



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
23.05.2012 Bulletin 2012/21

(51) Int Cl.:
B65B 11/04 (2006.01) B65B 11/58 (2006.01)

(21) Application number: **11185846.0**

(22) Date of filing: **19.10.2011**

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME

(71) Applicant: **Biesse S.p.A.**
Pesaro (IT)

(72) Inventor: **Fabbri, Marco**
61013 Mercatino Conca (IT)

(74) Representative: **Jorio, Paolo et al**
Studio Torta S.p.A.
Via Viotti, 9
10121 Torino (IT)

(30) Priority: **19.10.2010 IT BO20100627**

(54) **Method and machine for packing products in at least one web of packing material**

(57) A method and machine for packing products (8) in at least one web (15, 17) of packing material, whereby the product (8) is packed in two webs (15, 17) of packing

material joined by a transverse heat-seal; and one of the webs (17) is selectively cut to pack the product (8) in the other web (15) only.

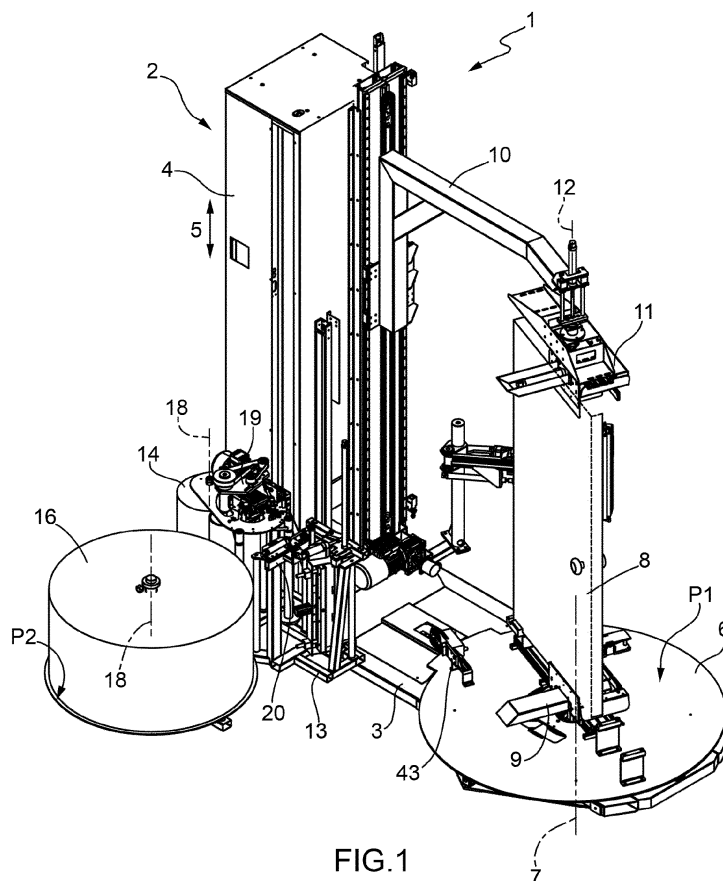


FIG.1

Description

[0001] The present invention relates to a machine for packing products in at least one web of packing material.

[0002] More specifically, the present invention relates to a packing machine of the type comprising a rotary platform mounted to rotate about a given axis of rotation; a gripping device for securing at least one product on the rotary platform; two packing material web rolls mounted on at least one supporting slide movable parallel to said axis of rotation; a heat-seal unit for joining the two webs with a transverse heat seal; and a cutting unit for cutting the two webs off the respective rolls.

[0003] The two webs are wound about the product by combining the movement of the rotary platform about the axis of rotation, and the movement of the supporting slide parallel to the axis of rotation.

[0004] Once packing is completed, the two webs are cut, crosswise to their travelling direction, off the packed product by the cutting unit, and are joined back together by the heat-seal unit to pack the next product.

[0005] Two different packing materials are used : normally a first in the form of stretch film; and a second, more expensive than the first, in the form, for example, of bubble film or stretch film printed with advertising and/or details about the product.

