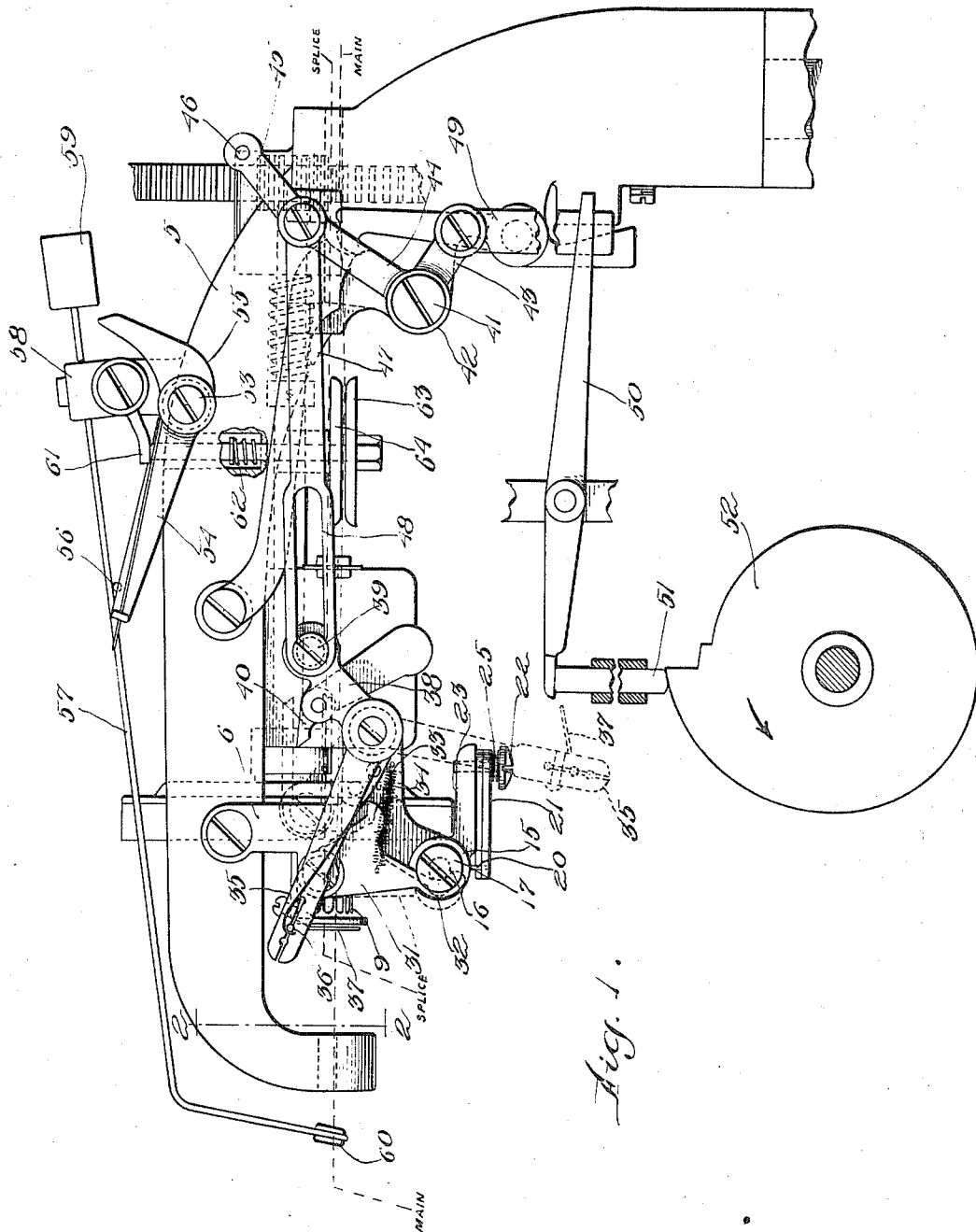


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 THREAD CUTTER AND CLAMP FOR KNITTING MACHINES.  
 APPLICATION FILED JULY 10, 1911.

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Patented July 1, 1913.

2 SHEETS—SHEET 1.



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Fig. 2.

