

No. 677,096.

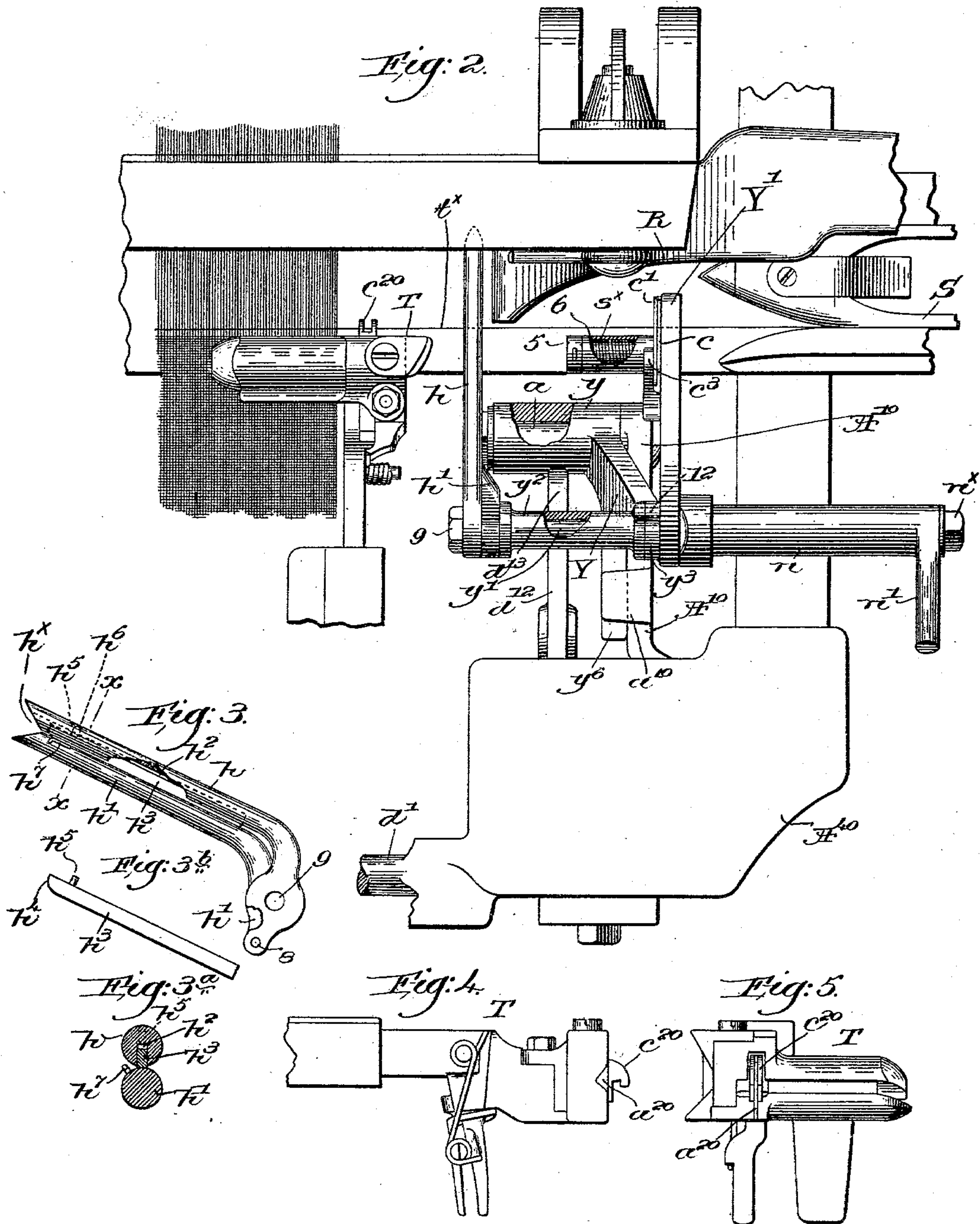
Patented June 25, 1901.

J. H. NORTHROP.
THREAD PARTING MECHANISM FOR LOOMS.

(Application filed Mar. 23, 1901.)

(No Model.)

