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(54) **Ironing system for ironing outerwears, in particular jackets and more particularly jacket plackets**

(57) An ironing system for perfectly ironing outerwears, in particular jackets and more particularly jacket plackets (P) comprises, in a bearing framework (2), a support table (9) having an upper support face (10) for

the placket (P), an upper ironing plane (19) that can move away from and towards the upper support face (10) according to a predetermined operative direction (A-A) and able to be moved in a plane (π) perpendicular to the operative direction (A-A).

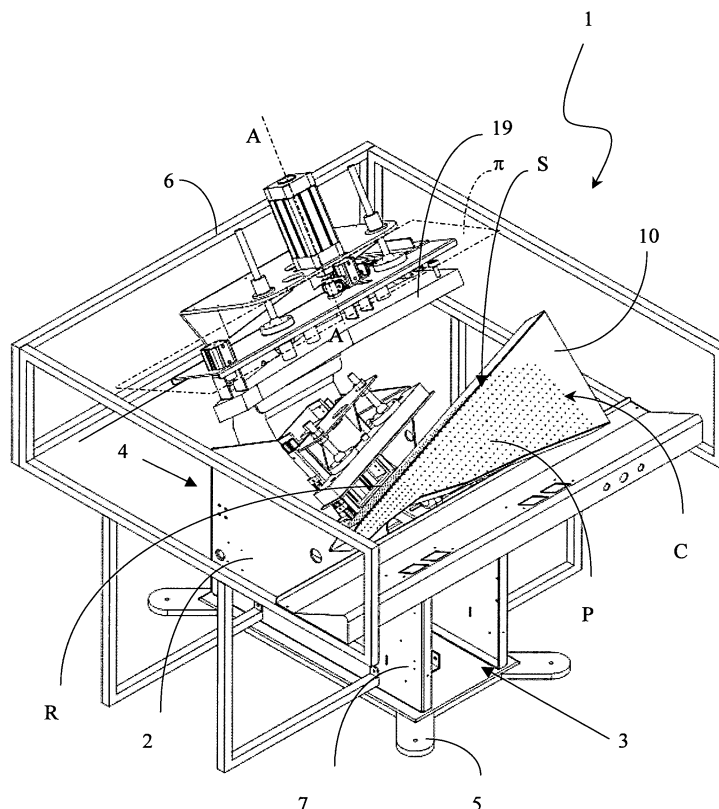


FIG. 1

Description

Field of application

[0001] The present invention refers to an ironing system for ironing outerwears, in particular jackets and more particularly jacket plackets.

[0002] More specifically, the invention refers to an ironing system of the type comprising, in a bearing framework, a support table having an upper support face for the placket, an upper ironing plane that is able to move away from and towards said upper support face according to a predetermined operating direction.

Prior art

[0003] As it is well known, in the ironing of outerwears there is a need to iron the placket and the revers positioning the join or sewing line between them straddling a suitable support table.

[0004] Known systems, whilst satisfying this need, have the drawback of not allowing exemplary ironing for outerwears as the size of the garment and therefore of its placket varies. In other words, an ironing system suitable for ironing outerwears of a predetermined size is not very good for ironing larger or smaller outerwears. In practice, there can be either incomplete ironing of the placket or, even worse, undesired pressing of the lining defining the placket, also pressing portions of the outerwear that should not be pressed, for example, in the outward part of the garment, the pocket area.

[0005] It should also be noted that the same drawbacks are encountered as the style of the outerwear varies, for example as the number of buttons varies, as well as in the passage from a single-breasted jacket to a double-breasted jacket.

[0006] The technical problem forming the basis of the present invention is that of providing an ironing system, having structural and functional characteristics such as to overcome the limitations and drawbacks that are still suffered by systems made according to the prior art.

Summary of the invention

[0007] Such a problem is solved by a system of the type specified, characterised in that the ironing plane can be moved in a plane perpendicular to the operative direction

[0008] Further characteristics and advantages of the ironing system according to the invention shall become clearer from the following description of an example embodiment thereof, provided for indicating and not limiting purposes with reference to the attached drawings.

Brief description of the drawings

[0009] In such drawings:

Figure 1 is a schematic perspective view of an ironing system according to the present invention;

Figure 2 is a plan view of the system of figure 1;

Figure 3 is an enlarged schematic perspective view of a detail of the system of figure 1;

Figures 4, 5 and 6 are schematic views of the detail of figure 3 in plan, elevation and from the side, respectively;

Figures 7A and 7B are enlarged perspective views of a detail of the system of figure 1, front and rear respectively;

Figures 8, 9 and 10 are views of the detail of figure 7 in plan, elevation and from the side, respectively;

Figures 11A and 11B are enlarged perspective views of a detail of figure 7A and 7B, front and rear respectively, in another step of its operation;

Figures 12, 13 and 14 are views of the detail of figure 11 in plan, elevation and from the side, respectively;

Figure 15 is an enlarged schematic perspective view of the detail of figure 3 in another step of its operation;

Figure 16 is a schematic perspective view, from a different angle of view, in particular from behind, of the detail of figure 15;

Figures 17 and 18 are schematic views of the detail of figures 15 and 16, in elevation and from the side respectively;

Figure 19 is an enlarged schematic perspective view of the detail of figure 3 in yet another step of its operation; and

Figures 20, 21 and 22 are schematic views of the detail of figure 19 in plan, elevation and from the side, respectively.

Detailed description

[0010] With reference to such figures, an ironing system for ironing outerwears C, and in particular for ironing a placket P and a revers R of a neck of a garment, is globally indicated with 1.

[0011] The ironing system 1 comprises a bearing framework 2 extending, in the depth direction, between a front part 3, at which an operator is positioned, and a rear part 4.

[0012] The bearing framework 2, for example made from welded sheet metal, rests on the floor with feet 5 and is surrounded by a substantially tubular protective

structure 6 for preventing injury. Such a bearing framework 2 is substantially box-shaped with opposite flanks 7 and 8.

[0013] At its front part 3, the ironing system 1 comprises a support table 9, on which to rest the garment to be ironed. The support table 9 is an elongated body, approximately prismatic elongated in the transversal direction.

[0014] The support table 9 has an upper support face 10 for the placket P of the garment C to be ironed, a side support face 11 of the revers R of the garment to be ironed, whereas the two faces 10 and 11 define a corner 12 on which a seam S of the garment abuts, by seam meaning the joining line between placket P and revers R.

[0015] It should be noted that the upper face 10 and the side face 11 have a smooth or flat surface 10a and 11a.

[0016] The support table 9 is supported by a saddle 13, which is in turn supported by the bearing framework 2 to that it can be angularly displaced around a pin 14 carried by the framework and extending transversally. It can be moved between an operative position, in which the support table 9 has the upper face 10 horizontal, and a non-operative position rotated to the front, towards the operator, in which the support table 9 has the upper face 10 inclined by about 45° with respect to horizontal.

[0017] The desired angular displacement of the saddle 1.3 between the two extreme angular positions, operative and non-operative, is caused by motor means 15 that in the example are in the form of a cylinder-piston group 16, of the type with eye bolts, in which the cylinder 17 has an eye bolt fixed to the flank 8 and the piston 18 has an eye bolt fixed to the saddle 13.

[0018] The ironing system 1 according to the invention also comprises an upper ironing plane 19, for ironing the placket P. Such an upper ironing plane 19 is substantially prism-shaped elongated in the transversal direction with a lower ironing face 20, defined at the front by an edge 21 which reproduces an interrupted shape in accordance with the shape of the placket P.

