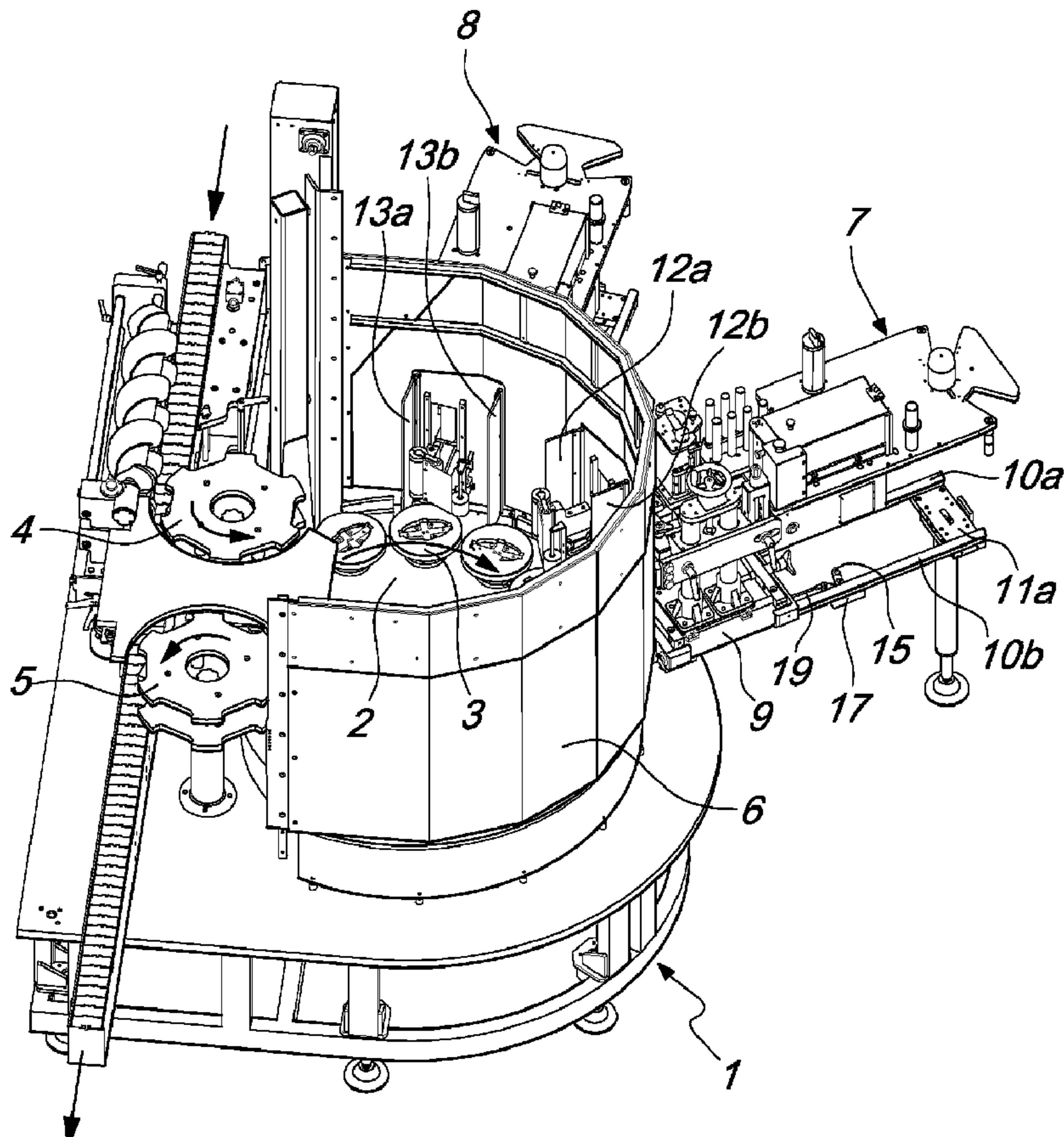




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(54) Titre : **MACHINE D'ETIQUETAGE, DESTINEE EN PARTICULIER A L'ETIQUETAGE DE RECIPIENTS**  
(54) Title: **LABELING MACHINE, PARTICULARLY FOR LABELING CONTAINERS**



(57) Abrégé/Abstract:

Labeling machine (1), particularly for labeling containers, comprising a rotating carousel (2) for supporting pans (3) adapted for the resting of the individual containers to be labeled and provided with a protective structure (6) which prevents, during operation,

**(57) Abrégé(suite)/Abstract(continued):**

access to the rotating carousel (2), at least one pair of identical labeling assemblies (7, 8) being provided which are arranged consecutively at the peripheral region of the rotating carousel (2), each one of the labeling assemblies (7, 8) being associated with a slider (9) slidable on guides (10a, 10b) between a forward active position, for applying the labels to the containers supported by the rotating carousel (2), and a retracted position, designed to load a reel of tape provided with the labels, the protective structure (6), which surrounds the rotating carousel (2), having, at each labeling assembly (7, 8), a door movable by the action of means that connect the door to the slider (9) which supports the labeling assembly (7, 8) between an open position, assumed when the labeling assembly (7, 8) is in the forward position, and a closed position, assumed when the labeling assembly (7, 8) is in the retracted position.

