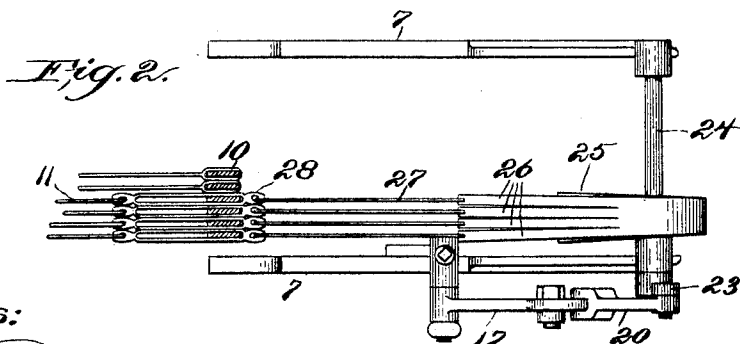
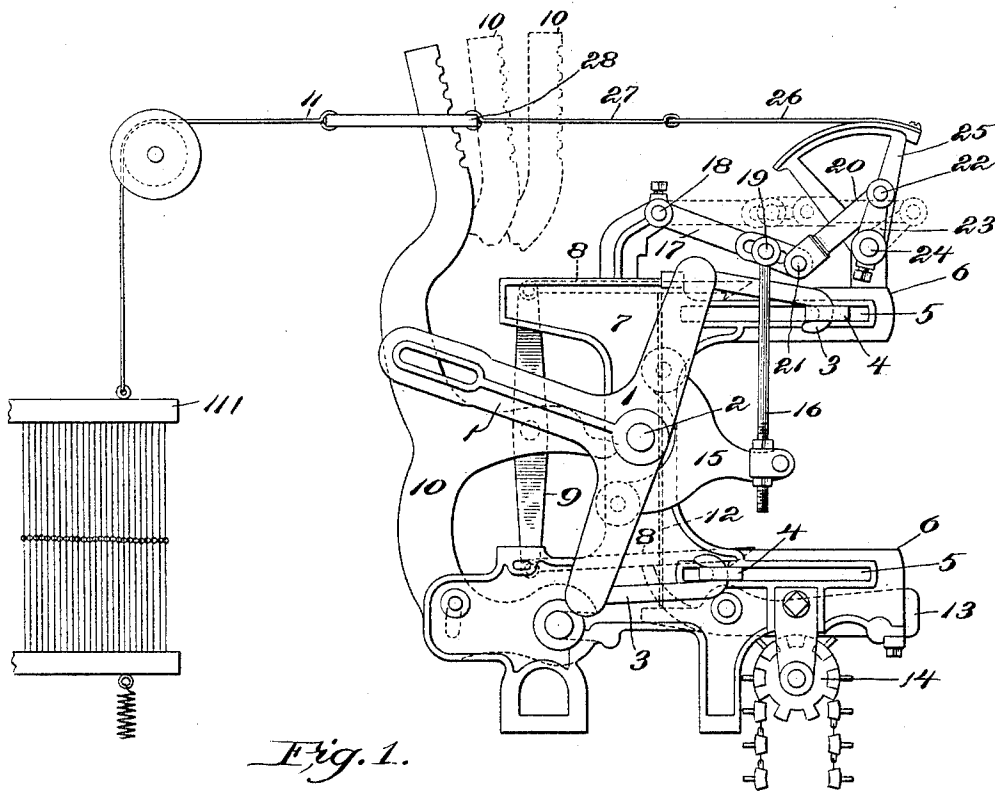


(No Model.)

H. BARDSLEY.
LENO MOTION FOR LOOM DOBBIES.

No. 586,753.

Patented July 20, 1897.



Witnesses:

Arthur F. Randall
Oscar F. Will

Inventor:

Henry Bardsley
by *Nathaniel Salver & Randall*
his Attorneys

UNITED STATES PATENT OFFICE.

HENRY BARDSLEY, OF PROVIDENCE, RHODE ISLAND, ASSIGNOR TO THE
KNOWLES LOOM WORKS, OF WORCESTER, MASSACHUSETTS.

LENO-MOTION FOR LOOM-DOBBIES.

SPECIFICATION forming part of Letters Patent No. 586,753, dated July 20, 1897.

Application filed December 17, 1896. Serial No. 616,004. (No model.)