[0019] The upper ironing plane 19 is guided in motion, according to a predetermined direction A-A, through guide means 22 away from and towards the support table 9, when the latter is in its operative position. In particular, the guide means 22 are in the form of two rectilinear cylindrical rods 23 that are parallel to A-A, which are guided so that they can slide inside bushes 24. The bushes 24 are supported by an upright 25. The upright 25 is supported, so that it can be moved angularly, by the bearing framework 2. In particular, the upright 25 is hinged to the bearing framework 2 through a pin 26 extending transversally and is able to be moved angularly between an operative position, in which the upper ironing plane 19 has the lower ironing face 20 horizontal and a non-operative position in which the upper plane 19 is rotated to the rear by about 45° with respect to the horizontal, away from the operator.

[0020] For the desired linear displacement in direction A-A of the upper ironing plane 19 motor means 27 are

provided, which are in the form of a cylinder-piston group 28 of the flanged type, with a cylinder 29 having the flange fixed to the upright 25 and a piston 30 active on the upper ironing plane 19, in a position substantially equidistant from the cylindrical rods 23.

[0021] For the desired angular displacement of the upright 25 motor means are provided, for example a cylinder-piston group, not represented in the figures since it is conventional.

[0022] The upper ironing plane 19 is supported by an elongated support plane 32 extending transversally, to which the cylindrical rods 23 are fixed. The upper ironing plane 19 is fixed to the support plane 32 through spacer columns 38 extending substantially in alignment with the cylindrical rods 23.

[0023] In accordance with the present invention, the upper ironing plane 19 can be adjustably displaced in a plane π perpendicular to the direction A-A in a predetermined operative position between a withdrawn position and an advanced position. Preferably, the upper ironing plane 19 can be adjustably moved according to an angular displacement α , in which α varies between a minimum value 0° and a maximum value $\alpha_{\max}$ selected between 10° and 20°, preferably 15°.

[0024] In a preferred embodiment of the invention, the support plate 32 is divided into two juxtaposed half-plates, an upper half-plate 32b, on which the cylindrical rods 23 are fixed and the piston 30 is active, and a lower half-plate 32a, on which the spacer columns 38 and therefore the upper ironing plane 19 are fixed.

[0025] The lower half-plate 32a can be adjustably moved with respect to the upper half-plate 32b. In particular, the lower half-plate 32a is hinged to the upper half-plate 32b through a pin 33 arranged at an end of the support plate 32. In this way the lower half-plate 32a can be angularly moved by the aforementioned angular displacement α .

[0026] It should be noted that when the angular displacement α is equal to 0°, the edge 21 is withdrawn (as shown in figure 8), whereas when the angular displacement α is equal to $\alpha_{\max}$, the edge 21 is advanced (as shown in figure 12).

[0027] Thanks to this angular displacement α a practically rectilinear movement of the various points of the edge 21 is achieved, so as to take them up to a desired operative position, and to be precise the position in which the edge 21 of the upper ironing plane 19 is in line with the placket P at the start of the lining.

[0028] For the desired displacement command means 34 are also provided arranged on the opposite side to the pin 33 and that are in the form of a cylinder-piston group 35 of the type with eye bolts, having a cylinder 36 with an eye bolt fixed to the upper half-plate 32b and a piston 37 having an eye bolt fixed to the lower half-plate 32a. It is also possible to make such command means 34 through a stepper motor.

[0029] For the locking of the upper ironing plane 19 in the desired operative angular position between the with-

drawn position and the advanced position locking means 39 are provided to join together the lower and upper half-plates 32a and 32b.

[0030] In the example, the locking means 39 comprise a first hydraulic piston 40 arranged at the pin 33 and a second hydraulic piston 41 arranged on the side of the cylinder-piston group 35. The hydraulic pistons 40 and 41, when activated, join together the lower and upper half-plates 32a and 32b with the formation of a substantially monolithic body that constitutes the support plate 32. The lower and upper half-plates 32a and 32b are further stiffened through stiffeners, all indicated with 32c.

[0031] Since the second hydraulic piston 41 is supported by the lower half-plate 32a and consequently moves with it, an arched slot 42 is if necessary provided.

[0032] A side ironing plane 43 for ironing the revers R completes the ironing system 1 according to the invention.

[0033] The side ironing plane 43 is guided so that it can move according to a direction B-B through guide means 44 from and towards the side face 11 of the support table 9. In particular, the side ironing plane 43 is supported by a trolley 45 that is able to slide along a guide 46 projecting from the saddle 13 and possibly made in one piece.

[0034] Motor means 47, for example in the form of a cylinder-piston group, are provided to command the side ironing plane 43 in its movement from and towards the direction B-B.

[0035] Advantageously, the ironing system 1 according to the invention comprises a position indicator 48 of the upper ironing plane 19. In particular, the indicator 48 is applied at the edge 21 of the upper ironing plane 19 to emit a dot of light towards the support table 9.

[0036] Hereafter the operation of the ironing system 1 according to the invention is described with reference to an initial condition depicted in figures 3, 4, 5 and 6.

[0037] In such an initial condition, the support table 9 is rotated at the front towards the operator, the upright 25 is rotated at the rear away from the operator, the upper ironing plane 19 and the side ironing plane 43 are in a position far from the respective faces 10 and 11 of the support table 9. In such a condition, the upper ironing plane 19 is for example in the withdrawn position.

[0038] In this initial condition, the operator rests the garment to be ironed on the support table 9 ensuring that the revers R, the placket P and the seam line S respectively rest upon the side face 11, upon the upper face 10 and along the corner 12.

[0039] At this point the motor means 15 are actuated so as to take the support table 9 into its operative position, in particular with the upper face 10 horizontal. Then the motor means 26 are commanded so as to rotate the upright 25 into its operative position in which the upper ironing plane 19 has its lower ironing face 20 facing and parallel to the upper face 10 of the support table 9.

[0040] Then the indicator 48 is switched-on.

[0041] The operator, acting upon the motor means 34,

angularly moves the upper ironing plane 19 through the angular displacement of the lower half-plate 32a with respect to the upper half-plate 32b until the dot of light generated by the indicator 48 and located at the edge 21 falls in line with the placket P at the start of the lining.

[0042] At this point, when the locking means 39 have been activated so as to join the lower and upper half-plates 32a and 32b, the operator activates the command means 34 so as to take the upper ironing plane 19 into contact pressing upon the upper face 10 of the support table 9 to carry out the desired ironing of the placket P. At the same time, the operator activates the motor means 47 so as to take the side ironing plane 43 into contact pressing upon the side face 11 of the support table 9 to carry out the desired ironing of the revers R (see figures 15, 16, 17 and 18).

[0043] At this point, the operator, proceeding substantially in reverse, moves the upper ironing plane 19 and the side ironing plane 43 away from the respective faces 10 and 11 of the support table 9, rotates the upright 25 to the rear so as to free the ironed garment and withdraw it.

[0044] At this point, the ironing system 1. is ready to receive the next garment to be ironed. In the case in which, through the indicator 48, the operator notices that the upper ironing plane 19 is already in an acceptable position, no adjustment operation needs to be carried out before ironing the new garment.

[0045] The main advantage of the ironing system according to the present invention is to achieve exemplary ironing of outerwears with complete ironing of the placket in its entire extension and also of course of the revers, leaving the pocket area and the lining untouched.

[0046] A further and important advantage of the proposed system is that it allows, during ironing, the fullness of the fabric to be absorbed, thanks to the flat or smooth surface of the faces of the support table 9 and of the upper and side ironing planes 19 and 43, so that the garment can acquire a desired three-dimensional shape after ironing.

