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(54) **Manual thermoplastic film packaging machine for postal and/or publishing products**

(57) A manual thermoplastic film packaging machine for postal and/or publishing products including a base (12), a single fold roll (14) of thermoplastic material (15), a heat sealing machine (28a, 28b) and a counterheat sealing machine (27a, 27b), in which the heat sealing machine (28a, 28b) is set on a vertical support structure (20) above the base (12) and the counterheat sealing machine (27a, 27b) is positioned on a pivoted (at 24) arm (25), near an upper end of the structure (20), horizontally pivoted and moveable between a non-operating position in which the heat sealing machine and the counterheat sealing machine are separated and a position in which the heat sealing machine and the counterheat sealing machine come into contact with each other to hold a portion (36) of the material (15) open along a lengthwise side and hanging from motorised feed rollers (18) set in the upper part of the structure (20), there being timed contact means (50) between the heat sealing machine and counterheat sealing machine and return means (31) in a non-operating position.

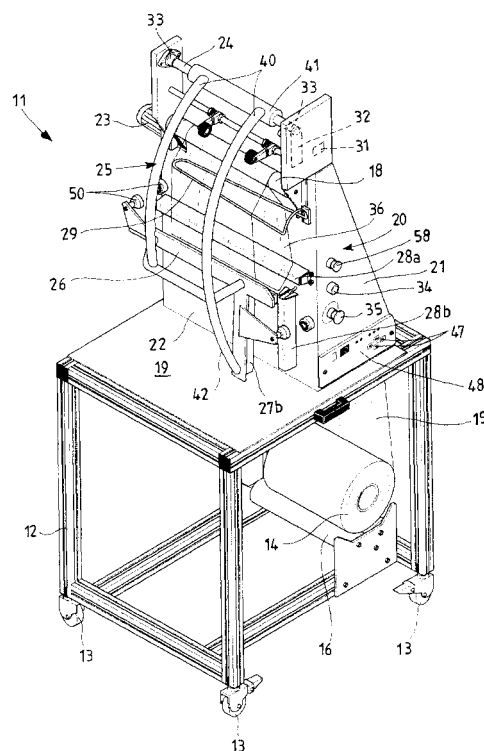


Fig.1

Description

[0001] The present invention refers to a manual thermoplastic film packaging machine for postal and/or publishing products.

[0002] In the field of packaging postal and/or publishing products within a plastic film, an apparatus is currently used simply consisting of a base which carries a roll of film and a horizontally pivoted heat sealing machine which is manually moveable between a raised rest position and a lowered position in contact with the film to produce the seal and the end package. In fact, after manually unrolling an initial roll segment, putting it on the base and wrapping it, at least partially, around a group of products, one then proceeds with the sealing of the film by moving the heat sealing machine from an almost vertical raised position to a horizontal lowered position.

[0003] This manual apparatus is extremely simple and does not cause any particular problems, apart from the necessary manual dexterity of the operator so as to satisfy industrially acceptable productivity levels.

[0004] In addition, the operator in charge must ensure that the film is well stretched out and that it does not wrap untidily thus preventing the introduction operations of the products and correct package creation.

[0005] Such machines are now particularly used e.g. in postal sorting offices in which the mail (letters, postcards, printed matter and similar) is put into groups, of several kinds, according to city zones, district, country or special post, namely priority post which must be delivered to the postman or someone in charge of the distribution of the same and is packaged there and then for improved transportation or to keep it together in a film of plastic material.

[0006] Such an apparatus, as has been said, does not allow the easy and quick handling of the mail and the creation of the package.

[0007] In addition, it takes up a fixed position and is not always easy to use inside offices, namely postal offices, with many post office boxes.

[0008] The aim of the present invention is to produce a manual thermoplastic film packaging machine for postal and/or publishing products which overcomes the aforesaid drawbacks and is easy and practical to use.

[0009] Another aim is to eliminate, as much as possible, some operations of relevancy to the staff in charge of packaging with problems linked with the correct positioning of the film, and its automatic repositioning, if possible, ready to produce the next package.

[0010] These aims, according to the present invention, are reached by producing a manual thermoplastic film packaging machine for postal and/or publishing products as in claim 1.

