

E. S. WOOD.

FILLING FEEDER FOR FILLING REPLENISHING LOOMS.

APPLICATION FILED DEC. 26, 1905.

2 SHEETS—SHEET 1.

Fig. 1.

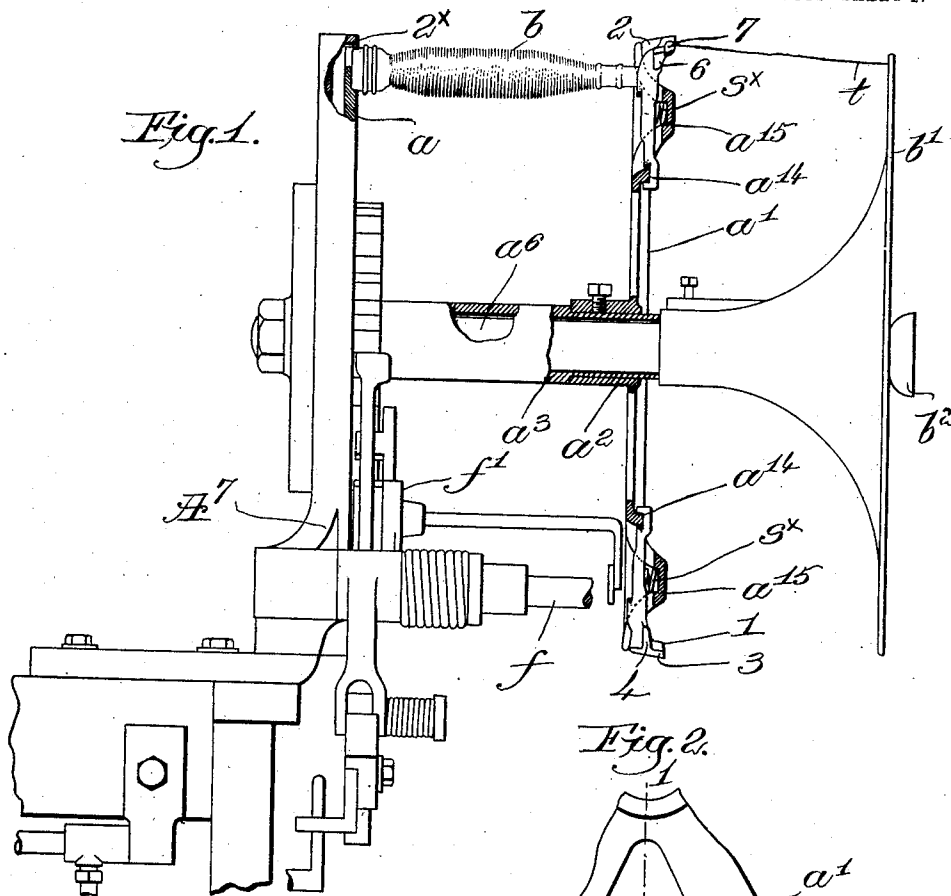


Fig. 2.

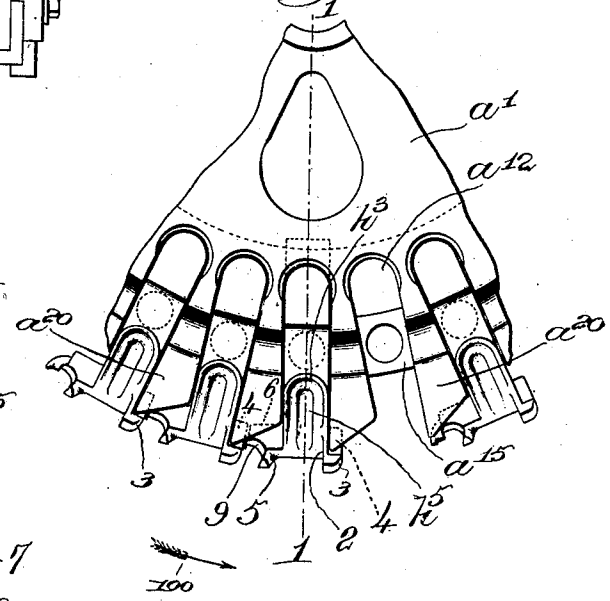
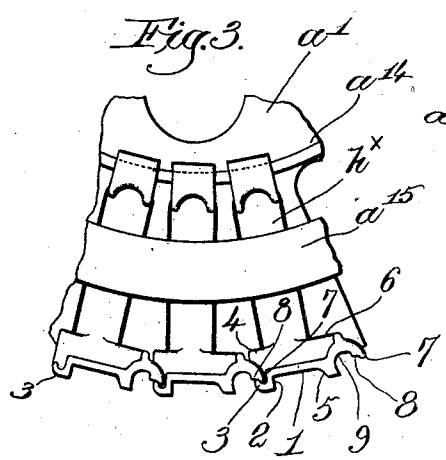


