A. VILLENEUVE.

KNITTING MACHINE STOP MECHANISM.

APPLICATION FILED JAN. 16, 1911.

1,003,675.

Patented Sept. 19, 1911.

2 SHEETS—SHEET 1.

Fig. 1.

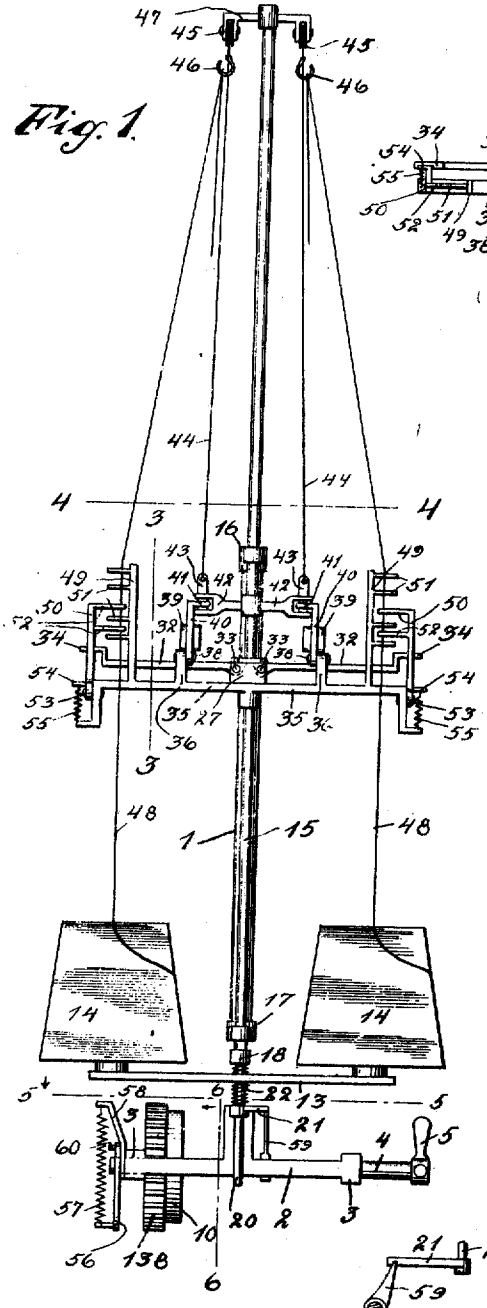
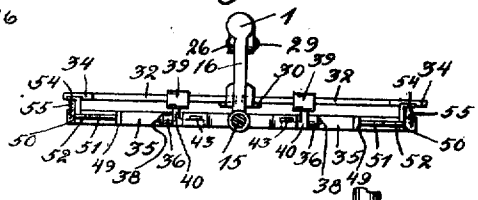


Fig. 4.



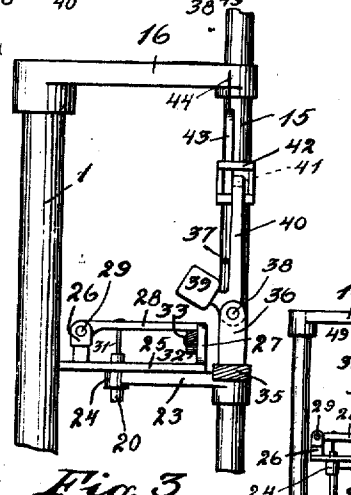


Fig. 3

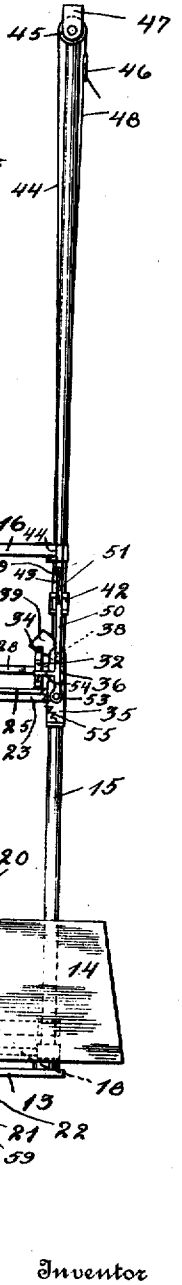


Fig. 2.

