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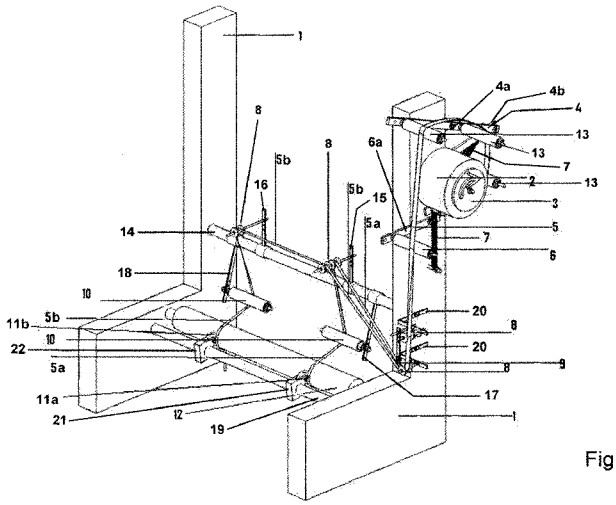


Fig.1

(57) Abstract: Retrofitting apparatus, for splitting, applying and pre-incise, at least one continuous strip supplied from a single reel of adhesive tape (5), on at least one side of an envelope of plastic material, to allow the tear opening of at least one side of said envelope, intended for packaging of plants and flowers, produced and extruded in a continuous and automated manner by a pre-existing and conventional machine, in such a way that, the retrofitting of said apparatus which applies the said strip, brings an improvement of the mechanical resistance to stresses, of said envelope destined to subsequent packaging of plants and flowers; which consists of a support structure (1), a motorized reel (2) of adhesive tape (5) that is dispensed and divided into at least two semi half (5a, 5b), by a cutter (9), with speed of unwinding proportional to the tension of said tape (5) that, is made to adhere and incised by blades of pre-incision, on the said envelopes, in continuous manner.

WO 2014/199189 A1

APPARATUS FOR SPLITTING, APPLYING AND PRE-INCISE AT LEAST ONE CONTINUOUS STRIP OF ADHESIVE TAPE FROM SINGLE COIL, FOR AN OPENABLE ENVELOPE, FOR THE PACKAGING OF FLOWERS.

[0001] The present invention relates to an apparatus to be installed retrofitted in a production line of openable envelopes for flowers, to split, apply and pre-incise at least a continuous strip supplied from a single reel of adhesive tape, on at least one side of an envelope of plastic material, to allow the tear opening of at least one side of said envelope, intended for packaging of plants and flowers, produced and ejected in a continuous and automated manner by a pre-existing and conventional, machine, in such a way that, the retrofitting of said apparatus which applies the said strips, brings an improvement of the mechanical resistance to stress, of said envelopes intended for subsequent packaging of plants and flowers.

Applicantion's field

[0002] Nowadays it is known in the industry of the garden-nursery, the habit of the market plants not sever, already prepared in pots of different sizes. The public, once chosen the plant, requires that it gets packaged, and one of the most practical ways, there is that to take advantage of packaging substantially ready for use. Moreover, it also happens that, in supermarkets, such as in shopping centers, as well in DYS centers, plants, especially in small pots, are offered to the public already packed with packaging very similar to those used in the garden-nursery.

[0003] Known are also, the wrapping of the pot and the plant or even simply the flowers with a film of plastic material such as sheets of polyethylene or polypropylene, and then once overlapping the ends, proceed to the fixing of the two ends, by means of stapling. It is a technique, however, still widely used by florists, very uncomfortable and, for this then, replaced by other solutions of packaging ready for use. Among the alternatives, there is the solution, which remains present, to provide packaging with different material, for example the use of various blanks of cardboard but, the latter, it seems little appreciated by the fact that, contrary to the sheets of polyethylene or polypropylene which, are mostly transparent, allows not at all a good visibility of the product.

[0004] It's also known the necessity to resort to packaging with special characteristics proper of the sheets of polyethylene or polypropylene, especially for packing pots of small and medium size but, at the same time to pack bunches of cut flowers which, is therefore particularly felt today. This has meant that the industry would develop, with innovative solutions, quickly, and especially with techniques designed to reduce and to facilitate packing performances, impacting in proportional measure on the overall cost.

[0005] Known is also the typical packaging obtained from the processing of films or sheets of plastic material such as polyethylene or polypropylene which, consists of the frusto conical envelope or frusto conical bag. It is in essence of a housing, with at least one open side, which is obtained by the coupling by overlapping of the two films or sheets of plastic material, partially heat-welding the two films or sheets, together peripherally,

according to the desired shape. In the event of an envelope with truncated-cone shape in plan, the side that usually is open corresponds to the longer side through which, when it is manipulated, is made to pass, threading, the potted plant or the bunch of flowers, while the opposite smaller side can present itself as well open as even with the bottom closed. The characteristic of these envelopes, is given by the fact that they can be marketed the one overlapped and joined at the origin to the other as a package. To allow, the detachment of a single envelope of plastic material from the assembly of envelopes formed from the package, it is necessary to provide that the same envelope in correspondence of its edge, corresponding to the opening side, being able to be edged or straight, have a trace of pre-cut, better known as pre-tear, of separation from the package. In this way the upper part of the envelope so obtained, provides a residual portion to lose that, once torn the envelope, remains joined to the other portions and envelopes not torn of the package.

[0006] Known however is the fact that, each of said envelopes, presents a poor resistance to mechanical stress during the detachment of the envelope itself, in correspondence of the pre-tearing, due to the tensions which the film or plastic sheet is subjected in performing manually the detachment which, tends to induce a tearing, along the line of separation that affects the film or plastic sheet, of the said envelope torn, returning therefore a considerable number of rejects.

[0007] Currently there is a consistent use of solutions in the field, at once original but, not exclusive and economical, because this still do not have the objective of using a retrofitting apparatus, to split, apply and pre-cut at

least a continuous strip supplied from a single reel of adhesive tape, on at least one side of an envelope of plastic material, to allow the tear opening of at least one side of said envelope, intended for packaging of plants and flowers, produced and ejected in a continuous and automated manner by a pre-existing and conventional machine, in such a way that, the retrofitting of said apparatus which applies the said strips, brings an improvement in resistance to mechanical stress, of said envelopes intended for subsequent packaging of plants and flowers .

State of the Art

[0008] In the context of a retrofitting apparatus, to split, applying and pre-incise at least a continuous strip supplied from a single reel of adhesive tape, on at least one side of an envelope of plastic material, to allow the tear opening of at least one side of said envelope, intended for packaging of plants and flowers, produced and ejected in a continuous and automated by a pre-existing and conventional machine, in such a way that, the retrofitting of said apparatus which applies the said strips , brings an improvement in resistance to mechanical stress, of said envelopes intended for subsequent packaging of plants and flowers, was conducted a search, which, although not thorough, has allowed to identify at least the following earlier documents, even if no one in the field of the present invention:

D1 GB992966 (A) KLEEN STIK PRODUCTS INC. [GB]

D2 CN101409362 (A) TIANJIN LISHEN BATTERY [CN]

D3 CN201956435 (U) TIANJIN LISHEN BATTERY [CN]

D4 CN202244268 (U) ANHUI ZHENGFENG DAILY USE COSMETICS LTD [CN]

[0009] D1 Represents a machine for applying adhesive tape to sheet material and designed primarily for applying "spots" of tape 22, Fig. 5, of selected length and spacing and which permits a plurality of laterally spaced tapes to be simultaneously applied as well as the application of continuous strips of tape. According to the invention the operation of the tape applying head and tape severing means is under the control of a rotatably mounted and readily exchangeable timing disc and when the leading edge of a sheet of material passes over a switch actuating means, the disc is rotated from a given reference position at a fixed speed. The disc carries a number of spaced timing points and actuating means responsive to the passage of these points operates the tape applying and severing means so as to apply "spots" of tape to the sheet passing through the machine. As shown in Fig. 1, a frame structure 2 supports a sheet feed table 4 with side walls 6, 8 and a housing 10 containing the control mechanisms for the tape applying and severing devices surmounted by a control panel 12. Adjustably supported above the table 4 are tape applying units 14 each comprising a tape, applying head 16, Fig. 7, and a tape severing means 18. Associated with each unit 14 is a pivot stand 20 carrying a roll 21 of adhesive transfer tape 22 to be applied to a sheet of material 24 fed over the table 4. The units 14 are adjustably mounted upon a horizontal support bar 23.

