

No. 701,938.

Patented June 10, 1902.

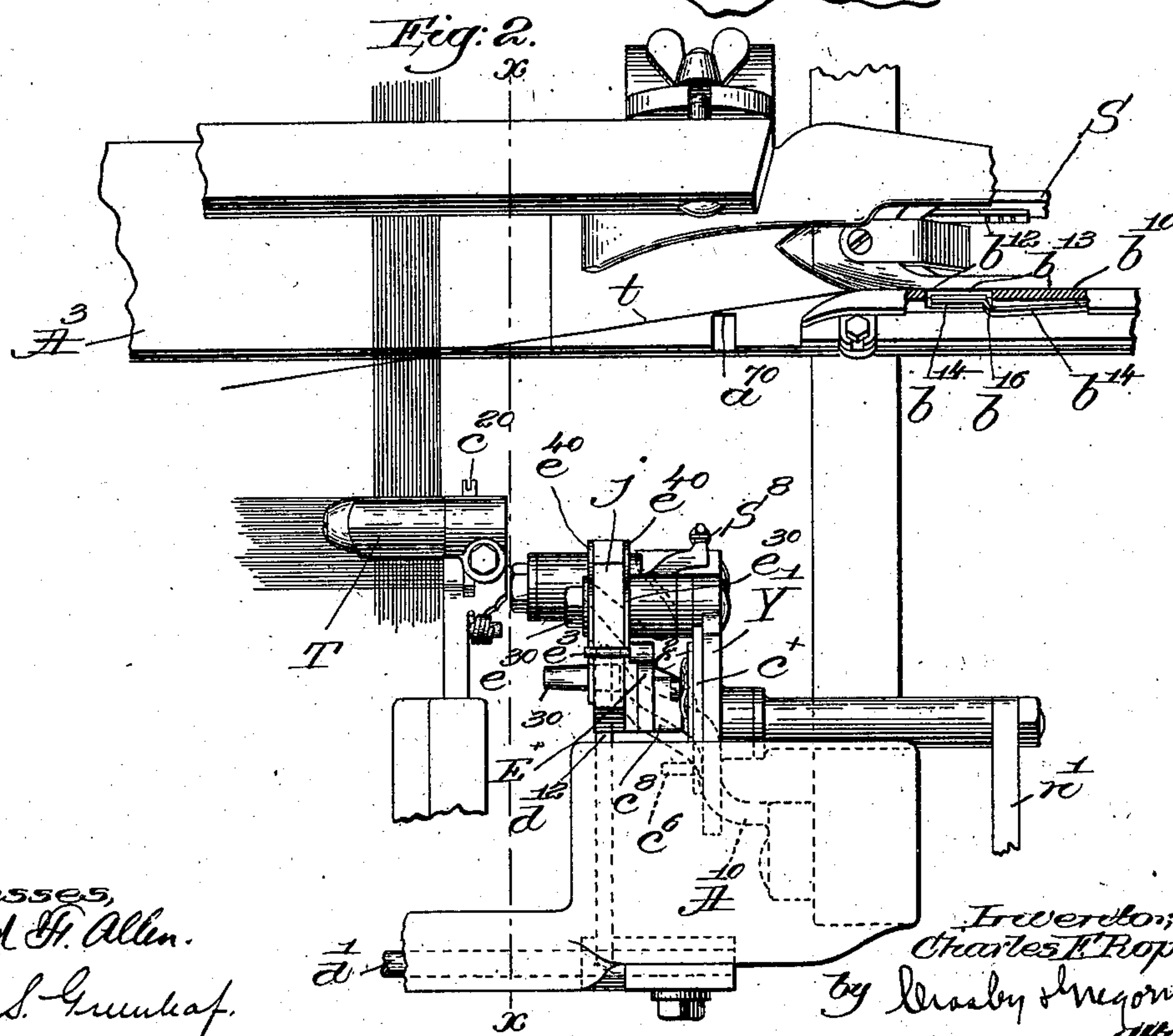
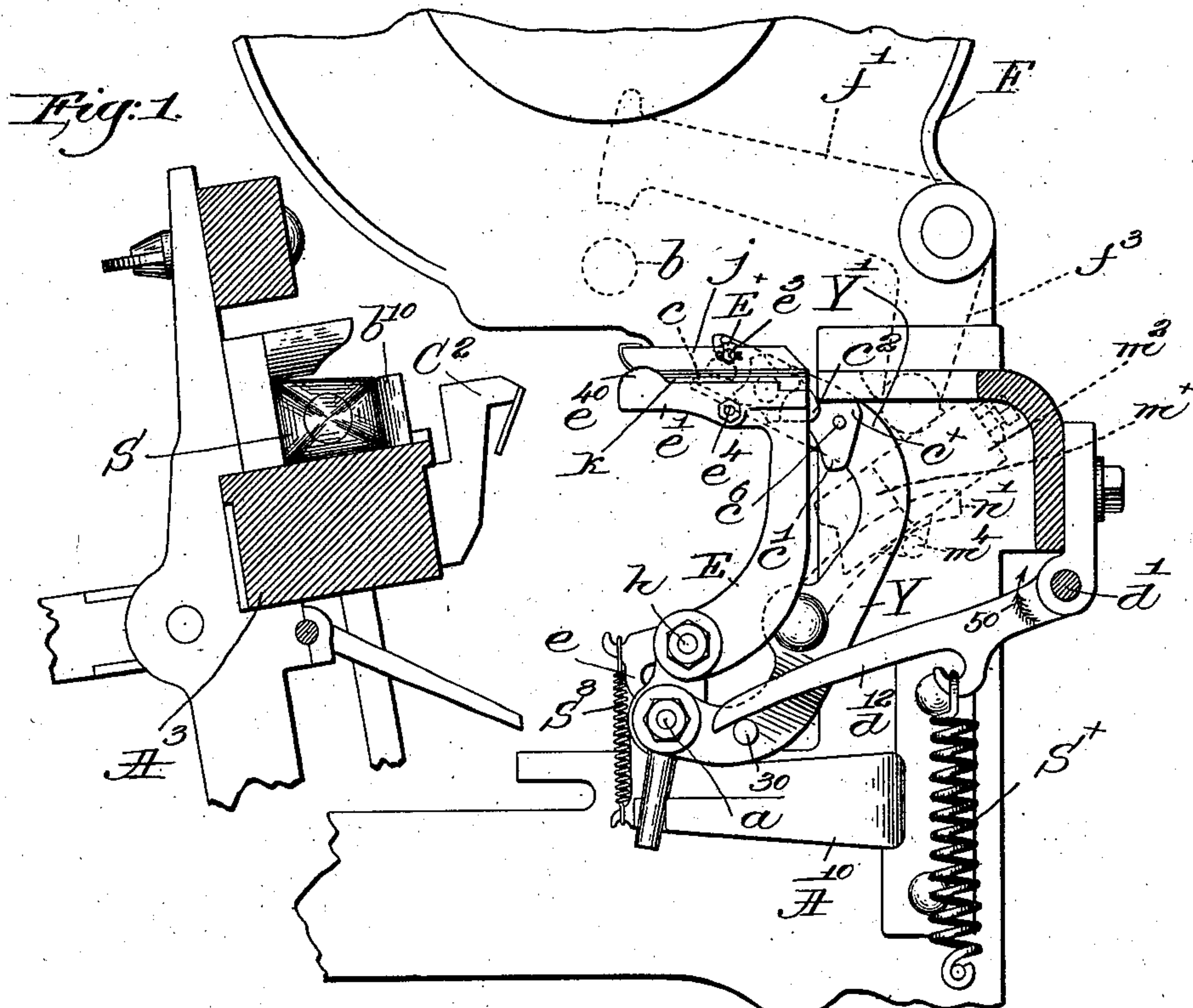
C. F. ROPER.

