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(54) Apparatus for feeding and cutting single or double wrapping material for packaging products

(57) An apparatus for feeding and cutting single or double wrapping material for packaging products composed of an outer sheet and an inner sheet which are superimposed and have two respective mutually offset edges, comprising a frame (2) that supports a first traction device (4) and a second traction device (5) respectively for drawing a first ribbon and a second ribbon of wrapping material wound on reels, and a device (6) for cutting the first and second ribbons into the outer and inner sheets, the first and second traction devices (4, 5) being suitable to unwind the first and second ribbons at different speeds, so as to provide an offset between the edges of the first and second ribbons, the cutting device (6) being suitable to cut simultaneously the first and second ribbons when the intended offset is achieved.

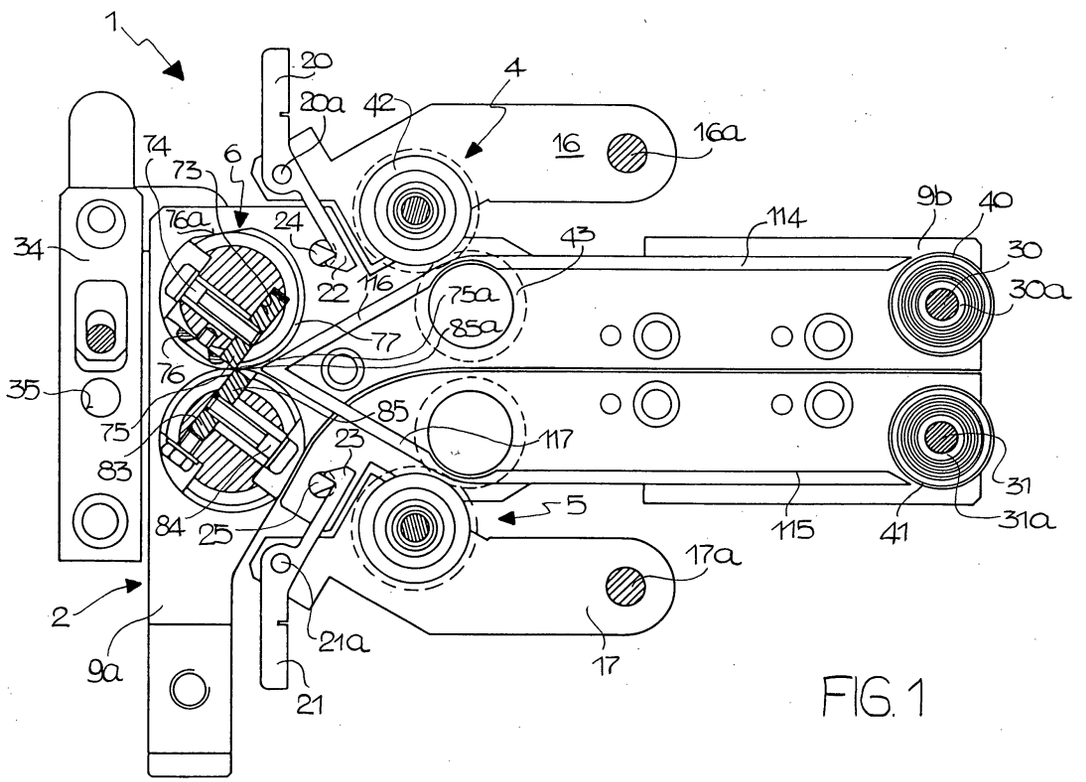

FIG. 1

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Description

[0001] The present invention relates to an apparatus for feeding and cutting single or double wrapping material for packaging products.

[0002] In known applications, the wrapping is generally constituted by two superimposed sheets made of different material and cut from ribbons wound in reels; the inner sheet is for example made of aluminum, paper or the like and is in contact with the product, and the other sheet, the outer one, is for example made of cellophane or other material that allows heat-sealing or gluing, and bears indications regarding the product itself.

[0003] Packaging generally occurs by surrounding the product with the wrapping, which must be closed by folding (for example in packages of the types known as single- or double-twist) or by means of a heat-sealing line provided on the cellophane, by means of a pad that works at a suitable temperature, as occurs for example for sleeve-type packages. To prevent the action of the pad from being applied between the aluminum and the cellophane, therefore preventing effective heat-sealing, in these last types of package, the wrapping must be produced so that the inner aluminum sheet is offset with respect to the outer sheet, so that after wrapping there is a sufficiently large region of contact between mutually opposite flaps of the outer sheet.

[0004] In the case instead of packages of kinds that do not have the heat-sealing line, for example for a double-twist package, the offset prevents the inner sheet from protruding from the outer one, thus becoming visible and compromising the aesthetic qualities of the product.

[0005] In the single-twist package type, moreover, it is necessary to introduce this offset not only to protect the aesthetic qualities of the product by also due to folding requirements while placing the wrapping around the product itself.

[0006] To meet these requirements, devices for feeding and cutting a single or double wrapping have been perfected which are very complicated in terms of construction and operation and have a high production cost. Moreover, since these devices are actuated entirely mechanically, it is necessary to replace elements of this actuation system whenever one wishes to change the offset between the inner sheet and the outer sheet.

[0007] The aim of the present invention is to provide a device for feeding and cutting a single or double wrapping material for packaging products, constituted by two superimposed sheets, which is capable of providing continuously wrappings characterized by a suitable offset, along the feeding direction, between said two sheets.

[0008] Within this aim, an object of the present invention is to provide an apparatus that allows to control the extent of the offset between the sheets without resorting to the replacement of mechanical parts.

[0009] Another object of the present invention is to provide an apparatus that is servocontrolled with the aid of an electronic computer.

[0010] Another object of the present invention is to provide an apparatus that is simple, relatively easy to provide in practice, safe in use, effective in operation, and has a relatively low cost.

[0011] This aim and these and other objects that will become better apparent hereinafter are achieved by the present apparatus for feeding and cutting single or double wrapping material for packaging products composed of an outer sheet and an inner sheet which are superimposed and have two respective mutually offset edges, comprising a frame that supports a first traction device and a second traction device respectively for drawing a first ribbon and a second ribbon of wrapping materials wound on reels, and a device for cutting said first and second ribbons into said outer and inner sheets, characterized in that said first and second traction devices are suitable to unwind said first and second ribbons at different speeds, so as to provide an offset between said edges of said first and second ribbons, said cutting device being suitable to cut simultaneously said first and second ribbons when the intended offset is achieved.

