

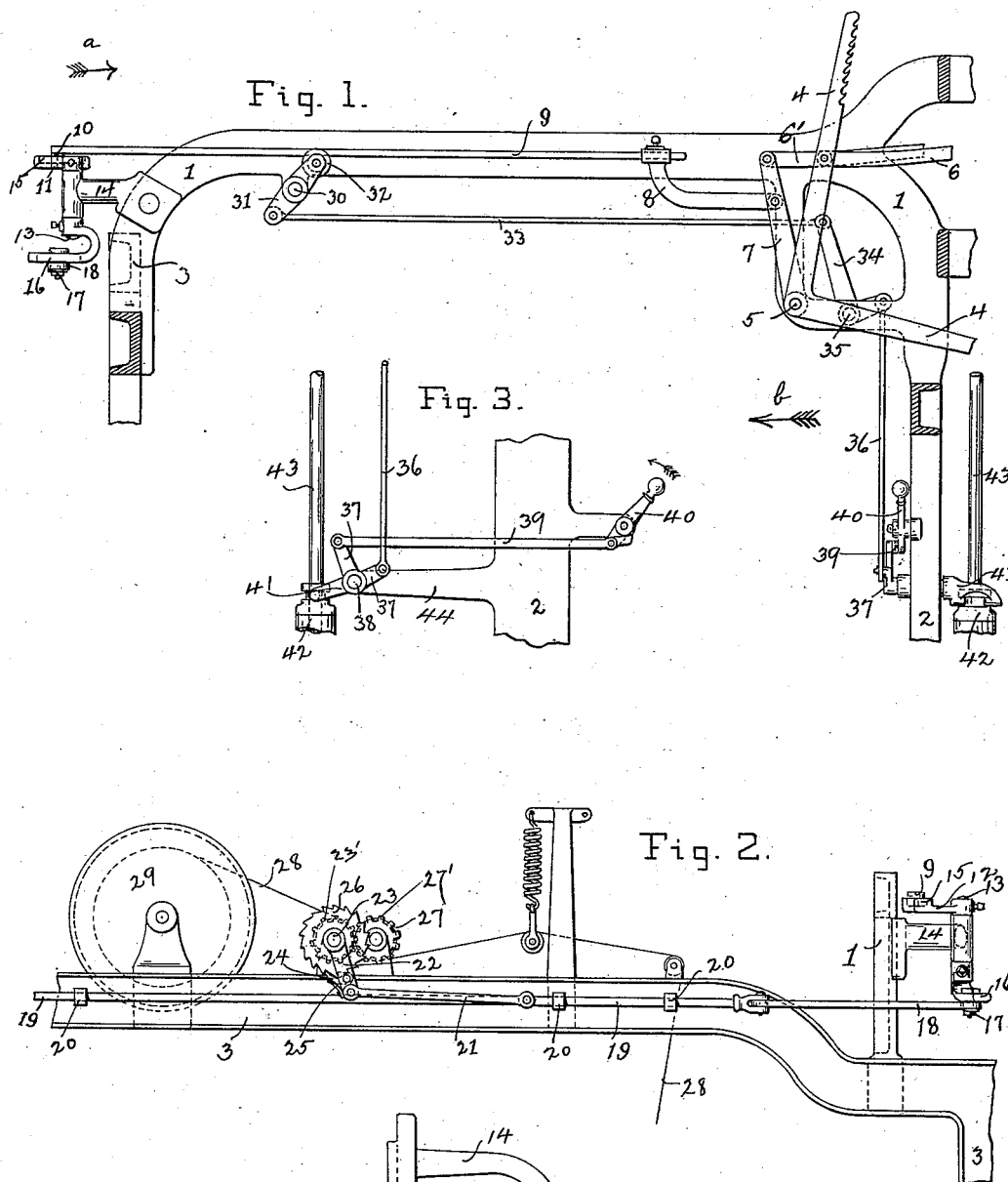
(No Model.)

G. F. HUTCHINS.

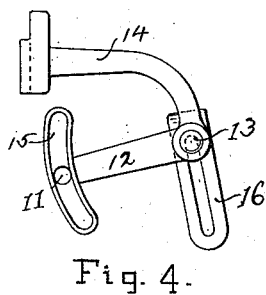
LET-OFF MECHANISM FOR LOOMS.

No. 381,787.

Patented Apr. 24, 1888.



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# UNITED STATES PATENT OFFICE.

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KNOWLES LOOM WORKS, OF SAME PLACE.

## LET-OFF MECHANISM FOR LOOMS.

SPECIFICATION forming part of Letters Patent No. 381,787, dated April 24, 1888.

Application filed August 8, 1887. Serial No. 216,368. (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 to improvements in looms, and more especially to automatic let-off motions for plush-loom.

The object of my invention is to provide a convenient arrangement which will permit weaving the pile in stripes and checks as well as plain; and my invention consists in certain novel features of construction, arrangement, and combination of the several parts of an automatic let-off motion, as will be hereinafter fully described.

Referring to the drawings, Figure 1 is a front elevation, partly in section, of a portion of a plush-loom sufficient to show the application of my invention. Fig. 2 is a side elevation looking in the direction of arrow *a*, Fig. 1. Said figure also shows some parts which for clearness are left off in Fig. 1. Fig. 3 is a side elevation of details shown in the lower part of Fig. 1, looking in the direction of arrow *b*, same figure; and Fig. 4 is a plan, slightly enlarged, of details shown in Figs. 1 and 2.

