

(19)



(11)

EP 1 286 889 B1

(12)

EUROPEAN PATENT SPECIFICATION

(45) Date of publication and mention
of the grant of the patent:
26.12.2007 Bulletin 2007/52

(51) Int Cl.:
B65B 25/02 (2006.01) B65B 43/12 (2006.01)

(21) Application number: **01943963.7**

(86) International application number:
PCT/NL2001/000441

(22) Date of filing: **11.06.2001**

(87) International publication number:
WO 2001/094207 (13.12.2001 Gazette 2001/50)

(54) APPARATUS FOR PACKING OBJECTS LIKE POT PLANTS INTO SLEEVES

VORRICHTUNG ZUM VERPACKEN VON GEGENSTÄNDEN WIE TOPFPFLANZEN IN EINEM
SCHLAUCH

APPAREIL D'EMBALLAGE D'OBJETS TELS QUE DES PLANTES EN POTS DANS DES MANCHONS

(84) Designated Contracting States:
**AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU
MC NL PT SE TR**

(30) Priority: **09.06.2000 NL 1015409**

(43) Date of publication of application:
05.03.2003 Bulletin 2003/10

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EP 1 286 889 B1

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Description

[0001] The invention relates to an apparatus for packing objects, such as pot plants, into sleeves, wherein the sleeves are formed by a first sheet and a second sheet which are connected to each other at their edges, with the exception of the upper edge.

[0002] Heretofore pot plants have been placed in such sleeves by hand. This requires much labour, while the labour is moreover unpleasant since the pot plants are usually heavy.

[0003] In accordance with the prior art disclosure of US-4.229.928 for this purpose an apparatus comprises a holding member for holding the sleeves, and an opening member for moving the first sheet and the second sheet apart at least on the upper side.

[0004] In accordance with the invention the apparatus further comprises a filling member for picking up the objects for packing and placing the objects into the opened sleeve. Further, the holding member is adapted to hold the sleeve on a strip releasably connected to the first sheet of the sleeve.

[0005] It is hereby possible to both hold the sleeve before the object is placed in the sleeve and to remove the sleeve from the strip as soon as the object has been placed in the sleeve.

[0006] According to the invention the holding member comprises a carrier which extends through at least two holes arranged in the strips, which strips are connected to the sleeves forming part of the group.

[0007] It is hereby possible to hold the strips and the associated sleeves in groups.

[0008] According to a preferred embodiment the holding member is adapted for connection to each of the strips of a group of sleeves, the sheets of which extend mutually parallel.

[0009] It hereby becomes possible to have a group of sleeves ready simultaneously for the filling operation.

[0010] This avoids a new sleeve having to be moved to the holding position after each filling operation; it is already present at the holding position.

[0011] In a further preferred embodiment of the invention, the holding member comprises guides which are adapted to successively guide the ends of the carriers to an engaging position in which the opening member can engage the sleeves.

[0012] Groups of sleeves, where each group of sleeves is connected to one carrier, can hereby be moved to the engaging position.

[0013] For the feed of such groups it is attractive that the holding member comprise a controllable blocking for blocking the route along the guides or to the pick-up position.

[0014] It is further attractive that the blocking is coupled to an unloading device for removing a carrier from the engaging position when the blocking is released.

[0015] The empty carrier is hereby removed automatically when a new, full carrier is supplied.

[0016] According to another attractive embodiment the opening member is provided with at least one suction cup, movable in a direction transversely of the surface of the sleeve, for engaging the second sheet of a sleeve situated in the engaging position and causing the second sheet to move away from the first sheet of the sleeve.

[0017] This construction ensures opening of the sleeves on the upper side. This is a difficult problem, since the two sheets from which the sleeve is assembled are usually pulled toward each other by static electricity and it is thus difficult to move them apart. By providing at least one suction cup it becomes possible to obtain a good attachment to the second sheet, so that the second sheet can be moved away from the first sheet.

[0018] This problem can otherwise also be solved in that the opening member comprises a downward directed blow nozzle placed above the holding member.

[0019] The sleeve is then opened further by a pin which forms part of the opening member and which is movable with a directional component transversely of the surface of the sleeve for engaging the opened sleeve on the inside and further opening the sleeve. It is after all of great importance that the opening obtained on the upper side of the sleeve is sufficiently large for passage of the object; folding and creasing of the sleeve are hereby prevented.

[0020] According to yet another preferred embodiment the pin is adapted to perform a movement with a vertical component to enable movement of the pin into the opened sleeve.

[0021] It is structurally attractive when the at least one suction cup is placed on a first slide and that the at least one pin is placed on a second slide and that both slides are movable along the same path.

[0022] An attractive embodiment further results when at least two pins are placed on the slide.

[0023] It is also important that the opening member comprises at least one other pin which is only movable in vertical direction. This measure provides the possibility of holding the sleeve open prior to moving the object into the sleeve.

[0024] Moving the sleeve away from the pins is facilitated when the pins are manufactured from resilient material.

[0025] According to an attractive preferred embodiment the filling member comprises a gripper adapted to pick up the objects which is connected to the movable arm, with which the gripper is movable from a pick-up position to an unloading position above the opened sleeve, and the gripper is adapted to release the object in the unloading position.

[0026] It hereby becomes possible to pick up objects and to release them in the unloading position above the opened sleeve. The objects hereby come to lie above the opened sleeve, where after the object drops into the sleeve after being released by the gripper.

[0027] For a good transport of the objects for packing to the apparatus and of the packed objects away from the apparatus, it is attractive that a conveyor belt to the

pick-up position is placed, and that under the unloading position an out-feed conveyor belt is placed for discharge of the objects packed in the sleeve.

[0028] This construction operates in particularly attractive manner when use is made of a sleeve as claimed in claim 19 comprising two sheets and an object for packing in the sleeve, which is characterized in that one sheet of the sleeve is connected to a strip by means of a releasable connection, wherein the connection is, dimensioned to break when the holding member is moved upward relative to the opening member.

[0029] As the holding means with the strip move upward the connection between strip and sleeve is hereby severed.

[0030] It is finally noted that the apparatus is dimensioned for the packing of pot plants into sleeves.

[0031] Other applications are however by no means precluded.

[0032] The present invention will be elucidated hereinbelow with reference to the accompanying figures, in which:

figure 1 is a perspective view of an apparatus according to the present invention;

figure 2 is a partly broken away view of the apparatus shown in figure 1 from another side;

figure 3 is a perspective view of several relevant parts of the apparatus according to the present invention; figures 4a-4c show detail views of the apparatus depicted in figure 1;

figure 5 shows a detail view of another component of the apparatus;

figure 6 is a view corresponding with figure 5 at a different stage of the process; and

figure 7 is a detail view of yet another situation.

[0033] Figure 1 shows a sleeving apparatus 1 which comprises a frame 2. In the frame is arranged a feed conveyor belt 3 which extends into the frame from outside, as well as a conveyor belt 4 which extends from the frame to a position outside the frame.