[0012] Further characteristics and advantages of the invention will become better apparent from the following detailed description of preferred but not exclusive embodiments of an apparatus for feeding and cutting single or double wrapping material for packaging products according to the invention, illustrated only by way of nonlimitative example in the accompanying drawings, wherein:

Figure 1 is a side elevation view of the apparatus according to the invention;
Figure 2 is a partially sectional plan view of the apparatus;
Figure 3 is a partially sectional front view of the first and second traction devices;
Figure 4 is a partially sectional front view of the cutting device;
Figure 5 is a partially sectional front view of constructive details of the apparatus;
Figure 6 is a side elevation view of a different embodiment of the apparatus.

[0013] With reference to the figures, the reference numeral 1 generally designates an apparatus for feeding and cutting single or double wrapping material according to the invention. The apparatus is composed, in a known manner, of a frame 2, which is mounted on a vertical shoulder 3 of the framework of the apparatus. The frame is substantially symmetrical with respect to a horizontal plane that is perpendicular to the shoulder. The shoulder 3 also supports the reels, not shown in the drawings, of the first ribbon and of second ribbon of wrapping material. The frame 2 supports, according to the invention, a first traction device for drawing the first ribbon, generally designated by the reference numeral

4, and a second traction device for drawing the second ribbon, generally designated by the reference numeral 5; said devices are arranged symmetrically with respect to the plane of symmetry of the frame. The frame also supports a device for cutting the first and second ribbons, which are superimposed, into an outer sheet and an inner sheet; the cutting device is generally designated by the reference numeral 6.

[0014] The frame 2 comprises a hollow box-like body 7, provided with a removable cover 8, which protrudes into a vertical wall 9 that is parallel thereto and is supported by a cross-member 10 and by two welded plates, not shown in the drawings. A front end 9a and a rear end 9b are present on said vertical wall.

[0015] The position of the frame 2 is adjustable at will on the vertical shoulder 3, since there is a horizontal threaded bar 11 and a vertical threaded bar 12; the bars are supported in the box-like element 7 by thrust bearings 13 and are respectively engaged in a horizontal female thread 14 and in a vertical female thread 15, which are rigidly coupled to the shoulder 3.

[0016] The frame 2 further comprises a first pair of plates 16 and a second pair of plates 17, which can rotate respectively about the axes 16a and 17a, which are symmetrical with respect to the plane of symmetry of the frame, said plates are provided with a respective first pair of slotted seats 16b and with a second pair of slotted seats 17b, which are affected at right angles by a first pair of threaded holes 16c and by a second pair of threaded holes 17c. The plates of each one of said first and second pairs of plates are mutually connected respectively by a first transverse panel 18 and a second transverse panel 19.

[0017] Said first pair of plates 16 and said second pair of plates 17 can be anchored to the frame by means of a respective first pair of locking levers 20, pivoted to the axis 20a, and second pair of locking levers 21, pivoted on the axis 21a. The first pair of locking levers 20 and the second pair of locking levers 21, mutually connected by horizontal rods not shown in the drawings, are in fact provided with a respective first pair of hook-like protrusions 22 and second pair of hook-like protrusions 23, which correspondingly engage on a first pair of teeth 24 and on a second pair of teeth 25, formed on the cover 8 and on the vertical wall 9 of the frame 2.

[0018] The frame 2 has an upper pair of cylindrical through seats 26 and a lower pair of cylindrical through seats 27, which lie mutually opposite and have a horizontal axis and are provided in pairs on the cover 8 and at the front end 9a of the vertical wall 9. Likewise, an upper pair of through holes 28 and a lower pair of through holes 29 which are mutually opposite and have a horizontal axis are formed in the cover and in a central region of the vertical wall.

[0019] An upper stem 30 and a lower stem 31 are present at the rear end 9b, are rigidly coupled to the respective ends 30a, 30b and 31a, 31b, lie at right angles to the shoulder 3 and also protrude toward said shoulder.

[0020] The frame is completed by a support 32, which protrudes from the box-like body 7 at right angles to the shoulder 3 and is provided with a first upright 33 and with a second upright 34 on which there are two through openings 35, which have a horizontal axis and are arranged in a lower region, and two vertical slots 36, and a first female thread 37 and a second female thread 38, both of which have a vertical axis, are formed in an upper region and intersect said slots.

[0021] An upper hollow cylindrical element 40 and a lower hollow cylindrical element 41 are respectively fitted on the upper stem 30 and on the lower stem 31 and are rotatably supported by corresponding pairs of bearings 39; said cylindrical elements are suitable to convey respectively the first and second ribbons within the apparatus.

[0022] According to the invention, the first traction device 4 comprises an upper roller 42 and a lower roller 43 whose axes are horizontal and perpendicular to the shoulder 3; said rollers are mutually in contact along a generatrix and are covered, in their central region, with material having good elastic properties, such as for example rubber. Respective pluralities of transverse grooves 42a and 43a are formed on the lateral surfaces of the rollers.

[0023] The lower roller 43 is mounted in the upper pair of through holes 28 and has, at its opposite ends, an inner tab 43b and an outer tab 43c: the inner tab cantilevers into the box-like body 7, while the outer tab cantilevers out beyond the vertical wall 9; the lower roller 43 is supported rotatably by bearings 44 within said upper pair of through holes and has a sealing ring 44a on the cover 8. A driving gear 45 and a ring gear 46 are keyed onto the inner tab 43b, inside the box-like body, are locked by means of a first lug 47, and are locked axially by means of a first ring 47a. At the opposite end, proximate to the vertical wall 9, there is a lower gear 48 keyed thereto, while a driving pulley 49 is fixed on the outer cantilevered tab 43c in abutment against a spacer 49a, by means of a second lug 50 and is fixed axially by a first nut 50a.

[0024] The upper roller 42, which has a tubular cylindrical shape, is mounted, so that it is supported rotatably by bearings 51, on a first bar 52, which is inserted in the first pair of slotted seats 16b of the first pair of plates 16. The first bar 52 is fixed inside the first pair of slotted seats by way of a first pair of grub screws 53, which engage in the first pair of threaded holes 16c and act on a first pair of helical springs 54. An upper gear 55 is rigidly coupled to the upper roller 42, proximate to the vertical wall 9, and meshes with the lower gear 48, and there are thrust bearings 56 in the assembly of the upper roller 42 on the first bar 52 in order to define the axial position of said roller with respect to the first pair of plates 16.