[0010] D2 discloses a device for sticking a side tape on a polymer lithium cell and the device comprises: a tape feeding device (1), a cell feeding

clamp (3), a tape turning device (5) and a turning handle (6) which are horizontally arranged in sequence; the tape turning device (5) is connected with the turning handle (6); the tape feeding device (1) and the cell feeding clamp (3) are connected by the tape and locate the tape; the cell feeding clamp (3) is used for transversely arranging the cell on the tape above the cell feeding clamp (3). The device for sticking a side tape on a polymer lithium cell provided by the invention has the advantages of high efficiency, convenient operation, good benefit, better effect and consistency when the operation of sticking the side tape of the cell is carried out, thus effectively reducing the labor cost and the material cost of the polymer lithium cell, being beneficial to forming the scale of industries and having a great production practice meaning.

[0011] D3 The utility model particularly relates to a protection adhesive tape pasting device for a lithium ion battery, which belongs to the field of lithium ion battery processing and is characterized in that the protection adhesive tape pasting device for the lithium ion battery mainly comprises a bottom plate, a slide block, an adhesive tape fixing mechanism, an adhesive tape cutting mechanism and a pole piece positioning clamp, wherein the bottom plate is provided with a left baffle plate and a right baffle plate, the slide block is glidingly connected with the bottom plate, the slide block is connected with the right baffle plate through a tension spring, the adhesive tape fixing mechanism is fixed at one side of the slide block, the adhesive tape cutting mechanism is fixed on the side surface of the slide block, and the pole piece positioning clamp is fixed on the bottom plate corresponding to the adhesive tape fixing mechanism. The protection adhesive tape

pasting device for the lithium ion battery has the beneficial effects that the protection adhesive tape pasting device can be applicable to the pasting and the cutting of protection adhesive tapes in different sizes for different pole pieces, the pasting quality of the protection adhesive tapes and the cutting accuracy of the protection adhesive tapes are improved, further, the adhesive tape does not need to be cut by an adhesive tape cutting machine, the operation work procedure is saved, the safety of the battery is improved, and the protection adhesive tape pasting device is applicable to the design and development of various battery cells or the pasting of the protection adhesive tapes for the pole pieces in various sizes during the normal production.

[0012] D4 The utility model discloses an automatic adhesive tape cutting device for mosquito coil packaging tubes, which comprises a tabletop and a conveying belt. The automatic adhesive tape cutting device is characterized in that the conveying belt is mounted on the tabletop, a cutting slide is slidably mounted on the tabletop on the lateral side of the conveying belt, a cutting cylinder is mounted on the tabletop beside the cutting slide, the cutting slide is connected to the cutting cylinder, a conical top is mounted on the lateral side of the upper end of the cutting slide, the middle of the conical top is provided with a through groove, a retractable blade is mounted in the through groove and connected to a retractable motor mounted at the upper end of the cutting slide, and a rotary adhesive tape reel and a plurality of tensioning wheels are mounted on the tabletop beside the cutting slide. By means of cooperation of the cylinder with the slide, adhesive tapes can be cut off automatically and rapidly when the adhesive

tapes are well adhered to packaging paper tubes on the conveying belt, so that production efficiency is greatly improved, and labor is saved. In addition, the adhesive tapes can be pressed tightly, products are high in uniformity, and quality can be guaranteed.

[0013] Ultimately it is reasonable to assume known:

a) the typical packaging obtained from the processing of films or sheets of plastic material such as polyethylene or polypropylene which, consists of the frusto-conical envelope or frusto-conical bag, with at least one side open, which is obtained by the coupling from the superposition of two film or sheets of plastic material, partially heat-welding the two films or sheets, together peripherally, according to the desired shape;

b) to allow the detachment of a single envelope of plastic bags made from the assembly of bags constituted by the package, it is necessary to provide that the same envelope at its edge, corresponding to the opening side, being edged or straight, has a track of pre-cut, better known as pre-tear, of separation from the package. In this way the upper part of the envelope so obtained, provides a residual portion to lose that, once torn the envelope, remains joined to the other portions and envelopes not torn of the package;

c) the fact that, each of said envelopes, presents a poor resistance to mechanical stress during the detachment of the envelope itself, in correspondence of the pre-tearing, due to the

tensions which the film or plastic sheet is subjected in performing manually the detachment that, tends to induce a tear along the line of separation that affects the film or plastic sheet, of the said envelope torn, thus entailing a considerable number of rejects;

d) a machine for applying adhesive tape to sheet material and designed primarily for applying "spots" of tape 22, Fig. 5, of selected length and spacing and which permits a plurality of laterally spaced tapes to be simultaneously applied as well as the application of continuous strips of tape. According to the invention the operation of the tape applying head and tape severing means is under the control of a rotatably mounted and readily exchangeable timing disc and when the leading edge of a sheet of material passes over a switch actuating means, the disc is rotated from a given reference position at a fixed speed. The disc carries a number of spaced timing points and actuating means responsive to the passage of these points operates the tape applying and severing means so as to apply "spots" of tape to the sheet passing through the machine. As shown in Fig. 1, a frame structure 2 supports a sheet feed table 4 with side walls 6, 8 and a housing 10 containing the control mechanisms for the tape applying and severing devices surmounted by a control panel 12. Adjustably supported above the table 4 are tape applying units 14 each comprising a tape, applying head 16, Fig. 7, and a tape severing means 18.

