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(54) **Automatic bagging machine of lids in self-adhesive bags**

Vorrichtung zum automatischen Verpacken von Deckeln in selbstklebende Beutel

Dispositif d'emballage automatique de couvercles dans des sachets autocollants

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(73) Proprietor: **Taller Autorema, s.l.
30564 Lorqui (Murcia) (ES)**

(72) Inventor: **Moreno Navarro, Rafael
30564 Lorqui -(Murcia) (ES)**

(74) Representative: **Carvajal y Urquijo, Isabel et al
Clarke, Modet & Co.,
C/ Goya No. 11
28001 Madrid (ES)**

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Description

[0001] The present invention relates to an automatic bagging machine of basic and easy-to-open lids in self-adhesive paper bags, the machine of which is particularly applicable within the metal container manufacturing industry and generally in any production line where lids or similar materials with respect to their physical and geometric features are worked with.

[0002] Automatic bagging machines comprising a lid cluster former, a bag storage area, means for extracting, shifting and forming the bags and means for inserting the lid clusters into the bags and closing said bags, said means being arranged practically in alignment, which simplifies the structure and operation of the machine are known in the art.

[0003] The present invention allows on one hand to achieve a greater effectiveness in obtaining the bags filled with the lids, and on the other hand, to facilitate the adaptation of the machine to the manufacturing requirements and conditions.

[0004] To that end according to the invention, the systems for lid cluster formation, for handling the empty bags and for inserting the lid clusters into the bags, as well as the systems for folding and closing the bags and for collecting and distributing the same, are improved, all this such that handled product traceability is maintained throughout the machine.

[0005] With the improvements of the invention, the machine is created with a modular concept starting from two modules, one a production track and the other one two parallel production tracks.

[0006] These modules can be grouped, forming combinations with one track, two tracks, three tracks, four tracks, etc., taking into account that the operating principle is the same for all the tracks, which will have their own autonomy in automatic and manual operation state. It will have an end conveyor belt for this arrangement which will be responsible for collecting the clusters of the different tracks and taking them to a cluster selection and distribution module according to track of origin, acting as a controlling storage area or deposit.

[0007] On the other hand, the machine of the invention includes, between the lid cluster former and the inserter of said clusters into the bags, a deposit responsible for controlling lid cluster supply. By means of this storage area, if the machine is operating normally with respect to bag collection, placement and formation, the lid clusters will go directly through the deposit, but not being stored therein, rather for their insertion into the unfolded bags. On the other hand, if any operation problem occurs during the different bag preparation and filling operations, the lid clusters supplied by the cluster former will be stored in the deposit area, up to a certain number, later being automatically extracted for carrying out bag filling.

[0008] Thus, in both the lid cluster supply process and in the final reception of bags with lid clusters, the machine has means for controlling the cluster and bag delivery

according to the machine operating conditions and manufacturing requirements.

[0009] According to the improvements inserted in the lid cluster former, the latter comprises a horizontal conveyor belt by means of which the lids are conveyed with a given spacing between them, a rotating wheel receiving the lids from the conveyor belt and grouping them in stack form, a stack divider for dividing it into clusters including a large predetermined number of lids, and a magnetic channel along which the clusters are shifted for their delivery to the lid inserter through the previously mentioned deposit.

[0010] The rotating wheel of the lid cluster former receives the lids from the belt in the horizontal position and drags and turns them 90° with mechanical or magnetic means until arranging them approximately in the vertical position, in which position it supplies them to the magnetic channel in stack form. This wheel includes a lid stack cutter or divider for cluster formation. The divider comprises a guide parallel to the magnetic channel, located above said channel, and a lid number limiter blade, which blade is assembled on said guide and can be shifted along the same, following the shifting of the lids from the rotating wheel and along the channel to the lid inserter. This blade acts in the area of the rotating wheel once the lid stack includes a pre-established number of lids, and it shifts along the guide, dragging or pushing the lid cluster to the lid inserter.

[0011] According to the invention the bag forming and closing means are also improved, which include a first pair of empty and positioned bag holding cylinders, provided with means for guiding the lids inside the bag and for holding said bag, means for opening the bag, a second pair of holding and compaction cylinders for compacting the lids inside the bag, and a bag folding cylinder assembly made up of two cylinders forming an L acting like a guillotine in order to carry out a first folding of the bag. Finally and as in the machine of the main patent, these closing means include a second bag folding cylinder and a final bag closure cylinder.

[0012] All the features set forth as well as others of the invention as they are included in the claims are explained below in greater detail with the aid of the attached drawings in which a non-limiting embodiment example is shown.

[0013] In the drawings:

Figure 1 shows a side elevational view of a machine constituted according to the invention.

Figure 2 shows a plan view of the machine of Figure 1, corresponding to a two-track module.

Figure 3 shows a plan view of the deposit or controlling storage area of the closed and filled bags at the machine outlet.

Figure 4 shows a side elevational view of the lid cluster former.

Figure 5 shows a front elevational view of the deposit in charge of controlling the supply of lid clusters, ac-

cording to the A-A direction of Figure 1.

Figure 6 shows a side view, on a larger scale, of the area of insertion, folding and sealing of the lids in the paper bags.

Figures 7 and 8 are a front elevational and upper plan view of the side stops of the lid cluster inserted in a paper bag.

Figures 9 and 10 show front elevational views of two consecutive positions of the mechanism carrying out the first folding of the bags.

Figure 11 shows a front elevational view of the heating mechanism of the glue for closing the bags.

Figure 12 shows a side elevational view of the bag storage area.

Figure 13 shows a front elevational view of the final closed bag collector according to line B-B of Figure 1.

[0014] As has been indicated, the machine of the invention is designed with a modular concept by means of modules which may include a single bagging track or line, or two tracks. These modules can later be combined with one another in order to arrange single-track, two-track, three-track machines, etc.

[0015] Figure 1 shows a side elevational view of a machine, independently of the number of tracks thereof, since all of them will be in parallel, whereas Figure 2 shows a plan view of the machine of Figure 1 corresponding to a two-track module.

[0016] In any case, each one of the tracks of the machine of the invention includes, as in the machine of the prior art, a lid cluster former, with reference number 1, a bag storage area, with reference number 2, a unit with means for removing and positioning the bags, with general reference number 3, and a unit with means for inserting the lid clusters into the bags and for the closure thereof, with general reference number 4.

[0017] The machine of the invention includes, between the lid cluster former 1 and the inserter 4 for inserting said clusters into bags, a deposit or storage area 5 in charge of controlling the lid cluster supply to the inserter 4.

[0018] A centralized collection system 6, Figure 2, or else a controlling deposit or storage area system 7, can be arranged at the outlet of the machine where the closed bags with the lid clusters are received, as is shown in Figure 3 for a two-track machine.

[0019] The lid cluster former 1 comprises, as can be seen best in Figure 4, a horizontal conveyor belt 8 in charge of receiving the lids, which can have a length of 500 mm for example, which moves the lids in horizontal position and with a given spacing therebetween. This conveyor belt delivers the lids to a rotating wheel 8' receiving the lids in horizontal position and conveying and rotating them 90° until placing them approximately in the vertical position, in which it delivers and groups them in stack form in a magnetic channel 9. Lid counting is carried out on the wheel 8' and once the stack includes the pre-established lid number, a cutter or blade 10 which is as-

sembled and can be shifted along a guide 11 parallel to the channel 9 and located above the same begins to operate. This cutter or blade 10 acts as a lid stack dividing element, forming clusters which are pushed by the blade itself along the channel 9, as the head 12 of said blade shifts along the guide 11 until a position 12' in which the inserter 14, which includes a compactor 13, begins to operate and is shifted to the end position 14', shifting the lid cluster to the filling and closing area 4 when the rest of the machine is operating normally. However, if any problem occurs in the collection of the bag from storage area 9 or in its placement and opening in area 3, the lid inserter 14 will place the cluster in the deposit 5, which includes a series of receiving stations 16 which are arranged in levels vertically shiftable from a position in which both the collection of clusters coming from the magnetic field 9 and the delivery of clusters to insertion area 4 for inserting clusters in the bags occur, being possible to select in any case the direct passage of the lid clusters from the magnetic channel to the lid inserter or through the deposit, depending on the operating circumstances of the rest of the machine, as has been indicated.