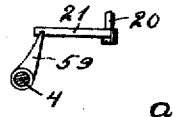


Fig. 4a

Witnesses

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166

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2 SHEETS—SHEET 2.

Fig. 6.

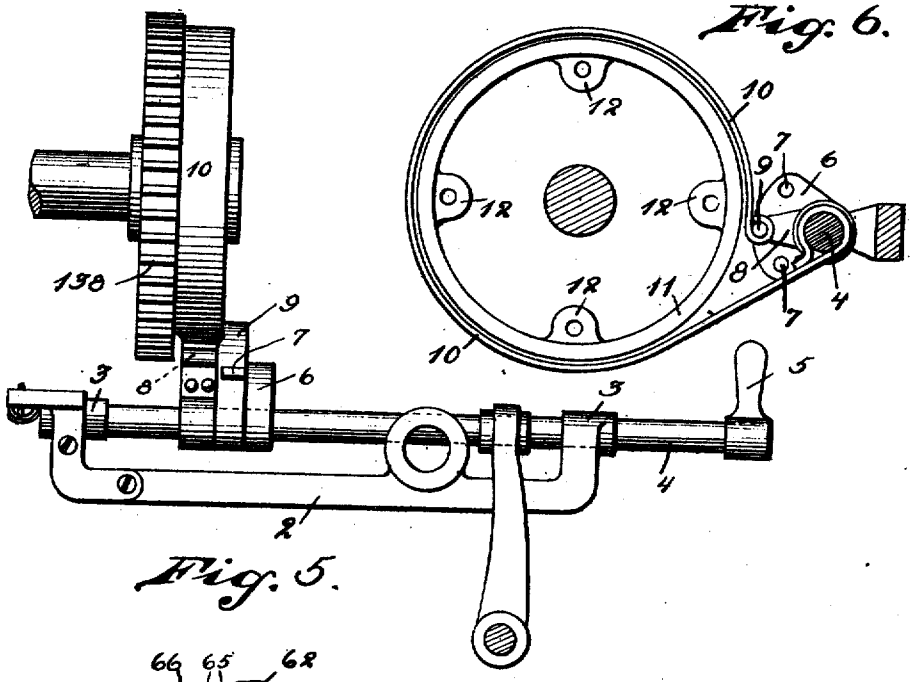


Fig. 5.

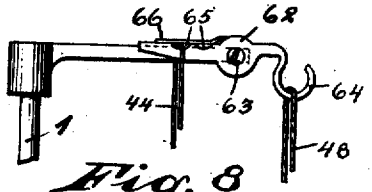


Fig. 8

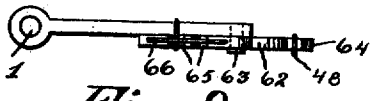


Fig. 9.

Fig. 7.

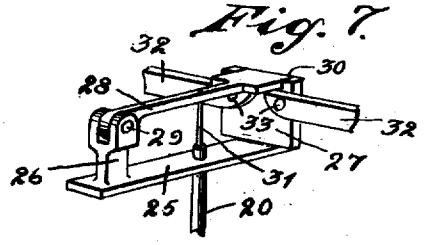


Fig. 10.

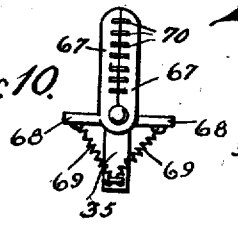


Fig. 11.

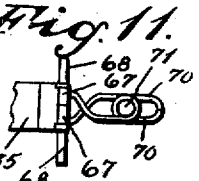
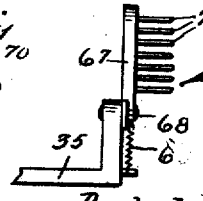


Fig. 12.