[0034] Further arranged in the frame are two holding members 5 for holding sleeves, as well as two opening members 6 for opening the sleeves, and a double-action filling member 7 for picking up pot plants 8 supplied via feed conveyor belt 3, placing the pot plants above the opened sleeves and releasing the pot plants, so that they come to lie in the sleeve, the sleeve breaks off from the strip attached thereto and comes to lie on the outfeed conveyor belt 4.

[0035] Filling member 7 is formed by a carriage 10 which can travel along rails 9 arranged horizontally in frame 2. Carriage 10 can move in horizontal direction along the rails. Extending downward from the carriage are four rods 11 on which a slide 12 is mounted. By means of a drive integrated into the carriage it is possible to move the rods 11 upward, as well as the slide 12 connected fixedly thereto. It is thus possible to move slide

12 in horizontal and vertical direction. Mounted on slide 12 are two pick-up elements 13 which are each adapted to pick up the pot of a pot plant 8.

[0036] Using the above described filling member it is possible to transport the picked-up pot plants to a random position inside the frame.

[0037] As is more apparent from figure 2, two holding members 5 are further arranged in the frame for holding the sleeves into which the pot plants must be placed. The holding member is formed essentially by an auxiliary frame 14. On this auxiliary frame are mounted two brackets 15 which are adapted to carry a rod 16.

[0038] A stack of sleeves 17 is connected to a rod 16 in that each of the sleeves 17 is fixed to a strip 18. Strip 18 is separated from each of the sleeves by means of a perforation. In each of the strips 18 are arranged perforations 19 through which the rod extends. It is thus possible for a number of sleeves to be fastened to one rod 16.

[0039] When a rod 16 is present in brackets 15, brackets 15 function as holding device. The rods remain resting thereon and are enclosed inside bracket 15 and a frame part 20. It will be apparent that it is important for the machine to operate at the highest possible speed. For this purpose a rod, when the sleeves 17 fastened thereto are all filled and removed from the rod, must be discharged quickly and replaced by a new, filled rod. Use is made for this purpose of a supply rail 21 leading to the position of the bracket. Supply rail 21 extends obliquely and is provided with a groove in which a large number of rods 16 can be placed.

[0040] When a rod 16 has had all its sleeves removed, a block 22 to which bracket 18 is fixed is slid backward in the direction of arrow 23 as shown in figure 4a. The space between frame part 20 and bracket 15 is hereby left clear, so that rod 16 can drop downward. The bracket further clears the lower outlet of supply rail 21, so that the subsequent rod present in supply rail 21 can drop downward onto bracket 15. Simultaneously with the downward movement of the filled rod 16 the block 22 moves again in the direction of arrow 24 of figure 4b, so that the rod is enclosed and the situation of figure 4c is obtained, and the filled rod can have its sleeves removed.

[0041] The sleeve-opening member comprises a first slide 25 which is movable in horizontal direction inside the auxiliary frame. Connected to first slide 25 are two auxiliary carriers 26 which are movable in horizontal direction relative to slide 25 by means of a linear drive element, for instance a pneumatic cylinder 27. On each of the carriers 26 are placed two suction cups 28 which are connected to a vacuum pump not shown in the drawing. Using suction cups 28 one sheet of the sleeves consisting of two sheets can be pulled away from the other sheet.

[0042] For this purpose a combination can be made of the movement of the linear drive element 27 and the drive of the first slide 25, so that suction cups 28 are moved toward the relevant sheet, the suction cups are energized and the sleeves are pulled up. Use can otherwise be

made herein of a blowing means, arranged above the sleeve-opening member, for directing an airflow downward; this contributes toward further opening of the sleeve.

[0043] It is then important for the sleeves to be pulled further open, wherein use is made of a second slide 29, which second slide is provided with pins, as best shown in figure 6. Like first slide 25, second slide 29 is movable in horizontal direction along the auxiliary frame 14, while on the second frame at the position of each of the bags there are arranged two pins 30 which can enlarge the opening formed by suction cups 28 on the upper side of the sleeve by causing the second slide to move further outward.

[0044] Pins 30 are manufactured from resilient but strong material. This facilitates the removal of the sleeve when the objects drop into the sleeve. It is also possible to manufacture the pins from rigid material and to connect them to the frame in resilient manner.

[0045] In order to cause pins 30 to move into the sleeve the second slide 29 is furthermore movable in vertical direction by means of linear drive elements 31.

[0046] Figure 7 further shows that inside the space between brackets 15 and frame parts 20 the rods 18 can be moved upward from the sleeves by linear drive elements mounted on the auxiliary frame. It is hereby possible to move the whole of the sleeve package some distance upward, so that it is possible to tear the opened sleeve away from the carrier. This is otherwise also possible when the pot plants are caused to fall into the opened sleeve; this can involve such a development of force that the sleeve tears away from the strip. An automatic severing action is hereby obtained. It is however recommended to separate the severing operation from the filling operation; this results in a better controllability.

[0047] This is however purely a matter of dimensioning; there are numerous other possibilities for tearing the sleeves from the strips.

[0048] It will further be apparent that other modifications can also be made to the system shown here.

Claims

1. Apparatus (1) for packing objects, such as pot plants (8), into sleeves (17), wherein the sleeves are formed by a first sheet and a second sheet which are connected to each other at their edges, with the exception of the upper edge, wherein the apparatus (1) comprises:

- a holding member (5) for holding the sleeves (17); and
- an opening member (6) for moving the first sheet and the second sheet apart at least on the upper side,

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a filling member (7) for picking up the objects for packing and placing the objects into the opened sleeve (17),

wherein the holding member (5) is adapted to hold the sleeve (17) on a strip releasably connected to the first sheet of the sleeve (17) and comprises a carrier which extends through at least two holes arranged in the strips, which strips are connected to sleeves (17) forming part of a group.

2. Apparatus as claimed in claim 1, **characterized in that** the holding member (5) is adapted for connection to each of the strips of a group of sleeves (17), the sheets of which extend mutually parallel.
3. Apparatus as claimed in claim 1, **characterized in that** the holding member (5) comprises guides which are adapted to successively guide the ends of the carriers to an engaging position in which the opening member (6) can engage the sleeves (17).
4. Apparatus as claimed in claim 3, **characterized in that** the holding member (5) comprises a controllable blocking for blocking the route along the guides as far as the pick-up position.
5. Apparatus as claimed in claim 4, **characterized in that** the blocking is coupled to an unloading device for removing a carrier from the engaging position when the blocking is released.
6. Apparatus as claimed in any of the foregoing claims, **characterized in that** the opening member (6) comprises at least one suction cup, movable in a direction transversely of the surface of the sleeve (17), for engaging the second sheet of a sleeve (17) situated in the engaging position and for pulling the second sheet away from the first sheet of the sleeve (17).
7. Apparatus as claimed in any of the foregoing claims, **characterized in that** the opening member (6) comprises a downward directed blow nozzle placed above the holding member (6).
8. Apparatus as claimed in claim 6 or 7, **characterized in that** the opening member (6) comprises at least one pin movable with a directional component transversely of the surface of the sleeve (17) for engaging the opened sleeve (17) on the inside and further opening the sleeve (17).
9. Apparatus as claimed in claim 8, **characterized in that** the at least one pin is adapted to perform a movement with a vertical component to enable movement of the pin into the opened sleeve (17).
10. Apparatus as claimed in any of the claims 6 - 9, **characterized in that** the at least one suction cup

is placed on a first slide, that the at least one pin is placed on a second slide and that both slides are movable along the same path.