[0047] A further advantage of the system according to the invention is that it allows an unusual increase in productivity and an enhanced flexibility of use, making it also economically advantageous to iron different successive small batches.

[0048] Finally, the ironing system according to the invention is structurally simple and functionally reliable, as well as simple to use, not requiring expert personnel.

Claims

1. Ironing system for ironing outerwears, in particular jackets and more particularly jacket plackets (P), of the type comprising, in a bearing framework (2), a support table (9) having an upper support face (10) for the placket (P), an upper ironing plane (19) that can move away from and towards said upper support

face (10) according to a predetermined operative direction (A-A) **characterised in that** said upper ironing plane (19) can be moved in a plane (π) perpendicular to said operative direction (A-A).

2. Ironing system according to claim 1, **characterised in that** said upper ironing plane (19) is able to be moved angularly in said plane (π). 5
3. Ironing system according to claim 2, **characterised in that** said angular displacement (α) is of a size between a minimum value equal to 0° and a maximum value ($\alpha_{\max}$) selected between 10° and 20° , preferably 15° . 10
4. Ironing system according to claim 2, **characterised in that** said upper ironing plane (19) is supported through a support plate (32) divided into a lower half-plate (32a) and an upper half-plate (32b) hinged together. 15
5. Ironing system according to claim 4, **characterised in that** motor means (34) are provided to command said angular displacement (α) of said lower half-plate (32a) with respect to said upper half-plate (32b). 20
6. Ironing system according to claim 5, **characterised in that** it comprises an indicator (48) associated with an edge (21) of said upper plane (19) to emit a dot of light towards said upper face (10) of said support table (9). 25
7. Ironing system according to claim 6, **characterised in that** said motor means (34) command said angular displacement according to the position of said dot of light. 30
8. Ironing system according to claim 7, **characterised in that** it comprises locking means (39) to join said lower and upper half-plates (32a, 32b) with the formation of a substantially monolithic body that constitutes said support plate (32). 35
9. Ironing system according to any one of the previous claims, **characterised in that** said support table (9) comprises a side support face (11) for a revers (R) of said outerwear and **in that** a side ironing plane (43) is provided that is able to move from and towards said side support face (11) to iron said revers (R). 40
10. Ironing system according to any one of the previous claims, **characterised in that** said upper support face (10) of said support table (9) and a lower face of said upper ironing plane (19) have flat or smooth surfaces. 45
11. Ironing system according to any one of the previous claims, **characterised in that** said support table (9) 50

is supported by a saddle (13) that is hinged to the bearing framework (2) so as to be able to be moved angularly, under the action of motor means (15), between an operative position and a non-operative position rotated to the front.

12. Ironing system according to any one of the previous claims, **characterised in that** said upper ironing plane (19) is supported in such a way that it is guided by an upright (25) hinged to said bearing framework (2) so as to be able to be moved angularly, under the action of motor means (27), between an operative position and a non-operative position rotated to the rear. 55

