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(54) **System for transferring substantially flat and flexible items, particularly elements of skins**

System zur Übergabe von im wesentlichen flächigen und biegsamen Gegenständen, insbesondere Hautelementen

Système pour transférer des objets essentiellement plats et flexibles, en particulier des éléments de peau

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US-A- 4 550 905

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Description

[0001] The present invention relates to an apparatus and to a method for transferring items substantially flat and flexible, particularly skins.

[0002] The animals skins must be loaded on and unloaded from aerial transfer means from which they are hanging in order to be transferred from a working station to a next working station, during the working process.

[0003] The aerial transferring means generally includes hanging drive means fixed to ceiling and comprising a conveyor chain supporting a plurality of rods which extend from it substantially horizontally and from which the elements of skins are hanging. Each rod shows a "C" shape bent axis which defines a portion of the lower rod working as support member for a respective skin element.

[0004] WO 97/48630 discloses a system for transferring skins where a telescopic arm, horizontally extending, is sliding in vertical direction on a respective support column. The telescopic arm can move between each rod of the aerial transferring means and a ground conveyor lying by side of the aerial transferring means so as to move the skins from the interested rod to the conveyor, or vice versa.

[0005] The support column is placed beside the aerial transferring means, or beside the ground conveyor. In both the cases, the support column involves a certain encumbrance, which can result to be unacceptable in case the installation is accomplished in restricted spaces. WO 97/48630 illustrates furthermore a support frame having portal shape which extends above the aerial transferring means and is provided with support rods, suitable to be operated by end pliers in order to carry out transferring of the skins from the aerial transfer means to a ground conveyor, or vice versa. Also this portal frame involves considerable encumbrance.

[0006] FR 2636611 discloses an apparatus for handling and transferring plane and flexible products, in particular hides and leathers, between two workstations comprising a carrying structure intended to be interposed between the said stations, a shaping transporter arranged between the structure and one of the stations, a transfer gantry crane mounted so as to move between the second station and the transporter and at least one head for gripping by suction the flexible products, said head being suspended so as to move relative to the gantry crane.

[0007] FR 1602174 discloses a method and an apparatus for transferring plane and flexible sheets, especially leather, from a storage position to a conveyor wherein the sheets are first placed on a movable surface while maintaining such surface in a substantially vertical position and then tilting the surface toward said conveyor. The apparatus for performing the method comprises a movable, tiltable surface supported on a frame and suction means movable back and forth between a sheet storage position and a position above the frame, said surface comprising at least one endless belt or a series of rollers actively driven, and rollers being rotatably supported on shafts rigidly connected to each other and one of the shaft being operatively connected to tilting means which tilt the movable surface constituted by said belt or rollers back and forth though a tilting angle to direct the sheet toward said conveyor.

[0008] An object of the invention is to improve the existing systems for the movement of the skins, particularly in order to make available the reduction of the encumbrances.

[0009] In one aspect of the invention, an apparatus is provided for transferring items substantially flat and flexible, comprising first conveyor means of said items, second conveyor means of said items, transfer means for transferring said items from said first conveyor means to said second conveyor means, or vice versa, support means for said transfer means, characterized in that said support means are movable between a working position at said first conveyor means and a further working position at said second conveyor means, or vice versa.

[0010] By this aspect of the invention, it is possible to remarkably reduce the overall encumbrance, because the support means can occupy substantially the same space which is occupied by the first and second conveyor means.

[0011] Furthermore by moving the support means between the first conveyor means and the second conveyor means it is possible to achieve a greater precision in the moving of the transfer means.

[0012] The invention will be better understood and accomplished with reference to the enclosed drawing table, wherein:

Figure 1 is a schematic side view of an apparatus for transferring skins toward a balance conveyor;
Figure 1A is an enlarged section taken along plane 1A-1A of Figure 1;
Figure 2 is a top view of Figure 1;
Figure 3 is a section taken along plane III-III of Figure 1;
Figure 4 is a section taken along plane IV-IV of Figure 1;
Figure 5 is a sketch side view of an apparatus as in Figure 1, but in a version suitable to draw skins from a balance shape conveyor;
Figure 6 is a partial view, enlarged and broken of divaricating means in their closing position;
Figure 7 is a view as in Figure 6, but in a partially open position;
Figure 8 is a view as in Figures 6 and 7, but in a complete opening position;
Figure 9 is a sketch side view of transferring means for transferring skins so that they form a stack of skins superimposed on one another;
Figure 10 is a sketch side view of transferring means for transferring individual skins from a stack of skin already arranged;

Figure 11 is a sketch view of a plant for the working of skins.

[0013] With reference to the Figures 1 and 2, an apparatus 1 includes a base 2 moving between lower conveyor means 3 of skins and upper conveyor means 5 of skins.

[0014] The upper conveyor means 5 includes cantilever rod means 6 which extends substantially horizontally from chain means, not shown, and is hold in place by clamp means 9 supported by a column 10.

[0015] The movable base 2 includes a plate 11 to which first drive columns 12 are fixed on which members 13 of a first vertically sliding frame 14 are externally slidably engaged.

[0016] A second frame 15 is engaged to slide in a vertical direction with respective further members 17 on external slide ways 16 of the first frame 14.

[0017] An operating pneumatic cylinder 19 extends between the base 2 and a cross-bar 18 of the first frame 14, which drives and controls the vertical displacements of the first frame 14.

[0018] A further pneumatic cylinder 20 extends between the cross-bar 18 and a further cross-bar 21 interconnecting upward the further members 17 and controls the vertical displacements of the second frame 15.

[0019] The further cross-bar 21 includes a "U" shaped portion such to surround over three sides the rod means 6, so as to be able to receive on the own upper borders a region of a skin element 4 initially placed crossover the rod 6.

