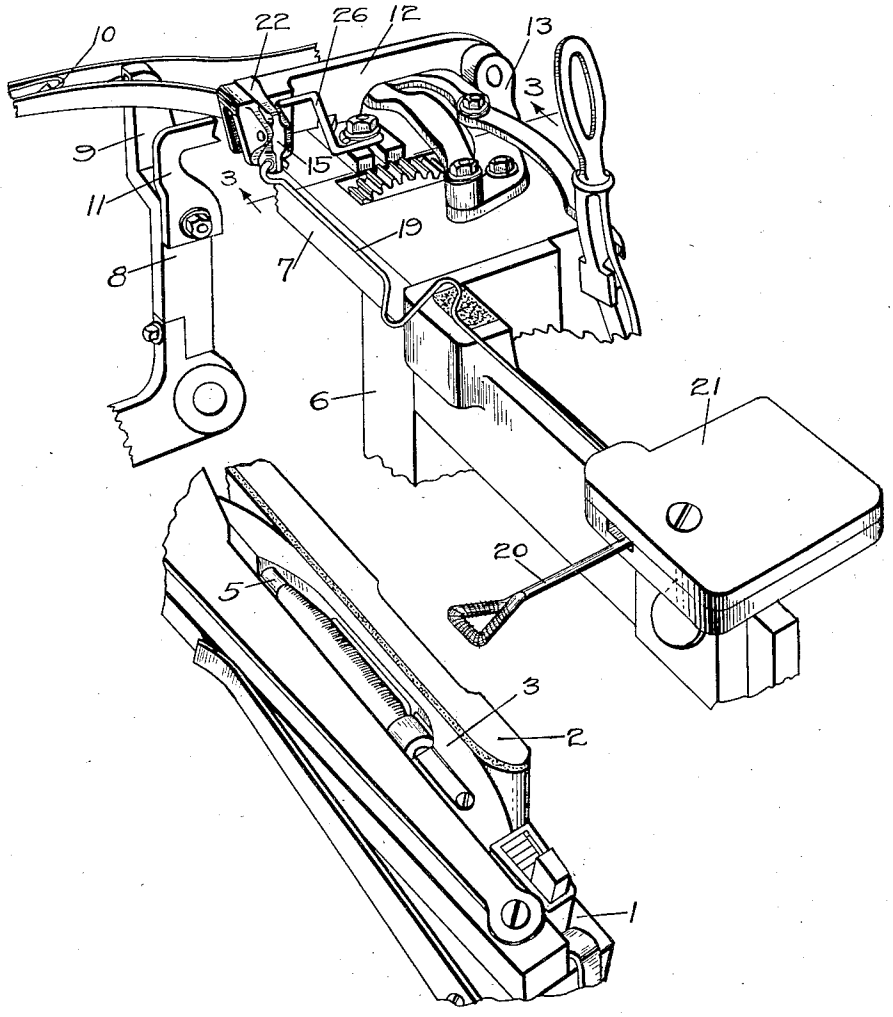
July 30, 1935. J. M. TUTEN 2,009,864

FEELER CONTROLLED FILLING REPLENISHING MECHANISM

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Fig. 1.



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Fig. 2.

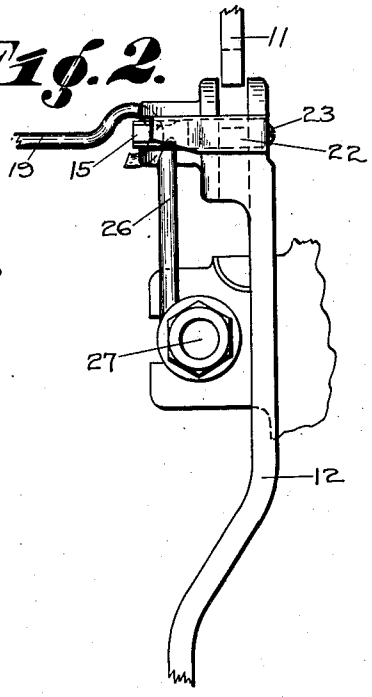


Fig. 4.

