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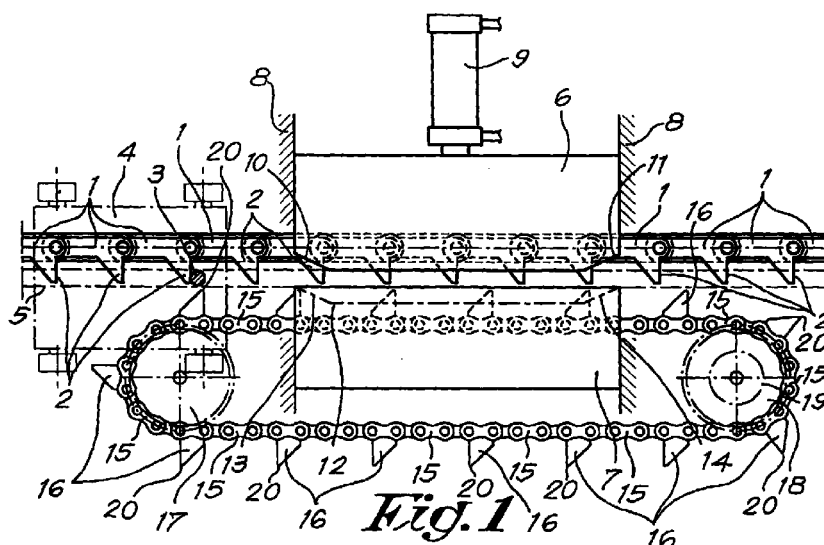
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(54) **Device for coupling transport elements in relation to drive mechanism of such transport elements, and for uncoupling them respectively**

(57) Device for coupling transport elements in relation to the drive mechanism for such transport elements, for uncoupling them respectively, whereby these transport elements (4) are equipped with a drag pen (3) which can be moved by the above-mentioned drive mechanism in the shape of a drag chain or such (1) with protrusions (2), and whereby this drag pen (3) is guided in a guide (5), characterised in that it consists of carriages (6-7) erected on either side of the above-mentioned guide (5); means (9) which can move the above-

mentioned carriages (6-7) crosswise in relation to said guide (5) so as to bring the drag pen (3) either outside the track or in the track of the guide (5); and means which make it possible to gradually speed up a stationary drag pen (3) placed outside the track of the guide (5), until the speed of the drag pen (3) is equal to the speed of the drag chain (1), after which this drag pen (3) is put in the track of the drag chain (1) by means of the carriage (7).



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Description

[0001] The present invention concerns a device for coupling transport elements in relation to the drive mechanism of such transport elements, and for uncoupling them respectively.

[0002] By a drive mechanism is mainly referred to continuously moving drive means here, such as an endless drag chain or such, whereas by transport elements is mainly referred to trolleys which are driven by means of said drag chain or such, with the help of a coupling element, such as what is called a drag pen, which can co-operate with the above-mentioned drive means.

[0003] Several drive mechanisms for the above-mentioned transport elements are already known, whereby the above-mentioned drag pen is put either in the track or outside the track of the above-mentioned drag chain or such in order to move the transport elements or to stop them.

[0004] A major disadvantage related to these known drive mechanisms consists in that the uncoupling of the transport element from the drive mechanism, in particular the coupling of the transport element to the above-mentioned drive mechanism, is carried out in a relatively brusque manner, in other words, especially setting the transport element in motion again is always accompanied by a shock in the devices known until now.

[0005] It is clear that such brusque movements of the above-mentioned transport elements are not tolerated for the transport of certain products.

[0006] Also, when such transport elements have been stopped a relatively large number of times and have been set in motion again, the goods situated on said transport element will have shifted on the transport element at each brusque movement, so that, after a certain number of brusque movements, they can fall off the transport element.

[0007] Also, the present invention aims a device for coupling transport elements in relation to their drive mechanism, for uncoupling them respectively, whereby the transport elements, at the time they are being coupled to their drive mechanism, uncoupled respectively, have a speed which is identical to the speed of the drive mechanism, such that this coupling, uncoupling respectively, can always be carried out without any shocks or brusque movements.

[0008] The device according to the invention for coupling transport elements in relation to the drive mechanism for such transport elements, for uncoupling them respectively, whereby these transport elements are equipped with a drag pen which can be moved by the above-mentioned drive mechanism in the shape of a drag chain with protrusions, and whereby this drag pen is guided in a guide, to this aim consists of carriages erected on either side of the above-mentioned guide; means which can move the above-mentioned carriages crosswise in relation to said guide so as to bring the

drag pen either outside the track or in the track of the above-mentioned guide; and means which make it possible to gradually speed up a stationary drag pen placed outside the track of the above-mentioned guide, until the speed of the drag pen is equal to the speed of the drag chain, after which this drag pen is put in the track of the drag chain by means of either of the above-mentioned carriages, or to evenly slow down a drag pen in the track of the drag chain, which is taken out of the track of the drag chain by either of the above-mentioned carriages.

