May 7, 1940. H. J. LANIER 2,200,182

THREAD CUTTING MECHANISM

Filed Aug. 2, 1939 2 Sheets-Sheet 1

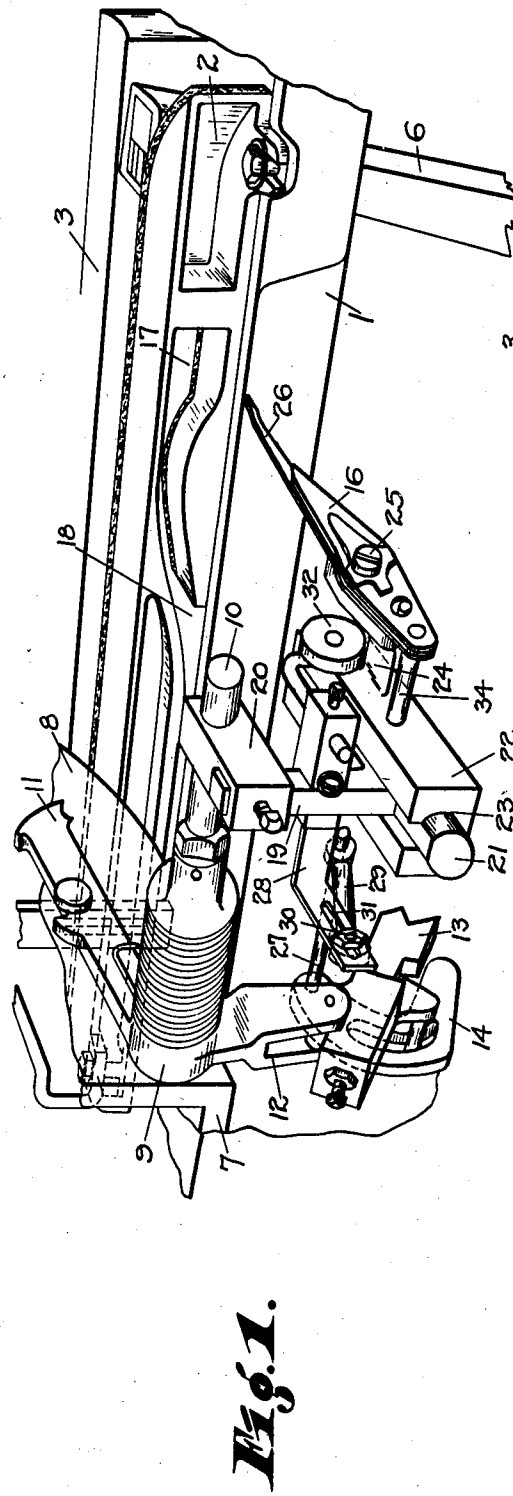

Fig. 1.

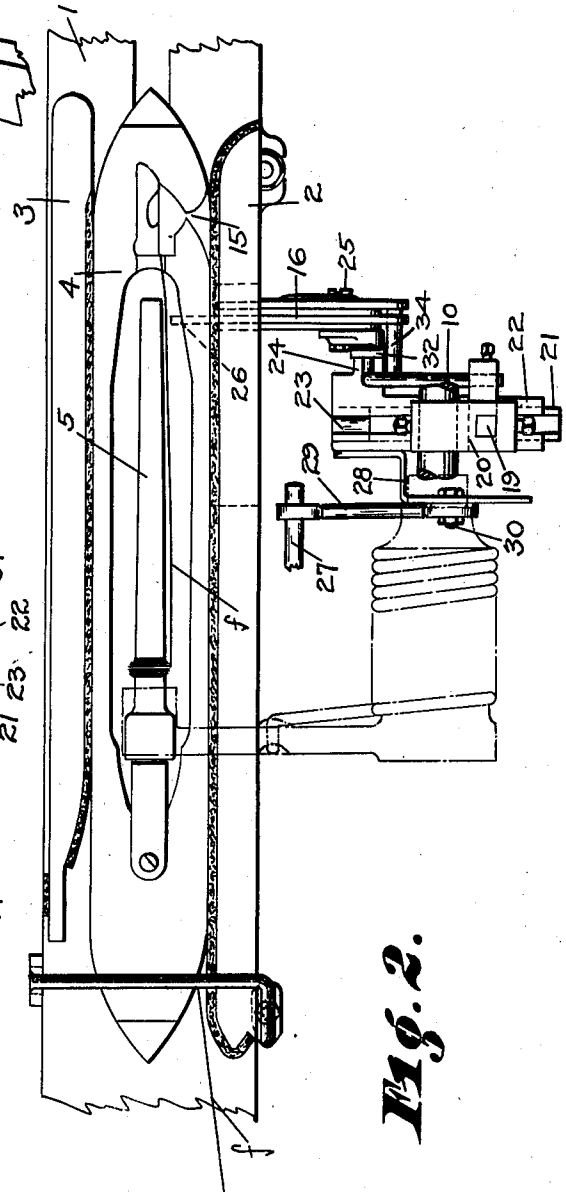

Fig. 2.