Associated with each unit 14 is a pivot stand 20 carrying a roll 21 of adhesive transfer tape 22 to be applied to a sheet of material 24 fed over the table 4. The units 14 are adjustably mounted upon a horizontal support bar 23;

e) a device for sticking a side tape on a polymer lithium cell and the device comprises: a tape feeding device (1), a cell feeding clamp (3), a tape turning device (5) and a turning handle (6) which are horizontally arranged in sequence; the tape turning device (5) is connected with the turning handle (6); the tape feeding device (1) and the cell feeding clamp (3) are connected by the tape and locate the tape; the cell feeding clamp (3) is used for transversely arranging the cell on the tape above the cell feeding clamp (3). The device for sticking a side tape on a polymer lithium cell provided by the invention has the advantages of high efficiency, convenient operation, good benefit, better effect and consistency when the operation of sticking the side tape of the cell is carried out, thus effectively reducing the labor cost and the material cost of the polymer lithium cell, being beneficial to forming the scale of industries and having a great production practice meaning;

f) a protection adhesive tape pasting device for a lithium ion battery, which belongs to the field of lithium ion battery processing and is characterized in that the protection adhesive tape pasting device for the lithium ion battery mainly comprises a bottom plate, a slide block, an adhesive tape fixing

mechanism, an adhesive tape cutting mechanism and a pole piece positioning clamp, wherein the bottom plate is provided with a left baffle plate and a right baffle plate, the slide block is glidingly connected with the bottom plate, the slide block is connected with the right baffle plate through a tension spring, the adhesive tape fixing mechanism is fixed at one side of the slide block, the adhesive tape cutting mechanism is fixed on the side surface of the slide block, and the pole piece positioning clamp is fixed on the bottom plate corresponding to the adhesive tape fixing mechanism. The protection adhesive tape pasting device for the lithium ion battery has the beneficial effects that the protection adhesive tape pasting device can be applicable to the pasting and the cutting of protection adhesive tapes in different sizes for different pole pieces, the pasting quality of the protection adhesive tapes and the cutting accuracy of the protection adhesive tapes are improved, further, the adhesive tape does not need to be cut by an adhesive tape cutting machine, the operation work procedure is saved, the safety of the battery is improved, and the protection adhesive tape pasting device is applicable to the design and development of various battery cells or the pasting of the protection adhesive tapes for the pole pieces in various sizes during the normal production;

g) an automatic adhesive tape cutting device for mosquito coil packaging tubes, which comprises a tabletop and a conveying

belt. The automatic adhesive tape cutting device is characterized in that the conveying belt is mounted on the tabletop, a cutting slide is slidably mounted on the tabletop on the lateral side of the conveying belt, a cutting cylinder is mounted on the tabletop beside the cutting slide, the cutting slide is connected to the cutting cylinder, a conical top is mounted on the lateral side of the upper end of the cutting slide, the middle of the conical top is provided with a through groove, a retractable blade is mounted in the through groove and connected to a retractable motor mounted at the upper end of the cutting slide, and a rotary adhesive tape reel and a plurality of tensioning wheels are mounted on the tabletop beside the cutting slide. By means of cooperation of the cylinder with the slide, adhesive tapes can be cut off automatically and rapidly when the adhesive tapes are well adhered to packaging paper tubes on the conveying belt, so that production efficiency is greatly improved, and labor is saved. In addition, the adhesive tapes can be pressed tightly, products are high in uniformity, and quality can be guaranteed.

Drawbacks

[0014] That said and what is known in the public domain, it is highlighted that it was not traced any document which describes a retrofitting apparatus, to split, apply and pre-cut at least a continuous strip supplied from a single reel of adhesive tape on at least one side of an envelope of

plastic material, to allow the tear opening of at least one side of said envelope, intended for packaging of plants and flowers, produced and ejected in a continuous and automated by a pre-existing and conventional machine, in such a way that, the retrofitting of said apparatus which applies the said strips, brings an improvement in resistance to mechanical stress, of said envelopes intended for subsequent packaging of plants and flowers.

[0015] For what it regards instead a combined solution specifically designed of a retrofitting apparatus, to split, apply and pre-cut at least a continuous strip provided by a single reel of adhesive tape, on at least one side of an envelope of plastic material, to allow tear opening of at least one side of said envelope, intended for packaging of plants and flowers, to a pre-existing and conventional machine that produces and extrudes in a continuous and automated manner said envelope, no similar realizations are found or which suggest the use in the field of patents and in general, in the state of the art.

[0016] In principle, it can therefore be agreed that what tracked as state of the art essentially concerns the use of apparatuses for the application of adhesive tape to sheet material and designed primarily for the application of "portions" of tape of selected length and spacing which, allows a plurality of laterally spaced tape strips to be applied simultaneously and the application of strips of continuous tape, even to attach a side adhesive tape on a rechargeable lithium polymer battery, a fastening mechanism of the adhesive tape, a mechanism of cutting the adhesive tape and a clamp positioning; an automatic adhesive tape cutting device for mosquito coil packaging tubes, which comprises a tabletop and a conveying belt. The

automatic adhesive tape cutting device is characterized in that the conveying belt is mounted on the tabletop, a cutting slide is slidably mounted on the tabletop on the lateral side of the conveying belt, a cutting cylinder is mounted on the tabletop beside the cutting slide, the cutting slide is connected to the cutting cylinder, a conical top is mounted on the lateral side of the upper end of the cutting slide, the middle of the conical top is provided with a through groove, a retractable blade is mounted in the through groove and connected to a retractable motor mounted at the upper end of the cutting slide, and a rotary adhesive tape reel and a plurality of tensioning wheels are mounted on the tabletop beside the cutting slide, by means of cooperation of the cylinder with the slide, adhesive tapes can be cut off automatically and rapidly when the adhesive tapes are well adhered to packaging paper tubes on the conveying belt. All this, without, however, disclose a retrofitting apparatus combinable with an existing machine, to split, apply and pre-cut at least a continuous strip supplied from a single reel of tape, on at least one side of an envelope of plastic material, to allow the tear opening of at least one side of said envelope, intended for packaging of plants and flowers, produced and ejected in a continuous and automated, so that, the retrofitting of said apparatus which applies the said strips adhesive, brings an improvement of the mechanical resistance to the stresses of said envelopes, intended for subsequent packaging of plants and flowers.

[0017] From all the above, there is a need for companies, particularly in the sector, to identify alternative solutions, more effective, compared to

the solutions up to now in be. One aim of the present invention is also to overcome and solve the described drawbacks.

Brief description of the invention

[0018] This and other aims are achieved with the present invention according to the characteristics of the included claims solving the mentioned problems through the implementation of a retrofitting apparatus, to split, to apply and pre-cut, at least a continuous strip provided by a single coil of adhesive tape, on at least one side of an envelope of plastic material, to allow the tear opening of at least one side of said envelope, intended for packaging of plants and flowers, produced and ejected in a continuous and automated by a pre-existing and conventional machine, in such a way that, the retrofitting of said apparatus which applies the said strip, brings an improvement in resistance to mechanical stress, of said envelope destined to the subsequent packaging of plants and flowers; which consists of a support structure, a motorized reel of adhesive tape that is dispensed and split into at least two semi half, by a cutter, with unwinding speed proportional to the tension of said tape, which is made to adhere and incised by blades of pre-cut, on the said envelopes, in continuous.

Aims and advantages

[0019] In this way, through the considerable creative contribution whose effect has allowed to achieve a considerable technical progress, are achieved some aims and advantages.

[0020] The first aim of the present invention was to enable the realization of an retrofitting apparatus, to be installed on an existing machine for the production of envelopes, to split, apply and pre-cut, at least one continuous strip supplied from a single reel of adhesive tape, on at least one side of an envelope of plastic material, to allow the tear opening of at least one side of the said envelope, intended for packaging of plants and flowers.

[0021] A second aim is also the realization of a retrofitting apparatus, on an existing machine for the production of envelopes, to spilt, apply and to pre-cut, at least one continuous strip supplied from a single reel of adhesive tape, on at least one side of an envelope of plastic material, to allow the tear opening of at least one side of the said envelope, intended for packaging of plants and flowers, produced and ejected in a continuous and automated manner by a pre-existing and conventional machine of production of envelopes, in so that, the retrofitting of said apparatus which applies the said strip, on said pre-existing and conventional machine of production of envelopes, brings an improvement in resistance to mechanical stress, of said envelope destined to subsequent packaging of plants and flowers.