2 Sheets—Sheet 2.



Witnesses
Edward H. Allen.
John J. M. Gargill

Inventor:
James H. Northrop,
by Lewis H. Gregory.
attys.

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. 677,096, dated June 25, 1901.

Application filed March 23, 1901. Serial No. 52,493. (No model.)

To all whom it may concern:

Be it known that I, JAMES H. NORTHROP, a citizen of the United States, residing at 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 more particularly to looms provided with automatic filling-replenishing mechanism to furnish a fresh supply of filling when the shuttle-filling has failed or become exhausted to a predetermined extent, a loom of such a type being shown in United States Patent No. 641,763, dated January 23, 1900. In said patent means are shown for parting the end of old filling between the edge of the cloth and the shuttle when the new supply of filling is transferred, a thread-cutting temple severing the thread adjacent the edge of the cloth while a second thread-parting device acts near the shuttle, the piece of filling thus severed being engaged and pulled out of the way by a thread-clamp, the latter acting also to bring the filling end into position to be severed by the thread-cutting temple.

My present invention has for its object the production of a novel thread-holder and also an improved thread-parter, the operating connections between the thread-holder and thread-parter and the filling-replenishing mechanism also presenting novel features of construction.

Figure 1 is a transverse sectional view of the loom, showing in side elevation the novel features of my present invention in normal position. Fig. 2 is a top or plan view of the novel mechanism shown in Fig. 1 partly broken out, but in position just before parting the thread near the shuttle. Fig. 3 is a detached view, in side elevation and partly broken out, of the thread-holder. Fig. 3^a is a cross-sectional view thereof on the line *xx*, Fig. 3. Fig. 3^b is a side view of the gravity-presser, and Figs. 4 and 5 are side and front elevations of the thread-cutting temple.

I have herein shown the filling-parting means as operative only when the shuttle is

properly boxed, the thread-parter being illustrated as mounted on a shuttle-feeler.

The loom-frame *A*, breast-beam *A*¹⁰, the lay *A*⁸, which has the bottom of one of its shuttle-boxes cut away to permit the passage therethrough of an ejected filling-supply from the self-threading shuttle *S*, the filling-replenishing mechanism, comprising a hopper to hold the filling-supplies *b*, (see dotted lines, Fig. 1,) the transferrer *f*¹, fulcrumed at *f* and having a depending end *f*³, and the shaft *d*¹, adapted to be rotated when the filling-replenishing mechanism is to be operated, may be and are all substantially as shown in the United States patent referred to. As in said patent, the end *f*³ of the transferrer carries a spring-controlled rocker-stud *m*, having an arm *m*² and a lateral lug *m*⁴, the arm being provided with a notched dog *m*^x, to be engaged by a bunter *C*² on the lay when a change of filling is to be effected. A bracket *A*¹⁹ on the loom side has longitudinally secured to it a lateral stud *a*, on which is rotatably mounted the sleeve-like hub *y* of an upturned and rearwardly-bent arm or support *Y*, the bent upper end *Y*¹ thereof constituting a shuttle-feeler to move across the shuttle-race at the entrance to the shuttle-box, if the shuttle is properly boxed, in well-known manner, and the said support *Y* is also provided with a rigid rigid laterally-extended stud *y*¹, on which is mounted the thread-holder, to be described, a sleeve *y*² surrounding the stud between a boss *y*³ on the support *Y* and the thread-holder to position the latter relatively to the support. At its extremity the feeler *Y*¹ is notched, as at 3, (see dotted lines, Fig. 1,) and a fixed cutting-blade *c* is secured on the feeler at the upper side of the notch, while the second coöperating cutting-blade *c*¹ is pivotally mounted on the feeler at the lower side of the notch, the blade *c*¹ being fulcrumed on a stud 4 and normally held open by a spring *s*^x, (see Fig. 2,) surrounding the stud and attached at one end to a collar 5, fast on the latter, the other end of the spring acting upon the blade *c*¹ to normally maintain it open in the position shown in Fig. 1, the spring being inclosed by a sleeve-like shell 6. The rear end of the blade is provided with a segmental slot *c*³, through which is fastened a pin 7 on the feeler to limit

the swinging movement of the blade, the latter being closed by engagement of an upturned finger c^3 , forming a part thereof, with any suitable actuating device on the lay, herein shown as the top or guard R of the shuttle-box.