[0025] The second traction device 5 comprises a first roller 57 and a second roller 58, which have horizontal axes that are perpendicular to the shoulder 3 and are

mutually in contact along a generatrix and are covered, in the central region, with material having good elastic properties, such as for example rubber. Respective pluralities of circumferential notches 57a and 58a are formed on the surfaces of the rollers.

[0026] Respective ends, an inner one 57a that cantilevers into the box-like body 7 and an outer one 57b, are formed in the first roller. A driven gear 59 is keyed on the inner end, meshes with the driving gear 45, and is locked by a third lug 60 and is locked axially by a second ring 60a. A first gear 61 is instead keyed on the outer end, internally with respect to the vertical wall 9, while the first roller 57 is axially rigidly coupled by a second nut 61a. The first roller is supported rotatably by two bearings 62, which are inserted in the lower pair of through holes 29, and is provided on the cover 8 with a sealing ring 62a.

[0027] The second roller 58, which has a tubular cylindrical shape, is mounted, so that it is supported rotatably by bearings 63, on a second bar 64, which is inserted in the second pair of slotted seats 17b of the second pair of plates 17. The second bar 64 is fixed inside the second pair of slotted seats by way of a second pair of grub screws 65, which are engaged in the second pair of threaded holes 17c and act on a second pair of helical springs 66. A second gear 67 is rigidly coupled to the second roller 58, proximate to the vertical wall 9, and meshes with the first gear 61, while thrust bearings 68 are provided in the assembly of the second roller on the second bar 64 in order to determine the axial position of said roller with respect to the second pair of plates 17.

[0028] The cutting device 6 comprises a first shaft 69 and a second shaft 70, which have parallel axes that lie within the same vertical plane. The first shaft 69 is constituted by a central cylindrical portion 69a and by an inner tang 69b and an outer tang 69c, which have a smaller diameter and are coaxial to the central cylindrical portion. The first shaft is supported rotatably by bearings 71, which are coupled to thrust bearings 71a and sealing rings 71b inserted in the upper pair of cylindrical through seats 26, and its inner tang 69b has such a length that it passes beyond the box-like body 7 and the shoulder 3, being supported also by an additional bearing 71c arranged on the box-like body. A manual actuation handwheel 72 is rigidly coupled to the outer tang 69c so as to cantilever beyond the vertical wall 9, and is locked axially to said wall by a third ring 72a.

[0029] The central cylindrical portion 69a is provided with a first longitudinal slot 73, the central plane of which is not diametrical and is appropriately inclined with respect to the axis of said cylindrical portion. A first blade 75, shaped like a parallelepiped, is locked in said first slot by means of a first series of screws 74 arranged at right angles; the first cutting edge 75a of said blade protrudes from the lateral surface of the cylindrical portion, and the first blade abuts against a first series of removable plates 76. The cylindrical portion 69a further has a first plurality of collars 77, which have a chamfer 77a that is tangent to the lateral surface of said cylindrical portion and is provided in a diametrically opposite position with respect to the first cutting edge 75a. A gear with a double set of teeth 78 is rigidly fitted over the inner tang 69b of the first shaft 69, is suitable to recover the plays in meshing and is located inside the box-like body 7; said inner tang, which cantilevers beyond the shoulder 3, is connected to a universal joint 79.

[0030] The second shaft 70 has a central expansion 70a, which has the same diameter as the central portion 69a of the first shaft, and has an inner end region 70b and an outer end region 70c, which have a smaller diameter and are coaxial to the central expansion. The second shaft is supported rotatably by bearings 80, which are inserted in the lower pair of cylindrical through seats 27; there are also thrust bearings 80a at the vertical wall 9 and a sealing ring 80b on the cover 8. A pinion 81 is fixed on the inner end region 70b and meshes with the double-toothed gear 78, while in the outer end region axial locking occurs by means of a fourth ring 82.

[0031] The expansion 70a is provided with a second longitudinal slot 83, whose central plane is parallel to a diametrical plane and does not pass through the axis of the second shaft. A second blade 85 shaped like a parallelepiped is fixed in said slot by means of a second series of screws 84, and its second sharp edge 85a protrudes from the lateral surface of the expansion 70a. A second plurality of collars 86 is further provided on said lateral surface; said collars are offset with respect to the first plurality of collars 77 provided on the cylindrical portion 69a of the first shaft 69.

[0032] A gap 86a is therefore present between the first shaft 69 and the second shaft 70 and allows the sliding of the superimposed first and second ribbons.

[0033] The support 32 of the frame 2 supports a device for supporting the wrapping after cutting, suitable to convey the wrapping onto the product, generally designated by the reference numeral 87. Such device is constituted by an upper shaft 88 and a lower shaft 89, which are mutually adjacent in a vertical direction and face the cutting device; said shafts are respectively provided, in the central region, with a first covering 88a and with a second covering 89a, preferably made of rubber, which have a first plurality of circumferential grooves 88b and a second plurality of circumferential grooves 89b formed on the two shafts in mutually corresponding axial positions. Said grooves are crossed by surfaces for supporting the wrapping, which are not shown in the drawings.

[0034] The upper shaft 88 enters the pair of vertical slots 36 and is rotatably supported by bearings 90 that are applied within a first bush 91 and a second bush 92. Said bushes, accommodated inside the vertical slots, are provided with a first flat portion 91a and a second flat portion 92a, which are orientated toward the first female thread 37 of the first upright 33 and the second female thread 38 of the second upright 34. An inner grub screw 93 and an outer grub screw 94 respectively en-

gage in the female threads and act on a respective inner spring 95 and outer spring 96. The inner spring 95 abuts against the first flat portion 91a, while the outer spring 96 abuts against the second flat portion 92a. The upper shaft, which in this manner has a degree of freedom in a vertical direction, is locked axially, with respect to the uprights of the support, internally by a pair of thrust bearings 97 and externally, in the segments that cantilever with respect to said uprights, by a first stop ring 98 proximate to the first upright 33 and by an upper sprocket 99 that is keyed thereat proximate to the second upright 34.