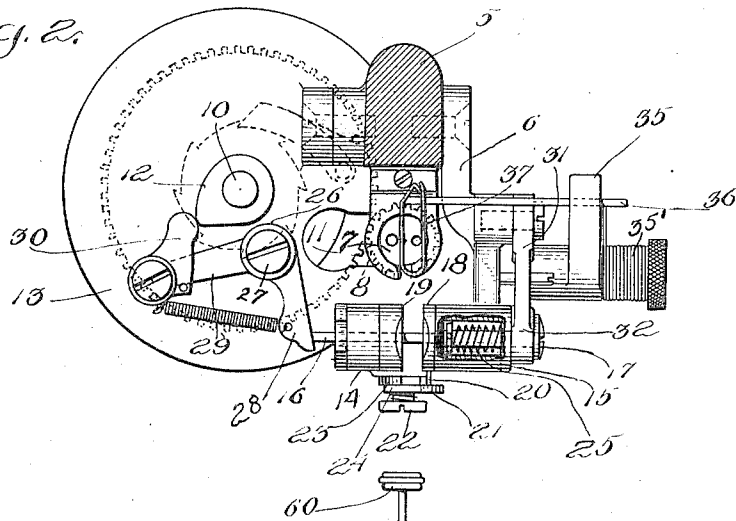
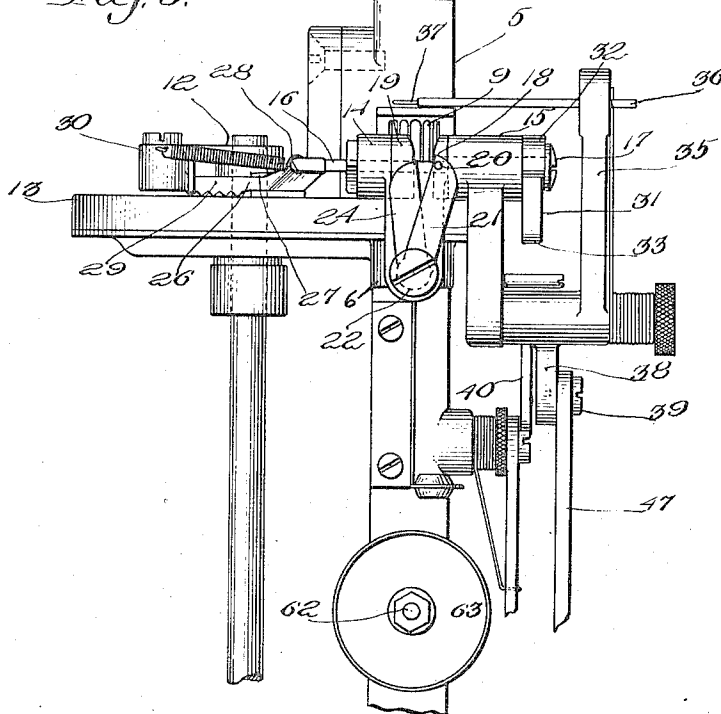


Fig. 3.



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# UNITED STATES PATENT OFFICE.

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## THREAD CUTTER AND CLAMP FOR KNITTING-MACHINES.

1,066,234.

Specification of Letters Patent.

Patented July 1, 1913.

Application filed July 10, 1911. Serial No. 637,600.

*To all whom it may concern:*

Be it known that I, ALBERT E. STEWART, of Franklin, in the county of Merrimack and State of New Hampshire, have invented certain new and useful Improvements in Thread Cutters and Clamps for Knitting-Machines, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to improvements in knitting machines whereby the reinforce thread may be clamped and cut by mechanism operating to release the main thread lifting or tension mechanism.

The object of the invention is to so construct a device of this nature having means for engaging and pulling the reinforce thread laterally from its normal path of movement that said thread may be clamped and cut, and that the main thread lifting or tension device may be released.

The invention consists in the novel means for clamping and cutting the reinforce thread.

The invention also consists in the novel means for setting the thread clamping and cutting devices.

The invention also consists in the novel mechanism for releasing the thread clamping and cutting devices.

The invention also consists in such other novel features of construction and combination of parts as shall hereinafter be more fully described and pointed out in the claims.

