

J. H. NORTHROP.

THREAD PARTING MECHANISM FOR LOOMS.

(Application filed Apr. 29, 1901.)

(No Model.)

Fig. 1.

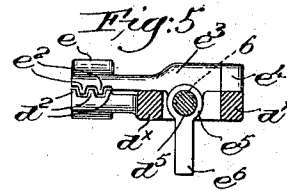
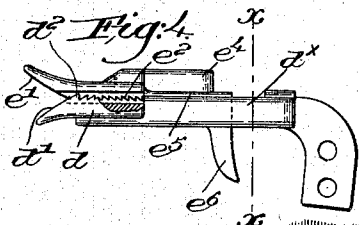
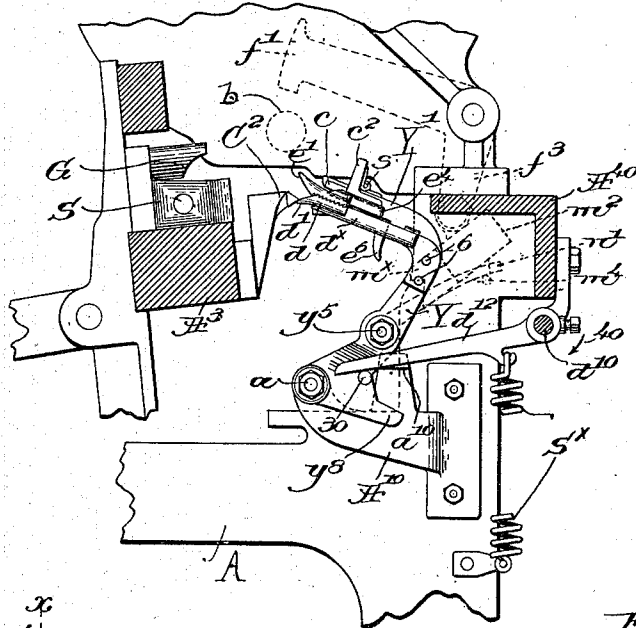


Fig. 2.

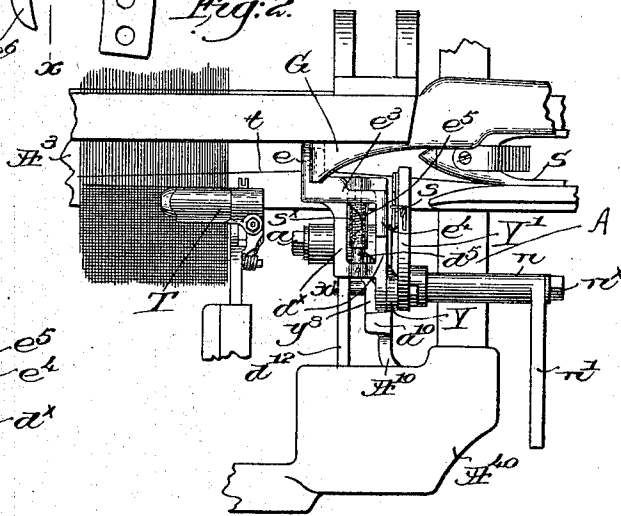
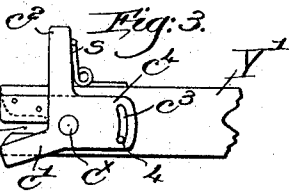
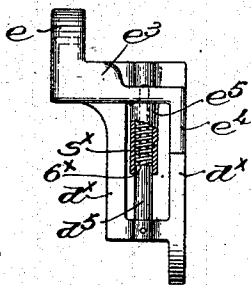


Fig. 6.



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# UNITED STATES PATENT OFFICE.

JAMES H. NORTHROP, OF TUSTIN, CALIFORNIA, ASSIGNOR TO DRAPER COMPANY, OF PORTLAND, MAINE, AND HOPEDALE, MASSACHUSETTS.

## THREAD-PARTING MECHANISM FOR LOOMS.

SPECIFICATION forming part of Letters Patent No. 681,069, dated August 20, 1901.