[0035] The lower shaft 89 is supported rotatably by bearings 100 which are arranged in the pair of through openings 35. In the segments that cantilever with respect to the uprights, the shaft finds an axial reference by way of a second stop ring 101 proximate to the first upright 33, proximate to the second upright by way of the presence of a lower sprocket 102, which meshes with the upper sprocket 99 and is coupled to a driven pulley 103. Thrust bearings 104 are also provided externally with respect to the uprights.

[0036] A means for opening the wrapping supporting device, generally designated by the reference numeral 105, is provided at the top of the first upright 33. Said means is composed of a pivot 106, which passes through said upright and is rigidly coupled thereto by way of a respective third stop ring 107 on one side and a center bearing 108 on the other side. An opening lever 109 is connected to the pivot 106 and is provided, at one end, with an actuation knob 110 and, at the other end, with a disk-like protrusion 111 with a hole 112 that is eccentric with respect to said protrusion. The pivot cantilevers with respect to the first upright 33 toward the shoulder 3 and enters said eccentric hole, while an arm 113 is pivoted at one end on the disk-like protrusion 111 and is articulated, at its other end, to the upper shaft 88, which is immobilized by the first stop ring 98.

[0037] The apparatus is completed by an upper ribbon guiding surface 114, which is rigidly coupled to the frame 2 and lies horizontally between the upper hollow cylindrical element 40 and the lower roller 43, and a lower guiding surface 115, which is arranged symmetrically with respect to the upper surface with reference to the imaginary plane of symmetry of the frame of the apparatus. Said surfaces are suitable to guide the sheets until they reach the cutting device 6. Said upper and lower surfaces are extended proximate to the cutting device 6, respectively with a first inclined wall 116 and a second inclined wall 117, which mutually converge and join on the plane of symmetry at the first shaft 69 and the second shaft 70.

[0038] The operation of the apparatus according to the invention is as follows. The first and second ribbons of the wrapping materials, gathered in reels, are drawn respectively by the first traction device 4 and by the second traction device 5. In detail, the lower roller 43 receives its motion from a motor, not shown in the drawings, by way of the ring gear 46. Such motion is transmitted to the first roller 57 by meshing between the driving gear 45 and the driven gear 59, which have a different number of teeth. The lower roller 43 further transmits the motion to the upper roller 42, by meshing between the lower gear 48 and the upper gear 55, which have the same number of teeth. In turn, the first roller 57 drives the second roller 58 by way of the meshing of the first gear 61 with the second gear 67, which have the same number of teeth.

[0039] From the above description it is evident that the lower roller 43 and the upper roller 42 rotate at the same speed but in opposite directions; the same occurs for the first roller 57 and the second roller 58, which however have different speeds with respect to the upper roller and the lower roller.

[0040] By way of the first pair of springs 54 and of the second pair of springs 66, which impart a force that can be adjusted by way of the first pair of grub screws 53 or the second pair of grub screws 65, the upper roller 42 is compressed onto the lower roller 43 and the second roller 58 is compressed onto the first roller 57. This ensures sufficient friction between the rollers to draw between them respectively the first ribbon and the second ribbon, which accordingly slide on the guiding surfaces 114 and 115 and on the inclined walls 116 and 117 at different speeds.

[0041] This advancement at different speeds causes an offset between the first ribbon and the second ribbon, which by being conveyed by the inclined walls join proximate to the cutting device 6. The first shaft 69 receives its motion from the universal joint 79, which is driven by a motor that is not shown in the drawings. By way of the meshing between the double-toothed gear 78 and the pinion 81, the motion is transmitted from the first shaft 69 to the second shaft 70. Since the double-toothed gear 78 has twice as many teeth as the pinion 81, the second shaft rotates at twice the speed of the first shaft, but in the opposite direction. In this manner, for every two turns of the second shaft 70 the first blade 75 encounters the second blade 85, and their respective cutting edges 75a and 85a, due to the inclination of the first blade with respect to a diametrical plane, cut the first and second ribbons, which are superimposed and can slide in the gap 86a between the first and second shafts: this cutting occurs when the offset between the first and second ribbons has reached the intended extent. The chamfer 76a on the first shaft avoids the interference that would occur between the second blade 85 and the first plurality of collars 76 during the turns that are alternated with those in which the first and second blades meet.

[0042] The lower shaft 43, furthermore, is capable of driving also the device for supporting the wrapping 87 by way of the driving pulley 49, which is connected to the driven pulley 103 by means of a belt, not shown in the drawings. The upper shaft 88 and the lower shaft 89, kept in mutual contact by the action of the inner spring 95 and of the outer spring 96, convey the wrap-

ping onto the product, preventing it from falling due to gravity or from forming wrinkles that might compromise the arrangement of the wrapping around the product itself, conveying the two sheets onto the product to be wrapped.

[0043] If it is necessary to act on one of the two ribbons, if it has jammed within the various devices of the apparatus and it is necessary to restore operation by removing it or placing it back in the correct position, it is possible to act, in the first or second traction device respectively, on the first pair of locking levers 20 or on the second pair of locking levers 21, disengaging the pairs of hook-like tabs 22 or 23 from the pairs of teeth 24 or 25, thus lifting the upper roller 42 from the lower one 43 or lowering the second roller 58 with respect to the first roller 57 by rotation respectively of the first pair of plates 16 about the axis 16a and of the second pair of plates 17 about the axis 17a.

[0044] If instead it is necessary to remove the sheets that constitute the wrapping from the supporting device 87, one acts on the opening lever 109, which by being rotated appropriately about the pivot 106, as a consequence of the eccentricity of the disk-like element 111 with respect to the axis of said pivot causes the lifting of the upper shaft 88 in contrast with the inner spring 95 and the outer spring 96, said shaft being drawn by the arm 113. This produces a gap between the first covering 88a and the second covering 89a that is sufficient to extract any jammed sheets.

[0045] A second embodiment of the apparatus uses a second motor to drive the first roller 57 of the second traction device instead of a transmission produced by meshing of the driving gear 45 with the driven gear 46, thus rendering the offset between the first and second ribbons independent of the rigid transmission ratio between the driving gear and the driven gear.

[0046] A third embodiment of the apparatus, shown in Figure 6, uses a different cutting device, generally designated by the reference numeral 200. This device comprises a cutting shaft 201, provided with a movable blade 202, which cooperates with a fixed blade 203.