[0011] Additional characteristics of the invention emerge from the dependent claims.

[0012] The characteristics and advantages of a manual thermoplastic film packaging machine for postal and/or

or publishing products, according to the present invention, will be made clearer from the enclosed drawings, supplied simply as explanatory, non-limiting examples, in which:

figure 1 is a perspective view of a manual packaging machine, according to the present invention, open and ready to seal,

figure 2 is a perspective view of a packaging machine set in a post office with post office boxes for sorting and packaging mail into small packages wrapped in plastic material,

figure 3 is a side section view of a manual packaging machine, according to the present invention, open and ready to seal as shown in figure 1,

figure 4 is a side section view of a manual packaging machine, according to the present invention, of the type as shown in figure 1, which also has a lengthwise film precutting wheel.

[0013] With reference to the figures, a manual thermoplastic film packaging machine is shown for postal and/or publishing products produced, according to the present invention, denoted as a whole, by 11, with a vertical arrangement.

[0014] The packaging machine 11 includes a base 12, for example moveable on wheels 13, also with a brake lock, in a lower part of which is set a roll 14 of single fold thermoplastic material 15. The roll 14 is positioned on idle support rollers 16 which assist the guided flow of the plastic material 15 towards deviation rollers 17 up to a pair of feed and counter rollers 18. As said, the roll 14 holds the single fold material 15, i.e. a flattened tubular material and open along one lengthwise side, used to produce this type of packaging.

[0015] The base 12 carries a vertical support structure 20 on one of its work surfaces 19, consisting of two side shoulders 21 and a front wall 22, bearing the cited pair of feed and counter rollers 18 driven by a transmission and relative motor 23. One upper end of the support structure 20 carries a shaft 24 on which is pivoted an arm 25, horizontally pivoted as regards the support structure 20 and bearing a shaped plate 26 which carries an L-shaped counterheat sealing machine 27a, 27b.

[0016] An L-shaped heat sealing machine, constituted by two parts of transversal and longitudinal seal, is provided on the front wall surface 22 of the support structure 20, facing the horizontally pivoted arm 25. Said heat sealing machine is able to come into contact with the counterheat sealing machine 27a, 27b in two parts of transversal and lengthwise seal. Above, is also envisaged a splitter 29 made by a U-shaped rod, opening up the single fold film 15 which runs over it being fed by the pair of feed rollers 18. The film 15 thus takes on a vertical arrangement which is open on one side and ready for the simple insertion of the material to be packaged inside it.

[0017] In addition, figure 3 shows the presence of an additional separator element 30 before the rollers 18 that inserts itself into the single fold film 15 separating its two overlapped parts before introducing them on to rollers 18 and assisting the following insertion on to the splitter 29. There is also a microswitch 31 near the pivoting shaft 24 which is activated by a rod 32, integral with the shaft 24.

[0018] After a chosen period of time the microswitch 31, controlled by a control circuit, causes the disengagement of the two contact holding electromagnets 50 of the counterheat sealing machine 27a, 27b and heat sealing machine 28a, 28b. The electromagnets 50 are positioned on both the front wall 22 of the support structure 20 and the arm 25 and form timed contact means between the heat sealing machine and the counterheat sealing machine, connected to the microswitch 31. Upon disengagement, the heat sealing machine 28a, 28b and counterheat sealing machine 27a, 27b become separated.

[0019] Rotation of the arm 25 in returning to its raised position is carried out by a return spring (not shown) positioned near the end supports 33 of the shaft 24. In addition, the support structure 20, has an on switch 34 and off switch 35 in its side part or shoulder 21. An unrolling push button 58 feeds the necessary amount of film 36 to produce a package containing a certain number of envelopes and/or cards 37.

[0020] As shown in fig 4, there is the option of a notched wheel 38 or motorised lengthwise film precutting wheel 39 near the idle support rollers 16. This notched wheel 38 is in contact with a lengthwise side area of the unrolling film 15 so as to produce a knurled or scored line to assist opening of the final package.

