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(54) Device for the drive of an edge thread mechanism in weaving machines.

(57) Device for the drive of an edge thread mechanism in weaving machines, whereby the edge thread mechanism (3) consists of at least two parts (4,5) which make opposite movements (A,B), characterized in that it mainly consists of a drive element (9); a connecting element (10) which is moved to and fro by the drive element (9); and a coupling mechanism (11) between the above-mentioned connecting element (10) and the above-mentioned parts (4,5) of the edge thread mechanism (3) which allows to drive these parts (4,5) with opposite movements (A,B), whereby this coupling mechanism (11) consists of at least two levers (16,17) which are coupled at their first ends (18,19) to the connecting element (10) and at their second ends (20,21) to a part (4,5) of the edge thread mechanism (3).

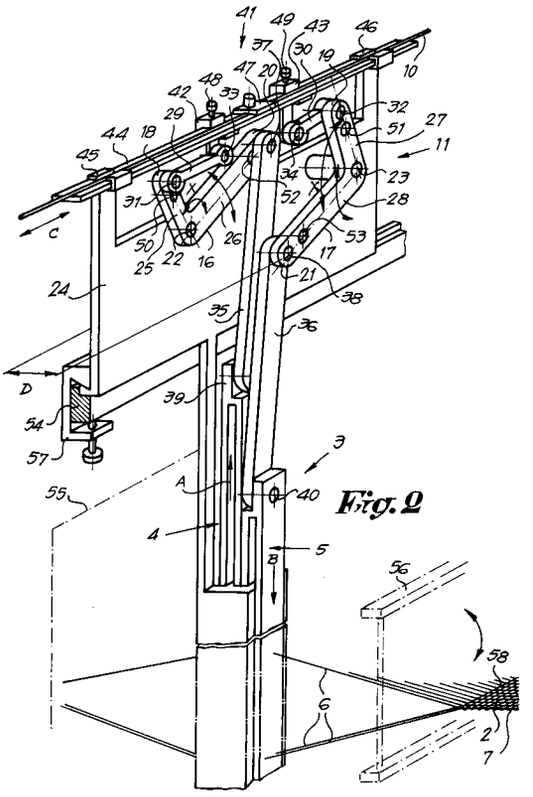

Fig. 2

EP 0 519 550 A1

This invention concerns a device for the drive of an edge thread mechanism in weaving machines.

It is known that in order to form a selvedge on the fabric or to bind catch threads in weaving machines, use is made of an edge thread mechanism, in particular an appliance which allows to make special weaves, differing from the weave of the fabric.

It is also known that the drive of such egde thread mechanisms can be provided in two ways, on the one hand dependent on the movement of the harnesses, and on the other hand by means of an independent drive. The present invention concerns a device of the type whereby the drive is provided independently from the harnesses.

Independently driven edge threads mechanisms offer the advantage that they can trace their own course and that they provide their own crossing line. The crossing line is the place where the top and bottom warp threads cross and change position.

Such independently driven edge thread mechanisms offer the advantage that an optimum weave can be realized, at any desired moment.

As is known, edge thread mechanisms mainly consist of two parts, in particular thread guide elements which are moved up and down alternately. The independently driven edge thread mechanisms known hitherto make use of cams, gear racks, springs and suchlike for the drive. These classic means do not allow simple adjustments of the length of the course and the crossing line. In addition, these drives contain many components, which makes them voluminous, while wear can occur at a large number of places.

If use is made of release springs in order to move the thread guide elements back, this has the disadvantage that these springs are subject to much wear as they are constantly stretched out over the entire course of the thread guide elements.

As the known drives for edge thread mechanisms are voluminous, the latter must be mounted far away from the fell line, which in turn has the disadvantage that the thread guide elements must have a very long course.

The present invention concerns a device for the drive of an edge thread mechanism in weaving machines, whereby the above-mentioned disadvantages are excluded.

In addition, the invention aims a device with a simple construction; whereby no release springs are necessary for the thread guide elements; which allows that the length of the course and the crossing line can be adjusted in a simple way; which allows a simple mounting; and which allows that the edge thread mechanism can be mounted so close to the fell line that the thread guide elements require only a short course.

To this end, the invention concerns a device for the drive of an edge thread mechanism in weaving machines, whereby the edge thread mechanism consists of at least two parts which make opposite movements, characterized in that they mainly consist of a drive element; a connecting element which is moved to and fro by the drive element; and a coupling mechanism between the above-mentioned connecting element and the above-mentioned parts of the edge thread mechanism which allows to drive these parts with an opposite movement, whereby this coupling mechanism consists of at least two levers which are each coupled at their first end to the connecting element and at their second end to a part of the edge thread mechanism.