[0020] As in the main patent, the means for extracting and shifting the bags from the storage area 2 include a set of guides 17 running above the bagging line 18, in which guides there is assembled a bag extractor 19, shiftable along said guides by means of a cylinder between a rear position on the bag storage area 2 and a front position in which the bag opening and holding will be carried out, as will be explained in reference to Figures 6 to 11.

[0021] The machine of the invention includes two cylinders 19 and 20 for the holding of the bags. When the bag shifter 17' reaches the position represented in Figure 6, at the end of the run, and once the bag is placed in its active position, the cylinder 19, which bears a tongue 22 that is inserted in the bag above the lower wall thereof, is actuated. This tongue will act as a runner to subsequently facilitate entry of the lid cluster in the bag. Then the cylinder 20 is actuated, moving upwards and pressing against the lower wall of the bag between the tongue 22 and the head of the cylinder 20, the bag thus being secured. Then bag opening is performed by means of an air jet supplied through an adjustable nozzle 41, and once the bag is open the cone nozzle 21 advances to position 21', being inserted in said bag. Then the lids can be inserted in the bag, as described in the main patent, the compaction cylinders 23, Figures 7 and 8, later acting. These cylinders act in a converging position, remarkably tangent to the front section of the lid cluster 24, acting as members for cluster retention and compaction against a rear stop 25, Figures 1 and 2, coinciding with the machine described in the main patent. In Figure 7, it can be seen how the bag 24 is supported at the lower portion by retractable arms 44.

[0022] Two cylinders 25 and 26 forming an L, the second of which has a folder arm 27, have been arranged for closure of the bag once the lid cluster 24 has been

inserted therein. The bringing closer together or separation of the cylinder 25 and arm 27 from the bag 28 containing the lid cluster is achieved by means of the cylinder 25. Once the cylinder 25 is brought closer and actuated by means of the lowering of the arm 27, as is observed in Figure 10, a first bag folding operation is carried out, said arm acting as a guillotine. Keeping the cylinder and arm 27 in the position of Figure 10 and according to that described in the main patent, it has a lower roller 30 by means of which a second folding is carried out, the closing of the bag being finished with an end cylinder 42, Figure 1.

[0023] As in the case of the main patent, there is a glue heater 31 for closing the bag, Figures 6 and 11, which is shiftable by means of rotation in order to bring it closer to the bag 28 and withdraw it once the necessary time has elapsed.

[0024] To facilitate the bag loading operation, one of the sides 33 in the bag storage area 2 has been designed as a collapsible panel to facilitate positioning of the bags 34 and their placement on a raisable-bottom platform 35.

[0025] Otherwise, the machine of the invention can have a single central collection 36 at the outlet of the closed bags containing the lid cluster, as shown in Figure 2, in which case each track of the module will have its own encoding and labeling system for the purpose of not losing product traceability.

[0026] A collector for each track can also be arranged, as shown in Figure 3, in which two collectors 40 are arranged for a two-track machine.

[0027] Figure 13 shows a front elevational view of the closed bag collector. Once the bag with the lid stack is folded and sealed, a distributor system acts which opens the retractable arms 44 and drops the cluster into an output deposit 36 in vertical chamber, which has gates 45 that can be actuated by means of cylinders to retain or allow the bags 28 to drop down to the buckets 38 passing underneath, dragged by the conveyor belt 37. This deposit has the purpose of storing the clusters while waiting, if necessary, for the conveyor belt 37 with buckets 38 to collect the clusters 28 and carry them to a distribution conveyor belt 39 from where they reach the delivery tray 40. The conveyor belt 39 will leave each cluster in the corresponding tray 40, Figure 3, as each one is identified with a track of the machine, such that there is correct product traceability from start to finish. The work of the operator in charge of the machine is facilitated by means of this arrangement since the design of the machine is more ergonomic and makes the finished cluster collection easier for their subsequent placement on a pallet. When it is not necessary to divide the bags according to the track of origin, a single tray 40 can be arranged, as shown in Figure 1, conveyor belt 39 being eliminated in this case since the bags 28 will be dumped directly by the buckets 38 in the tray.

Claims

1. An automatic bagging machine of basic and easy-to-open lids in self-adhesive paper bags, which machine comprises a lid cluster former (1), a bag storage area (2), means (3) for extracting and positioning the bags, and means (4) for introducing the lid clusters in the bags and for the closure thereof, **characterized in that** it further includes a deposit (5) between the lid cluster former (1) and the inserter of said clusters into the bags which is responsible for controlling the lid cluster supply; and **in that** the lid cluster former (1) comprises a horizontal conveyor belt (8) by means of which the lids are conveyed with a given spacing between them, a rotating wheel (8) which receives the lids of the conveyor belt (8) and groups them in stack form, a divider for dividing the stack into clusters including a predetermined number of lids and a magnetic channel (9) along which the clusters are shifted for their delivery to the lid inserter through said deposit; and **in that** the means for forming and closing the bags include a first pair of positioned bag holding cylinders (19, 20) provided with means for guiding the lids into the bag and for holding said bag, means for opening the bags, a second pair of holding and compaction cylinders (23) for compacting the lids inside the bag, and a bag folding cylinder assembly made up of two cylinders (25, 26) forming an L acting by way of a guillotine (27) to carry out a first folding of the bag, and a roller (30) for a second folding of the bag and final closure thereof.
2. The automatic bagging machine according to claim 1, **characterized in that** the rotating wheel (8') of the lid cluster former receives the lids from the conveyor (8) belt in the horizontal position and drags and turns them 90° until arranging them approximately in the vertical position in which they are fed to a magnetic channel (9) for stack formation, the rotating wheel (8') including a lid stack cutter or blade (10).
3. The automatic bagging machine according to claim 1, **characterized in that** the lid stack cutter (10) comprises a guide (11) parallel to the magnetic channel (9) located above said channel, and a lid number limiter blade assembled on said guide (11) and can be shifted along the length thereof; said cutter (10) acts in the area of the rotating wheel (8') once the lid stack includes the pre-established lid number, and shifts along the guide (11), dragging the lid cluster (24) to a lid inserter (14).
4. The automatic bagging machine according to claim 1, **characterized in that** the deposit (5) responsible for controlling lid cluster supply comprises a series of lid cluster receiver stations (16) which are arranged in levels that are vertically shiftable from a

position, wherein the receiving of clusters coming from the magnetic channel (11) for the lid cluster formel (1) and the delivery of clusters to the lid inserter (14) takes place, the direct passing of the lid cluster (24) from the magnetic channel (11) to the lid inserter (14) or the passing through the deposit (5) being selectable.

5. The automatic bagging machine according to claim 1, **characterized in that** the first pair of cylinders (19, 20) of the bag formation means includes a first horizontally operating cylinder (19) which incorporates a tongue (22) that can be inserted in a positioned bag (28) in order to act as a runner to guide the insertion of the lid clusters in the bag (28), and a second lower vertically operating cylinder (20) able to press and hold the lower wall of the bag (28) against said tab. 10
6. The automatic bagging machine according to claim 1, **characterised in that** the means for opening the bags (28) consist of a nozzle (41) the outlet of which is aimed towards the opening of a positioned bag; through which nozzle (41) an air jet is supplied towards the inside of the bag (28). 15 20 25
7. The automatic bagging machine according to claim 1, **characterized in that** the cylinders (23) of the second pair of holding and compaction cylinders are arranged one on each side of the bag (28) containing the lid cluster (24), the cylinder (23) of which act in converging directions on the opening of said bag, tangent to the front of the lid cluster (24) for their retention and compression against an upper support stop of the bag (28). 30 35
8. The automatic bagging machine according to claim 1, **characterized in that** in the two cylinders (25, 26) forming an L of the first folding cylinder assembly, the first cylinder (25) acts as a means of bringing the second cylinder (26) closer, the second cylinder of which is provided with an arm (27) parallel to the first cylinder (25) and shiftable in the direction perpendicular to the axis of the bag (28) and lid cluster (24). 40
9. The automatic bagging machine according to claim 1, **characterized in that** it comprises a deposit (7) responsible for receiving and storing the closed bags (28) containing a lid cluster (24), from where a collection conveyor collects them and carries them to a distribution conveyor. 50
10. The automatic bagging machine according to claim 1, **characterized in that** the bag storage area (2) has a hinged collapsible wall on one of its sides which acts as a base platform (35) for placing and ordering the bags, from where they are inserted in stack form on the floor of the storage area. 55