INVENTOR.
HENRY J. LANIER.
BY Claude F. Snider
ATTORNEY.

May 7, 1940. H. J. LANIER 2,200,182

THREAD CUTTING MECHANISM

Filed Aug. 2, 1939 2 Sheets-Sheet 2

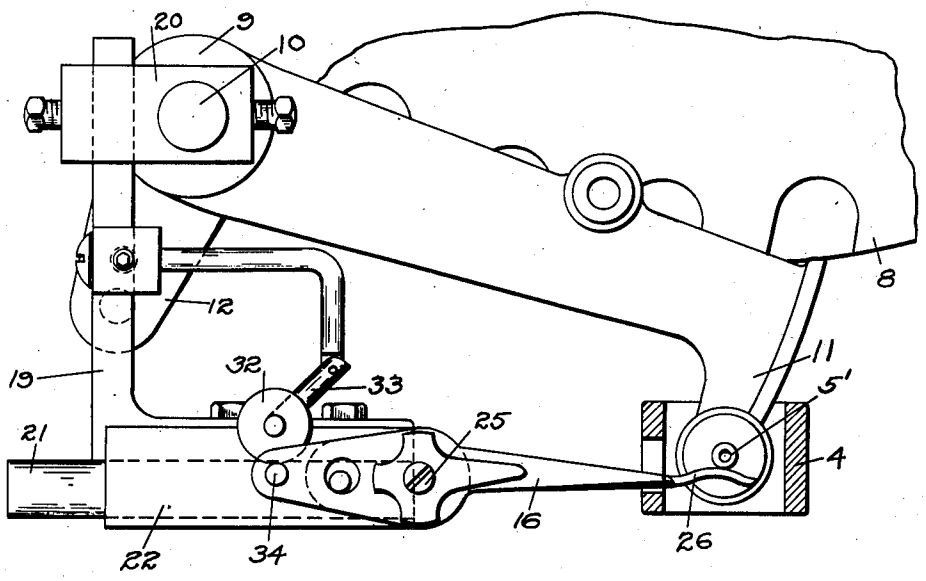

Fig. 3.

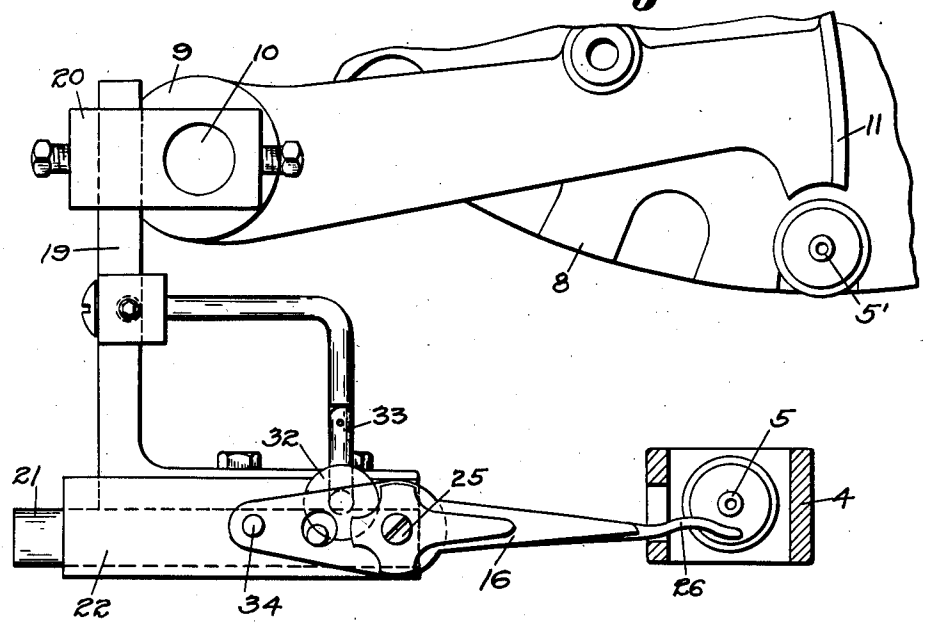

Fig. 4.