Fig. 3.



Witnesses:  
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No. 830,397.

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2 SHEETS—SHEET 2.

Fig. 4.

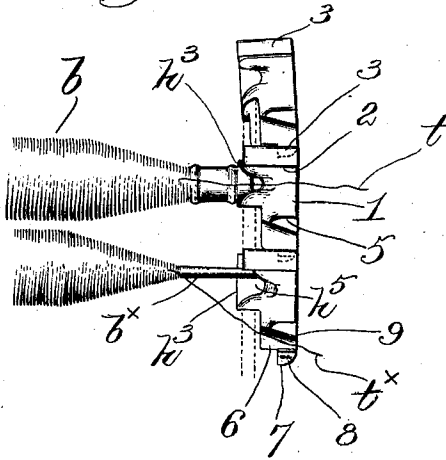


Fig. 5.

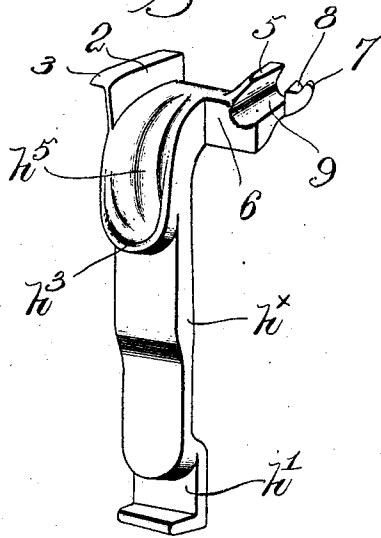
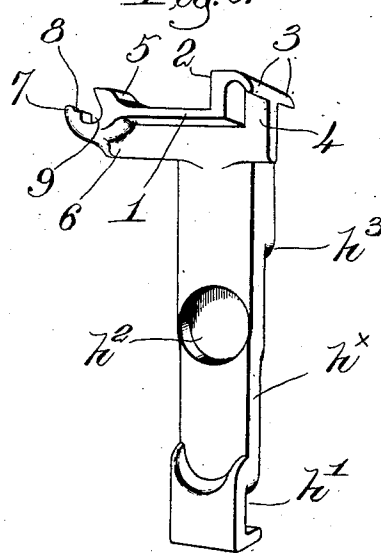


Fig. 6.



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# UNITED STATES PATENT OFFICE.

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## FILLING-FEEDER FOR FILLING-REPLENISHING LOOMS.

No. 830,397.

Specification of Letters Patent.

Patented Sept. 4, 1906.

Application filed December 26, 1905. Serial No. 293,245.

*To all whom it may concern:*

Be it known that I, EVERETT S. WOOD, a citizen of the United States, and a resident of Hopedale, county of Worcester, State of Massachusetts, have invented an Improvement in Filling-Feeders for Filling-Replenishing Looms, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

This invention has for its particular object the production of improved means for holding the tips of bobbins or cop-skewers in the filling-feeder of a filling-replenishing loom, whereby the filling end is controlled in a better manner and its catching on adjacent parts is prevented. I have also provided means for imparting an augmented pressure to the endmost filling-carrier of the series in the feeder to thereby prevent any rotative movement of the said filling-carrier while it is in position to be transferred.

