form of a cutting and measuring carriage. These items can subsequently undergo further processing.

Bar cutting machines generally require two operators. The first operator forms the reinforcing steel bars to be cut into a bundle in the storage area, ready to be transported by the conveying device, while the second operator starts the conveying device and the cutting machine and places the individual steel bars from the bundle against a limiting stop.

As the bars forming the bundle can never be drawn out of the crude steel storage area in a compact manner, the bundle must be rendered more compact by urging it against the limiting stop. However, fairly considerable variations in the lengths of the bars in a bundle can still occur. Only then can the prepared material be manually moved laterally into the cutting jaws. After cutting a limited number of bars — the size of the cutting jaws determining the exact number of bars, the device must be cleared in a longitudinal direction, so that the next cutting operation can begin.

For reasons of economy, large bundles must be simultaneously drawn up, measured and cut. This necessitates considerable supporting capacities on the part of the individual machine components. Conveying elements, such as rollers, ropes and chains, and blades, are subject to considerable wear on account of the large specific load. There is also the danger that when a bundle is being drawn up, additional bars, which were not gripped by the conveying device, are carried along with the bundle in an uncontrolled manner, which can lead to serious injuries to operating personnel. To reduce this danger, the conveying speed of a bundle may not exceed a specific value.

Although the conveying and cutting of individual bars or pairs of bars is more rapid than that of conveying and cutting bundles of bars, it is still maintained by persons skilled in the art, that this is not economical, as in spite of the increased conveying and cutting rates of the individual bars, there is a specific limit to cutting capacity, and this cannot be exceeded. For this reason, a lower throughput is achieved than when the material is cut in bundles.

SUMMARY OF THE INVENTION

The object of the present invention is to provide a process which makes it possible to achieve a comparable or increased throughput when cutting bars individually or in pairs over cutting bars in bundles, by increasing the conveying and cutting rate through a constant supply of material and wherein, after being placed in the insertion device, the bars are automatically moved forwards, measured into varying lengths, cut, sorted, counted, and placed in position for further conveyance.

According to the invention, this problem is solved in that the reinforcing bars conveyed individually or in pairs to the insertion device of the bar cutting machine are automatically moved on by this machine and by impinging on a displaceable stop are kept at adjustable lengths, without the reinforcing bars springing back, and in that the steel bars being moved up, are brought up over the bars which have been cut, immediately after the cutting operation, and further in that the regulation of the lengths of the bars, the counting, sorting of the cut bars according to their length, and the positioning of the bars so that they can be transported further, is program controlled.

The arresting of the movable upper blade of the cutting device and the releasing of the same for the cutting operation is preferably effected by means of electrical signals released when the bars being conveyed further trip a switching flap.

The movable upper blade of the cutting device is preferably swung in the direction of movement of the steel bars by the bars themselves as they are moved forwards after the cutting operation.

The bar cutting machine for cutting the reinforcing steel bars according to the above-described process is characterized in that the conveying and cutting unit, which is built at the front over the base frame, is provided at its lower part with driven conveyor rollers and at its upper part with pressure loaded pressure rollers, of which the front pressure roller is adapted to be released and adjusted either manually or automatically and in synchronism with the cutting operation of a vertically guided blade. In its lowered position, this blade is designed to be tilted by the forward movement of the bar material immediately after removal of the cutting pressure.

An insertion device is advantageously provided for the manual or mechanical insertion of one or two bars into the conveying and cutting unit. To this insertion device is attached a switching cone, which, on the introduction of the insertion device, releases the lowering movement of the front pressure roller onto the bars to be cut and the pressing of this pressure roller against the constantly rotating conveyor rollers which convey the bars to the blade. The conveyor rollers are advantageously provided with a concave groove adapted to re-

ceive two bars. In this way, the bars are pressed against each other and onto the conveyor rollers in an even manner, thus ensuring that they are moved in synchronism, that is, without any mutual longitudinal displacement.

There are further provided according to the invention, one or more longitudinally displaceable measuring devices and a longitudinally displaceable end measuring unit with end buffers for measuring varying lengths of bar material. An impulse generator, which may be programmed, controls the arresting of the buffer stop of the measuring device and the operating position of a turnover grid for sorting the cut material according to its length.