INVENTOR.
HENRY J. LANIER.
BY
Claude F. Snider
ATTORNEY.

Patented May 7, 1940 2,200,182

UNITED STATES PATENT OFFICE

2,200,182

THREAD CUTTING MECHANISM

Henry Jones Lanier, La Grange, Ga., assignor to Draper Corporation, Hopedale, Mass., a corporation of Maine

Application August 2, 1939, Serial No. 288,006

7 Claims. (Cl. 139—256)

The present invention pertains to bobbin changing looms, and more particularly relates to the construction and arrangement of the mechanism on such looms for parting and clamping the outgoing filling ends.

Looms of the type to which my invention applies commonly include a reciprocating lay having a shuttle box at the replenishing end thereof, a shuttle, bobbin changing means including a transferrer having a latch thereon and a member to swing the latch to transferring position, and parting and clamping mechanism for parting and clamping the outgoing filling end. Preferably, such mechanism is arranged to part and clamp the filling end adjacent the eye end of the shuttle. Of the various mechanisms heretofore proposed for this purpose, the most commonly used construction includes a bracket suspended from the stud on which the transferrer is pivoted and having a guideway located in front of the outer end of the shuttle box, and thread parting and clamping blades located inwardly of the loom from such guideway. These prior blades are mounted on a carrier which is slidable in the guideway and operated by a frame structure. Such frame structure is pivotally suspended from the transferrer stud and is connected to the latch operating member.

The said prior mechanism operates satisfactorily but is sufficiently complicated that it is expensive to make and keep in repair and is difficult to adjust properly. It has occurred to me that by rearranging and reconstructing the parts of the prior mechanism, and by providing improved guiding and supporting means, the mechanism may be substantially simplified and improved.

It is accordingly a principal object of the present invention to provide, in a bobbin changing loom, a lay having a shuttle box, a shuttle, a transferrer and latch, and a latch operating member, as aforesaid, and new and improved mechanism for parting and clamping the outgoing filling end which mechanism shall comprise a fixed support in front of the shuttle box intermediate the ends thereof, a carriage slidably mounted on said support and having thread parting and clamping blades located at the outer side of the carriage, and means directly connecting the said member to the inner side of the carriage for operating the latter, whereby the aforesaid prior mechanism shall be materially simplified and the said objections thereto substantially eliminated.

The foregoing and other objects of the invention are accomplished in the construction illustrated on the accompanying drawings, of which:

Fig. 1 is a perspective view of part of a loom having the preferred embodiment of my invention applied thereto;

Fig. 2 is a plan view of part of the structure shown on Fig. 1;

Fig. 3 is a view partly in elevation and partly in section, to a larger scale, illustrating the operation of the mechanism at the time of transfer; and

Fig. 4 is a view similar to Fig. 3 but showing the mechanism in normal running position.

The loom shown on the drawings is but fragmentarily illustrated, parts and mechanisms not shown or described being of suitable usual construction forming no part of the present invention. Some of the parts shown are likewise of usual construction, such parts being of the present invention only in that they are examples of what may be used in conjunction with other new parts to form a complete operative combination. The illustrated parts that are old, per se, include the lay, shuttle box, shuttle and replenishing mechanism to be hereinafter described.

The lay includes a lay beam 1 which is mounted for reciprocation toward and from the front of the loom. The lay is provided with a shuttle box at the replenishing side of the loom, which shuttle box may comprise a front box plate 2 and a back portion 3 for receiving the shuttle 4. The shuttle 4 contains a bobbin 5 carrying a supply of filling thread, the bobbin being detachably held in the shuttle in the usual manner. The shuttle is picked longitudinally of the lay, from side to side of the loom, by any suitable mechanism which may include a picker stick 6.

The aforesaid usual replenishing mechanism includes a hopper, of which a stand 7 and disc 8 are fragmentarily shown, for carrying a reserve supply of bobbins 5'. When the filling supply on the bobbin 5 is substantially exhausted, a reserve bobbin 5' is transferred to the shuttle by a transferrer 9. This transferrer is pivoted on a stud 10 which is fixed in the stand 7 and extends horizontally parallel to the lay beam 1. The transferrer includes a rearwardly extending arm having a head 11 for engaging the butt of a reserve bobbin, and a depending arm 12 having a latch 13 pivoted thereon. Transfer is effected when a member 14 (of well known construction) swings the latch 13 upwardly to a position where it will be engaged by a bunter (not shown) on the lay.