Apparatus of a somewhat similar character is shown in my United States Patent No. 759,146, dated May 3, 1904, and also in patents to Stimpson, Nos. 755,252 and 769,573, to which reference may be had, and in my present invention I sustain the tips of the filling-carriers, whether bobbins or cop-skewers, by a series of spring-controlled holders mounted to rock on one of the plates of the feeder.

Certain novel features of construction, however, are herein embodied in the tip-holders, whereby improved and novel results are secured which give a more certain and efficient operation in the loom.

The various novel features of my invention will be fully described in the subjoined specification and particularly pointed out in the following claims.

Figure 1 is a front elevation and partial section of the replenishing mechanism of a loom of the Northrop type—such, for instance, as shown in United States Patent No. 529,940, dated November 27, 1894—with a filling-feeder embodying my present invention, the sectional portion being taken on line 1 1, Fig. 2. Fig. 2 is a partial inner side elevation of the end or plate of the feeder on which the tip-holders are mounted, one of the holders being omitted for clearness of illustration. Fig. 3 is a detail of the outer

side of the plate and some of the tip-holders thereon. Fig. 4 is a detail looking toward the outer ends of several tip-holders, showing the manner in which a filling end is led from both a bobbin and a cop-skewer. Fig. 5 is an enlarged perspective view of one of the tip-holders viewing its face; and Fig. 6 is a similar view, but looking at the back of the tip-holder.

Referring to Fig. 1, the feeder-stand  $A^7$ , supporting the horizontal stud  $a^6$ , on which are rotatably mounted the hubs  $a^3$  and  $a^2$  of the end plates  $a$  and  $a'$ , respectively, the disk  $b'$  and stud  $b^2$ , by which the filling ends are held, the transferrer  $f'$ , mounted to rock on the stud  $f$  to effect a transfer of filling, and the peripheral pockets  $2^x$  in the plate  $a$  to receive the heads of the filling-carriers  $b$ , whether bobbins or cop-skewers, may be and are of well-known construction in Northrop looms and operate in usual manner.

The plates  $a$   $a'$  of the feeder are rotated in unison by well-known means and present the filling-carriers one by one in position to be transferred from the feeder to the running shuttle. The plate  $a'$  is herein shown as constructed substantially as in my patent No. 759,146 referred to, it having radial openings  $a^{12}$  opposite the pockets  $2^x$ , an annular rib  $a^{14}$  at the inner ends of the openings on the outer side of the plate, and socketed spring-seats  $a^{15}$ , arranged in a circle spanning the openings  $a^{12}$ , each seat receiving a spiral spring  $s^x$ , cooperating with a tip-holder movably mounted in each opening  $a^{12}$  of the plate.

The tip-holders herein shown are in certain features very similar to those shown in the patent, each being shaped to present an elongated body  $h^x$ , movable freely in an opening  $a^{12}$  and transversely grooved at its inner end at  $h'$  to embrace and rock on the rib  $a^{14}$ , the spring  $s^x$  entering a recess  $h^2$ , Fig. 6, in the back of the holder, the face of the holder having a curved rib  $h^3$  to form a seat for the blunt tip of a bobbin and a longitudinal seat  $h^5$  for a cop-skewer tip.

The outer end of the holder is widened laterally and extended outwardly at 1 in my present invention, and at one side of the face of the holder a relatively high guard-shoulder 2 is formed, having an overhanging lip 3, (clearly shown in Fig. 6,) said lip extending at

substantially right angles to a lateral lug 4 and projecting at each end beyond the lug.