11. Apparatus as claimed in claim 10, **characterized in that** at least two pins are placed on the slide. 5
12. Apparatus as claimed in any of the claims 6 - 11, **characterized in that** the opening member (6) comprises at least one other pin which is only movable in vertical direction. 10
13. Apparatus as claimed in any of the claims 8 - 12, **characterized in that** the pins are manufactured from resilient material. 15
14. Apparatus as claimed in any of the foregoing claims, **characterized in that** the filling member (7) comprises a gripper adapted to pick up the objects which is connected to a movable arm, with which the gripper is movable from a pick-up position to an unloading position above the opened sleeve (17), and that the gripper is adapted to release the object in the unloading position. 20
15. Apparatus as claimed in claim 14, **characterized in that** the unloading position lies some distance above the upper side of the opened sleeve (17). 25
16. Apparatus as claimed in claim 14 or 15, **characterized in that** a conveyor belt leads to the pickup position, and that under the unloading position an outfeed conveyor belt is placed for discharge of the objects packed in a sleeve (17). 30
17. Apparatus as claimed in any of the foregoing claims, **characterized in that** the holding member (5) is movable upward relative to the opening member (6). 35
18. Apparatus as claimed in any of the foregoing claims, **characterized in that** the apparatus (1) is dimensioned for the packing of pot plants (8) into sleeves (17). 40
19. Use of a sleeve in an apparatus (1) for packing objects, such as pot plants (8) according to any one of the foregoing claims, wherein the sleeve (17) is formed by a first sheet and a second sheet, which are connected to each other at their edges with the exception of the upper edge, **characterised in that** one of the first and second sheets of the sleeve is connected to a strip by means of a releasable connection. 45 50

Patentansprüche

1. Vorrichtung (1) zum Verpacken von Gegenständen

wie Topfpflanzen (8) in Hüllen (17), wobei die Hüllen durch einen ersten Bogen und einen zweiten Bogen gebildet werden, die miteinander mit Ausnahme der Oberkanten an den Kanten verbunden sind, wobei die Vorrichtung (1) umfasst:

- ein Halteelement (5) zum Halten der Hüllen (17); und
- ein Öffnungselement (6) zum Auseinanderbewegen des ersten Bogens und des zweiten Bogens zumindest an der Oberseite,

gekennzeichnet durch

ein Einfüllelement (7) zur Aufnahme der zu verpackenden Gegenstände und Hineinstellen der Gegenstände in die geöffnete Hülle (17), wobei das Halteelement (5) ausgebildet ist, um die Hülle (17) auf einem Streifen zu halten, der lösbar mit dem ersten Bogen der Hülle (17) verbunden ist und einen Träger aufweist, der sich **durch** mindestens zwei in den Streifen angeordneten Löcher erstreckt, wobei die mit den Hüllen (17) verbundenen Streifen Teil einer Gruppe bilden.

2. Vorrichtung gemäß Anspruch 1, **dadurch gekennzeichnet, dass** das Halteelement (5) zur Verbindung mit jedem der Streifen einer Gruppe von Hüllen (17) ausgebildet ist, wobei die Bögen der Hüllen beidseitig parallel verlaufen. 25
3. Vorrichtung gemäß Anspruch 1, **dadurch gekennzeichnet, dass** das Halteelement (5) Führungen umfasst, die ausgebildet sind, um die Enden der Träger nacheinander in eine Eingriffsposition zu führen, in der das Öffnungselement (6) in die Hüllen (17) eingreifen kann. 30
4. Vorrichtung gemäß Anspruch 3, **dadurch gekennzeichnet, dass** das Halteelement (5) ein steuerbare Sperre zum Sperren des Wegs entlang der Führungen bis zur Aufnahmeposition umfasst. 35
5. Vorrichtung gemäß Anspruch 4, **dadurch gekennzeichnet, dass** die Sperre mit einer Entladeeinrichtung verbunden ist, um einen Träger aus der Eingriffsposition zu entfernen, wenn die Sperre aufgehoben wird. 40
6. Vorrichtung gemäß einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** das Öffnungselement (6) zumindest einen Sauger umfasst, der in einer Richtung quer zur Oberfläche einer Hülle (17) bewegbar ist, um in den zweiten Bogen einer in der Eingriffsposition befindlichen Hülle (17) einzugreifen, und um den zweiten Bogen vom ersten Bogen der Hülle (17) wegzuziehen. 45 50 55

7. Vorrichtung gemäß einem der vorhergehenden An-

sprüche, **dadurch gekennzeichnet, dass** das Öffnungselement (6) eine nach unten gerichtete Luftdüse aufweist, die über dem Halteelement (6) angeordnet ist.

8. Vorrichtung gemäß Anspruch 6 oder 7, **dadurch gekennzeichnet, dass** das Öffnungselement (6) zumindest einen Stift umfasst, der mit einer Richtungskomponente quer zur Oberfläche der Hülle (17) bewegbar ist, um in die geöffneten Hülle (17) in der Innenseite einzugreifen und die Hülle (17) weiter zu öffnen. 5
9. Vorrichtung gemäß Anspruch 8, **dadurch gekennzeichnet, dass** zumindest ein Stift zur Durchführung einer Bewegung mit einer vertikalen Komponente ausgebildet ist, um die Bewegung des Stifts in die geöffneten Hülle (17) zu ermöglichen. 10
10. Vorrichtung gemäß einem der Ansprüche 6 bis 9, **dadurch gekennzeichnet, dass** zumindest ein Sauger auf einem ersten Schlitten angeordnet ist, wobei der mindestens eine Stift auf einem zweiten Schlitten angeordnet ist und beide Schlitten entlang desselben Wegs bewegbar sind. 20
11. Vorrichtung gemäß Anspruch 10, **dadurch gekennzeichnet, dass** zumindest zwei Stifte auf dem Schlitten angeordnet sind. 25
12. Vorrichtung gemäß einem der Ansprüche 6 bis 11, **dadurch gekennzeichnet, dass** das Öffnungselement (6) zumindest einen weiteren Stift umfasst, der nur in vertikaler Richtung bewegbar ist. 30
13. Vorrichtung gemäß einem der Ansprüche 8 bis 12, **dadurch gekennzeichnet, dass** die Stifte aus elastischem Material gefertigt sind. 35
14. Vorrichtung gemäß einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** das Einfüllelement (7) einen Greifer enthält, der zur Aufnahme der Gegenstände ausgebildet und mit einem bewegbaren Arm verbunden ist, mit dem der Greifer von einer Aufnahmeposition zu einer Entladeposition über der geöffneten Hülle (17) bewegbar ist, und dass der Greifer ausgebildet ist, um den Gegenstand in der Entladeposition freizugeben. 40
15. Vorrichtung gemäß Anspruch 14, **dadurch gekennzeichnet, dass** die Entladeposition sich in einem gewissen Abstand über der Oberseite der geöffneten Hülle (17) befindet. 45
16. Vorrichtung gemäß Anspruch 14 oder 15, **dadurch gekennzeichnet, dass** ein Transportband zu einer Aufnahmeposition führt und dass unter der Aufnahmeposition ein Auslauftransportband zum Abladen 50

der in einer Hülle (17) verpackten Gegenstände angeordnet ist.