The transfer of a reserve bobbin is effected

when the shuttle 4 is positioned in the shuttle box shown, at which time a filling thread *f*, known in the art as the outgoing filling end, extends from the cloth to and along the shuttle box, thence through the eye 15 of the shuttle, and to the bobbin 5. This filling end *f* must be parted between the bobbin and the cloth, and preferably it is parted adjacent the eye end of the shuttle and the piece leading to the cloth clamped and withdrawn from the shuttle box. To this end, parting and clamping blades 16 are arranged to enter an opening 17 in the box plate 2 and part and withdraw the clamped filling end forwardly through a longitudinal slot 18. The construction and operation of the blades 16 may be similar to those in patent to Stafford, No. 1,552,388, except as hereinafter described.

The present invention provides novel and improved arrangement of supporting and operating means for the parting and clamping blades 16. To this end, a fixed support 19 is located in front of the shuttle box intermediate the ends thereof. In the preferred embodiment, the support 19 comprises a vertical bar having its upper end fixed in a block 20 on the stud 10 so that the support depends from said stud. The support 19 has a horizontal guide rod 21 fixed to the lower end thereof. This guide rod extends forwardly and rearwardly of the loom and may be formed from a round rod flattened or slabbed on its upper side.

A carriage 22 is slidably supported by the fixed support 19. As shown, the carriage comprises an elongated block having a longitudinal guideway 23 therein of the proper cross-section to embrace the guide rod 21 with a sliding fit. The slabbed-circle cross-section of the guide rod and guideway permit the carriage 22 to be supported by the guide rod 21 and no other supporting means for the carriage is required. The carriage 22 has an arm 24 projecting from the outer side thereof, which is the side toward the outer or picker stick end of the shuttle box. The blades 16 are mounted on this arm 24, one parting and one clamping blade being pivoted on a screw 25 and the other blades being fixed as usual. It will be noted that the blades 16 are in position to part and clamp the filling end *f* adjacent the eye end of the shuttle 4, and that the support 19 and carriage 22 are located between the blades 16 and the latch operating member 14.

The carriage 22 and blades 16 normally occupy a forward position, as shown by Figs. 1, 2 and 4. In this position, the blades do not enter the opening 17 far enough to engage the running filling, although a finger 26 on the blades partially enters the shuttle when the lay is at its forward position as shown by Fig. 4. The carriage is moved rearwardly from its normal position just prior to each operation of the transferrer, the rearward position being the operative or parting and clamping position wherein the blades enter the opening 17 far enough to engage the filling end *f* when the lay is forward. After transfer, the carriage is returned to its forward position.

In the preferred embodiment, the latch operating member 14 is utilized to slide the carriage 22 and parting and clamping blades 16 rearwardly and forwardly to and from parting position. The member 14 has a pin 27 projecting outwardly therefrom and this pin is directly connected to the carriage by being connected to the inwardly projecting arm 28 of the carriage. As shown, the connection comprises a link 29 having its rearward end pivoted on the pin 27 and its forward end pivoted on a stud 30 in the arm 28. This stud 30 may be adjusted in a slot 31. Thus, when the member 14 moves rearwardly to raise latch 13 to transferring position, it slides the carriage 22 rearwardly to parting position. After transfer the member 14 returns forwardly and withdraws the carriage forwardly with it.

When the carriage is forward the blades 16 are closed as shown. A suitable trip such as a roller 32 on a pivoted arm 33 engages a pin 34 in the movable parting and clamping blades to open such blades as the carriage moves rearwardly. The blades are again closed by the finger 26 which comprises an integral extension of one of the blades, the finger being struck by the incoming bobbin 5'. The pivoted trip 32, 33 swings forwardly to allow the blades to remain closed when the carriage returns to its forward position after transfer.

The vertical position of the blades may be adjusted by adjusting the support 19 in block 20. The block 20 may be adjusted longitudinally of stud 10. The carriage 22 may be adjusted forwardly and rearwardly by moving stud 30 in slot 31. Thus, all required adjustments of the parting and clamping blades are provided for. Because of the above-described relative location of the parts, the mechanism may be simple in construction and therefore relatively inexpensive to make and keep in repair and adjustment, although the single guide rod 21 for supporting carriage 22 also contributes materially to these results. This application is a continuation in part of my copending application Ser. No. 195,109, filed March 10, 1938.