To all whom it may concern:

Be it known that I, HENRY BARDSLEY, a citizen of the United States, residing at Providence, in the county of Providence and State

5 of Rhode Island, have invented certain new and useful Improvements in Leno-Motions for Loom-Dobbies, of which the following is a specification, reference being had therein to the accompanying drawings.
10 In the process of weaving leno it is necessary, in order to facilitate the crossing of the warp-threads, that certain of the said warp-threads should be given a half-and-return movement during the cross-weaving—that
15 is to say, during the cross-weaving it is necessary to give to certain of the harness-frames and the warp-threads which are controlled thereby at the time of each shed formation a half-and-return motion—that is, a move-
20 ment which shall carry such warp-threads from one extreme plane of the normally open shed to an intermediate or middle point and then back again to the original plane. When
25 not concerned in cross-weaving, the same harness-frames and their warp-threads are required to be given a full motion—that is, to be moved like all the other harness-frames and their warp-threads—namely, from one extreme plane of the shed to the other extreme
30 plane thereof.

It is the object of my invention to provide devices of simple and convenient character capable of being applied readily to dobbies such as now are in extensive use and fitted
35 to operate in connection with the parts of the said dobbies to occasion the half-and-return movement of the required warp-threads during the cross-weaving without interfering with the capacity of the usual parts of
40 the dobbies to produce a full movement of the same warp-threads from one extreme plane of the shed to the other thereof, when the cross-weaving of the said warp-threads is to be superseded by other kinds of inter-
45 weaving thereof for the time being.

The invention will be described first with reference to the accompanying drawings, in which I have represented the best embodiment thereof that has so far been contrived,
50 and afterward the distinguishing character-

istics thereof will be particularly pointed out and distinctly claimed in the claims at the close of this specification.

Figure 1 of the drawings shows in side elevation a well-known form of dobby having applied thereto the said embodiment of my invention and certain of the harness-frames which are operated thereby, with the intermediate connections. Fig. 2 is a view in plan of the parts which are represented in
55 Fig. 1.

1 is the usual actuating-rocker of the dobby, it receiving movement in customary manner (not necessary to be shown or described herein) from the mechanism of the loom to which
60 the dobby is applied.

2 is the rock-shaft on which the said rocker is fixed.

3 3 are the connectors, which transmit movement from arms of the said rocker to
70 the lifters.

4 4 are the usual lifters, they moving in slots 5 5 in the horizontally-extending portions 6 6 of the frame 7 of the dobby.

8 8 are the hooks or hooked jacks that are
75 engaged and actuated in known manner by the lifters 4 4.

9 9 are the lever-connectors, they having the hooks or hooked jacks 8 8 pivotally connected with the upper and lower ends thereof in usual manner, and each lever-connector being pivoted, as customary, upon an outwardly-projecting portion of one of the harness-actuators or harness-levers. 10 10 are
80 the said harness-actuators or harness-levers. 11 11 are the connections or cordings which serve to transmit movement from the said harness-actuators or harness-levers 10 10 to the harness-frames 111.

12 are the usual needles, and 13 are the
90 usual pattern fingers or levers.

14 is the usual pattern-cylinder, which is operated in known manner not necessary to be explained or shown herein.

So far as they have been referred to in this
95 description with reference to the drawings, the parts are all of well-known character and construction, save in the respect which is pointed out hereinafter with reference to the harness connections or cordings, and they
100

are intended to operate, as well as are capable of operating, in the manner which is usual in open-shed dobbies.

15 15 is an arm or extension which I attach, in accordance with the present invention, to the rocker 1.

16 is a connecting-rod that is actuated by the said arm or extension 15.

17 is a swinging arm which is pivoted at 18 to the dobby-frame 7 and has the upper end of the connecting-rod 16 pivoted thereto at 19.

20 is a second swinging arm, one end of which is joined pivotally at 21 to the swinging arm 17, while the other end thereof is 15 joined pivotally at 22 to the arm 23.

24 is a rock-shaft upon which the arm 23 is made fast.

25 is an arm that also is made fast upon the rock-shaft 24, the said arm 25 having a 20 curved upper end that is concentric with the rock-shaft 24.

26, 26 are straps which are connected at their outer ends to the said curved upper end of the arm 25, the inner ends of the said straps 25 26 26 having connected thereto wires 27 27, which are engaged with elongated loops or links 28 28, that are connected with and form part of the harness connections or cordings. The harness-actuators or harness-levers of 30 those harness-frames which are required to have at times the half-and-return motion are passed through the said elongated loops or links 28 28.

