(No Model.)

G. F. HUTCHINS.

LET-OFF MECHANISM FOR LOOMS.

No. 417,033. Patented Dec. 10, 1889.

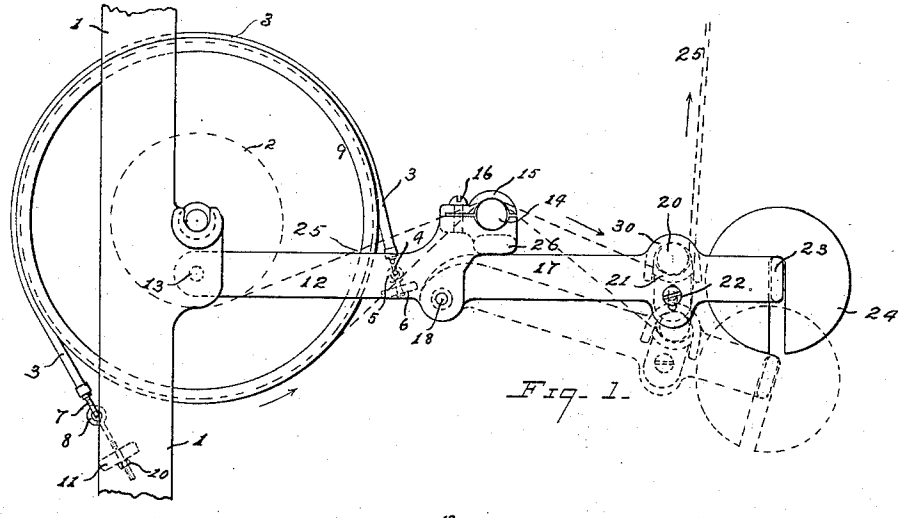


Fig. 1.

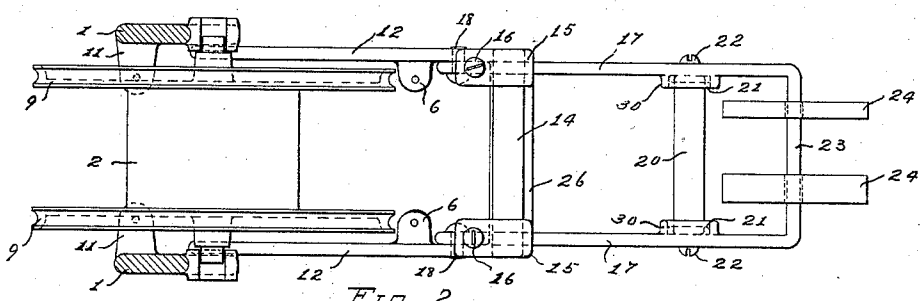


Fig. 2.

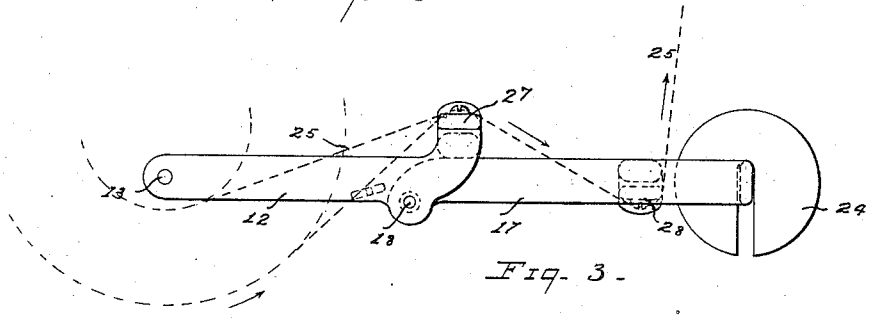


Fig. 3.

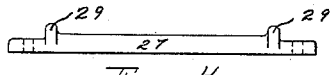


Fig. 4.

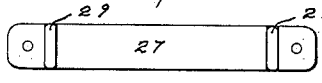


Fig. 5.

Witnesses

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UNITED STATES PATENT OFFICE.

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

LET-OFF MECHANISM FOR LOOMS.

SPECIFICATION forming part of Letters Patent No. 417,033, dated December 10, 1889.