[0020] As shown in Figure 3, the lower conveyor means 3 includes a conveyor 24 and a set of rollers 25 arranged so as to cause a skin element 4 to rise along the direction shown by the arrow F1 toward an intermediate conveyor 26. The intermediate conveyor 26 is horizontally movable by means of an operating cylinder 27 in order to define a space S large enough to allow the frames 14 and 15 to pass through it when the moving base 2 lies below a skin element 4 which is in a transferring position wherein it is partially placed on the intermediate conveyor 26 and partially placed on the rollers 25.

[0021] As shown in Figure 4, the plate 11 is downward provided with wheels 28 with vertical axis laterally engaged in slide ways 29 of a block 30. In order to move the moving base 2 between under the lower transport means 3 and the upper transport means 5 a rack 31 is provided, fixed to the block 30 and engaged by a pinion 32 of a motor-reducer 33 mounted on the moving base 3.

[0022] With reference to the Figure 5, it is displayed in which manner the second frame 15 is provided with divaricating means 34 comprising a couple of column 35 extending parallel to the further members 17 and externally to them in order to support a couple of upper wings 38 swinging about horizontal axes and a couple of lower wings 37, both the lower wings and the upper wings being hinged in a swinging manner to a rod 37a interconnecting the drive columns 35.

[0023] Operating means 39 is arranged in order to wide open apart the upper wings 38 through lever means 41 from an opening position shown in Figure 6 to a closing position shown by dashed line in Figure 8.

[0024] Further operating means 36 is provided in order to produce, by means of further lever means 43, an angular rotation of the lower wings 37 from a closing position shown in Figure 6 to an opening position shown by dashed line in Figure 8.

[0025] The wide opening apart of the upper wings 38 is used to aid the separation of a skin element 4 from the rod 6 from which it is initially hanging so as to make possible that the skin element 4 is first detached from the rod 6 and then unthreaded from it is a longitudinal direction.

[0026] Divatication of the couple of lower wings 37 is instead used to move away each from the other the borders of the skin element 4 when the skin element 4 is on board of the second frame 15 and assures that the above mentioned borders are spaced between them by an amount greater than the distance S, so as one border is received by the intermediate conveyor 26 and the other is received by the rollers 25.

[0027] In Figure 9, an apparatus 60 is shown for transferring skins initially coming from a conveyor 24 and then transferred from here onto an upper conveyor 49 having a proximal end connected to the conveyor 24 and a distal end ending above a lower conveyor 46 overhanging a building region of a skins stack 45.

[0028] The conveyor 49 shows its own distal end hinged around a fix axis and can accomplish an circular arc R being joint to slide way means 48 moving on vertical drive means 50.

[0029] Transversal drive means 47 is further joint to the vertical drive means 50 onto which a lower conveyor 46 is mounted moving between an extended position Z where it overhangs the region of the stack 45 in order to start to lay thereupon a skin element 4 and a withdrawn position Y where the lower conveyor lies substantially outwards the encumbrance of the stack region 45.

[0030] In this manner, when a skin element 4 coming from the conveyor 24 has to be stored in the stack region 45 it passes from the carrier 24 to the upper conveyor 49 and from here to the lower conveyor 46 which is still lying near its withdrawn position Y and which progressively advances toward its extended position as long as it receives the skin element 4 delivered by the upper conveyor 49 through its distal end. When the skin element 4 lies completely placed on the lower conveyor 46, the conveyor 46 continues to cause the skin element 4 to proceed in an opposed direction with regard to the upper conveyor 49 up when an its advanced border goes down to the stack region 45 and leans on its top. Then the lower conveyor 46 starts to go back towards the withdrawn position Y still delivering consecutive portions of the skin element 4 on the top of the stack region

45 up when all the skin element 4 is stored on the top of the skin region 45.

[0031] As shown in Figure 10, in a further version of the apparatus for transferring skin elements 4 at the beginning lying in a region of a stack 45, sucker type clamp means 52 is provided that may be raised by a pneumatic cylinder 51 supported by a frame 53.

[0032] The clamp means 52 is suitable to operate on a border region of a skin element 4 of a stack 45 by rising it for an amount sufficient to allow belt conveyor means 54 to slip under the skin element partially risen and take it progressively in charge on itself.

[0033] The convyer 54 is then moved away from the stack region 45 along the direction shown by the arrow F2 on horizontal drive means 54a up when it reaches a position near a transit carrier 55 which delivers the skin element 4 in advance transferred to him by the conveyor 54 to the conveyor 24 in order to move it towards another working station.

[0034] As shown in Figure 11, in a manufacturing plant with an aerial transferring line G an apparatus C can be provided for transferring the skins on the rods 6 as shown in Figures from 1 to 4, associated to an unstacker A, B as shown in Figure 10; furthermore in order to draw the skins 4 from the rods 6 an apparatus D can be provided as described with reference to Figures from 5 to 8, and a skin stacker apparatus E, F as shown in Figure 9.

Claims

1. Apparatus for transferring substantially flat and flexible items (4), comprising first conveyor means (3) of said items (4), second conveyor means (5) of said items (4), transferring means (12, 14, 15, 21, 22, 35, 36, 37, 38, 39, 40) for transferring said items (4) from said first conveyor means (3) to said second conveyor means (5), or vice versa, support means (11) for said transferring means (12, 14, 15, 21, 22, 35, 36, 37, 38, 39, 40) , said support means (11) being movable between an operative position of said transferring means at said first conveyor means (3) and a further operative position at said second conveyor means (5), or vice versa, and further comprising displacing means (30, 31, 32, 33) arranged for displacing said support means (11) between under said first conveyor means (3) and under said second conveyor means (5).

2. Apparatus according to claim 1, wherein drive means (29) extends for said support means (11) between said first conveyor means (3) and said second conveyor means (5).

3. Apparatus according to claim 1, or 2, wherein said transferring means (12, 14, 15, 21, 22, 35, 36, 37, 38, 39, 40) includes a plurality of frame means (12, 14, 15) extending substantially vertically.