[0006] Because both packing materials are always wound simultaneously about the product, known packing machines of the type described involve a certain amount of waste of the second packing material, which could otherwise be limited, in the case of bubble film, to those parts of the product requiring greater protection, and, in the case of printed stretch film, to a given height and/or length.

[0007] It is an object of the present invention to provide a machine for packing products in at least one web of packing material, designed to eliminate the above drawbacks, and which is cheap and easy to implement.

[0008] According to the present invention, there is provided a machine for packing products in at least one web of packing material, as claimed in Claims 1 to 9.

[0009] The present invention also relates to a method of packing products in at least one web of packing material.

[0010] According to the present invention, there is provided a method of packing products in at least one web of packing material, as claimed in Claims 10 to 15.

[0011] A non-limiting embodiment of the present invention will be described by way of example with reference to the accompanying drawings, in which :

Figure 1 shows a schematic view in perspective, with parts removed for clarity, of a preferred embodiment of the packing machine according to the present invention;

Figure 2 shows a schematic view in perspective, with parts removed for clarity, of a detail in Figure 1;

Figure 3 shows a schematic view in perspective, with

parts removed for clarity, of a detail in Figure 2;

Figure 4 shows a schematic plan view, with parts removed for clarity, of the Figure 3 detail.

[0012] Number 1 in Figure 1 indicates as a whole a packing machine with a supporting frame 2 comprising a substantially horizontal base 3, and an upright 4 extending upwards from base 3 in a substantially vertical direction 5.

[0013] Base 3 supports a rotary platform 6, which is connected to base 3 to rotate, with respect to frame 2, about an axis of rotation 7 substantially parallel to direction 5, defines a substantially horizontal supporting surface P1 for a product 8 (in this case, a door), and comprises a gripper 9 for gripping a bottom edge of product 8.

[0014] Upright 4 is fitted with a substantially L-shaped supporting arm 10, which projects over platform 6 from upright 4, is connected to upright 4 to slide straight up and down in direction 5 with respect to frame 2, and is fitted on its free end with a gripper 11, which is connected to arm 10 to rotate, with respect to arm 10, about an axis of rotation 12 parallel to axis 7, retains a top edge of product 8, and cooperates with gripper 9 to secure product 8 on supporting surface P1.

[0015] Machine 1 also comprises a vertical slide 13, which is fitted to upright 4 to slide straight up and down in direction 5 with respect to frame 2, and defines a substantially horizontal supporting surface P2 for a roll 14 of a first web 15 of packing material (Figure 4) - in this case, stretch film - and for a roll 16 of a second web 17 of packing material (Figure 4), such as bubble film or stretch film printed with advertising and/or details about product 8.

[0016] Rolls 14 and 16 are mounted on slide 13 with their longitudinal axes 18 parallel to each other and to direction 5; and webs 15 and 17 are wound about product 8 by combining the movement of platform 6 about axis 7 with the movement of slide 13 in direction 5, as described in detail below.

[0017] Slide 13 also supports a known tensioning unit 19 for tensioning web 15; and a horizontal slide 20 fitted to slide 13 to slide straight back and forth with respect to slide 13 in a horizontal direction 21 crosswise to direction 5, under the control of an actuator cylinder 22 fixed to slide 13 and having an output rod 23 connected to slide 20.

[0018] As shown in Figures 2, 3 and 4, slide 20 supports a clamping device 24 for clamping web 17 and comprising a fixed jaw 25, which is defined by a box body fixed to slide 20 in a direction parallel to direction 5, is bounded at the front by an end wall 26 facing web 17, and has a number of (in the example shown, three) openings 27 aligned in direction 5 and formed through wall 26 in direction 21.

[0019] Jaw 25 cooperates with a comb-shaped movable jaw 28, which extends in direction 5, is located between webs 15 and 17, and is hinged to slide 20 to rotate with respect to slide 20 about a hinge axis 29 parallel to

direction 5.

[0020] An actuator cylinder 30, fitted to slide 20 and having an output rod 31 connected to jaw 28, moves jaw 28 between a clamped position (not shown), in which web 17 is clamped against wall 26, and a release position (Figures 3 and 4).