17. Vorrichtung gemäß einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** das Halteelement (5) relativ zum Öffnungselement (6) nach oben bewegbar ist. 5
18. Vorrichtung gemäß einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** die Vorrichtung (1) zum Verpacken von Topfpflanzen (8) in Hüllen (17) ausgelegt ist. 10
19. Verwenden einer Hülle in einer Vorrichtung (1) zum Verpacken von Gegenständen wie Topfpflanzen (8) gemäß einem der vorhergehenden Ansprüche, wobei die Hülle (17) durch einen ersten Bogen und einen zweiten Bogen gebildet wird, die miteinander mit Ausnahme der Oberkanten an den Kanten verbunden sind, **dadurch gekennzeichnet, dass** einer der ersten und zweiten Bögen der Hülle mittels einer lösbaren Verbindung mit einem Streifen verbunden ist. 20

Revendications

1. Appareil (1) pour emballer des objets, tels que des plantes en pot (8), dans des manchons (17), dans lequel les manchons sont formés par une première feuille et une deuxième feuille qui sont reliées l'une à l'autre sur leurs bords, à l'exception du bord supérieur, dans lequel l'appareil (1) comprend :

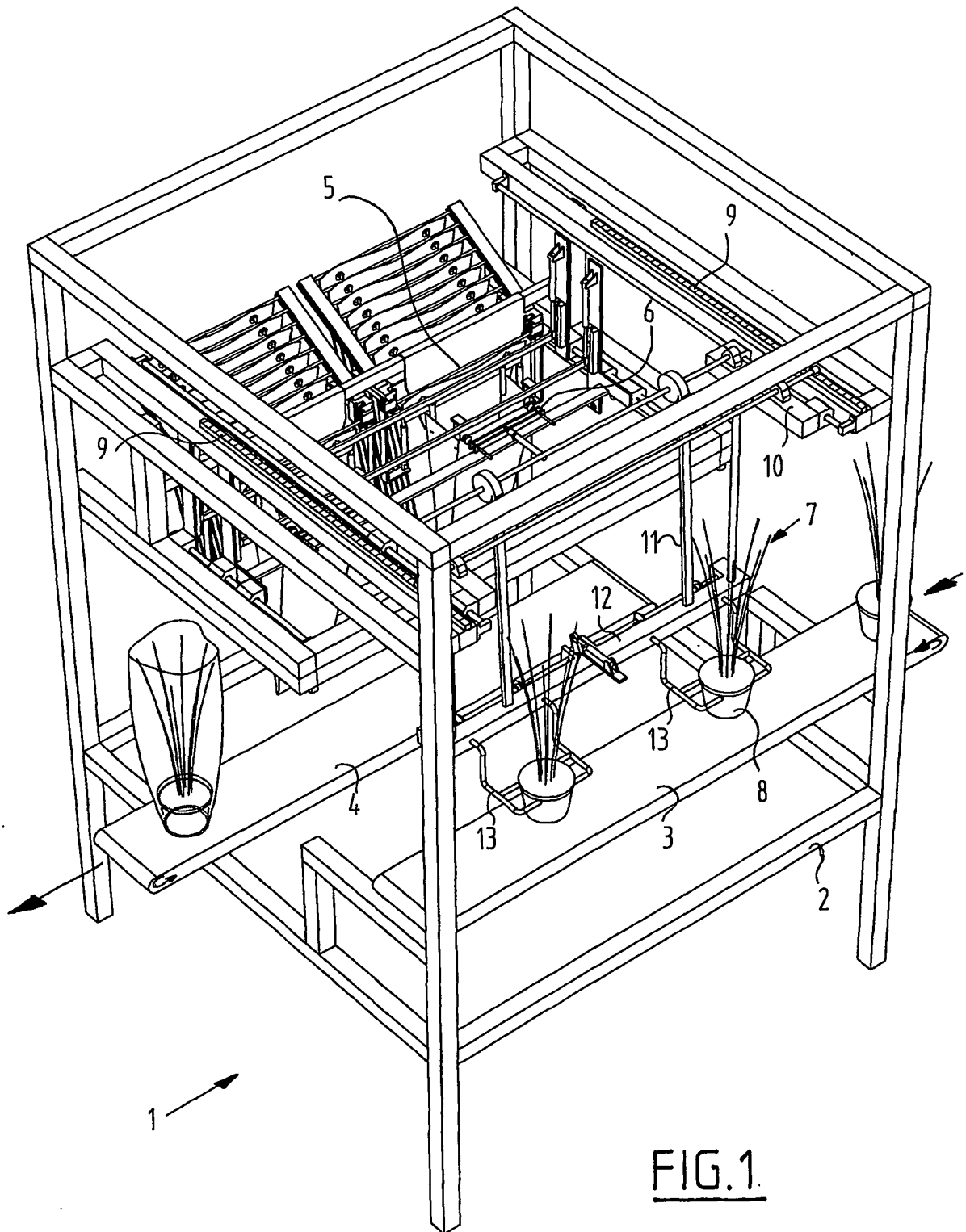
- un élément de support (5) pour supporter les manchons (17) ; et
- un élément d'ouverture (6) pour écarter la première feuille et la deuxième feuille au moins sur le côté supérieur,

caractérisé par

un élément de remplissage (7) pour ramasser les objets pour emballer et placer les objets dans le manchon ouvert (17), dans lequel l'élément de support (5) est adapté pour soutenir le manchon (17) sur une bande reliée de manière libérable à la première feuille du manchon (17) et comprend un transporteur qui s'étend à travers au moins deux trous disposés dans les bandes, dont les bandes sont reliées aux manchons (17) formant une partie d'un groupe.

2. Appareil selon la revendication 1, **caractérisé en ce que** l'élément de support (5) est adapté pour être relié à chacune des bandes d'un groupe de manchons (17), dont les feuilles s'étendent parallèlement les unes aux autres.