4. Apparatus according to claim 3, wherein said frame means (12, 14, 15) includes driving means (12) projecting upward from said support means (11) and fixed to them.

5. Apparatus according to claim 4, wherein frame means (14) is slidably engaged on said driving means (12).

6. Apparatus according to claim 5, wherein further frame means (15) is slidably engaged on said frame means (14).

7. Apparatus according to any one of the preceding claims, wherein said transferring means (12, 14, 15, 21, 22, 35, 36, 37, 38, 39, 40) includes divaricating means (35, 36, 37, 38, 39, 40) angularly moving between a closing position wherein said divaricating means (35, 36, 37, 38, 39, 40) substantially does not interact with said item (4) and an opening position wherein said divaricating means (35, 36, 37, 38, 39, 40) substantially interacts with said item (4).

Patentansprüche

1. Vorrichtung zum Übergeben von im Wesentlichen flachen und flexiblen Gegenständen (4), mit einem ersten Beförderungsmittel (3) für die Gegenstände (4), einem zweiten Beförderungsmittel (5) für die Gegenstände (4), Übergabemitteln (12, 14, 15, 21, 22, 35, 36, 37, 38, 39, 40) zum Übergeben der Gegenstände (4) von dem ersten Beförderungsmittel (3) zu dem zweiten Beförderungsmittel (5) oder umgekehrt, Trägermitteln (11) für die Übergabemittel (12, 14, 15, 21, 22, 35, 36, 37, 38, 39, 40), wobei die Trägermittel (11) zwischen einer Arbeitsposition der Übergabemittel des ersten Beförderungsmittels (3) und einer weiteren Arbeitsposition bei dem zweiten Beförderungsmittel (5) beweglich sind oder umgekehrt, und ferner mit Verlagerungsmitteln (30, 31, 32, 33), die zum Verlagern der Trägermittel (11) zwischen unterhalb der ersten Beförderungsmittel (3) und unterhalb der zweiten Beförderungsmittel (5) angeordnet sind.

2. Vorrichtung nach Anspruch 1, wobei sich Fahrwegmittel (29) für die Trägermittel (11) zwischen dem ersten Beförderungsmittel (3) und dem zweiten Beförderungsmittel (5) erstrecken.

3. Vorrichtung nach Anspruch 1 oder 2, wobei die Übergabemittel (12, 14, 15, 21, 22, 35, 36, 37, 38, 39, 40) eine Vielzahl von Rahmenmitteln (12, 14, 15) beinhalten, die sich im Wesentlichen vertikal erstrecken.

4. Vorrichtung nach Anspruch 3, wobei die Rahmenmittel (12, 14, 15) Antriebsmittel (12) beinhalten, die von den Trägermitteln (11) nach oben ragen und daran befestigt sind.

5. Vorrichtung nach Anspruch 4, wobei die Rahmenmittel (14) verschieblich an dem Antriebsmittel (12) angeordnet sind.

6. Vorrichtung nach Anspruch 5, wobei weitere Rahmenmittel (15) verschieblich an den Rahmenmitteln (14) angeordnet sind.

7. Vorrichtung nach einem der vorhergehenden Ansprüche, wobei die Übergabemittel (12, 14, 15, 21, 22, 35, 36, 37, 38, 39, 40) Gabelmittel (35, 36, 37, 38, 39, 40) beinhalten, die sich winklig zwischen einer Schließposition, in der die Gabelmittel (35, 36, 37, 38, 39, 40) mit den Gegenständen (4) im Wesentlichen nicht zusammenwirken, und einer Öffnungsposition, in der die Gabelmittel (35, 36, 37, 38, 39, 40) mit den Gegenständen (4) im Wesentlichen zusammenwirkt, bewegen.

Revendications

1. Dispositif pour transférer des articles (4) sensiblement plats et flexibles, comprenant un premier moyen transporteur (3) desdits articles (4), un second moyen transporteur (5) desdits articles (4), des moyens de transfert (12, 14, 15, 21, 22, 35, 36, 37, 38, 39, 40) pour transférer lesdits articles (4) dudit premier moyen transporteur (3) audit second moyen transporteur (5), ou vice versa, des moyens de support (11) pour lesdits moyens de transfert (12, 14, 15, 21, 22, 35, 36, 37, 38, 39, 40), lesdits moyens de support (11) étant mobiles entre une position d'utilisation desdits moyens de transfert au niveau dudit premier moyen transporteur (3) et une autre position d'utilisation au niveau dudit second moyen transporteur (5), ou vice versa, et comprenant de plus des moyens de déplacement (30, 31, 32, 33) prévus pour déplacer lesdits moyens de support (11) entre le dessous dudit premier moyen transporteur (3) et le dessous dudit second moyen transporteur (5).

2. Dispositif selon la revendication 1, dans lequel des moyens de mouvement (29) s'étendent pour lesdits moyens de support (11) entre ledit premier moyen transporteur (3) et ledit second moyen transporteur (5).

3. Dispositif selon la revendication 1 ou 2, dans lequel lesdits moyens de transfert (12, 14, 15, 21, 22, 35, 36, 37, 38, 39, 40) comprennent une pluralité de moyens de bâti (12, 14, 15) s'étendant essentiellement verticalement.

4. Dispositif selon la revendication 3, dans lequel lesdits moyens de bâti (12, 14, 15) comprennent des moyens d'entraînement (12) se projetant vers le haut à partir desdits moyens de support (11) et fixés à eux.

5. Dispositif selon la revendication 4, dans lequel les moyens de bâti (14) sont engagés de manière coulissante sur lesdits moyens d'entraînement (12).

6. Dispositif selon la revendication 5, dans lequel d'autres moyens de bâti (15) sont engagés de manière coulissante sur lesdits moyens de bâti (14).