THREAD PARTING MECHANISM FOR LOOMS.

(Application filed Jan. 9, 1902.)

(No Model.)

2 Sheets—Sheet 1.



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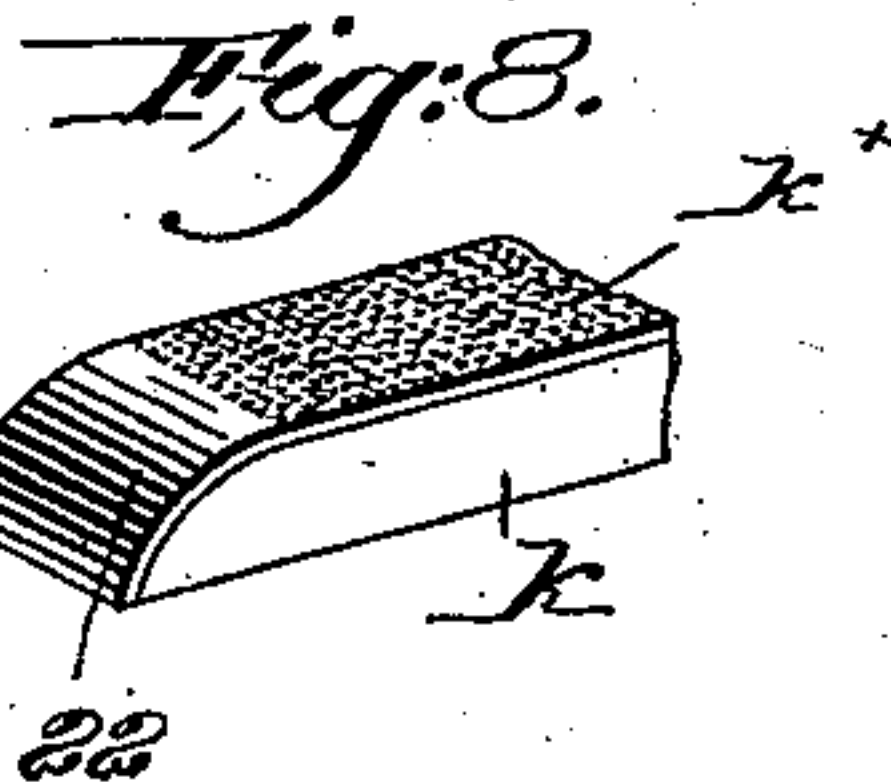
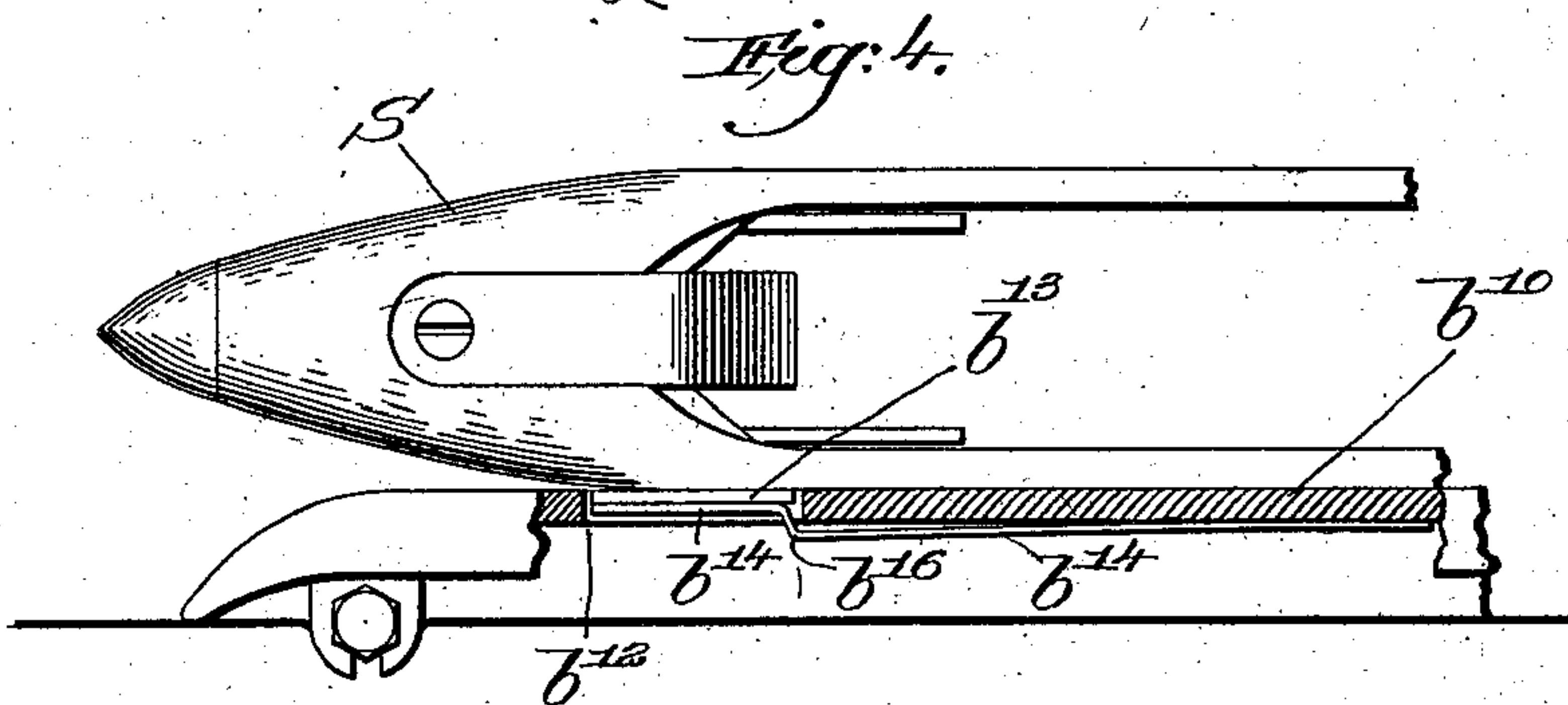