Patentansprüche

1. Automatische Beutelabfüllmaschine mit grundlegenden und leicht zu öffnenden Verschlüssen in selbstklebenden Papierbeuteln, wobei die Maschine eine Verschlussballenformeinrichtung (1), einen Beutelaufbewahrungsbereich (2) und eine Einrichtung (3) zum Herausziehen und Positionieren der Beutel umfasst sowie eine Einrichtung (4) zum Einführen der Verschlussballen in die Beutel und zum Verschließen dieser, **dadurch gekennzeichnet, dass** die Maschine ferner ein Lager (5) zwischen der Verschlussballenformeinrichtung (1) und der Einrichtung zum Einfügen der genannten Ballen in die Beutel aufweist, die dafür zuständig ist, die Verschlussballenzufuhr zu regeln; und wobei die Verschlussballenformeinrichtung (1) ein horizontales Förderband (8) umfasst, durch das die Verschlüsse mit einem bestimmten Zwischenabstand zwischen diesen transportiert werden, mit einem Drehrad (8'), das die Verschlüsse von dem Förderband (8) aufnimmt und diese in Stapelform zusammenfasst, mit einem Teiler zum Teilen des Stapels in Ballen, einschließlich einer vorbestimmten Anzahl von Verschlüssen, und mit einem magnetischen Kanal (9), entlang welchem die Ballen für ihre Zufuhr an die Verschlusseinführungseinrichtung durch das genannte Lager verschoben werden; und wobei die Einrichtung zum Bilden und Verschließen der Beutel ein erstes Paar positionierter Beutelhaltezyylinder (19, 20) aufweist, die mit einer Einrichtung zum Führen der Verschlüsse in den Beutel und zum Halten des genannten Beutels versehen sind, mit einer Einrichtung zum Öffnen der Beutel, mit einem zweiten Paar von Halte- und Kompaktierungszyindern (23) zum Kompaktieren der Verschlüsse in dem Beutel, und mit einer Beutelfaltzylindereinheit, die aus zwei Zylindern (25, 26) besteht, die ein L bilden, das mittels einer Guillotine (27) so fungiert, dass ein erstes Falten des Beutels ausgeführt wird, und mit einer Walze (30) für ein zweites Falten des Beutels und das letztendliche Verschließen desselben. 5 10 15 20 25 30 35 40 45
2. Automatische Beutelabfüllmaschine nach Anspruch 1, **dadurch gekennzeichnet, dass** das Drehrad (8') der Verschlussballenformeinrichtung die Verschlüsse von dem Förderband (8) an der horizontalen Position aufnimmt und diese um 90° zieht und dreht, bis sie ungefähr an einer vertikalen Position angeordnet sind, an der sie einem magnetischen Kanal (9) für die Stapelbildung zugeführt werden, wobei das Drehrad (8') einen Verschlussstapelschneider oder eine Verschlussstapelklinge (10) aufweist. 50
3. Automatische Beutelabfüllmaschine nach Anspruch 1, **dadurch gekennzeichnet, dass** der Verschlussstapelschneider (10) eine Führung (11) parallel zu dem magnetischen Kanal (9) umfasst, ange- 55

ordnet oberhalb des genannten Kanals, und mit einer an der genannten Führung (11) montierten Verschlussanzahlbegrenzungseinrichtung, die entlang ihrer Länge verschoben werden kann; wobei der genannte Schneider (10) in dem Bereich des Drehrads (8') arbeitet, wenn der Verschlussstapel die vorher festgelegte Anzahl von Verschlüssen aufweist, und wobei sie entlang der Führung (11) verschoben wird, wobei der Verschlussballen (24) zu einer Verschlusseinführungseinrichtung (14) gezogen wird.

4. Automatische Beutelabfüllmaschine nach Anspruch 1, **dadurch gekennzeichnet, dass** das Lager (5), das für die Regelung der Verschlussballenzufuhr zuständig ist, eine Reihe von Verschlussballen-Aufnahmestationen (15) umfasst, die in Ebenen angeordnet sind, die vertikal von einer Position verschiebbar sind, worin die Aufnahme der von dem magnetischen Kanal (11) für die Verschlussballenformeinrichtung (1) kommenden Ballen und die Zufuhr der Ballen an die Verschlusseinführungseinrichtung (1) erfolgt, wobei der Verlauf der Verschlussballen (24) direkt von dem magnetischen Kanal (11) zu der Verschlusseinführungseinrichtung (14) oder der Verlauf durch das Lager (5) ausgewählt werden kann.
5. Automatische Beutelabfüllmaschine nach Anspruch 1, **dadurch gekennzeichnet, dass** das erste Paar von Zylindern (19, 20) der Beutelbildungseinrichtung einen ersten horizontal arbeitenden Zylinder (19) aufweist, der eine Zunge (22) aufweist, die in einen positionierten Beutel (28) eingeführt werden kann, um als ein Läufer zu fungieren, um die Einführung der Verschlussballen in den Beutel (28) zu führen, und mit einem zweiten unteren, vertikal arbeitenden Zylinder (20), der die untere Wand des Beutels (28) an den genannten Streifen drücken und halten kann.
6. Automatische Beutelabfüllmaschine nach Anspruch 1, **dadurch gekennzeichnet, dass** die Einrichtung zum Öffnen der Beutel (28) eine Düse (41) aufweist, deren Auslass in Richtung der Öffnung eines positionierten Beutels ausgerichtet ist; wobei durch die Düse (41) ein Luftstrom in Richtung der Innenseite des Beutels (28) zugeführt wird.
7. Automatische Beutelabfüllmaschine nach Anspruch 1, **dadurch gekennzeichnet, dass** die Zylinder (23) des zweiten Paares der Halte- und Kompaktierungszylinder mit einem Zylinder auf jeder Seite des Beutels (28) angeordnet sind, der den Verschlussballen (24) aufweist, wobei die Zylinder (23) in konvergierende Richtungen an der Öffnung des genannten Beutels wirken; tangential zu der Vorderseite des Verschlussballens (24) für deren Zurückhalten und Kompression an einen oberen stützenden Anschlag des Beutels (28).

8. Automatische Beutelabfüllmaschine nach Anspruch 1, **dadurch gekennzeichnet, dass** die beiden Zylinder (25, 26) ein L der ersten Falzylindereinheit bilden, wobei der erste Zylinder (25) als eine Einrichtung wirkt, welche den zweiten Zylinder (26) näher bringt, wobei der zweite Zylinder der Einheit mit einem Arm (27) bereitgestellt ist, der parallel zu dem ersten Zylinder (25) ist, und der in die Richtung verschiebbar ist, die senkrecht zu der Achse des Beutels (28) und des Verschlussballens (24) ist.
9. Automatische Beutelabfüllmaschine nach Anspruch 1, **dadurch gekennzeichnet, dass** diese ein Lager (5) umfasst, das für die Aufnahme und das Aufbewahren der verschlossenen Beutel (28) zuständig ist, welche einen Verschlussballen (24) aufweisen; wobei eine Sammelfördereinrichtung diese von dort sammelt und sie zu einer Verteilungsfördereinrichtung transportiert.
10. Automatische Beutelabfüllmaschine nach Anspruch 1, **dadurch gekennzeichnet, dass** der Beutelaufbewahrungsbereich (2) eine kollabierbare Wand mit Scharnier auf einer seiner Seiten aufweist, die als Basisplattform (35) dient, um die Beutel zu platzieren und anzuordnen, von wo diese in Stapelform auf dem Boden des Aufbewahrungsbereichs eingeführt werden.

