

No. 677,097.

Patented June 25, 1901.

J. H. NORTHROP.

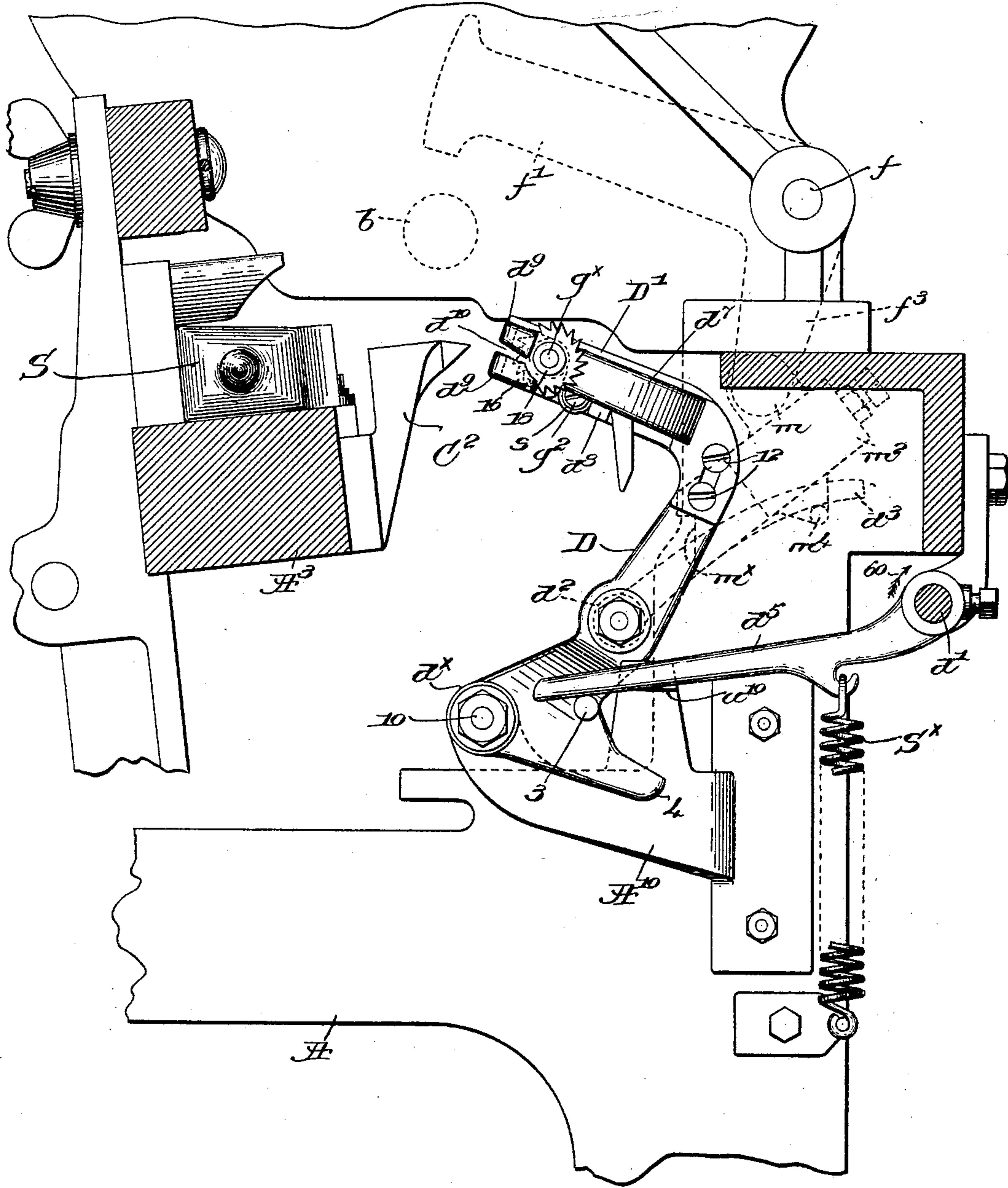
THREAD PARTING MECHANISM FOR LOOMS.

(No Model.)

(Application filed Mar. 23, 1901.)

2 Sheets—Sheet 1.

Fig. 1.



