FILLING DETECTOR FOR LOOMS

William H. Baham, Greenville, and Frederick Gordon Cobb, Lancaster, S. C.

Application September 9, 1933, Serial No. 688,722

13 Claims. (Cl. 159—377)

This invention relates to improved means for automatically stopping a loom when the filling becomes exhausted or broken and also for automatically replenishing the filling supply in the shuttle upon exhaustion or breaking of the filling when it is used on a battery or magazine loom. In some types of looms there are no means for automatically replenishing the filling supply when it becomes exhausted, but stop motions are used to detect this failure of the filling and stop the loom and an operator replenishes the filling supply or ties the broken ends and again starts the loom. In other types of loom such as battery looms, magazine looms, and the like, the filling detector means, upon the exhaustion of the filling supply in the shuttle or upon breakage of the filling, causes the filling detector to automatically operate the filling replenishing means to place a new supply of filling in the shuttle. The improved means as shown in the accompanying drawing, is adapted to work on both types of looms, to stop the one having no magazine or battery, and on the other type having a magazine or battery, the apparatus is connected to the filling replenishing means to automatically replenish the filling instead of stopping the loom, as in the case of a plain loom having no battery.

In the herein set forth invention, a very delicate filling feeler finger is employed which controls the other parts which engage the weft hammer or snake head and therefore the filling feeler finger, not having to withstand the force exerted by the snake head or weft hammer to stop the loom or operate the replenishing mechanism, can be of very light structure, and therefore, requires no grate or filling fork to cause the same to be operated by the filling. It is thus seen that the filling grate can be dispensed with and also the filling fork, and there can be employed instead thereof, a very light weight filling feeler finger.

In the co-pending application of one of the applicants herein, namely, Frederick Gordon Cobb, Serial Number 674,900, filed June 8, 1933, there is shown a mechanism similar to the one herein disclosed. The herein disclosed mechanism eliminates all possibilities of breaking or straining the filling feeler finger for the reason that on the present invention the filling feeler finger is entirely released from the dog which is pivotally mounted on the snake head or weft hammer, and therefore, there is no possibility of the filling feeler finger becoming damaged due to any strain being placed thereon in stopping the looms or in replenishing the weft supply upon exhaustion thereof.

Some of the objects of the invention having been stated other objects will appear as the description proceeds when taken in connection with the accompanying drawing, in which:

Figure 1 is a side elevation of our invention;
Figure 2 is a longitudinal sectional view similar to Figure 1 but having the nearest side of the filling slide broken away;
Figure 3 is a plan view of the filling slide with the snake head and other parts omitted;
Figure 4 is an exploded isometric view of the improved pivoted dog and a means for mounting it on the snake head;
Figure 5 is an assembled plan view of our invention showing a portion of a loom.

This invention is an improvement over the co-pending application of Frederick Gordon Cobb, above noted, and many conventional parts shown in the co-pending application are eliminated from the drawing.

The conventional slide guide 41 is provided as set forth in said co-pending application and in this slide guide is slidably mounted slide 40 and having the portions 11 and 12 which project backwardly where they are connected to either the stop motion or the filling replenishing mechanism of the loom, as at 42. This filling slide 10 has a guideway 13 therein which has a slot 14 therein, through which lint and other foreign particles may pass, instead of blocking the guideway 13 and preventing operation of the mechanism. Spanning the distance between these sidewall portions 11 and 12 is a pin 14g. The end of the sidewall portions 11 and 12 are joined by an integral member 15.

Also spanning the distance between the sidewalls 11 and 12 and near the portion 15 is a pin 16 mounted in holes 17 and 18 and in the side walls 11 and 12 on which is pivotally mounted a filling feeler finger 19 having a loop 16a which is adapted to be held in raised position by means of the filling 20 when present in the weaving operation when the filling is moved against the filling feeler finger by the beating up motion of the reed 43 in the lay 40 of the loom. Snake head or weft hammer 22 has an oscillatory motion, this being a conventional part of the loom, and an L-shaped member 23 having a hole 24 therein which is penetrated by a pin 25, is mounted in weft hammer 22. Pin 25 loosely penetrates hole 24 so as to pivotally mount member 23 on pin 25. Member 23 has a horizontal portion 26 which reciprocates back and forth in guideway 13 in the
filling slide and normally the filling slide remains inoperative except upon failure of the filling, as will be hereinafter described. The horizontal portion 26 has a slot 27 therein penetrated by a pin 28 passing through holes 29 and 30. This pin 28 also penetrates hole 31 in dog 32 for pivotally mounting dog 32. Dog 32 has a weightend end 33 adapted to hold the parts in position shown in Figure 1. The dog 32 also has a notch 35 there-
in on the upper edge thereof and a hooked portion 36 on the lower edge thereof, and the end of the dog has sloping portions 37 and 38.

It will be noticed that the dog 32 is thicker than the slot 14 so as to prevent manual raising of the weighted portion 33 and allowing the other end of the dog to penetrate slot 14 so as to cause the upper edge 37 of the dog 32 from being thrust against the pin 14c. It is seen that if the weighted portion 33 is raised and the snake head 30 repositioned that the sloping portion 37 causes the dog to slide over the pin 14c and the slot 14 being narrow, it cannot go beneath pin 14c. The sloping portion 37 is provided so as to prevent injury to the filling feeler finger 19.