Revendications

1. Machine de mise en sac automatique pour des opercules basiques et faciles à ouvrir dans des sacs en papier autoadhésifs, laquelle machine comprend un dispositif de formation de groupes d'opercules (1), une zone de stockage de sacs (2), un moyen (3) destiné à extraire et à positionner les sacs et un moyen (4) destiné à introduire des groupes d'opercules dans les sacs et à les fermer, **caractérisée en ce qu'elle** comprend en outre un dépôt (5) entre le dispositif de formation de groupes d'opercules (1) et le dispositif d'insertion desdits groupes à l'intérieur des sacs qui est responsable de la commande de la fourniture en groupes d'opercules, et **en ce que** le dispositif de formation de groupes d'opercules (1) comprend une courroie de transport horizontale (8) au moyen de laquelle les opercules sont acheminés avec un écartement donné entre ceux-ci, une roue rotative (8') qui reçoit les opercules de la courroie de transporteur (8) et les regroupe en forme de pile, un dispositif de division destiné à séparer la pile en groupes comprenant un nombre prédéterminé d'opercules et un canal magnétique (9) le long duquel les groupes sont déplacés pour leur délivrance vers le dispositif d'insertion d'opercules par ledit dépôt ; et **en ce que** le moyen destiné à former et à fermer les sacs comprend une première paire de cylindres de

- maintien de sacs positionnés (19, 20) dotés d'un moyen de guidage des opercules à l'intérieur du sac et destinés à maintenir ledit sac, un moyen destiné à ouvrir les sacs, une seconde paire de cylindres de maintien et de tassement (23) destinés à tasser les opercules à l'intérieur du sac, et un ensemble de cylindres de pliage de sacs constitué de deux cylindres (25, 26) formant un L agissant par l'intermédiaire d'une guillotine (27) pour exécuter un premier pliage du sac, et un rouleau (30) pour un second pliage du sac et une fermeture finale de celui-ci.
2. Machine de mise en sac automatique selon la revendication 1, **caractérisée en ce que** la roue rotative (8') du dispositif de formation de groupes d'opercules reçoit les opercules de la courroie de transporteur (8) dans la position horizontale et les tire et les tourne de 90° jusqu'à, les disposer approximativement dans la position verticale dans laquelle ils sont fournis dans un canal magnétique (9) pour une formation de pile, la roue rotative (8') comprenant un dispositif de coupe ou de lame (10) de pile d'opercules.
 3. Machine de mise en sac automatique selon la revendication 1, **caractérisée en ce que** le dispositif de coupe de pile d'opercules (10) comprend un guide (11) parallèle au canal magnétique (9) situé au-dessus dudit canal, et une lame de dispositif de limitation du nombre d'opercules montée sur ledit guide (11) et qui peut être déplacée sur la longueur de celui-ci, ledit dispositif de coupe (10) agit dans la zone de la roue rotative (8') une fois que la pile d'opercules comprend le nombre d'opercules préétabli, et se déplace le long du guide (11) en tirant le groupe d'opercules (24) vers un dispositif d'insertion d'opercules (14).
 4. Machine de mise en sac automatique selon la revendication 1, **caractérisée en ce que** le dépôt (5) responsable de la commande de la fourniture de groupes d'opercules comprend une série de stations de réception de groupes d'opercules (16) qui sont agencées à des niveaux qui peuvent être verticalement décalés d'une position, où la réception des opercules provenant du canal magnétique (11) pour le dispositif de formation de groupes d'opercules (1) et la délivrance de groupes vers le dispositif d'insertion d'opercules (14) a lieu, le passage direct du groupe d'opercules (24) du canal magnétique (11) vers le dispositif d'insertion d'opercules (14) ou le passage à travers le dépôt (5), pouvant être sélectionné.
 5. Machine de mise en sac automatique selon la revendication 1, **caractérisée en ce que** la première paire de cylindres (19, 20) du moyen de formation de sacs comprend un premier cylindre fonctionnant horizontalement (19) qui intègre une patte (22) qui peut être insérée dans un sac positionné (28) de manière à agir en tant que coulisseau pour guider l'insertion des groupes d'opercules dans le sac (28), et un second cylindre inférieur fonctionnant verticalement (20) capable de comprimer et de maintenir la paroi inférieure du sac (28) contre ladite patte.
 6. Machine de mise en sac automatique selon la revendication 1, **caractérisée en ce que** le moyen d'ouverture des sacs (28) est constitué d'une buse (41) dont la sortie est orientée vers l'ouverture d'un sac positionné, à travers laquelle buse (41) un jet d'air est fourni vers l'intérieur du sac (28).
 7. Machine de mise en sac automatique selon la revendication 1, **caractérisée en ce que** les cylindres (23) de la seconde paire de cylindres de maintien et de tassement sont agencés individuellement sur chaque côté du sac (28) contenant le groupe d'opercules (24), dont les cylindres (23) agissent dans des directions convergentes sur l'ouverture dudit sac, en étant tangents à l'avant du groupe d'opercules (24) pour leur maintien et leur compression contre une butée de support supérieure du sac (28).
 8. Machine de mise en sac automatique selon la revendication 1, **caractérisée en ce que** dans les deux cylindres (25, 26) formant un L du premier ensemble de cylindres de pliage, le premier cylindre (25) agit comme moyen de rapprocher le second cylindre (26), le second cylindre est doté d'un bras (27) parallèle au premier cylindre (25) et pouvant être décalé dans la direction perpendiculaire à l'axe du sac (28) et du groupe d'opercules (24).
 9. Machine de mise en sac automatique selon la revendication 1, **caractérisée en ce qu'elle** comprend un dépôt (7) responsable de la réception et du stockage des sacs fermés (28) contenant un groupe d'opercules (24), à partir duquel un transporteur de recueil les recueille et les achemine vers un transporteur de distribution.
 10. Machine de mise en sac automatique selon la revendication 1, **caractérisée en ce que** la zone de stockage de sacs (2) comporte une paroi articulée et pliable sur l'un de ses côtés qui agit comme une plate-forme de base (35) pour placer et ordonner les sacs, à partir de laquelle ils sont insérés sous une forme d'une pile sur le plancher de la zone de stockage.