Figure 1, represents a side elevation of the new thread cutter and clamp and the mechanism for operating the same mounted on the thread feed head of a knitting machine, the cam for operating the thread drawing device being shown. Fig. 2, represents a sectional view of parts of the same taken on line 2—2 Fig. 1, looking toward the right in said figure. Fig. 3, represents a bottom plan view of parts of the device.

Similar numbers of reference designate corresponding parts throughout.

As shown in the drawings, in its preferred form, 5 indicates the head or frame adapted to be mounted on a knitting machine for the purpose of sustaining the thread twisting devices, said head being approximately of the construction heretofore well known. This head 5 has the member 6, in which is journaled the twister 7 having the pinion 8 and

the arms 9, 9 between which a thread may be engaged when said thread is drawn laterally from within said twister. Adjacent the twister is the shaft 10, journaled in the member 6 and having the large gear 11, in engagement with the pinion 8, and at its outer end the cam 12. This shaft 10 is the usual and well known means employed to transmit motion to the twister.

On the gear case 13 of the gear 11, below the twister 7, are the projections 14, and 15 having bores in which is slidable the rod 16, having at one end the head 17 and furnished with the jaw 18 movable with said rod relative to the jaw 19 sustained by said rod 16. Jaw 18 has the pin 20, which is engaged with the cutting blade 21 pivoted on the stud 22, which latter is secured in the arm 23 extending from the projections 14 and 15 and supports the fixed cutting blade 24 against which the blade 21 is pressed by a spring carried by said stud. The movement of the jaw 18 toward the jaw 19 and the simultaneous cutting movement of the blade 21 is effected by the coil spring 25 located in the chamber which forms the enlargement of member 15, so that a thread drawn between said jaws 18, 19 and blades 21 and 24 may be simultaneously clamped and cut.

The means for moving rod 16 against the action of spring 25 to release a thread from between the jaws 18 and 19, comprises the bell crank lever 26 pivoted on the stud 27 secured in the gear case 13 and having the arm 28 bearing against rod 16 and the arm 29 having the pivoted spring-retracted pawl against which, at times, the cam 12 of shaft 10 is adapted to act to effect the swinging of said bell crank lever 26. Provision is made for retaining the jaw 18 and blade 21 in the open position against the action of spring 25; this comprises the latch member 31 pivotally mounted on a stud extending from the member 6 and having the hook 32, adapted to engage between head 17 of rod 16 and the projection 15, and the tooth adapted at times to be engaged by a releasing device whereby said latch member may be swung out of said engagement and against the action of its retracting spring 34.

Pivotally mounted on an extension from member 6, is the spring depressed thread drawing arm 35 acted upon by spring 35' and having the adjustable rod 36 furnished at its

end with the usual thread engaging and drawing hook frame 37 whereby the reinforce thread may be engaged when said frame 37 swings upward with said arm 35 and said thread may be drawn downward between the jaws 18 and 19 and between the blades 21 and 24 when said arm 35 moves downward to the position shown in dotted lines in Fig. 1 of the drawings. On the sleeve of arm 35 is the lever 38, having the stud 39 and the pivoted pawl 40, which latter is adapted to engage the tooth 33 of the latch member 31 to effect the swinging of said member 31 and the disengagement of its hook 32 from the head 17 approximately at or slightly before the arm 35 has reached the limit of its downward movement.

Provision is made for the swinging upward of arm 35 against the action of its spring. On the pivot 41, secured in a stud of frame 5 is the sleeve 42 having the arms 43 and 44 of which the latter has the member 45 furnished with the pin 46. At the juncture of arm 44 and member 45 is pivoted the rod 47 having the slot 48 in which is engaged the stud 39 of the thread engaging and drawing mechanism. Pivotally connected with the arm 43 is the rod 49, which is actuated by the lever 50, the lifter 51 and the cam 52 of any suitable construction and arrangement to effect the positive retraction of rod 47 and, for a limited degree in said movement determined by the length of slot 48, the corresponding movement of arm 35.

