March 27, 1934. J. BREAKELL ET AL 1,952,969

SKEIN WINDING MACHINE

Filed Aug. 26, 1930 2 Sheets-Sheet 1

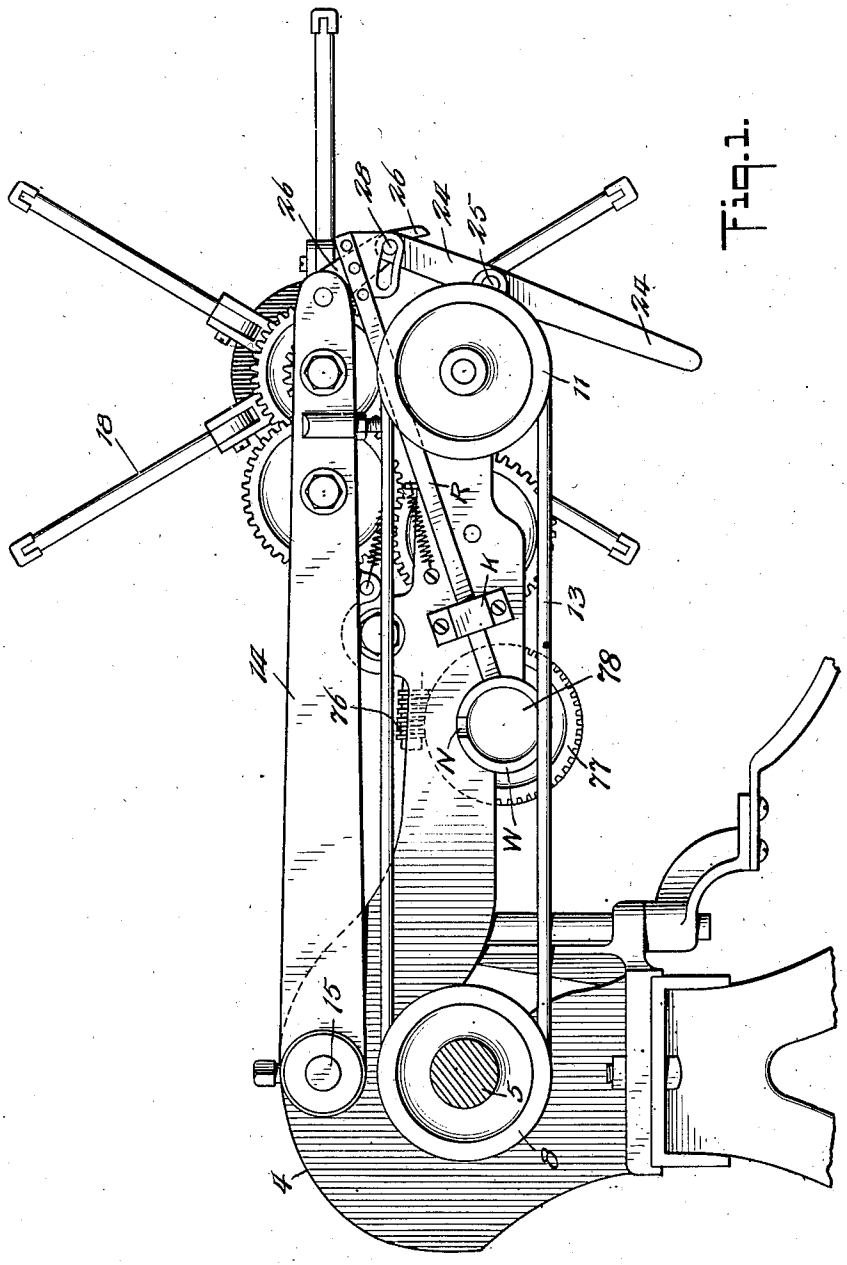


Fig. 1.

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Fig. 2.

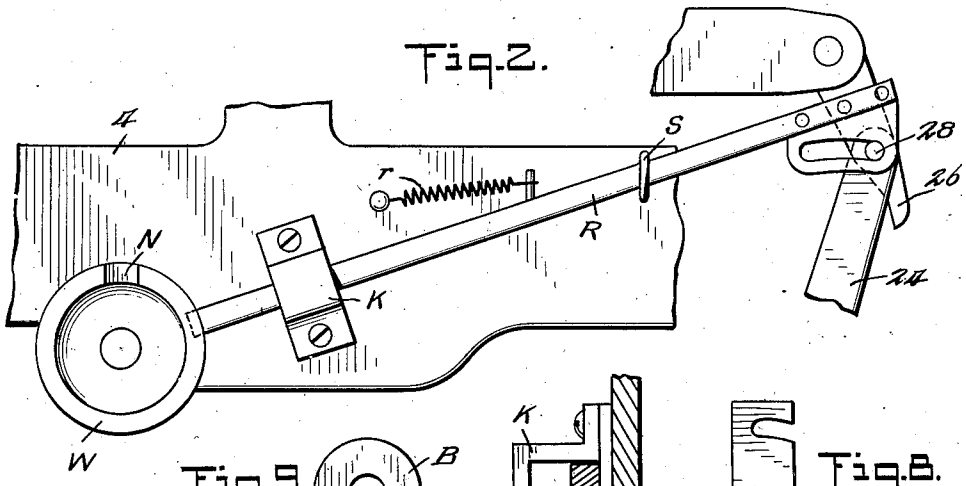


Fig. 9.