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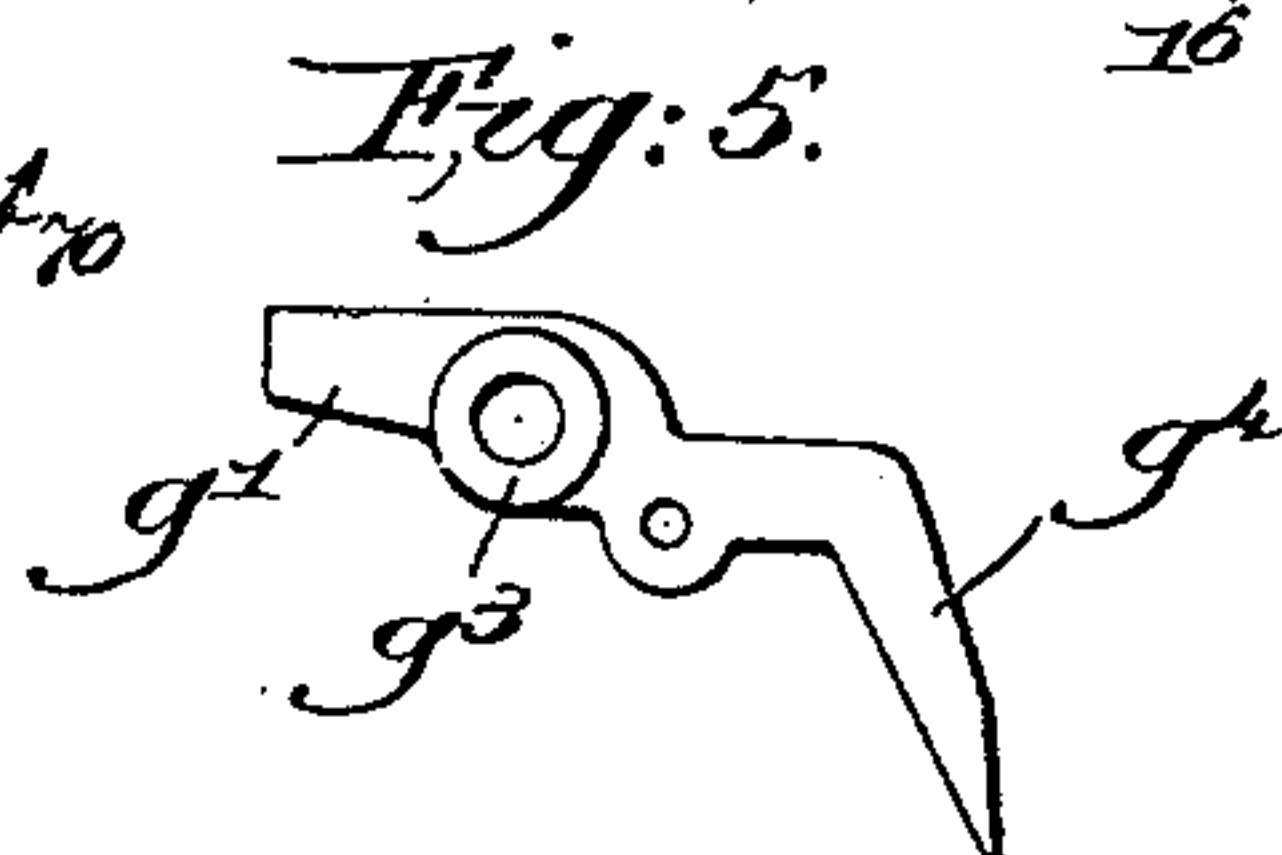