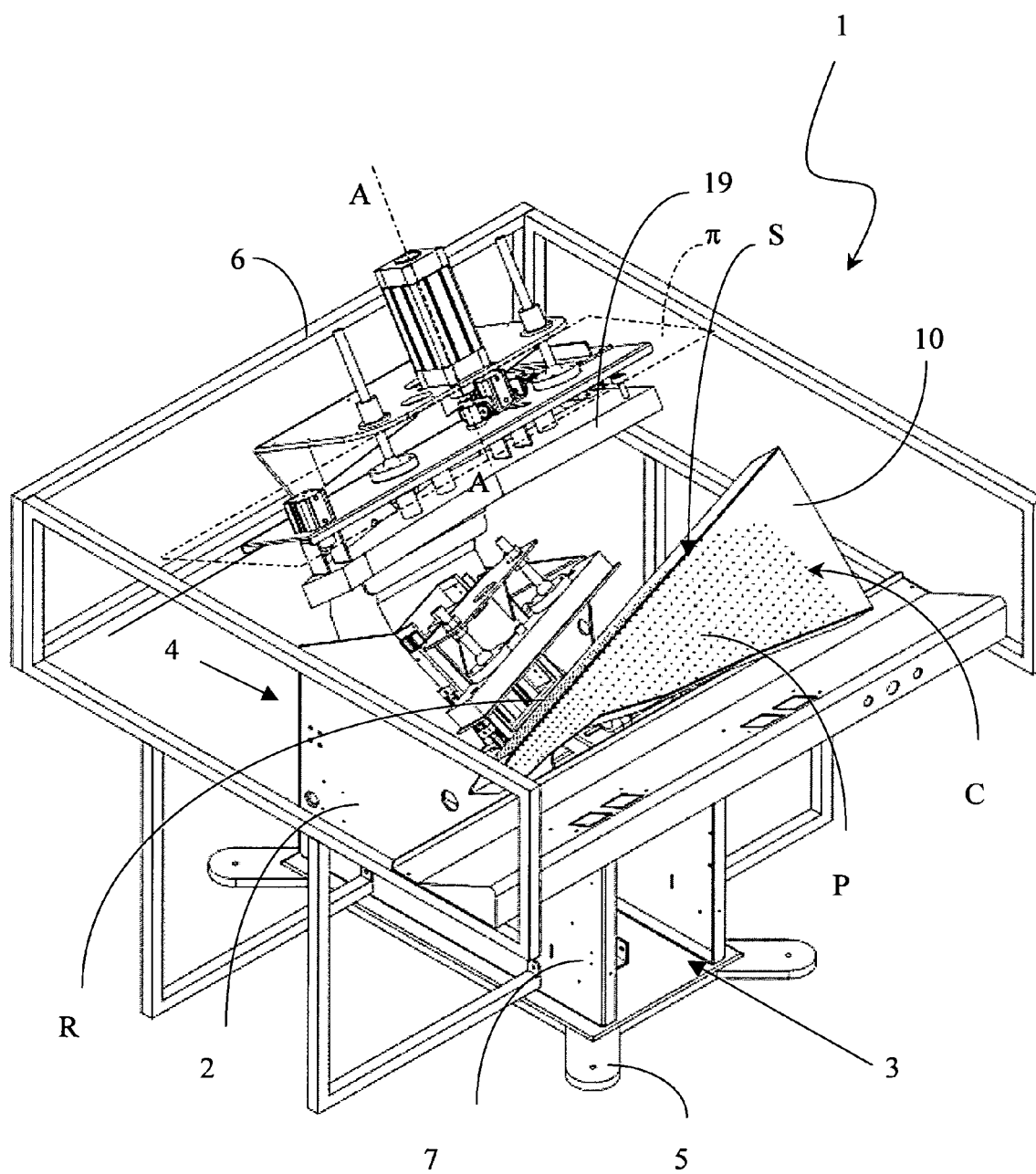


FIG. 1

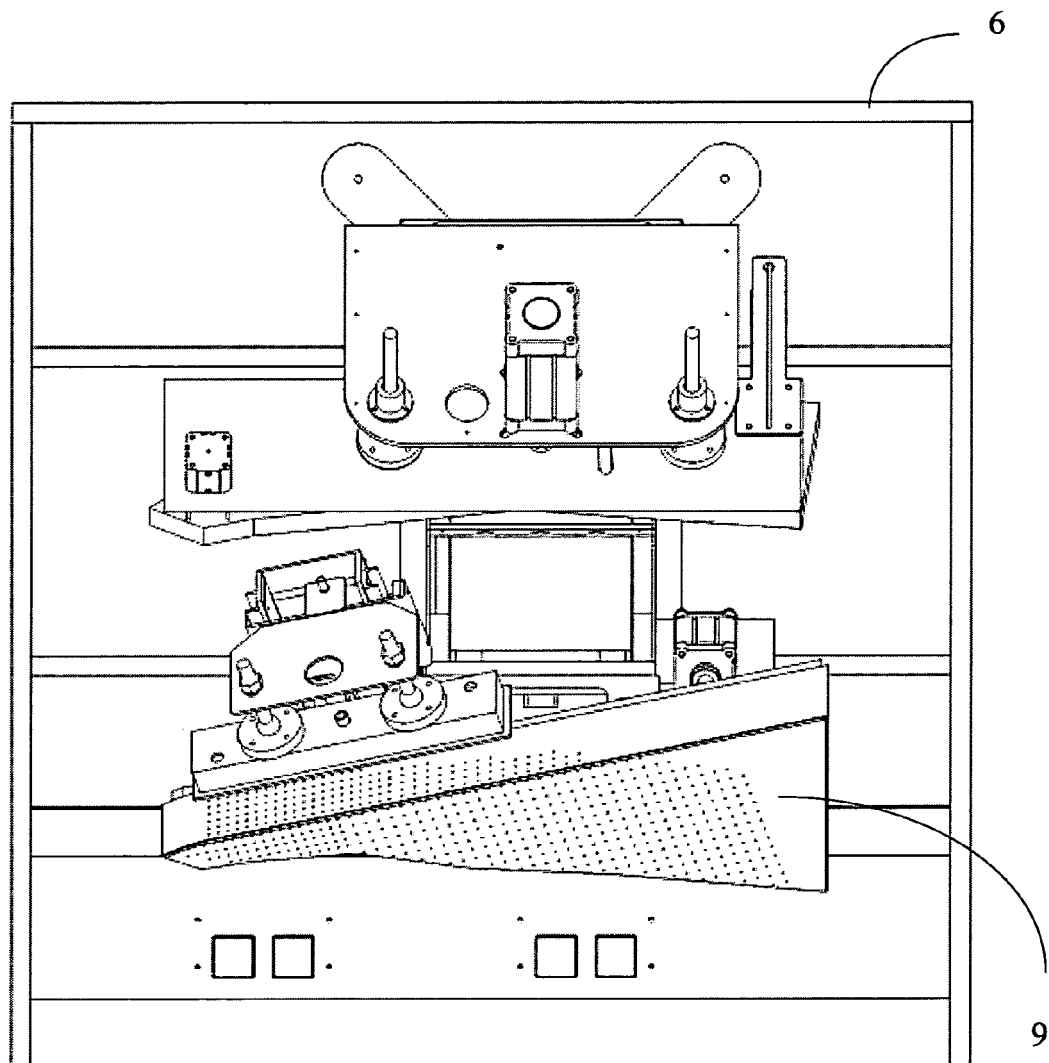
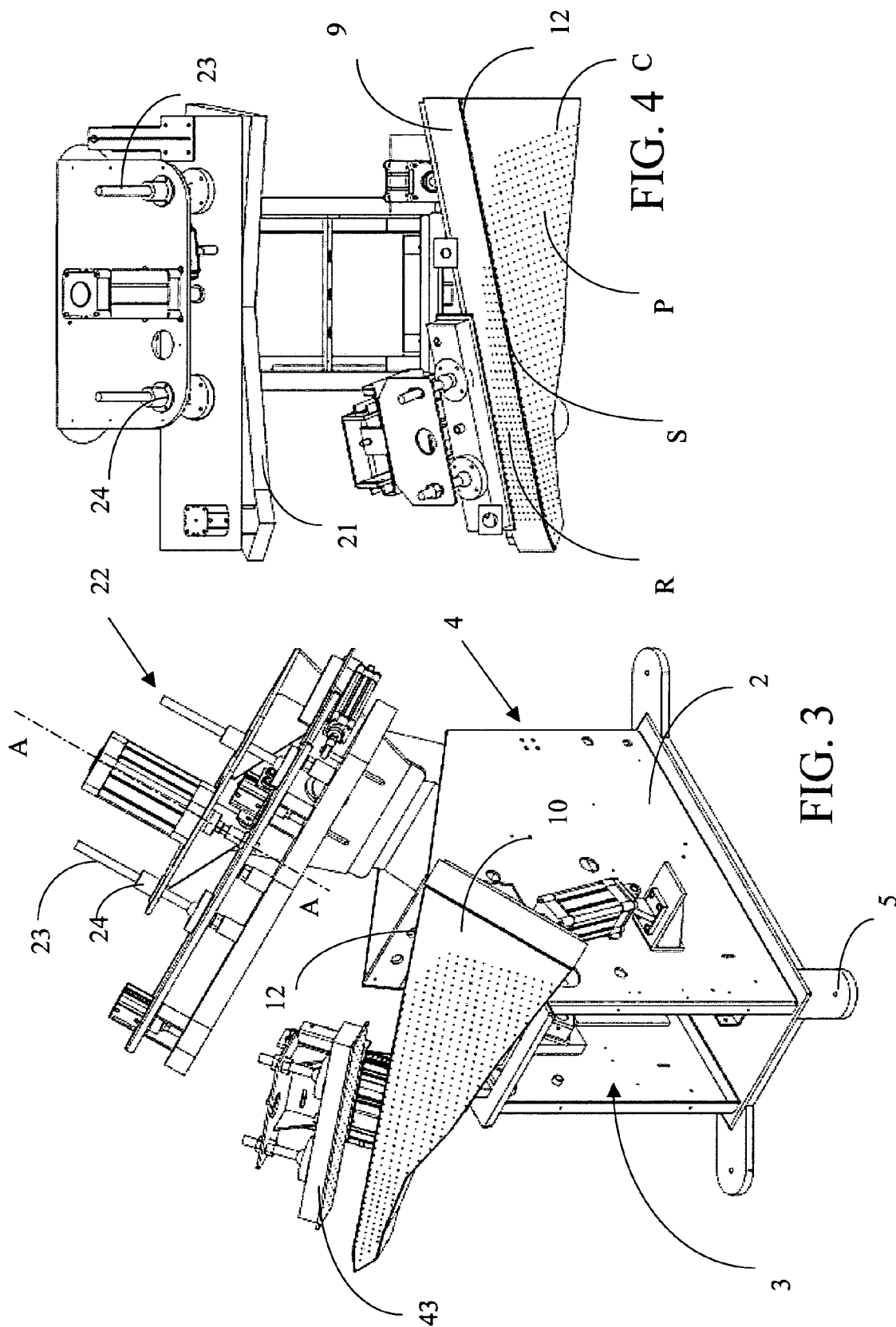