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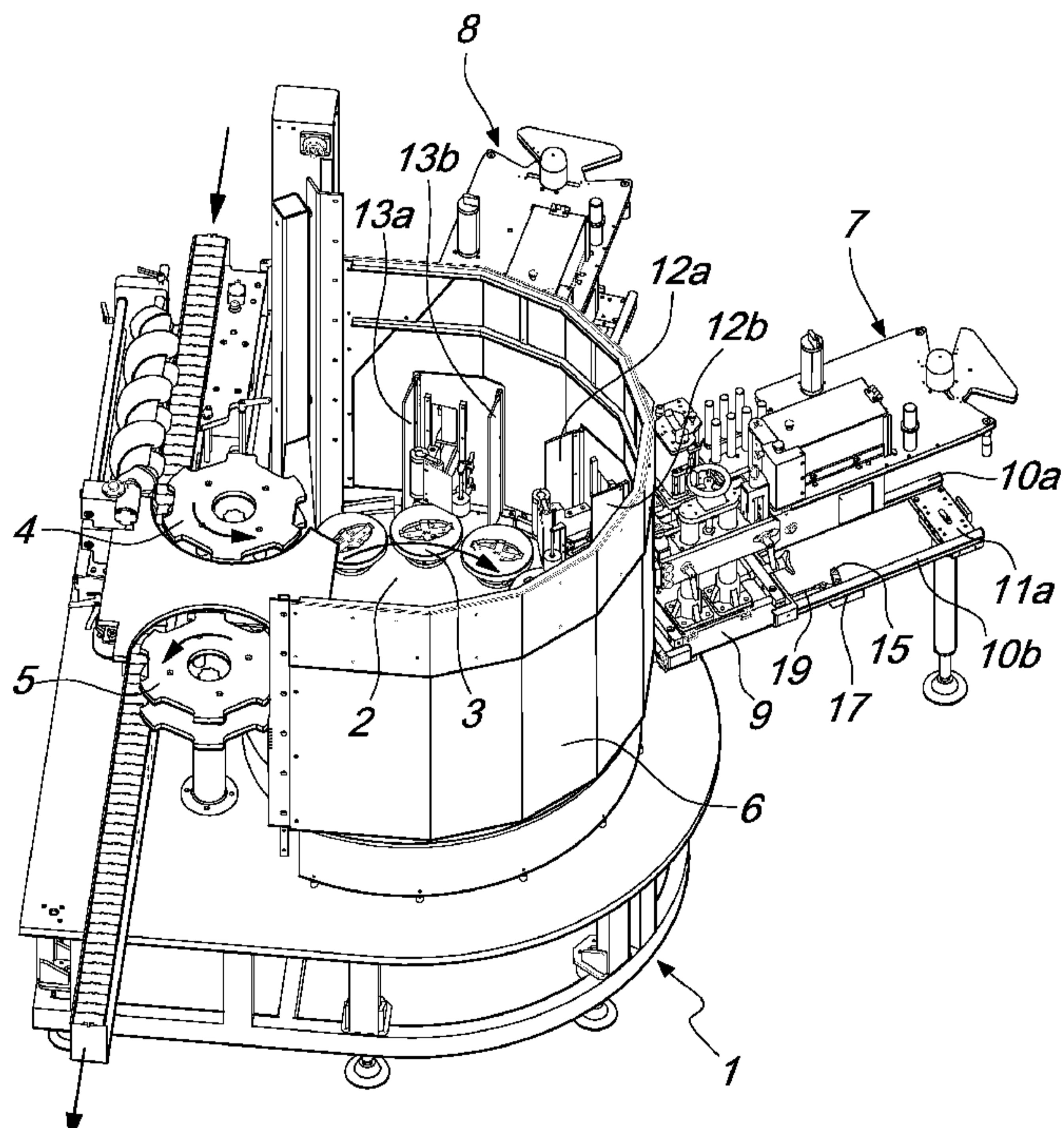


Fig. 1

(57) **Abstract:** Labeling machine (1), particularly for labeling containers, comprising a rotating carousel (2) for supporting pans (3) adapted for the resting of the individual containers to be labeled and provided with a protective structure (6) which prevents, during operation, access to the rotating carousel (2), at least one pair of identical labeling assemblies (7, 8) being provided which are arranged consecutively at the peripheral region of the rotating carousel (2), each one of the labeling assemblies (7, 8) being associated with a slider (9) slidable on guides (10a, 10b) between a forward active position, for applying the labels to the containers supported by the rotating carousel (2), and a retracted position, designed to load a reel of tape provided with the labels, the protective structure (6), which surrounds the rotating carousel (2), having, at each labeling assembly (7, 8), a door movable by the action of means that connect the door to the slider (9) which supports the labeling assembly (7, 8) between an open position, assumed when the labeling assembly (7, 8) is in the forward position, and a closed position, assumed when the labeling assembly (7, 8) is in the retracted position.

LABELING MACHINE, PARTICULARLY FOR LABELING  
CONTAINERS

**Technical Field**

The present invention relates to a labeling machine, particularly for  
5 labeling containers.

**Background art**

Nowadays, labeling machines are known which comprise a rotating  
carousel for supporting pans adapted for the resting of individual containers  
to be labeled, and also comprising at least one pair of identical labeling  
10 assemblies which are arranged consecutively at the peripheral region of the  
carousel.

Each labeling assembly is associated with a slider slidable on guides  
between a forward active position, in which the labels taken from a tape  
wound on reels are applied to the containers, and a retracted position  
15 designed to load the labels on the reel of tape.

During the operation of the machine, the labeling assemblies are in  
the forward position, and while one of the assemblies is performing the  
application of labels onto the containers, gradually consuming the  
associated reel of tape, the other assembly is waiting and is provided with an  
20 intact reel.

When the reel of the labeling assembly that has performed the  
application of labels has run out, the assembly that was waiting  
automatically comes into operation, so as to ensure the continuity of  
operation of the machine.

25 This exchange takes place with the help of an operator who brings the  
slider for supporting the labeling assembly that has finished its reel of tape  
into the retracted position, mounts a new reel of tape, and brings the  
assembly into the forward position again.