Application filed September 23, 1889. Serial No. 324,845. (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 Let-Off Mechanism 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 more particularly to a let-off mechanism for ribbon or tape looms in which the head of the warp-beam is grooved to receive a friction-band.

The object of my invention is to provide a let-off which shall be automatic in its operation; and my invention consists in certain novel features of construction of a let-off mechanism, as will be hereinafter fully described, and the nature thereof indicated in the claims.

Referring to the drawings, Figure 1 is a side elevation of a let-off embodying my improvements. Fig. 2 is a plan view of the same. Fig. 3 is a side elevation of a modification of my improvements; and Figs. 4 and 5 are detail views.

In the accompanying drawings, 1 represents the warp-beam stand, in which the warp-beam 2 rests.

3 is a friction-band, having an eye 4 at one end, through which passes the hook 5, fast in the lug 6. There is a similar eye 7 in the other end of the friction-band 3, through which passes the hook 8. The hook 8 has a screw-thread cut upon its shank, and the friction-band 3 is drawn tight over the head 9 of the beam 2 by the pressure of the nut 10 against the lug 11 of the stand 1, through which the hook 8 passes. The lug 6 is on the doubled-arm lever 12, pivoted at 13 to the beam-stand 1, and the friction-band 3 is of such a length as to hold the lever 12 in a horizontal position. The outer ends of the lever 12 have a recess to receive the glass rod 14, which is held in place by the cap 15 and screw 16. A doubled-arm lever 17 is pivoted at 18 to the lever 12 and carries a glass rod 20, held in place by the cap 21 and screw 22, the bar 23, connecting the outer ends of the lever 17, being used to hold the weights 24.

The operation of the let-off is as follows: Suppose the lever 17 to be in the position indicated by the dotted lines, Fig. 1, the warp being represented by the heavy dotted lines 25. Then the weight 24 acts on the lever 12 by reason of the warp-threads 25 passing over the glass rod 14 and under the glass rod 20, and thus the friction-band 3 is tightened over the beam-head 9, the resulting friction preventing any rotation of the beam, and consequently any let-off of the warp. As the loom weaves and the cloth is taken up, the warp is drawn in the direction of the arrow, Fig. 1, and the lever 17 is moved upward to its position, as shown in the full lines. The part 26 of the lever 12 is a tie connecting the two sides of the lever, and when the lever 17 touches this tie 26 the two parts 12 and 17 act as one solid lever, and since the warp passes under the glass rod 20 the whole lever is raised upward, thus slacking the friction-band 3 and allowing the beam to revolve under the tension of the warp-threads 25. As soon as the beam revolves the additional length of warp thus obtained causes a slackness, which is immediately taken up by the action of gravity on the weight 24, and the downward motion of the lever 17 separates it from the lever 12 and again brings the pressure of the weight 24 upon the friction-band 3, stopping any further rotation of the beam. The lever 17 would be in same position as shown in the dotted lines whenever there had been a "pick-out" or a slackness for any other cause. It would be in the position as shown in the full lines when the loom was running, and the automatic operation of letting off the warp, as described above, would be going on continually and almost imperceptibly.

In the modification shown in Fig. 3 the operation is the same, the difference in construction being the substitution of the porcelain bars 27 and 28 for the glass rods 14 and 20.

The projections 29, Figs. 4 and 5, on the

porcelain bars are to prevent the warp-threads from slipping off sidewise, while the caps 15 and the projections 30 on the lever 17, Figs. 1 and 2, answer the same purpose when the glass rods are used.

The advantages of glass rods or porcelain bars in the levers 12 and 17 over any kind of rolls or pulleys are a great reduction of sliding friction on the warp-threads and economy of production; also, when a pulley is used, if one of the delicate warp-threads break near the pulley, the thread if not at once detected will wind round the pulley, making a snarl and oftentimes a bad break.

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

In a let-off mechanism for looms, the combination, with a warp-beam and head and a friction-band, of two levers jointed together and pivoted at one end, each lever carrying a glass rod or porcelain bar, and a weight on the outer lever for the purpose stated, substantially as set forth.

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Witnesses:
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