FIG. 2



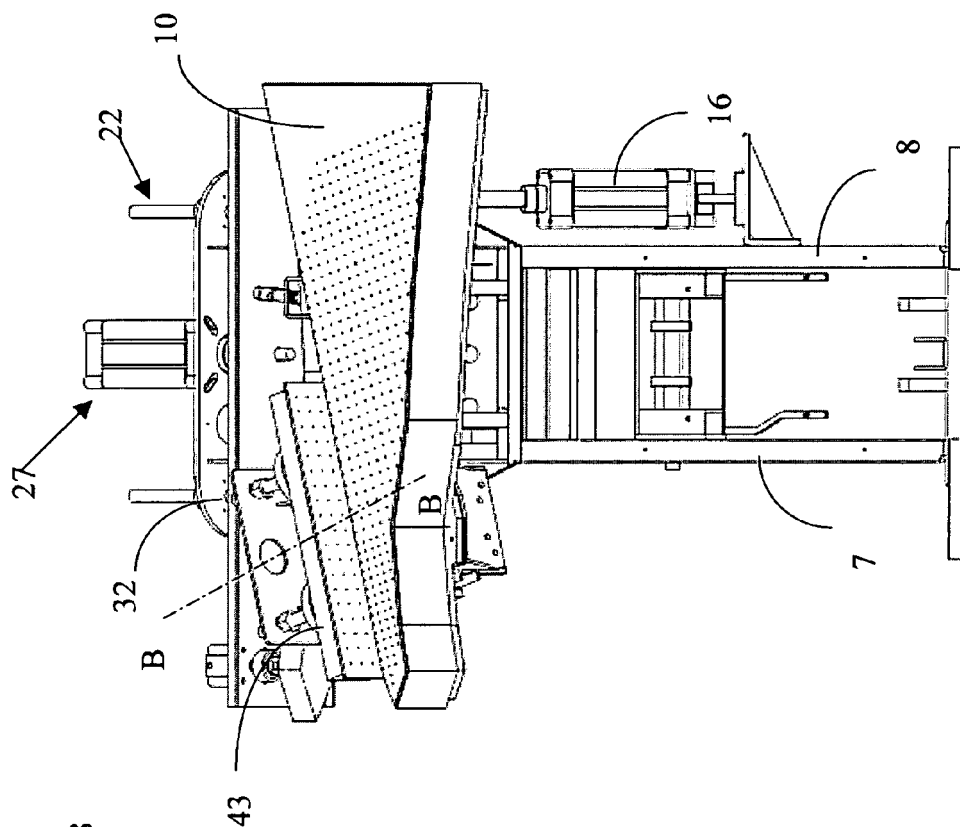


FIG. 5

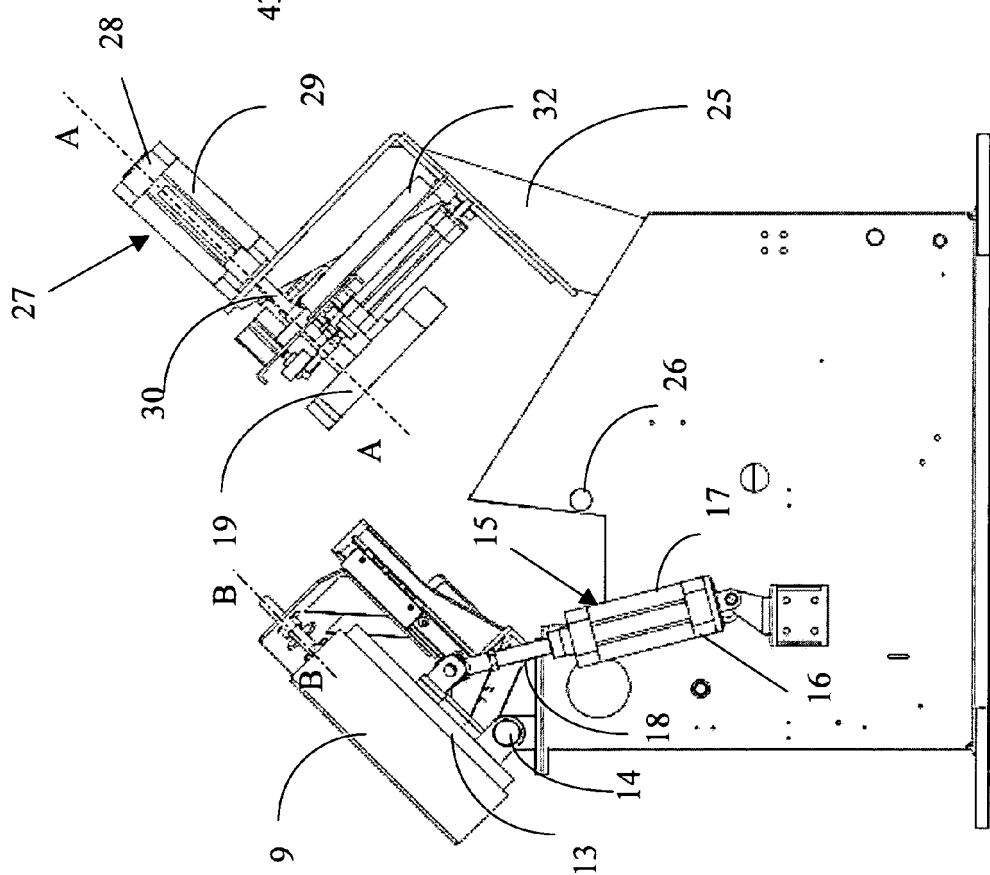


FIG. 6

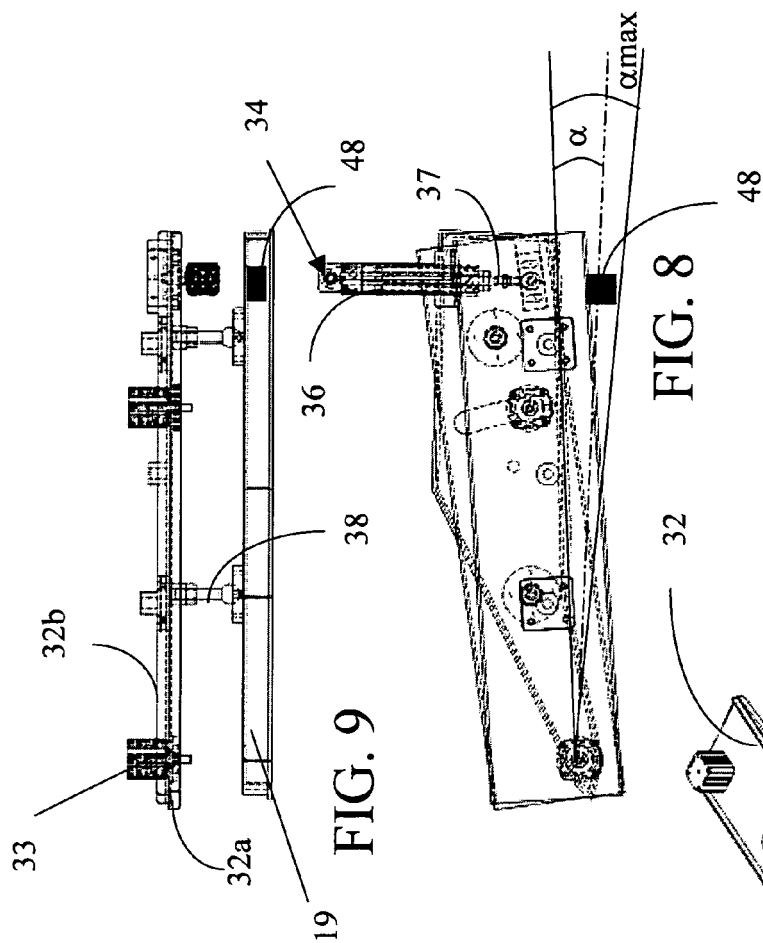


FIG. 9

FIG. 8

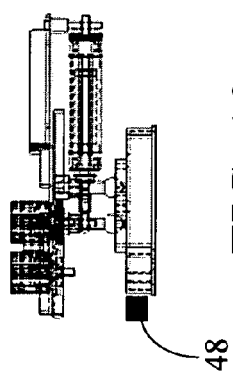


FIG. 10

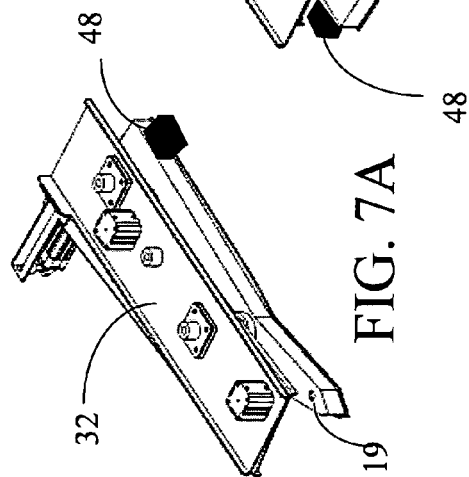


FIG. 7A

FIG. 7B

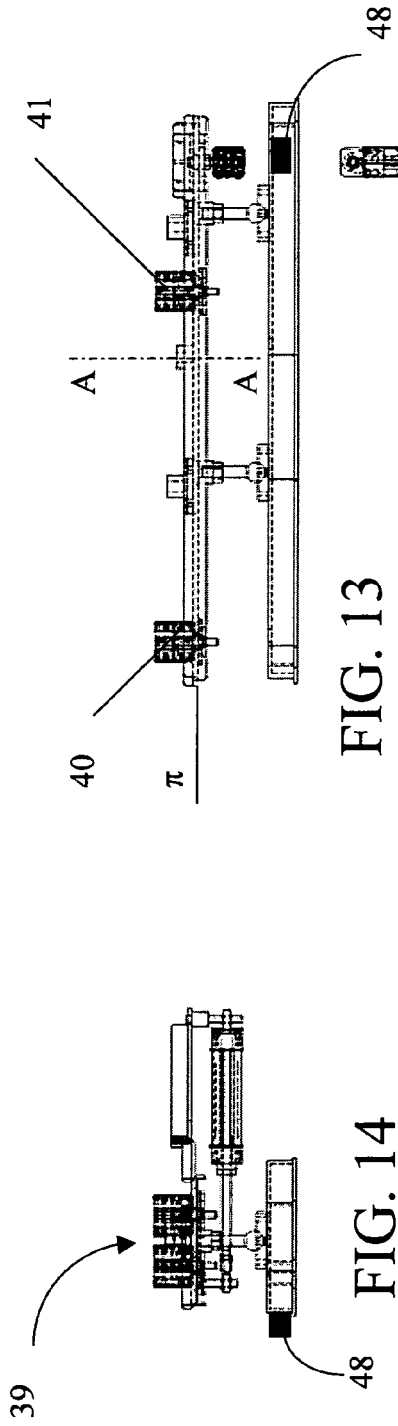