[0021] Slide 20 also supports a cutting unit 32 comprising a fork-shaped cutter 33, which is mounted along the feed path of web 17, is fixed to the output rod of an actuator cylinder 34 fitted to slide 20 in a direction parallel to direction 5, and is moved by cylinder 34, in direction 5, between a raised position, in which cutter 33 extends over web 17, and a lowered position.

[0022] Machine 1 also comprises a heat-seal unit 35, in turn comprising a heat-seal bar 36, which is housed inside jaw 25, extends in direction 5, and comprises a number of heat-seal members 37 equal in number to openings 27 and aligned in direction 5. Each member 37 faces a respective opening 27, and is bounded by a heated end surface 38 sloping with respect to direction 21 and projecting outwards of bar 36.

[0023] Bar 36 is fitted to the output rod of an actuator cylinder 39 fixed to jaw 25, and is moved by cylinder 39, in a direction perpendicular to surfaces 38, between a withdrawn position (Figures 3 and 4), in which members 37 are housed completely inside jaw 25 to disengage web 17, and a forward position (not shown), in which members 37 project outwards of jaw 25 through respective openings 27.

[0024] Bar 36 cooperates with a counter-bar 40, which is fixed to slide 13, extends in direction 5, is located on the opposite side of webs 15, 17 to jaw 25, and has a number of pads 41, which are equal in number to members 37, are bounded by respective end surfaces 42 parallel to surfaces 38, and project towards web 15 from counter-bar 40.

[0025] Operation of machine 1 will now be described as of the instant in which movable jaw 28 is in the clamped position clamping the leading end of web 17; slide 20 is in a withdrawn position; bar 36 is set to the withdrawn position; the leading end of web 15 is retained by a known gripping device 43 fitted to platform 6; and cutter 33 is set to the raised position.

[0026] Once product 8 is positioned and secured on platform 6, web 15 is wound about product 8 by combining the movement of platform 6 about axis 7 with release of device 43, and with the movement of slide 13 and, therefore, of roll 14 in direction 5.

[0027] To join web 17 to web 15 and so pack product 8 in both webs 15 and 17, platform 6 is stopped; actuator cylinder 22 moves slide 20 forward to position heat-seal members 37 facing counter-bar 40; bar 36 is moved into the forward position to bring members 37 into contact with respective pads 41, with webs 15 and 17 in between, and heat seal webs 15 and 17 transversely; bar 36 and slide 20 are moved back into their withdrawn positions; jaw 28 is moved into the release position to release web 17; and platform 6 is started up again.

[0028] It should be pointed out that, when slide 20 and bar 36 are moved into their forward positions, members 37 and pads 41 extends through openings 27 and the openings in jaw 28 to avoid drawing web 17.

[0029] To detach web 17 from web 15 to pack product 8 in web 15 only, platform 6 is stopped; jaw 28 is moved into the clamped position to clamp web 17; cutter 33 is lowered to cut web 17 crosswise; and platform 6 is started up again.

[0030] As will be clear from the above description, the more expensive web 17 is wound selectively about product 8 only as required, thus greatly reducing consumption of web 17 and packing cost as a whole.

[0031] In variations not shown :

clamping device 24, cutting unit 32, and heat-seal unit 35 are movable in time with web 15 and/or web 17, to enable machine 1 to cut web 17 and heat-seal webs 15 and 17 without stopping platform 6; a gluing unit is substituted for heat-seal unit 35; a fixed supporting platform is substituted for platform 6; and upright 4 is replaced with a supporting upright mounted to rotate about the fixed supporting platform; and rolls 14 and 16 may be more than two in number.

Claims

1. A machine for packing products (8) in at least one web (15, 17) of packing material, the machine comprising a supporting platform (6); a gripping device (9, 11) for securing at least one product (8) to the supporting platform (6); a first roll (14) of a first web (15) of packing material; at least a second roll (16) of a second web (17) of packing material; at least one supporting slide (13) for supporting said first and second roll (14, 16), said first and/or second web (15, 17) being wound about the product (8) by rotating the supporting platform (6) and the supporting slide (13) with respect to each other and about at least one axis of rotation (7), and by moving the supporting slide (13) in a direction parallel to the axis of rotation (7); and a splicing unit (35) for connecting the webs (15, 17) to pack the product (8) in both webs (15, 17); the machine being **characterized by** also comprising a cutting unit (32) for selectively cutting the second web (17), to cut off feed of the second web (17) and pack the product (8) in the first web (15) only.
2. A machine as claimed in Claim 1, wherein the rolls (14, 16) have respective longitudinal axes (18) substantially parallel to said axis of rotation (7); the cutting unit (32) comprising a cutter (33) movable parallel to the axis of rotation (7).
3. A machine as claimed in Claim 1 or 2, and also com-