[0047] In particular, the cutting shaft 202, supported rotatably by bearings and driven by a gearmotor assembly, not shown in the figure, has a longitudinal slot 204 that forms two mutually perpendicular surfaces. Said surfaces accommodate the movable blade 202 so that it rests on respective mutually perpendicular lateral surfaces; said blade is elongated and shaped like a parallelepiped and is rigidly coupled to said surfaces. The fixed blade 203 is also substantially elongated and shaped like a parallelepiped and is fixed to the frame 2 of the apparatus. Said fixed blade is in fact provided with a plurality of transverse slots 205 in which a plurality of horizontal screws 206 is inserted; said screws allow to apply, with a respective plurality of washers 207 interposed, said fixed blade to a vertical surface 208 formed on the frame. The fixed blade 203 is supported in a lower region by a block 209 that rests on a plurality of vertical grub screws 210 clamped by a respective plurality of nuts 211.

[0048] It has thus been shown that the invention achieves the proposed aim and objects. In particular, the apparatus allows to feed continuously wrappings that have a uniform offset between the sheets that compose it. The presence, in the third embodiment, of two motors designed to actuate the first and second traction devices allows to obtain the intended offset simply by acting on the rotation rate of the two motors, without resorting to the replacement of mechanical parts.

[0049] The invention thus conceived is susceptible of numerous modifications and variations, all of which are within the scope of the inventive concept.

[0050] All the details may further be replaced with other technically equivalent ones.

[0051] In practice, the materials used, as well as the shapes and the dimensions, may be any according to requirements without thereby abandoning the scope of the protection of the appended claims.

[0052] The disclosures in Italian Patent Application No. BO2001A000558 from which this application claims priority are incorporated herein by reference.

[0053] Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly such reference signs do not have any limiting effect on the scope of each element identified by way of example by such reference signs.

Claims

1. An apparatus for feeding and cutting single or double wrapping material for packaging products composed of an outer sheet and an inner sheet which are superimposed and have two respective mutually offset edges, comprising a frame (2) that supports a first traction device (4) and a second traction device (5) respectively for drawing a first ribbon and a second ribbon of wrapping material wound on reels, and a device (6) for cutting said first and second ribbons into said outer and inner sheets, **characterized in that** said first and second traction devices (4, 5) are suitable to unwind said first and second ribbons at different speeds, so as to provide an offset between said edges of said first and second ribbons, said cutting device (6) being suitable to cut simultaneously said first and second ribbons when the intended offset is achieved.

2. The apparatus according to claim 1, **characterized in that** said first traction device (4) for drawing said first ribbon comprises a lower roller (43) and an upper roller (42), which are supported rotatably in said frame (2) and have axes that are parallel and in mutual contact along a generatrix; a first pair of springs

(54) is provided which act so as to produce a mutual compression between said lower roller (43) and said upper roller (42), said lower and upper rollers being suitable to draw, by rotation in mutually opposite directions, said first ribbon in the direction for feeding said wrapping, said lower roller (43) being driven by a ring gear (46) that is keyed thereon and actuated by a motor.

3. The apparatus according to claims 1 and 2, **characterized in that** said second traction device (5) for drawing said second ribbon comprises a first roller (57) and a second roller (58), which are supported rotatably in said frame (2) and have axes that are parallel and in mutual contact along a generatrix; a second pair of springs (66) is provided which act so as to produce a mutual compression between said first roller (57) and said second roller (58), said first and second rollers being suitable to draw, by rotation in mutually opposite directions, said second ribbon in the direction for feeding said wrapping, said first roller (57) being actuatable by way of the meshing of a driven gear (59) keyed thereon with a driving gear (45) keyed on said lower roller (43), said driving gear (45) and said driven gear (59) having a different number of teeth.

4. The apparatus according to claim 1, **characterized in that** said device (6) for cutting said first and second ribbons comprises a first shaft (69) and a second shaft (70), which are supported rotatably in said frame (2) and have parallel axes, said first shaft (69) having a central cylindrical portion (69a) in which there is a first longitudinal slot (73) whose central plane is not diametrical, said slot being inclined with respect to the axis of said first shaft (69), said second shaft (70) having a central expansion (70a) in which there is a second longitudinal slot (83) whose central plane is parallel to a diametrical plane and does not pass through the axis of said second shaft (70), a first blade (75) being locked in said first slot (73), said blade being shaped like a parallelepiped and having a first cutting edge (75a) that protrudes with respect to the lateral surface of said central cylindrical portion (69a), a second blade (85) being fixed in said second slot (83), said second blade being shaped like a parallelepiped and having a second cutting edge (85a) that protrudes with respect to the lateral surface of said central expansion (70a).

5. The apparatus according to claim 4, **characterized in that** said central cylindrical portion (69a) of said first shaft (69) and said central expansion (70a) of said second shaft (70) are provided respectively with a first plurality of collars (77) and with a second plurality of collars (86) which are mutually axially offset.

6. The apparatus according to claim 3, **characterized in that** said first roller (57) of said second traction device (5) can be actuated by a second motor.