7. Dispositif selon l'une quelconque des revendications précédentes, dans lequel lesdits moyens de transfert (12, 14, 15, 21, 22, 35, 36, 37, 38, 39, 40) comprennent des moyens de bifurcation (35, 36, 37, 38, 39, 40) se déplaçant angulairement entre une position de fermeture où lesdits moyens de bifurcation n'interagissent substantiellement pas avec ledit article (4) et une position d'ouverture où lesdits moyens de bifurcation (35, 36, 37, 38, 39, 40) interagissent substantiellement avec ledit article (4).

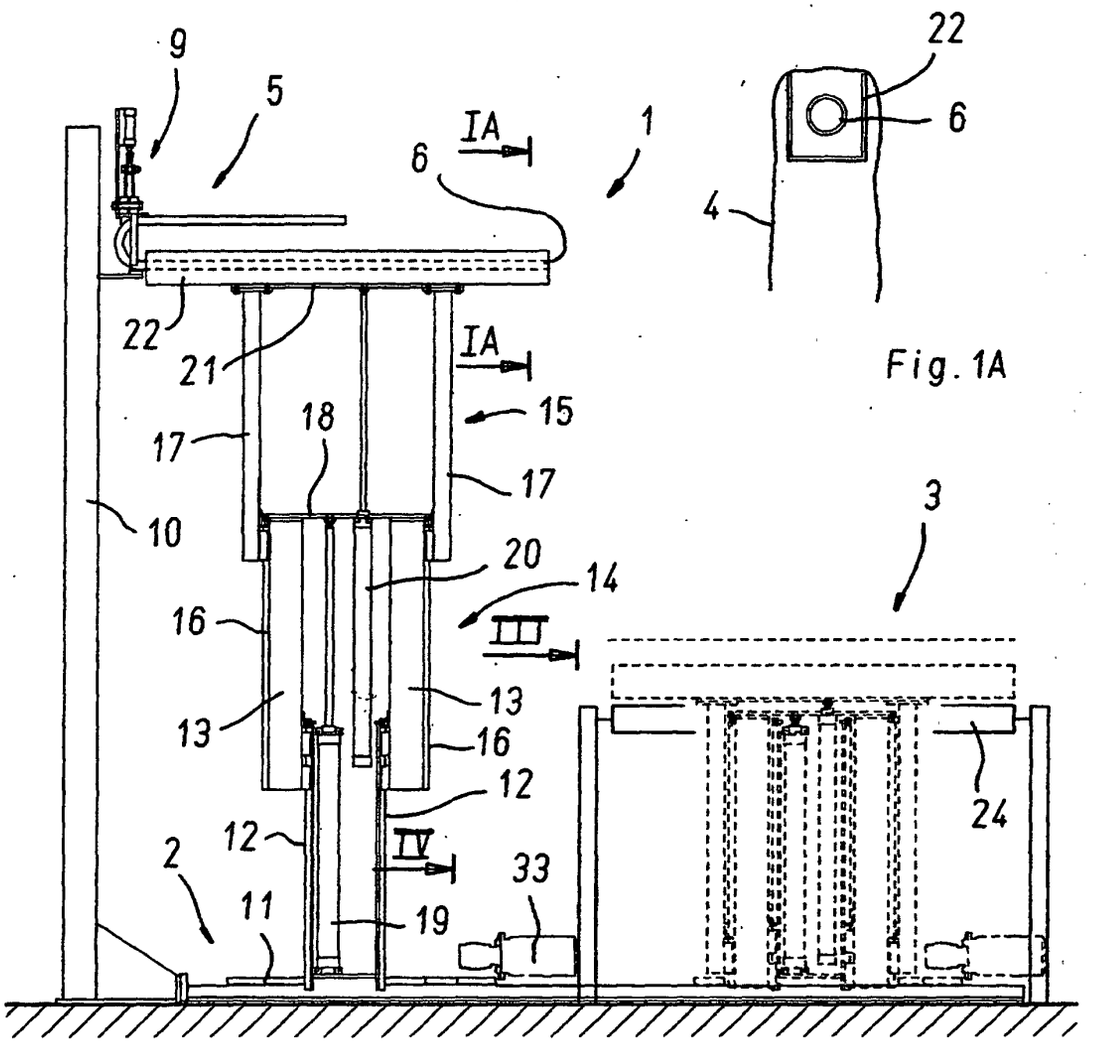

Fig. 1

Fig. 1A

IV III

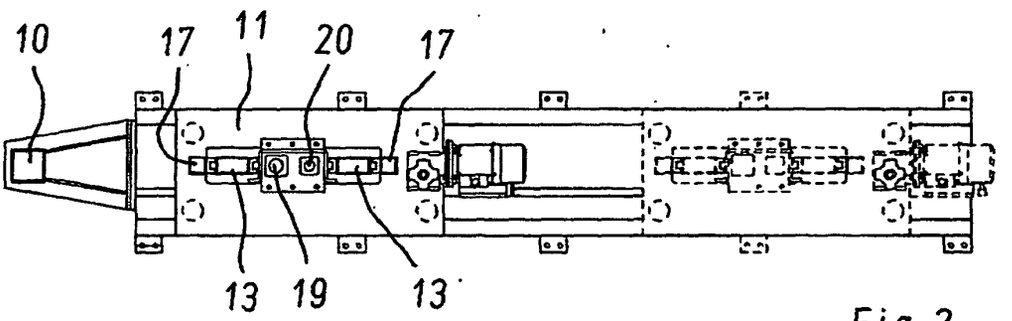

Fig. 2

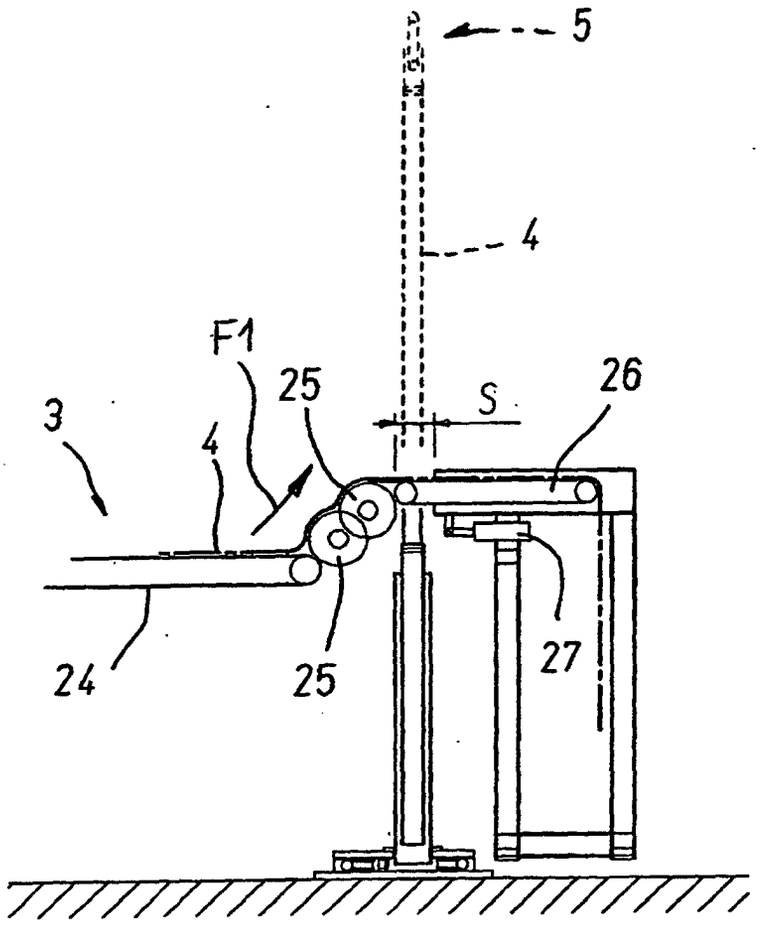

Fig.3

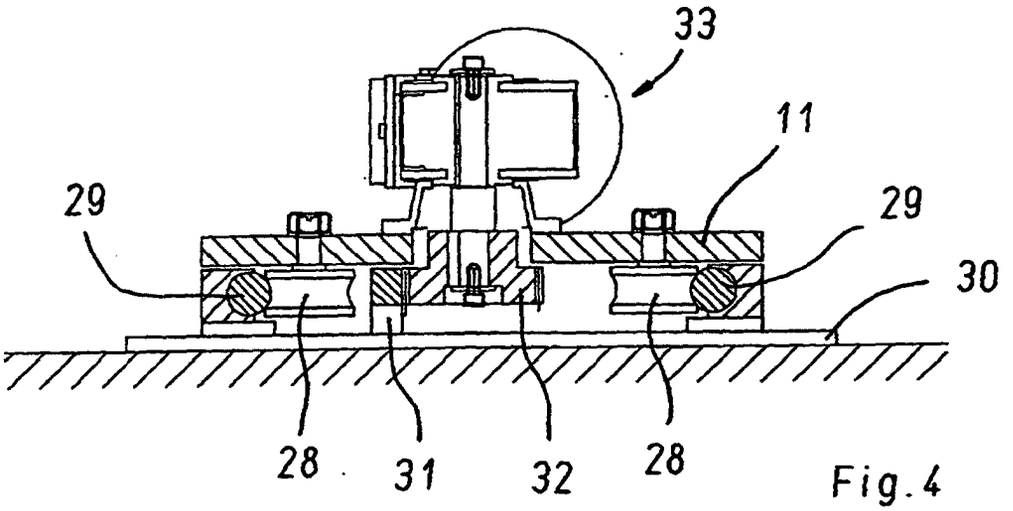

Fig.4

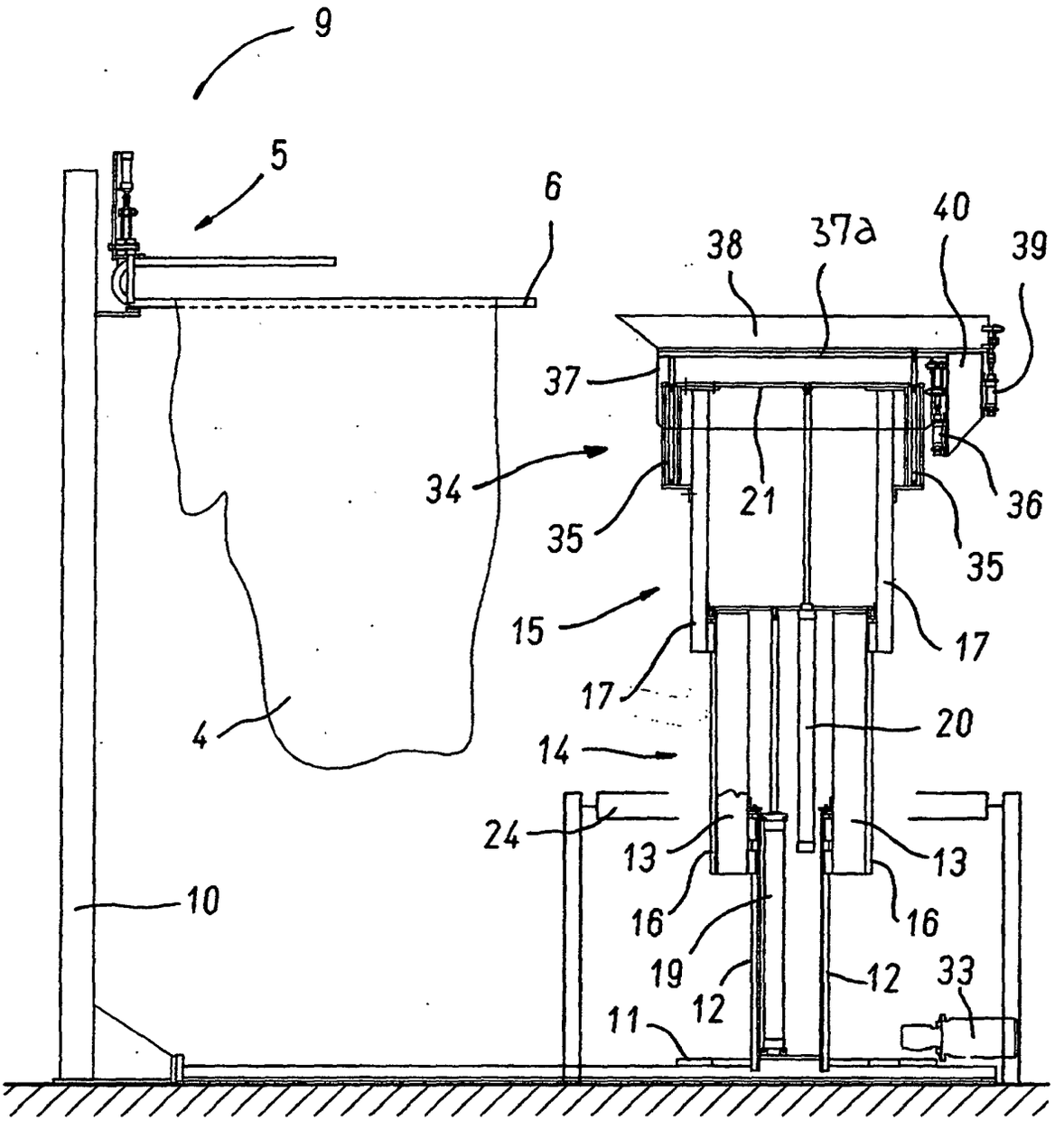
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Fig.5