[0022] A third aim consisted of making a retrofitting apparatus, on an existing machine for the production of envelopes, to split, apply pre-incise, at least one continuous strip supplied from a single reel of adhesive tape, on at least one side of an envelope of plastic material, to allow the tear opening of at least one side of said envelope, intended for packaging of plants and flowers, which consists of a support structure that includes a motorized reel of tape that is dispensed and split into at least two semi half

by a cutter, and having a speed control of the unwinding motor of the said reel, which speed is proportional to the tension of said tape, measured in real time, thanks to a tensioner assembly of the said tape and relative moto-potentiometer, connected to the said speed control of the said unwinding motor.

[0023] A fourth aim consists in the realization of a retrofitting apparatus, to be installed on an existing machine for the production of envelopes, to split, apply and pre-incise, at least one continuous strip supplied from a single reel of adhesive tape, on at least one side of an envelope of plastic material, to allow the tear opening of at least one side of said envelope, intended for packaging of plants and flowers, having said continuous strip of adhesive tape that is adhered completely on said envelopes and, incised contextually, with close stretches of pre-cutting, along its median axis, obtained by a rotating circular blade of pre-cut, to facilitate the tear-off opening, of the said envelope, at the time of end use.

[0024] These and other advantages will appear from the following detailed description of preferred embodiments with the aid of the attached schematic drawings, whose details of execution are not to be considered limitative but only illustrative.

Content of the drawings

Fig.1 is a perspective front and side view of the invention;

Fig.2 is a perspective view of the rear and side of the invention;

Fig.3 is a two-dimensional view in top plan of the invention;

Fig.4 is a two-dimensional view in frontal plant of the invention;

Fig. 5 is a two-dimensional view in plant from the motor side of the invention;

Fig. 6 is a perspective view of envelopes with the adhesive strips with pre-cuts.

5

Practical example of embodiment of the invention

[0025] The object of the present invention (Fig. 1,2,3,4,5,6) is a retrofitting apparatus to be installed on an existing machine of production of envelope of plastic material (25), consisting of a support structure (1), to apply and pre-incise, by rotating circular blade of pre-cut (11a, 11b), at least one continuous strip of adhesive tape (5) having a width between 1 cm and 5 cm, and supplied by a single reel (2) of continuous strip of adhesive tape (5), for then split by a cutter (9), said continuous strip of adhesive tape (5) in at least two semi-half (5a, 5b) to be applied on at least two sides an envelope of plastic material (25), to allow the tear opening of at least one side of said envelope of plastic material (25), intended for packaging of plants and flowers.

[0026] Retrofitting apparatus for an already existing machine of production of envelope of plastic material (25), consisting of a support structure (1), for feeding at least one continuous strip of adhesive tape (5) having a width between 1 cm and 5 cm, supplied by a single reel (2), supported by a reel support with embedded coaxial motor (3) but, in a preferred embodiment, also by an electric motor coupled to a gear motor, both mounted externally to the single reel (2).

[0027] Retrofitting apparatus fitted onto an existing machine of production of envelope of plastic material (25), consisting of a support structure (1), provided with a group rocker-arm of tape tension (4), which is supported by a fulcrum pin (4a) to which it is rigidly fixed, in coaxial manner, a moto-potentiometer (23) and, that unwinds the reel so that the non-adherent side of the adhesive tape (5) is accompanied in its travel from an assembly of tensioning, constituted by sliding rollers (13), which are supported by the higher leverage straight (4b) and the lower leverage L shaped (4c), and put in tensioning by the tension springs (7).

[0028] Retrofitting apparatus fitted to an existing machine of production of envelope of plastic material (25), consisting of a support structure (1), where the speed of rotation of the reel support with embedded coaxial motor (3) is varied in proportion to the position of inclination of the group rocker-arm of tape tension (4) which actuates the said moto-potentiometer (23), which reduces the speed of rotation of the reel support with embedded coaxial motor (3), when the tension of the adhesive tape (5) reduces and, increases the speed of rotation of the reel support with embedded coaxial motor (3), when the tension of the adhesive tape (5) increases, thus allowing an optimal feeding of said adhesive tape (5).

[0029] Retrofitting apparatus fitted to an existing machine of production of envelope of plastic material (25), consisting of a support structure (1), provided with a support (6a) for a tape reel stabilizer (6) that feeds the said adhesive tape (5) rotated 90° from a first support (20) of the pulley (8) that also supports a cutter (9) which splits the said adhesive tape (5) in

two semi half (5a, 5b), after which the said adhesive tape (5) is just transited on the second support (20) of the pulley (8).

[0030] Retrofitting apparatus fitted to an existing machine of production of envelope of plastic material (25), consisting of a support structure (1), which feeds the first semi-half (5a) of adhesive tape (5) rotated still of 180°, towards a pulley (8) supported by a support axle (15) fixed in adjustable manner on a longitudinal member of upper support (14), and feeds the second semi-half (5b) of adhesive tape (5) rotated still of 180°, towards a pulley (8) supported by a support axle (16) fixed in adjustable manner on a longitudinal member of upper support (14).

[0031] Retrofitting apparatus fitted to an existing machine of production of envelope of plastic material (25), consisting of a support structure (1), which feeds the first semi-half (5a) of adhesive tape (5) rotated still of 180°, towards a pulley (8), and directs said semi half (5a) of adhesive tape (5) rotated of another 90° to a guide roller (10) supported by a support axle (17) fixed in adjustable manner, the which in turn directs said semi half (5a) of adhesive tape (5) to a steel roller (12) on which slides a plastic film laminate (26) and, on which is in direct pressure contact a rotating circular blade of pre-cut (11a), supported by an adjustable bracket (21), fixed in a movable manner on a longitudinal member of lower support (19), from under which outcomes the first said semi-half (5a) of the adhesive tape (5), adhered and provided with pre-cut (24), to the said plastic film laminate (26) for the subsequent production of envelope of plastic material (25).

[0032] Retrofitting apparatus fitted to an existing machine of production of envelope of plastic material (25), consisting of a support structure (1),

which feeds simultaneously also the second semi-half (5b) of the adhesive tape (5) rotated still of 180°, towards a pulley (8), and directs said semi half (5b) of adhesive tape (5) rotated of another 90° to a guide roller (10) supported by a support axle (18) fixed in an adjustable manner, which in turn directs said semi half (5b) of adhesive tape (5) to a steel roller (12) on which slides a plastic film laminate (26) and, on which is in direct pressure contact a rotating circular blade of pre-cut (11b), supported by an adjustable bracket (22), fixed in a movable manner on a longitudinal member of lower support (19), from under which outcomes, simultaneously with the first semi-half (5a), the second semi half (5b) of adhesive tape (5), adhered and provided with pre-cut (24), to the said plastic film laminate (26) for the subsequent production of envelope of plastic material (25).

[0033] The forms shown in the drawings are merely illustrative but not exhaustive.