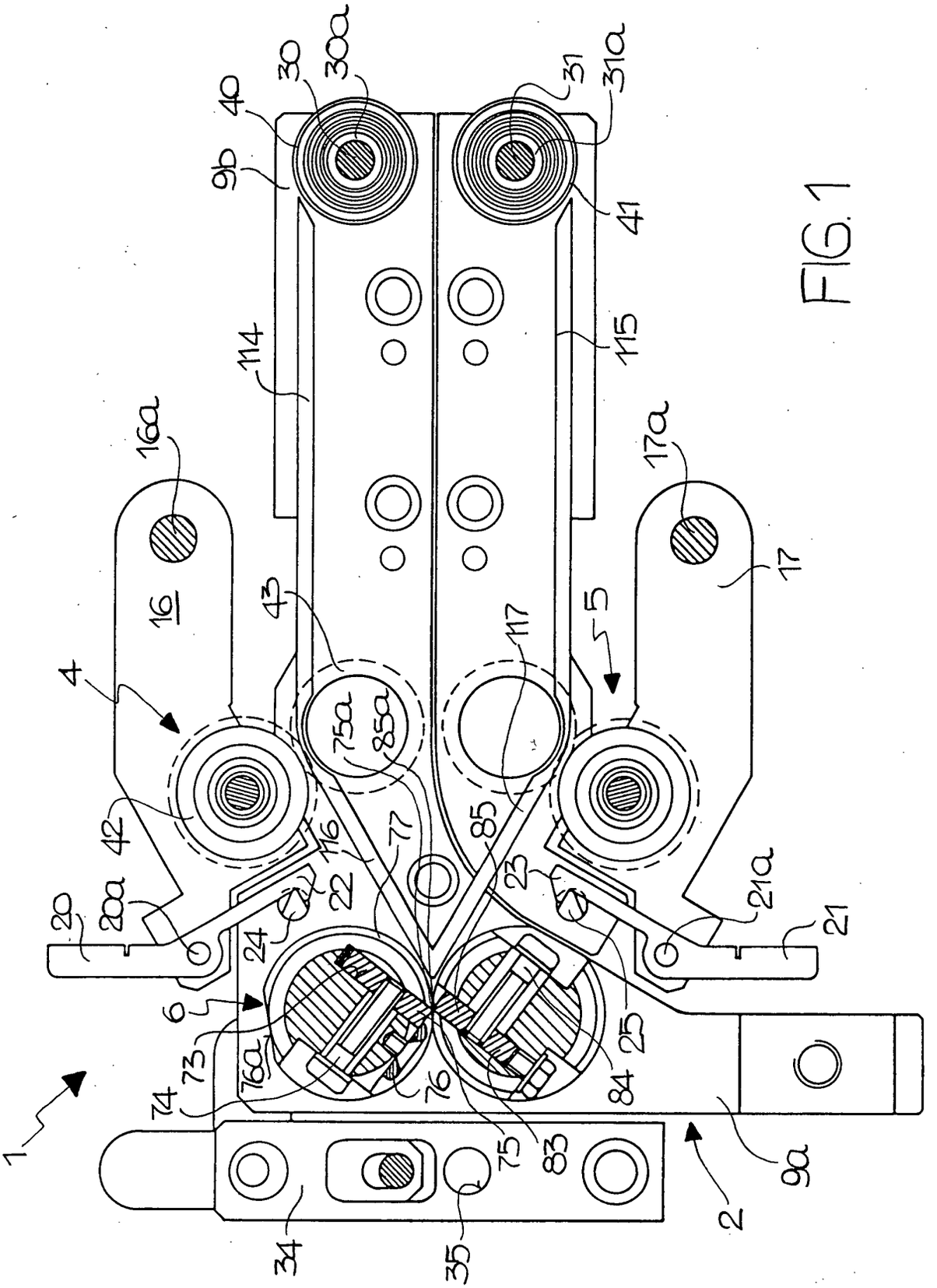
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FIG. 1