In this manner, the situation is restored wherein both of the  
30 assemblies are situated in the forward position, ready to perform the

alternation of operation described above.

Obviously, the rotating carousel is provided with a protective structure that prevents access to the carousel proper during operation.

Since the forward position of each labeling assembly is such that the 5 front part of the assembly is situated beyond the protective structure, on the carousel side, and since the retracted position of the assembly is such that this same front part is outside the protective structure, it implies that the presence is necessary, for each labeling assembly, of means that are capable of preventing intrusions beyond the protective structure when the labeling 10 assembly is in the retracted position, and which are capable of allowing the assembly to pass through when it needs to be brought to the forward active position.

The means available today are not entirely satisfactory.

### **Disclosure of the invention**

15 Therefore the aim of the present invention is to provide a labeling machine, particularly for labeling containers, in which the means of protection against interventions with the rotating carousel exhibit the utmost operational efficiency.

This aim, as well as other objects which will become more apparent 20 hereinafter, are achieved by a labeling machine, particularly for labeling containers, comprising a rotating carousel for supporting pans adapted for the resting of the individual containers to be labeled, provided with a protective structure which prevents, during operation, access to said rotating carousel, and further comprising at least one pair of identical labeling 25 assemblies, which are arranged consecutively at the peripheral region of said rotating carousel, each one of said labeling assemblies being associated with a slider slidable on guides between a forward active position, for applying the labels to the containers supported by said rotating carousel, and a retracted position, designed to load a reel of tape provided with the labels, 30 characterized in that said protective structure, which surrounds said rotating

carousel, has, at each one of said labeling assemblies, a door movable by action of means that connect said door to said slider, which supports said labeling assembly between an open position, assumed when said labeling assembly is in said forward position, and a closed position, assumed when 5 said labeling assembly is in said retracted position.

### **Brief description of the drawings**

Further characteristics and advantages of the invention will become better apparent from the description of a preferred, but not exclusive, embodiment of a labeling machine, particularly for labeling containers, 10 according to the present invention, illustrated by way of non-limiting example in the accompanying drawings wherein:

- Figure 1 is a perspective view of an embodiment of a labeling machine, particularly for labeling containers, according to the invention, with two labeling assemblies located in their forward active position;
- 15 - Figure 2 is a perspective view from above of the slider for supporting a labeling assembly in the forward position, with the associated door, of the machine shown in Figure 1;
- Figure 3 is a perspective view from below of the supporting slider shown in Figure 2;
- 20 - Figures 4 and 5 are two enlarged-scale detailed views of two details of the supporting slider shown in Figure 3;
- Figure 6 is a perspective view from above of the detail shown in Figure 5;
- 25 - Figure 7 is a perspective view from below of the slider for supporting a labeling assembly in the retracted position, with the associated door, of the machine shown in Figure 1.

### **Ways of carrying out the invention**

With reference to the figures, the labeling machine, particularly for labeling containers, generally indicated with the reference numeral 1, 30 comprises a rotating carousel 2 for supporting pans 3 adapted for the resting

of individual containers which are fed by way of the entry star wheel 4 and evacuated by way of the exit star wheel 5.

Moreover, a protective structure of the carousel 2 is provided, generally indicated with the reference numeral 6, which prevents, during 5 operation, access to the carousel 2 and two identical labeling assemblies, 7 and 8.

Each labeling assembly 7 or 8 is associated with a slider 9 slidable on guides 10a and 10b, mutually connected to crossbars 11a and 11b, between a forward position, shown in Figures 1, 2 and 3, with the associated details 10 shown in Figures 4, 5 and 6, in which the labeling assembly 7 is in the active condition for applying the labels to the containers supported by the carousel 2, and the retracted position, shown in Figure 7, in which the labeling assembly 7 is available for the loading of an intact reel of tape.

At the labeling assembly 7, there is, as part of the protective structure 15 6, a door formed by wings 12a and 12b which are movable according to the arrows in Figure 2 between the open position shown in Figures 2 and 3, assumed when the labeling assembly 7 is in the forward position, and the closed position shown in Figure 7, assumed when the labeling assembly 7 is in the retracted position.

20 Moreover, a similar door is provided, formed by wings 13a and 13b, which can be seen in Figure 1, for the labeling assembly 8.

The movement of the wings 12a and 12b of the door is performed by means that connect the door with the slider 9.

Such means comprise a cam 14 which is integral with the slider 9 and 25 adapted to actuate a roller 15 associated with an arm 16 which is pivoted, with an end stop 16a, on a support 17 fixed to the guide 10b and which is connected by way of a linkage 18 with one end of a tension member 19 which at the other end is pivoted on a plate 20a integral with a toothed wheel 20 which is keyed to a shaft 21 supporting the wing 12b, associated 30 with an element 22 of the structure of the labeling machine 1.

The toothed wheel 20 constitutes the first element of a kinematic chain that connects the shaft 21 supporting the wing 12b, on which the toothed wheel 20 is keyed, with a shaft 23 supporting the wing 12a associated with the element 22 as well, so as to produce simultaneous and 5 oppositely oriented movements of the wings 12a and 12b between the open and closed positions.

Such kinematic chain comprises, in addition to the toothed wheel 20, a toothed wheel 24 keyed on the shaft 23, so that the toothed wheels 20 and 24 are connected one another by means of a pair of toothed wheels 25.

10 Moreover, a spring 27 is provided connected at one end to a fixed pin 28 and at the other end to a pin 29 supported by a plate 20b which is integral with the toothed wheel 20, so as to tighten up progressively from the resting situation assumed when the slider 9 is in the forward position shown in Figure 3 and in the detail of Figure 4, and the loaded situation assumed 15 when the slider 9 is in the retracted position shown in Figure 7.