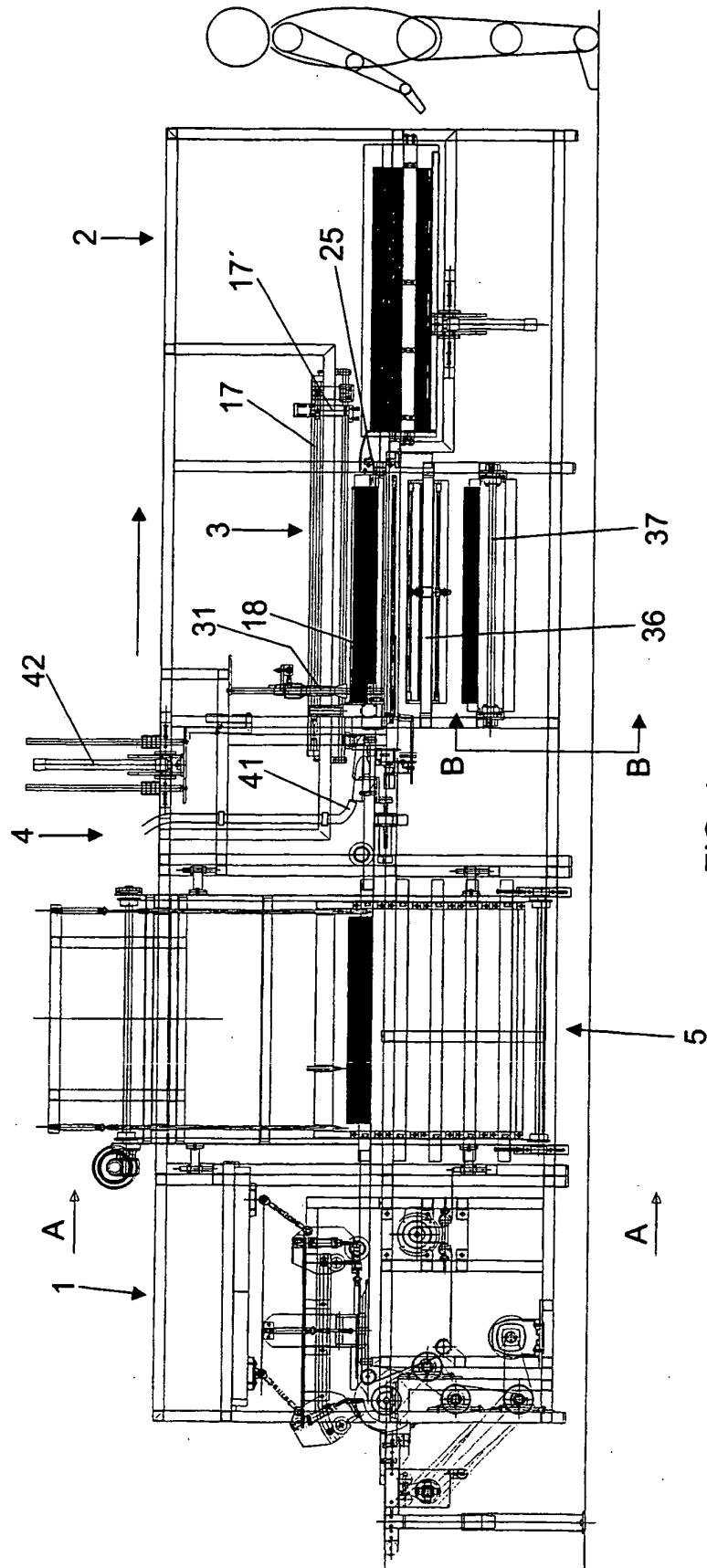


FIG. 1

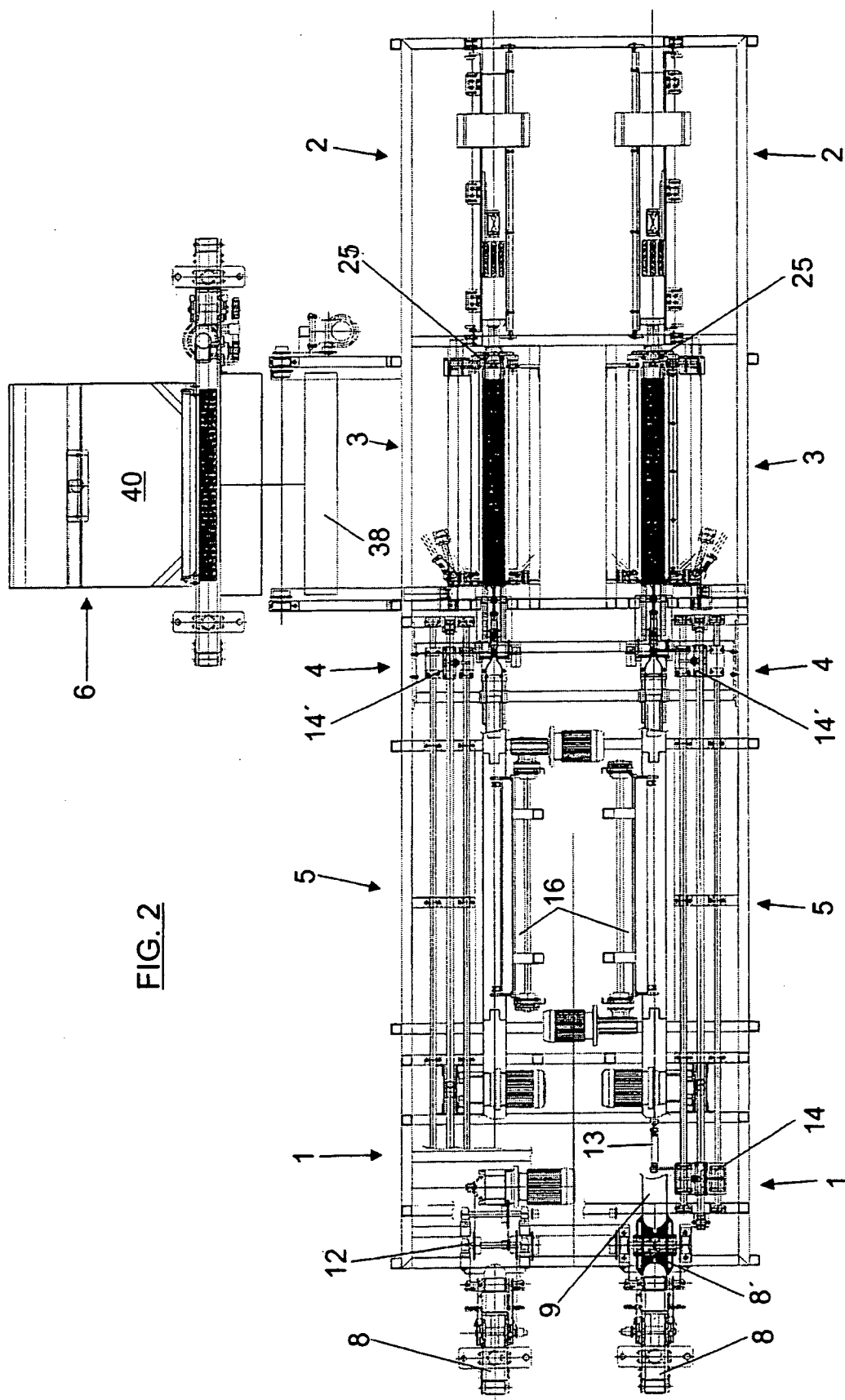


FIG. 2

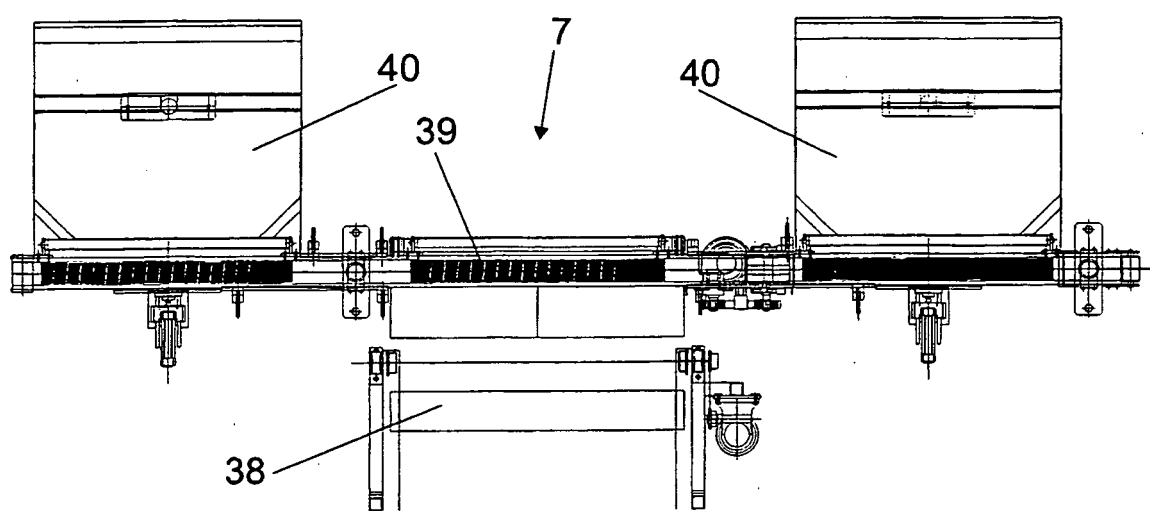