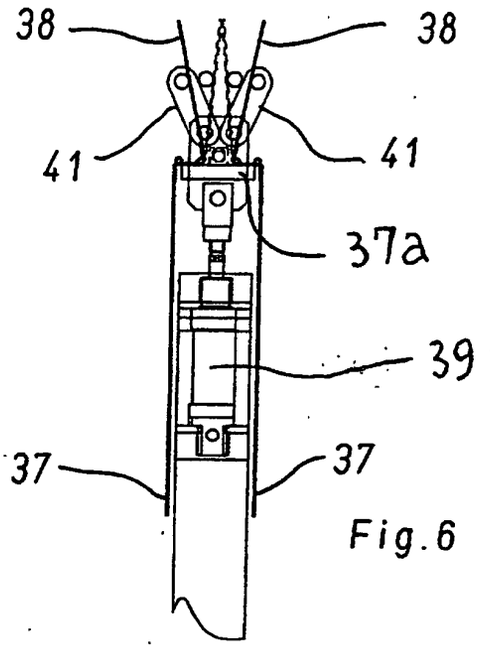

Fig.6

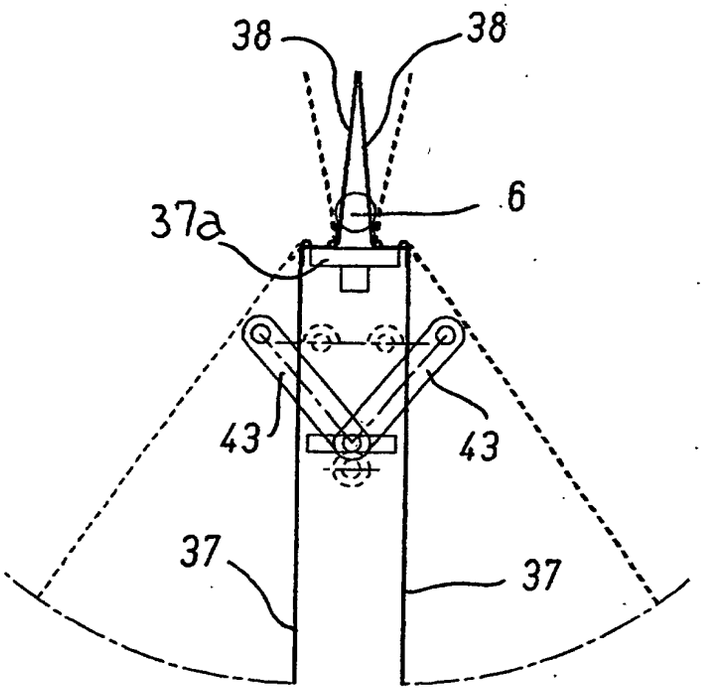

Fig.8