[0021] The fixed heat sealing machine 28a, 28b and the moveable counterheat sealing machine 27a, 27b can be made of metal straps and preheated wires coated with Teflon or similar, which prevent sticking and/or the generation of smoke or toxic gases during the sealing operation.

[0022] The horizontally pivoted arm 25 for example is made up of a pair of curved bars 40, fixed to a coupling 41 positioned on the pivoting shaft 24, set integral with the two shoulders 21 of the support structure 20. The pair of bars 40 is also handle shaped 42 to assist the operator in working the packaging machine.

[0023] A manual packaging machine, according to the present invention, thus proves particularly advantageous to use, for example, in the sorting of mail set in post office boxes 43, 44 of a post office, as shown in fig 2.

[0024] This is since it is easy to position it next to the post office boxes 43 where an operator 45 picks up the groups of envelopes and/or cards 37, 37', 37" etc. and puts them in the portion of single fold film 36 hanging from the feed rollers 18 and suspended at the splitter 29 with a transversal bottom seal 46. At this stage, using the handle 42, the operator lowers the raised and de-

tached arm 25 so as to bring the counterheat sealing machine 27a, 27b into contact with heat sealing machine 28a, 28b. The sealing time is automatically activated, i.e. which can be set by the relevant switches 47 positioned on a control panel 48 of the packaging machine. Also the sealing temperature can be chosen, depending on the packaging material used, using the additional switches 47 supplied.

[0025] Upon expiry of the chosen sealing time, the packaging machine control circuit (not shown) activates the microswitch 31 which deactivates two contact holding electromagnets 50 of the counterheat sealing machine 27a, 27b and the heat sealing machine 28a, 28b.

[0026] The electromagnets 50 are positioned on both the front part 22 of the support structure 20 and on the arm 25. The electromagnets 50 are timed contact holding means between the heat sealing machine and counterheat sealing machine, connected to the microswitch 31.

[0027] The arm 25 is raised and returned by the cited spring parts (return spring, not shown) which acts between the shaft 24 and the coupling 41. The control circuit at this point activates the motor 23 which, if necessary, turns forwards and backwards the minimum amount necessary to ensure detachment of the sealed film end 36 at 46 from the heat sealing machine 28a. The new film portion 36 thus has a transversal seal 46 and is ready to receive an additional group of products 37.

[0028] Should the chosen film length hanging from the rollers 18 prove insufficient, further unrolling of the required amount of film is achieved by pressing the unrolling push button 58.

[0029] The vertical arrangement of the film ready to receive the groups of envelopes, cards and similar provides for a simple introduction of said groups into the same in the correct position. The film is always well stretched out vertically and immediately ready to accept new mail and produce a new package.

Claims

1. A manual thermoplastic film packaging machine for postal and/or publishing products including a base (12), a single fold roll (14) of thermoplastic material (15), a heat sealing machine (28a, 28b) and a counterheat sealing machine (27a, 27b), **characterised in that** said heat sealing machine (28a, 28b) is positioned on a vertical support structure (20) above the base (12) and said counterheat sealing machine (27a, 27b) is positioned on a pivoted (at 24) arm (25), near an upper end of said structure (20), horizontally pivoted and moveable between a non-operating position in which said heat sealing machine and the counterheat sealing machine are separated and a position in which said heat sealing machine and counterheat sealing machine come into contact

with each other to hold a portion (36) of said material (15) open along a lengthwise side and hanging from motorised feed rollers (18) set in the upper part of said structure (20), there being timed contact means (50) between said heat sealing machine and counterheat sealing machine and return means (31) in a non-operating position. 5

2. A manual packaging machine as in claim 1, **characterised in that** it is moveable since said base (12) has wheels (13). 10
3. A manual packaging machine as in claim 1, **characterised in that** both said heat sealing machine (28a, 28b) and counterheat sealing machine (27a, 27b) are L-shaped. 15
4. A manual packaging machine as in claim 1, **characterised in that** said arm (25) has a handle grip (42) to position it in an operating position. 20
5. A manual packaging machine as in claim 1, **characterised in that** said portion (36) of said material (15) open along a lengthwise side and hanging from feed rollers (18) runs over a splitter (29). 25
6. A manual packaging machine as in claim 1, **characterised in that** said motorised feed rollers (18) are controlled by a monitoring circuit to turn turn forwards and backwards the minimum amount necessary to ensure detachment of said lower sealed end (36) of said material (15), transversally sealed (at 46) from said heat sealing machine (28a). 30
7. A manual packaging machine as in claim 1, **characterised in that** said contact means consist of electromagnets (50) which can be engaged to keep said heat sealing machine (28a, 28b) and said counterheat sealing machine (27a, 27b) in contact with each other. 35 40