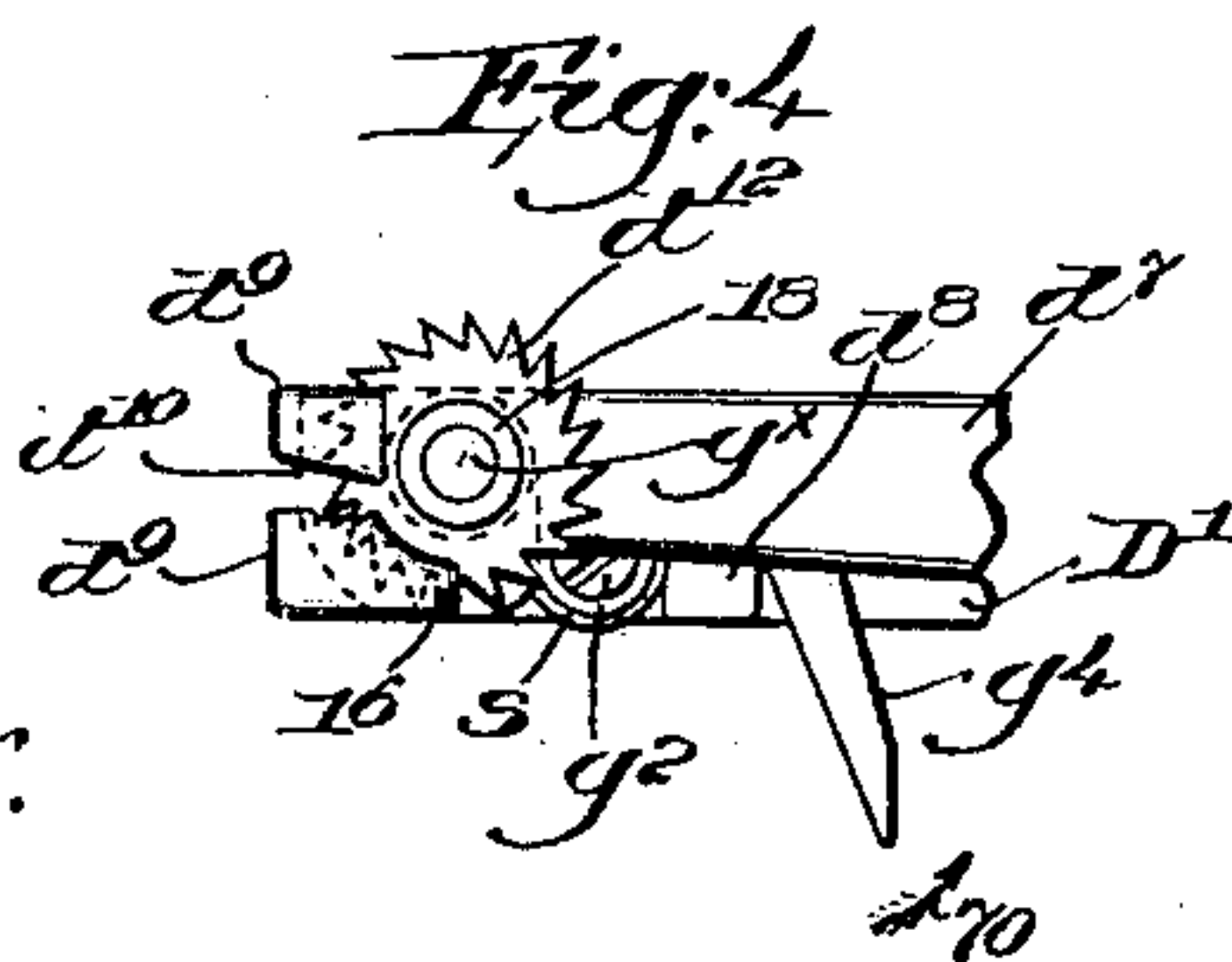
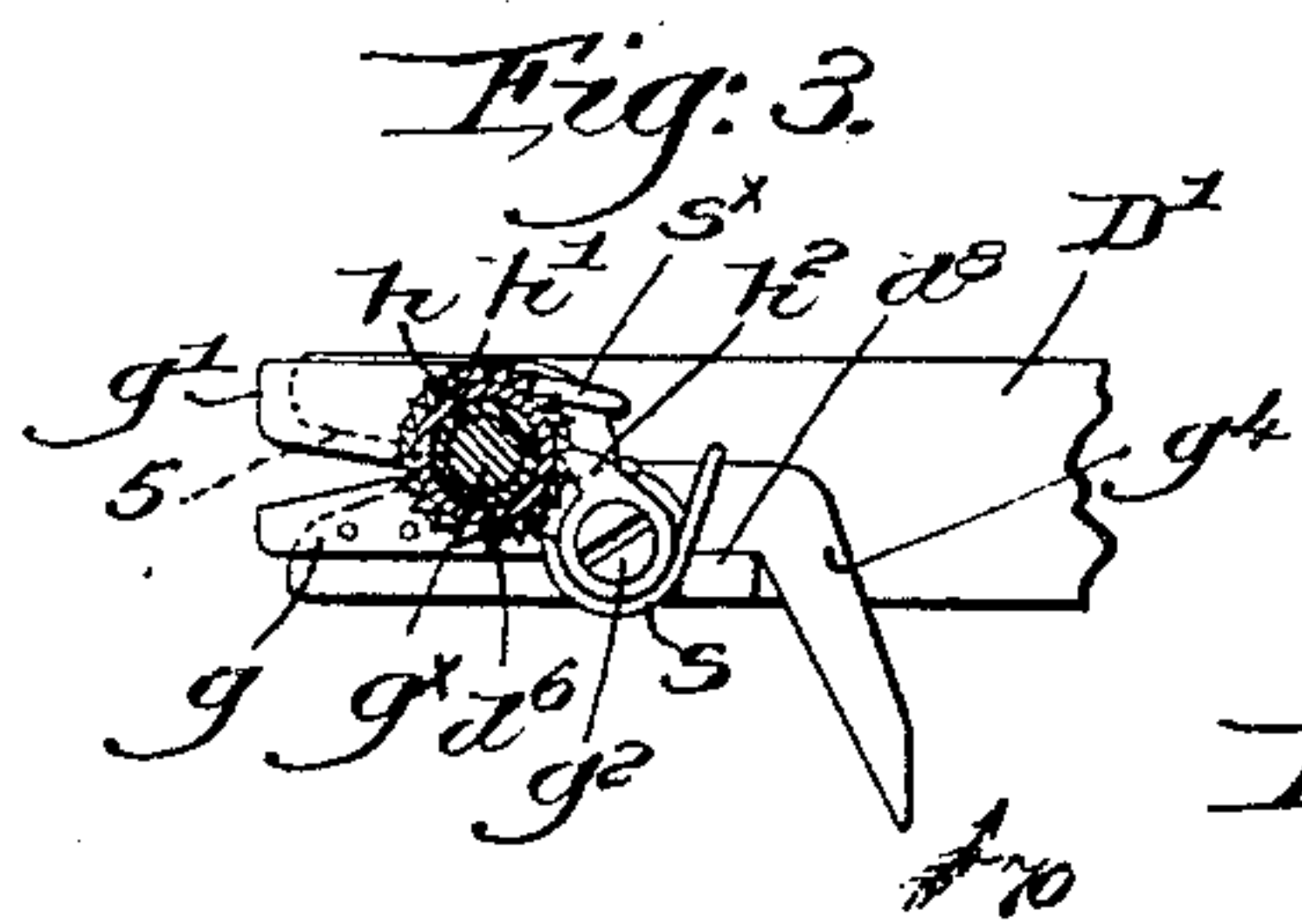
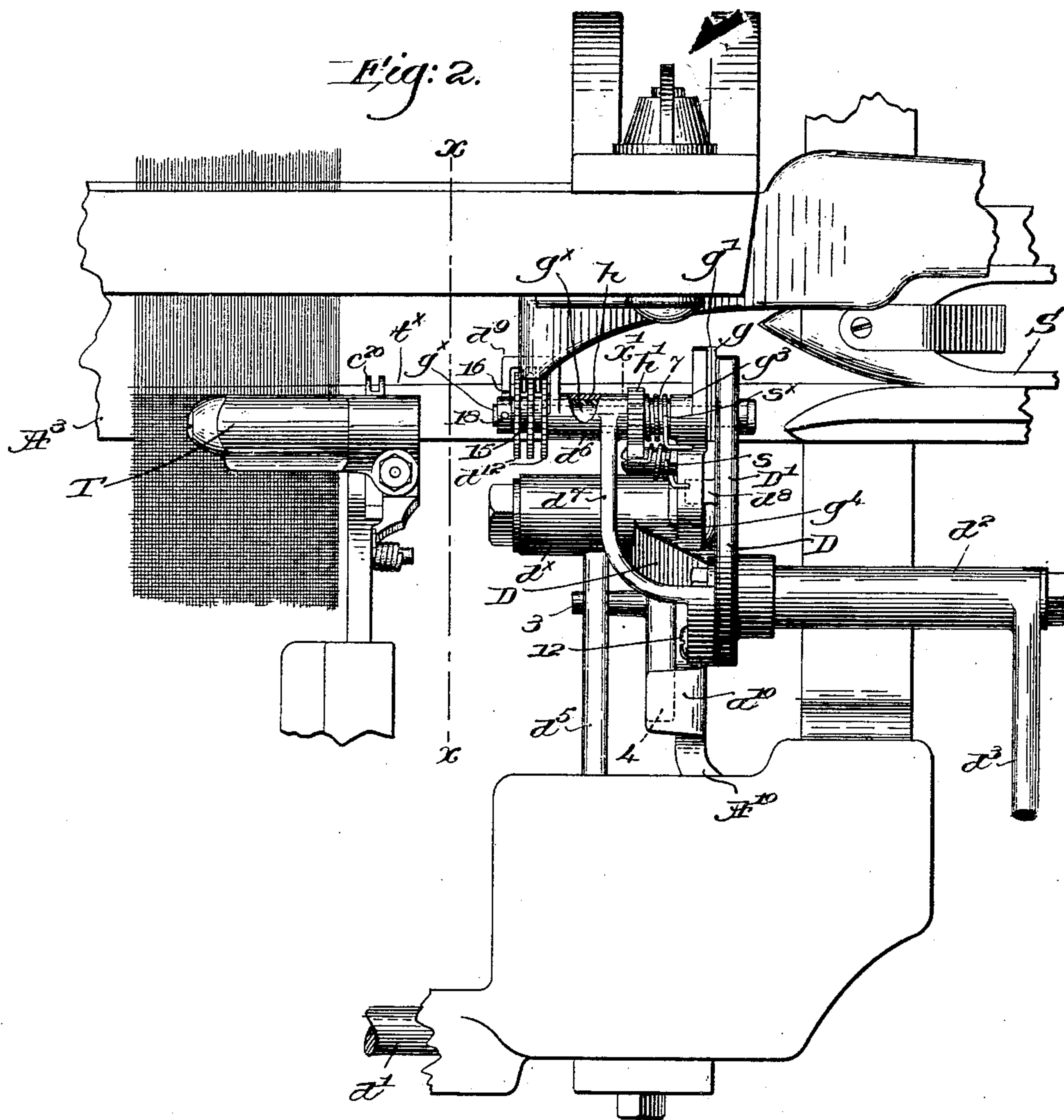
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THREAD PARTING MECHANISM FOR LOOMS.