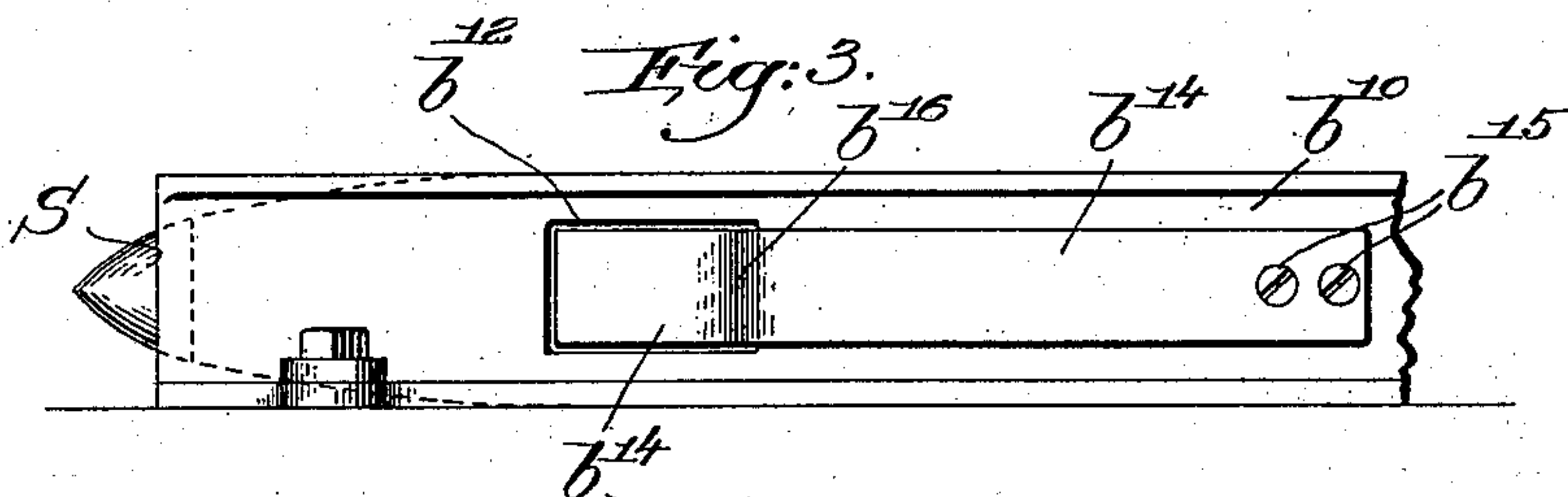
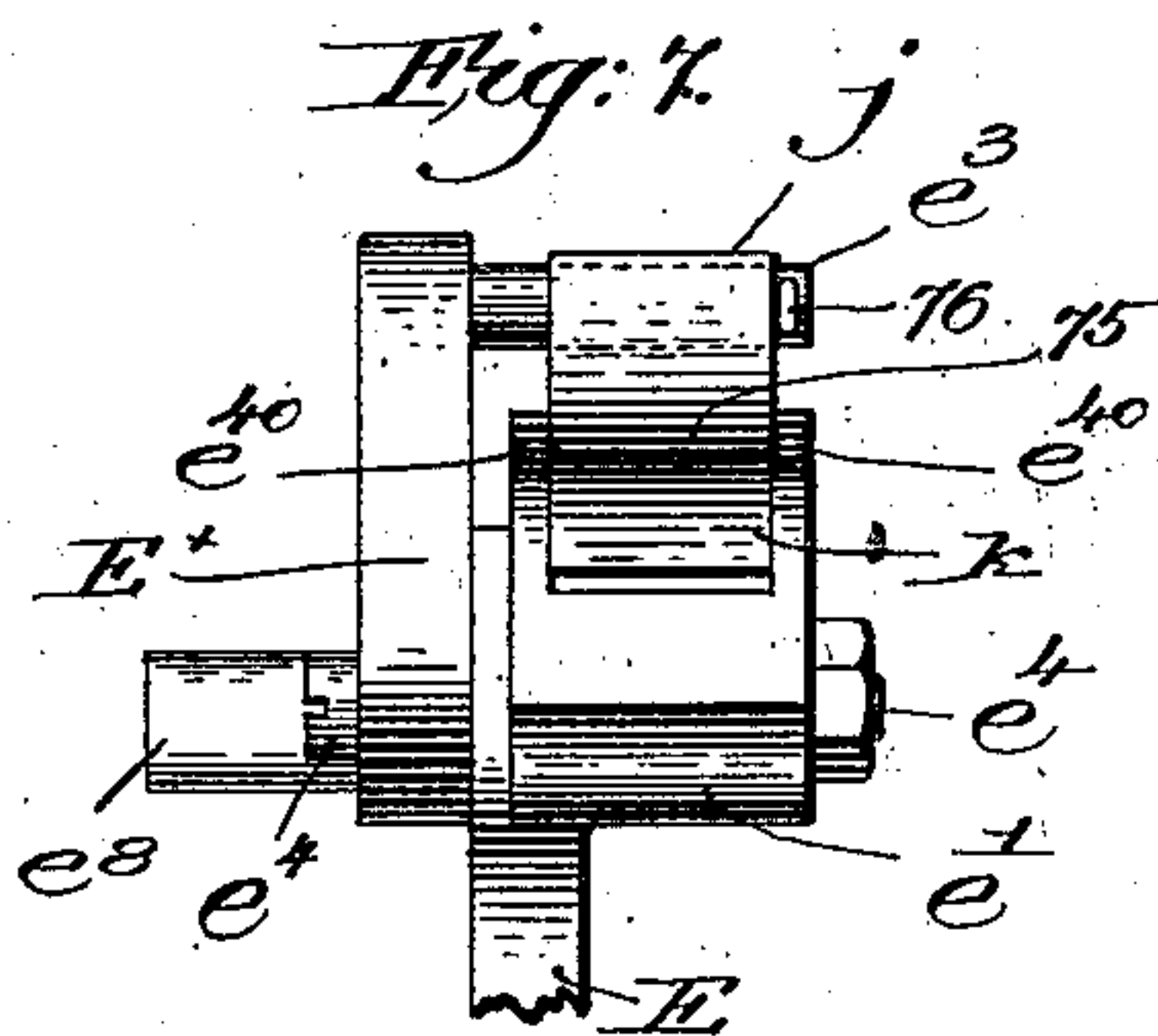
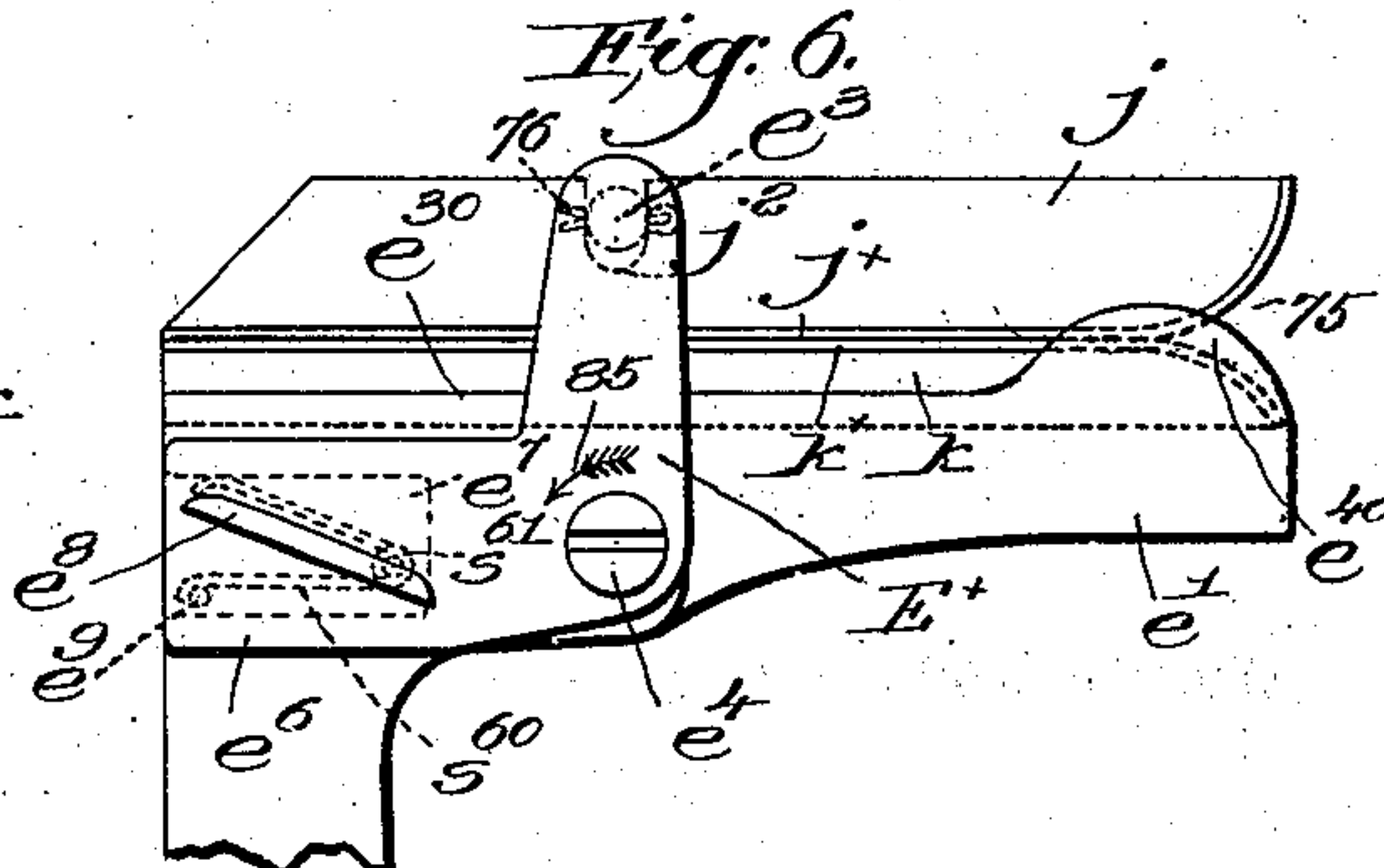