The filling feeler finger has a looped portion 18a adapted to fall over and on opposite sides of the smaller end of dog 32 and to engage the shoulder 35 when there is a failure of filling as the upper portion of 19 is heavier than the lower portion. The feeling end of the filling feeler finger 19 is rounded such as by being corrugated or roughened by any desired manner so as to cause the yarn 20 to frictionally engage the same without sliding therein. Although this is shown in the drawing as being sinuous, it could be a straight filling feeler finger with corrugations or roughenings thereon.

It is seen that in normal weaving that if there is a filling thread present, that the beating up of the lay of the loom will push the thread to the position shown in Figure 1 and raise the looped portion 18a of the filling feeler finger to a point where it will not engage the shoulder 35 as shown in Figure 1 but when the filling is not present the filling feeler finger, on account of gravity, will assume the position as shown in Figure 2 and will engage the shoulder 35 against the loop, will not only raise the dog 32 to the position shown, but will cause a loop 18a to be expelled completely from the shoulder 35 simultaneously or imme-

1. In a loom having a mechanism such as stop motions, and weft replenishing means, means for operating said mechanism comprising a slide guide, a slide, a member mounted for reciprocatory motion in said slide, a pivoted member in said reciprocating member, a filling feeler finger movable by the filling to elevated position, a shoulder on the pivoted member engageable by the filling feeler finger in the absence of filling, a hook on said pivoted member for engaging the slide when the pivoted member is moved by said finger engaging said shoulder, the finger being moved out of the path of the said shoulder by filling and in the absence of filling engaging said shoulder to move the pivoted member upon reciprocation of the said member, and means operable by the movement of the slide for operating said mechanism.

3. Means for detecting an absence of filling in 20 a loom during the weaving operation which comprises a filling detecting finger operable by a filling supported solely by the warp and the shuttle, a filling slide, a reciprocating weft hammer or snake head, means carried by the snake head or weft hammer for engaging the filling detector finger in the absence of filling in the warp self automatically disengaging the filling detector finger from the means carried by the snake head or weft hammer, means on the filling slide en-
geageable by the weft hammer or snake head after the filling detector has been disengaged from the weft hammer or snake head for engaging the filling slide and means operable by the filling slide for controlling operation of the loom.

4. In a filling detector for looms, a slide guide, a slide mounted in said slide guide, a member mounted for reciprocatory movement in said slide, a second member pivotally mounted in the first member, a filling detector finger mounted in said slide and held by the presence of a filling out of contact with said pivoted member, means on the pivoted member for engaging the filling detec-
tor finger in the absence of filling, and means on the pivoted member for engaging the slide after the pivoted member engages the filling detec-
tor finger to move the slide.

5. In a filling detector for looms, a filling feeler finger, a reciprocating member, a pivoted member mounted on the reciprocating member, means engageable by the filling finger from the absence of filling, and means engageable by the pivoted member when engaged by the filling feeler finger for controlling the loom.

6. Control mechanism for looms comprising a filling feeler finger, a pivoted member on the slide for engaging the pivoted member in the absence of filling in the loom, and means engageable by the pivoted member when engaged by the said finger for controlling the loom.

7. Control mechanism for looms comprising a reciprocating member, a pivoted member on said reciprocating member, a filling feeler finger normally held by the presence of filling out of contact with the pivoted member but being adapted to fall by gravity onto the pivoted member in the absence of filling to engage the pivoted member, and means engageable by the pivoted member when engaged by said finger for controlling the loom.

8. Control mechanism for looms operable by the filling comprising a slide guide, a slide, a snake head, a member mounted on said snake head for reciprocatory movement on said slide, a pivoted member mounted on the member 75
mounted on the snake head, a filling feeler finger adapted to engage the pivoted member but being held out of engagement therewith by the presence of filling, means on the pivoted member for engaging the slide when the pivoted member is engaged by said finger, and means movable by the slide for controlling the loom.

9. In a loom having a stop motion, a filling feeler finger, a slide, a pivoted member, means on the pivoted member engageable by the finger in the absence of filling and other means on the pivoted member for engaging the slide when the pivoted member is engaged by the finger, and means movable by the slide for controlling the loom.

10. Means for automatically operating weft replenishing means, stop motions and the like for looms, comprising a filling slide and a filling detector mounted thereon, movable means operable by the filling detector for engaging the filling slide, a member slidably mounted in the filling slide in which said movable means is mounted, and means for imparting reciprocatory motion to the slidably mounted member.

11. In a loom, control means therefore, a sliding member for operating the control means, a weft hammer mounted for reciprocation with relation to said sliding member, a movable member mounted on the weft hammer and having means for engaging the sliding member but normally held out of engagement with the sliding member, a filling feeler finger adapted, in the absence of filling, to engage said movable member to cause the movable member, upon movement of the weft hammer, to engage and move said sliding member.

12. Means for controlling the operation of a loom comprising a normally stationary slidable member, a constantly reciprocating member associated with said slidable member, a movable member mounted on the reciprocating member, a filling feeler finger mounted on the slidable member and having means thereon to engage the movable member in the absence of filling so the movement of the reciprocating member will cause the movable member to engage said slidable member and move the same, and means for controlling the loom operable by said slidable member.

13. A filling feeler finger for looms comprising a single prong for engaging the yarn, a loop on the other end of the finger, a filling slide, a weft hammer, a pivoted member on the weft hammer engageable by the said loop in the absence of filling for moving the pivoted member into engagement with the filling slide to move the same, the pivoted member carrying the load of moving the filling slide and relieving the said loop from the strain of moving the filling slide.

WILLIAM H. BAHAN.

FREDERICK GORDON COBB.