Projecting from the head 5 is the stud 53 on which is pivoted the spring lifted arm 54 having the cam 55 and the finger 56 which is engaged beneath the tension rod 57, which is mounted in the pivoted block 58 and has at one end the counter weight 59 and at the other end is bent downward and furnished with the guide eye 60. Block 58 has the finger 61 which bears against the slidable spring raised stem 62 of the tension member 63, so that when said finger 61 presses downward on said stem 62 the tension member 63 is moved away from its related member 64, fixed to the head 5, and tension on the reinforce thread between said members 63 and 64 is relieved. When arm 44 is swung to permit the downward movement of arm 35, the member 45 carries its pin 46 toward and beneath the cam 55 of arm 54 and, after arm 35 has reached its limit of downward movement, the rod 47, on account of its slot 48 continues to move for a short distance while said pin 46 engages cam 55 and acts to swing the same upward and thus to swing downward the free end of arm 54, whereby the tension rod 57 is relieved from the lifting action of finger 56 and said rod 57 may then be more readily drawn downward by thread passing through the eye 60 and, in such movement the action of finger 61 on the stem 62 of tension mem-

ber 63 tends to relieve the tension on the reinforce thread.

In the operation of the machine, the reinforced thread is led through the twister and through the drawing hook frame 37 by being slipped between the ends of the arms of said frame. It is also to be observed that the cam 52 is of such nature that no movement of the parts will take place during the greater portion of the revolution of said cam but during about one-fourth of the revolution, movement of the various parts will take place. Now suppose, the parts to be in a position shown in Fig. 1. Upon movement of the cam 52, the member 51 will drop and the lever 50 for the end carrying the member 49 lifted. This will throw forward the link 47 and also bring the pin 46 into contact with the cam 55. As the pin 46 contacts with the cam 55, the arm 61 will be depressed and consequently release the tension between the members 63 and 64 by forcing the former downward. As this is done, the end of the slot 48 contacts with the pin 39. This causes the lever arm 35 to move downward and to assume the dotted line position shown in said figure. When nearly at the end of its movement, the tooth 40 engages the member 31 and forces it away from the pin 16 so that the head 17 is permitted to move inward toward the projection 15, this being accomplished by the action of the spring 25. This causes the clamp 18 to move toward the clamp 19 and engage the thread. At the same time, the movable cutter blade 21 closes over the blade 24 by the action of the member 18, thus cutting the thread. Now, when the cam has moved around to lift the pin 51, the parts are retracted and at this time the cam 12 operates to actuate the pawl 30 and lever 29, thus forcing the pin 16 against the action of the spring 15 and permitting the latch member 31 to drop behind the head 17 and holds the parts in the original position.

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

1. Thread cutting and clamping means comprising a thread twister, means for operating said twister, a spring operated thread clamp, means actuated by the twister operating mechanism for moving said clamp to the open position, means for engaging and holding said clamp, thread drawing means, and means actuated by said thread drawing means for releasing said clamp holding means.

2. Thread cutting and clamping means comprising a thread twister rotatably mounted, means for rotating said twister, spring actuated thread clamping and cutting means, means actuated by the twister rotating mechanism for moving said clamping and cutting means to the open position,

means for engaging and holding said clamping and cutting means in such open position, a thread drawing means, and means actuated by said thread drawing means for releasing said clamp holding means, substantially as described.

3. Thread cutting and clamping means of the nature described comprising a thread twister rotatably mounted, driving means  
10 for said twister, a bell crank operated in one direction through said driving means, a rod slidably mounted and having a clamping means, a cutter having a movable blade connected with said clamping means, a spring  
15 for moving said blade, means for engaging and holding said rod against the action of said spring, thread drawing means, and means actuated by said thread drawing means, for releasing said holding means.  
20 4. Thread cutting and clamping means

comprising a thread twister, a rod slidably mounted below said twister and having a head and a clamping member, a cutter having a pivoted spring actuated blade connected to move with said clamping member  
25 means for moving said rod, a latch pivotally mounted with respect to said rod and adapted to hold said rod against the action of said spring, a thread drawing arm pivotally mounted and actuated in one direction by a  
30 spring, a thread engaging device carried by said arm, a pawl carried by said arm and adapted to engage and move said latch, and means for moving said arm positively in one direction.

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