FIG. 13

FIG. 14

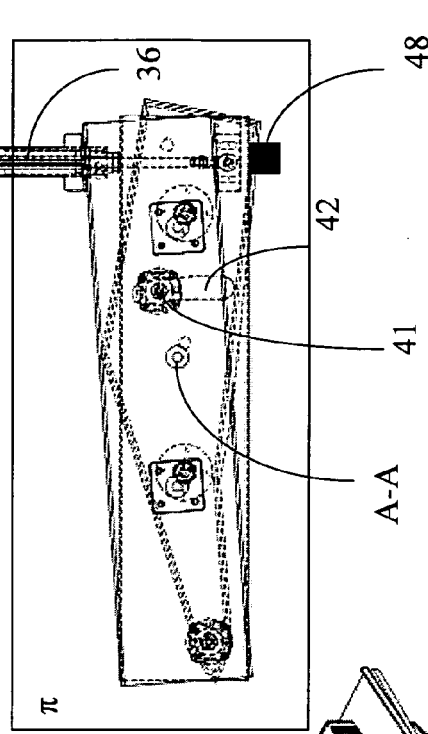


FIG. 12

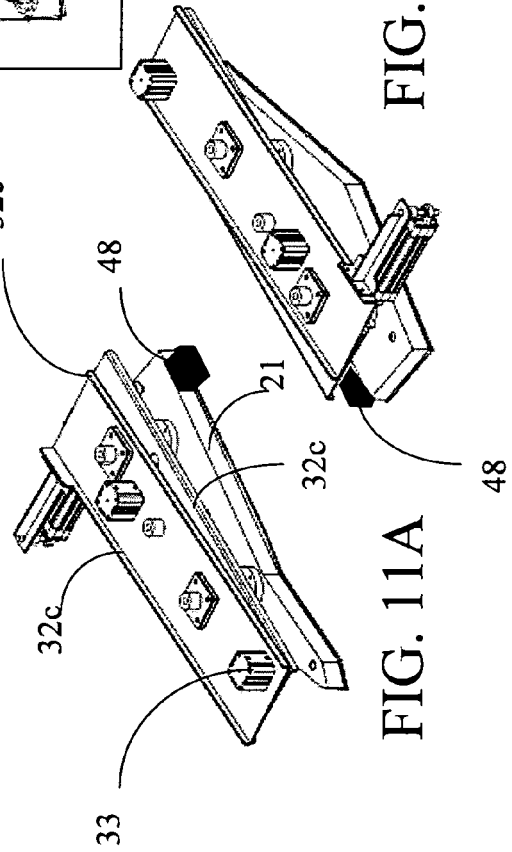


FIG. 11A

FIG. 11B

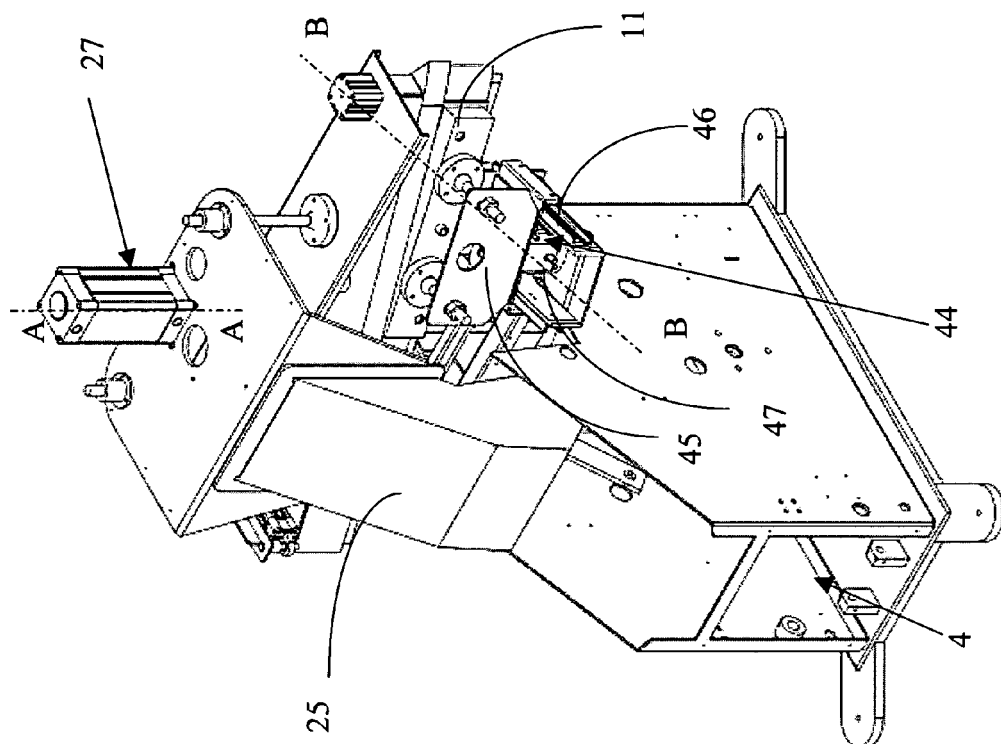


FIG. 16

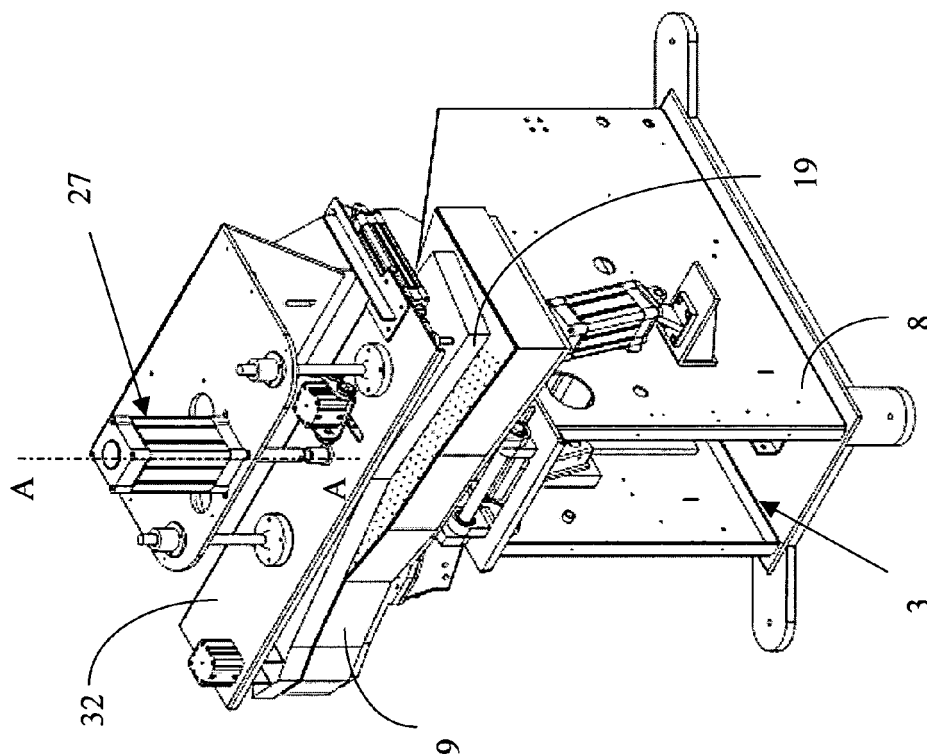


FIG. 15

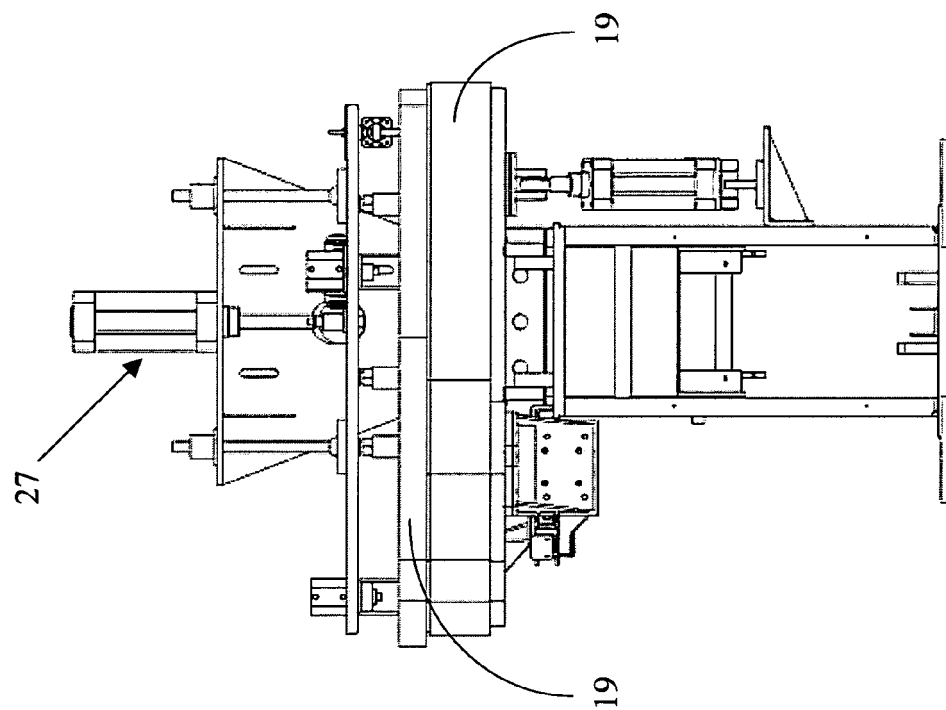


FIG. 17

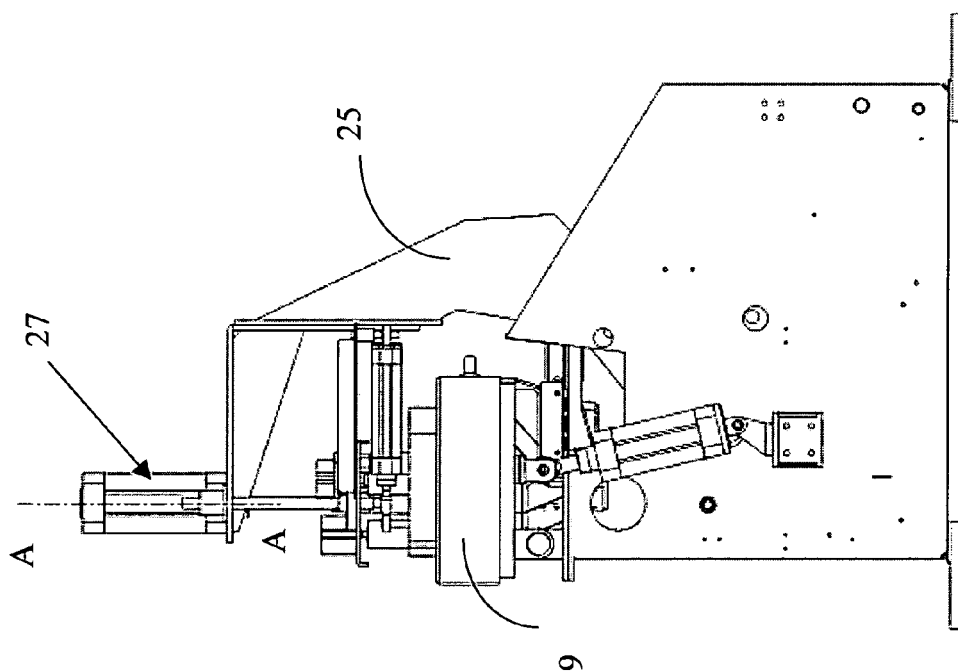