prising a clamping device (24) for clamping the second web (17) as the cutting unit (32) and the splicing unit (35) are operated.

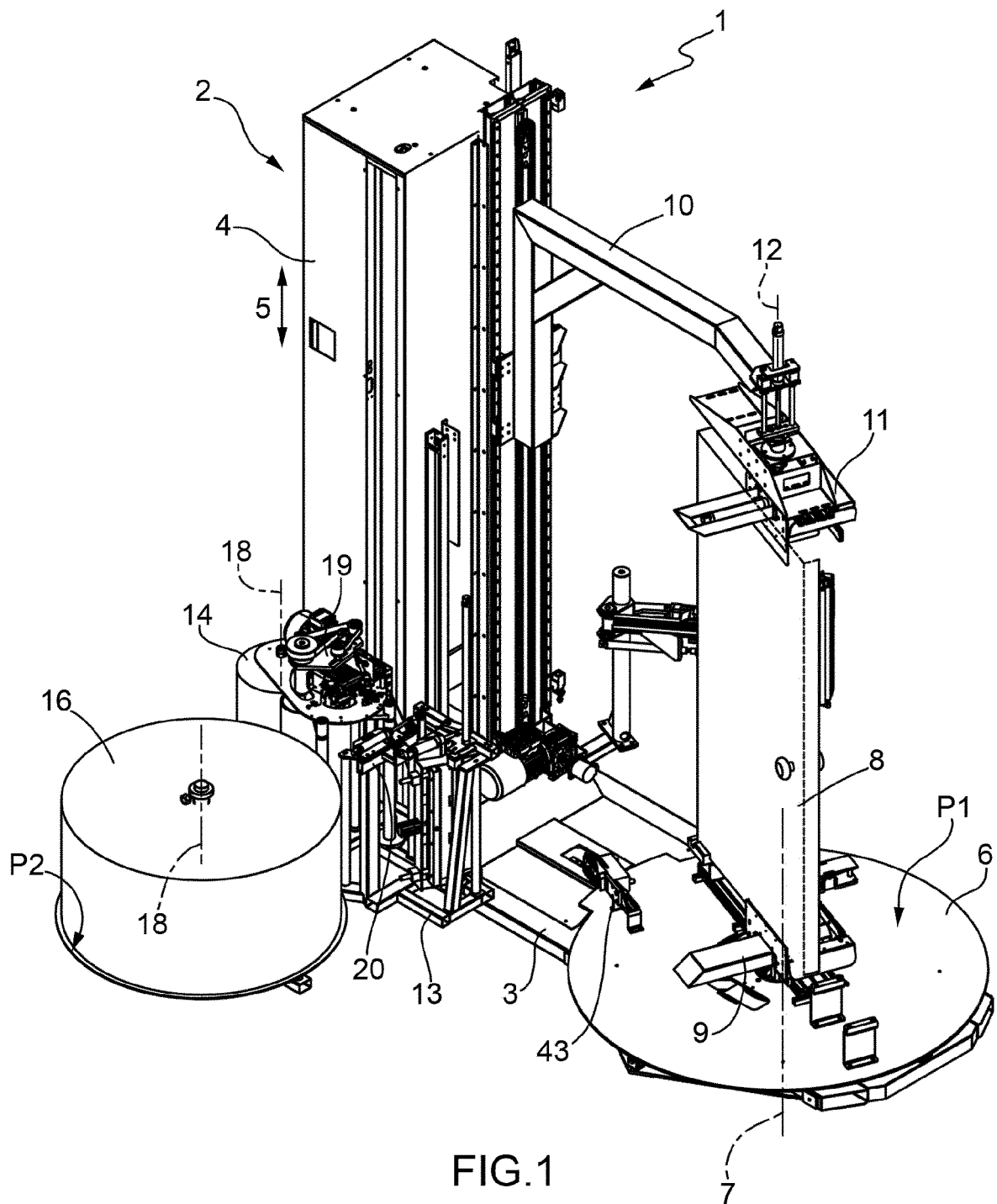
4. A machine as claimed in Claim 3, wherein the splicing unit (35) comprises at least one heat-seal member (37); and a counter-bar (40) cooperating with the heat-seal member (37).
5. A machine as claimed in Claim 4, wherein the clamping device (24) comprises two jaws (25, 28), which are movable with respect to each other between a clamped position clamping the second web (17), and a release position releasing the second web (17), and are designed to allow the heat-seal member (37) and/or the counter-bar (40) to extend through the jaws (25, 28) and into contact with one another, with the two webs (15, 17) in between.
6. A machine as claimed in Claim 5, wherein one jaw (28) extends between the two webs (15, 17), and the second web (17) extends between the two jaws (25, 28).
7. A machine as claimed in any one of Claims 4 to 6, and also comprising a further supporting slide (20) movable to and from said counter-bar (40); the clamping device (24), the cutting unit (32), and the heat-seal member (37) being mounted on said further supporting slide (20).
8. A machine as claimed in any one of Claims 1 to 3, wherein the splicing unit (35) comprises a gluing device for gluing the two webs (15, 17) together.
9. A machine as claimed in any one of the foregoing Claims, wherein the supporting platform (6) is a rotary platform mounted to rotate about said axis of rotation (7).
10. A method of packing products (8) in at least one web (15, 17) of packing material on a machine comprising a supporting platform (6), a gripping device (9, 11) for securing at least one product (8) on the supporting platform (6), a first roll (14) of a first web (15) of packing material, at least a second roll (16) of a second web (17) of packing material, and at least one supporting slide (13) for supporting said first and second roll (14, 16); the method comprising the steps of :