The cam 14 is shaped according to a first inclined section 14a that begins at a certain distance from the roller 15 when the slider 9 is in the forward position, and a second section 14b which proceeds straight and parallel to the direction of movement of the slider, so as to produce a 20 movement of the roller 15 connected to the cam 14 only at the central section of the stroke of the slider 9.

Operation of the labeling machine 1, according to the present invention, beginning from the situation shown in Figure 3 with the corresponding details of Figures 4, 5 and 6, which shows the slider 9 in the 25 forward position with the labeling assembly 7 in the active position, is described in the following.

In this situation, the wings 12a and 12b of the door are open, and the labeling assembly is located with the front part beyond the door.

When it is necessary to change the reel of tape of the labeling 30 assembly 7 because it has run out, an operator manually causes the

translational movement of the slider 9 from the forward position to the retracted position, and for a first section of the stroke the cam 14 cannot touch the roller 15, so that the wings 12a and 12b of the door do not move, thus allowing the passage of the labeling assembly 7.

5 At a certain point the contact of the roller 15 with the cam 14 begins, and more precisely contact with the inclined section 14a thereof, and from this moment the roller 15 is moved so as to produce a traction on the tension member 19 which actuates the toothed wheel 20 and all of the kinematic chain deriving from it; in this manner the movement of the wings 12a and  
10 12b towards the closed position is produced, which position is reached when the roller 15 has finished the path on the inclined section 14a of the cam 14.

The motion of the slider 9 then proceeds until the retracted position is reached, with a section of stroke where the roller 15 is in contact with the  
15 section 14b of the cam which causes no movement of the roller: consequently the wings 12a and 12b remain motionless in the closed position thus reached, and the labeling assembly 7 moves away from them so as to allow an operator to perform the necessary interventions.

During the described movement of the slider 9, the loading of the  
20 spring 27 has been achieved, which, during the return stroke of the slider 9 to the forward position, performs the function of ensuring contact of the roller 15 with the cam 14.

The labeling machine, particularly for labeling containers, thus conceived, is susceptible of numerous modifications and variations, all of  
25 which are within the scope of the appended claims.

Moreover, all the details may be replaced by other, technically equivalent elements.

In practice the materials employed, provided they are compatible with the specific use, and the contingent dimensions and shapes, may be any  
30 according to requirements and to the state of the art.

Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly, such reference signs do not have any limiting effect on the interpretation of each 5 element identified by way of example by such reference signs.

CLAIMS

1. A labeling machine (1), particularly for labeling containers, comprising a rotating carousel (2) for supporting pans (3) adapted for the resting of the individual containers to be labeled, provided with a protective structure (6) which prevents, during operation, access to said rotating carousel (2), and further comprising at least one pair of identical labeling assemblies (7, 8), which are arranged consecutively at the peripheral region of said rotating carousel (2), each one of said labeling assemblies (7, 8) being associated with a slider (9) slidable on guides (10a, 10b) between a forward active position, for applying the labels to the containers supported by said rotating carousel (2), and a retracted position, designed to load a reel of tape provided with the labels, characterized in that said protective structure (6), which surrounds said rotating carousel (2), has, at each one of said labeling assemblies (7, 8), a door movable by action of means that connect said door to said slider (9), which supports said labeling assembly (7, 8) between an open position, assumed when said labeling assembly (7, 8) is in said forward position, and a closed position, assumed when said labeling assembly (7, 8) is in said retracted position.

2. The labeling machine (2) according to claim 1, characterized in that said slider (9) for supporting said labeling assembly (7, 8) is provided with a cam (14) for actuating a roller (15) which is associated with an arm (16), which is pivoted on a fixed support (17) and connected by means of a linkage (18) to a tension member (19) for actuating a kinematic chain which connects two shafts (21, 23), each designed to support a wing (12a, 12b) of the door inserted in said protective structure (6) so as to produce simultaneous and oppositely oriented movements of said wings (12a, 12b) between the open and closed positions of said door.

3. The labeling machine (1) according to claim 1 or 2, characterized in that said kinematic chain, which connects said shafts (21, 23), each designed to support said wings (12a, 12b) of said door, comprises a first gear (20),

which is connected to said tension member (19) for actuation and is keyed directly onto said shaft (21) of a first wing (12a), and a second gear (24), which is keyed directly onto said shaft (23) of the second wing (12b) and is connected to said first gear (20) by a pair of gears (25, 26), a spring (27) 5 being provided, fixed at one end and connected at the other end to a tab that protrudes from said first gear (20), so as to be progressively stretched during the motion of said slider (9) in the direction from the forward position to the retracted position.

4. The labeling machine (1) according to any one of claims 1 to 3, 10 characterized in that said cam (14) integral with the slider (9) for supporting said labeling assembly (7, 8) is shaped so as to move said roller (15) connected thereto only at the central portion of the stroke of said slider (9).

