(No Model.)

G. F. HUTCHINS.

SHEDDING MECHANISM, &c., FOR LOOMS.

No. 397,858. Patented Feb. 12, 1889.

Fig. 1.

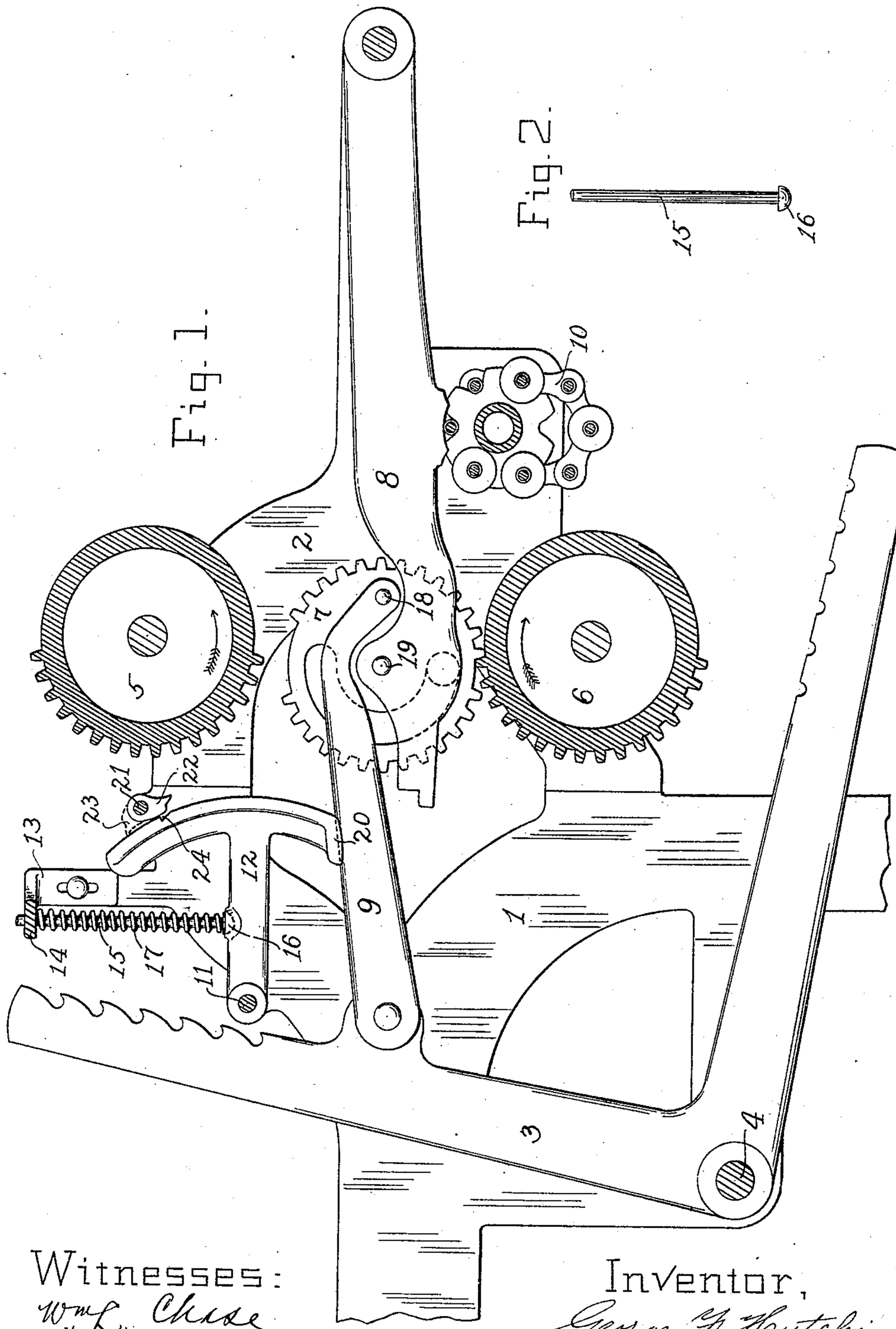

Fig. 2.

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GEORGE F. HUTCHINS, OF WORCESTER, MASSACHUSETTS, ASSIGNOR TO THE KNOWLES LOOM WORKS, OF SAME PLACE.

SHEDDING MECHANISM, &c., FOR LOOMS.

SPECIFICATION forming part of Letters Patent No. 397,858, dated February 12, 1889.

Application filed June 8, 1888. Serial No. 276,539. (No model.)

To all whom it may concern:

Be it known that I, GEORGE F. HUTCHINS, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Shedding Mechanism, &c., for Looms; and I do hereby declare that the following is a full, clear, and exact description thereof, which, in connection with the drawings making a part of this specification, will enable others skilled in the art to which my invention belongs to make and use the same.

My invention relates to looms, and more particularly to the harness and shuttle-box mechanism of the well-known Knowles loom, and is an improvement on the mechanism shown in United States Patent No. 237,549.