winding said first and/or second web (15, 17) about the product (8) by rotating the supporting platform (6) and the supporting slide (13) with respect to each other and about an axis of rotation (7), and by moving the supporting slide (13) in a direction parallel to the axis of rotation (7); and
joining the two webs (15, 17) to pack the product

(8) in both webs (15, 17);

the method being **characterized by** also comprising the step of :

- selectively cutting the second web (17) to cut off feed of the second web (17) and pack the product (8) in the first web (15) only.
11. A method as claimed in Claim 10, wherein the rolls (14, 16) have respective longitudinal axes (18) substantially parallel to said axis of rotation (7); the method also comprising the step of :
cutting the second web (17) parallel to said axis of rotation (7).
12. A method as claimed in Claim 10 or 11, and also comprising the step of :
retaining the second web (17) as the second web (17) is cut and/or the two webs (15, 17) are spliced.
13. A method as claimed in any one of Claims 10 to 12, and also comprising the steps of :
retaining the second web (17) between two jaws (25, 28);
joining the webs (15, 17) using a heat-seal unit (35) comprising at least one heat-seal member (37), and a counter-bar (40) cooperating with the heat-seal member (37); and
moving the heat-seal member (37) and/or the counter-bar (40) through the two jaws (25, 28) and into contact with each other, with the two webs (15, 17) in between.
14. A method as claimed in any one of Claims 10 to 12, wherein the webs (15, 17) are joined by gluing.
15. A method as claimed in any one of Claims 10 to 14, wherein the two webs (15, 17) are joined by a splicing unit (35), and the second web (17) is cut by a cutting unit (32); the method also comprising the step of:
moving the cutting unit (32) and the splicing unit (35) forward in time with said first and/or second web (15, 17).