[0009] In order to better explain the characteristics of the invention, the following preferred embodiments of a device according to the invention are described as an example only without being limitative in any way, with reference to the accompanying drawings, in which:

figure 1 schematically represents a top view of a device according to the invention;

figures 2-3 and 4 are views similar to that in figure 1, but for successive positions of the device according to the invention;

figure 5 represents a top view to a larger scale of a practical embodiment of a device according to the invention, in particular in the position as represented in figure 1;

figures 6-7 and 8 represent sections respectively according to lines VI-VI, VII-VII and VIII-VIII in figure 5;

figure 9 shows a view which is similar to that in figure 5, but for a second characteristic position of the device.

[0010] Figure 1 represents a drag chain 1 whose links are provided with protrusions 2 which can co-operate with what is called a drag pen 3 of a transport element or a trolley 4.

[0011] This drag pen 3 normally moves in a guide 5 provided next to the drag chain 1.

[0012] According to the invention, carriages 6 and 7 respectively are provided on either side of the above-mentioned guide 5, erected at a distance in relation to one another which is equal to the width of the above-mentioned guide 5, so as to form a groove, and which are connected to one another in an appropriate manner under the above-mentioned drag chain 1 and the above-mentioned guide 5.

[0013] The carriages 6 and 7 can move along a guide which is schematically represented by 8.

[0014] These carriages 6 and 7 can be moved together in this manner by a suitable drive mechanism 9, for example a hydraulic or pneumatic cylinder.

[0015] In this case, the carriage 6 is provided with bevels 10 and 11 respectively towards the side walls.

[0016] Where these carriages 6 and 7 are situated, the above-mentioned guide 5 is made wider, namely over a width which is almost equal to twice the width of the guide 5, so as to locally form a wider groove 12 which is connected to the actual guide 5 by means of

bevels 13 and 14 respectively, whereby these bevels 13 and 14 are preferably parallel to the bevels 10 and 11 of the carriage 6.

[0017] Under the carriage 7 and parallel to the drag chain 1 is provided an endless chain 15 of which certain links show a protrusion 16, whereby this chain 15 is guided over guide wheels 17 and 18 of which for example the guide wheel 18 can be driven such by a motor, schematically represented by 19, that it gradually speeds up and slows down.

[0018] The chain 15 is situated such that the free ends 20 of its protrusions 16 pass at a short distance from the guide 5, in particular in the above-mentioned groove 12.

[0019] The working of the device according to the invention is schematically represented in figures 1 to 4.

[0020] In figure 1, the carriages 6 and 7 are situated in their neutral position, in particular the position in which the groove 12 between these carriages 6 and 7 is situated right above and in the extension of the guide 5.

[0021] The chain 15 stands still and the drag chain 1 drives the trolley 4 via the drag pen 3.

[0022] Given this position of the carriages 6 and 7, the drag pen 3 can freely move through the groove 12 between the carriages 6 and 7, such that the trolley 4 is still being continuously driven and passes the device 6 to 20 without any hindrance.

[0023] When a trolley 4 has to be temporarily brought to a standstill, the carriages 6 and 7 will be placed into the position as represented in figure 2, by means of the cylinder 9, whereby the groove 12 between the carriages 6 and 7 has been provided right past the guide 5, in particular above the part of the groove 12 which is so to say situated next to the guide 5.

[0024] As a result, the drag pen 3 of the trolley 4 is provided next to the guide 5 by means of the drag chain 1, and thanks to the presence of the above-mentioned bevel 10, so that this drag pen 3 no longer remains under the impact of the protrusions 16 of the drag chain 1, and so that the trolley 4 gradually comes to a standstill.

[0025] In order to set the above-mentioned trolley 4 in motion again, the chain 15 will be driven by the motor 19, until one of the protrusions 16 of the chain 15 makes contact with the drag pen 3 of the stationary trolley 4, after which the speed of the chain 15 is gradually stepped up until the speed of the chain 15 is equal to the speed of the drag chain 1.

[0026] Naturally, the speeds of the chains 15 and 1 will be equal before the drag pen 3 leaves the groove which is formed between the carriages 6 and 7.

[0027] Before the drag pen 3 reaches the bevel 11 of the carriage 6, the carriages 6 and 7 will be moved into the position of figure 1 again by means of the cylinder 9, as a result of which the drag pen 3 is placed in the track of the guide 5 again by means of the carriage 7, so that the drag pen 3 is taken along again by the drag chain 1.