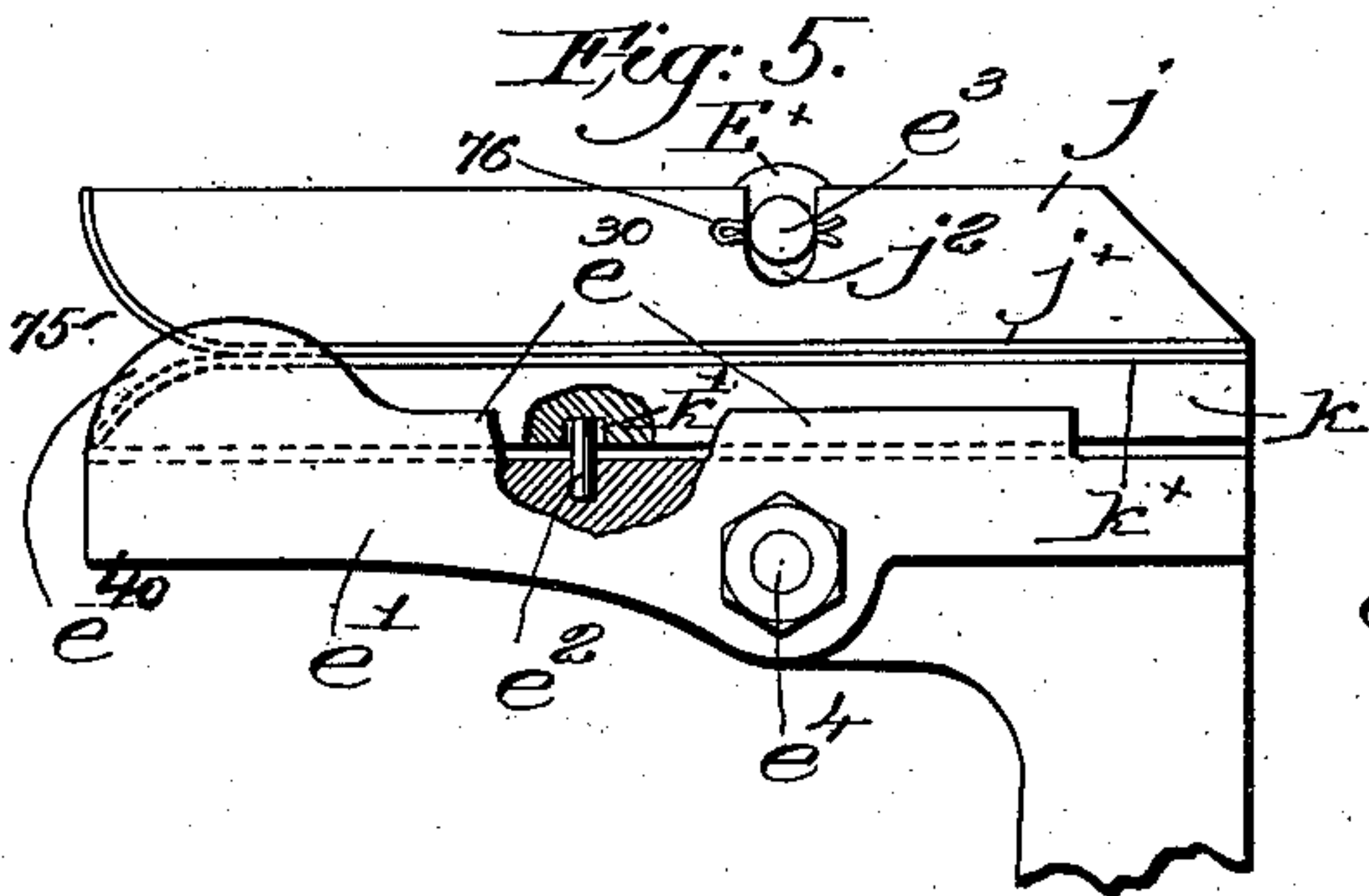
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(No Model.)