The connecting element preferably consists of a cable which extends along the weaving machine according to the weave breadth.

Preferably, the device is also provided with setting means to adjust the crossing line. These setting means preferably consist of movable clamps which allow that the first ends of the levers can be coupled to the connecting element at several places. This allows a simple adjustment of the crossing line.

The levers preferably have two lever arms, which are set at an angle of 45 to 135 degrees. The lever arms coupled to the parts of the edge thread mechanism are preferably larger than the lever arms coupled to the above-mentioned connecting element. This construction offers the advantage that a small shift of the connecting element results in a large shift of the above-mentioned parts of the edge thread mechanism.

The coupling mechanism and the edge thread mechanism are preferably mounted on one and the same frame which is movable along a profile which extends along the weave breadth of the weaving machine. As the coupling mechanism is coupled to the connecting element by means of detachable clamps, the coupling mechanism can be moved in a simple way along with the edge thread mechanism after the above-mentioned clamps have been detached. In this way the edge thread mechanism can be set in a simple way according to the weave breadth, depending on the place where a selvedge or a weave with catch threads must be realized.

In order to better explain the characteristics according to the invention, by way of example only and without being limitative in any way, a number of preferred embodiments are described with reference to the accompanying drawings, where:

figure 1 shows a weaving machine which makes use of a device according to the invention;

figure 2 shows a view of the part which is

indicated in figure 1 by arrow F2, to a greater scale;

figure 3 shows a variant of the embodiment according to figure 2.

Figure 1 shows a weaving machine 1 which, as is known, can be equipped with one or more edge thread mechanisms 3 in order to form selvedges on the fabric 2 and/or to bind catch threads.

As shown in figure 2, such an edge thread mechanism 3 mainly consists of two parts 4 and 5 which make opposite movements A and B up and down. These parts 4 and 5 have a number of thread guides, such that the threads 6 cooperating with the latter can be woven to a selvedge 7 by means of a special weave. The construction of these thread guides will not be discussed in this description as it belongs to the state of the art. An example of such thread guides is described in Belgian patent No. 898.353 of the applicant.

The invention consists in that for the drive of the edge thread mechanisms 3 as shown in figure 1 use is made of a device 8 which is characterized in that it mainly consists of the combination of a drive element 9; a connecting element 10 which can be moved to and fro by the drive element 9; and for each edge thread mechanism 3 a coupling mechanism 11 between the connecting element 10 and the above-mentioned parts 4 and 5.

The drive element 9 can be chosen arbitrarily. Essentially, this drive element 9 must provide a movement to and fro.

According to figure 1 the drive element 9 has a lever 12 which is mounted onto a rotary shaft 13 which is driven to and fro for example by means of a cam or suchlike. The connecting element 10 is connected to the lever 12 by means of a fastening point 14. The movement of the lever 12 allows the connecting element 10 to be moved in one direction, while it can be moved back by means of a spring 15. For the drive element 9 use can be made for example of a dobby.

The connecting element 10 preferably consists of a cable which extends along the weaving machine 1 according to the weave breadth.

As shown in figure 2, the coupling mechanism 11 consists of at least two levers 16 and 17, which are coupled at their first ends 18 and 19 to the connecting element 10 and at their second ends 20 and 21 to the above-mentioned parts 4 and 5.

The levers 16 and 17 can be rotated around pivots 22 and 23 which are mounted on a frame 24. The levers 16 and 17 preferably have each two lever arms 25-26 and 27-28 respectively, which are set at an angle X of 45 to 135 degrees. In the example shown the angle is 90 degrees.

The lever arms 26 and 28 which are coupled to the parts 4 and 5 are larger than the lever arms 25 and 27 which are coupled to the connecting element 10, such that a small shift C of the connecting element 10 results in large shifts A and B of the parts 4 and 5.

The levers 16 and 17 are coupled to the connecting element 10 by means of rods 29 and 30, which on the one hand are connected to the ends 18 and 19 of the levers 16 and 17 by means of pivots 31 and 32, and on the other hand to the connecting element 10 by means of pivots 33 and 34.