References

1) support structure
2) single reel of adhesive tape
3) reel support with embedded coaxial motor
4) rocker-arm of tape tension
4a) fulcrum pin
4b) upper leverage straight
4c) lower leverage L shaped
5) adhesive tape

5a) semi right half

5b) semi left half

6) tape reel stabilizer

6a) support

7) tension springs

8) tape guide pulleys

9) cutter

10) guide roller

11a) rotating circular blade of pre-cut

11b) rotating circular blade of pre-cut

12) steel roller

13) sliding rollers

14) longitudinal member of upper support

15) support axle

16) support axle

17) support axle

18) support axle

19) longitudinal member of lower support

20) "L" shaped brackets

21) adjustable bracket

22) adjustable bracket

23) moto-potentiometer

24) pre-cut

25) envelope of plastic material

26) plastic film laminate

CLAIMS

1. Apparatus for a machine of production of envelopes of plastic material (25) intended for packaging of plants and flowers, comprising a support structure (1), **characterized in that** it is powered with at least a continuous strip of adhesive tape (5) of width between 1 cm and 5 cm, supplied by a single reel (2), unwound by a reel support with embedded coaxial motor (3), and wherein it comprises a rocker-arm of tape tension (4), which is supported by a fulcrum pin (4a) to which it is rigidly fixed, in a coaxial manner, a moto-potentiometer (23) so as to unroll the reel (2) in such a way that the non-adherent side of the adhesive tape (5) is accompanied in its run by a tensioning assembly, consisting of sliding rollers (13), which said sliding rollers (13) are supported by the upper leverage straight (4b) and the lower leverage L shaped (4c) and said adhesive tape (5) so as to be put in tension by the tension springs (7).

2. Apparatus for a machine for the production of envelope of plastic material (25) intended for packaging of plants and flowers, consisting of a support structure (1) according to claim 1, **characterized in that** the speed of rotation of the reel support with embedded coaxial motor (3) is varied in proportion to the tilt position of the rocker-arm of tape tension (4) which actuates the said moto-potentiometer (23), which reduces the speed of rotation of the reel support with embedded coaxial motor (3), when the tension of the adhesive tape (5) is reduced, and increases the speed of rotation of the reel support with embedded

coaxial motor (3), when the tension of the adhesive tape (5) increases, thus allowing an optimal feeding of said adhesive tape (5).

3. Apparatus for a machine for the production of envelope of plastic material (25) intended for packaging of plants and flowers, consisting of a support structure (1) according to claim 1 and 2 **characterized in that** it is provided with a support (6a) for a tape reel stabilizer (6) that feeds the said adhesive tape (5) rotated of 90° from a first support (20) of the pulley (8) that also supports a cutter (9) which splits the said adhesive tape (5) in two semi half (5a, 5b), after which the said adhesive tape (5) is just transited on the second support (20) of the pulley (8).

4. Apparatus for a machine for the production of envelope of plastic material (25) intended for packaging of plants and flowers, consisting of a support structure (1) according to claim 1, 2 and 3, **characterized in that** feeds the first semi half (5a) of adhesive tape (5) still rotated of 180°, to a pulley (8) supported by a support axle (15) fixed in an adjustable manner on a longitudinal member of upper support (14) and, simultaneously feeds the second semi half (5b) of adhesive tape (5) still rotated of 180°, to a pulley (8) supported by a support axle (16) fixed in adjustable manner on a longitudinal member of upper support (14).

5. Apparatus for a machine of production of envelope of plastic material (25) the preceding claims, **characterized in that** feeds the first semi half (5a) of adhesive tape (5) rotated still of 180°, to a pulley (8) and, directs said semi half (5a) of adhesive tape (5) rotated of another 90° to a guide roller (10) supported by a support axle (17) fixed in an

adjustable manner, which in turn directs said semi half (5a) of adhesive tape (5) to a steel roller (12) on which slides a plastic film laminate (26) and, on which is in direct pressure contact a rotating circular blade of pre-cut (11a), supported by an adjustable bracket (21), fixed in a movable manner on a longitudinal member of lower support (19), which outcomes from under the first said semi half (5a) of adhesive tape (5), adhered and provided with pre-cut (24), to said plastic film laminate (26) and, simultaneously also feeds the second semi half (5b) of adhesive tape (5) still rotated of 180°, to a pulley (8), and directs said semi half (5b) of adhesive tape (5) rotated of another 90° to a guide roller (10) supported by a support axle (18) fixed in an adjustable manner, which in turn directs said semi half (5b) of adhesive tape (5) towards a steel roller (12) on which slides a plastic film laminate (26) and, on which is in direct pressure contact a rotating circular blade of pre-cut (11b), supported by an adjustable support (22), fixed in a movable manner on a longitudinal member of lower support (19), from under which outcomes, simultaneously with the first semi half (5a), the second semi half (5b) of adhesive tape (5), adhered and provided with pre-cut (24), to said plastic film laminate (26), for the subsequent production of envelope of plastic material (25).

6. Apparatus for a machine for the production of envelope of plastic material (25) intended for packaging of plants and flowers, consisting of a support structure (1) according to the preceding claims, **characterized in that** the support structure (1), comprises means for applying and pre-incise, by means of rotating circular blade of pre-

cut (11a, 11b), at least one continuous strip of adhesive tape (5) having a width between 1 cm and 5 cm, and supplied by a single reel (2) of continuous strip of adhesive tape (5), for then split by a cutter (9), said continuous strip of adhesive tape (5) in at least two semi half (5a, 5b) to be applied on at least two sides of an envelope of plastic material (25) and, pre-cut from said blades of pre-cut (11a, 11b), to allow the tear opening of at least one side of said envelope of plastic material (25), intended for packaging of plants and flowers, in such a way that, applying the said strips of adhesive tape (5a, 5b) with said pre-cut, to the plastic film laminate (26), for the subsequent production of envelope of plastic material (25), is improved the resistance to mechanical stress, of said envelopes of plastic material (25).