The thread-holder comprises two relatively fixed and elongated jaws $h h'$, Figs. 3 and 3^a, superposed one above the other and having their downturned ends connected by a pin 8, the stud y' passing through a hole 9 at the base of the jaws, the latter being held tightly against the outer end of the sleeve y^2 by a suitable nut 9. The outer ends of the jaws are beveled to present a notched entrance h^x , and the said jaws are shown in Fig. 3^a as cylindrical in cross-section and not in contact with each other. The upper jaw is longitudinally slotted along its under side at h^2 to receive loosely therein the gravity-presser h^3 , shown as an elongated bar of metal, beveled or rounded at h^4 at its end nearest the entrance to the jaws and normally resting by its weight on the lower jaw. An upturned lug h^5 on the presser loosely enters a hole h^6 in the upper jaw to prevent longitudinal displacement of the presser. A detent h^7 , shown as a rearwardly-turned open hook, is secured to the lower jaw near its outer end for a purpose to be described. A stud y^5 on the support Y is extended laterally from the outer side thereof to receive thereupon the long hub n of a finger n' , which is extended upward and forward to rest upon the lug m^4 , hereinbefore referred to, a nut n^x , screwed upon the end of the stud y^5 , tightly holding the finger in place on the stud and immovable relatively to the arm Y.

Referring to Fig. 2, a pin 12 is shown in dotted lines as extended through the enlarged end of the sleeve y^2 into the boss y^3 to prevent any accidental rotation of the sleeve, and, furthermore, the pin 8, which holds the jaws of the thread-holder from relative movement, is also preferably fastened into the adjacent end of the sleeve y^2 . An offset foot y^6 at the lower end of the support Y is adapted to engage a stop a^{10} on the bracket A^{10} when the support is swung into position to enable the thread-holder and thread-parter to operate, as will be described.

I have herein shown the operating or controlling rock-shaft d' as having fast upon it an arm d^{12} , which at its inner end forms a jaw-like portion d^{13} , and a relatively movable jaw d^{14} is fulcrumed at d^{15} on the said arm d^{12} , the movable jaw having an extension d^{16} beyond its fulcrum, said extension being connected to one end of a strong spring S^x , which is at its lower end secured to a stud on the loom-frame, the normal tendency of the spring being to hold the jaw d^{14} closed against the arm d^{12} in the position shown in Fig. 1, and also acting through the arm d^{12} to maintain the rock-shaft d^8 in its normal position, the arm d^{12} and jaw d^{14} having opposed stop-faces 20 22, respectively. A pin 30 on the support

Y, eccentric to its fulcrum a , is extended between the jaw portion d^{13} and jaw d^{14} , so that the spring S^x is operative to maintain the shuttle-feeler, the support Y, and the various parts carried thereby in the position shown in Fig. 1.

A thread-cutting temple 6, forming the subject-matter of United States Patent No. 585,465, dated June 29, 1895, is herein shown, the movable member c^{20} of the temple cutter coöperating with a fixed member or blade a^{20} , the said movable member being hooked and operating as in the patent referred to when the filling end is brought against the fixed blade by the movement of the thread-holder, to be described, after which the movable member c^{20} is operated at the forward beat of the lay to draw the filling against the blade a^{20} and sever it. The temple as a whole is indicated at T and is mounted in usual manner adjacent the selvage of the cloth.

Referring to Fig. 2, it will be noted that the thread-holder is located between the temple and the thread-parter, comprising the blade $c c'$, and that the latter is when in operative position adjacent the end of the shuttle in the shuttle-box.