(No Model.)

(Application filed Mar. 23, 1901.)

2 Sheets—Sheet 2.



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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. 677,097, dated June 25, 1901.

Application filed March 23, 1901. Serial No. 52,494. (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.

My present invention relates to thread-parting mechanism particularly adapted for looms provided with automatic filling-replenishing mechanism, the thread-parting mechanism operating upon a change in filling to sever the spent filling end adjacent the cloth and the shuttle, means being provided for catching the piece of thread thus severed and withdrawing it from the vicinity of the cloth making and severing devices.

Figure 1 is a transverse sectional view of a portion of a loom on the line xx , Fig. 2, with one embodiment of my present invention applied thereto and shown in normal inoperative position. Fig. 2 is a top or plan view of the mechanism shown in Fig. 1, the thread-parting and thread-catching means being shown in position to operate as the lay completes its forward beat. Fig. 3 is a sectional detail of the thread-catcher on the line x' , Fig. 2. Fig. 4 is a detail in side elevation of the thread-catcher shown in position to catch the thread, and Fig. 5 is a side elevation of the movable blade of the thread-parter.

In the present embodiment of my invention the thread parter and catching devices are arranged to operate only when the shuttle is properly boxed, and the operative positioning of such devices is controlled by or through a shuttle-feeler which detects improper positioning of the shuttle in the box.

The filling-replenishing mechanism may be of any suitable character—such, for instance, as is shown in United States Patent No. 641,763, dated January 23, 1900—and herein I have only shown the transferrer f' , fulcrumed on a stud f and having a depending end f^3 , the transferrer operating to insert a fresh supply of filling, as b , (see dotted lines, Fig. 1,) into a self-threading shuttle S^5 when replenishing of filling is to be effected, and

the lay A^8 , having a bunter C^2 , the main frame A , and the controlling or operating rock-shaft d' to effect the operation of the filling-replenishing mechanism may be and are all as in said United States patent. As in said patent, a spring-controlled rocker-stud m is mounted on the depending end f^3 of the transferrer, said stud having an arm m^2 , provided with a lateral lug m^4 and an attached notched dog m^x , to be engaged by the bunter C^2 when the filling-replenishing mechanism is to be operated.