FIG. 3

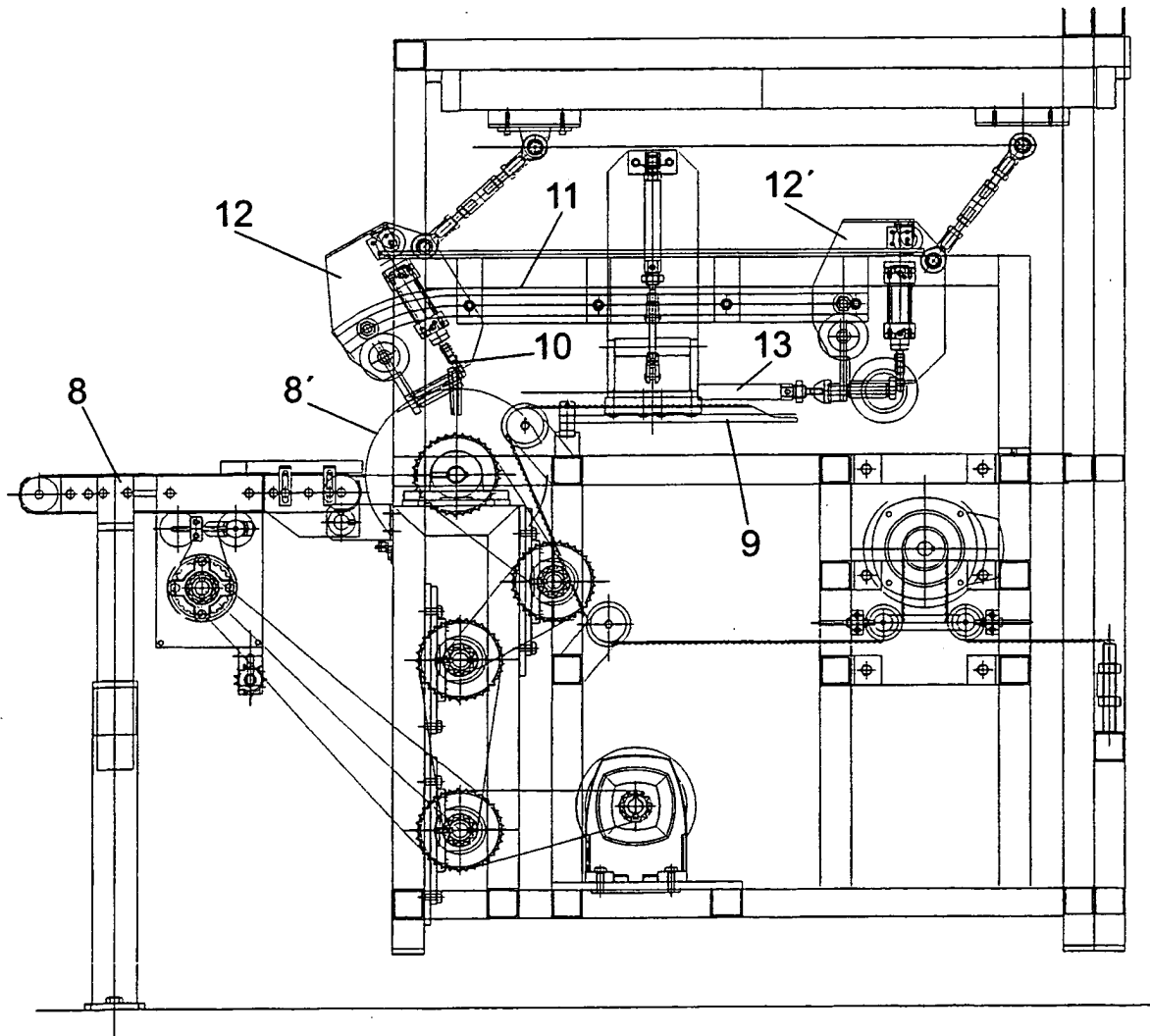


FIG. 4

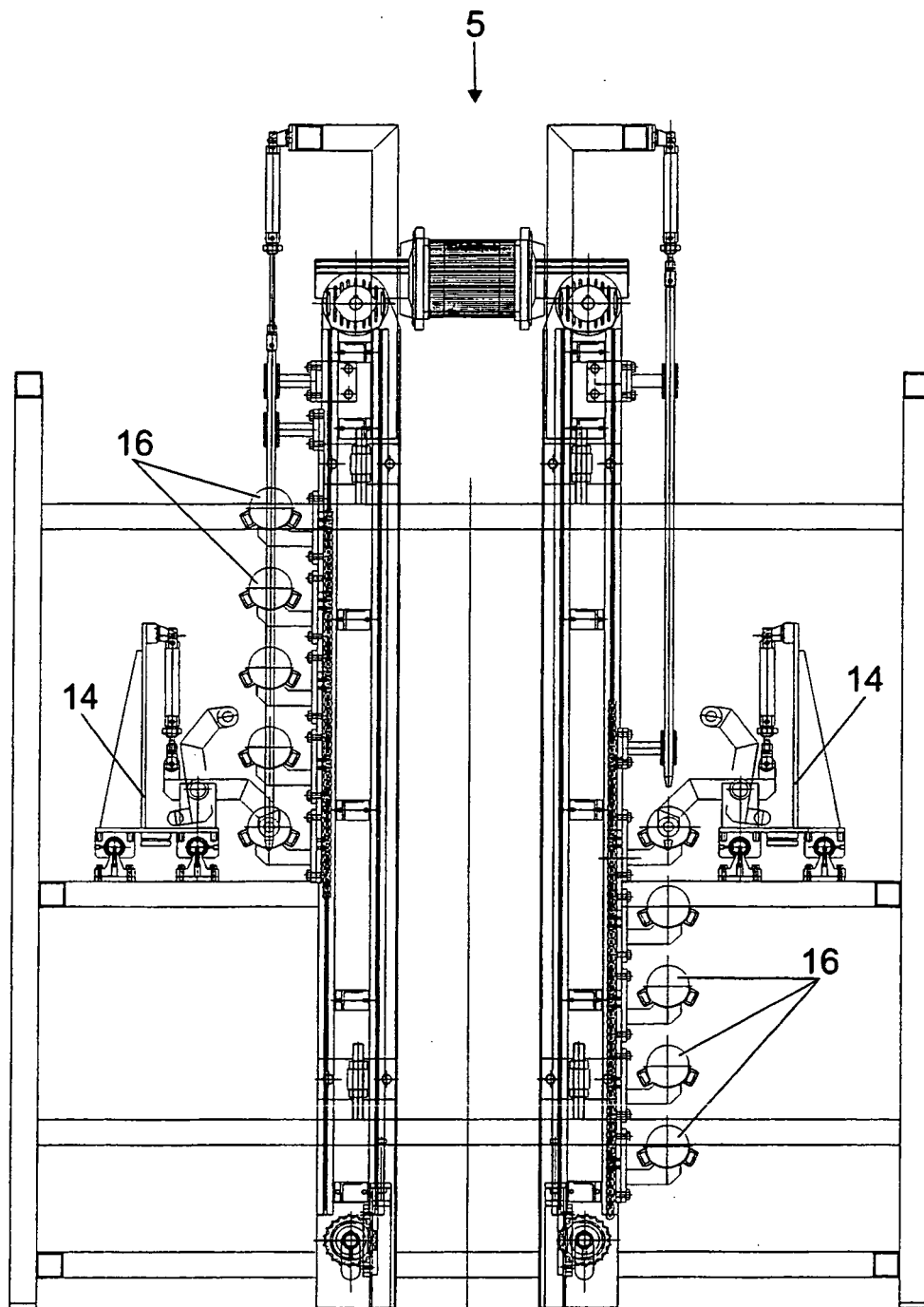


FIG. 5

