J. A. SHAYER.

HARNESS ACTUATING MECHANISM.

APPLICATION FILED JUNE 8, 1914.

1,122,650. Patented Dec. 29, 1914.

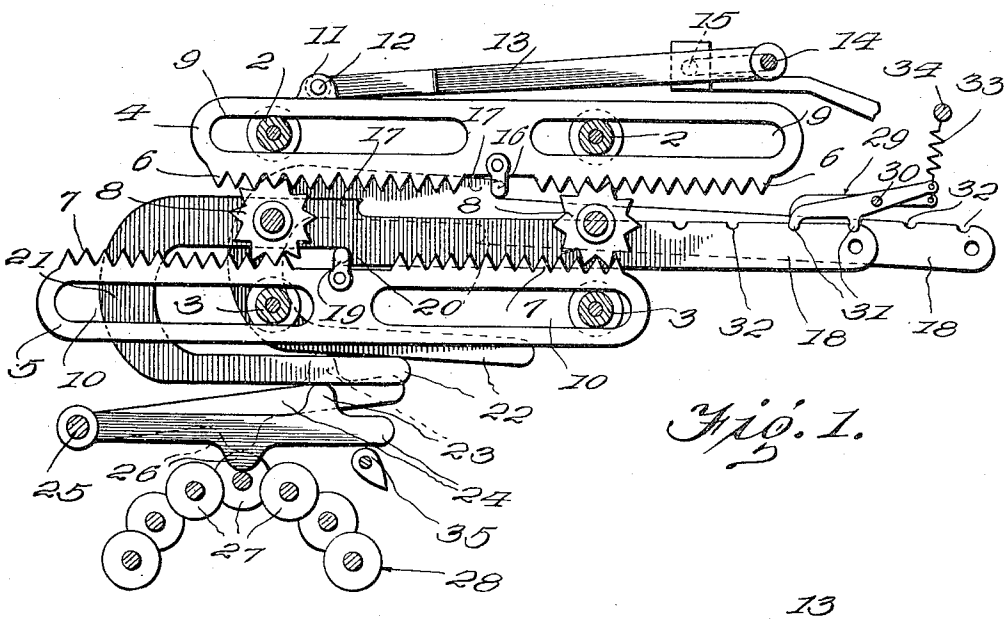


Fig. 1.

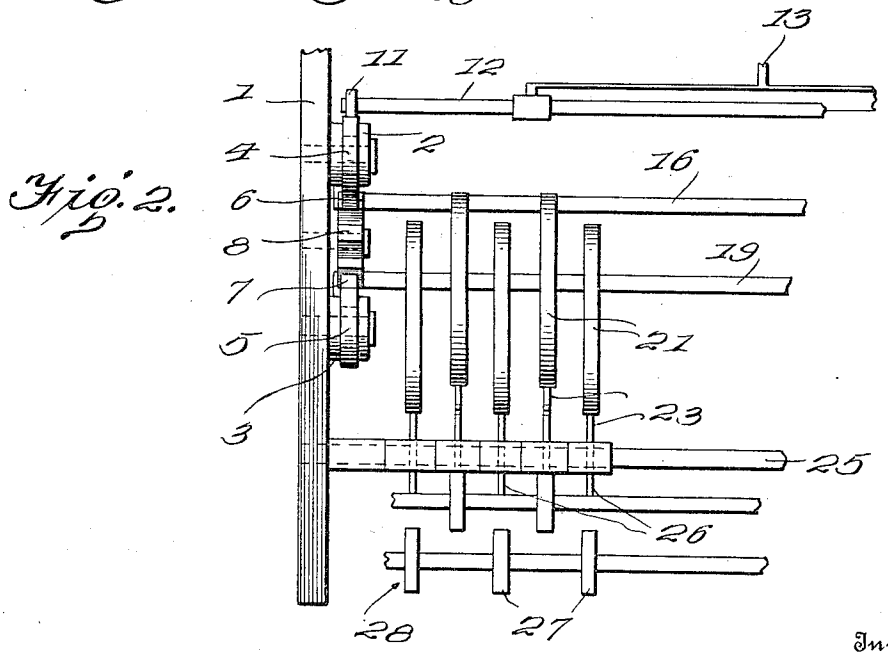


Fig. 2.

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HARNESS-ACTUATING MECHANISM.

1,122,650. Specification of Letters Patent. Patented Dec. 29, 1914.

Application filed June 8, 1914. Serial No. 843,737.

To all whom it may concern:

Be it known that I, JOSEPH A. SHAYER, a citizen of the United States, residing at Harrisville, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Harness-Actuating Mechanism; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in means for actuating the harnesses of looms and more particularly to those of the type known as the Jacquard, in which each thread of the warp has an independent harness, the mechanism herein described, being designed to operate the jacquard levers to independently actuate said harnesses.

The primary object of this invention is to improve upon the structure incorporated in U. S. Patent 1,088,666, granted Feb. 24, 1914, to G. A. Metcalf and myself.

The gist of the present invention lies in providing means whereby the rollers of the pattern chain are allowed to raise the operating bars which rock the jacquard levers to a greater extent than is possible by the construction shown in said patent, thereby increasing the efficiency of the machine in a manner to be hereinafter explained.

A secondary object of the invention is to provide a yielding catch for retaining said operating bars in adjusted position, yet allowing them to be readily moved by the means employed.

With these and minor objects in view, the invention resides in certain novel features of construction and combination herein described and claimed and shown in the drawings wherein:—

Figure 1 is a side elevation partly in section, showing the application of my invention; Fig. 2 is an end view of the parts shown in Fig. 1.