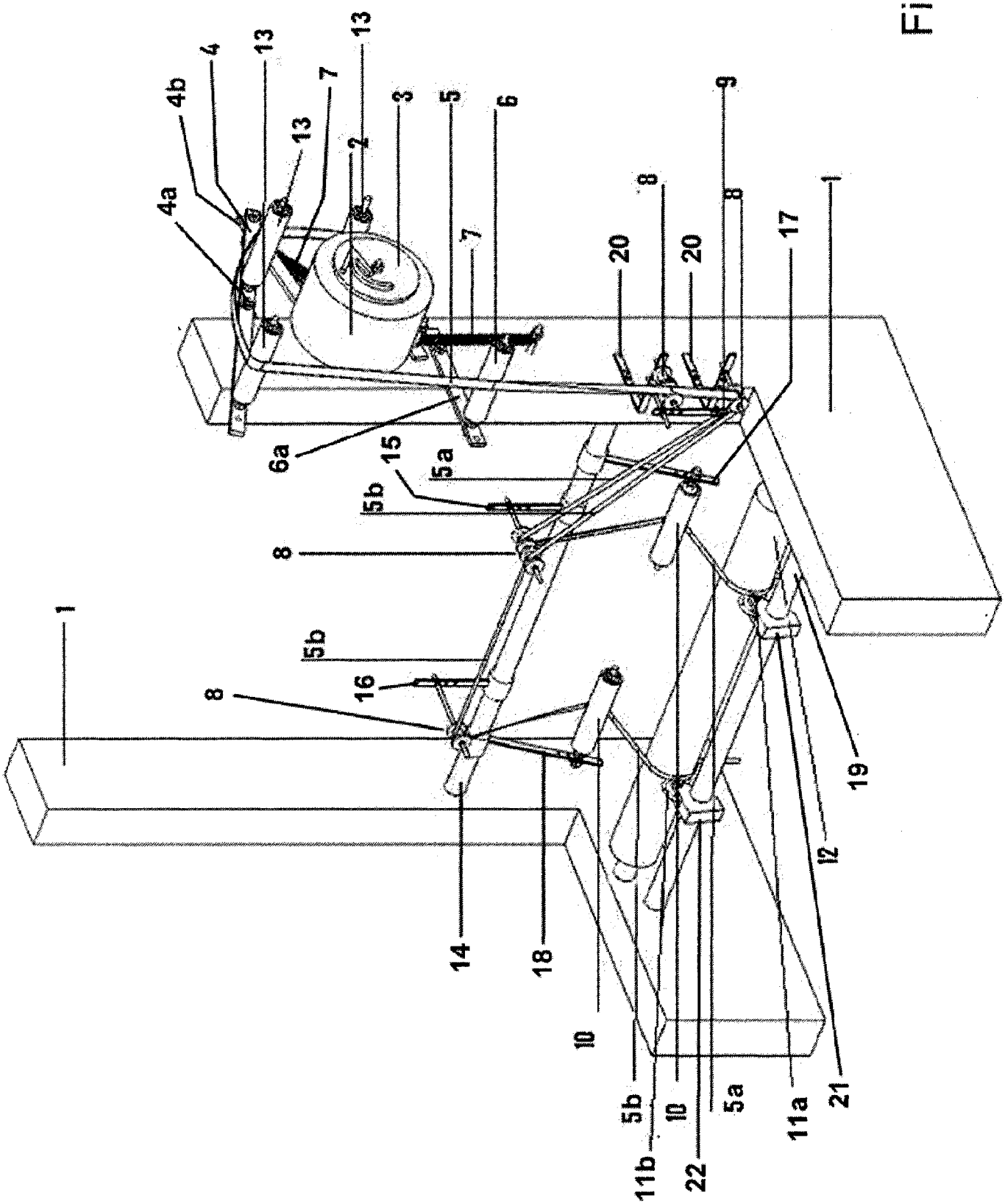
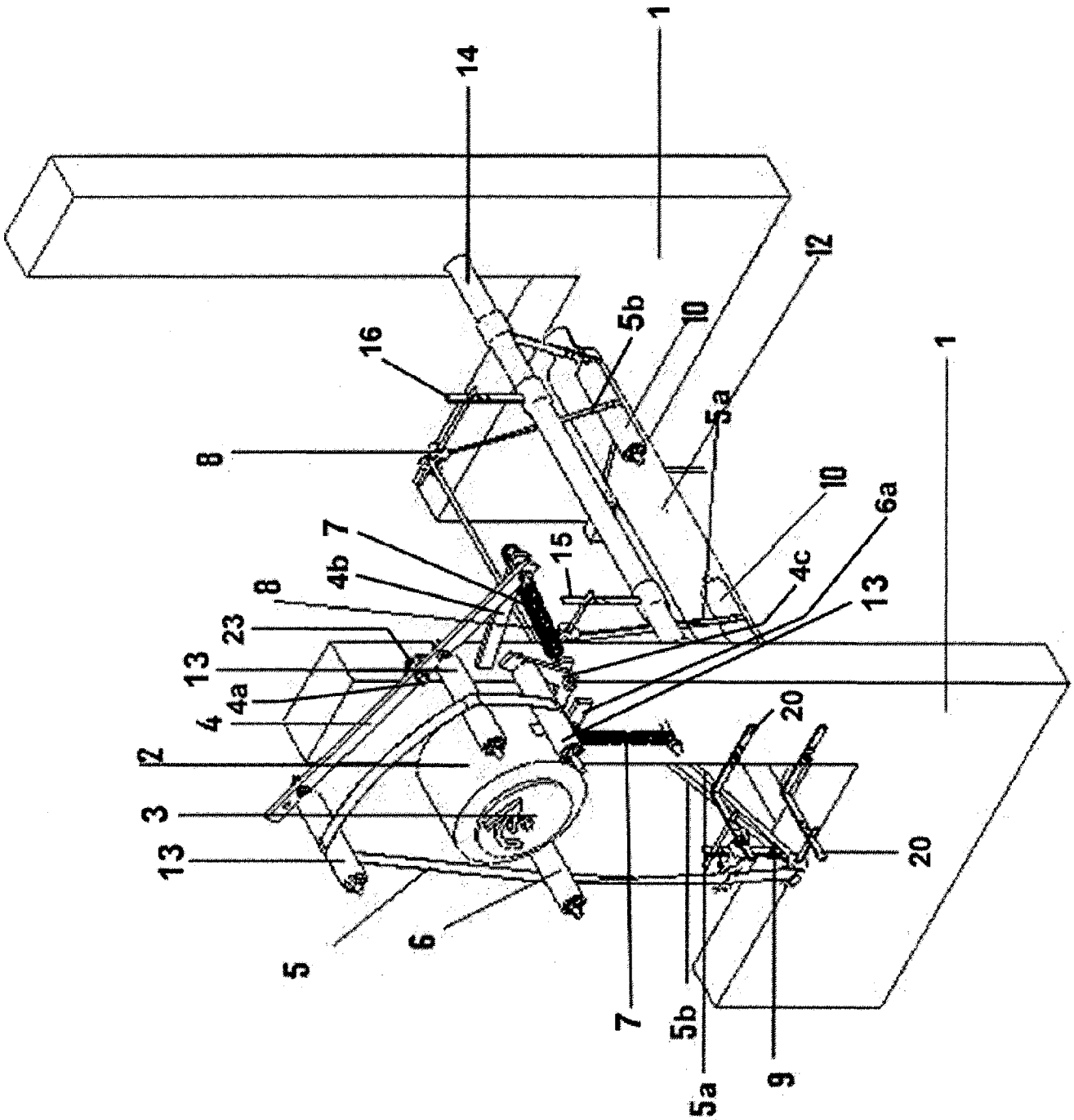