Application filed April 29, 1901. Serial No. 57,891. (No model.)

To all whom it may concern:

Be it known that I, JAMES H. NORTHROP, a citizen of the United States, and a resident of Tustin, in the county of Orange and State of California, have invented an Improvement in Thread - Parting Mechanism for 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 relates particularly to looms wherein the filling is automatically replenished when the shuttle-filling has failed or become exhausted to a predetermined extent, such a loom being shown in United States Patent No. 641,763, dated January 23, 1900; and my present invention has for its object novel means for disposing of the end of the old filling between the edge of the cloth and the shuttle when the new supply of filling is transferred, the piece of filling being severed adjacent the shuttle and the edge of the cloth, the severing at the latter point being effected usually by a thread-cutting temple; and a part of my invention includes a device to engage the piece of filling thus parted or severed and to move it out of the way, the two parts of the holder having a rubbing motion imparted thereto to gradually work the piece of filling out from between the members of the holder.

Figure 1 is a transverse sectional view of a portion of a loom, showing in side elevation and in normal position the thread parting and holding means embodying my present invention. Fig. 2 is a top or plan view of the novel mechanism shown in Fig. 1; but the parting and holding means are shown in position to part and engage the filling when the lay beats up. Fig. 3 is an enlarged side elevation of the cutting blades or jaws of the parter. Fig. 4 is a side elevation, also enlarged, of the filling-holder, one of the jaws thereof being broken out to more clearly show the barbs on the inner faces of the jaws. Fig. 5 is a transverse sectional detail on the line  $x-x$ , Fig. 4, looking toward the left. Fig. 6 is an enlarged detail in plan of the filling-holder, partly broken out.

The loom-frame A, breast-beam A<sup>40</sup>, lay A<sup>3</sup>, 50 the self-threading shuttle S, the filling-replenishing mechanism comprising a hopper (not shown) to hold the filling-supply  $b$ , the transferer  $f'$ , and the controlling rock-shaft  $d^{10}$  to determine the time of operation of the 55 filling-replenishing mechanism may be and are all substantially as in the patent referred to, and, as in said patent, the depending end  $f^3$  of the transferer is provided with a dog  $m^x$  to be engaged by a bunter C<sup>2</sup> on the lay 60 when a change of filling is to be effected.

A bracket A<sup>10</sup> on the inner face of the loom side, adjacent which the filling-replenishing mechanism is located, is provided with a lateral stud  $a$ , on which is fulcrumed an up- 65 turned and rearwardly-bent arm or support Y, a bent branch Y' constituting a shuttle-feeler to move across the shuttle-race at the entrance to the shuttle-box when the shuttle is properly boxed, the feeler Y'' being notched 70 at its extremity, as at 3, (see dotted lines, Fig. 3,) a fixed cutting-blade  $c$  being secured at the upper side of the notch, while a movable blade  $c'$  is fulcrumed at  $c^x$  on the feeler, said blade having an upturned finger  $c^2$ , normally acted upon by a spring  $s$  to maintain 75 the blades open, pivotal movement of the blade  $c'$  being limited by a pin 4 on the feeler, extended into a curved slot  $c^3$  in the extension  $c^4$  of the blade. The blades are closed 80 to part the filling by or through the engagement of the finger  $c^2$  with some portion of the lay, and herein I have shown the overhanging guard G as adapted to engage the finger 85 when the lay comes forward, provided the support Y has been moved into operative position. An open stand  $d^x$  is secured to the support Y by bolts 6, Fig. 1, said stand at its inner end being laterally offset and forwardly extended to form a jaw  $d$ , having a beveled inner 90 end  $d'$  and provided on its upper face with a series of holding barbs or teeth  $d^2$ , (see Figs. 4 and 5,) the points of the teeth being turned toward the front of the loom. A cooperating upper jaw  $e$ , having its rear or entrance end 95 beveled at  $e'$ , is provided on its under face with a series of retracting barbs or teeth  $e^2$ , the points of which are also turned toward

the front of the loom, and referring to Fig. 5 it will be noted that the series of teeth  $e^2$   $d^2$  alternate laterally, the teeth on one jaw entering the spaces between the series of teeth on the other jaw. The jaw  $e$  has a laterally-extended arm  $e^3$ , provided with an extension  $e^4$  in parallelism with the jaw, but extended oppositely therefrom, and the part  $e^3$  is also provided with a tubular extension  $e^5$ , having a downturned heel  $e^6$  for a purpose to be described.