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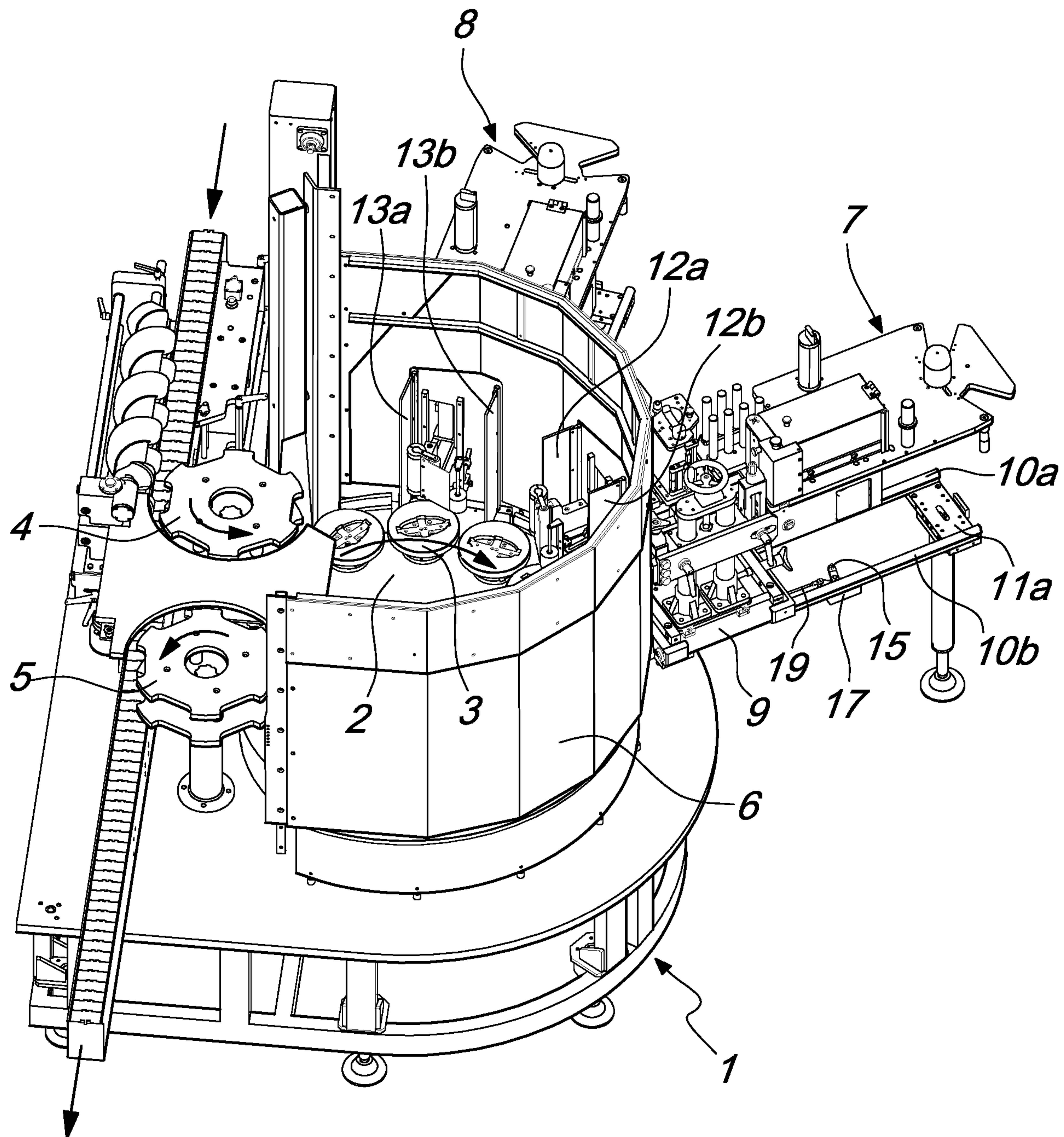