The main advantages provided by the invention are that a single operator is responsible for supplying the reinforcing steel bars from the storage pile to the conveying device, which is also designed to convey the bars further, so that an additional drawing device is not required. A further advantage is that, on account of the fact that only one or two bars are conveyed and cut at one time, the conveyor belt and the machine can be designed to receive far smaller loads than when the bars are cut in bundles. As the bars can be kept at the correct length by means of a buffer stop, which intercepts any impact, and by means of the front pressure roller which prevents the bars from springing back, no variation in the length of the measured steel bars occurs. A particular advantage of the invention is provided by the upper blade which is adapted to be tilted forwards in the direction of travel of the steel bars. This enables the steel bars being moved up to be brought up over the cut bars immediately after the cutting operation and even before the blade has returned to its upper starting position. A further advantage is that the bars can be counted and sorted automatically and the individual bar or pair of bars can be cut without considerable wastage of material.

Other objects, features and advantages of the present invention will be made apparent from the following detailed description of the preferred embodiment thereof provided with reference to the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a diagrammatic, partial sectional view of a steel bar cutting machine with a conveying and carrying frame and measuring devices for measuring the lengths of the steel bars,

FIG. **1***a* is a diagrammatic view of the dials of an impulse generator of the cutting machine,

FIG. **2** is a plan view of the machine according to FIG. **1**,

FIG. **3** is a diagrammatic, sectional, detailed view of the insertion device which is introduced into the conveying and cutting unit,

FIG. **4** is the insertion device according to FIG. **3** shown in full,

FIGS. **5***a* and **5***b* are views of an upper tiltable blade and a lower stationary blade during or immediately after the cutting operation,

FIGS. **6***a* and **6***b* are views of the left and right positions of a turnover grid of the cutting machine along the cutting line I—I.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

A conveying and cutting unit **12** of a steel bar cutting machine **10** is built over the base frame and projects over the reinforcing steel bars stacked in a crude steel pile **14.** The conveying and cutting unit **12** is provided with constantly rotating conveyor rollers **18, 20,** which are arranged in the lower part of the carrying frame and which are driven by an endlessly circulating chain **22.** A drive motor **26** is provided for the chain **22.** The driving pinion **24** of the motor **26** is in engagement with the chain **22.** Another pinion **28** ensures the necessary stressing of the chain **22.** The conveyor rollers **18, 20,** rotate constantly and transport one or two bars **16,** which are held against the conveyor rollers **18, 20,** by pressure rollers **30** and **40,** in the direction of an upper, tiltable blade **52** which cooperates with a lower stationary blade **50.** The blade **52** forms the upper blade support for the cutting of the bars **16.** This upper blade support is adapted to swivel about the swivel axis **56.** The lower blade **50** forms the lower blade support for cutting the bars. The pressure rollers **30, 40,** are arranged in the upper part of the conveying and cutting unit **12.** The front roller **30** is displaceable and is adapted to be released either manually or automatically and in synchronism with the cutting operation effected by the vertically guided blade **52.** To bring pressure to bear on the pressure rollers **30, 40,** and on the blade **52,** pressure cylinders **32, 36,** and **34** are provided. These are supplied with pressure by a pump unit **42** arranged in the lower part of the conveying and cutting unit **12.** The pump unit **42** consists of a motor **46** with a driven plate **48** and a pump **42.** The driven plate **48** serves as an energy storage means for the cutting energy to be applied. The pump unit **42** is connected to the pressure cylinders **32, 36,** and the pressure cylinder **54** for the activation of the blade **52** via a pressure switch **34** which may, for example, consist of a hydraulic switching valve in the form of a multi-way magnetic valve. A hinged lever **37,** which is pivotably mounted about a central axis, leads from the pressure cylinder **32** to the front pressure roller **30.** The pressure cylinder **32** is connected via a forward and return flow pressure line with the pressure switch **34,** so that, during operation of the pump unit **42,** pressure may be applied to or removed from the front pressure roller **30,** depending on the adjustment of the pressure switch **34.** The rear pressure roller **40** which is always adjustably pressure loaded during the operation of the pump unit **42,** is hinged to the pressure cylinder **36** by way of an angle lever **38** which is rotatable about an axis. The cylinder **36** is connected to the pressure switch **34** by way of a single pressure line, so that, during operation of the pump unit **42,** the pressure engaged in this line remains constant. As a result, the rear pressure roller **40** rests with constant pressure against the bars **16** and prevents the bars **16** from recoiling from a buffer stop **60** or **76.**

An insertion device **17** (FIGS. **3** and **4**), which is manually or mechanically introduced into and removed from the conveying and cutting unit **12,** is provided for the insertion of the bars into the conveying and cutting unit **12.** A switching cone **15** is rigidly secured to the insertion device **17.** When the insertion device **17** is introduced into the conveying and cutting unit, this switching element **15** activates a switching contact **13** and thus activates a switching signal for the pressure

switch **34**. This pressure switch **34** acts on the pressure cylinder **32** for the front pressure roller **30** which is in turn lowered onto the bars **16** to be cut. This pressure roller **30** then presses the bars against the constantly rotating conveyor rollers **18, 20,** which transport the bars **16** to the tiltable blade **52.**