[0028] In this manner, a trolley 4 can be brought to a standstill in a simple manner on the one hand, and such stationary trolley 4 can be driven again without any shocks and without any brusque movements on the other hand.

[0029] Figures 5 to 9 represent a practical embodiment of a device according to the invention whereby figure 5 is represented in the position of the above-mentioned figure 1, whereas figure 9 represents the position corresponding to figure 2, and whereby only the drag pen 3 is represented for clarity's sake.

[0030] In this embodiment, the carriages 6 and 7 are connected to one another by means of connecting laths, 21 and 22 respectively, whereas the carriage 7 is connected to the frame of the device according to the invention by means of drawback springs, 23 and 24 respectively.

[0031] In this practical embodiment, the movement of the carriages 6 and 7 is obtained by a drive means 9, which in this case consists of two of what are called knee levers, 25 and 26 respectively, which are connected to one another by means of a rod 27 which is in turn connected to a suitable drive means, for example a motor reductor 28 with an eccentric shaft.

[0032] The carriage 7 is further provided with grooves 29 which can move along rods 30 during the movement of the carriage 7, as a result of which the carriage 7 can absorb shocks without hindering the movement of the drive means 9.

[0033] The working of this device is identical to that of figures 1 to 4 and consequently will not be further described.

[0034] It is clear that the present invention is by no means limited to the above-described embodiments represented in the accompanying drawings; on the contrary, such a device for coupling transport elements in relation to the drive mechanism of such transport elements, and for uncoupling them respectively, can be made in all sorts of shapes and dimensions while still remaining within the scope of the invention.

Claims

1. Device for coupling transport elements in relation to the drive mechanism for such transport elements, for uncoupling them respectively, whereby these transport elements (4) are equipped with a drag pen (3) which can be moved by the above-mentioned drive mechanism in the shape of a drag chain or such (1) with protrusions (2), and whereby this drag pen (3) is guided in a guide (5), characterised in that it consists of carriages (6-7) erected on either side of the above-mentioned guide (5); means (9) which can move the above-mentioned carriages (6-7) crosswise in relation to said guide (5) so as to bring the drag pen (3) either outside the track or in the track of the guide (5); and means which make it possible to gradually speed up a sta-

tionary drag pen (3) placed outside the track of the guide (5), until the speed of the drag pen (3) is equal to the speed of the drag chain (1), after which this drag pen (3) is put in the track of the drag chain (1) by means of the carriage (7).

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driven by a suitable motor (19) which can drive the chain (15) such that it is gradually speeded up.

2. Device according to claim 1, characterised in that the above-mentioned guide (5) shows a widening where the carriages (6-7) are situated so as to form a groove (12) whose width is equal to twice the width or about twice the width of the guide (5).

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3. Device according to claim 2, characterised in that the transition of the guide (5) into the groove (12) is made by means of bevels (13-14).

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4. Device according to claim 1, characterised in that the carriages (6-7) are appropriately connected to one another at a distance from one another which is equal to the width of the above-mentioned guide (5), whereby these carriages (6-7) are driven by a suitable drive means (9).

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5. Device according to claim 4, characterised in that the carriage (6) has bevels (10-11) which are parallel to the bevels (13-14) of the groove (12).

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6. Device according to claim 4, characterised in that the drive means (9) consists of a hydraulic or pneumatic cylinder.

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7. Device according to claim 4, characterised in that the drive means (9) consists of a motor reductor (28) which is connected to the rod (27) which is in turn connected to two pairs of knee levers (25-26) which are in turn connected to one of the above-mentioned carriages (6-7).

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8. Device according to claim 4, characterised in that the carriages (6-7) are connected to one another by means of connecting laths (21-22).

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9. Device according to any of the preceding claims, characterised in that the carriages (6-7) are connected to the frame of the device by means of draw-back springs (23), (24) respectively.