Witnesses

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UNITED STATES PATENT OFFICE.

ARCHELAS VILLENEUVE, OF FRANKLIN, NEW HAMPSHIRE.

KNITTING-MACHINE STOP MECHANISM.

1,003,675. Specification of Letters Patent. Patented Sept. 19, 1911.

Application filed January 16, 1911. Serial No. 602,866.

To all whom it may concern:

Be it known that I, ARCHELAS VILLENEUVE, a citizen of the United States, residing at Franklin, in the county of Merrimack and State of New Hampshire, have invented certain new and useful Improvements in Knitting-Machine Stop Mechanism, of which the following is a specification.

My invention relates to knitting machine stop mechanism, of the character which automatically stops a knitting machine in case the thread should break or become tangled or snarled whereby the thread is prevented from being freely fed to the needle.

An important object of this invention is to provide mechanism of the above character, which is automatic and reliable in its operation.

Other objects and advantages of my invention will be apparent during the course of the following description.

In the accompanying drawings forming a part of this specification and in which like numerals are employed to designate like parts throughout the same, Figure 1 is a front view of the stop mechanism, Fig. 2 is a side view of the same, Fig. 3 is an enlarged detailed sectional view taken on line 3—3 of Fig. 1, Fig. 4 is a horizontal sectional view taken on line 4—4 of Fig. 1, Fig. 4ª is an end view of a rock-shaft showing means to hold the same against movement, Fig. 5 is an enlarged plan view taken on line 5—5 of Fig. 1, Fig. 6 is a vertical sectional view taken on line 6—6 of Fig. 1, and looking in the direction of the arrows, Fig. 7 is a perspective view of a pivoted lever and means for actuating the same, Fig. 8 is a side view of a slightly modified form of means for supporting the thread, to feed the same to the knitting machine, Fig. 9 is a plan view of the same, Fig. 10 is an end view of a slightly modified form of hammer, Fig. 11 is a plan view thereof, and, Fig. 12 is a side view of the same.

My stop mechanism is designed to be used in connection with the knitting machine disclosed in the Patent Number 726,178, granted to G. D. Mayo, under date of April 21, 1903.

In the drawings wherein is illustrated a preferred embodiment of my invention, the numeral 1 designates a main support, which is to be suitably mounted upon the framework of the Mayo knitting machine. To the lower end of the main support 1 is rigidly connected an approximately U-shaped casting 2. The casting 2 has its transverse arms provided with heads 3, through which is journaled a rock-shaft 4, carrying a handle 5 upon one end thereof. This rock-shaft is provided within the casting 2 with a plate 6, which is rigidly mounted thereon. This plate is provided upon one side thereof with a pair of spaced pins 7, between which is disposed a link 8, having pivotal connection with the rock-shaft 4. This link carries a pin 9, having connection with one end of a band-brake 10, as shown. This band-brake surrounds an annular flange 11, provided with ears 12, which are suitably rigidly connected with a pinion 138, which pinion forms a portion of the above referred to knitting machine. The band-brake 10 has one end thereof connected with the rock-shaft 4, as shown.

The main support 1 carries a plate or base 13, upon which are suitably mounted spools of thread 14, as shown. Forwardly of the main support 1 is a supporting shaft 15, which is connected with said main support by means of upper and lower horizontal arms 16 and 17, respectively. Near and below the lower arm 17, the supporting shaft carries a rearwardly extending arm 18, having a head 19, within which is slidably mounted a vertically disposed reciprocatory rod 20. The reciprocatory rod 20 has rigid connection near its lower end with a catch or finger 21. The rod 20 carries a compressible coil spring 22, which is disposed between the arm 18 and the catch 21, whereby such spring serves to urge the rod 20 downwardly.