Fig.1

Fig.2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8
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1
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6a
7
15
4b
4c
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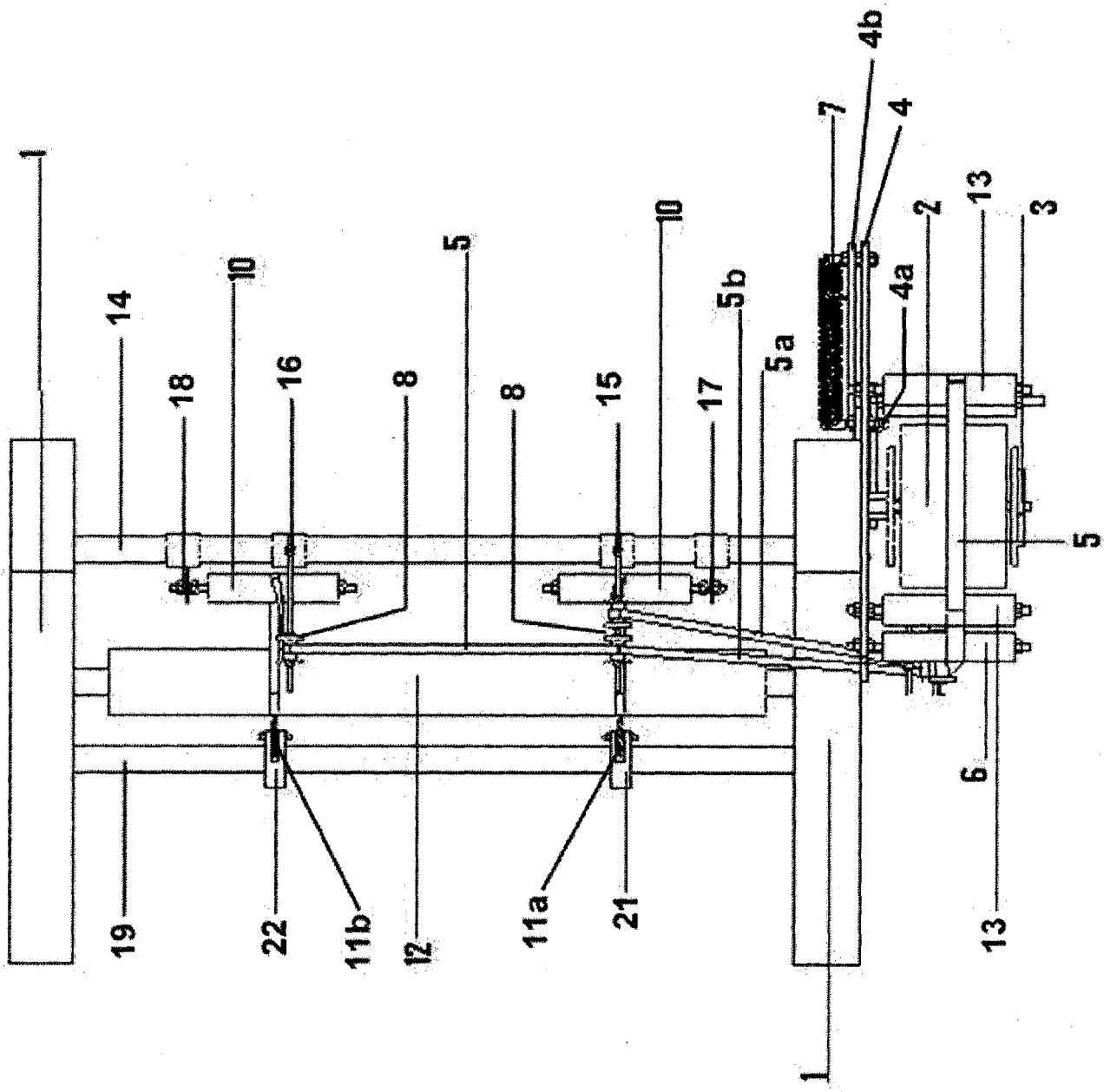
4a
4
20
2
3
20
13
5
6
7
5b
5a
9

Fig.3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10
17
5b
5a
4b
7
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2
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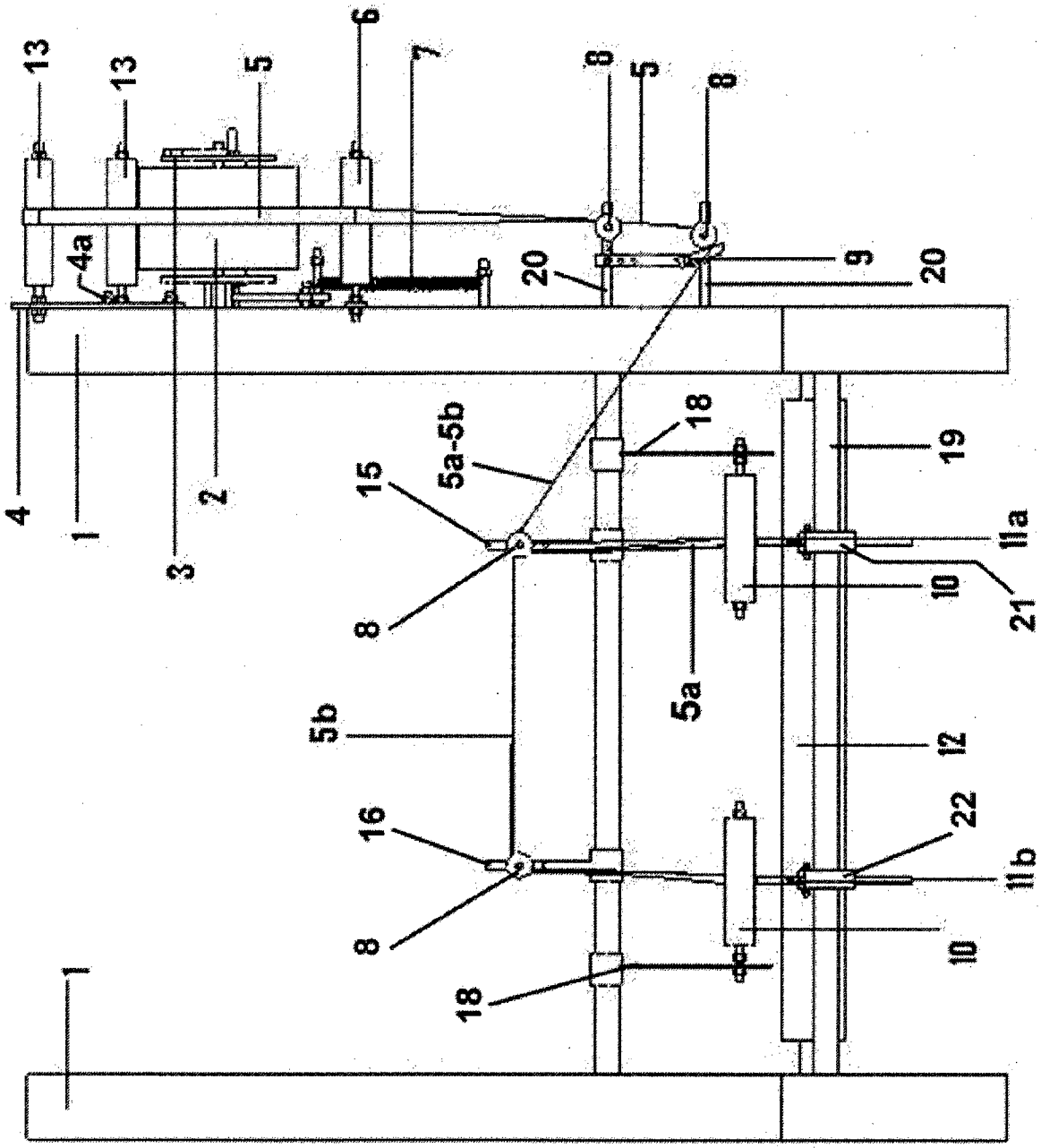
1
19
22
11b
12
11a
21