In the operation of the apparatus when the rock-shaft d' is rocked in the direction of the arrow 50, Fig. 1, as it will be when a change of filling is to be effected, the arm d^{12} will be raised against the action of the spring S^x , and the support Y and parts carried thereby will be swung rearwardly on the fulcrum a to bring the shuttle-feeler into a position to feel the shuttle as the lay beats up, and at the same time the movement of the finger n' will permit the spring-controlled rocker-stud m to rotate sufficiently to move the dog M^x into position to be engaged by the bunter C^2 as the lay completes its forward beat, and the transferer f' will be operated in well-known manner to provide a sufficient supply of filling and to eject the old or spent supply from the shuttle. At the time such old supply is ejected the filling end t^x (see Fig. 2) will extend from the edge of the cloth to the shuttle, and when the thread-holder and thread-parter are moved into operative position, as has been described, this filling end will enter between the open jaws $c c'$ of the parter and it will also pass into the opening between the jaws $h h'$ of the thread-holder and underneath the gravity-presser h^3 , the weight of the latter holding the thread between it and the top of the lower jaw h' . As the forward movement of the lay is completed the top or guard R of the shuttle-box will engage the upturned extension c^3 and close the blade c' to sever the thread adjacent the shuttle, it being remembered that the thread is at such time held in the thread-holder. The change of filling having been effected, the lay moves back and the support Y resumes its normal position, (shown in Fig. 1,) brought back thereto by the action of the spring S^x , and such movement of the thread-holder

draws the filling end t^x into position to be engaged by the hooking member c^{20} of the temple cutter and at the next forward beat of the lay the temple cutter will be actuated to sever the filling end. The piece of filling thus cut out between the cloth and the shuttle is retained in the holder by the weight of the gravity-presser h^3 , and as the loom continues to run the constant jarring or vibration of the presser as it is loosely held will gradually work the piece of thread downward toward the lower end of the presser, and when the thread finally passes from between the latter and the lower jaw it will drop out and fall to the floor. There is thus no opportunity for the severed piece to become entangled in the cloth or in the fresh filling-thread after the change of filling has been effected. Should the shuttle be improperly boxed, the feeler Y cannot move far enough across the race of the lay to bring the thread-partner and thread-holder into operative position, and at such time the jaw d^{14} may give sufficiently, if necessary, to prevent any smashing of the parts, the connection between the arm d^{13} and the support Y being thus of a yielding character.

By the construction shown I obviate the use of a separate spring to swing the shuttle-feeler into operative position.

When the filling end passes into the holder between the lower jaw and the presser, it passes beyond the hook-like detent h^7 and the latter prevents any accidental withdrawal of the thread from the holder as the latter moves back into central position.

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

1. In a loom provided with mechanism for automatically replenishing the filling, means operative upon change of filling to part the thread of the old supply of filling, adjacent the cloth and the shuttle, respectively, controlling means for the replenishing mechanism, and a thread-holder movable by or through the operation of such means to engage the thread between the points at which it is to be parted, the holder including a gravity-controlled presser and a support on which it is loosely mounted, jarring of the presser in the operation of the loom eventually releasing the parted piece of thread.

2. In a loom provided with mechanism for automatically replenishing the filling, means operative upon change of filling to part the thread of the old supply of filling adjacent the cloth and the shuttle, respectively, controlling means for the replenishing mechanism, and a thread-holder movable by or through the operation of such means to engage the thread between the points at which it is to be parted, said holder including an elongated support, a gravity-presser loosely mounted thereon, and means to limit the movements of the presser, the weight of the latter retaining the parted piece of thread

in the holder until released by the jarring of the presser.

3. In a loom provided with mechanism for automatically replenishing the filling, means operative upon change of filling to part the thread of the old supply of filling adjacent the cloth and the shuttle, respectively, controlling means for the replenishing mechanism, and a thread-holder movable by or through the operation of such means to engage the thread between the points at which it is to be parted, the holder comprising two relatively fixed and slightly-separated jaws one above the other, and a gravity-presser resting on the lower jaw and loosely held in place by the upper jaw, the thread passing between the lower jaw and the presser and being held by the weight of the latter until released by the jarring thereof.

4. In apparatus of the class described, thread-parting means, and a holder to engage the thread before the operation of said means, said holder comprising two superposed, slightly-separated, and relatively fixed jaws having flared ends, and a gravity-presser shorter than the jaws, resting upon the lower one and being limited in its movement by the upper one, the thread passing between the lower jaw and the presser and held by the weight of the latter, the jarring of the presser acting to finally work the parted piece of thread toward the base of the jaws and beyond the adjacent end of the presser.

