

A. F. CASWELL.  
LOOM TAKE-UP.  
APPLICATION FILED JULY 9, 1903.

NO MODEL.

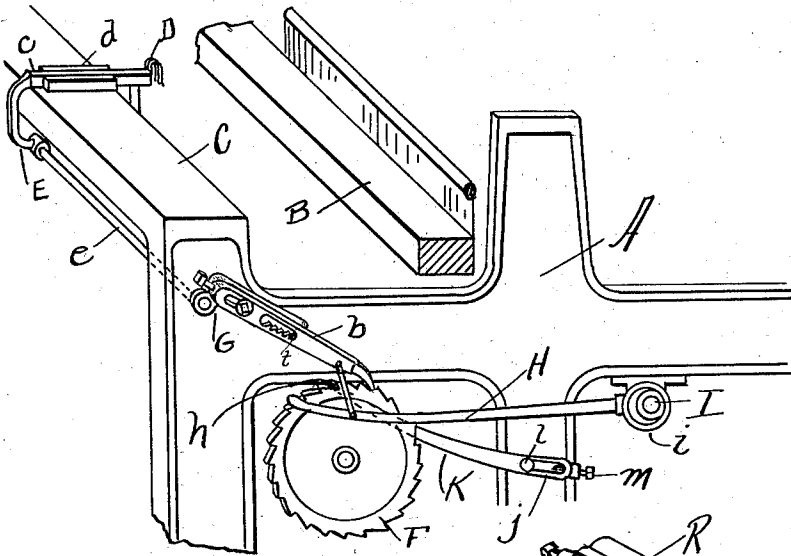


Fig. 1.

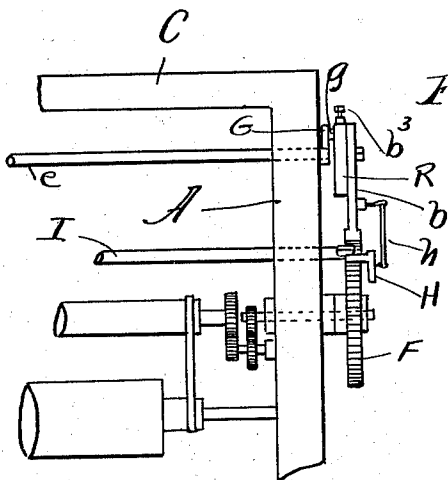


Fig. 2.

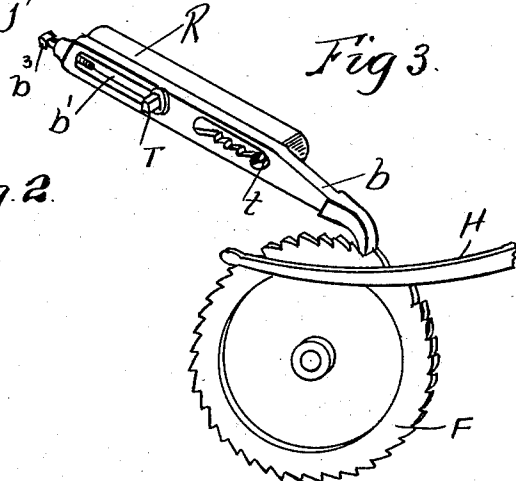


Fig. 3.

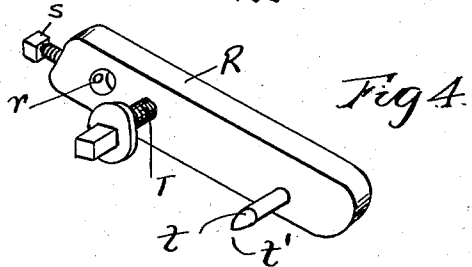


Fig. 4.

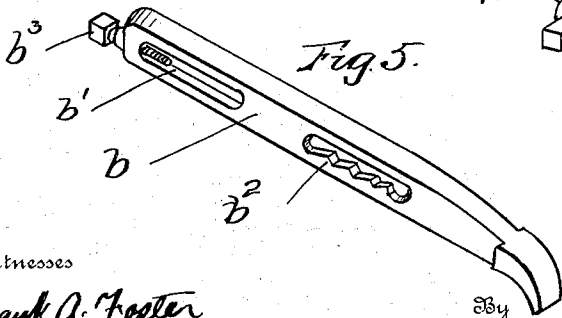


Fig. 5.

Witnesses

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# UNITED STATES PATENT OFFICE.

ARTHUR F. CASWELL, OF TAUNTON, MASSACHUSETTS, ASSIGNOR OF ONE-HALF TO HERBERT H. SHUMWAY, OF TAUNTON, MASSACHUSETTS.

## LOOM TAKE-UP.

SPECIFICATION forming part of Letters Patent No. 748,262, dated December 29, 1903.

Application filed July 9, 1903. Serial No. 164,831. (No model.)