3. Appareil selon la revendication 1, **caractérisé en ce que** l'élément de support (5) comprend des guides qui sont adaptés pour guider successivement les extrémités des transporteurs sur une position engagée dans laquelle l'élément d'ouverture (6) peut entrer en prise avec les manchons (17). 5
4. Appareil selon la revendication 3, **caractérisé en ce que** l'élément de support (5) comprend un dispositif de blocage pouvant être commandé pour bloquer le parcours le long des guides au niveau de la position de préhension. 10
5. Appareil selon la revendication 4, **caractérisé en ce que** le dispositif de blocage est couplé à un dispositif de décharge pour enlever un transporteur de la position d'engagement quand le dispositif de blocage est libéré. 15
6. Appareil selon l'une quelconque des revendications précédentes, **caractérisé en ce que** l'élément d'ouverture (6) comprend au moins une ventouse, mobile dans une direction transversalement à la surface du manchon (17), pour entrer en prise avec la deuxième feuille d'un manchon (17) située dans la position d'engagement et pour retirer la deuxième feuille de la première feuille du manchon (17). 20 25
7. Appareil selon l'une quelconque des revendications précédentes, **caractérisé en ce que** l'élément d'ouverture (6) comprend une buse de soufflage dirigée vers le bas placée au dessus de l'élément de support (6). 30
8. Appareil selon la revendication 6 ou 7, **caractérisé en ce que** l'élément d'ouverture (6) comprend au moins une broche mobile avec un composant directionnel transversalement par rapport à la surface du manchon (17) pour entrer en prise avec le manchon ouvert (17) sur l'intérieur et en outre ouvrir le manchon (17). 35 40
9. Appareil selon la revendication 8, **caractérisé en ce qu'**au moins une broche est adaptée pour réaliser un mouvement avec un composant vertical pour permettre un mouvement de la broche dans le manchon ouvert (17). 45
10. Appareil selon l'une quelconque des revendications 6 à 9, **caractérisé en ce qu'**au moins une ventouse est placée sur une première coulisse, **en ce qu'**au moins une broche est placée sur une deuxième coulisse et **en ce que** les deux coulisses sont mobiles le long du même chemin. 50 55
11. Appareil selon la revendication 10, **caractérisé en ce qu'**au moins deux broches sont placées sur la coulisse.
12. Appareil selon l'une quelconque des revendications 6 à 11, **caractérisé en ce que** l'élément d'ouverture (6) comprend au moins une autre broche qui est uniquement mobile dans la direction verticale.
13. Appareil selon l'une quelconque des revendications 8 à 12, **caractérisé en ce que** les broches sont fabriquées à partir d'un matériau résistant.
14. Appareil selon l'une quelconque des revendications précédentes, **caractérisé en ce que** l'élément de remplissage (7) comprend un élément de préhension adapté pour ramasser les objets qui est relié à un bras mobile, avec lequel l'élément de préhension peut être mobile depuis une position de ramassage jusqu'à une position de décharge au dessus du manchon ouvert (17), et **en ce que** l'élément de préhension est adapté pour libérer l'objet dans la position de décharge.
15. Appareil selon la revendication 14, **caractérisé en ce que** la position de décharge se trouve à une certaine distance au dessus du côté supérieur du manchon ouvert (17).
16. Appareil selon la revendication 14 ou 15, **caractérisé en ce qu'**un tapis roulant conduit à la position de ramassage, et **en ce que** sous la position de décharge, un tapis roulant d'évacuation est placé pour évacuer les objets emballés dans un manchon (17).
17. Appareil selon l'une quelconque des revendications précédentes, **caractérisé en ce que** l'élément de support (5) peut être mobile vers le haut par rapport à l'élément d'ouverture (6).
18. Appareil selon l'une quelconque des revendications précédentes, **caractérisé en ce que** l'appareil (1) est dimensionné pour l'emballage des plantes en pot (8) dans des manchons (17).
19. Utilisation d'un manchon dans un appareil (1) pour emballer des objets, tels que des plantes en pot (8) selon l'une quelconque des revendications précédentes, dans lequel le manchon (17) est formé par une première feuille et une deuxième feuille, qui sont reliées l'une à l'autre sur leurs bords avec l'exception du bord supérieur, **caractérisé en ce qu'**une des première et deuxième feuilles du manchon est reliée à une bande au moyen d'une connexion pouvant être libérée.