Fig.4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5
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7
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5
8
4a
20
9
20
4
1
3
2
5a-5b
18
19
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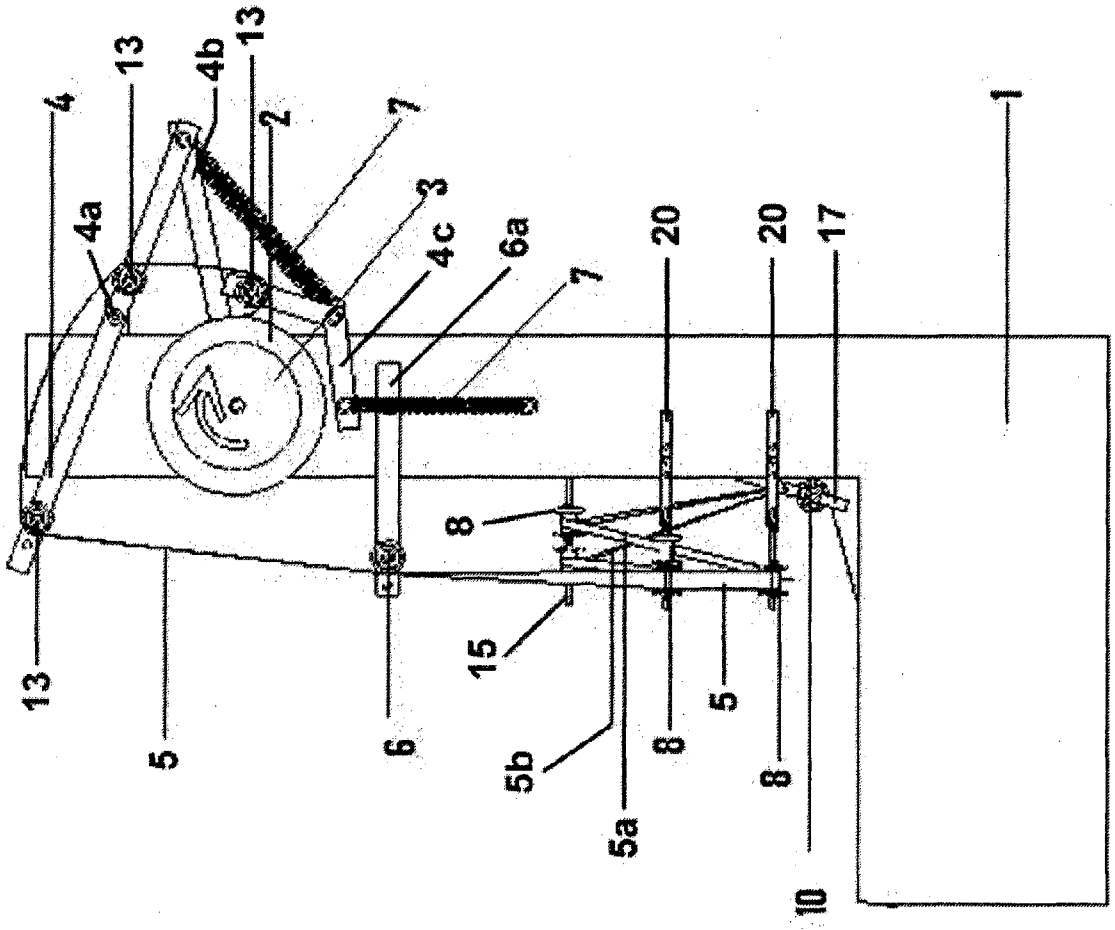
11a
8
10
21
5a
5b
12
16
22
11b
8
10
1
18

Fig.5



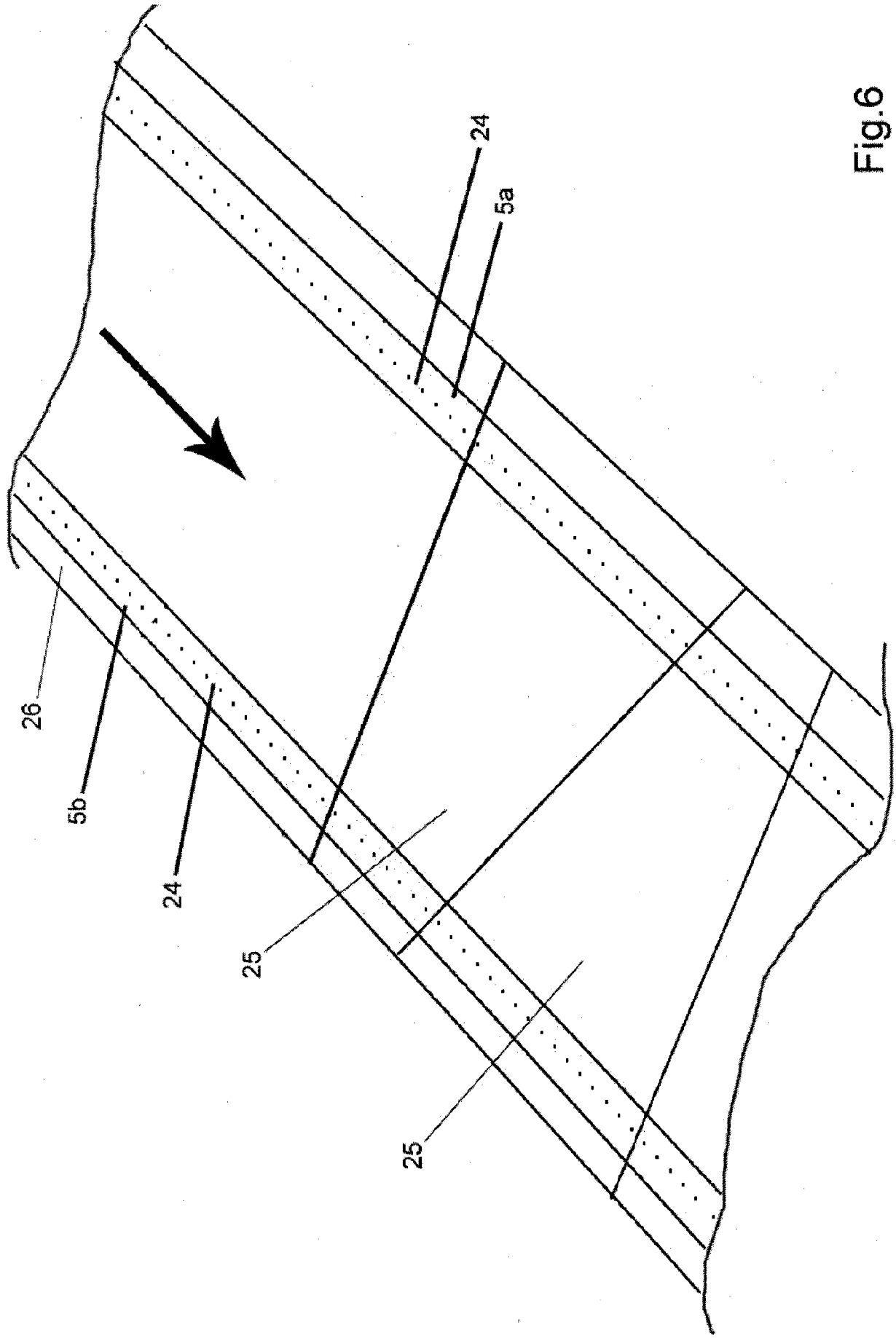


Fig.6

INTERNATIONAL SEARCH REPORT

International application No
PCT/IB2013/001205

A. CLASSIFICATION OF SUBJECT MATTER
INV. B31B1/00
ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
B31B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	GB 992 966 A (KLEEN STIK PRODUCTS INC) 26 May 1965 (1965-05-26) cited in the application page 4, line 72 - page 17, line 64 figures 1a-24	1
A	US 4 957 571 A (CIPOLLA PETER C [US]) 18 September 1990 (1990-09-18) column 2, line 43 - column 6, line 68 figures 1-5	1-6
A	US 2006/045393 A1 (DANIELS MARK E [US] ET AL) 2 March 2006 (2006-03-02) paragraph [0053] - paragraph [0088] figures 1-5	1-6

-/--

[X] Further documents are listed in the continuation of Box C.

[X] See patent family annex.

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"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
27 March 2014	02/04/2014

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Rodriguez Gombau, F

INTERNATIONAL SEARCH REPORT

International application No
PCT/IB2013/001205

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

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A	US 5 820 712 A (WEDER DONALD E [US] ET AL) 13 October 1998 (1998-10-13) column 2, line 42 - column 13, line 65 figures 1-24	1-6
A	US 2001/039756 A1 (WEDER DONALD E [US] ET AL) 15 November 2001 (2001-11-15) paragraph [0037] - paragraph [0136] figures 1-28	1-6

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