*To all whom it may concern:*

Be it known that I, ARTHUR F. CASWELL, a resident of Taunton, in the county of Bristol and State of Massachusetts, have invented certain new and useful Improvements in Loom Take-Ups; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention pertains to take-up mechanism for looms wherein provision is made for arresting and also letting back the take-up by the action or operation of the weft-fork or filling-detector, which latter operates at every other pick to detect the presence or absence of the filling, as is very common in looms. When the weft-thread breaks or the filling is exhausted from the shuttle, there will be a pick, or perhaps two picks, of filling absent in the cloth before the weft-thread is properly laid again. In weaving light fabric it is found of great advantage to let back two or three teeth at such times to prevent making thin places in the cloth.

My invention has for its object the production of an extremely-simple mechanism which will operate to stop the take-up roll and to let back two or three picks when a break occurs or when the shuttle fails to lay the weft-thread in weaving light goods. This is effected by arranging the detent-pawl of the take-up so that it, with the actuating-pawl, will be raised out of engagement with the ratchet-wheel and let back a predetermined number of picks. The same mechanism may also be so adjusted that when weaving heavier goods the take-up roll will be instantly arrested when the fork fails to find the weft-thread and allow said take-up to remain at rest for a predetermined number of picks after starting up the loom again.

The invention consists of novel features and parts and combinations of the same, as will be fully described hereinafter and then pointed out in claims.

A practical embodiment of the invention is represented in the accompanying drawings, forming a part of this specification, in which

similar characters of reference indicate corresponding parts in all the views.

Figure 1 is an end elevation of a portion of the loom, showing my take-up and let-back mechanism attached thereto. Fig. 2 shows a portion of the loom in side elevation and a portion of the take-up mechanism. Fig. 3 is an enlarged perspective view of my mechanism for producing a dwell or rest of the take-up roll when the filling is absent. Fig. 4 is a perspective view of the plate on which the detent-pawl is hung, to be set rigidly or allowed to slide longitudinally. Fig. 5 is a perspective view of the weft-fork-operated detent-pawl.

Referring to the drawings, A is the end frame of the loom, B is the lay, and C is the breast-beam.

D is the weft-fork, pivoted on the slide *d*, that is mounted on the breast-beam.

*e* is the projection at the rear end of the slide, against which normally rests the lever E, which lever is mounted on and fixed to the rod *e*, that runs along under the breast-beam. This rod *e* extends out through the frame beyond the end of the loom and has a crank G on its end. On the pin *g* of this crank is mounted and fixed the plate R, on which plate is hung the detent-pawl *b*. The usual ratchet-wheel F, connected by a train of gears to the take-up roll in the well-known manner, is actuated by pawl H from the cam *i*, said cam being rotated by the crank-shaft I.

In weaving light goods when it is desired to use the let-back motion I connect the outer end of the detent *b* and the free end of the actuating-pawl H together, preferably by a strap *h* or other suitable flexible connection, so that when the detent is raised the actuating-pawl will also be raised and allow the ratchet to turn back until stopped by the let-back pawl K. This let-back pawl engages the ratchet-wheel F between the actuating-pawl and the detent-pawl, the opposite end of which is slotted at *j*. A pin or bolt *l* projects outward from the frame into this slot. In the end of this pawl and projecting into said slot is an adjusting-screw *m*, by means of which the let-back may be regulated to any number of teeth desired.

The plate or lever R (see Fig. 4) has a hole  $r$  in one end, into which fits the crank-pin  $g$  and on which this plate is held in the desired position by the set-screw  $s$ . The guide-bolt T extends through the slot  $b'$  in the detent  $b$  and serves as guide on which the latter slides. The pin  $t$  extends out from said plate into the toothed slot  $b^2$  in said detent, an edge  $t'$  being formed on its lower side for engaging the teeth in said slot  $b^2$ . The set-screw  $b^3$  in the detent may be adjusted in or out to regulate the movement of the detent-pawl, as will be hereinafter explained.