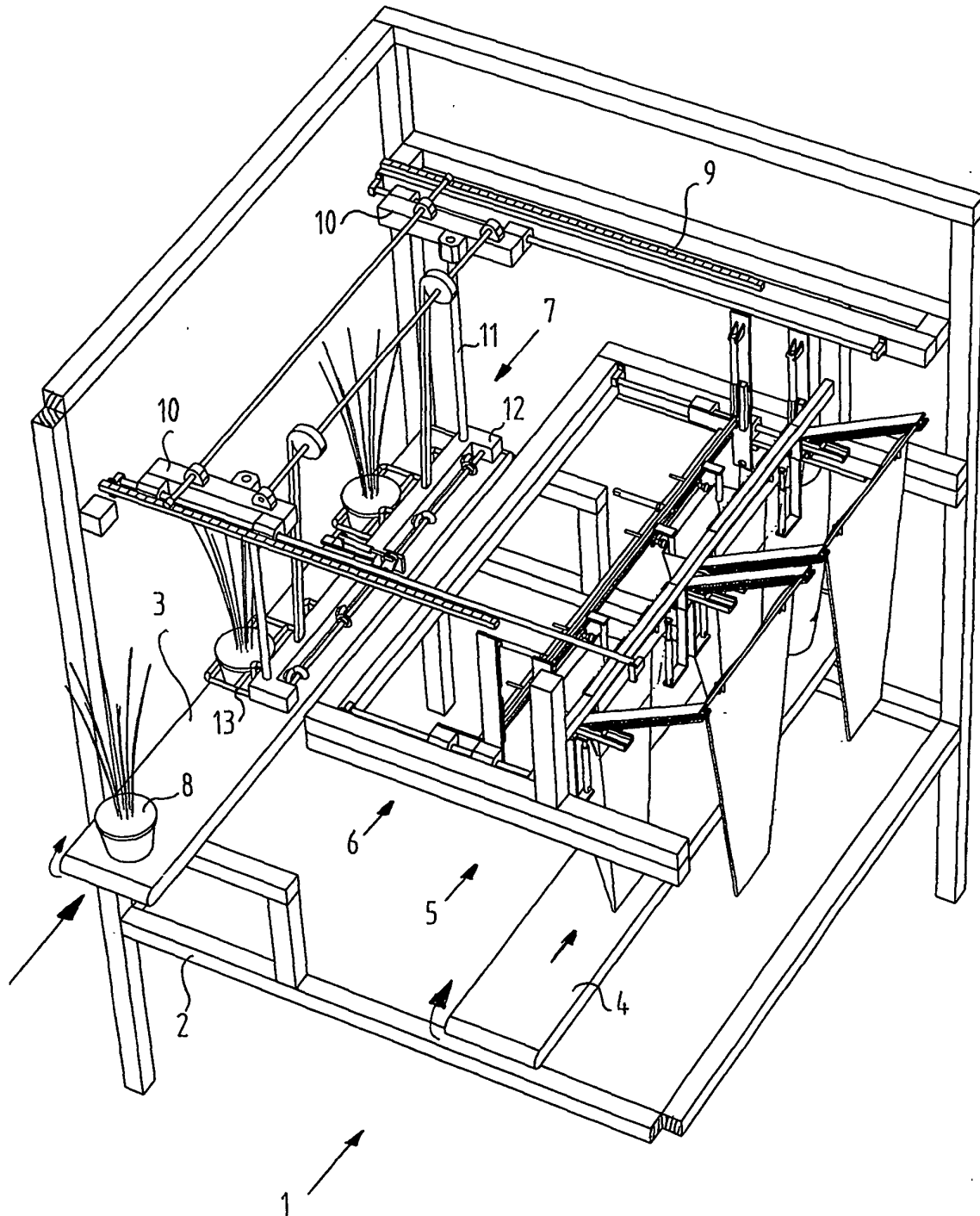


FIG.2

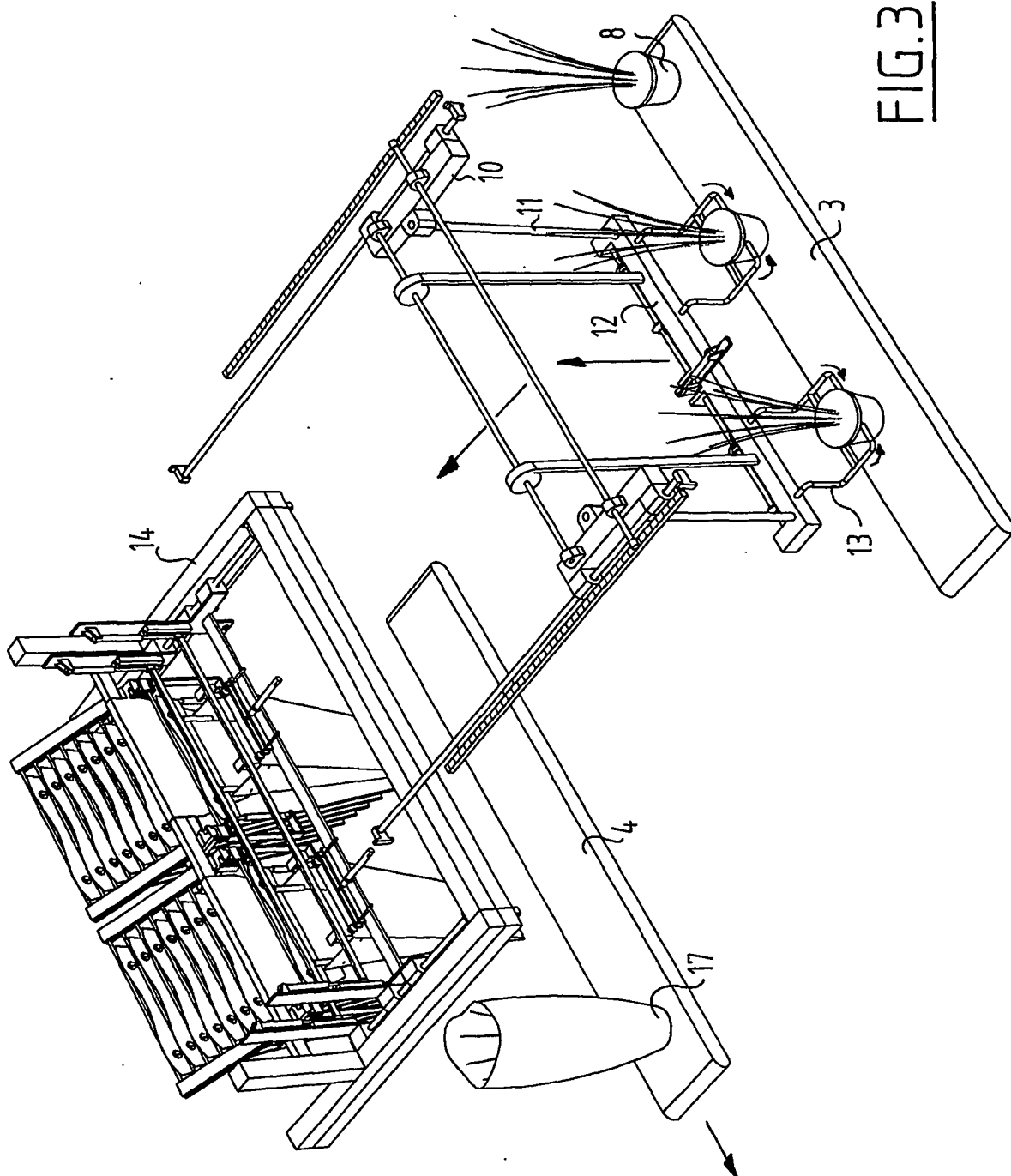


FIG. 3