Fig. 1

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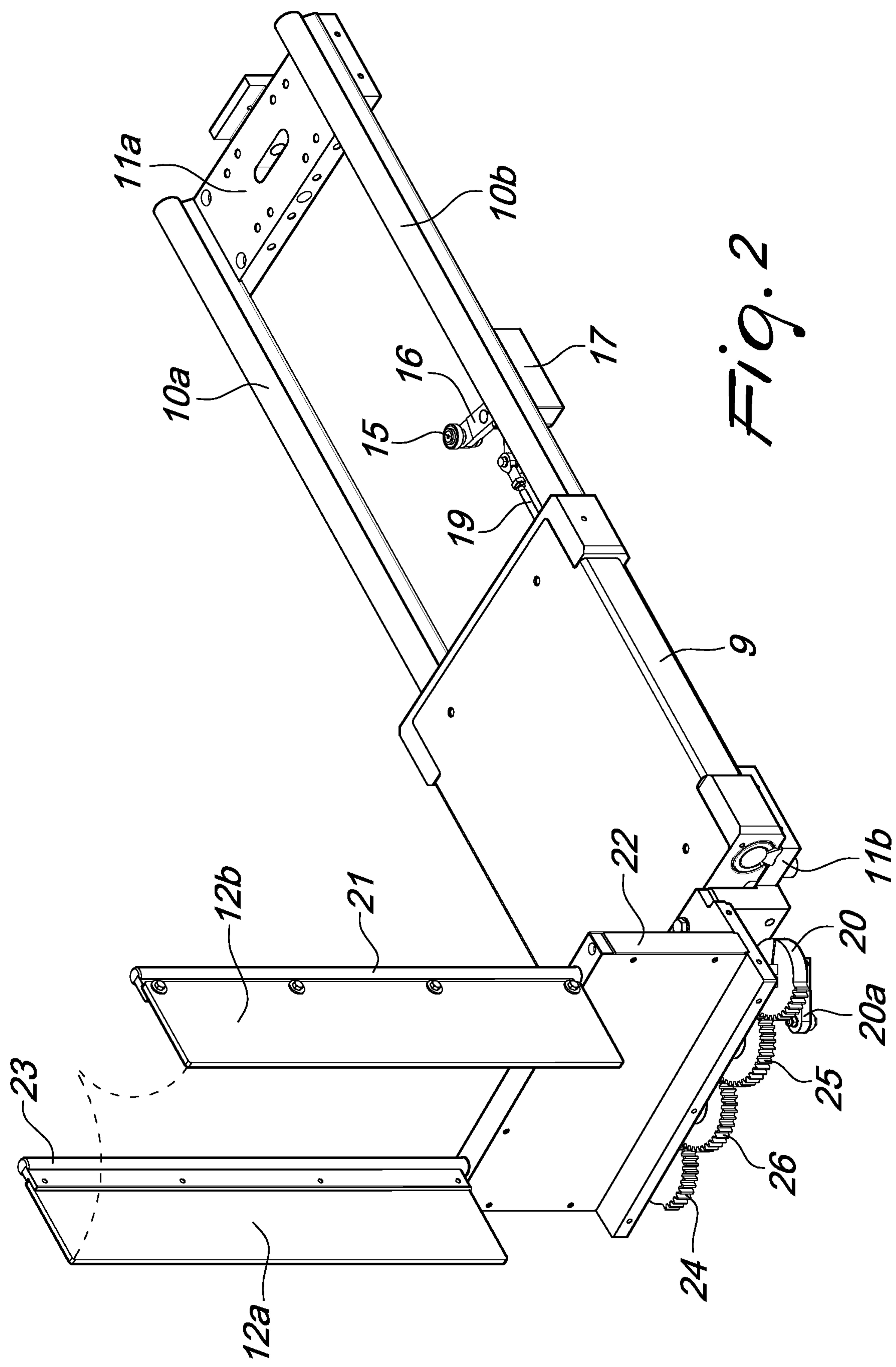