2 Sheets—Sheet 2.



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UNITED STATES PATENT OFFICE.

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THREAD-PARTING MECHANISM FOR LOOMS.

SPECIFICATION forming part of Letters Patent No. 701,938, dated June 10, 1902.

Application filed January 9, 1902. Serial No. 88,975. (No model.)

To all whom it may concern:

Be it known that I, CHARLES F. ROPER, a citizen of the United States, and a resident of Hopedale, county of Worcester, State of Massachusetts, 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 provided with automatic filling-replenishing mechanism and having means for parting the thread of the filling-supply to be abandoned between the cloth and the shuttle, such a loom being shown in United States Patent No. 683,423, dated September 24, 1901. Such parting of the thread is effected while or immediately after the shuttle is positioned in the shuttle-box to receive the fresh filling-supply, the thread being clamped first near the shuttle and thereafter parted between the clamp and shuttle, and while the thread is still clamped it is brought into the range of a temple thread-cutter to be parted thereby adjacent the edge of the cloth. In order that the parting and clamping means can properly engage the thread, the latter must be substantially taut between the cloth and the boxed shuttle; but it sometimes happens that the shuttle will rebound slightly, thus slackening the thread and permitting it to kink or twist out of the reach of the clamp and parting devices, so that they cannot operate properly, and the thread instead of being properly severed will break, and the broken end is apt to fly back toward the cloth and be woven thereinto.

One of the objects of my present invention is to provide means for maintaining the thread properly taut between the cloth and the shuttle when boxed, even should the shuttle rebound somewhat.

Other objects of my invention will be hereinafter described, and particularly pointed out in the following claims.

Figure 1 is a transverse sectional view of a portion of a loom provided with automatic filling-replenishing mechanism, taken on the

line *xx*, Fig. 2, the thread parting and clamping mechanism of the patent referred to being also shown in normal inoperative position. Fig. 2 is a part plan view of the mechanism shown in Fig. 1 and clearly illustrating one embodiment of my present invention for clamping the thread at the shuttle when boxed, the same being hidden by other parts of the mechanism in Fig. 1. Fig. 3 is an enlarged front elevation of a part of the front wall of the shuttle-box at the replenishing side of the loom, showing the device for clamping the thread at the shuttle. Fig. 4 is a top or plan view, also enlarged, of a part of the shuttle in the box, the front wall thereof being partly shown in section to more clearly illustrate the action of the clamping device. Figs. 5 and 6 are enlarged views of opposite sides of the thread-catcher to be described, the support for one of the jaws being broken out in Fig. 5. Fig. 7 is an end view thereof looking into the entrance end of the jaws, and Fig. 8 is a perspective detail of the entrance end of one of the jaws of the thread-catcher.

The lay A^3 , self-threading shuttle S , the filling-replenishing mechanism, comprising a feeder F to hold the filling supplies or carriers b , (see dotted lines, Fig. 1,) the transferrer f' , having the depending end f^3 and the shaft d' to be rocked in the direction of arrow 50, Fig. 1, when filling replenishing is to be effected, and the notched dog m^x , carried by the arm f^3 and to be engaged by the bunter C^2 on the lay to effect change of filling, are all substantially as in the patent referred to or United States Patent No. 641,792. The upturned arm Y , fulcrumed on the stud a on the bracket A^{10} and bent at its upper end to constitute a shuttle-feeler Y' , is bodily movable laterally on the stud a , as in Patent No. 683,423 and by the means therein shown and described, said arm Y having a finger n' to engage a lug m^4 on the arm m^2 , which carries the dog m^x , while an arm d^{12} , fast on the rock-shaft d' , is held against a pin 30 on the arm Y by or through the action of the spring S^x , Fig. 1, all as in said patent just referred to. The movable member c^x , common to the thread-parter and

thread-clamp, is mounted on the notched upper end Y' of the arm Y , cooperating with the fixed cutting-blade c and with the flat face of the fixed member c^2 of the clamp, as in said patent, so that the filling-thread t , between the cloth and shuttle, when boxed for filling replenishing will be acted upon and first clamped by the members $c^x c^2$ and then parted by the members $c^x c$, the swinging movement of the arm Y , as provided for in said patent, bringing the parting and clamping devices into position to engage the thread. The lay is cut away to present a shoulder a^{10} to engage the heel c' of the blade-jaw c^x when the lay completes its forward beat to thus operate said blade-jaw, it being opened thereafter by the setting-pin c^6 , as in said patent, and while the thread is still clamped it is brought by the return of the arm Y to normal position into the range of a thread-cutting temple T , Fig. 2, which may be substantially as shown in United States Patent No. 585,465, the movable cutting member c^{20} thereof cooperating with a fixed member (not shown) to part the thread adjacent the cloth upon a subsequent forward beat of the lay.

Referring to Figs. 2, 3, and 4, the front wall b^{10} of the shuttle-box at that end of the lay nearest the filling-feeder F is provided near its inner end with an opening b^{12} , the said opening receiving in it a clamping pad or presser b^{13} , made of felt, leather, bristles, or other suitable and preferably non-metallic material attached to the free end of a spring-arm b^{14} , extended longitudinally of and attached to the front wall of the shuttle-box by suitable screws, as b^{15} , Fig. 3, the arm being bent inward, as at b^{16} , to permit the pad or presser to enter the opening b^{12} and to project a slight distance beyond the inner face of the front wall b^{10} when the shuttle is not in the box.