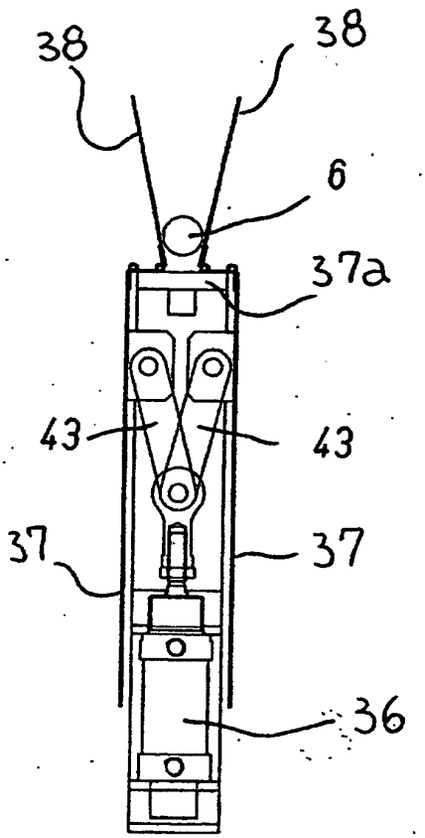

Fig.7

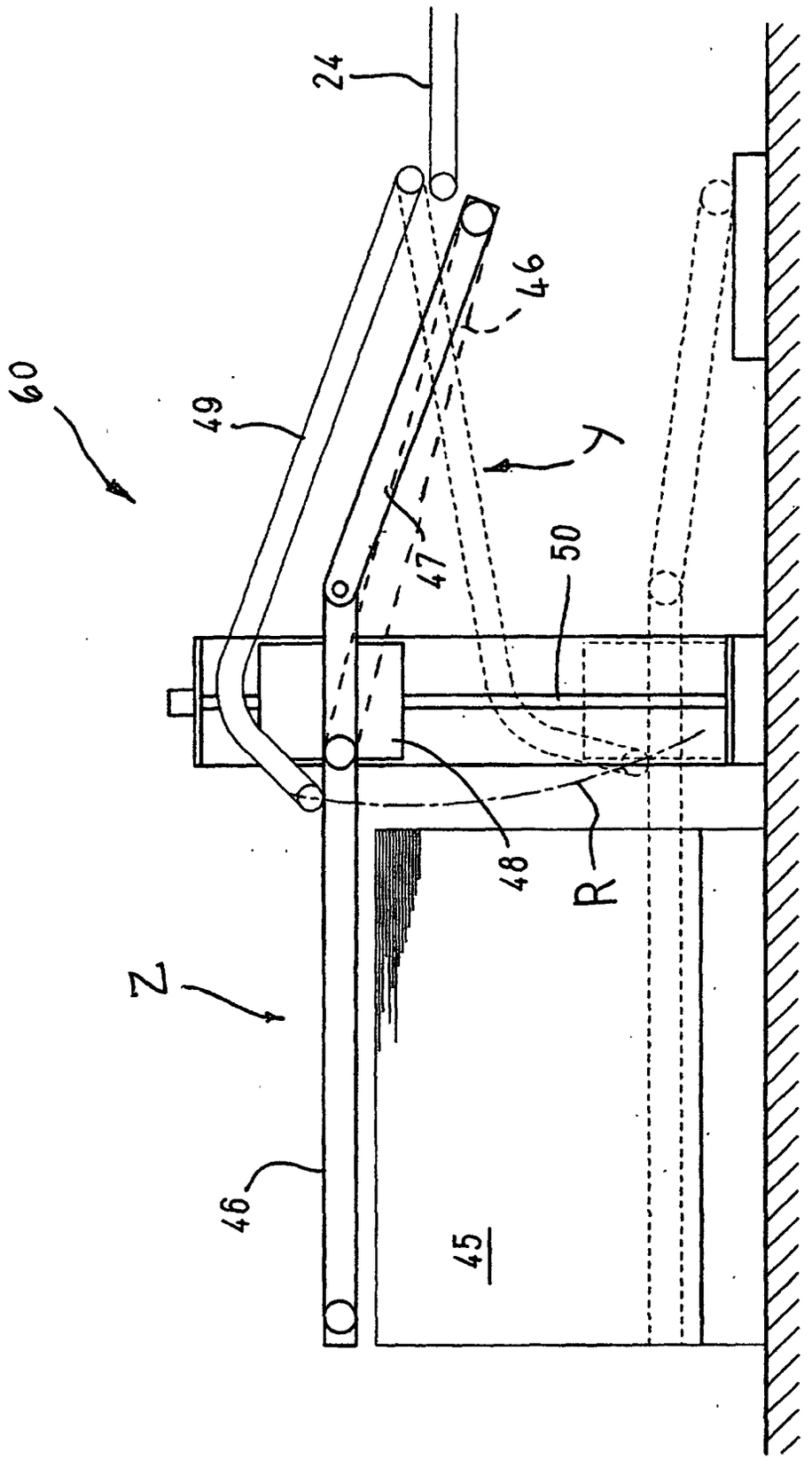

Fig.9