FIG.2

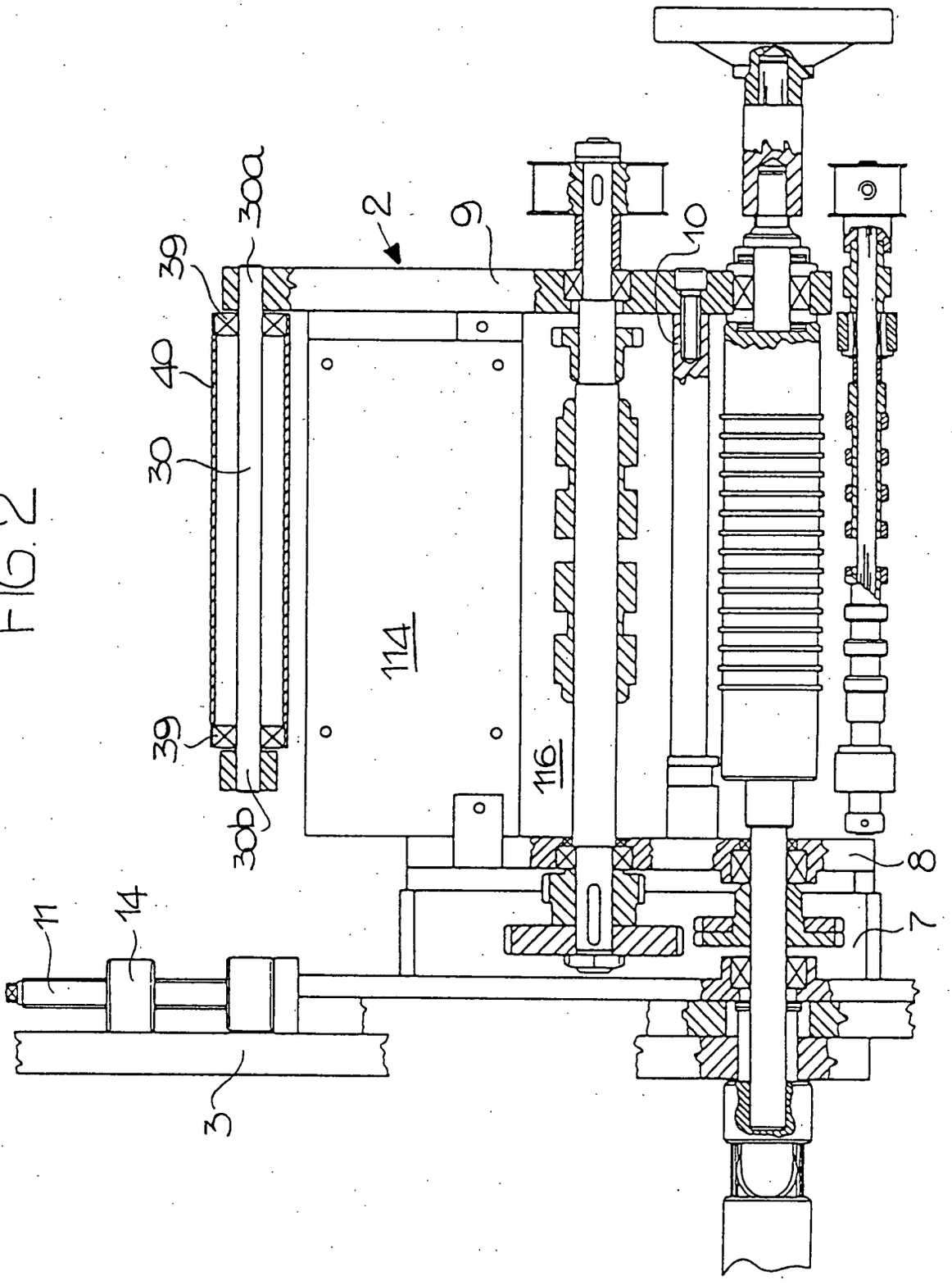
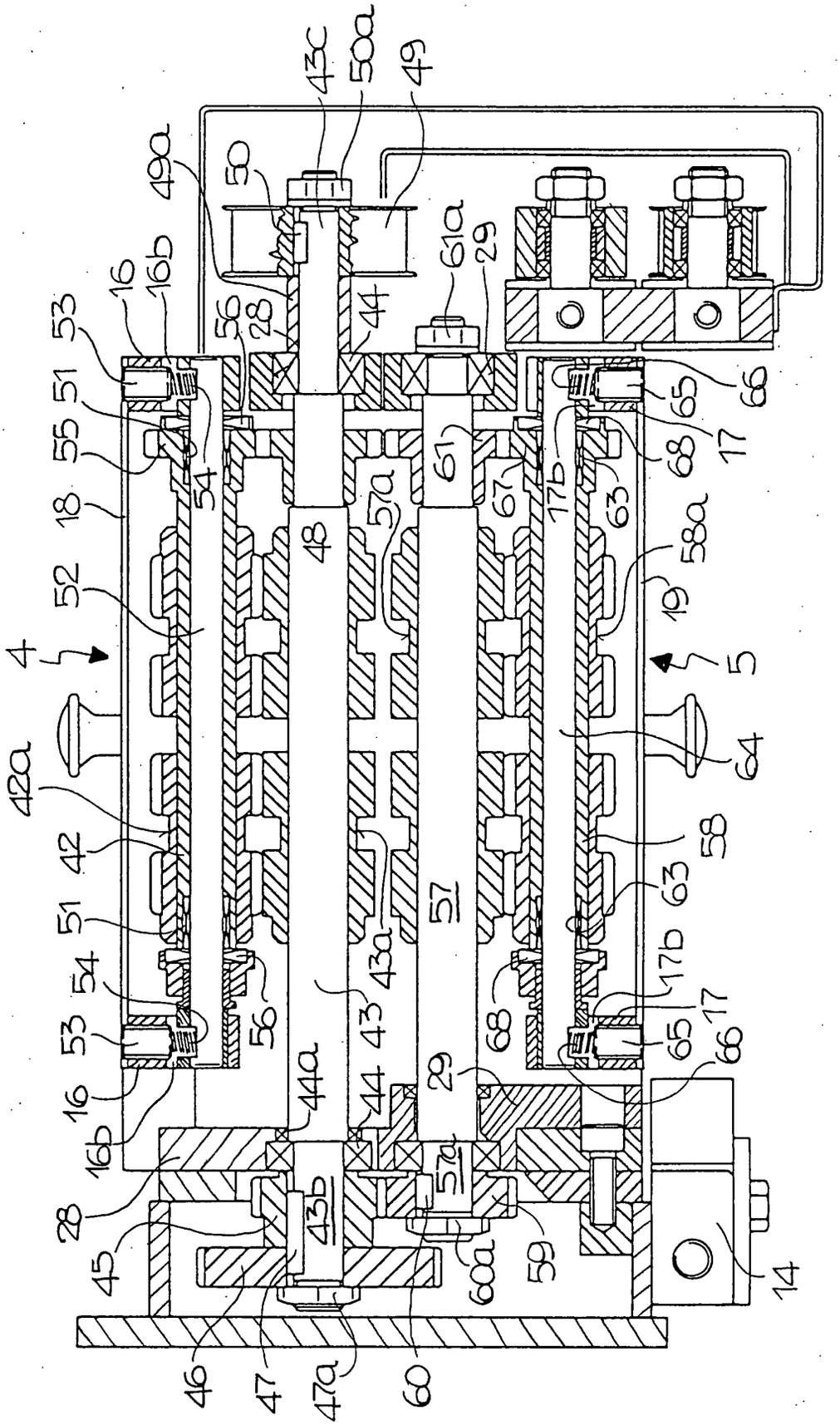


FIG. 3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49a
50
61a
29
16
16b
53
56
28
44
51
55
54
18
52
4
48
57a
61
67
17b
63
58a
19
5
42a
64
42
58
57
43a
43
44a
44
29
68
65
66
17
45
43b
57a
60a
59
14
46
47
47a
60