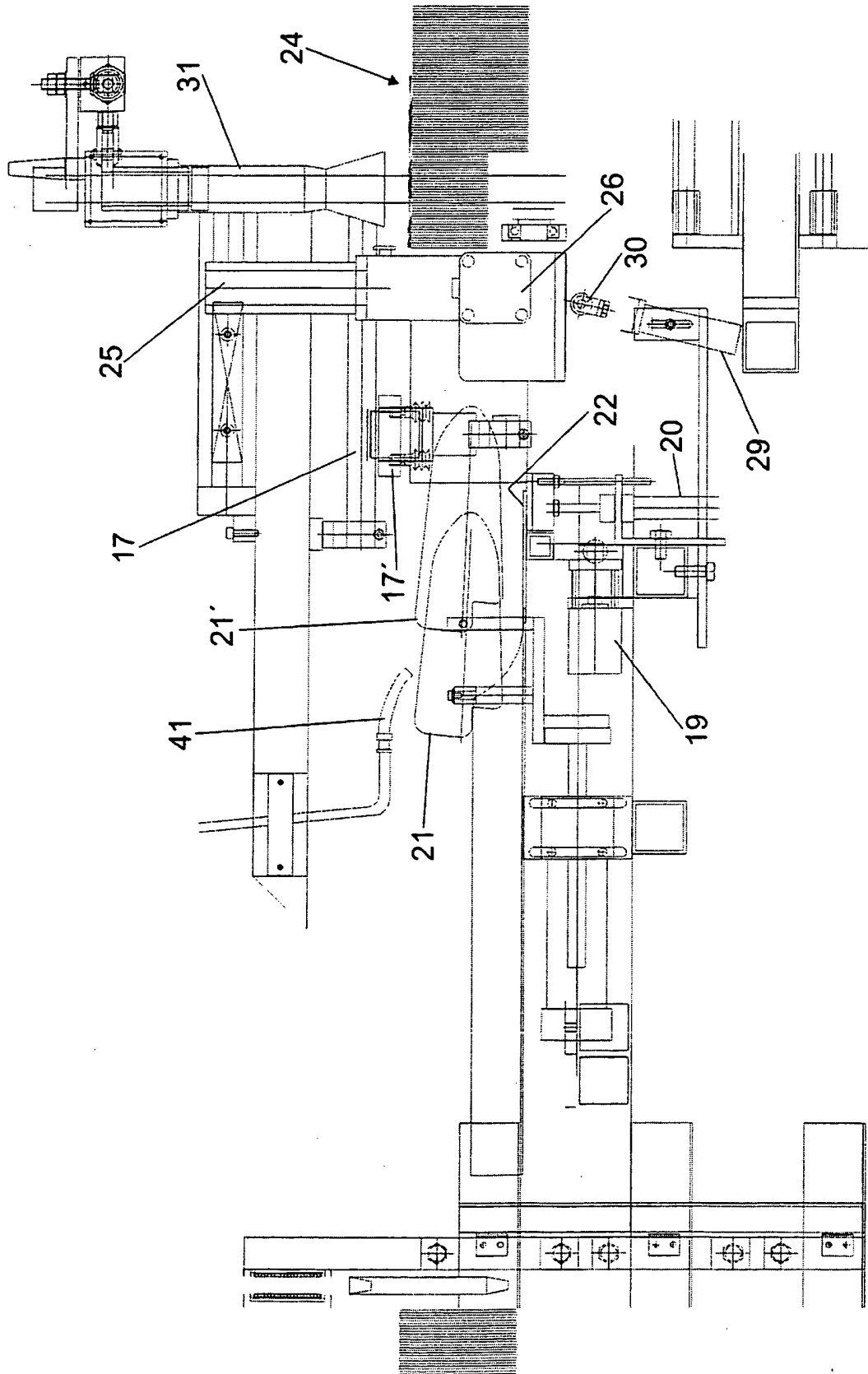
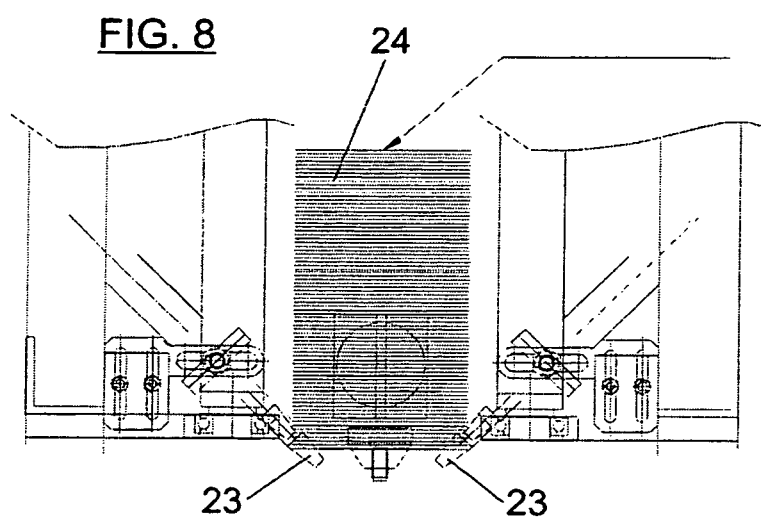
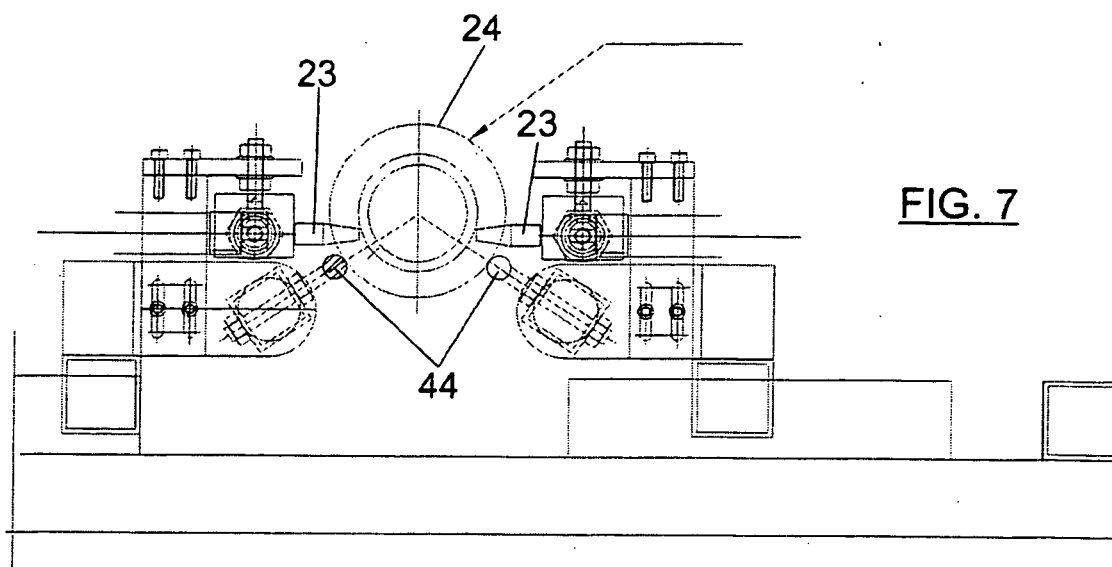