Having fully disclosed the preferred embodiment of my invention, I claim:

1. In a bobbin changing loom, the combination of the lay having a shuttle box at the replenishing end thereof, a shuttle, a fixed stud, a transferrer pivoted on said stud, a latch pivoted on said transferrer, a member for operating said latch, a fixed support depending from said stud in front of said shuttle box intermediate the ends of the latter, a guide rod fixed to said support and extending forwardly and rearwardly of the loom, a carriage having a guideway slidably embracing said guide rod, thread parting and clamping blades mounted on said carriage at the outer side thereof in position to part and clamp the outgoing filling end adjacent the eye end of said shuttle and means directly connecting said member to an arm on the inner side of said carriage for sliding said carriage and blades rearwardly and forwardly to and from parting position.

2. In a bobbin changing loom, the combination of the lay having a shuttle box at the replenishing end thereof, a shuttle, a transferrer having a pivoted latch thereon, a single fixed support having a guide rod thereon, said support being located in front of said shuttle box with said guide rod extending horizontally toward said shuttle box intermediate the ends of the latter, a carriage having a guideway slidably embracing said guide rod, said guide rod comprising the sole means for supporting said carriage, parting and clamping blades mounted on said carriage in position to part and clamp the outgoing filling end adjacent the eye end of said shuttle, and means for sliding said carriage and blades rearwardly and forwardly to and from parting position.

3. In a bobbin changing loom, the combination of the lay having a shuttle box at the replenishing end thereof, a shuttle, a transferrer having a pivoted latch thereon, a member for operating said latch, a fixed support having a guide rod thereon in front of said shuttle box, said guide rod extending horizontally toward and from said shuttle box intermediate the ends thereof, a carriage having a guideway slidably embracing said guide rod, said guideway comprising the sole means for supporting said carriage, parting and clamping blades mounted on said carriage at the outer side thereof in position to part and clamp the outgoing filling end adjacent the eye end of said shuttle, and means directly connecting said member with an arm on the inner side of said carriage for sliding said carriage and blades to and from parting position.

4. In a bobbin changing loom, the combination of the lay having a shuttle box at the replenishing end thereof, a shuttle, a fixed transferrer stud, a transferrer pivoted on said stud, a latch on said transferrer, a member for operating said latch, a fixed support depending from said stud in front of said shuttle box intermediate the ends of the latter, said support having a horizontal guide rod at its lower end, said guide rod extending forwardly and rearwardly of the loom, a carriage having a guideway embracing said guide rod, said guide rod comprising the sole means for supporting said carriage, thread parting and clamping blades mounted on said carriage at the outer side thereof for parting and clamping the outgoing filling end, an arm on the inner side of said carriage, and a link having one end pivoted to said member and its other end pivoted to said arm for sliding said carriage and blades rearwardly and forwardly to and from parting position.

5. In a filling replenishing loom having a lay provided with a shuttle box at the replenishng end thereof for receiving a shuttle, means for clamping and cutting the filling on a bobbin about to be expelled from the shuttle and withdrawing the filling from the shuttle box, said clamping and cutting means having associated therewith a bobbin support for supporting the outer end of a bobbin as it is introduced into the shuttle, and means for opening the clamping and cutting means as it is removed from the shuttle box, said bobbin support being operated by a filled bobbin to close said clamping and cutting means when a filled bobbin is introduced into the shuttle.

6. In a filling replenishing loom having a shuttle box at the replenishing end thereof for receiving a shuttle, the front wall of the shuttle box having an opening therein and the shuttle, when boxed, having an opening therein coinciding with the opening in the front wall, filling parting and clamping means, means for moving said parting and clamping means through said openings upon a transfer operation being effected and for thereafter withdrawing said parting and clamping means from the shuttle box, means carried by the filling parting and clamping means and engageable by a filling carrier as it is moved into the shuttle for closing said filling parting and clamping means to cause the outgoing filling end to be withdrawn from the shuttle box, and means for opening the filling parting and clamping means after the outgoing filling end has been withdrawn from the shuttle box.

7. In a filling replenishing loom having a lay provided with a shuttle box at the replenishing end thereof for receiving a shuttle, the said shuttle box having a front wall provided with a slot extending to one edge of the front wall, clamping and cutting means movable through said slot for clamping and cutting a filling end from an exhausted filling carrier and withdrawing it from the shuttle box through said slot, means carried by the clamping and cutting means and engageable by a filling carrier being moved into the shuttle for closing said clamping and cutting means, other means for opening said clamping and cutting means when the clamped filling end has been removed from the shuttle box and means for moving said clamping and cutting means as aforesaid.

HENRY JONES LANIER.