In the accompanying drawings, I have illustrated a portion of a loom and have shown the structure which is located at what may well be termed the head thereof. As the structure on both sides of the machine is identical, I have illustrated and described the mechanism on but one side thereof.

Mounted on the inner face of each side wall 1 of the loom head are upper and lower pairs of rollers 2 and 3 respectively, said rollers supporting upper and lower rack bars 4 and 5 which are provided with teeth 6 and 7 on their adjacent edges, said teeth meshing with the teeth of spur gears 8 which are revolubly supported by the end walls 1. As most clearly seen in Fig. 1, the bars 4 and 5 are provided with slots 9 and 10 respectively which receive said rollers 2 and 3, whereby said bars may be supported to reciprocate.

Having its opposite ends mounted in ears 11, rising from one end of the upper bar 3, is a transverse shaft 12 to which a forked end of a connecting rod 13 is loosely connected, the opposite end of said rod being mounted upon the crank 14 of a transverse crank shaft 15 which is supported in suitable bearings and driven by any appropriate means (not shown). It will therefore be seen that when the shaft 15 is rotated, the rack bars 4 and 5 will be reciprocated and that this reciprocation will be imparted to the lower rack bar 5 in a reverse direction, this being due to the provision of the spur gears 8.

As clearly seen in the drawings, the upper rack bar 4 supports one end of a transverse rod 16 which coacts with a number of stops 17 formed on the upper side of bars 18 designed to operate the jacquard levers while the lower rack bar 5 supports one end of a transverse rod 19 which coacts with stops 20 on said bars 18, the positioning of these rods and stops being such as to reciprocate certain of the bars 18 at predetermined intervals when actuated by means to be described.

As in the patent above referred to, each operating bar 18 is provided with a depending portion 21 from which an arm or finger 22 projects, said fingers underlying the bars 18 and resting upon upright extensions 23 which rise from a number of tilting levers 24, the latter being pivotally supported by a suitably mounted transverse shaft 25 and each having a depending lug or projection 26 with which the rollers 27 of the pattern chain 28 are adapted to contact as the step motion is imparted to said chain by means not shown and forming no part of the present invention.

By positioning the depending projections 26 nearer to the shaft 25 than the projections 23, it will be seen that the upward movement imparted to the levers 24, at the points at which the lugs 26 depend, will be multiplied at the points from which the projections 23

rise, thereby allowing the reciprocating bars 18 to be raised and lowered to a greater extent than is possible by the construction shown in the before mentioned patent. This is the most salient feature of the present invention and it will be seen that a great advantage is derived by interposing these levers between the pattern chain and the arms 22, since, the shoulders 17 and 20 may be made of greater height thereby allowing a greater amount of bearing surface for the transverse rods 16 and 19 and preventing said shoulders from becoming worn to such an extent as to allow said rods to slide thereover.

A further improvement lies in the provision of a number of spring actuated catches 29, each of said catches being in the form of a lever pivoted intermediate its ends to a transverse shaft 30 and having a pair of projections 31 on one end, adapted to engage notches 32 formed in the upper sides of the bars 18, while its opposite end is connected to the lower end of a coil spring 33 whose upper end is secured to a transverse shaft 34, whereby the tension of each of said springs is exerted to throw the projections 31 into the notches 32, when the bars 18 are shifted to the proper extent. It will be noted, however, that the construction of each projection is such as to allow the same to be readily disengaged from the notches 32 when the bars 18 are shifted longitudinally by means hereinbefore described.

In Fig. 1, I have illustrated in diagram an eccentric 35 which extends transversely from one side wall 1 to the opposite wall of the loom head, said eccentric being located beneath the free ends of the levers 24 and being designed to raise all of said levers simultaneously to such an extent as to bring the projections 26 out of the paths of their respective rollers 27, and to limit the downward movement of said levers.

From the foregoing description, taken in connection with the accompanying drawings, it will be seen that the alterations made over the U. S. patent before mentioned, although being simple, greatly increase the efficiency and life of the machine.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. In a harness actuating mechanism for looms, the combination with a pattern chain, a lever operating bar having an arm lying adjacent thereto, shoulders on opposite sides of said bar, spaced bars having transverse rods coacting with the shoulders on the operating bar and means whereby said spaced bars may be reciprocated simultaneously in opposite directions, of a lever interposed between said arm and the pattern chain, said lever being fulcrumed at one of its ends, a projection rising from the free end of said lever and contacting with said arm, a second projection depending from the lever and spaced between its fulcrum and the first mentioned projection, said second projection contacting with the pattern chain, and an eccentric beneath said lever and designed to limit the downward movement thereof when the machine is in operation, and to raise said lever out of the path of the pattern chain.

2. The combination with a plurality of lever operating bars having upper and lower shoulders, upper and lower spaced bars having transverse rods coacting with said shoulders, mechanism whereby said spaced bars may be reciprocated simultaneously in opposite directions, arms on the lever operating bars and a pattern chain beneath said arms, of a plurality of levers fulcrumed at one end and interposed between the pattern chain and said arms, projections rising from the free ends of said levers and contacting with said arms, other projections depending from the intermediate portions of said levers and disposed in the path of the rollers on the pattern chain, and an eccentric extending transversely beneath the levers and designed to limit the downward movement thereof and to raise said levers out of the path of the pattern chain.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

JOSEPH A. SHAYER.

Witnesses:
JEAN B. RICHARD,
ANNIE PICHE.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."