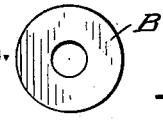


Fig. 7.

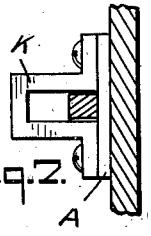


Fig. 8.



Fig. 3.

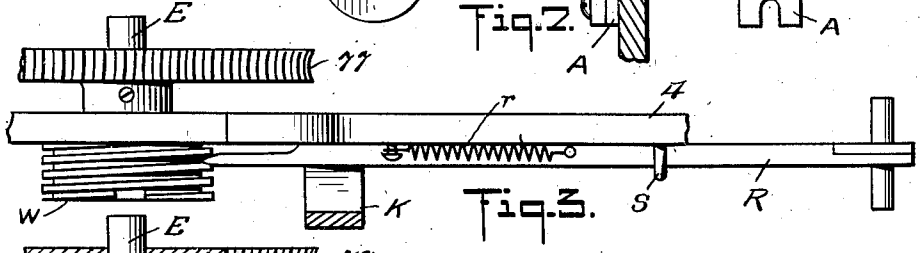


Fig. 4.

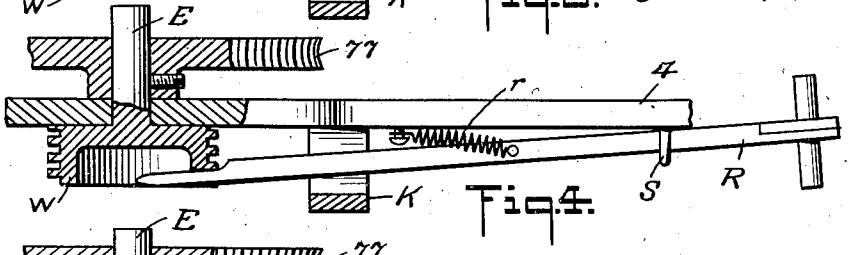


Fig. 5.

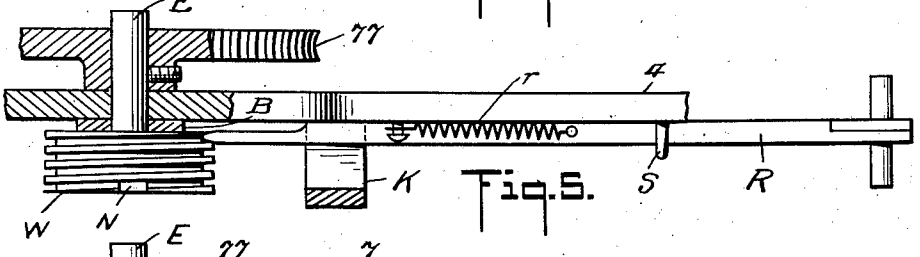
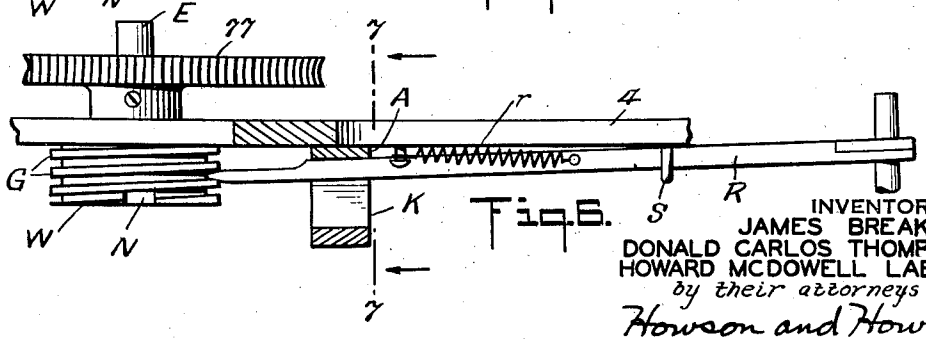


Fig. 6.



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UNITED STATES PATENT OFFICE

1,952,969

SKEIN WINDING MACHINE

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Application August 26, 1930, Serial No. 477,922

3 Claims. (Cl. 242—53)

This invention relates to skeining machines and more particularly to that portion of the machine which controls the length of yarn or thread wound in a skein. A machine of the above type is shown and described in the McIsaac Patent No. 1,179,016, but in that device the skein length is fixed and may not be easily changed, it being necessary to change the gear ratio in order to vary the skein length.

It is an object of our invention to provide a simple mechanism having provision for varying the length wound in the skein without the necessity of changing gears or gear ratios.

In the drawings, Figure 1 is a side elevation of a machine embodying my invention;

Fig. 2 is a fragmentary detail of the portion of the frame of the machine as shown in Fig. 1 with our invention applied to it;

Fig. 3 is a top view of our invention, set in the position it occupies at the start of the winding operation.