The stand  $d^x$  is made substantially as an open grid, on which the transverse part  $e^3$  of the movable jaw and the extension  $e^4$  rest and slide, it being manifest that the jaw  $e$  is movable longitudinally of the jaw  $d$ . A shouldered guide-pin  $d^6$ , mounted in the stand, projects into the tubular extension  $e^5$  and is surrounded by a spring  $s^x$ , one end of the spring resting against a shoulder  $6^x$  of the guide-pin, and its other end bearing upon the lateral extension  $e^3$ , the normal expansion of the spring tending to maintain the jaws in the relative position shown, so that the flaring ends  $d' e'$  thereof present a wide mouth for the entrance of the filling when the holder is moved into operative position.

A stud  $y^5$  on the support Y extends laterally from the outer side thereof to support the long hub  $n$  of the finger  $n'$ , extended upward and forward to rest upon a lug  $m^4$  (see Fig. 1) on the arm  $m^2$ , supported by the depending part  $f^3$  of the transferrer, the finger being rigidly held in place on the stud  $y^5$  by a suitable nut  $n^x$ , Fig. 2.

The lower end of the support Y is provided with a toe  $y^8$  to engage a stop  $a^{10}$  on the bracket  $A^{10}$  when the support is swung into operative position.

The operating or controlling rock-shaft  $d^{10}$  has secured to it an arm  $d^{12}$ , which extends above and engages a pin 30 on the support Y, the arm  $d^{12}$  having attached to it one end of a strong spring  $S^x$ , the other end of which is suitably secured to the loom-frame, the spring normally holding the arm  $d^{12}$  and the support in the position shown in Fig. 1.

In Fig. 2 I have shown a thread-cutting temple T, adjacent the edge of the cloth, and such temple may be conveniently such as shown in United States Patent No. 585,465, dated June 29, 1895, to engage and sever the filling  $t$ , Fig. 2, when brought against the cutting mechanism of the temple by movement of the thread-holder, as will be described.

In the operation of the apparatus when the rock-shaft  $d^{10}$  is rocked in the direction of the arrow 40, Fig. 1, as it will be when a change of filling is to be effected, the arm  $d^{12}$  will be raised, and the support Y, with the devices carried thereby, will be swung rearwardly on the fulcrum  $a$  by or through the movement of the dog  $m^x$  into operative position in the path of the bunter  $C^2$ , and the transferrer  $f'$  will be operated in well-known manner to insert a fresh supply of filling in the shuttle and at the same time to eject the old or spent

filling. As such old supply is ejected, the filling  $t$  (see Fig. 2) extends from the edge of the cloth to the shuttle, and when the filling-holder and filling-parter are moved into operative position, as has been described, the filling will enter between the blades  $c c'$  of the parter and into the flaring mouth of the jaws  $d e$  and thence between the barbs or teeth on the opposite faces of the said jaws. As the lay completes its forward beat the guard G engages the upturned finger  $c^2$  and closes the blade  $c'$  upon its cooperating blade  $c$ , severing the filling adjacent the shuttle, and the lay-beam, as herein shown, will engage the heel  $e^6$  of the upper jaw and will move the latter rearwardly against its spring  $s^x$ . This movement of the upper jaw acts through the barbs  $e^2$  thereon to draw the thread toward the bases of the jaws, and as the support Y returns to operative position the filling end held in the holder will be moved into position to be severed by the thread-cutting temple T. The severed piece of filling remains in the holder, and at the next change of filling the operation hereinbefore described will be repeated and a second piece of filling will be held between the jaws of the holder; but when the jaw  $e$  is moved toward the front of the loom its barbs will act upon the first piece of filling to move it still farther toward the bases of the jaws, and finally the pieces of filling will be discharged from between the jaws out of the way of the cloth, absolutely preventing any chance of the severed pieces being drawn into the cloth during the weaving. The holding-barbs  $d^2$  on the lower jaw prevent the pieces of filling from moving toward the entrance of the jaws when the upper jaw moves into normal position by expansion of its spring.