The supporting shaft 15 is provided intermediate its ends with a supporting structure including a rearwardly extending arm 23, having a head 24, through which the upper end of the reciprocatory rod 20 is slidably mounted, as clearly shown in Figs. 2 and 3. Upon the arm 23 is rigidly mounted a casting 25, carrying an upstanding lug 26 near its rear end and an upstanding plate 27. A horizontal operating lever 28 has its rear end pivotally connected with the lug 26, as shown at 29. The forward end of the lever 28 is enlarged, as shown, and is adapted for insertion within a recess 30 formed in the upper end of the plate 27, as more clearly shown in Fig. 7. The reciprocatory rod 20 and lever 28 are connected by a link 31. Pivotally connected

with the upstanding plate 27 are pairs of swinging levers 32, as shown at 33. These levers are so positioned that when they are oscillated downwardly, their inner ends will engage the operating lever 28, to elevate the same. The swinging levers 32 extend in opposite directions and each of the same is provided upon its outer end with a crank or off set portion 34. The supporting structure comprising the arm 23 further comprises a pair of oppositely extending arms 35, which are disposed below the swinging levers 32, when such levers are in their normal positions. The oppositely extending arms 35 carry upstanding lugs 36, to which are pivotally connected hammers 37, as shown at 38. Each of the hammers 37 comprises a head 39, which is adapted to strike the swinging lever 32, when the hammer is released. Each hammer further comprises an upstanding finger 40, carrying a horizontal extension 41, which operates within the guide-bracket 42. This guide-bracket is provided with suitable openings formed therethrough for the reception of a movable latch 43, which is adapted to hold the hammer against downward movement, as shown. The latch 43 is supported by a cord 44, trained about a pulley 45 and having suitable connection with a hook 46. The pulley 45 is supported by a bracket 47. The thread 48 from the spool 14 is run through the hook 46 and then fed to the needle. In case the thread 48 by snarling or the like, should fail to feed easily to the needle, the same will pull the hook 46 downwardly, whereby the latch 43 will be moved out of engagement with the hammer 37 and such hammer permitted to fall.

Each of the arms 35 supports thread engaging means comprising a stationary member 49 and a swinging hammer 50. The stationary member 49 comprises thread engaging fingers 51 and the swinging hammer 50 comprises thread engaging fingers 52. The thread 48 passes between the fingers 51 and 52, as shown. The hammer 50 has pivotal connection with the arm 35, as shown at 53, said hammer being provided with an extension 54, to which is connected a retractile coil spring 55, having the opposite end thereof connected with the outer end of the arm 35, as shown. In case the thread 48 should break, the spring 55 will oscillate the hammer 50 rearwardly, to strike the off set end of the swinging lever 32, whereby such swinging lever is in turn oscillated downwardly.

From the description of the above referred to parts, it is obvious that automatic means are provided to elevate the rod 20, in case the thread 48 should be drawn too tight or break.

The rock-shaft 4 has a curved lever 56 rigidly mounted upon one end thereof, which lever has its lower end connected with a retractile coil spring 57, the upper end of which coil spring is suitably connected with an upstanding bracket 58. The bracket 58 is rigidly mounted upon the bracket 2, as shown. The spring 57 tends to oscillate the rock-shaft 4 in the direction of the arrow, shown in Fig. 2. The rock-shaft 4 is provided intermediate its ends with an upstanding finger 59, which is rigidly connected with the same. This finger is normally held against movement by the catch 21, whereby the spring 57 cannot oscillate the rock-shaft. The lever 56 carries a pin 60 at its upper end, which is adapted to strike and force downwardly an extension 61, which is rigidly connected with a lever 165.

My stop mechanism is particularly adapted for use in connection with the knitting machine disclosed in the patent granted to G. D. Mayo, No. 726,178. Attention is particularly called to Fig. 24 of the above referred to patent, wherein the lever 165 is illustrated, the same being pivoted to the frame-work of the machine, as shown at 166. In this machine, when the lever 165 is swung clock-wise so that its right hand end is moved downwardly, it depresses the arm 164 of the trip-dog 161 to move the latter for freeing the belt-shifter, which cuts off the power as is clearly explained in the above referred to patent. I have not shown parts 164 and 161 as they may be readily understood by reference to said patent and said Fig. 24.