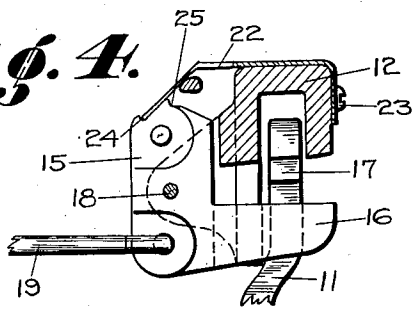
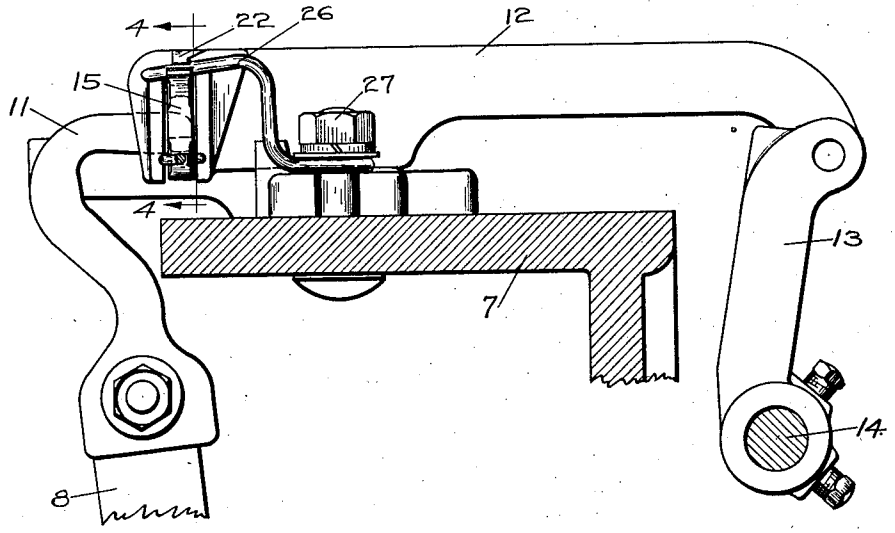


Fig. 3.



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2,009,864

UNITED STATES PATENT OFFICE

2,009,864

FEELER-CONTROLLED FILLING REPLENISHING MECHANISM

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Application November 7, 1934, Serial No. 751,893

7 Claims. (Cl. 139—269)

The present invention pertains to automatic filling replenishing looms of the feeler type and has more particular reference to the means or mechanism controlled by the feeler for initiating the replenishing operation.

In looms of the type mentioned, a filling feeler operates to detect substantial exhaustion of the filling supply in the shuttle and to thereupon move a part into the path of a moving weft hammer. The part is connected with a train of mechanism which, upon movement of the part by the weft hammer, initiates the replenishing operation. The part which is thus engaged by the weft hammer has been constructed so that it automatically occupies its inoperative position, out of the path of the weft hammer, unless actively held in such path by or through the operation of the feeler.

The weft hammer commonly performs an additional function, as the operation of the stopping mechanism under control of a filling fork, and under some conditions it cannot be timed to properly cooperate with both mechanisms. Usually, the fork mechanism requires a timing of the weft hammer which is too early to insure engagement of the latter with the feeler-controlled part before the part is allowed by the feeler to return to inoperative position.

It is further noted that, particularly with side slipping feelers on high speed looms, the feeler may detect and indicate substantial exhaustion of the filling supply but the indication be lost before the weft hammer engages the feeler-controlled part, even though the weft hammer is properly timed. I find that this failure of the mechanism is due to the faulty operation of the feeler blade. That is, when the feeler blade is struck by the rapidly moving, but decelerating, filling carrier the blade may slip sidewise and also, simultaneously, be thrown forwardly away from the filling carrier. This allows the feeler blade to immediately right itself and thus to move the feeler controlled part out of the path of the weft hammer before replenishment is actually initiated.

It is an object of the present invention to provide, in a loom having a weft hammer and a part movable into the path of the weft hammer upon substantial exhaustion of the filling supply, a latch means operable to retain such part in the path of the weft hammer independently of its moving means, and means for releasing the latch only when said part is engaged and moved by the weft hammer.

Further objects will be hereinafter more specifically enumerated, or will become apparent as the description proceeds.

The preferred embodiment of the invention is illustrated on the accompanying drawings, of which:

Fig. 1 is a perspective view of the feeler end of a loom containing said embodiment;

Fig. 2 is a detail, in plan;

Fig. 3 is an elevation, partly in section on line 3—3 of Fig. 1 but showing the parts as they appear during the replenishing operation; and

Fig. 4 is a cross-sectional view taken approximately on line 4—4, Fig. 3, but showing the parts as they appear after a replenishing operation is completed.

The loom to which my invention has been applied is conventional in many respects and accordingly is but fragmentarily illustrated. There is shown, of the old parts, a lay 1 which is adapted to reciprocate toward and from the front of the loom, a shuttle box 2 at the left hand end of the lay, a shuttle 3 which is adapted to be picked along the lay as by picker stick 4, an automatically ejectable bobbin 5, and a portion of the frame work as loom side 6 and breast beam 7.

There is also shown a conventional moving weft hammer 8 which has an arm 9 cooperating with the filling fork mechanism 10 and an arm 11 cooperating with other parts, to be described, for effecting filling replenishment. The weft hammer preferably reciprocates toward and from the front of the loom, which is toward and from the breast beam, making one complete reciprocation for each two picks and starting its forward movement slightly before the lay reaches front center on one of such picks.

Replenishment is effected through movement of a member, such as slide 12, which is pivotally secured to the upper end of an arm 13 on the usual replenishing rod 14. A part 15 is movably mounted on the member 12 so as to be normally out of the path of the weft hammer. The part may, however, be moved so that its arm 16 intercepts the shoulder 17 (Fig. 4) on the arm 11 whereby the part and member are bodily moved forwardly by the weft hammer, to thereby effect filling replenishment.