FIG. 6



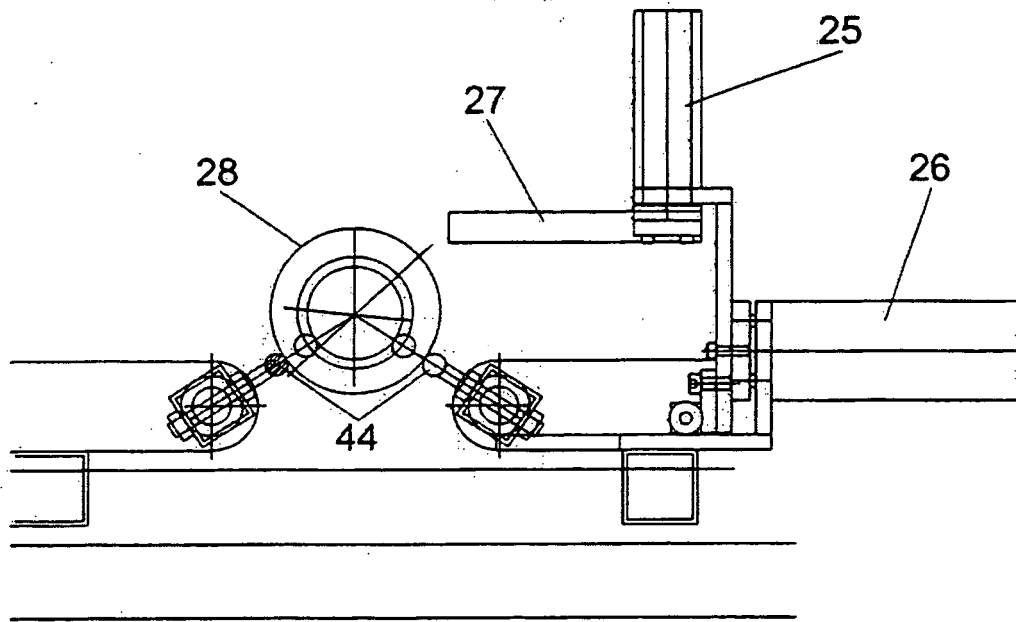


FIG. 9

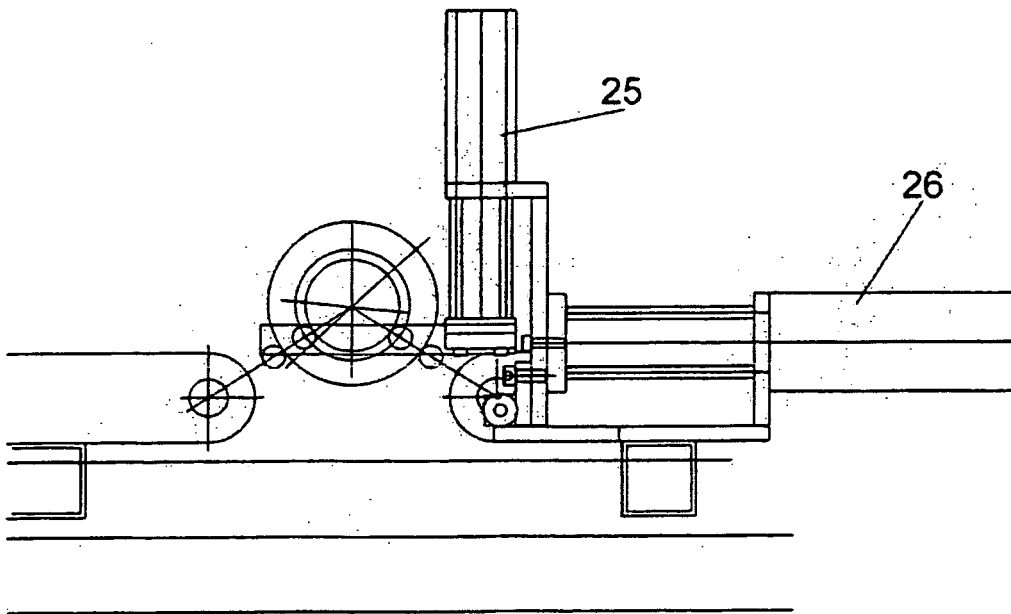
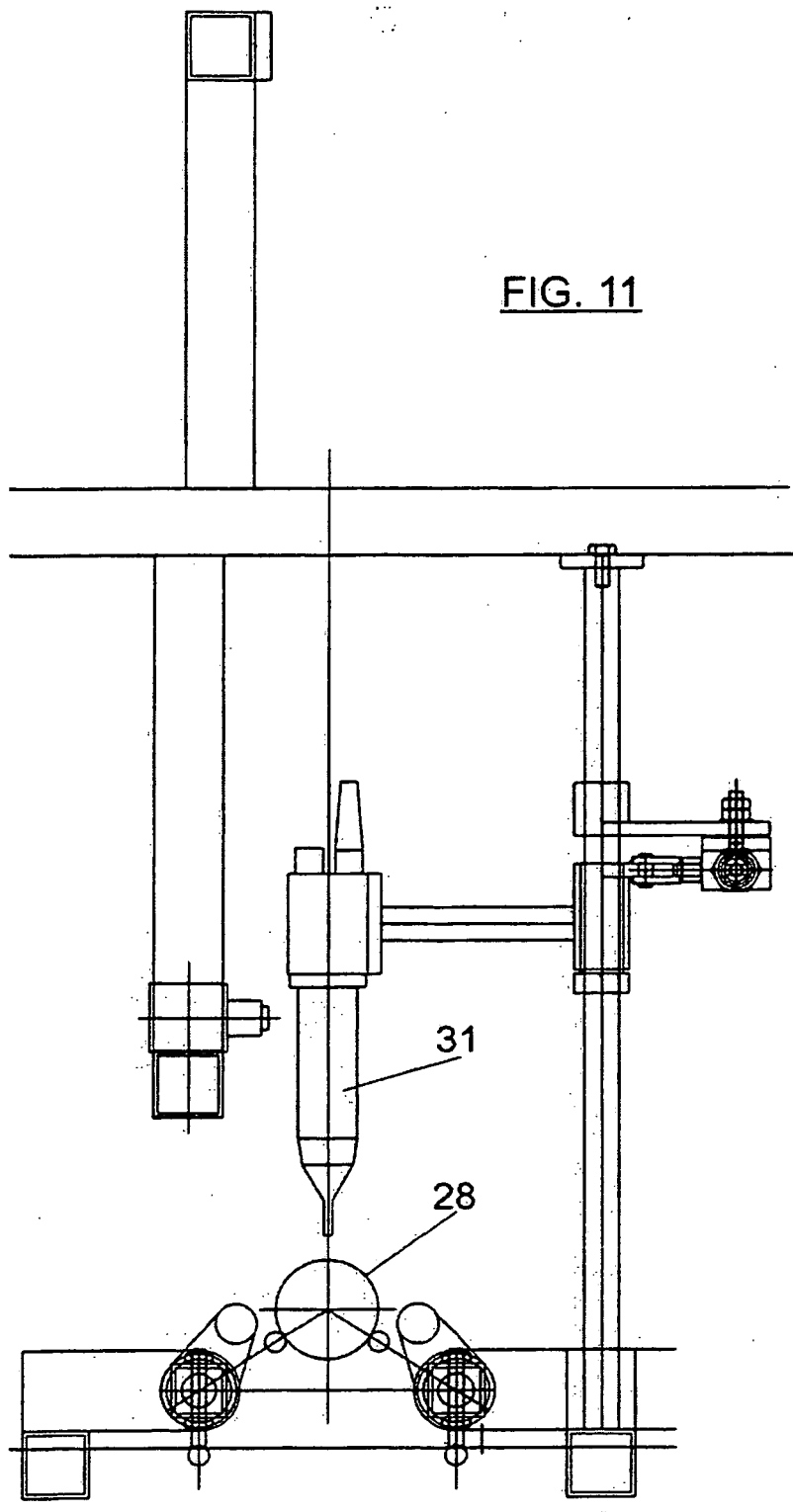


FIG. 10

FIG. 11



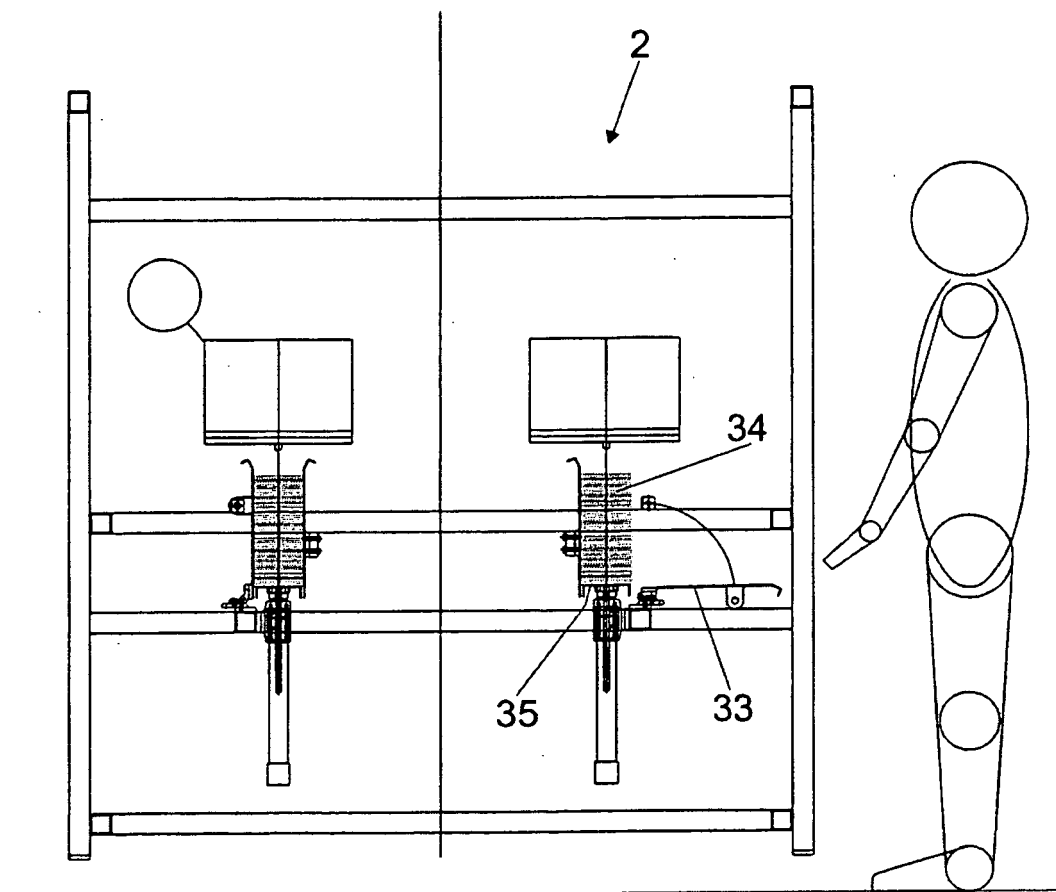


FIG. 12