The levers 16 and 17 are coupled to the parts 4 and 5 by means of rods 35 and 36, which one the one hand are connected to the ends 20 and 21 of the levers 16 and 17 by means of pivots 37 and 38, and on the other hand are connected to the upper ends of the parts 4 and 5 by means of rods 39 and 40.

According to the invention, the device is provided with setting means to adjust the crossing line of the parts 4 and 5, in other words the place of the parts 4 and 5 where the threads are in line or at the same height in relation to the position of the connecting element 10.

In the embodiment shown in figure 2 these setting means consist of detachable clamping means 41 which allow the levers 16 and 17 to be coupled to the connecting element 10 at various places as desired. These clamping means 41 consist of two clamps 42 and 43 and a rail 44 which is attached to the connecting element 10.

The rail 44 is movable in seatings 45 and 46 which are fixed onto the frame 24 and clamped to the connecting element 10 by means of a clamp 47.

The clamps 42 and 43 are connected to the rods 29 and 30 by means of the above-mentioned pivots 33 and 34, and can be fastened to the rail 44 at the desired place by means of screws 48 and 49 or similar.

It is clear that different crossing lines can be obtained by mounting the clamps 42 and 43 onto the rail 44 in different places.

According to a variant, the clamps 42 and 43 can also be connected directly to the connecting element 10, in other words without using the rail 44 and the accompanying clamp 47. When moving the coupling mechanism 11 according to the weave breadth of the weaving machine, for example in order to realize a special weave at a different place, this method requires that at a chosen place the two clamps are set in relation to the connecting element 10 and in relation to one another. The embodiment using a rail 44, however, only requires that the rail 44 is set in relation to the connecting element 10.

In order to adjust the course, in other words the amplitude of the movement of the parts 4 and 5 of the edge thread mechanism 3, the pivots 31, 32,

37 and 38 can be moved on the lever arms 16 and 17. To this end additional openings 50-53 have been introduced in the lever arms 16 and 17. All pivots can for example be provided with bearings.

The device 8 can also be provided with setting means to adjust the course, which are provided at the height of the drive element 9. These setting means can for example consist of a mechanism which allows that the distance Y between the rotary shaft 13 and the fastening point 14 is adjusted. As a result the course of the connecting element 10 can be made larger or smaller at an identical angular rotation of the rotary shaft 13.

The device 8 can also be provided with means to adjust the crossing moment, in other words the moment in the weaving cycle when the threads cross and change position at the height of the parts 4 and 5. These means can for example consist of a mechanism which allows to attach lever 12 to the rotary shaft 13 in another angle position.

The edge thread mechanism 3 is preferably attached to the frame 24. The frame 24 can be moved along a profile 54 which is mounted between the harnesses 55 and the reed 56, and which extends along the breadth of the weaving machine. The frame 24 can be fastened to this profile 54 by means of clamping means 57. This construction allows that the coupling mechanism 11 and the edge thread mechanism 3 can be mounted in any desired place in a simple way.

As the coupling mechanism 11 is very small, meaning that the total breadth D as indicated in figure 2 is very small, this mechanism 11 and the edge thread mechanism 3 attached to it can be mounted close to the reed 56, in other words close to the fell line 58, which has the advantage that the edge thread mechanism 3 only has to trace a short course.

Mounting is preferably done, as indicated in the figures, above the fabric surface, such that the coupling mechanism 11 is easily accessible and that all above-mentioned adjustments can be easily carried out. However, it is not excluded to mount the coupling mechanism 11 underneath the fabric surface, whereby the appliance from figure 2 must be reversed.

Figure 3 shows a variant whereby the first ends 18 and 19 of the levers 16 and 17 are connected by means of a rigid element, for example a rail 44 as mentioned above. As in figure 2, use is made of clamps 42, 43 and 47. The above-mentioned shift C of the connecting element 10 hereby results in a small movement up and down of the rail 44.

The present invention is in no way limited to the embodiments described by way of example and shown in the accompanying drawings; on the contrary, such a device for the drive of an edge thread mechanism in weaving machines can be realized in several sorts of variants while still remaining within the scope of the invention.

Claims

1. Device for the drive of an edge thread mechanism in weaving machines, whereby the edge thread mechanism (3) consists of at least two parts (4,5) which make opposite movements (A,B), characterized in that it mainly consists of a drive element (9); a connecting element (10) which is moved to and fro by the drive element (9); and a coupling mechanism (11) between the above-mentioned connecting element (10) and the above-mentioned parts (4,5) of the edge thread mechanism (3) which allows to drive these parts (4,5) with opposite movements (A,B), whereby this coupling mechanism (11) consists of at least two levers (16,17) which are coupled at their first ends (18,19) to the connecting element (10) and at their second ends (20,21) to a part (4,5) of the edge thread mechanism (3).