By the term "harness-actuator" I mean 35 either harness-levers such as are shown in the accompanying drawings or those parts in other forms of shedding mechanism for looms which have an equivalent function to perform in effecting the movement of the 40 harness-frames. When operated by the engagement of their connected hooks or hooked jacks with the usual lifters 4 4, so as to receive their full length of stroke outward, the said harness-actuators or harness-levers, in consequence of their engagement with the outer 45 ends of the links 28 28, serve to transmit to their harness-frames the full-length movement that carries the warp-threads from the lower plane of the shed to the upper plane 50 thereof. Thus whenever an outward movement of one of the said harness-actuators or harness-levers is called for by the indicators on the pattern-cylinder the movement of the said harness-actuator or harness-lever which 55 results from the actuation of the latter from one of the usual lifters 4 4 gives to the connected harness-frame its full motion and highest position. While the harness-actuator or harness-lever remains in its outer position, 60 it supersedes the action of the oscillating arm 25 upon the said connected harness-frame. This it does by reason of its engagement with the outer end of the elongated loop or link 28 and by reason of the further 65 fact that the arm 25, which may be termed a "half-stroke lifter," has only half the extent of traverse that the usual lifters have.

Whenever the outward movement of one of the said harness-actuators or harness-levers is not called for, the latter remains stationary 70 in its innermost position. The length of the opening in the elongated loop or link 28 permits the said loop or link and all of the connections intermediate the arm 25 and the harness-frame to move in unison with the 75 said arm 25.

It has been pointed out hereinbefore that the arm 25 is fast upon a rock-shaft 24, having a second arm 23 also made fast thereon, this latter arm having joined thereto the 80 swinging arm 20, and the latter in turn being pivotally connected with a second swinging arm 17, from which last a connecting-rod 16 extends to an arm or extension that is provided upon the rocker 1. As the rocker os- 85 cillates it swings the arms 17 and 20, carrying the pivot 21, by which such arms are joined together above and below the line passing through the pivots 18 and 22, by which such arms are joined to the dobby-frame and the 90 arm 23. It follows that each swinging movement of the rocker 1 in either direction occasions a complete oscillation of the rock-shaft 24 and arm 25 and the required half-and-return movement of the harness-frames, 95 the links 28 28 playing back and forth relatively to the retracted harness-actuators or harness-levers. In other words, while an ordinary lifter is occupied in making a complete traverse one way the half-stroke lifter— 100 i. e., arm 25—will make its complete one-way traverse and return.

The elongated links 28 28 permit play of the harness connections or cordings relatively 105 to the harness-actuators or harness-levers when the latter are in their innermost or retracted position, and thus enable the said harness connections or cordings to be moved by the oscillating arm 25 and given the desired half-and-return movement without occasioning movement of the said harness-actuators or harness-levers. At the same time 110 whenever one of the harness-actuators or harness-levers is actuated, it being moved outward by reason of the engagement of the lifters with its connected hooks or hooked 115 jacks, the said harness-actuator or harness-lever acts upon the outer end of the corresponding loop or link and thereby operates to occasion the full movement of the harness-frame. It will be obvious that equivalent 120 contrivances for permitting play between a harness-actuator or harness-lever and the harness connections or cordings may be substituted in lieu of the elongated loops or links. 125

It will be understood that the invention will be employed in connection with certain 130 only of the harness-actuators or harness-levers pertaining to a dobby. The remaining harness-actuators or harness-levers will be operated in customary manner to communicate full-length movements to their connected harness-frames.

I claim as my invention—

1. The combination with a harness-actuator, its actuating devices, including lifters and a rocker by which such lifters are moved, a harness-frame, and harness connections
5 having an elongated loop to engage with the said harness-actuator, the said harness-actuator operating to transmit full-length movements to the harness-frame, of the arm 25, also engaging with the said harness connections, the swinging arms 17 and 20 operatively connected with the said arm 25, and means to actuate said swinging arms from the rocker aforesaid to cause the arm 25 to make a complete half-and-return traverse at
10 each complete one-way traverse of the said lifters, substantially as described.

2. The combination with a harness-frame,

a harness-actuator, harness connections whereby to operate said harness-frame from said harness-actuator, the hooks or hooked
20 jacks connected with said harness-actuator, the lifters engaging with the said hooks or hooked jacks to operate the said harness-actuator, and the rocker operatively connected with the said lifters, of devices operated from
25 the said rocker and communicating to the said harness-frame a half-and-return movement, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

HENRY BARDSLEY.

Witnesses:

ALONZO R. PATTEN,
WILLIAM L. HUTCHINS.