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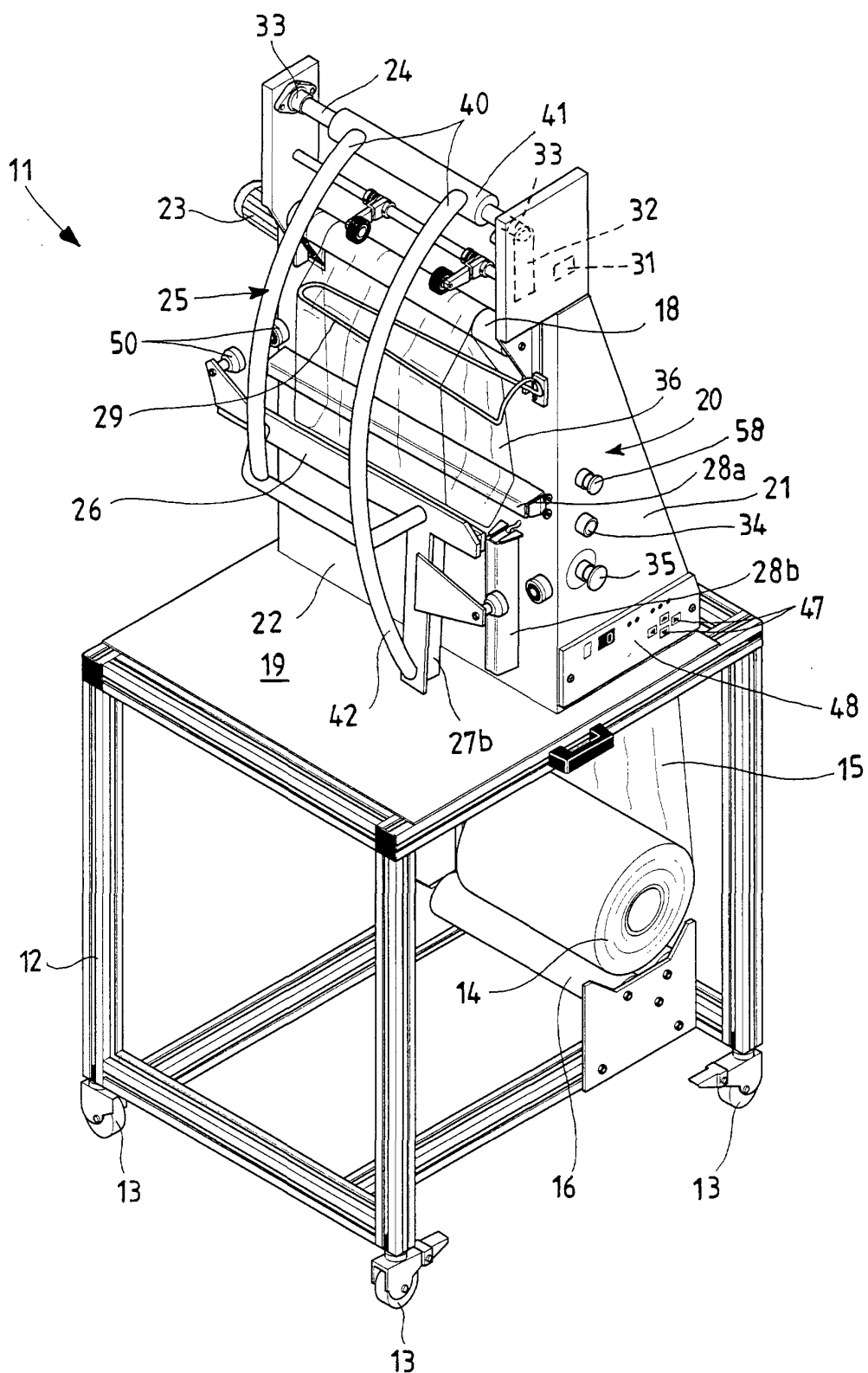