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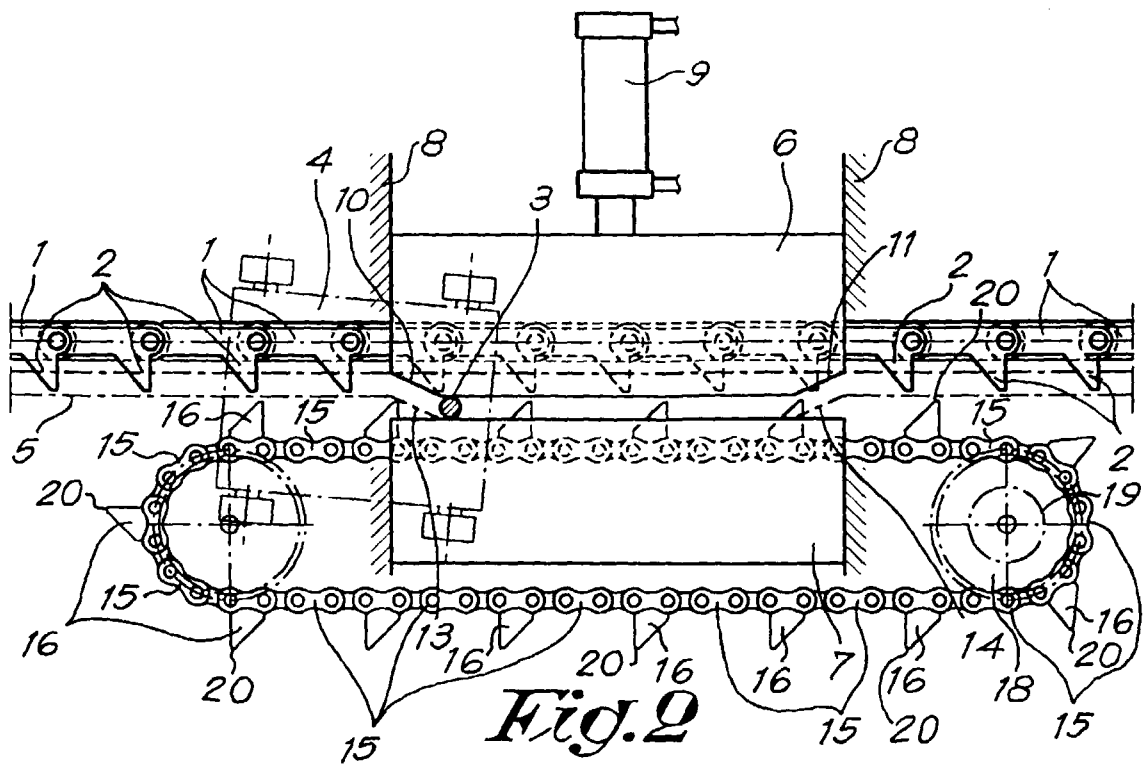
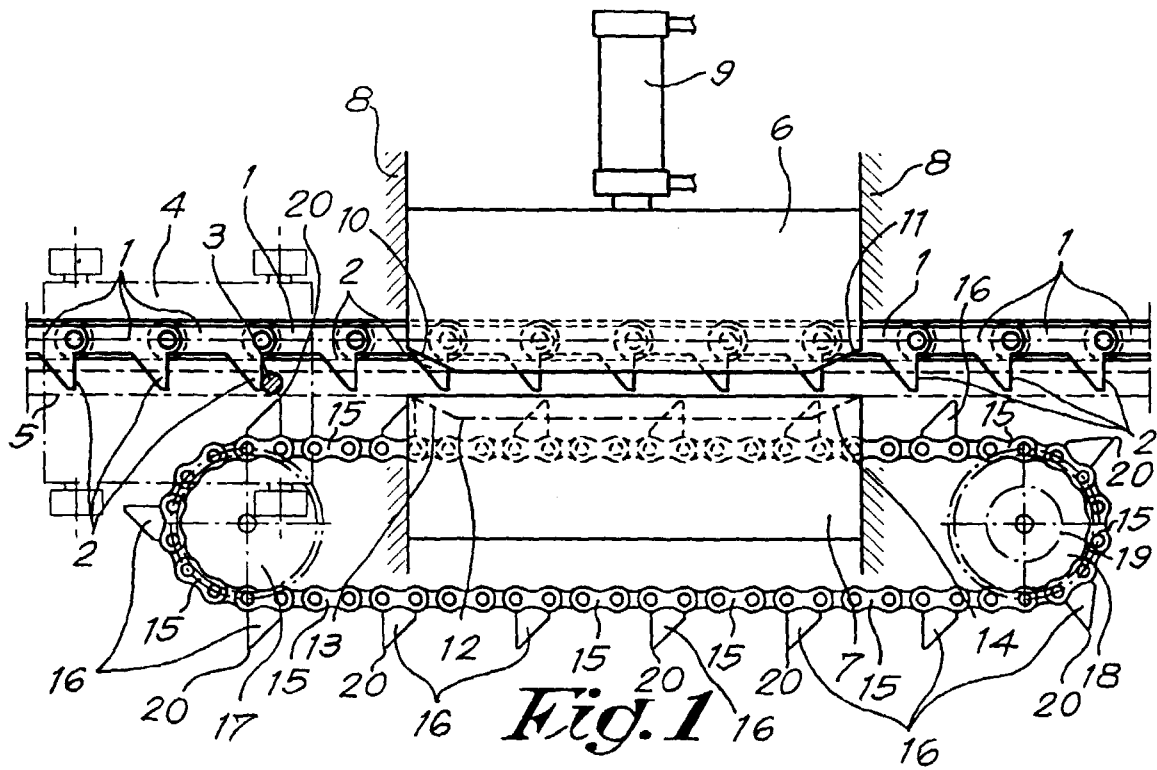
10. Device according to claim 1, characterised in that, next to the drag chain (1), where the carriages (6) and (7) are situated, is provided an endless chain (15) of which several links have a protrusion (16), and whereby the free ends (20) of these protrusions (16) pass at a short distance from the guide (5), in particular in the above-mentioned groove (12).