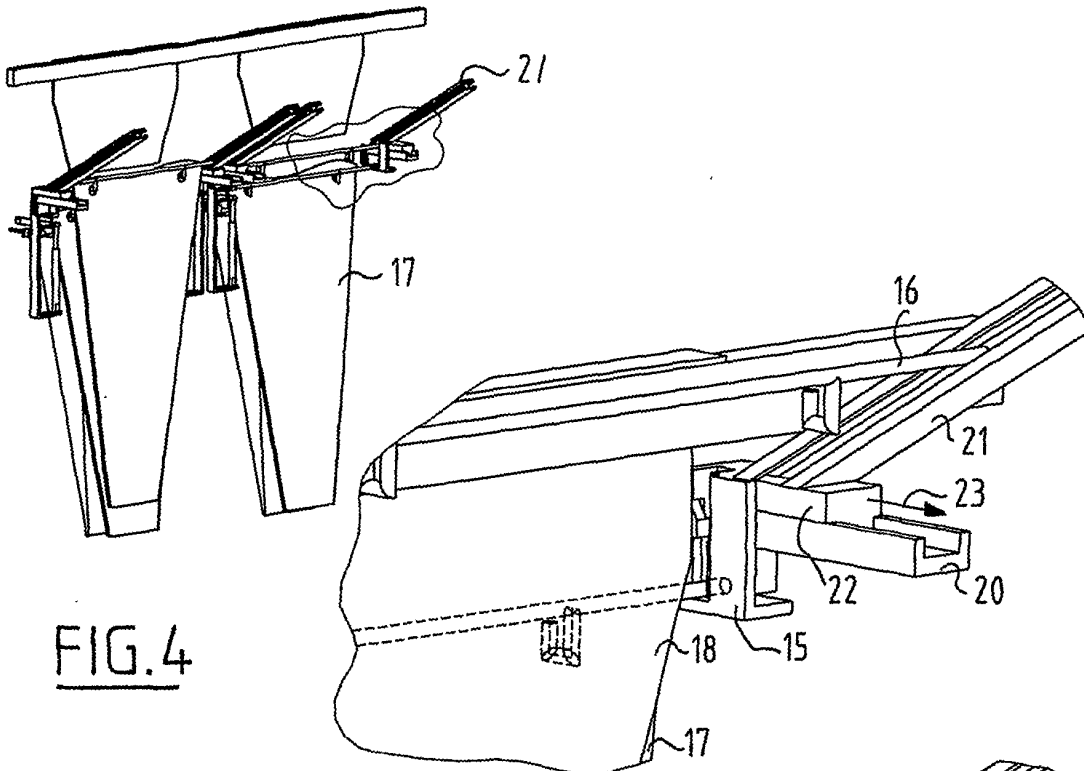


FIG. 4A

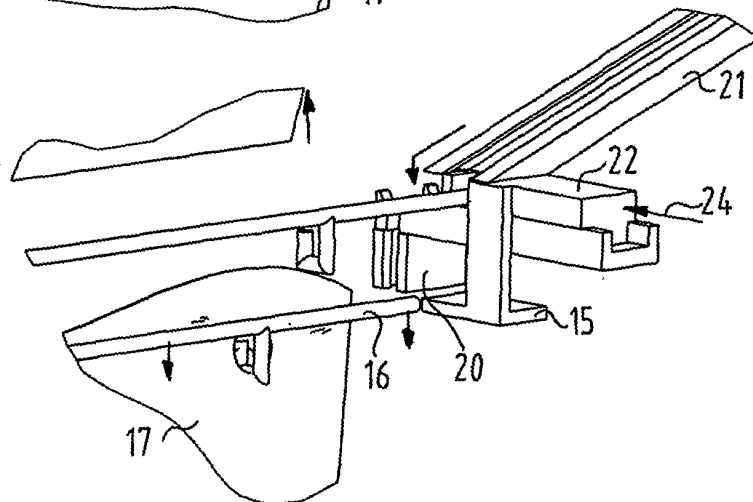
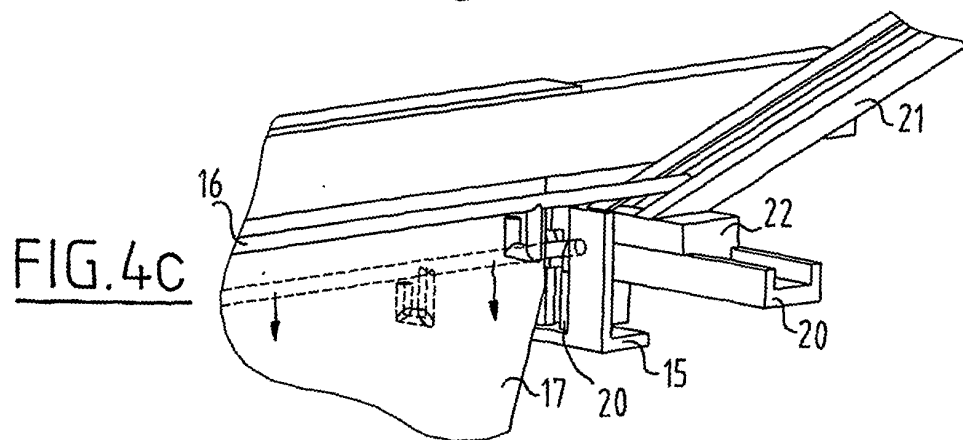