2. Device according to claim 1, characterized in that the connecting element (10) consists of a cable which extends along the weave breadth.

3. Device according to claims 1 or 2, characterized in that it has setting means to adjust the crossing moment of the edge thread mechanism (3).

4. Device according to claim 3, characterized in that the setting means consist of clamping means (41) which allow that the levers (16,17) can be coupled to the connecting element (10) in various places as desired.

5. Device according to claim 4, characterized in that the clamping means (41) mainly consist of two clamps (42,43) which can be clamped onto a rail (44) in various places, whereby this rail (44) is on the one hand mounted in a movable way in seatings (45,46), and on the other hand connected to the connecting element (10), and whereby the levers (16,17) are coupled to the clamps (42,43) by means of hingeable rods (29,30).

6. Device according to claim 4, characterized in that the clamping means (41) mainly consist of two clamps (42,43) which can be clamped onto a rail (44) in various places, whereby this rail (44) forms on the one hand a rigid connection between the first ends (18,19) of the levers (16,17), and is on the other hand connected to the connecting element (10).

7. Device according to any of the above claims, characterized in that it has setting means to adjust the length of the course of the parts (4,5) of the edge thread mechanism (3).

8. Device according to any of the above claims, characterized in that the levers (16,17) have lever arms (25,26;27,28) which are set at an angle (X) of 45 to 135 degrees.

9. Device according to any of the above claims, characterized in that the lever arms (26,28) of the levers (16,17) which are coupled to the above-mentioned parts (4,5) of the edge thread mechanism (3) are larger than the lever arms (25,27) which are coupled to the connecting element (10).

10. Device according to any of the above claims, characterized in that the coupling mechanism (11) and the edge thread mechanism (3) are mounted on the same frame (24), and in that the frame (24) is movable along a profile (54) which extends along the weave breadth.

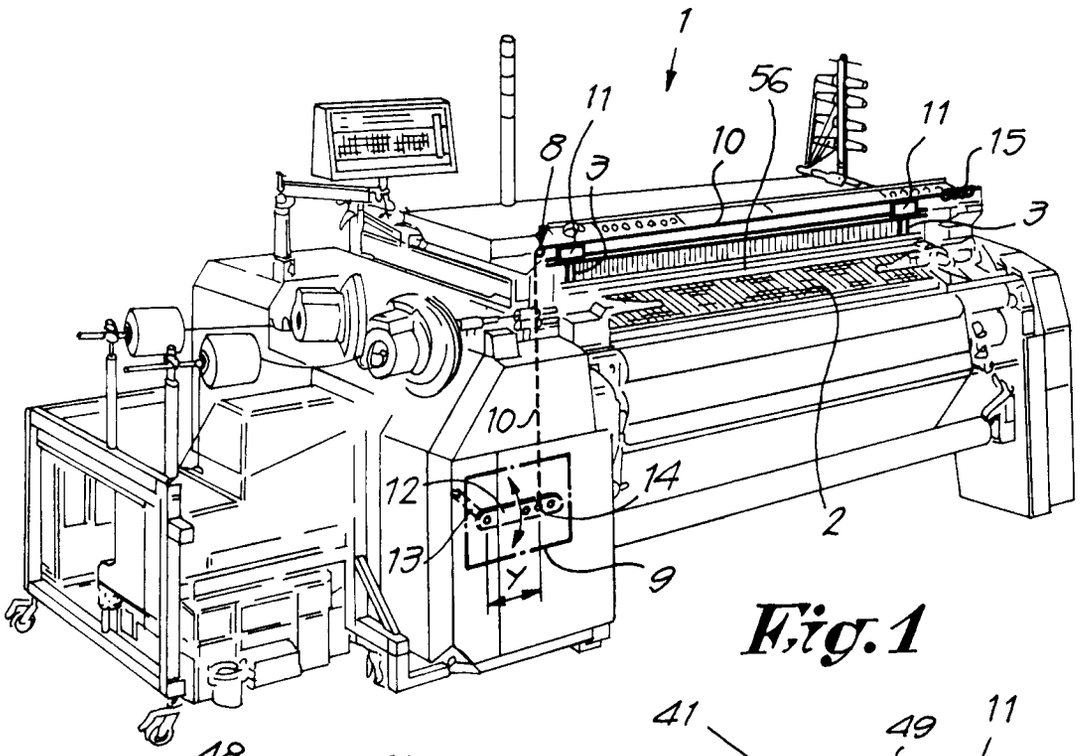
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Fig.1