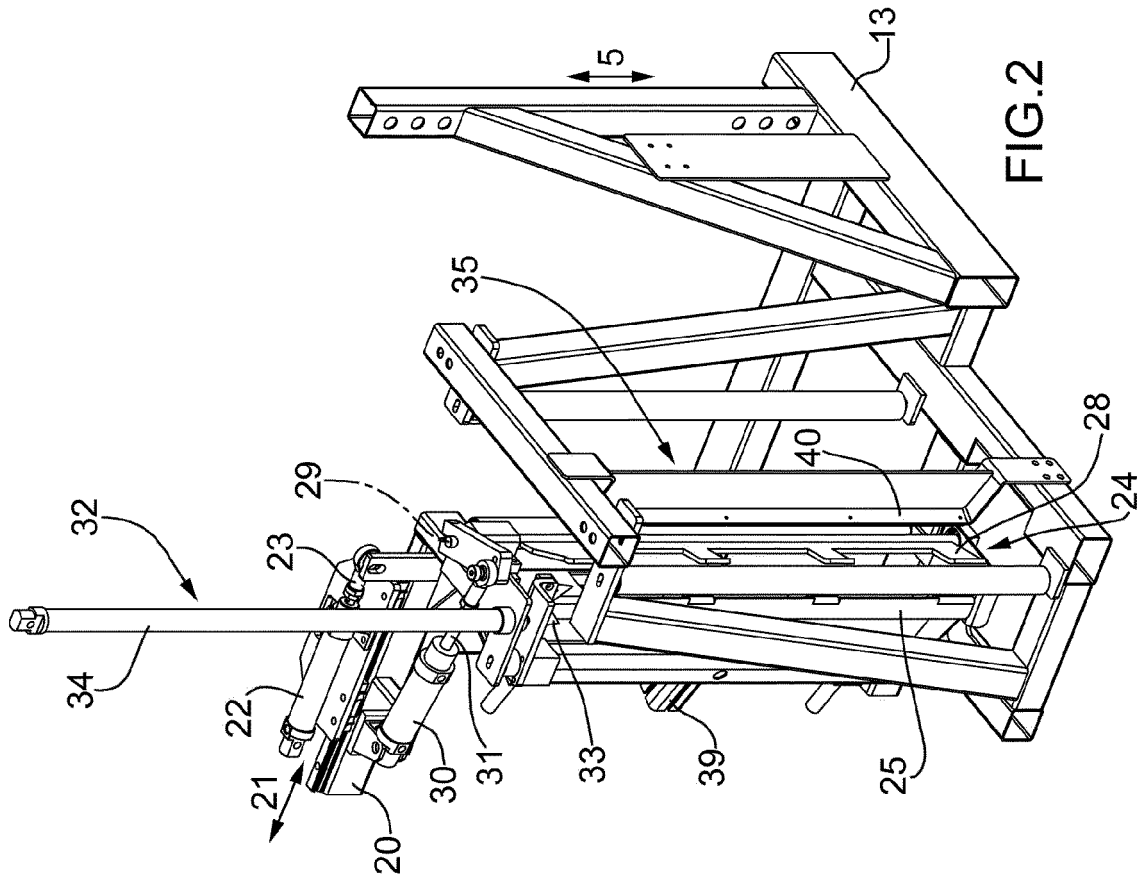


FIG. 2

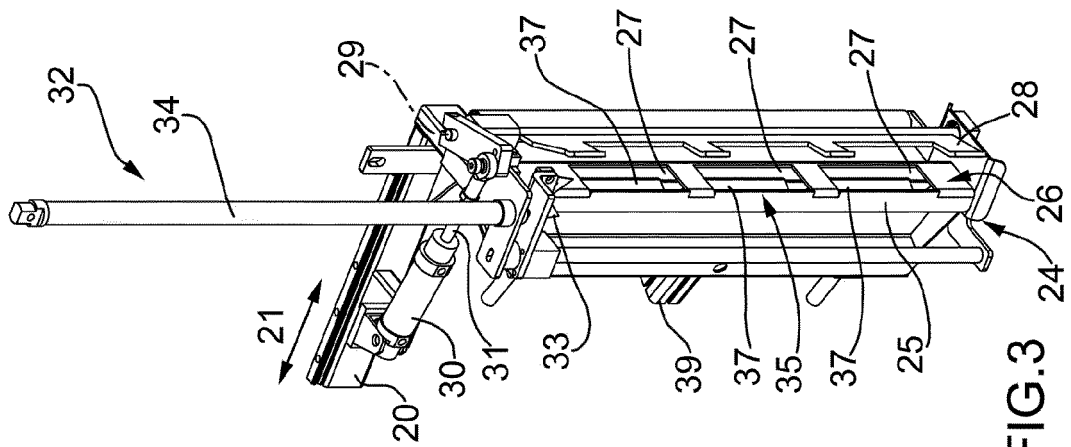


