(No Model.)

J. ECCLES.

HARNESS MOTION FOR LOOMS.

No. 579,967. Patented Apr. 6, 1897.

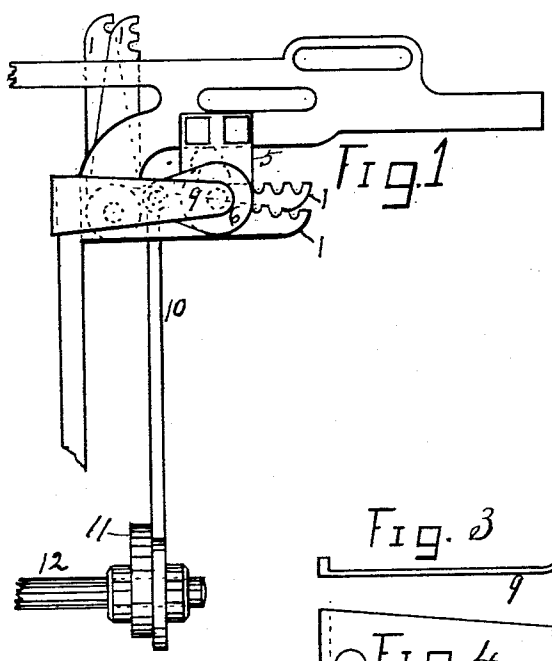


Fig. 1

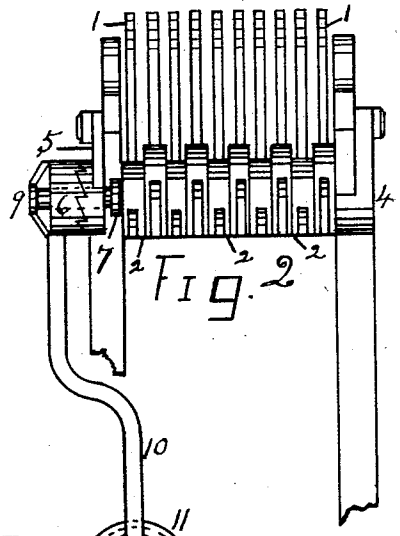


Fig. 2

Fig. 3

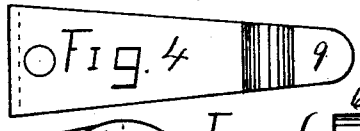


Fig. 4

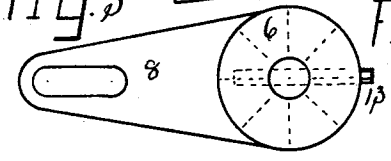


Fig. 5

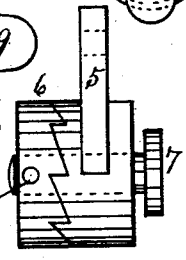


Fig. 6

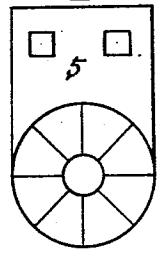


Fig. 7

Fig. 8

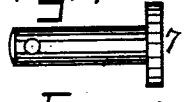


Fig. 9



Fig. 10

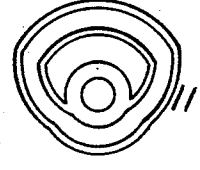


Fig. 11

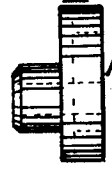


Fig. 12

Fig. 13

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HARNESS-MOTION FOR LOOMS.

SPECIFICATION forming part of Letters Patent No. 579,967, dated April 6, 1897.

Application filed January 7, 1897. Serial No. 618,258. (No model.)

To all whom it may concern:

Be it known that I, JAMES ECCLES, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a new and useful Improvement in Harness-Motions for Looms, of which the following is a specification.

My invention relates to improvements in the mechanism for operating the harness or heddle-frames in looms and belongs to a well-known class of heddle-motions known to weavers as the "open shed." In many fancy patterns the weaving requires one, two, three, or four heddles out of a set of ten or more to remain open for several picks, and thus an open shed prevents the unnecessary movement and chafing of the warp-threads.

By my improvement the heddle-frames are all liberated at each pick.

My invention consists in an automatically-operated clamp that will rigidly clamp all the heddle-levers open for the flight of the shuttle and automatically liberate them just as the lifter and depressor starts on the return stroke that opens the shed; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a back view of so much of a loom-harness frame as will show my invention mounted thereon. Fig. 2 is an end view of Fig. 1. Fig. 3 is an edge view of the spring. Fig. 4 is a face view of Fig. 3. Figs. 5, 6, and 7 are views of the cam-box. Figs. 8 and 13 are views of the right-angle harness-lever. Figs. 9 and 10 are views of the pressure-pin. Figs. 11 and 12 are views of the eccentric cam.

Similar numerals of reference refer to like parts in all views.

The construction of my invention is as follows:

1 represents the right-angle harness-lever; 3, the double-hook moving jack. These levers and jacks are constructed as shown in Figs. 8 and 13. The jacks are controlled by a pattern-chain and operated by a lifter and depressor in a manner well known to weavers.

To the lever 1 I fix a bearing-surface 2. (See Fig. 8.) In a series of levers these surfaces bear one against the other, as shown in Fig. 2, which shows a series of ten levers nested one against the other at the bearing-surfaces 2.

4, Fig. 2, is a fixed bearing, it being placed at the right-hand side of the last lever in the series.

5 is a stand or hanger for the clamp-pin 7. This stand 5 forms a part of the cam-box 6.

7 is a pressure-pin. The flanged end of this pin presses against the surface 2 on the lever 1. The plain end of pin 7 on the left is pressed by the spring 9. By means of a pin 13 the pressure-pin 7 is fixed to the part 6 of the cam-box. To that part of the cam-box 6 is an arm 8. From this arm 8 is a connecting-rod 10.

11 is an eccentric grooved cam mounted on the crank-shaft 12.

The operation of my invention is as follows: Motion being given the cam 11 by shaft 12, as soon as the shed is opened the cam-box is closed, as shown in Figs. 2 and 6. This closing of the cam-box allows the spring 9, through the pin 7, to press all the levers 1 together at 2, and clamp them tight, holding the shed open for the passage of the shuttle and a cross of the warp-yarn on the previous shot of weft until the next shot is crossed on. As the lifter and depressor hooks on the jacks for a change of the shed the cam 11, through rod 10 and cam-box 6, acting against the inclined cams of the box, press apart the cam-box 6, which draws to the left the pin-head 7 and relieves all the levers, and they are free to be moved in either direction, up or down, when they are again clamped, as before described.

The cam-box shows eight bearing-surfaces, but it is obvious that a less number may be used.

It is obvious that my invention may be applied to vertical levers such as shown in Patent No. 51,928 of January 9, 1866.

Having as above fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

In an open-shed heddle-motion for looms; the combination of a series of levers, each having bearing-surfaces, a fixed bearing-surface on one side, a pressure clamp-pin, a spring bearing on said pin and a liberating cam-box, arranged substantially as shown and described, for firmly clamping and liberating the levers when required.

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Witnesses:
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