The insertion device **17** is constructed in stages and is provided with a contact surface **19** for the bars **16.** When the insertion device is inserted into the conveying and cutting unit, the contact surface **19** projects out of the conveying and cutting unit **12** so that two bars **16** can be laid thereon. By withdrawing the insertion device **17** in the direction of the arrow according to FIG. **3,** pressure is removed from the front pressure roller **30** which then rises, owing to the fact that the switching cone **15** is separated from the switching contact **13.** The two bars, which have been loaded, fall onto a rail **21** arranged at the level of the concave groove **23** of the rollers **18, 20.** The insertion device **17** can subsequently by reintroduced, whereupon the bars **16** are pushed from the rail **21** onto the conveyor rollers **18, 20.**

The drive parts of the conveying and cutting unit **12** are encased in removable housing parts.

On termination of the cutting operation, the cutting pressure of the blade **52** is zero and its arresting force is removed, so that the bars **16** which are being moved in a forward direction, are able to turn the blade **52** about a transverse axis of tilt **56.** This axis of tilt **56** is displaced about the distance a with respect to its cutting edge.

As the axis **56** is displaced by the distance a with respect to the cutting plane, the blade **52** cannot be pushed to the right when the cutting material is still passing through and the cutting operation being effected, as the rotational radius of the blade **52** is longer by an amount *b* than the vertical in the cutting plane (see FIG. **5***a*).

The arresting of the blade **52** and its release after the cutting operation are controlled by electrical signals of one or more measuring devices **58** or of an end measuring unit **74.** These measuring devices activate the pressure switches **34** to engage or disconnect the pressure cylinder **54** for the blade **52.** One or more longitudinally displaceable measuring devices **58** are arranged along and above the conveying and carrying frame in a measuring channel provided with a drop bottom **92.**

The measuring device **58** consists of a sliding carriage **62** longitudinally displaceable in a measuring channel, a spring plate **80** for inserting the bars **16** into the measuring device, a switching flap **66** connected to a switch **68,** and a buffer stop **60** rotatable about a transverse axis. This buffer stop **60** is connected to a comparably sized, longitudinally displaceable counterweight **70** via a return spring **69.** This counterweight **70** receives the force of the impact when the bars **16** strike against the buffer stop **60,** and is displaced in the direction of the arrow (see FIG. **1**) In the vertical position, the rotatable switching flap **66** projects as far as the proximity of the drop bottom **92** of the measuring channel and is rotated by the bars **16,** which strike against it. The switch **68** which is connected to the switching flap **66** is thereby activated, thus engaging or disconnecting the pressure cylinder **54** via the pressure switch **34.** An electromagnet **64** is provided on the sliding carriage **62.** This electromagnet **64** is engaged or disconnected in accordance with the selected program via an impulse generator **86** mounted on the conveying and cutting unit **12.** When the electromagnet **64** is engaged, the buffer stop **60** is locked in striking position for the bars **16.** As soon as the bars **16** touch the switching flap **66,** the pressure cylinder **54,** and thus the blade **52,** are activated via the switch **68,** thus initiating the cutting operation. A camber and pivot inclination is provided from the switching flap **66** to the buffer stop **60,** to cater to the inertia of the regulating system. The overall weight of the sliding carriage is such that a violent blow on the buffer stop **60** cannot raise the sliding carriage **62.** Generally, only one measuring device **58** and one end measuring unit **74** are provided with a buffer stop **76.** Further measuring devices can be arranged as required between the first measuring device **58** and the end unit **74.** These will also be provided with an impulse generator.

The end measuring unit **74** consists of a longitudinally displaceable sliding carriage **78,** the spring plate **80** for inserting the bars, the switching flap **66,** which activates the switch **68,** and the buffer stop **76,** which is rigidly secured to the sliding carriage **78,** and which is connected to the comparably sized, longitudinally displaceable counterweight **70.**

The sliding carriage of the measuring units **58, 74** are displaceable along a measuring channel which guides the bars **16** up to impact. On its underside, the measuring channel is provided with the multi-sectional drop bottom **92** which is controlled on a time-delay principle with the commencement of the cutting operation and which releases the bars **16** at the bottom after the cutting process. A turnover grid **84** for sorting the cut bars, is provided below the measuring channel. The turnover grid **84** is controlled by a cylinder **90** controlled by the inpulse generator **86.** The impulse generator **86** is provided with decade counters **88.** The turnover grid **84** adopts various positions and divides the cutting material according to length in accordance with a recorded program of the impulse generator **86.** The cutting material which is sorted in this way is loaded on the lower conveyor belt to be transported further.