FIG. 3

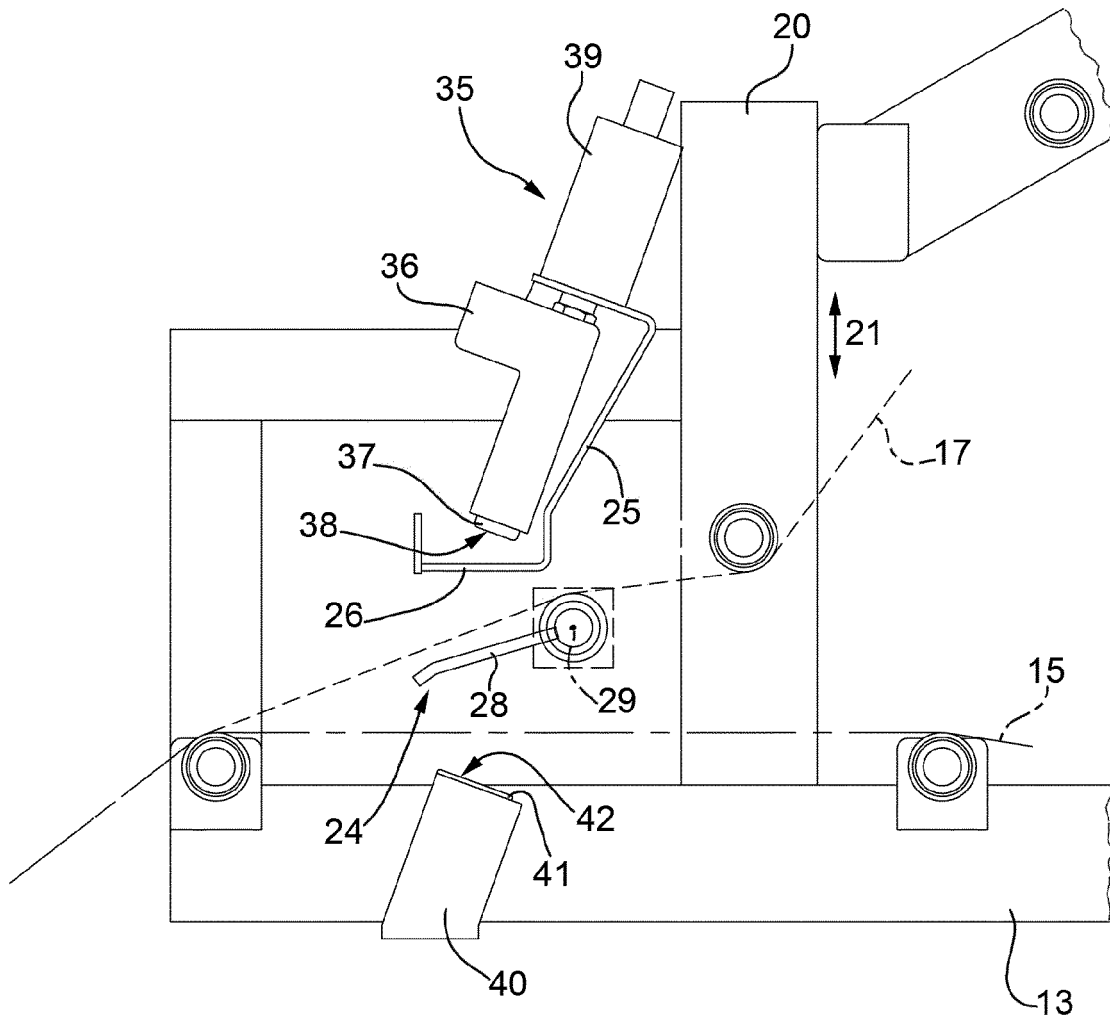


FIG.4