From the construction of the above referred to parts, it is obvious that when the rod 20 is elevated, as above described, the spring 57 will oscillate the rock-shaft 4, whereby the pin 60 will depress the extension 61 to oscillate the lever 165. At the same time the plate 6 is oscillated downwardly, pin 7 engaging the link 8, the band-brake is tightened on the flange 11 to prevent the rotation of the pinion 138.

In Figs. 8 and 9, I have illustrated a slightly modified means for supporting the thread 48, such means being designed to take the place of the pulley 45. The means comprises a lever 62, pivoted intermediate its ends, as shown at 63, and having its forward end in the shape of a hook 64, through which the thread 48 passes. The rear end of the lever 62 is provided with recesses 65, for the reception of one end of the cord 44, such cord being detachably connected with the lever, by means of a spring 66.

In Figs. 10, 11 and 12 I have illustrated a slightly modified form of thread engaging means, which may be employed in the place of the thread engaging means hereinabove described. Such means comprises a pair of pivoted hammers 67, which are provided at their lower ends with horizontal extensions

68. The extension 68 is disposed at right angles to the body portion of the hammer. A retractile coil spring 69 is connected with each of the horizontal extensions 68 and is also connected with the end of the arm 35, as shown. The hammers 67 carry thread engaging fingers 70, so constructed that the fingers of one hammer cross the fingers of the other hammer. The uppermost finger of one hammer and the lowermost finger of the other hammer are provided with eyes 71, to serve as a guide for the thread. When this form of thread engaging means is used, upon the thread being broken, the two hammers are oscillated downwardly in opposite directions, the extension 68 of one hammer striking against the lever 32, for oscillating the same downwardly.

In the operation of my stop mechanism, when the thread is broken, the hammer carrying the thread engaging fingers oscillates downwardly to strike the swinging lever 32, whereby the rod 20 is elevated. The rock-shaft 4 is now oscillated by spring 57 and the pin 60 engages extension 61, to effect the oscillation of the pivoted lever 165, whereby the belt is shifted and the knitting machine stopped. At the same time that the belt is being shifted, the band-brake is applied to the flange 11 to prevent the rotation of the pinion 138. In case the thread 48 should become too tight, the hammer 37 will be released, to drop downwardly and oscillate lever 32, whereby the lever 165 is oscillated in the manner above described.

I wish it understood that the form of my invention herewith shown and described is to be taken as a preferred example of the same and that certain changes in the shape, size, and arrangement of parts may be resorted to without departing from the spirit of my invention or the scope of the subjoined claims.

Having thus described my invention, I claim:—

1. The combination with means for stopping a knitting machine or the like, including a movable lever, of mechanism to move said lever, including a rock-shaft, means to turn said rock-shaft, means to normally hold the rock-shaft against movement, brake mechanism actuated by the turning the rock-shaft, means including two hammers to move the last named means, one hammer being provided with thread engaging means, and means to hold the other hammer against movement, said last named means being actuated by the undue pull on the thread.

2. The combination with means for stopping a knitting machine, including an oscillatory lever, of mechanism to effect a movement of said lever, including a rock-shaft, means to turn said rock-shaft, means to hold the rock-shaft against movement, means including two hammers to move the last named means, one hammer being provided with thread engaging means, and means to hold the other hammer against movement, said last named means being actuated by the tightening of the thread.

3. The combination with means for stopping a knitting machine, including an oscillatory lever, of mechanism to effect a movement of such lever, including a rock-shaft, means to turn said rock-shaft, a reciprocatory rod to hold the rock-shaft against movement, means including a pivoted lever to move said reciprocatory rod, two hammers to strike said pivoted lever, one hammer being provided with thread engaging means, a movable bolt to hold the other hammer against movement, and means connected with said bolt to move the same, the last named means being engaged by the thread and moved thereby when the thread becomes too tight.

In testimony whereof I affix my signature in presence of two witnesses.

ARCHELAS VILLENEUVE.

Witnesses:

ALVAH J. DAVIS,

LEWES LAMDRY.