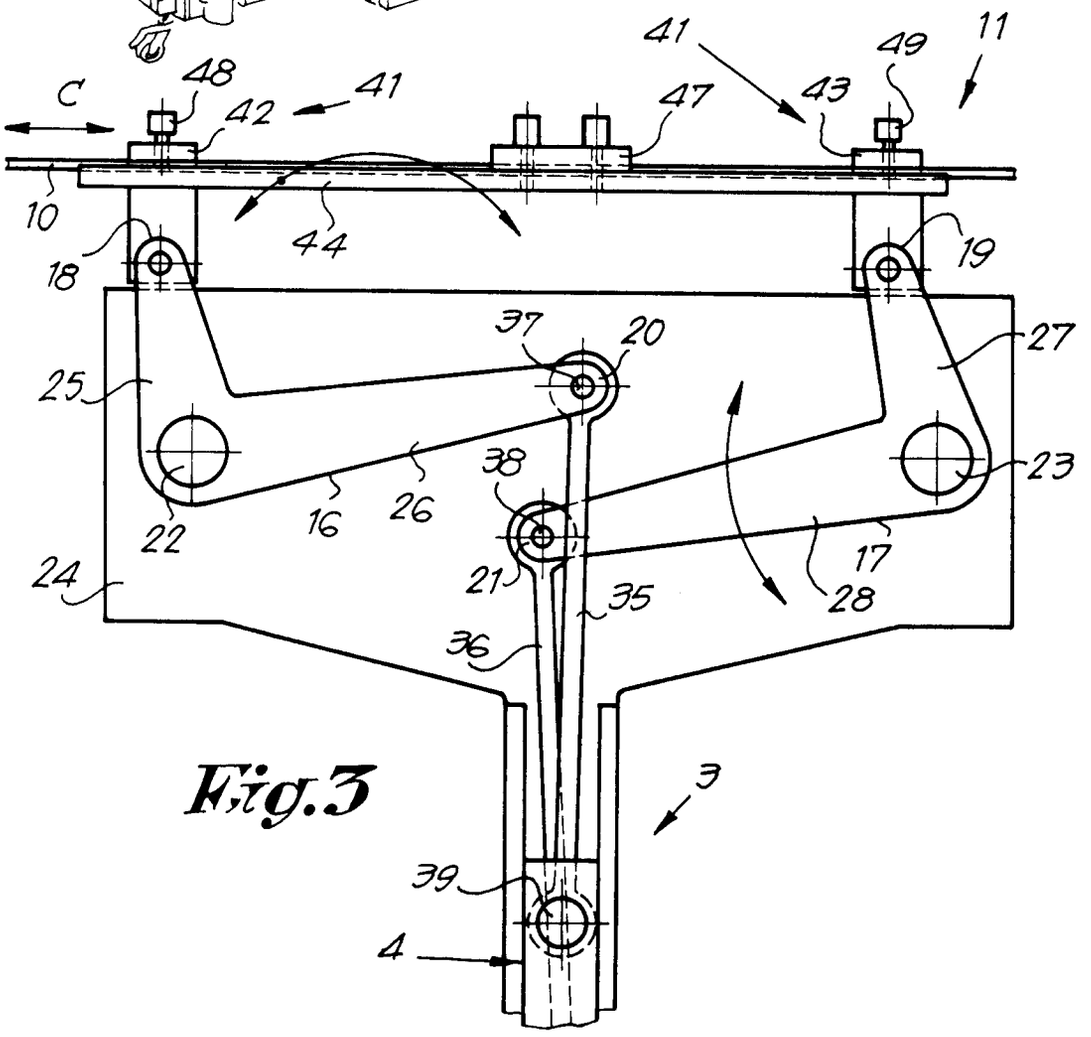
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Fig.3