In the accompanying drawings, 1 represents the arch or top rail, and 2 and 3 portions of the loom-frame.

The part marked 4, Fig. 1, represents one of the harness levers or jacks, pivoted at 5 and actuated in the usual way, through the connector 6, by the well-known Knowles head-motion, as set forth in Patent No. 134,992, of January 21, 1873.

Operated in the same manner as the jacks 4 is a lever, 7, Fig. 1, pivoted at 5 on the same shaft with the jacks 4 and provided with a connector, 6'. Jointed to lever 7 is a connector, 8, to which is attached the rod 9, extending across the loom and terminating in a finger,

10, which projects downward and enters a socket, 11, Figs. 1, 2, and 4, in the outer end of an arm, 12, pivoted on an upright shaft, 13, which has a bearing in stand 14, bolted to the arch. Cast upon the outer end of arm 12 is a piece having the circular groove 15, the center of the curvature of which is at the center of the shaft 13. In the bottom of said groove the socket 11 is formed. Fixed to the lower end of the shaft 13 is an arm, 16, slotted lengthwise, Fig. 4, for the stud 17, which carries one end of a connector, 18, the outer end of which is jointed to a rod, 19, Fig. 2, which slides in brackets 20, cast on the frame 3. Jointed to rod 19 is a connector, 21, the outer end of which is jointed to an arm, 22, pivoted on the shaft of the drawing-roll 23. The arm 22 carries a pawl, 24, held in engagement by a spring, 25, with the ratchet-wheel 26, fast upon shaft of drawing-roll 23. A roll, 27, is geared to the roll 23 by means of gears 27' and 23', secured upon the shafts of the rolls 27 and 23 in the ordinary manner, between which rolls the pile-warp 28 passes as it is drawn from the beam 29 to be carried to the harnesses. (Not shown.)

I have shown in the drawings the rod 19 continued out beyond the ratchet arrangement of the drawing-off rolls 23 and 27, so that the same may be connected with a second set of drawing-off rolls in case two warp-beams are used to form the plush, said sets of drawing-off rolls being operated alternately.

Carried upon stud 30, Fig. 1, bolted to arch 1, is an arm, 31, to one end of which is fixed, free to revolve upon a stud, a flanged roll, 32, between the flanges of which rests the rod 9. To the opposite end of the arm 31 is jointed the rod 33, which at its farther end is in turn jointed to the upright arm of knee-lever 34, to the other arm of which is jointed the connector 36. The lower end of connector 36 is jointed to one arm of a knee-lever, 37, pivoted upon shaft 38, having a bearing in an arm, 44, extending from frame 2. Jointed to the other arm of the knee-lever 37 is a rod, 39, whose other end is jointed to the hand-lever 40, whose office it is to disconnect the harness-motion from its source of motion when it is desirable to turn the loom by hand in finding the pick. This is accomplished in the usual manner through the fork 41, fast upon the shaft 38, act-

ing in the groove of the clutch 42 upon the driving-shaft 43.

The operation of the above-described mechanism is as follows: The movement of the arm 5 7, called by the pattern-chain in the same manner as the harnesses are called, through jacks 4, by the well-known Knowles harness mechanism before referred to, causes rod 9 to move, and, through shaft 13 and connections 16, 18, 10 19, and 21, causes arm 22 to move the pawl 24 and draw off from the beam 29 an amount of pile-warp, 28, determined by the number of ratchet-teeth on wheel 26 and the movement given to rod 19, which movement is made 15 variable by means of the slot in the arm 16. It will be seen that this arrangement lets off a certain fixed amount of pile-warp adjusted to the height of pile required, and that by actuating the let-off mechanism by the pattern-chain it lets off when the finger 10 calls for it, 20 and at no other time. When the loom is being turned by hand in finding the pick, it is desirable to stop the let-off. It will be seen that when the handle 40 is thrown over to dis- 25 engage the clutch 42 the effect, through connections 36, 32, and 33, will be to swing the arm 31 on its pivot 30, thus by the elevation of roll 32 lifting the finger 10 of rod 9 out of its socket 11 in the arm 12, and allowing the 30 harness-motion, and with it rod 9, to be moved without moving the ratchet-wheel connection.

The groove 15 keeps the finger 10 in the proper path, so that when the clutch 42 is thrown in again and support 32 moved out from under rod 9 the finger, when moved to the position 35 laterally which it occupied before being raised, drops into its socket 11 again.

It will be understood by those skilled in the art that my improved let-off mechanism may be applied to and operated in connection with 40 any harness-motion of looms controlled by a pattern-chain.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is— 45

In a loom, the combination, with a lever, 7, actuated by the usual harness-motion, a ratchet-wheel and pawl, and an arm carrying said pawl for operating the drawing-off rolls, and said drawing-off rolls and connections inter- 50 vening between said lever and ratchet-wheel, substantially as described, of means for disconnecting the ratchet movement of the let-off motion, consisting of lever 31, rod 33, knee-lever 34, connector 36, knee lever 37, rod 39, 55 and hand-lever 40, all combined together substantially as shown and described.

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