The object of my invention is to secure greater certainty in the action of the parts.

Referring to the drawings, Figure 1 is a sectional view taken between and parallel to the arches or elevated part of the loom-frame, as represented in Patent No. 134,992; and Fig. 2 is a detail view.

In the drawings I have shown only such parts as are necessary to illustrate the application of my invention.

The part marked 1 represents a portion of the arch of the loom-frame, and 2 the head-frame.

3 is a harness-lever, pivoted on the shaft 4, which extends across the arch-space and has a bearing in each arch.

5 and 6 are the cylinder-gears, 7 the vibrator-gear, 8 the vibrator-lever, 9 the connector, and 10 the pattern-chain, all arranged and operated in the usual manner, and as represented in said Patent No. 134,992.

11 is a rod which extends across the arch-space, and on which is pivoted an independent follower, 12, for each vibrator-gear connector 9 in the loom.

13 is an arm extending above the arch and carrying across the arch-space a plate, 14, through which pass freely the rods 15, the heads 16 of which, Fig. 2, rest in sockets on the followers. Confined between the plate 14 and the heads of the rods 16 are coil-springs 17, which act to press the followers downward upon the connectors 9.

The operation is as follows: As will be understood by those familiar with the Knowles loom, the harness-levers and the box-motion levers are reciprocated by the partial revolution of the vibrator-gear 7, a roll on the pattern-chain lifting the vibrator-gear into engagement with the top cylinder-gear, 5, throwing the vertical arm of the harness-lever outward, and a tube on the pattern-chain letting the vibrator-gear into engagement with the lower cylinder-gear, 6, and throwing the harness-lever in the opposite direction. Fig. 1 represents the lower cylinder-gear just beginning to act on the vibrator-gear. As the vibrator-gear revolves, the end of connector 9 is lifted by the crank-pin 18 a distance equal to the radius of the crank-pin path described about the center 19, and at the same time the connector is pushed to the left, Fig. 1. The coil-spring 17 by its compression allows the rod 15 to rise with the follower and connector, and when the crank-pin 18 passes the center and the end of connector 9 drops the force of the spring keeps the follower pressing on the connector. The top of connector 9 is rounded, and the saddle 20 of the follower is correspondingly hollowed to help keep these parts in alignment.

As explained in Patent No. 237,549, hereinbefore referred to, it frequently happens that the vibrator-lever 8 does not drop with sufficient promptness when the pattern-roll is turned out from under it; and it also often happens that when the lever 8 does drop all right the connector 9 does not follow it clear down promptly, by reason of the vibrator-gear turning slightly on its center, allowing the end of connector 9 to lag in its fall. The drop-weights covered by said Patent No. 237,549 have served to overcome these difficulties in some looms; but it has been found in operating this mechanism at high speed that the weights do not act with sufficient promptness, and that there is a tendency of the weight to rebound from the connector when the latter strikes the bottom of its fall, thus allowing all the difficulties to come in that are met without the use of drop-weights.

It will be readily seen that the spring-actuated follower effectually prevents the difficulties incident to the use of drop-weights.

The pivoted follower is an improvement on the direct weight sliding in a rack, because it is guided and kept in alignment with less friction. It is also an advantage over the direct weight as regards the use of the spring. The spring is placed toward the pivot from the saddle of the follower, thus requiring less movement of the spring than would be required with a direct weight, so that the pressure delivered by the spring is more nearly constant and its life extended. The head of the spring-rod is made to fit a socket in the follower, to facilitate the insertion or removal of the rod and spring for the purpose of renewing worn-out springs, or for other reasons; but I do not limit myself to this construction, as the spring-rod might terminate in a fork and be riveted loosely to the follower, or might be attached in other ways.

When it is desired to take out the vibrator-lever gear and connector from the loom, it is necessary to hold the follower up out of contact with the connector. To accomplish this, I have placed the rod 21 in ears on the arches and extended it across the arch-space, on which I have pivoted individual latches 22 for each follower, which may be raised into the position shown in dotted lines 23, where, in conjunction with notches 24 in the face of the followers, the followers may be held up out of the way, as desired.

It is also sometimes desirable to run the loom with part of the vibrators out, in which case the latch prevents the follower from dropping down and letting the spring and rod fall from their positions, or avoiding the necessity of removing the followers to prevent such derangement.

Inasmuch as the action of the vibrator-levers, gears, and connectors is the same on the compound levers of the box-motion shown in said Patent No. 134,992 as on the harness-levers, I have not deemed it necessary to illustrate the box-motion levers in this application.

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

1. The combination, with the cylinder-gears, the pattern-chain, the vibrator-lever, gear, and connector, and the harness-lever connected therewith, of the follower provided with a socket, the spring-rod provided with a head adapted to work in the follower-socket, coil-spring, and retaining-plate, substantially as shown and described.

2. The combination, with the cylinder-gears, the pattern-chain, the vibrator-lever, gear, and connector, and the harness-lever connected therewith, of the pivoted follower with notched face, and the retaining-latch, substantially as shown and described.

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