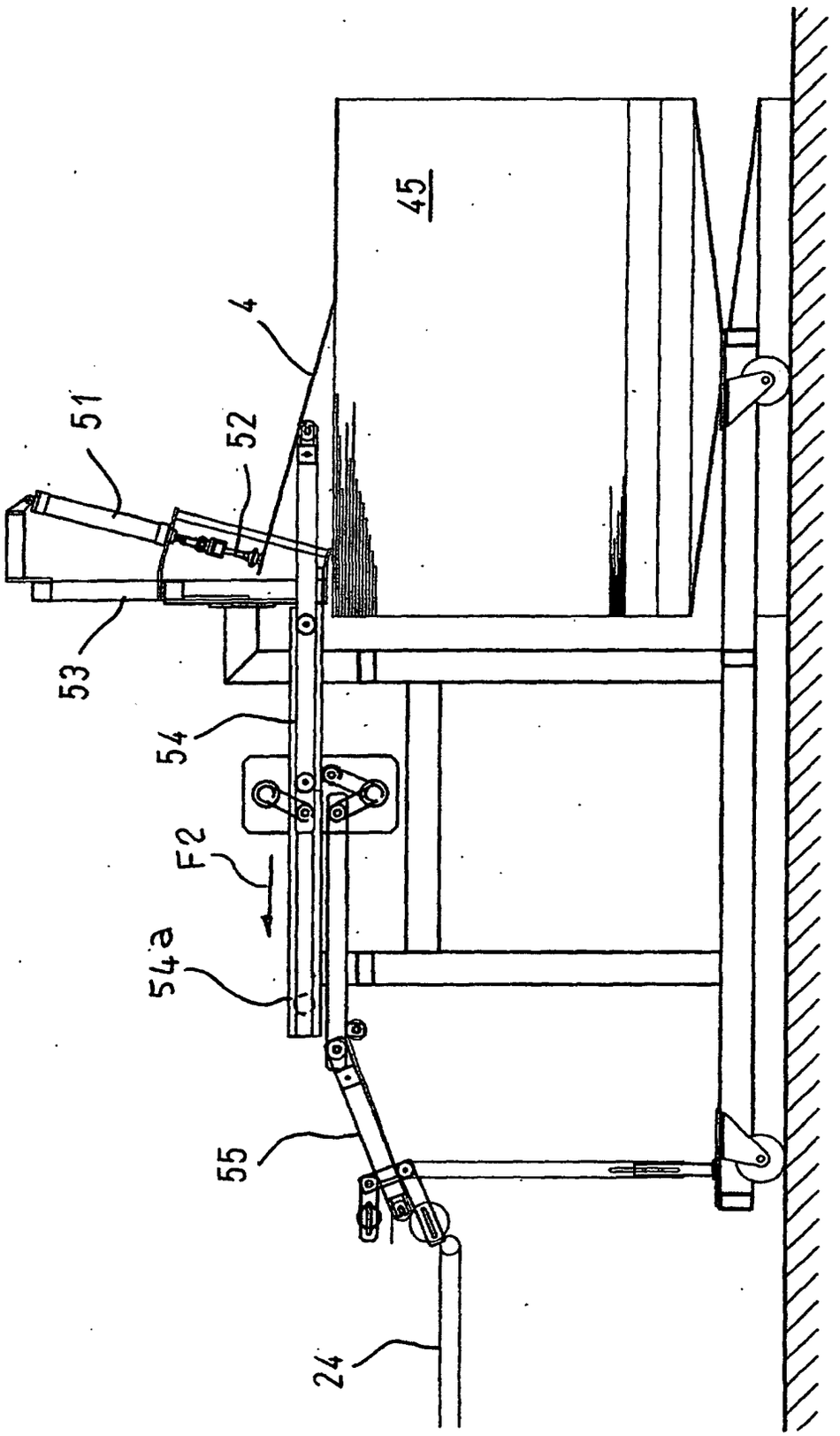

Fig. 10

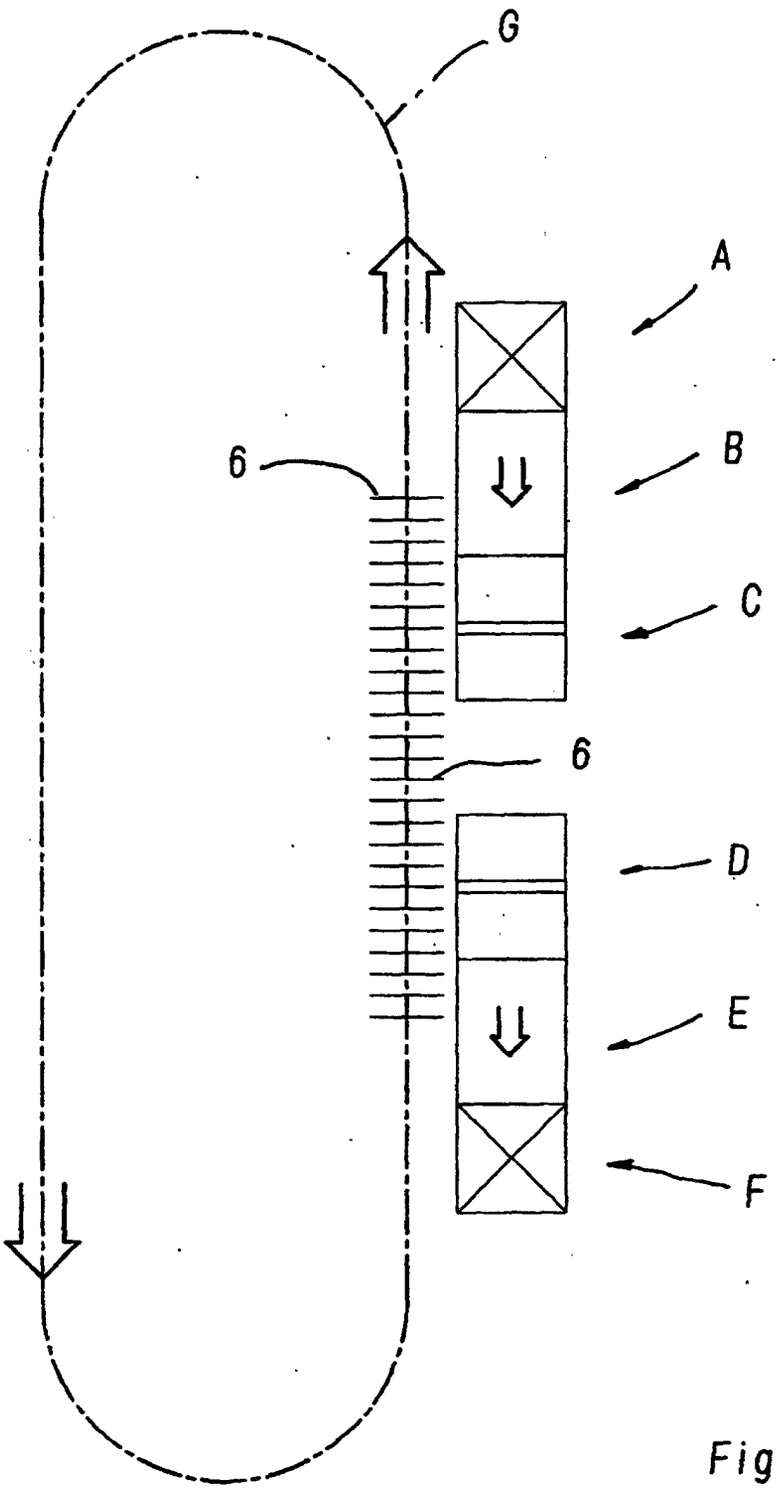

Fig. 11