Fig. 4 is a top view partly in section similar to Fig. 3, but with the parts in the position they occupy at the conclusion of winding a skein.

Fig. 5 is a view similar to Fig. 3, but showing a shim under the worm wheel, provided for winding a long length skein.

Fig. 6 is a view similar to Fig. 4 but showing a shim under the keeper, provided for winding a short length skein.

Fig. 7 is a transverse section view taken through the apparatus on line 7—7 of Fig. 6.

Fig. 8 is a detail of the keeper shim.

Fig. 9 is a detail of the worm wheel shim.

It will be seen by reference to the drawings that our invention is shown in connection with the same kind of a machine that is shown and described in the McIsaac Patent No. 1,179,016. In that machine, a power shaft 5 through a pulley 8, on that shaft, and a belt 13 connecting the pulley with another pulley 11 which is associated with a gear train, drives the gear train which in turn rotates the reel 18. The worm 76, and the worm gear 77 on the shaft 78, which is journalled in the arm 4 of the frame are also rotated through the agency of the gear train, and thereby a stop mechanism is actuated.

In the present invention, as in McIsaac's device, the winding of the yarn or thread on the reel is terminated by disengaging the gears, some of which are mounted on an arm 14 pivoted to the frame arm 4 at 15. The disengagement is accomplished by raising the outer end of the arm 14 through a toggle mechanism comprising a manual control lever 24 pivoted to the end of the frame arm 4 at 25 and pivotally engaging, at 28, with one end of a short lever 26 whose other end is pivoted to the end of the pivoted arm 14. To automatically actuate this toggle, the toggle pin 28 has slotted engagement with one end of a longitudinally movable stop rod R which is urged by a spring *r* toward the position to unmesh the gears.

Rod R slides in a U-shaped keeper K, which for convenience in mounting and securing it on the frame arm 4 has the ends of its legs out-turned to lie against the surface of the arm 4. The rod R is also guided under a U-shaped staple S mounted in the arm 4 at some distance from the keeper K. The other end of the rod R engages a helically grooved wheel W having a shaft E formed integrally therewith and journalled in the arm 4. As the worm wheel rotates the end of the rod R follows the helical path of the groove and is caused thereby to "drift" or move laterally, until it reaches the notch N in the periphery of the wheel at its edge, whereupon the stop rod R is thrown by spring *r* to a position to unmesh the gears and stop the reel.

To determinedly vary the length of yarn wound in a skein it is only necessary to change the location of the starting position of the end of the rod R from one convolution of the groove on the wheel W to another at the start of the winding operation, so that a greater or less number of revolutions of the reel are made before the notch N is encountered and the winding stopped. To facilitate the insertion of the end of the rod R repeatedly in the determined convolution when a number of short length skeins are to be wound, a shim or shims A may be inserted under the keeper K.

The thickness of the shim or shims may be one or more times the width of the convolution G (see Fig. 6) of the groove in wheel W, depending on whether it is desired to shift the rod R one or more convolutions. The insertion of this shim will locate the end of rod R one or more convolutions nearer the notch N and hence shorten the skein length.

When long length skeins are to be wound the end of the rod R need be located in one of the convolutions farthest from the notch N. In this case the repeated locating of the rod in a certain convolution may be facilitated by inserting a shim or shims B, of thickness equal to one or more times the width of a convolution G between the wheel W and frame arm 4.

Obviously by providing the wheel W with more or less convolutions greater or lesser lengths of

skeins may be wound. Also the end of the rod R might be beveled so as to engage in the first convolution of the groove in wheel W, instead of the second as shown in Fig. 3. If that were done the wheel shims B might be dispensed with and only one or more keeper shims, A, used. In order to predetermine the length of skein wound, the element W predetermines the time at which the rod R enters the notch N. Hence the element W is a timing means. Other modifications within the scope of our invention may occur to those skilled in the art. Therefore we do not limit ourselves to the specific embodiment shown.

We claim:—

1. In combination with a skein winding mechanism, stop means for rendering said winding mechanism inoperative, a shaft actuated by said mechanism, timing means cooperating with said stop means, means for mounting said timing means with clearance for displacement to positions spaced along the axis of said shaft, and means whereby said timing means may be selectively located in any one of said positions to thereby predetermine the length of skein to be wound.

2. In combination with a skein winding mechanism, a movable stop rod for rendering said winding mechanism inoperative, a shaft actuated by said mechanism, a helically grooved wheel cooperating with said stop rod, means for mounting said helically grooved wheel with clearance for displacement to positions spaced along the axis of said shaft, and means whereby said helically grooved wheel may be selectively located in any one of said positions to thereby predetermine the length of skein to be wound.

3. In combination with a skein winding mechanism, a helically grooved wheel, means for rotating said wheel from said mechanism, a movable stop rod engaging said wheel and adapted to move substantially radially to said wheel for rendering said winding mechanism inoperative, means for mounting said wheel with clearance for displacement to positions spaced along the axis of said rotating means, and means whereby said wheel may be selectively located in any of said positions to set the starting position of said rod in relation to said wheel and thereby selectively predetermine the length of skein to be wound.

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