The threading device for the shuttle, which is not herein shown and which is of any suitable construction, is located at the opposite end of the shuttle from that shown in Figs. 3 and 4, so that when the said shuttle is boxed in readiness for filling replenishing the thread-eye will be nearest the outer end of the shuttle-box, and consequently the thread leading from the eye to the cloth will extend inward past and across the outer face of the pad b^{13} . When the shuttle enters the box, its side wall engages and presses the pad b^{13} outward, the filling-thread, which runs along the outside of the shuttle at such time, being caught or clamped between the pad and the side of the shuttle, so that if the shuttle rebounds, as it sometimes does, the thread will not be immediately slackened, but will be held taut, retrograde movement of the shuttle having in practice no effect on the thread to loosen it or to carry it with it so long as the pad or presser acts upon the thread. By holding or clamping the thread at the shuttle in this manner when the shuttle is boxed it will be manifest that the thread cannot slacken suf-

ficiently to twist or curl, and therefore it will always be in position to be engaged by the thread-parting and thread-clamping device, hereinbefore referred to, when the same is brought into operative position by the swinging of the arm Y . If the thread is allowed to curl or twist, it will frequently be moved out of the way of the thread parting and clamping device, so that when the latter does move into operative position it cannot properly engage the thread and the latter will not be parted as it should be. The yielding or spring support b^{14} possesses enough elasticity to properly clamp the thread when the shuttle is boxed.

In Patent No. 683,423, hereinbefore referred to, the piece of thread which is cut out from between the shuttle and the cloth by the thread-parting device and the temple thread-cutter, respectively, is caught by a thread-catcher, and it is gradually worked thereby into position to be discharged from the thread-catcher, so that it cannot be woven into the cloth, and in my present invention the thread-catcher is mounted on an upright bent arm E , fulcrumed on a stud h on the bracket A^{10} , a spring S^8 (see Fig. 1) holding the arm in normal position, with a downturned stop e bearing against a fixed part of the bracket. The upper end of the arm E is provided with a rearward extension e' , having longitudinally-extended raised side portions e^{30} , (see Figs. 5 and 6,) between which the lower jaw of the thread-catcher is supported, said thread-catcher comprising, essentially, two elongated jaws $j k$, made of any suitable material—as, for instance, wood—and covered on their opposed faces with a rough surface material, as at $j^x k^x$, their rear ends being smooth and highly polished and flared toward the lay, as at 75. For the roughened part of the jaw-surface any suitable fabric may be used—such, for instance, as dogfish-skin—so arranged that the teeth or points on the opposed faces of the covering will be inclined toward the front of the loom and oppositely to each other. An upright pin e^2 loosely enters a socket k' in the bottom of the lower jaw (see Fig. 5) to permit a very slight longitudinal movement of the jaw and also to permit the same to tip, as it were, on the pin. The upper jaw rests upon the lower jaw and is transversely notched, as at j^2 , to receive loosely a horizontal pin e^3 , secured to or forming a part of a bell-crank E^x , fulcrumed at e^4 on one side of the extension e' , the bell-crank being clearly shown in Figs. 6 and 7. A cotter or other pin 76, extended through the outer end of the horizontal pin e^3 , prevents the jaw j from becoming accidentally disengaged from the said pin. The bell-crank E has its outwardly-extended foot e^6 provided on its inner face with a socket e^7 , (see dotted lines, Fig. 6,) and on its outer face the foot has a cam ledge or rib e^8 . The upper jaw rests by its weight upon the top of the lower jaw k , and it will be manifest that

when the bell-crank E^x is rocked such movement will through the horizontal pin e^3 effect a longitudinal movement of the jaw j relative to its fellow jaw. A lateral pin e^9 (see dotted lines, Fig. 6,) projects into the recess e^7 to support one end of a spring s^{60} , coiled between its ends, as at s^{61} , its other and free end bearing against the top of the recess e^7 and normally acting to retain the bell-crank E^x in the position shown in Figs. 5 and 6, thereby maintaining the upper jaw in its rearmost position. The socket e^7 and the spring s^{60} therein just described are substantially as in United States Patent No. 683,423 and operate as therein described. As in said patent the arm E is so located relative to the swinging arm Y that when the latter has returned to normal position the setting-pin c^6 on the blade-jaw c^x will ride over the top of the cam e^8 , depressing it and causing the bell-crank E^x to rock in the direction of the arrow 85, Fig. 6, to thereby move the jaw j toward the front of the loom, so that its covered face will rub longitudinally over the opposed covered face of the lower jaw k , the latter being at such time free to tilt somewhat on its supporting-pin e^2 , so that a piece of thread previously engaged by the jaws will be moved toward the front end of the latter, the opposite pointing of the teeth on the jaw-coverings acting to work the thread forward, but preventing its return when the upper jaw is moved rearwardly by the action of the spring s^{60} returning the bell-crank E^x to normal position after the pin c^6 has passed beyond the cam e^8 . As in the Patent No. 683,423 the setting-pin c^6 passes beneath the cam e^8 when the shuttle-feeler is next moved toward the lay to thereby move the blade-jaw c^x to elevate its rear end, and thus open the parter and clamp. The flaring ends of the jaws are made smooth, as at 22, Fig. 8, so that there will be no accidental catching of the thread by or upon the jaws until the latter is positively moved therebetween by the retractive action of the thread-clamp upon its return to normal position, and to still further prevent any accidental entrance of the thread between the jaws I have herein shown the raised sides e^{30} as increased in height at the rear end of the extension e' to constitute thread-guards e^{40} , which extend, as clearly shown in Figs. 5 and 6, beyond the contacting faces of the jaws and act to prevent accidental entrance of the thread, but readily permitting such entrance when the thread is positively moved between the jaws. The thread-guard also acts to position the upper jaw j and prevent improper lateral movement thereof.

I do not herein claim, broadly, a thread-catcher for the purpose hereinbefore set forth, nor do I claim as my invention the means for imparting longitudinal movement to one of the jaws of the thread-catcher.