The operation of the device is further explained, as follows: In weaving light cloth the detent  $b$  is drawn way back on the plate R and the guide-bolt T is set up tightly, firmly holding said detent as if fixed to said plate. When the fork fails to find the weft-thread, it is thrown back in the well-known manner and acts through the lever E and shaft  $e$  to raise the detent  $b$  out of engagement with the ratchet F. The raising of this detent simultaneously raises the actuating-pawl H through the connection  $h$ , and the take-up is free to turn back by the tension of the warp-threads until it is stopped by the regulating-screw  $m$  in the let-back pawl. (Illustrated in Fig. 1.) The flexibility of this connection  $h$  allows the actuating-pawl H the necessary freedom for its reciprocating motion. As there is not a particularly heavy tension on the warp-threads, and consequently on the pawls, in these light goods, it is possible and practicable to raise both of these pawls from the ratchet at once. In weaving heavy goods it is found to be impracticable to raise both of these pawls from the ratchet on account of the increased tension, hereinafter explained, and it is also found unnecessary to let back the take-up roll. I therefore simply release the detent by loosening bolt T and also disconnect it from the actuating-pawl H, and I have a mechanism, as shown in Fig. 3, which will instantly arrest the take-up when the fork fails to find the filling and allows it to remain at rest for the required number of picks, the action of which is as follows: When the fork is thrown back in the manner described above, the detent  $b$  is raised from engagement with the ratchet-wheel F and instantly slides forward by its own gravity until the regulating-screw  $b^3$  in its end brings up against the guide-bolt T. When the loom is started again, this detent, which is now extended, drops into engagement with the ratchet-wheel. Each forward stroke on the actuating-pawl carries this detent back the necessary distance to allow the pin  $t$  to engage another one of the notches in the slot  $b^2$  until said detent has worked back to the position shown in Fig. 3, where the guide-bolt has brought up in the end of slot  $b'$ , in which position it acts to and prevents a further backward movement of said ratchet-wheel, and the actuating-pawl is

then allowed to feed the take-up as the loom proceeds to weave.

My improved device, as herein shown and described, is broadly for the purpose of preventing the weaving of thin places in cloth and may be operated in two different ways: First, when used in weaving light goods it lets back two or three picks when the shuttle fails to lay the filling, and, secondly, in weaving heavy goods it may be set to stop the take-up roll and hold it at rest for a predetermined number of picks until the filling is again laid in and beat up correctly. The reason for letting back on light goods is in practical weaving when the loom is running at a high speed it is found that the last pick laid is thrown well forward by the momentum of the lay, while on starting up again the first two or three picks are not set so well forward, as the lay has not reached its maximum speed and throw. This difference is particularly apparent in light goods, where thin places are left. To overcome this, the take-up is let back three or four picks and the cloth is woven perfect. In weaving heavy goods a different condition of affairs exists. There are more threads in the warp to the inch, and these threads are all under a heavier tension, the filling is also laid in closer and beat up harder, and the lay therefore cannot set the filling-threads so far ahead as it does in the lighter goods. This is accounted for largely by the lost motion which exists to a greater or less degree in all reciprocating mechanism, and under these conditions it is found that to allow the take-up roll to remain at rest for two or three picks in the heavier goods produces the same result as letting back a like number in the lighter goods, thus obtaining the same perfect work in both cases.

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

1. In a loom take-up mechanism, a ratchet-wheel, a detent-pawl, means for allowing said detent to slide forward a predetermined distance when raised from said ratchet-wheel, an actuating-pawl, means whereby said detent is carried back to its rest position by successive steps at each stroke of the actuating-pawl, substantially as described.

2. In a loom take-up mechanism, a ratchet-wheel, an actuating-pawl, a weft-fork-operated shaft, a plate mounted on said shaft, a detent-pawl mounted on said plate, means for allowing said detent to slide forward when raised from said ratchet-wheel and means for returning said detent by successive steps by the action of the actuating-pawl, substantially as described.

3. In a loom take-up mechanism, a ratchet-wheel, a detent-pawl, means for allowing said detent to slide forward a predetermined distance when raised from said ratchet-wheel, adjustable means for determining the distance said detent shall slide forward, an actuating-

pawl, means whereby said detent is carried back to its rest position by successive steps at each stroke of the actuating-pawl, substantially as described.

5 4. In a loom take-up mechanism, a ratchet-wheel, a detent-pawl, adjustable means whereby said detent may be allowed to slide forward a predetermined distance when raised from said ratchet-wheel or set up and retained in its inward or rest position, means for returning said detent by successive steps to said inward or rest position by the action of the actuating-pawl when said detent is allowed to slide forward, in combination with  
10 a removable connection between said detent and actuating pawls when said detent-pawl is fixed in its inward position, substantially as described.

5 5. In a loom take-up mechanism in combination a ratchet-wheel, a detent-pawl, adjustable means whereby said detent may be allowed to slide forward when raised from said ratchet-wheel or set up and retained in its inward position, means for returning said  
20 detent to said inward position by the action

of the actuating-pawl when said detent has slid forward, a removable connection between said detent and actuating pawls when said detent-pawl is fixed in its inner position, substantially as described.

6. In a loom take-up mechanism in combination a ratchet-wheel, a detent-pawl, adjustable means whereby said detent may be allowed to slide forward when raised from said ratchet-wheel or set up and retained in its inward position, means for returning said  
35 detent by successive steps to said inward position by the action of the actuating-pawl when said detent has slid forward, a removable flexible connection between said detent  
40 and actuating pawls when said detent-pawl is fixed in its inner position, substantially as described.

In testimony whereof I have hereunto set my hand this 2d day of July, A. D. 1903.

ARTHUR F. CASWELL.

In presence of—

SALLIE W. HALL,  
ROBERT J. BELCHER.