A bracket A^{10} on the loom-frame is provided with a lateral stud 10, on which is mounted an elongated hub d^x of an upturned swinging arm D , rearwardly bent at its upper end at D' to constitute a shuttle-feeler, and the said arm or support D has attached to it the hub d^2 of a finger d^3 , which extends over the lug m^4 , hereinbefore referred to, to maintain the dog m^x in inoperative position when the arm D is in the position shown in Fig. 1, such position being maintained by engagement of a rocker-arm d^5 , fast on the controlling rock-shaft d' , with a lug or projection 3 on the arm D , a stiff spring S^x , secured at its lower end to the loom-frame and at its upper end to the rocker-arm, maintaining the latter and the rock-shaft d' in normal position.

An overturned stop a^{10} on the bracket A^{10} by its engagement with an extended foot 4 of the arm D limits the movement of the latter toward the back of the loom.

The feeler is notched at its extremity, as at 5, Fig. 3, and at the lower side of the notch is secured a fixed cutting-blade g to cooperate with a blade g' , the latter being fulcrumed on a stud g^x , rigidly secured to the shuttle-feeler at the back of the notch 5 and extended laterally therefrom. The stud g^x extends loosely through an elongated hub d^6 , secured to or forming part of an arm d^7 , shown as bolted to the swinging arm D at 12, and a sleeve h is interposed between the stud and the hub d^6 , extending beyond the end of the latter. At its inner end the sleeve has secured thereto a ratchet-wheel h' , with which cooperates a pawl h^2 , pivotally mounted on a pin g^2 , carried by the movable blade g' , a spring s , bearing at one end against the pawl and at its other end embracing an extension

thereon, serving to maintain the pawl in engagement with the ratchet.

Between the ratchet and the blade-hub g^3 a short collar 7 is interposed to maintain the parts laterally separated, the collar being non-rotatably held on the stud g^x and having secured to it one end of a spring s^x , the other end of the spring engaging the pivoted blade g' beyond its fulcrum to normally maintain it in the position shown in Fig. 3, with a portion of a downturned tail g^4 , secured to or forming part of the blade, in engagement with a stop d^8 on the shuttle-feeler, the said tail being adapted to be struck by the lay or any suitable part thereof as the lay completes its forward beat when the arm D has been moved into position to enable the feeler to feel for the shuttle.

The blades $g g'$ constitute a thread-parter movable with the shuttle-feeler, as herein shown, and adapted to part the filling adjacent the shuttle when the latter is in the shuttle-box, as shown in Fig. 2.

The hub d^6 , hereinbefore referred to, is provided at its inner end with an overhanging open grid d^9 , having a throat d^{10} to receive the filling end t^x , the grid forming one member of a thread-catcher, the other member consisting of one or more rotatable and toothed disks d^{12} , three being shown in Fig. 2, secured to the end of the sleeve h , projecting beyond the left-hand end of the hub d^6 , viewing Fig. 2, and slightly separated from each other in any suitable manner, as by washers 15, the peripheries of the disks extending into the open throat d^{10} , as clearly shown in Figs. 1 and 4. The teeth of the disks are preferably made somewhat after the manner of a circular saw, the points of the teeth extending forward in the direction of rotation of the disks to engage the filling-thread when in the throat of the grid and to draw the thread out and through the throat. The portion of the grid at the bottom of the throat is extended below the stud g^x , as at 16, Fig. 4, to form a guide for the end of the thread. A collar 18, pinned to the outer end of the stud, prevents longitudinal movement of the sleeve h and its attached parts.

In the operation of the mechanism when the filling is to be replenished the rock-shaft d' is turned in the direction of the arrow 60, Fig. 1, thus elevating the rocker-arm d^5 and permitting the spring-controlled stud m to swing the arm m^2 and dog m^x up into position to be engaged by the bunter C^2 as the lay beats up, and at the same time the arm D will be moved into operative position, the feeler moving across the shuttle-race if the shuttle is properly boxed and the filling end t extending at such time between the edge of the cloth, and the boxed shuttle will enter between the blades $g g'$ of the thread-parter, and it will also enter the throat d^{10} of the thread-catcher. As the lay completes its forward movement the tail g^4 will be engaged and swung in the direction of the arrow 70,