Fig.1

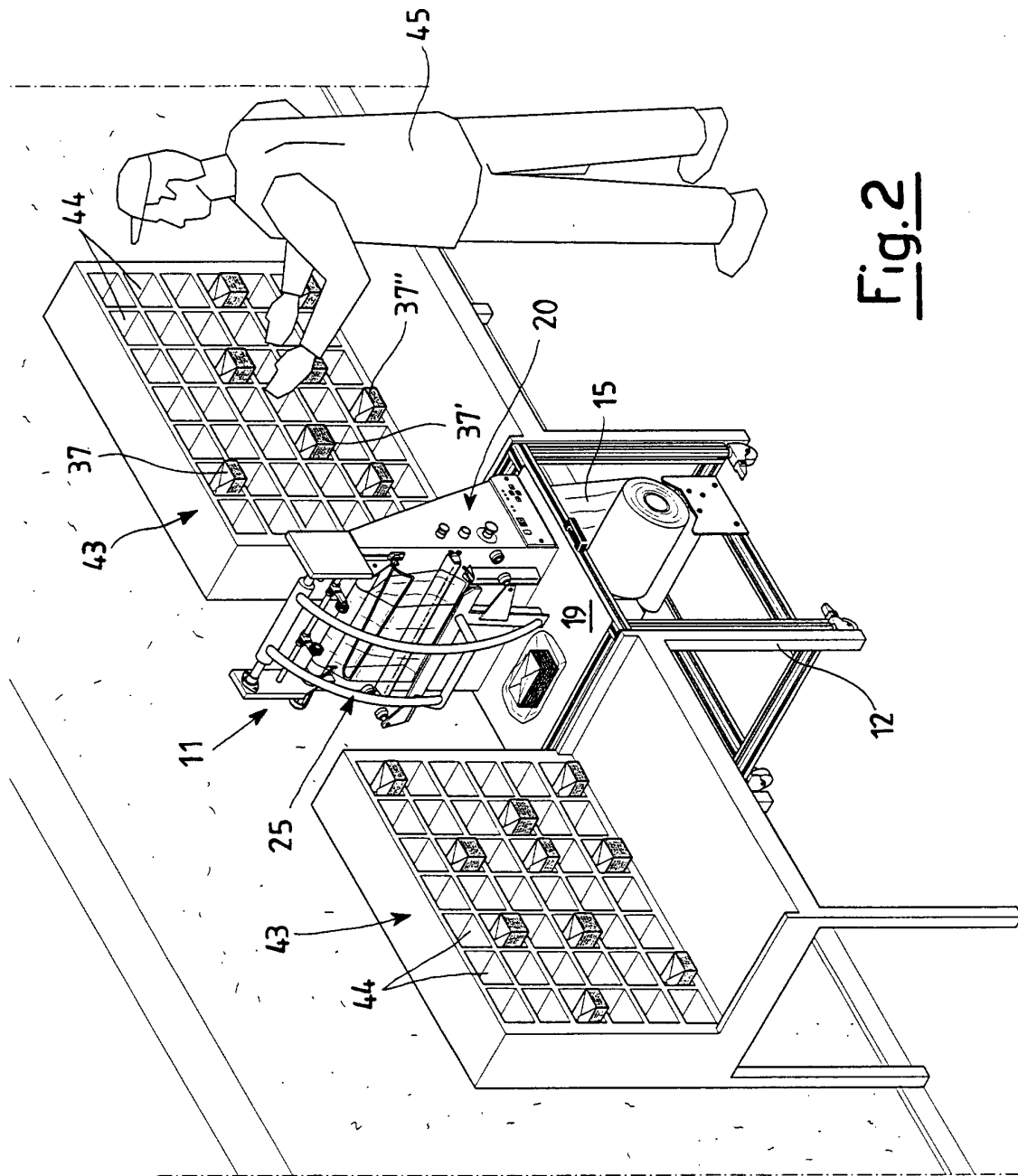


Fig. 2