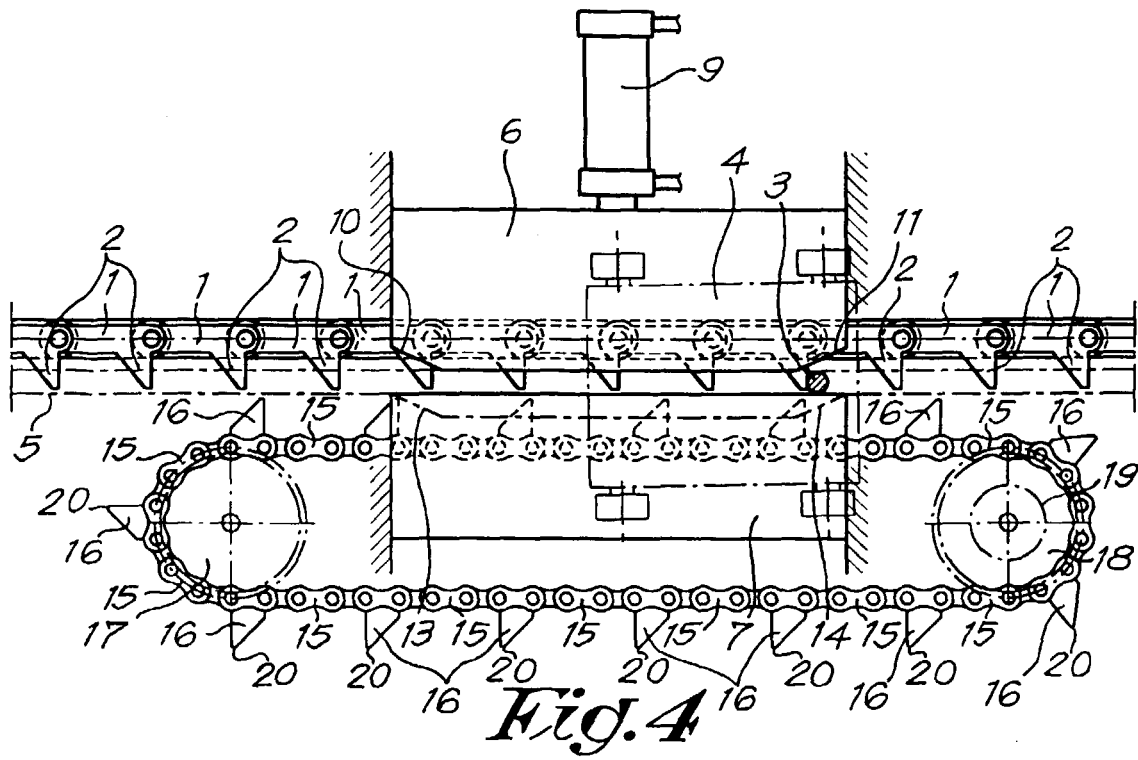
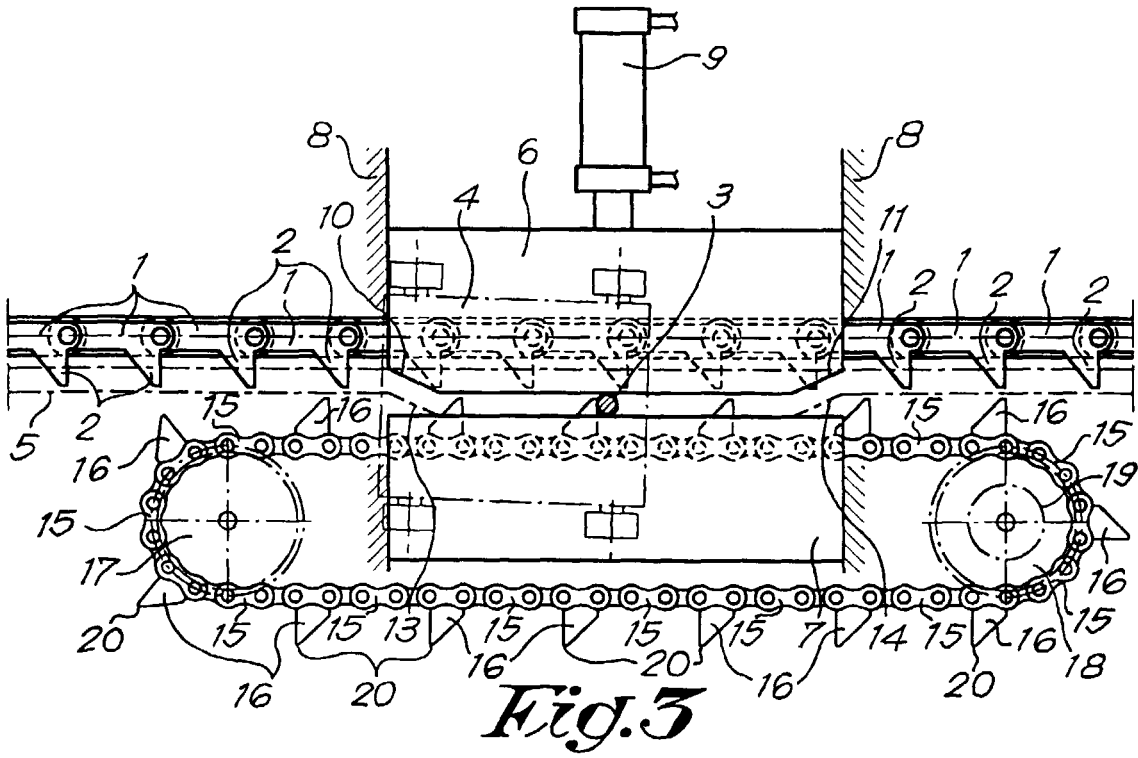
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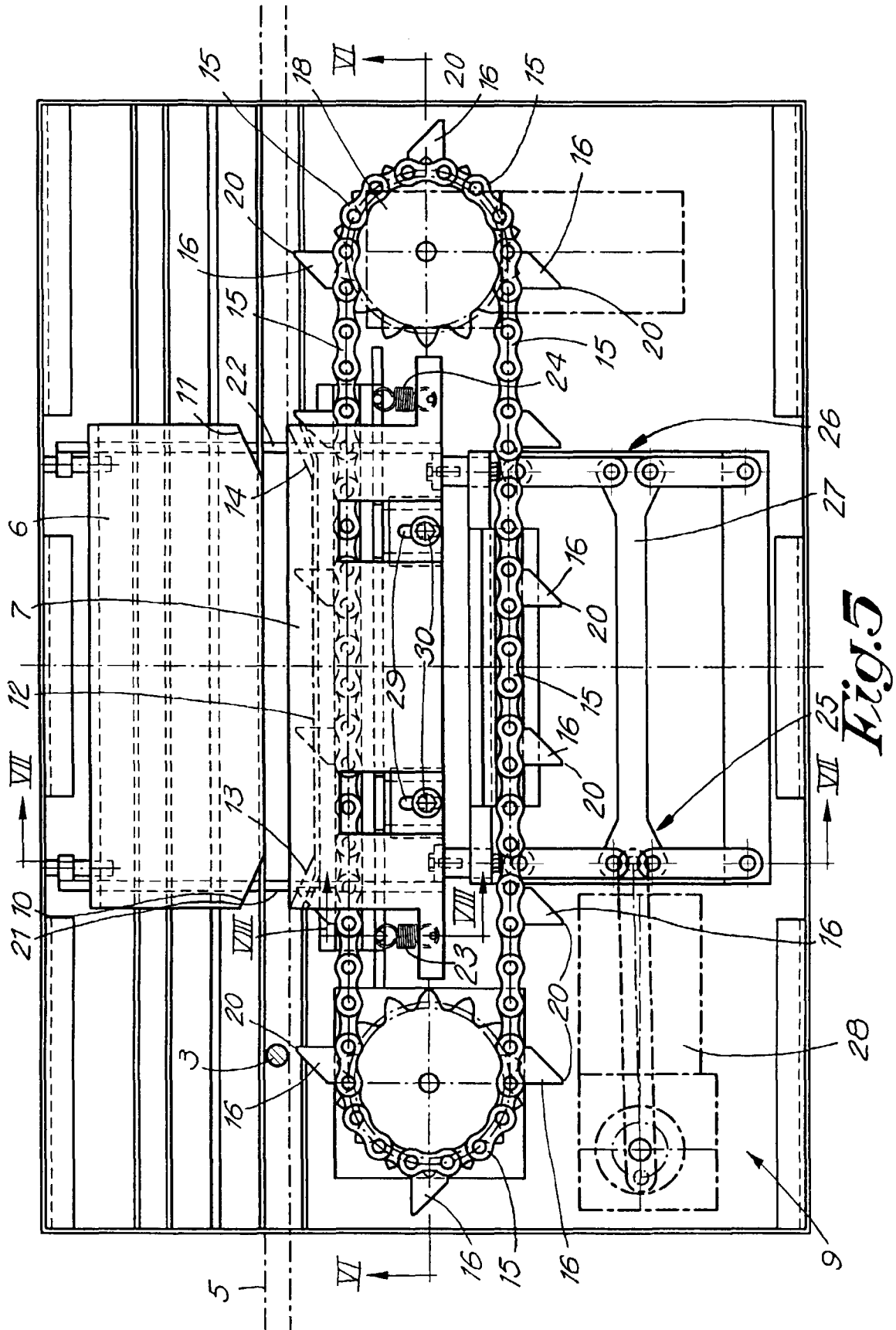
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11. Device according to claim 10, characterised in that the endless chain (15) runs over guide wheels (17-18) whereby one of these guide wheels (17-18) is