On the opposite side of the widened part 1 a shoulder 5 is formed substantially parallel 5 to but not as high as the guard-shoulder 2, this shoulder 5 being on a lateral ear or lug 6, considerably wider than the lug 4 and terminating in a hook 7, shouldered at 8, a deep groove or notch 9 being made in the ear between the hook and the shoulder 5. (See 10 Figs. 2, 5, and 6.) When the holders are positioned on the plate  $a'$ , the lug 4 and ear or lug 6 of each extend laterally across the outer face of the plate at each side of the openings 15  $a^{12}$  and limit inward movement of the holder, the lugs 4 and 6 cooperating with the adjacent pointed portions  $a^{20}$  of plate  $a'$ , as shown in Fig. 2. By referring to said Fig. 2 it will be seen that the lug 4 extends under the outer 20 corner of the portion  $a^{20}$  of the plate  $a'$  and that the adjacent portion of the lip 3 projects inward beyond the part  $a^{20}$ , so that at all times the plate portions  $a^{20}$  are covered or guarded by the lips, whether the tip-holders 25 are empty or in engagement with a filling-carrier. This construction makes it impossible for a filling end to get between any of the tip-holders and the portions  $a^{20}$  of the plate  $a'$ , on which they are mounted, for the 30 lips 3, extending beyond the plate, interpose themselves between the filling ends and the points of the plate.

It is important to prevent the filling ends from getting behind the points  $a^{20}$ , for if they 35 should do so the filling would almost surely be caught and pinched, so that upon transfer it would be broken and a second transfer would be required immediately.

The shoulder 2 is quite high, as will be seen, and this tends to prevent a filling end from 40 sliding off the proper tip-holder as the latter gradually approaches the position from which its filling-carrier is transferred.

The arrow 100, Fig. 2, indicates the direction of rotation of the feeder, and it will be 45 seen that even should a filling end be quite slack it would be held by the shoulder 2 in proper position when that particular tip-holder was on the downwardly-moving part 50 of the plate  $a'$ .

The hook 7 of each holder extends behind the lug 4 of the next adjacent holder, and the adjacent part of the lip 3 of said latter holder 55 overhangs the shoulder 8 of the hook 7 in such a way that the filling end cannot get between the adjacent tip-holders, for the lip 3 by its overhang would simply shed the filling end off. By making the lip long enough it acts as a protection or guard-covering for 60 the hook under it, whether the tip-holder on which the hook is mounted is empty or in use. When the notches 9 are used to lead off the filling ends and the operator inserts the tip of a filling-carrier in a tip-holder, the next one 65 nearest the notch 9 is empty; but even then

the lip 3 overhangs the hook 7 of the filled holder and prevents the filling end from getting between the two holders. After the filling-carrier is placed in the feeder and the filling end is drawn into the notch 9 and thence 70 over to the disk  $b'$ , Fig. 1, the lead of the filling end is such that the slackness of the end would tend to allow the thread to move in the direction of the shoulder 5 rather than in the opposite direction. Consequently if the 75 thread is not absolutely and positively drawn or pulled between the tip-holders at the outset by the operator it is practically impossible for it afterward to get between the holders without moving across the face of its own 80 holder, which is prevented by both the shoulders 5 and 2.

When bobbins are used, the blunt tips thereof are inserted in the seats  $h^3$  after the heads have been placed in the pockets  $2^x$  of 85 plate  $a$  of the feeder, the springs  $s^x$  of the holders being compressed when the tip is inserted, and, as shown in Fig. 4, the filling end  $t$  is led over the end 1 of the holder between the shoulders 2 and 5. The guard-shoulder 90 2 prevents any accidental slipping of the filling end at that side during the intermittent rotative movement of the feeder, even should the end be quite slack between the bobbin-tip and the disk  $b'$ , as has been explained, the 95 shoulder 5 forming the opposite side of the path for the filling end. A cop-skewer  $b^x$ , Fig. 4, has a much sharper tip than a bobbin, and when used the tip is pushed into the seat  $h^5$  and the filling end  $t^x$  is led through the 100 groove or notch 9, as shown in Fig. 4, and thence to the disk  $b'$ . The notch or groove serves as a guide for the filling end and maintains it in proper position, and the offset location of the notch has two purposes. 105

In practice it has been found that if the yarn is led straight off the end of a cop-skewer it will coil itself about the bare end of the skewer, and by reason of the conical shape thereof the yarn will gradually work 110 off the tip of the skewer and will be worn through by the friction between the cop-skewer and its tip-holder. To prevent this, the yarn is drawn through the offset notch 9, and when so led off the yarn will not work off 115 the end of the skewer, as described. Secondly, the offsetting of the notch affords more slack for the filling end when the cop-skewer is transferred, this slackness being desirable on account of the character of the yarn winding 120 on the skewer.