5. In apparatus of the class described, thread-parting means, and a holder to engage the thread before the operation of said means, said holder comprising two superposed, slightly-separated and relatively fixed jaws having flared ends, the upper jaw having a longitudinal recess in its under face, and a gravity-presser normally resting on the lower jaw and extended loosely into the said recess to be thereby maintained in operative position, the thread to be held passing between the lower jaw and the presser and being held by the weight of the latter.

6. In apparatus of the class described, thread-parting means, and a holder to engage the thread before the operation of said means, said holder comprising two superposed, slightly-separated and relatively fixed jaws having flared ends, a gravity-presser between the jaws, resting on the lower jaw and loosely retained in place by the upper one, the thread to be held and parted passing between the lower jaw and the presser, and a detent on one of the jaws to prevent accidental withdrawal of the thread after it has entered between the jaws.

7. In a loom, provided with mechanism for automatically replenishing the filling, independently-operating devices to part the thread of the old supply of filling adjacent the cloth and the shuttle, respectively, controlling means for the replenishing mechanism, and a thread-holder bodily movable with one of the parting devices, through the operation of

the controlling means, into position to engage the thread between the parting devices, the holder including a presser to act by gravity upon and hold the thread after it has been parted adjacent the shuttle, return of the holder to normal position presenting the held end of thread to the action of the other parting device.

8. In a loom provided with filling-supplying mechanism, controlling means therefor, a shuttle adapted to carry a supply of filling, two thread-parters to act upon the thread of the filling-carrier to be ejected adjacent the cloth and the shuttle, respectively, and a thread-holder movable by or through the operation of said controlling means into position to engage the thread between the thread-parters and maintain it in position to be parted, the thread-holder comprising a gravity-actuated presser and a support upon which it is loosely mounted, the presser resting on the parted piece of thread and retaining it in the holder until released by the vibrations of the presser.

9. In a loom provided with filling-replenishing mechanism, controlling means therefor, a thread-cutting temple at the same side of the loom, a shuttle adapted to carry a supply of filling, a thread-holder and a thread-parter movable upon change of filling into position to act upon the thread of the filling-carrier to be ejected, said holder including a gravity-presser to engage the thread, and an actuator on the lay to positively actuate the thread-parter, the return of the thread-holder to normal position bringing the filling end into position to be severed by the temple cutter.

10. In a loom provided with filling-replenishing mechanism, a thread-cutting temple, a swinging support governed by said mechanism, a thread-holder and normally open parting-blades mounted upon the support, said holder including a gravity-presser to engage and hold the thread, a device on the lay to close the blades as they are bodily moved by the support into operative position, such

movement of the support being effected upon actuation of the filling-supplying mechanism, and means to open the blades after severance of the thread, the return of the thread-holder to normal position bringing the filling end into position to be severed by the temple cutter.

11. In a loom provided with filling-replenishing mechanism, controlling means therefor, including a rock-shaft, a swinging support, a thread-holder and a thread-parter mounted thereupon, a lateral stud on the support, an arm fast on the controlling rock-shaft, and having a jaw-like end, a cooperating jaw pivotally mounted on said arm, said parts embracing the stud, and a spring to maintain the jaws normally closed, and also to resist movement of the thread-parter and thread-holder into position to act upon the thread, rocking of the shaft, when a change of filling is to be effected, overcoming the action of the said spring and moving the support to spring the holder and parter into operative position.

12. In a loom provided with filling-replenishing mechanism, a shuttle-feeler, normally open thread-parting blades mounted thereupon, a thread-holder mounted to move with the shuttle-feeler, and including a gravity-presser to engage and hold the thread, means to move the shuttle-feeler into operative position, prior to a change of filling, to thereby cause the thread of the filling-carrier to be ejected to enter and be held in the holder by the presser and to move the thread-parter into operative position, the lay and a bunter thereon to close the parting-blades and sever the thread as the lay beats up.

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.