The bar cutting machine operates as follows:

When the insertion device **17** is in the inserted position, two bars **16** are placed on the surface **19.** When the insertion device is moved in the direction of the arrow in FIG. **3,** the two bars **16** fall onto the rail **21.** The pressure is removed from the pressure roller **30,** which is then raised. When the insertion device **17** is again moved inwards, the bars **16** are moved from the rail **21** into the concave groove **23** of the conveyor rollers **18, 20.** During this process, the switching cone **15** which is rigidly mounted on the insertion device **17,** triggers the switching contact **13** which lowers the front pressure roller **30** via the pressure switch **34.** The front pressure roller **30** presses the two bars **16** against the constantly rotating conveyor rollers **18, 20.** Owing to the concave groove **23,** the two bars are pressed against each other and are thus pressed against the conveyor rollers **18, 20,** in an even manner. In this way, they are moved against the tiltable blade **52** in parallel. As soon as the bars **16** to be cut reach the buffer stop **60** of the measuring device **58,** the cutting process is commenced by the blade **52.** After the bars have passed through the cutting unit and before two new bars **16** are placed in position for cutting, the insertion device **17** is moved outwards in the direction of the arrow according to FIG. **3.** As a result, the front pressure roller **30** is raised

in the manner described above, and the two bars **16** fall onto the rail **21** and can be pushed onto the conveyor rollers **18, 20.**

While the bars **16** are being moved, the tiltable blade **52** is first raised so that the bars pass through the cutting device. The measuring device **58** and the end measuring unit **74** are controlled in such a manner that the longer pieces are cut from the bars **16** and then the shorter pieces. During their forward movement, the bars **16** strike against the rotatable buffer stop **60** of the first or successive measuring unit **58.** If the programmed length of the pieces cut from the bars **16** is not yet reached, the buffer stop **60** is not arrested, so that it is rotated about its transverse axis by the bars **16** striking against it, and the bars are able to pass beneath it. As soon as the bars **16** tilt the switching flap **66** of the end measuring unit, the relevant switch **68** is activated. This switch **68** transmits a control signal to the pressure switch **34,** whereupon pressure is exerted on the blade **52** by the pressure cylinder **54,** and the blade is lowered to begin the cutting operation. When the cutting operation is over and the cutting pressure has been removed, the blade **52** is rotated about its axis **56** by the forward moving bars **16** which strike against the blade **52.** The bars **16** are moved forwards until they encounter the measuring device **58** disposed in its operating position. In this position, the buffer stop **60** is blocked by the magnet **64.** The switching flap **66** activates the switch **68,** which initiates another cutting operation.

The tiltable blade **52** makes it possible for one or two bars to be conveyed in a continuous manner to the indidiual measuring devices **58.** As a result, the cutting process can be effected considerably more rapidly than with known machines. The turnover grid **84** is moved into its right or left operating position by the impulse generator **86** in accordance with the adjusted cutting lengths for the bars. In this way, the cutting material can be sorted according to length along both sides of the conveyor belt.

I claim:

1. In a steel bar cutting machine for cutting reinforcing steel bars for concrete steel including a conveying and carrying frame, secured to a base frame which is made of structural steel and is laterally displaceable and further including a conveying and cutting unit and a longitudinally displaceable measuring device, the improvements comprising:

a. a conveying and cutting unit (**12**) which is built over the base frame, having driven conveyor rollers (**18, 20**) at its lower part and pressure loaded pressure rollers (**30, 40**) at its upper part, one of said pressure rollers (**30**) being adapted to be released and adjusted automatically and in synchronism with the cutting operation of a vertically guided blade;

b. a vertically reciprocable blade support having an upper cutting blade pivotally attached thereto;

c. a stationary lower cutting blade attached to said conveying and cutting unit; and

d. means to reciprocate said upper blade support and said upper blade with respect to said stationary lower blade so as to cut steel bars therebetween, said means engaging an upper portion of said pivotal upper cutting blade to prevent pivoting thereof during the downward cutting stroke.

2. A bar cutting machine according to claim **1,** characterized in that an insertion device (**17**) is provided for the mechanical insertion of a pair of bars (**16**) into the conveying and cutting unit (**12**), and that attached to said insertion device (**17**) is a switching cone (**15**) which, on the inward movement of the insertion device (**17**) triggers the lowering movement of the pressure roller (**30**) onto the bars (**16**) to be cut and its action of pressing the bars (**16**) against the constantly rotating conveyor rollers (**18, 20**) which move the bars (**16**) forwards to the blade (**52**).