It will be seen that the side of the groove 9 adjacent the shoulder 5 is deepened by the latter, so that a firm and sure guide for the filling end is provided. 125

In actual practice it is noticed that there is a rotative tendency of the endmost or leading filling-carrier in the feeder, due to the rubbing of the head of the filling-carrier 130 against the abutment against which the head

rests when said filling-carrier is in position to be transferred. This rotative movement causes the filling to be wound upon the carrier, drawing the filling end too taut, or it  
 5 unwinds and makes the filling end improperly slack. Herein the construction is such that I am enabled to impart to the filling-carrier next to be transferred an augmented spring-pressure sufficient to prevent rotation.

10 When the tip-holders are mounted on the plate *a'* of the feeder, their springs *s<sup>x</sup>* are under a very considerable compression. In fact, these springs are made as strong as possible without rendering it too hard for the  
 15 operative to push the filling-carriers into the feeder when loading it. Consequently there is considerable pressure against the tip of the filling-carrier when inserted in the holder, and the filling-carrier is held in place in the  
 20 feeder. The tip-holder next ahead of the one holding the filling-carrier in position to be transferred is of course empty and its spring is acting to force it into normal position with its lugs 4 and 6 against the plate *a'*; but the  
 25 lug 4 of the full holder presses back upon the hook 7 of the empty holder, resisting this tendency of the latter holder to assume normal position. Consequently the stress of its  
 30 spring acts through the hook and lug to increase or augment the pressure upon the filling-carrier next to be transferred, and it is thereby held from any rotative movement. In other words, the empty holder is held back  
 35 so that its ear or lug 6 cannot engage and rest against the adjacent portion of the plate *a'*, maintaining its operating-spring under compression. The additional pressure thus exerted by the empty tip-holder is equal to the pressure of the next full tip-holder due to  
 40 its spring.

Various changes or modifications in details of construction can be made by those skilled in the art without departing from the spirit and scope of my invention, one practical embodiment thereof being herein shown and described.  
 45

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

50 1. A filling-feeder comprising two connected, circular plates, circularly-arranged means on one of them to sustain the heads of a series of filling-carriers, a series of radially-disposed and oppositely-located tip-holders  
 55 movably mounted on the other plate, individual springs for and to operatively position said tip-holders, and means on each tip-holder to engage and augment the spring action of the next following holder when the tip of a filling-carrier is operatively supported  
 60 thereby, to thereby prevent rotation of such filling-carrier.

2. A rotatable filling-feeder, having means to sustain the heads of a circularly-arranged  
 65 series of filling-carriers, a series of spring-

controlled tip-holders movably mounted on the feeder, to engage and sustain the tips of the filling-carriers, and means to cause a previously-operative tip-holder to cooperate with the next adjacent operative holder and  
 70 augment the spring action upon the filling-carrier engaged thereby.

3. A rotatable filling-feeder, having means to sustain the heads of a circularly-arranged series of filling-carriers, a series of spring-  
 75 controlled tip-holders movably mounted on the feeder, to engage and sustain the tips of the filling-carriers, and a projection on each tip-holder to extend behind the next following holder, whereby the spring-pressure upon the  
 80 filling-carrier next to be removed from the feeder will be augmented by cooperation of the adjacent empty tip-holder.

4. A filling-feeder for looms, having means to sustain the heads of a series of filling-car-  
 85 riers, a series of spring-controlled tip-holders movably mounted on the feeder to engage and sustain the tips of the filling-carriers, and means to subject the leading filling-carrier of the series to spring-pressure through a  
 90 plurality of the tip-holders.