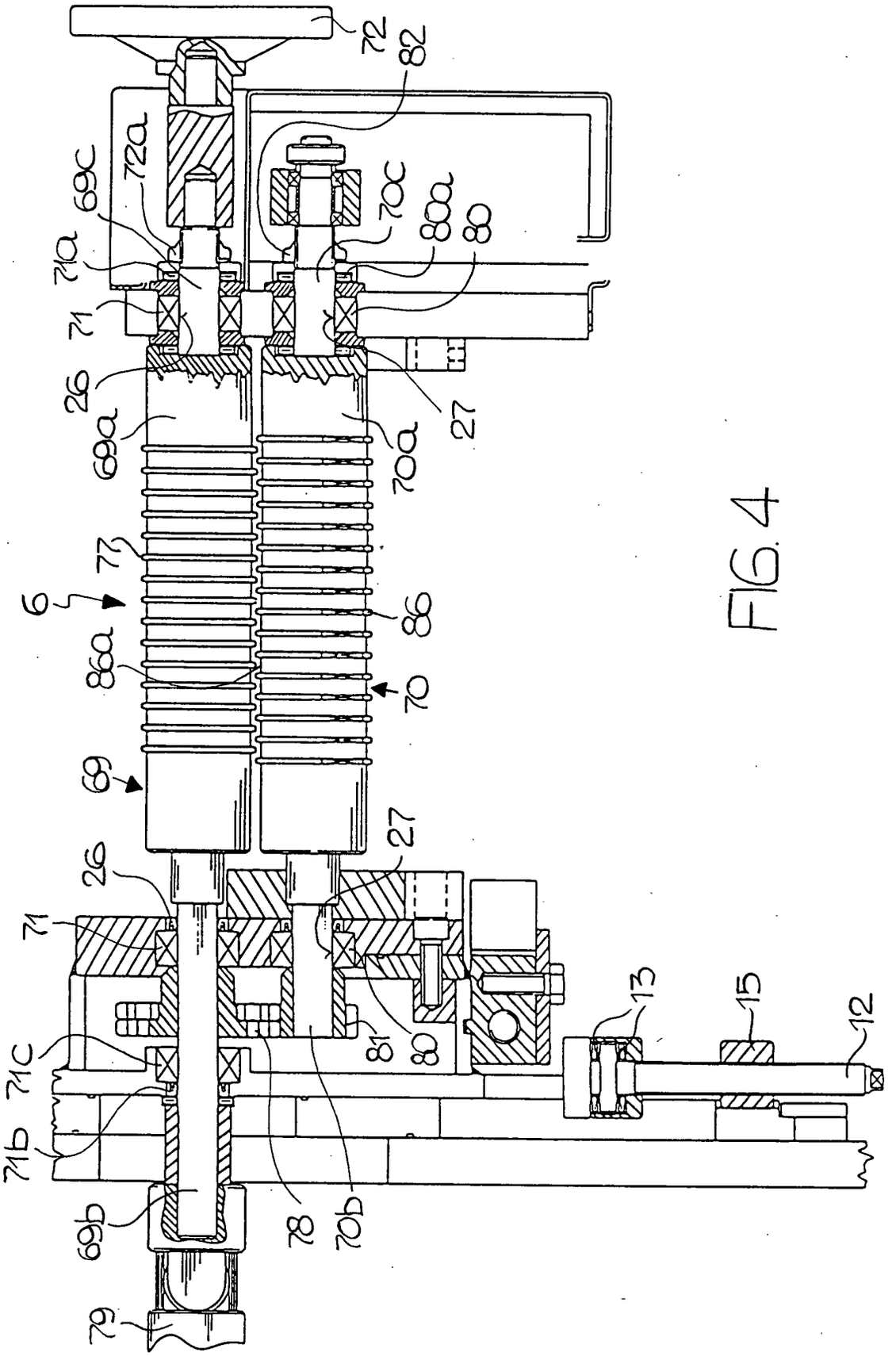
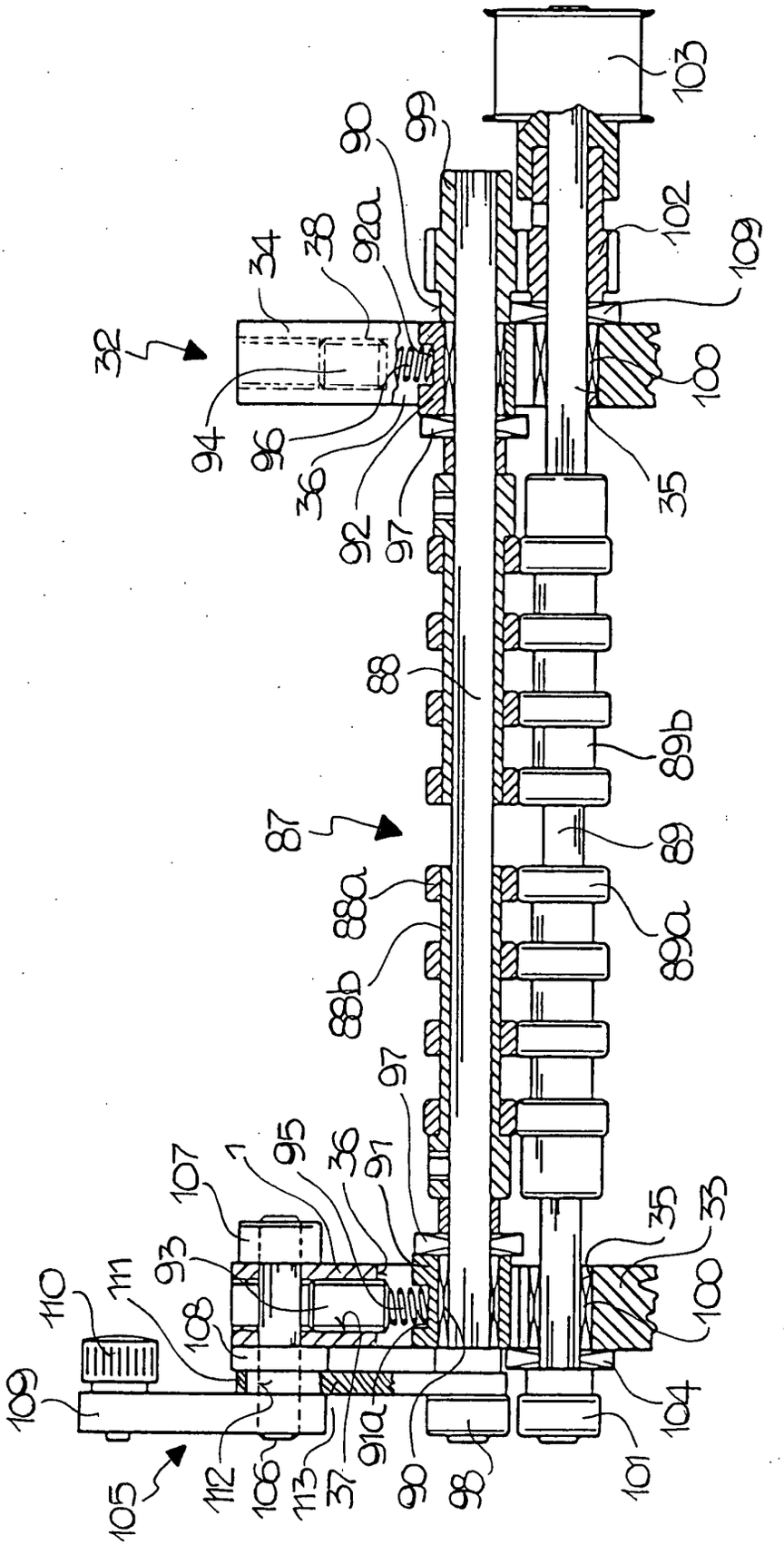

72
82
72a
69c
70c
80a
80
71a
71
26
27
69a
70a
77
6
86
86a
70
69
27
26
71
13
15
12
81
80
71c
71b
69b
28
70b
79

FIG 4

FIG 5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89b
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89a
88b
97
107
1
95
36
91
35
33
93
110
111
108
100
109
104
91a
112
106
113
37
90
98
101
105

FIG.6