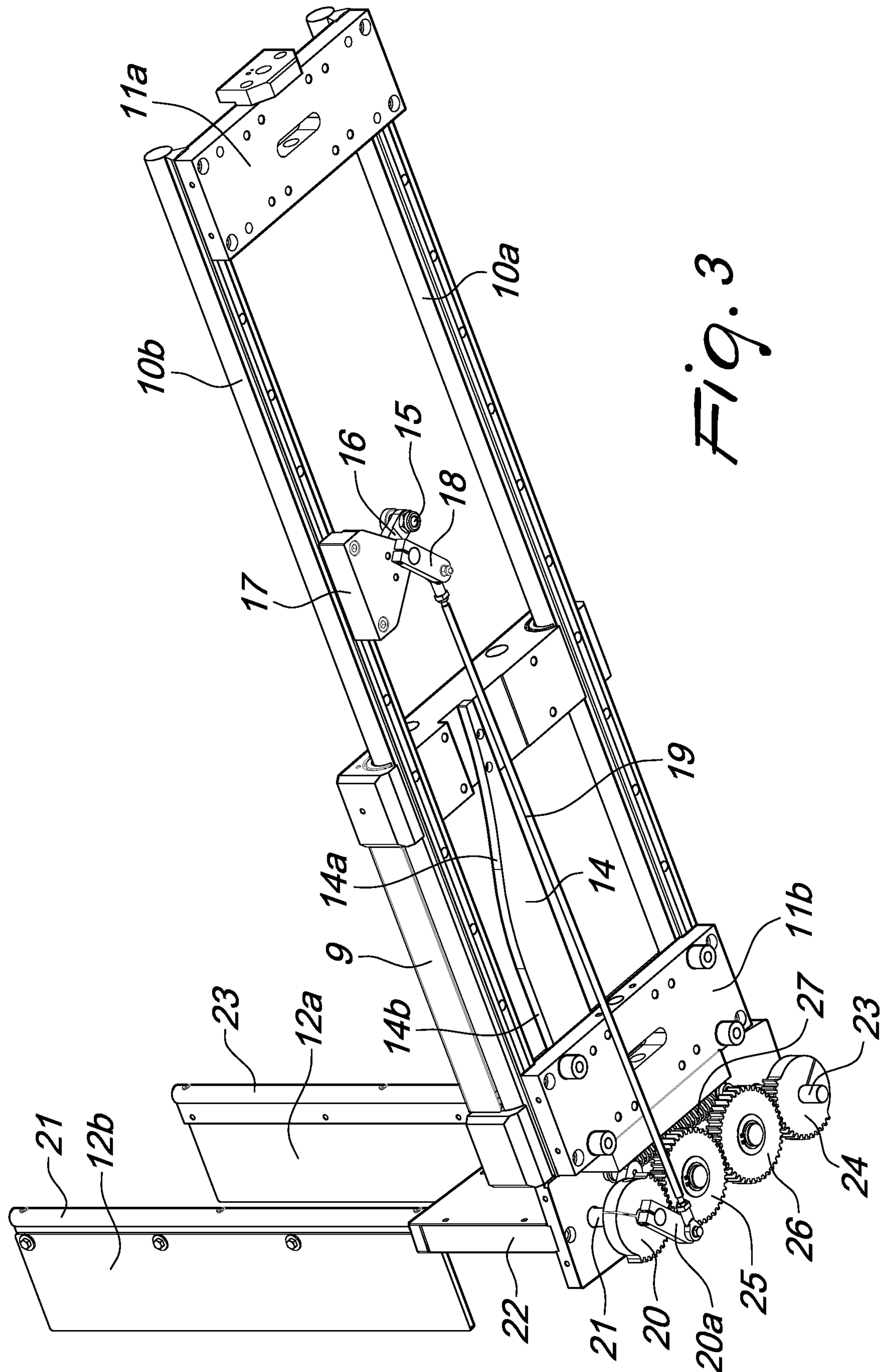
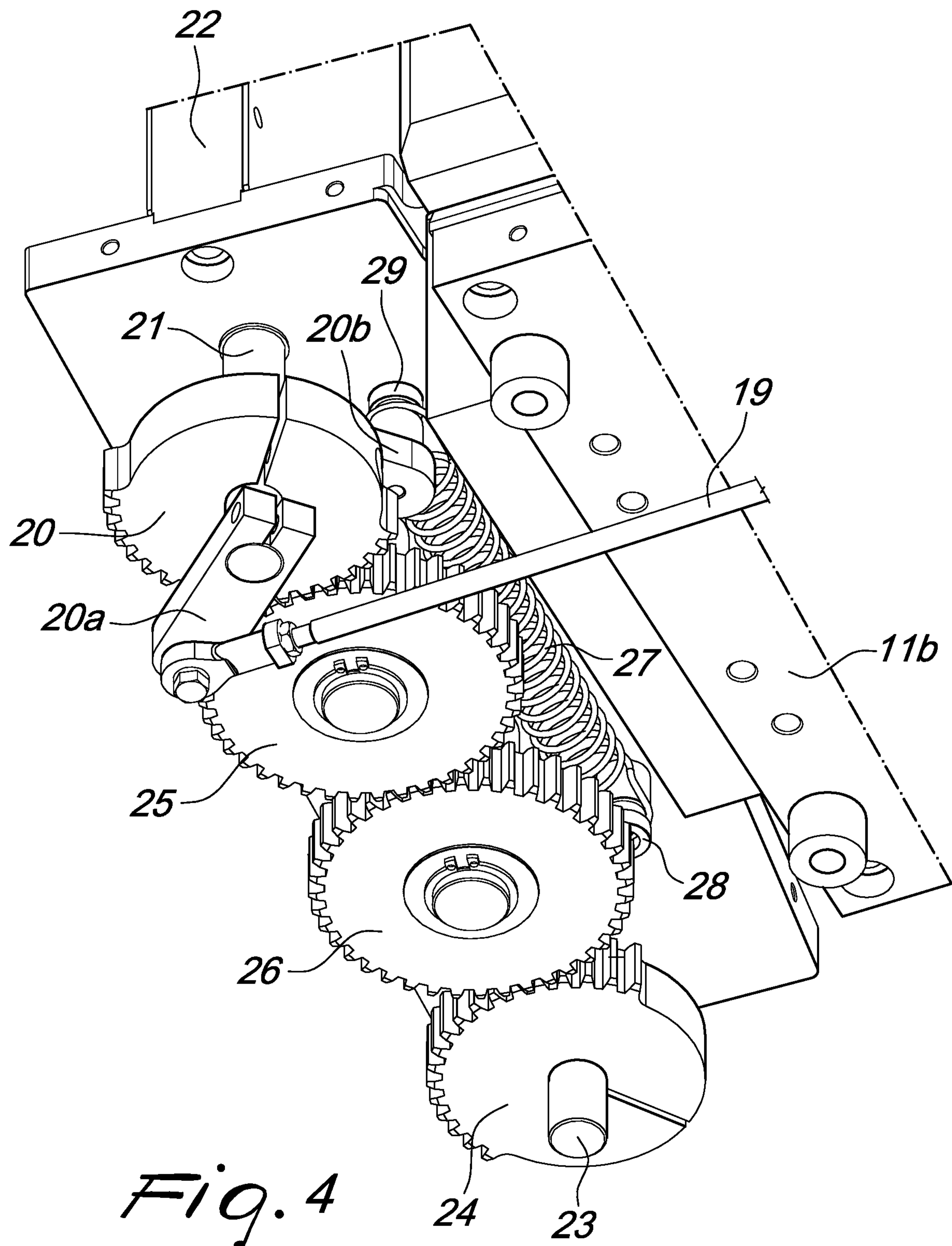