FIG. 4B



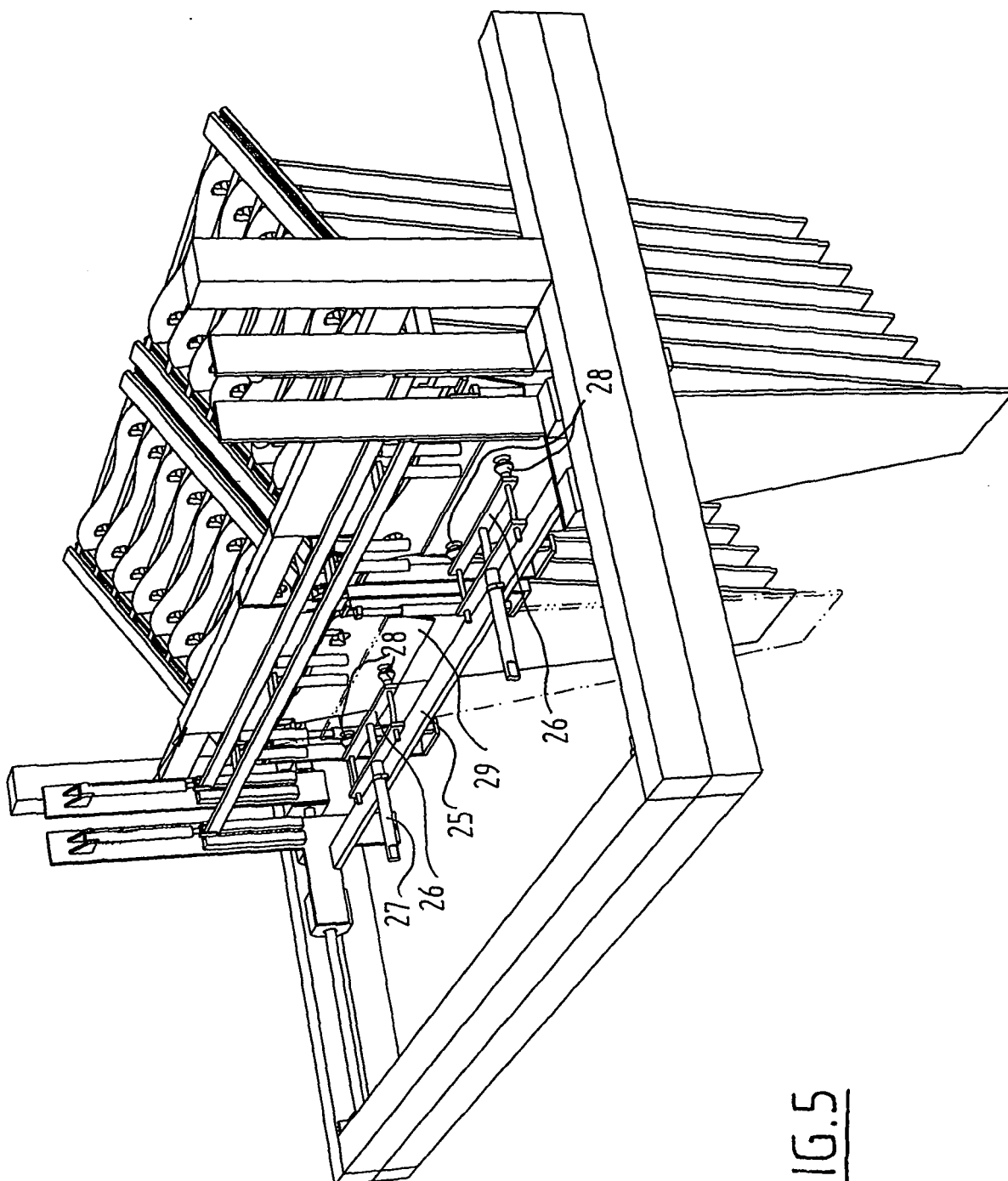


FIG. 5

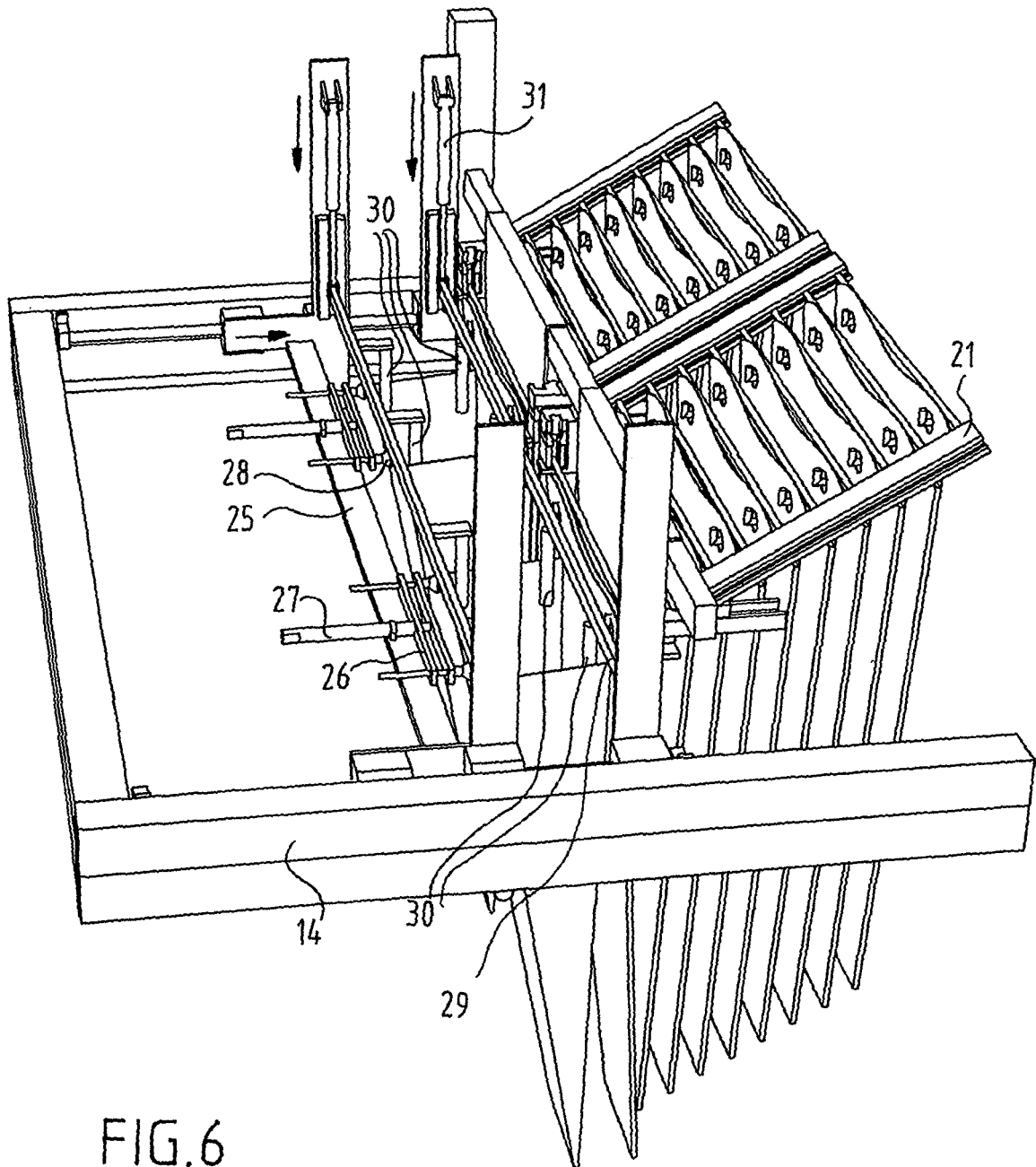


FIG.6

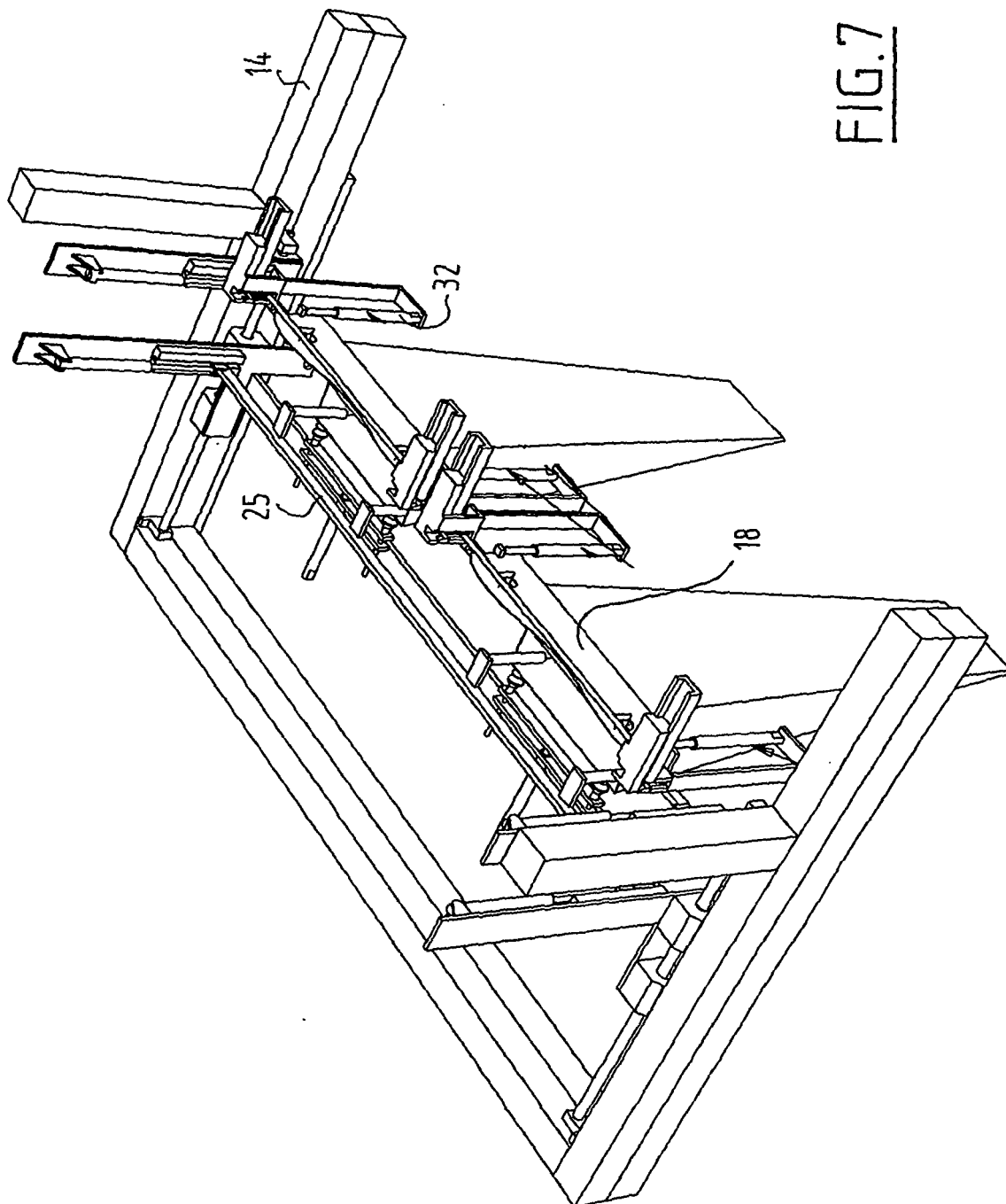


FIG. 7

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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