3. A bar cutting machine according to claim **2,** characterized in that when the insertion device (**17**) is moved inwards, the switching cone (**15**) activates a switching contact (**13**) which lowers the front pressure roller (**30**) via a pressure switch (**34**) and causes said roller (**30**) to be pressed against the bars (**16**) in the groove of the conveyor rollers (**18, 20**).

4. A bar cutting machine according to claim **2,** characterized in that the insertion device (**17**) is constructed in stages and is provided with a contact surface (**19**) for the bars (**16**).

5. A bar cutting machine according to claim **3,** characterized in that a rail (**21**) is arranged adjacent to the insertion device (**17**) at the level of the concave groove (**23**) of the conveyor rollers (**18, 20**).

6. A bar cutting machine according to claim **2,** characterized in that one or more longitudinally displaceable measuring devices (**58**) and a longitudinally displaceable end measuring unit (**74**) provided with buffer stops (**60** and **76**) are provided for the measurement of bars pieces of varying lengths, and in that a programmable impulse generator (**86**) controls the arresting of the buffer stop (**60**) of the measuring device (**58**) and the operating positions of a turnover grid (**84**) for sorting the cut bar pieces according to length.

7. A bar cutting machine according to claim **6,** characterized in that the measuring device consists of a sliding carriage (**62**) displaceable along the measuring channel, said sliding carriage comprising a spring plate (**80**), a switching flap (**66**) activating a switch (**68**) and an angular buffer stop (**60**) rotatable about a transverse axis, said buffer stop (**60**) being connected to a comparably sized and longitudinally displaceable counterweight (**70**) via a return spring (**69**).

8. A bar cutting machine according to claim **7,** characterized in that the switch (**68**) is connected to the pressure switch (**34**) for the activation of the cylinder (**54**) of the tiltable blade (**52**).

9. A bar cutting machine according to claim **7,** characterized in that an electromagnet (**64**) is provided on the sliding carriage (**62**) to arrest the buffer stop (**60**) in its striking position for the bar (**16**), said electromagnet (**64**) engaging and disconnecting the impulse generator (**86**) according to the selected program.

10. A bar cutting machine according to claim **6,** characterized in that the turnover grid (**84**) is disposed below the measuring channel and by moving this into different positions in accordance with the program of the impulse generator (**86**), short and long bar pieces (**72** and **82**) can be placed apart from each other on each side of the lower conveyor belt.

11. A bar cutting machine according to claim **6,** characterized in that one or measuring devices (**58**) and the end measuring unit (**74**) are displaceably arranged along and above the conveying and carrying frame in a measuring channel with a drop bottom (**92**).

12. A bar cutting machine according to claim 11, characterized in that the drop bottom (92) is multi-sectional and, on opening, releases the cut steel bars from below, in the direction of the turnover grid (84).

13. A bar cutting machine according to claim 1, characterized in that the conveyor rollers (18, 20) are provided with a concave groove (23) for receiving a pair of bars (16).

14. A bar cutting machine according to claim 1, characterized in that the pivoting axis (56) of the upper blade (52) is displaced laterally by a distance a with respect to its cutting edge.

15. A bar cutting machine according to claim 1, characterized in that a pump unit (42) consisting of a motor (46) with a rotary plate (48) provided for the pump (44) and arranged in the lower part of the conveying and cutting unit (12) applies pressure via the pressure switch (34) to a pressure cylinder (32, 36) for the pressure rollers (30 and 40) and to a pressure cylinder (54) for activating the blade (52) which is vertically guided against the stationary blade (50) in the lower part of unit (12).

16. A bar cutting machine according to claim 15, characterized in that a multi-way magnetic valve constitutes the pressure switch (34).

17. A bar cutting machine according to claim 1, characterized in that the pressure cylinder (36) which is connected to the pressure switch (34) by a single pressure line, and from which pressure cannot be removed during the operation of the pump unit (42), is connected to the rear pressure roller (40) by an angle lever (38) rotatable about an axis.

18. A bar cutting machine according to claim 1, characterized in that the front pressure roller (30) is connected to the pressure cylinder (32) via a lever (37) rotatable about an axis, said pressure cylinder (32) having pressure applied thereto or removed therefrom, either manually or automatically, by way of a forward and return flow pressure line to the pressure switch (34), during the operation of the pump unit (42).

19. A bar cutting machine according to one or more of claim 1, characterized in that a sliding carriage (78) of the end measuring unit (74) is provided with a buffer stop (60), a spring plate (80), and the switching flap (66) activating the switch (68), which is connected to the pressure switch (34).

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