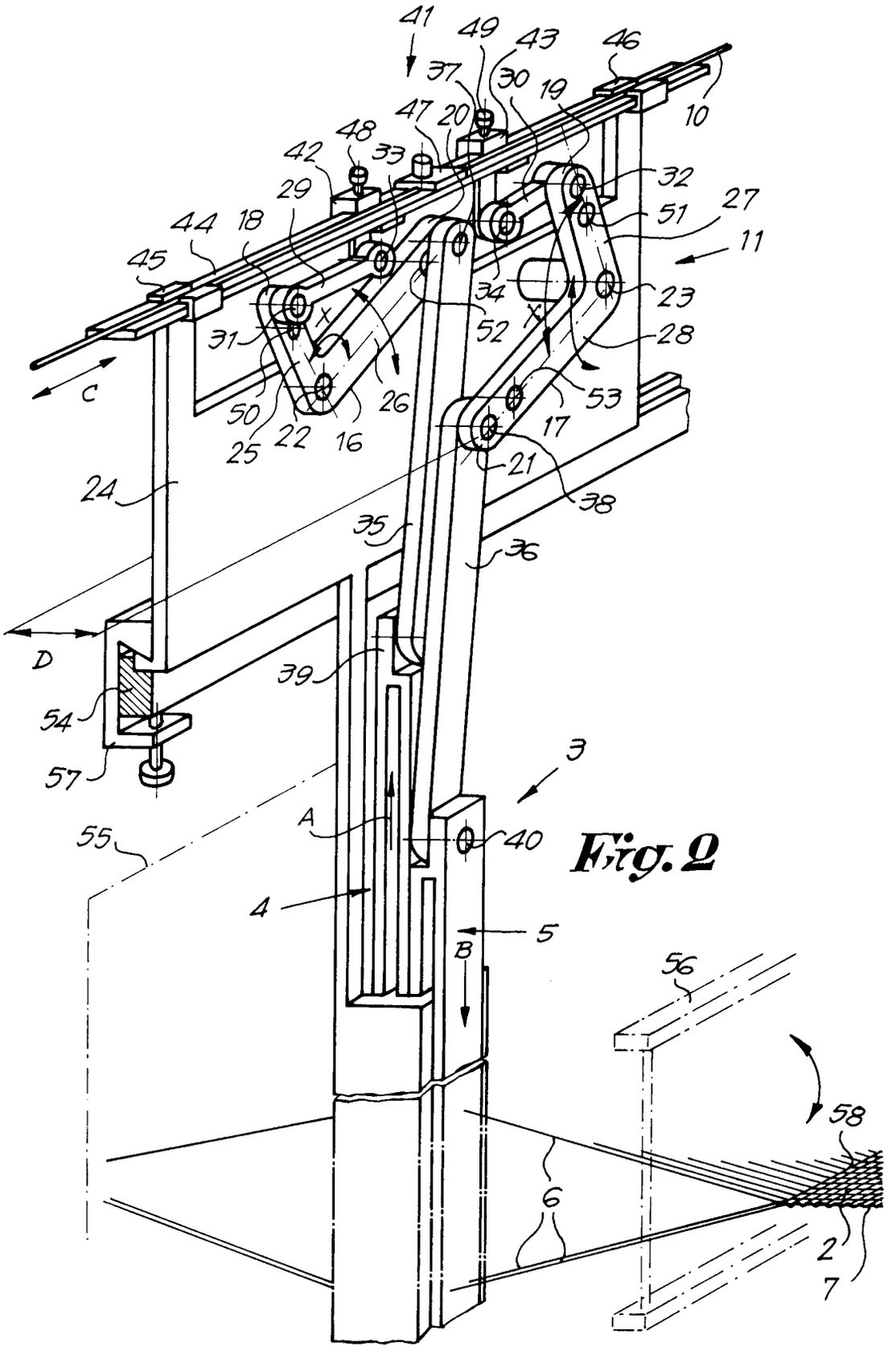
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Fig. 2

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EUROPEAN SEARCH REPORT

Application Number

EP 92 20 1682

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
Y	EP-A-0 393 467 (SOMET) * the whole document *	1-4,7	D03C11/00
Y	DE-A-2 329 302 (VYZKUMNY USTAV BAVLNARSCHSKY) * page 10, line 17 - page 11, line 8; figure 2 *	1-4,7	
A	US-A-3 593 752 (MOESSINGER) * claims 3,4; figures 7,8 *	1	
A	DE-A-3 318 715 (CASPERS)		
A	EP-A-0 152 956 (VAN DE WIELE)		

TECHNICAL FIELDS SEARCHED (Int. Cl.5)
D03C

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	30 JULY 1992	REBIERE J.L.

CATEGORY OF CITED DOCUMENTS

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