5. A filling-feeder for looms, having means to sustain the heads of a series of filling-car-  
 95 riers, a series of spring-controlled tip-holders movably mounted on the feeder to engage and sustain the tips of the filling-carriers, and means to subject the filling-carrier next to be removed from the feeder to spring-pressure through a plurality of tip-holders.

6. A filling-feeder for looms, having means  
 100 to sustain the heads of a series of filling-carriers, a series of spring-controlled tip-holders movably mounted on the feeder to engage and sustain the tips of the filling-carriers, and means to augment the pressure upon the  
 105 filling-carrier next to be removed from the feeder by or through spring action of the adjacent empty holder.

7. A rotatable filling-feeder, having means to sustain the heads of a circularly-arranged  
 110 series of filling-carriers, a series of rocking tip-holders mounted on the feeder opposite said head-sustaining means, a spring to press each holder inward, and means to cause the last empty holder to act upon the next one  
 115 sustaining a filling-carrier and thereby augment the pressure upon such filling-carrier.

8. A filling-feeder comprising a plate adapted to sustain the heads of a series of  
 120 bobbins or skewers, a connected plate, and a series of rocking, spring-controlled holders mounted thereon and adapted to receive and hold the tips of bobbins or cop-skewers, each holder having at its outer end, at one side, a  
 125 guard-shoulder and at the opposite side a lateral ear provided with a groove, the latter directing the filling end from a cop-skewer and the guard-shoulder controlling a bobbin filling end.

9. A filling-feeder comprising a plate 130

adapted to sustain the heads of a series of bobbins or skewers, a connected plate, and a series of rocking, spring-controlled holders mounted thereon and adapted to receive and hold the tips of bobbins or cop-skewers, each holder having at its outer end, at one side, a guard-shoulder provided with an overhanging, lateral lip, and at its opposite side a lateral ear provided with a groove and a shouldered hook, the hook of one holder passing under and engaging the overhanging lip of the next adjacent holder.

10. A filling-feeder comprising a plate adapted to sustain the heads of a series of bobbins or skewers, a connected plate, and a series of rocking, spring-controlled holders mounted thereon and adapted to receive and hold the tips of bobbins or cop-skewers, each holder having substantially parallel shoulders at its outer end to guide a bobbin filling end, one shoulder having an overhanging outer lip, and a lateral ear projecting beyond the other shoulder and terminating in a hook to engage the lip on the adjacent holder.

11. A filling-feeder comprising a plate adapted to sustain the heads of a series of bobbins or skewers, a connected plate, and a series of rocking, spring-controlled holders mounted thereon and adapted to receive and hold the tips of bobbins or cop-skewers, each holder having separate guiding means for bobbin and cop-skewer filling ends, and a lateral, overhanging lip and a hooked ear, the ear of one holder passing under and engaging the lip of the next holder.

12. A filling-feeder comprising a plate adapted to sustain the heads of a series of

bobbins or skewers, a connected plate, and a series of rocking, spring-controlled holders mounted thereon and adapted to receive and hold the tips of bobbins or cop-skewers, each holder having at its outer end, at one side, a guard-shoulder to prevent lateral displacement of a filling end, said shoulder having an overhanging lip, and a lateral ear on the opposite side of the holder terminating in a hook having a shoulder, the hook on each holder passing under and engaging the lip on the next holder, the hook and lip cooperating to prevent a filling end from being caught between the two holders.

13. A filling-feeder for looms having means to hold a series of filling-carriers by spring-pressure at one end of the latter, and means to augment the spring-pressure on the filling-carrier next to be removed from the feeder.

14. In a filling-feeder adapted to contain a series of filling-carriers which are transferred therefrom one by one to the running-shuttle, spring-acting means to act upon one end of the filling-carriers, the latter being forced into the feeder against the spring-pressure of said means, and means to augment the pressure upon the end of the filling-carrier next to be transferred without increasing the pressure to be overcome when the filling-carriers are inserted in the feeder.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

EVERETT S. WOOD.

Witnesses:

GEORGE OTIS DRAPER,  
ERNEST W. WOOD.