Figs. 3 and 4, to close the blades and at the same time to lift the pawl h^2 , as the latter is mounted between the blade-fulcrum and the tail g^4 , such lifting of the pawl acting through the ratchet h' to partly rotate the disks d^{12} . The teeth of the latter will engage the filling end then supported by the grid and resting in its open throat, and the thread will be caught and held, the thread-parter acting to sever the thread as or just before it is caught, the operations being practically simultaneous. The filling end having thus been severed adjacent the shuttle and being held by the thread-catcher, the arm D will return to normal position and the filling end will be drawn forward into the field of action of the cutter of a thread-cutting temple, (shown only in Fig. 2,) the temple herein illustrated forming the subject-matter of United States Patent No. 585,465, dated June 29, 1897, and it is only necessary to state herein that the movable member c^{20} of the temple cutter co-operates with a fixed member or blade, the movable member being hooked and operating as in the patent referred to. The filling end having been brought into position to be acted upon by the temple cutter, the movable cutter c^{20} of the latter is operated at the next forward beat of the lay to sever the filling end t^x at the temple and closely adjacent the edge of the cloth, the temple being indicated as a whole by T in Fig. 2. The thread can draw through the thread-catcher as the latter is returned to normal position sufficiently to compensate for the change in the position of parts, and after the piece of thread is thus cut off or severed it will be held in the thread-catcher out of the way of the temple or usual cloth-making devices, and jarring of the loom will eventually shake the piece down, or the weaver can remove the pieces from time to time as is necessary. The spring s^x returns the blade member g' to normal position with the blades of the thread-parter open, when the arm D resumes its normal 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 filling-replenishing mechanism, a temple thread-cutter, a thread-catcher movable into operative position to engage the end of spent filling prior to actuation of said replenishing mechanism, the thread-catcher comprising an open thread-support, and a co-operating rotatable member having a toothed periphery to engage the thread, and means to rotate the said member when in operative position, return of the thread-catcher to normal position carrying the caught filling end to the temple thread-cutter.

2. In a loom provided with filling-replenishing mechanism, a temple thread-cutter, a rocking support, controlling means therefor, a thread-catcher mounted on said support and movable into position to engage the fill-

ing end between the cloth and the shuttle, said thread-catcher comprising a grid to support the thread, and a cooperating, rotatable member having a toothed periphery to engage the thread and draw it through the grid, and means to rotate the said member when the thread is supported by the grid, whereby the thread is caught and moved into the field of action of the temple thread-cutter upon return of the thread-catcher to normal position.

3. In a loom provided with filling-replenishing mechanism, a temple thread-cutter, a shuttle-feeler, a thread-parter and a thread-catcher, mounted to be moved bodily with the feeler, means to govern the movement of the latter, the thread-catcher comprising a jaw-like grid to receive the filling end between the cloth and the shuttle, a cooperating rotatable member having a toothed periphery extended into the throat of the grid, and means to actuate the thread-parter, and rotate the toothed member of the thread-catcher when the filling end is in the grid of the latter.

4. In a loom provided with filling-replenishing mechanism, a temple thread-cutter, a shuttle-feeler, a thread-parter and a thread-catcher, mounted to be moved bodily with the feeler, means to govern the movement of the latter, the thread-catcher comprising a jaw-like grid to receive the filling end between the cloth and the shuttle, a cooperating rotatable member having a toothed periphery extended into the throat of the grid, the thread-parter comprising relatively movable blades, means to close the blades to sever the thread when the shuttle is properly boxed, and connections between the thread-parter and thread-catcher, to actuate the latter by or through the operation of the former.

5. In thread-parting mechanism for looms, a swinging support, means to move it, a

toothed disk rotatably mounted thereon, a grid having a thread-receiving throat into which the periphery of the disk extends, and means to rotate the disk intermittingly to catch a filling end in the throat of the grid and draw it therethrough.

6. In thread-parting mechanism for looms, a swinging support, means to move it, a rotatable shaft mounted thereon and provided with a plurality of toothed disks and a ratchet, a grid having a thread-receiving throat into which the peripheries of the disks extend, a pawl cooperating with the ratchet, and means to intermittingly actuate the pawl to thereby effect step-by-step rotation of the disks.

7. In a loom provided with filling-supplying mechanism, and means to control the time of its operation, the lay, an actuator thereon, a temple thread-cutter, a thread-catcher and a thread-parter, a support on which they are mounted, movement of said support to bring the parter and catcher into operative position being governed by the said controlling means, the parter comprising normally open blades, to sever the filling end adjacent the shuttle, the catcher including a grid and a cooperating rotatable toothed disk and means operated by closing of the parter-blades to rotate the disk, the actuator on the lay closing the blades on the forward beat of the lay, the filling end held by the thread-catcher between the parter and the cloth being brought into position to be severed by the temple thread-cutter when the thread-catcher resumes its normal position.

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.