Fig. 2

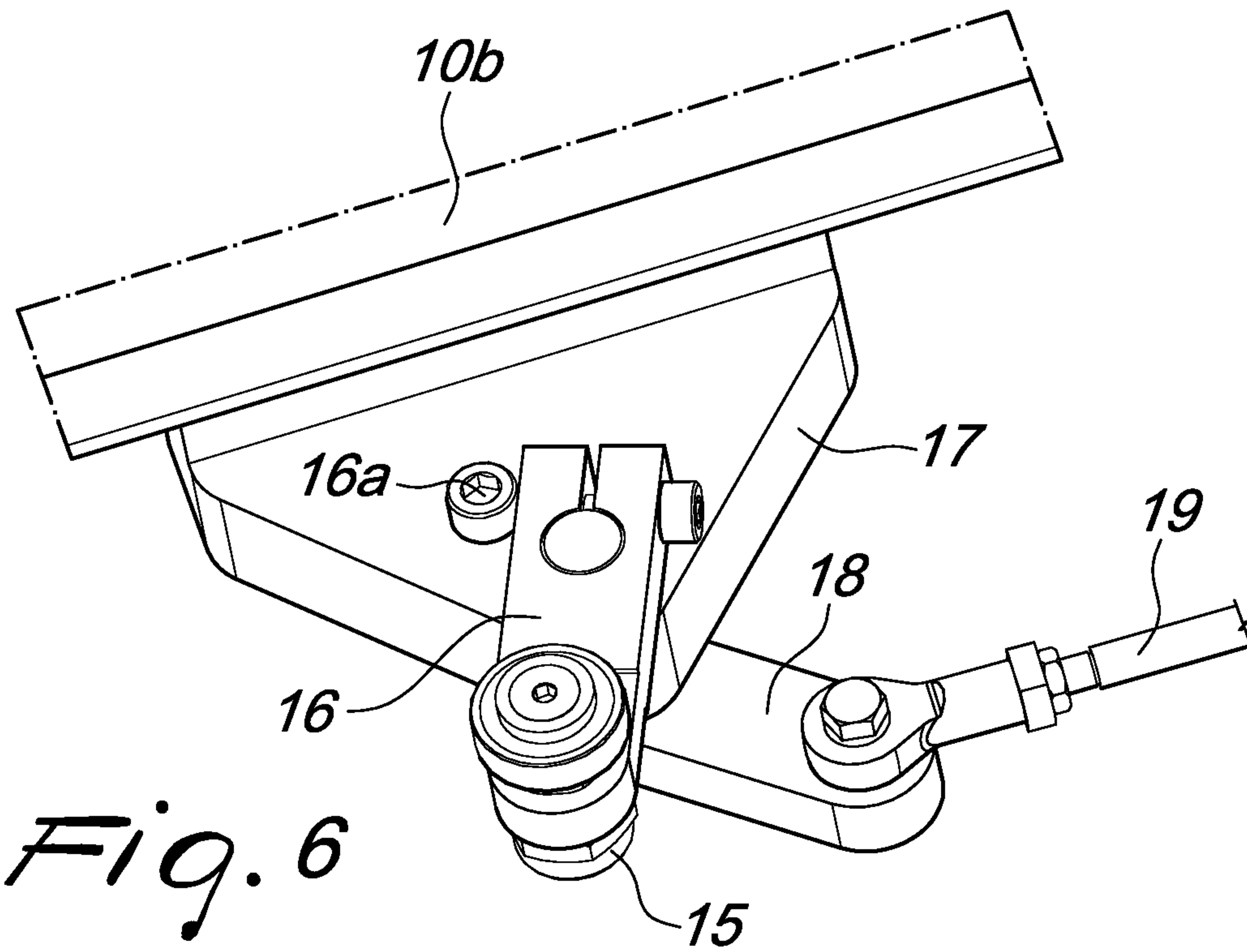
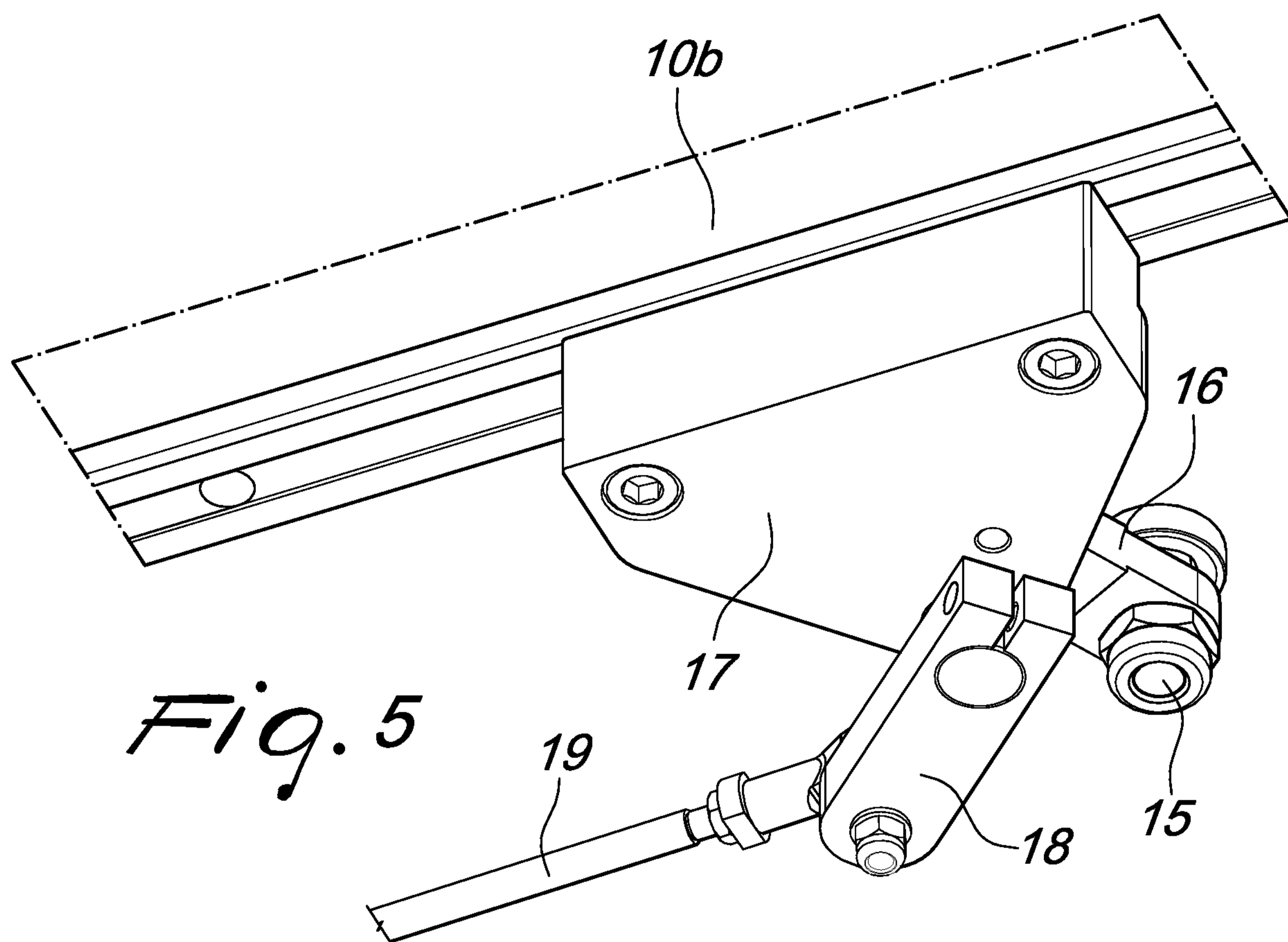
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