FIG. 18

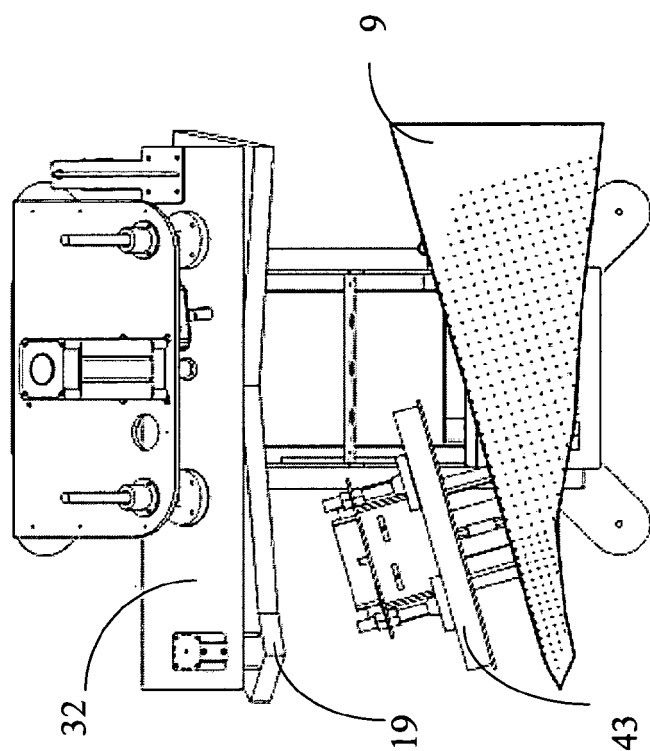


FIG. 20

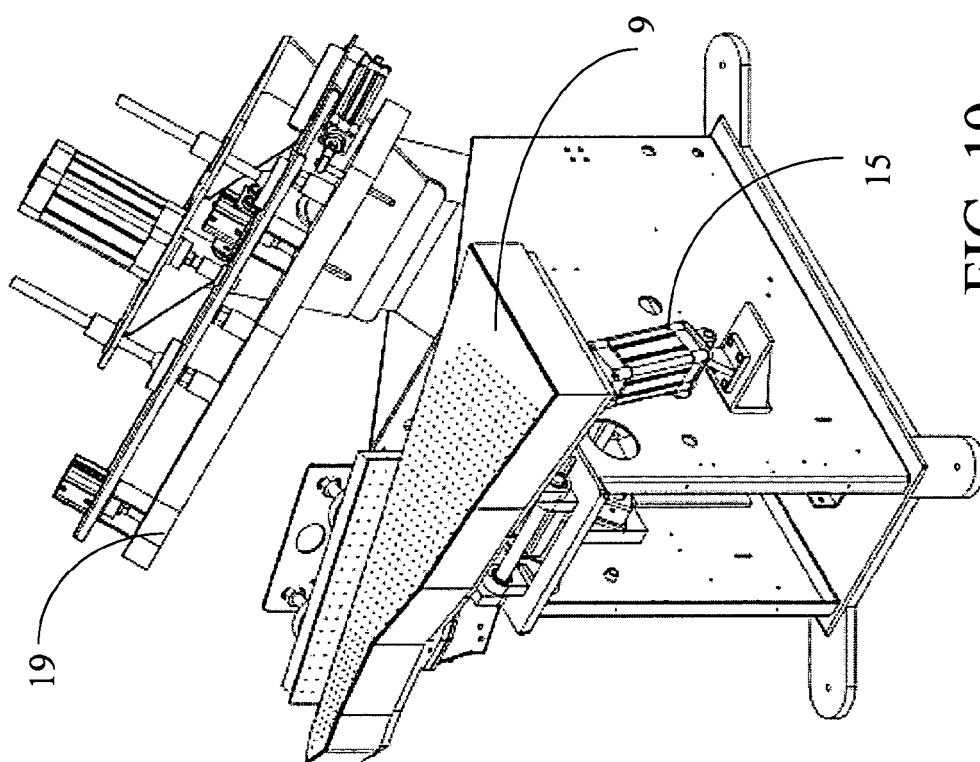


FIG. 19

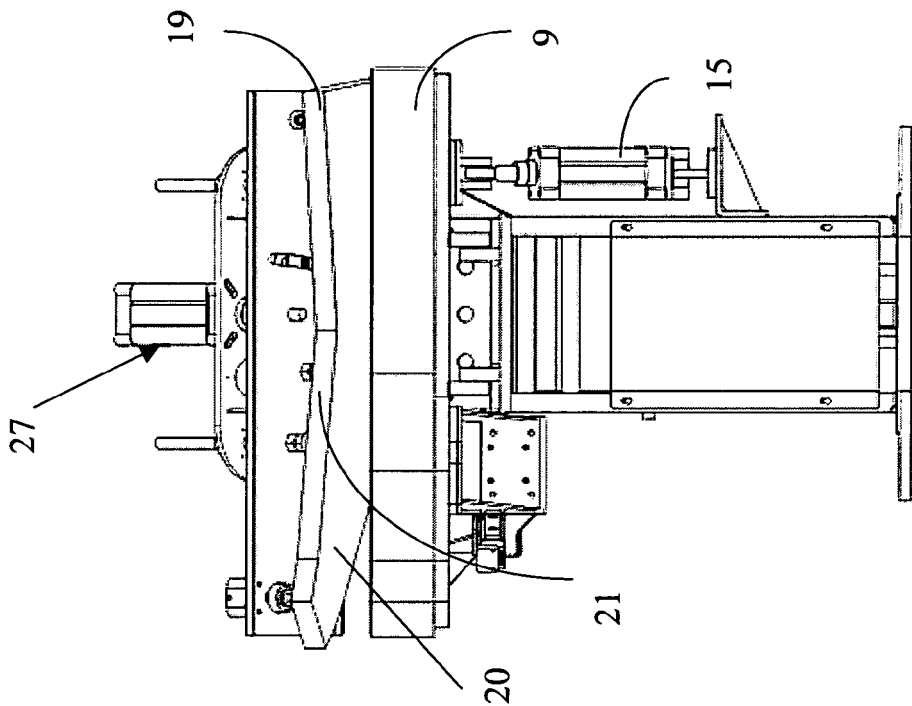


FIG. 21

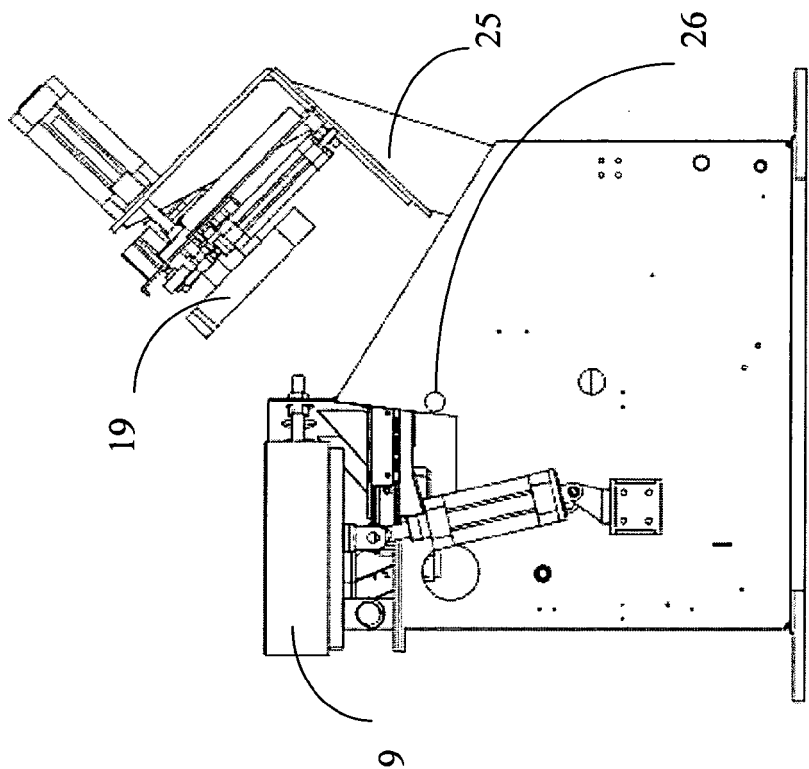


FIG. 22



European Patent
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EUROPEAN SEARCH REPORT

Application Number
EP 07 42 5183

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Place of search Munich		Date of completion of the search 16 August 2007	Examiner Weinberg, Ekkehard
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 07 42 5183

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