12. Device according to any of the preceding claims, characterised in that the carriage (7) can be displaced over the rods (30) by means of grooves (29).







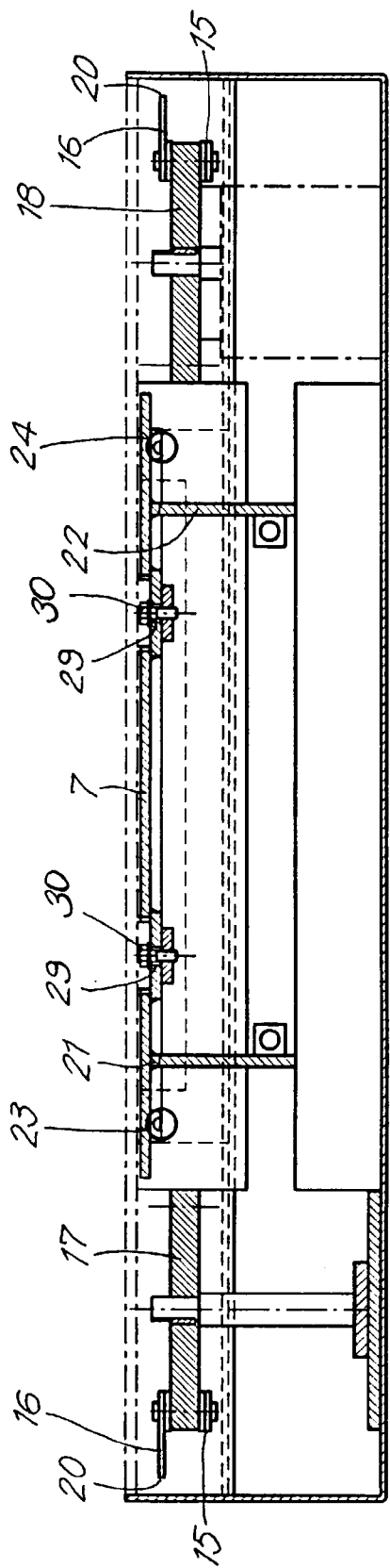


Fig. 6

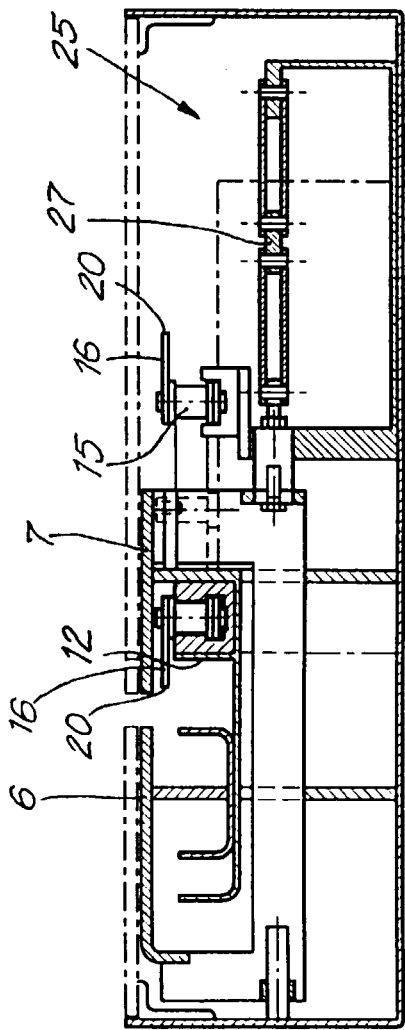