Fig.3

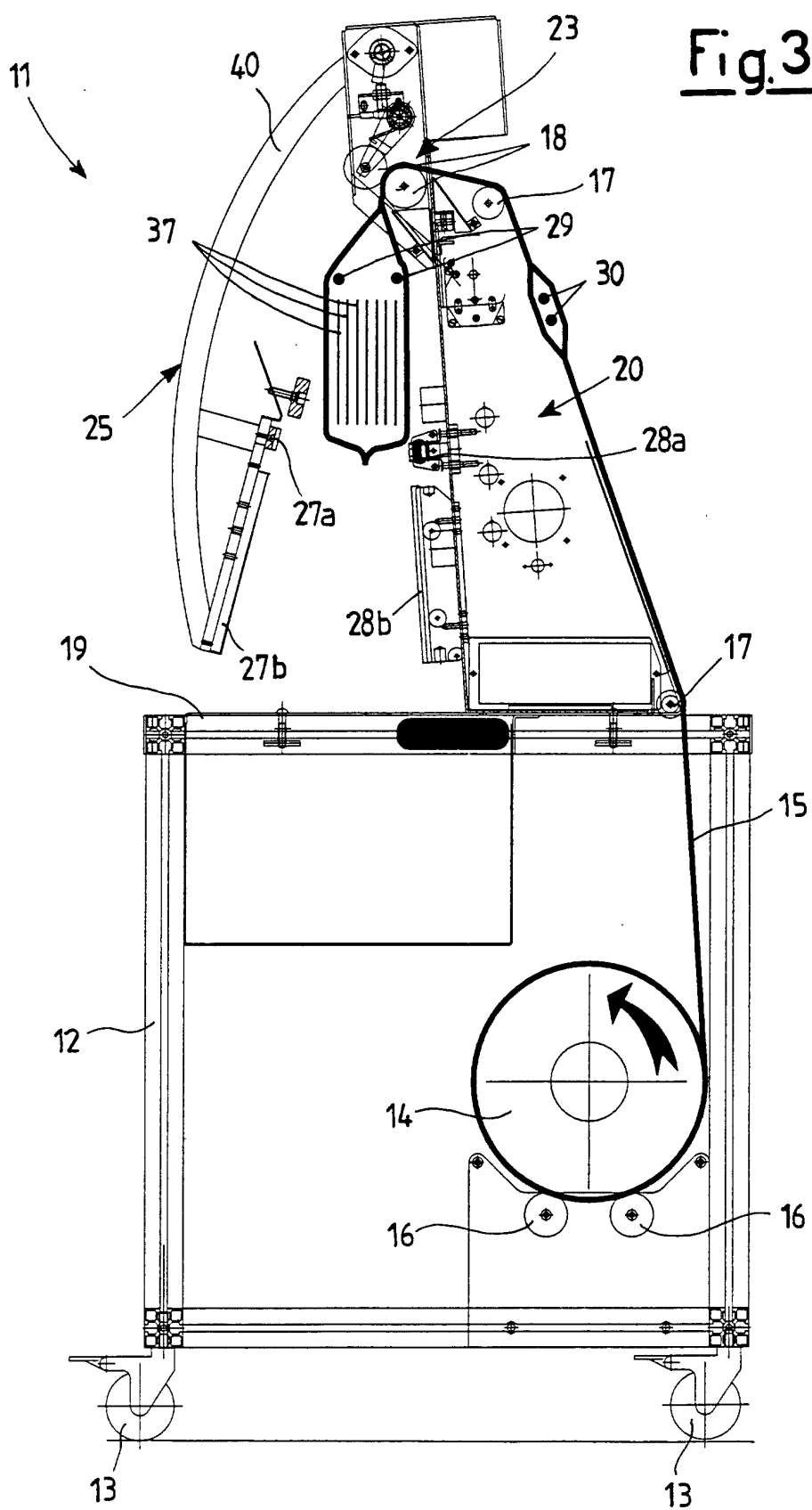


Fig.4