So far as I am aware it is broadly new to clamp or hold the thread at or against the

shuttle when the latter is boxed at the filling-replenishing side of the loom to maintain the thread taut between the shuttle and the cloth, and accordingly my present invention is not restricted to the precise construction and arrangement herein shown and described, as the same may be modified or rearranged without departing from the spirit and scope of my invention.

When the spent filling-carrier is ejected from the shuttle, the filling end is drawn down through the shuttle-eye, and the presser or pad serves to guide or support the end as it is pulled along, preventing it from dropping down between the shuttle and the box-wall, where it might catch and break.

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

1. In an automatic filling-replenishing loom, a shuttle adapted to contain a supply of filling, means to act upon the thread of the filling-supply to be abandoned and clamp it at the shuttle, and means operative upon replenishment of filling to part the thread so clamped.

2. In an automatic filling-replenishing loom, a shuttle adapted to contain a supply of filling, means to clamp against the shuttle the thread of the filling-supply to be abandoned, and a thread-parter operative upon replenishment of the filling to part the thread so clamped.

3. In an automatic filling-replenishing loom, a shuttle adapted to contain a supply of filling, means to clamp, at the shuttle, the thread of the filling-supply to be abandoned, and means bodily movable upon replenishment of filling into position to successively hold and part the thread so clamped.

4. In an automatic filling-replenishing loom, a shuttle adapted to contain a supply of filling, the lay, a shuttle-box thereon, a clamp to automatically engage and hold the thread by or through entry of the shuttle into the box, to maintain the thread taut, and a thread-parter operative upon replenishment of filling to part the thread while it is maintained taut.

5. In an automatic filling-replenishing loom, a shuttle adapted to contain a supply of filling, the lay, a shuttle-box thereon, having an apertured front wall, a friction-clamp to automatically engage the filling-thread through the aperture and clamp it against the shuttle when the latter enters the box, to maintain the thread taut, and means operative upon filling replenishment to part the thread while it is maintained taut.

6. In an automatic filling-replenishing loom, a shuttle adapted to contain a supply of filling, the lay, a shuttle-box thereon, a spring-controlled friction-pad to engage and clamp the thread against the side of the shuttle when the latter enters the box, to maintain the thread taut between the shuttle and the cloth, and a thread-parter movable into po-

sition to part the taut thread upon filling replenishment.

7. In an automatic filling-replenishing loom, a shuttle adapted to contain a supply of filling, the lay, a shuttle-box thereon, having an apertured front wall, a spring-controlled friction-pad mounted on the latter and adapted to enter the aperture and clamp the thread against the shuttle when boxed, to maintain the thread taut, and a thread-parter to part the taut thread upon filling replenishment.

8. In an automatic filling-replenishing loom, a shuttle adapted to contain a supply of filling, the lay, a shuttle-box thereon, a spring-actuated device to act upon the thread of the filling-supply to be abandoned and hold it against the shuttle when the latter is boxed, to maintain the thread taut, a thread-parter and a thread-clamp, arranged in juxtaposition and movable upon filling replenishment into position to act upon the taut thread, and means to actuate the clamp and thereafter the parter, to part the thread between the clamp and the holding device.

9. In an automatic filling-replenishing loom, a shuttle adapted to contain a supply of filling, the lay, a shuttle-box thereon, and means operative when the shuttle enters the box to hold the thread against the shuttle and maintain the thread taut between the shuttle and the cloth.

10. In an automatic filling-replenishing loom, a shuttle adapted to contain a supply of filling, means to hold, at the shuttle, the thread of the filling-supply to be abandoned, means operative upon filling replenishment to part the thread while maintained taut, and a thread-catcher to engage the thread between the cloth and the thread-parter.

11. In an automatic filling-replenishing loom, a temple thread-cutter, means to clamp the thread against the shuttle when the latter is boxed, and thereby maintain the thread taut between the shuttle and the cloth, a thread parting and clamping device operative upon filling replenishment to clamp the taut thread and part it, the return of said device to normal position carrying the thread still held thereby, into the range of the temple thread-cutter, and means to effect move-

ment of said device into and out of operative position.

12. In a loom provided with automatic filling-replenishing mechanism, a temple thread-cutter, means to act upon the thread of the filling-supply to be abandoned, to clamp and part the thread near the shuttle and thereafter to bring the thread while clamped into the range of the temple thread-cutter, and a thread-catcher to hold the piece of filling when parted by the latter, said thread-catcher comprising superposed jaws one of which is longitudinally movable relative to the other, means to intermittently effect such relative movement of the jaws, the latter having roughened opposed faces and smooth, flaring entrance ends, and a guard at the entrance of said jaws to prevent premature entrance of the thread therebetween.

13. A thread-catcher for automatic filling-replenishing looms, comprising two superposed jaws relatively movable in the direction of their length, a support for the lower jaw upon which it can tilt, the upper jaw resting on the lower jaw, and means to effect relative longitudinal movement of the jaws.

14. In a thread-catcher for automatic filling-replenishing looms, a fixed support, a lower jaw mounted thereupon to tilt and having a roughened upper surface, an opposed upper jaw having its undersurface roughened and resting upon the lower jaw, and means to engage the upper jaw and move it longitudinally.

15. In a thread-catcher for automatic filling-replenishing looms, a fixed support having longitudinally-extended raised sides forming a thread-guard at one end, a lower jaw mounted to tilt on said support between the raised sides thereof, an upper jaw resting on the lower jaw, and means to move said upper jaw longitudinally, the entrance ends of the jaws being flared adjacent to the thread-guard.

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

CHARLES F. ROPER.

Witnesses:

GEORGE OTIS DRAPER,
ERNEST W. WOOD.