Fig. 7

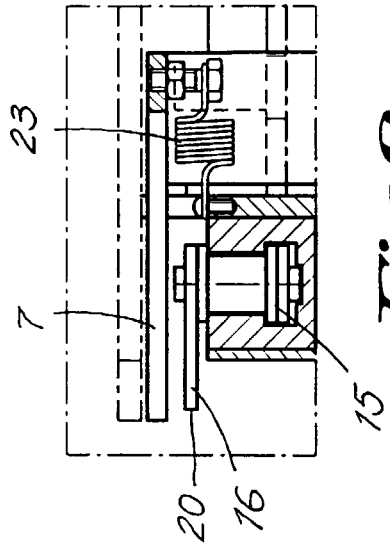


Fig. 8

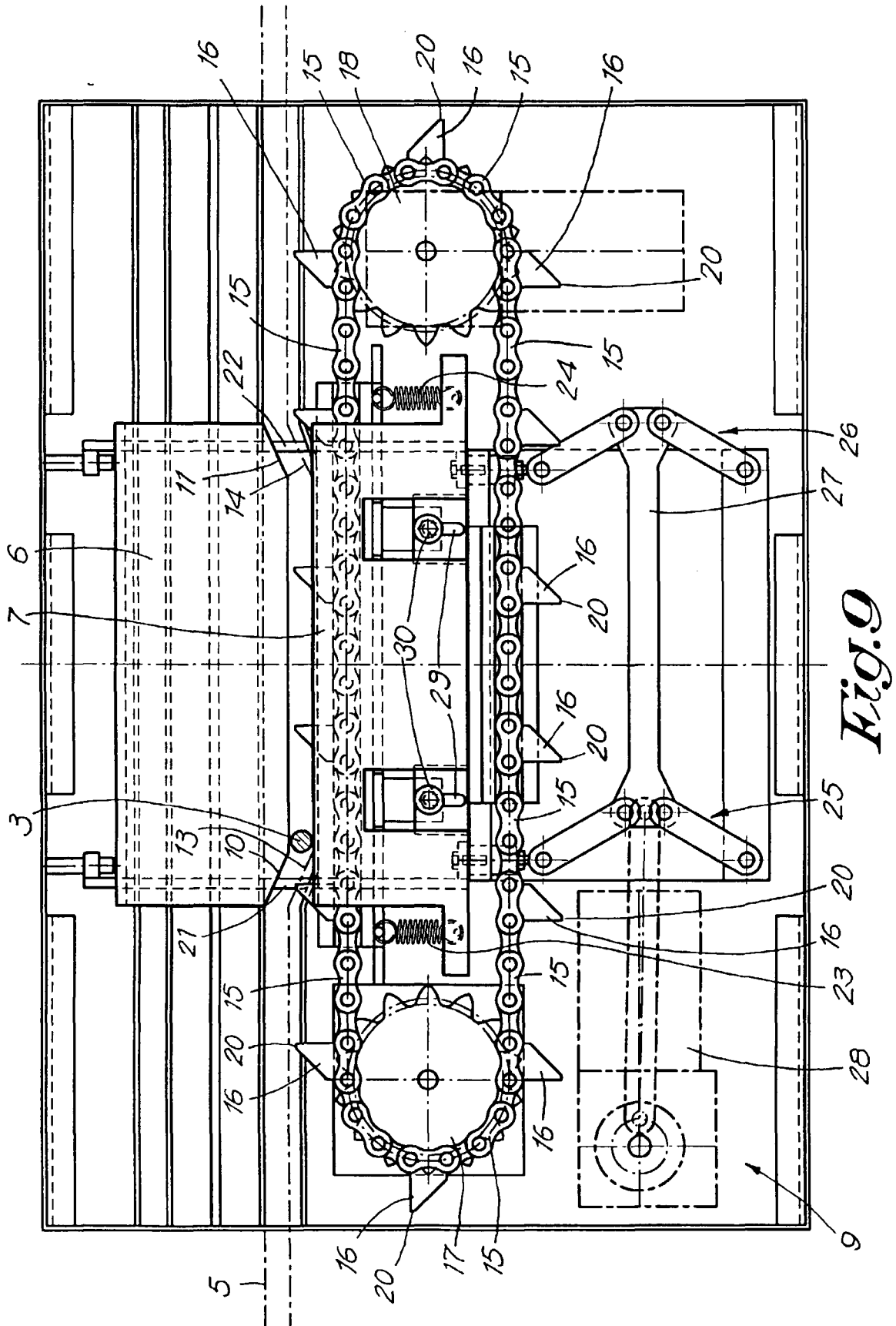


Fig. 9



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Application Number
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