The part 15 may be mounted for movement, as aforesaid, by being pivoted on a pin 18 carried by an ear on the slide member 12. The specific movable part 15 shown is particularly adapted for movement by a rod 19 which extends widthwise of the loom and has one end engaged into the part 15 while its other end cooperates with

the side-slipping feeler blade 20 of a filling feeler 21. Slipping of the feeler blade serves to move the rod 19 endwise (toward the right, Fig. 4) and thereby swing the arm 16 into the path of the weft hammer.

As is above noted, prior mechanisms of the type herein involved have been so constructed as to require that the feeler hold the movable feeler controlled part in the path of the weft hammer until the latter actually engages such part. The present invention provides a latch which is operative to hold the part 15 with its arm 16 in the path of the weft hammer. The latch is so operative immediately upon movement of the part, independently of subsequent movements of the feeler, and independent of the timing of the weft hammer.

The latch shown on the drawings consists simply of a flat spring 22 having one end fixed to the member 12 as by a screw 23 and having its other end free and biased to engage in the notches 24 and 25 in the part 15. During the normal operation of the loom, when the part 15 occupies the position of Fig. 4, the spring engages notch 24. However, a side-slipping of the feeler blade, even of very short duration, will result in the spring engaging in notch 25 and automatically locking the part in replenishing position.

It is required that means be provided for automatically releasing the latch to allow the part 15 to return to inoperative position. The means herein provided for this purpose is operative only when the member 12 actually moves forwardly to effect replenishment. This releasing means may consist simply of a rigid finger 26 having its forward end fixed to the breast beam as by a bolt 27 and having its rearward end free and bent so as to incline downwardly and rearwardly beneath the spring 22. When the member 12 (and thereby the spring) are moved forwardly by the weft hammer the spring rides up on the finger and is thereby released from the notch 25. The spring is so held until the weft hammer starts its rearward movement, whereupon the overbalancing weight of arm 16 returns the part 15 to its normal or inoperative position.

The mechanism constructed as above described is not subject to the disadvantages of prior constructions. That is, the weft hammer can be timed late and still properly initiate filling replenishment, and even if the feeler fails to hold its indication as long as it should there will be no failure of replenishment.

Having fully disclosed the preferred embodiment of my invention, I claim:

1. In a filling replenishing loom, a weft hammer, a member which is movable for effecting filling replenishment, a part carried by said member and movable into and out of the path of said weft hammer, means for moving said part into said path upon substantial exhaustion of the filling supply, a latch operating automatically upon movement of said part into said path to engage and retain the same therein, and means operable only upon replenishing movement of said member to release said latch.

2. In a filling replenishing loom, a weft hammer reciprocating forwardly and rearwardly once for each two picks of the loom, a member movable forwardly by said weft hammer for effecting filling replenishment, a part adapted to be interposed between said weft hammer and said member for causing the latter to be operated by the former, means for positioning said part between the weft hammer and member upon substantial depletion of the filling supply, a movable latch automatically engageable with said part for locking the same in said position, and means operable only upon forward movement of said member to release said latch.

3. In a filling replenishing loom, a filling feeler operable at a predetermined point in the loom cycle to detect substantial exhaustion of the filling supply, a member adapted to be moved forwardly for effecting filling replenishment, a forwardly and rearwardly moving weft hammer, a part carried by said member and movable thereon, means controlled by said filling feeler for moving said part into the path of said weft hammer, a latch on said member for locking said part in said path, said weft hammer engaging said part subsequent to the operation of said feeler, and means operable only upon forward movement of said member to release said latch.

4. In a filling replenishing loom, a weft hammer, a member which is movable for effecting filling replenishment, a part pivoted to said member for movement into and out of the path of said weft hammer, a filling feeler and connections therefrom for swinging said part into said path upon substantial exhaustion of the filling supply, a latch carried by said member and latching said part in said path, and a fixed finger engaging and releasing said latch upon replenishing movement of said member.

5. In a filling replenishing loom, a weft hammer, a slide member connected to effect filling replenishment when moved by said weft hammer, a part pivoted to said member for movement into and out of the path of said weft hammer, a filling feeler and connections therefrom for swinging said part into said path upon substantial exhaustion of the filling supply, a latch comprised of a spring fixed to said member and engaging said part for holding the same in said path, and a fixed finger engaging said spring and releasing the same from said part only upon replenishing movement of said member.

6. In a filling replenishing loom, a side-slipping filling feeler, a rod extending widthwise of the loom and movable endwise by said feeler upon substantial exhaustion of the filling supply, a weft hammer, a part movable by said rod into the path of said weft hammer and bodily movable by the latter for effecting filling replenishment, a movable latch for engaging and holding said part in said path, and means operable only after engagement of the part by the weft hammer for releasing said latch.

7. In a filling replenishing loom, a side-slipping filling feeler, a rod extending widthwise of the loom and movable endwise by said feeler upon substantial exhaustion of the filling supply, a weft hammer, a slide member movable to effect filling replenishment, a part pivoted to said member for movement by said rod into the path of said weft hammer, a latch on said member for holding said part in said path, and a fixed finger for engaging and releasing said latch only upon replenishing movement of said member.

JAMES MANER TUTEN.