It will be understood that the return of the controlling-shaft  $d^{10}$  to normal position after change of filling is effected in a well-known manner, and the support Y is through the action of the arm  $d^{12}$  returned to its normal position, as shown in Fig. 1, and the parting and holding means will only be operated when said means are in position to operate upon the filling between the shuttle and the edge of the cloth.

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

1. In a loom provided with filling-replenishing mechanism, means operative upon change of filling to part the filling adjacent the cloth and the shuttle, respectively, controlling means for the replenishing mechanism, and a holder for the cut piece of filling, movable by or through the operation of the controlling means into position to engage the filling between the parting means, said holder including two jaws having their opposed faces roughened, one of said jaws being movable longitudinally upon the other, and means to effect intermittent relative longitudinal movement of the jaws, to thereby work the

piece of filling between them toward the outer ends of the jaws.

2. In a loom provided with filling-replenishing mechanism, means operative upon change of filling to part the filling adjacent the cloth and the shuttle, respectively, two jaws bodily movable into position to engage the filling between said parting means, said jaws being provided with longitudinal series of barbs upon their opposed faces, the barbs on one jaw alternating with those upon the other jaws, one of the jaws being longitudinally movable upon the other, a spring to maintain it in normal position, and means to intermittingly move the jaw against the action of the spring when the jaws are moved into position to engage the filling.

3. In a loom provided with filling-replenishing mechanism, means operative upon change of filling to part the filling adjacent the cloth and the shuttle, respectively, two jaws bodily movable into position to engage the filling between said parting means, holding barbs on the inner face of one jaw, retracting-barbs on the opposed face of the other jaw, one of the jaws being movable longitudinally of the other jaw, to work a piece of filling therebetween toward the bases of the jaws, and means to intermittingly effect relative reciprocating movement of the jaws.

4. In a loom provided with filling-replenishing mechanism, the lay, a swinging support, a filling-parter and a filling-holder mounted thereon, means operative upon change of filling to swing the support and bring the parter and holder into position to engage the filling between the shuttle and the cloth, the parter including blades operated by or through the lay, the holder including two jaws one of which is movable longitudinally of the other, barbs on the opposed faces of the jaws, a heel on one jaw, to be engaged by the lay, to move the jaw in one direction, and a spring to re-

turn the jaw to normal position, the relative movement of the jaws acting to rub a piece of filling from the mouth of the jaws toward the bases thereof.

5. In apparatus of the class described, filling-parting means, and a holder to engage the filling adjacent said means, the holder comprising two jaws, one of which is longitudinally movable upon the other, alternating and longitudinally-arranged series of barbs upon the opposed faces of the jaws, and a spring to retain the jaws in normal position, the filling passing between the jaws when the latter are in operative position, relative longitudinal movement of the jaws operating to gradually rub a piece of filling therebetween toward the bases of the jaws.

6. In a loom provided with filling-replenishing mechanism, controlling means therefor, a shuttle adapted to carry a supply of filling, two thread-parters to act upon the filling of the filling-carrier to be ejected adjacent the cloth and the shuttle respectively, a filling-holder movable by or through the operation of said controlling means into position to engage the filling between the thread-parters, said holder comprising two jaws one of which is longitudinally movable relative to the other, and provided with a flaring mouth to receive the filling, a series of barbs on the opposed faces of the jaws, and means to effect relative longitudinal movement of the jaws to thereby gradually work a piece of filling held therebetween toward the bases of the jaws to be discharged therefrom.

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

JAMES H. NORTHROP.

Witnesses:

GEO. HUNTINGTON,  
J. G. QUICK.