June 18, 1935. M. McCANN 2,005,679

STOP MOTION DEVICE FOR SEWING MACHINES

Filed Oct. 18, 1934 2 Sheets-Sheet 1

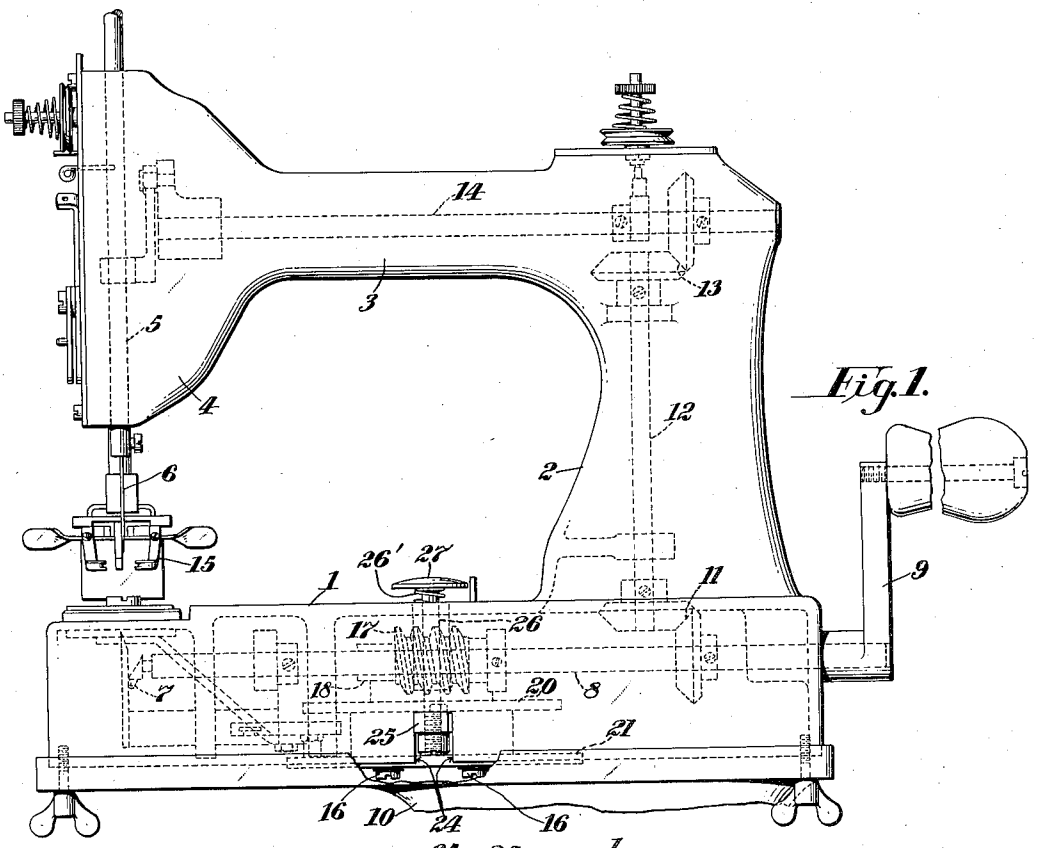


Fig. 1.

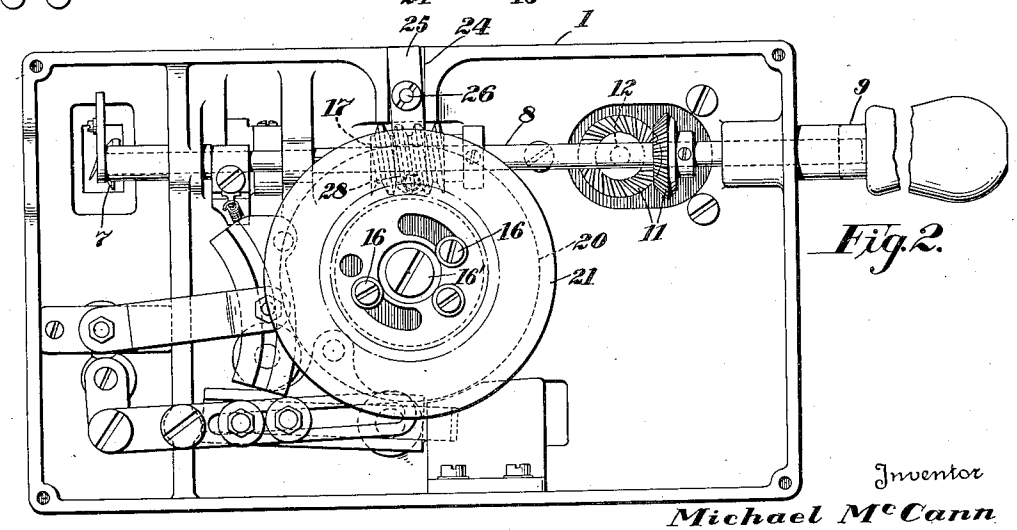


Fig. 2.

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STOP MOTION DEVICE FOR SEWING MACHINES

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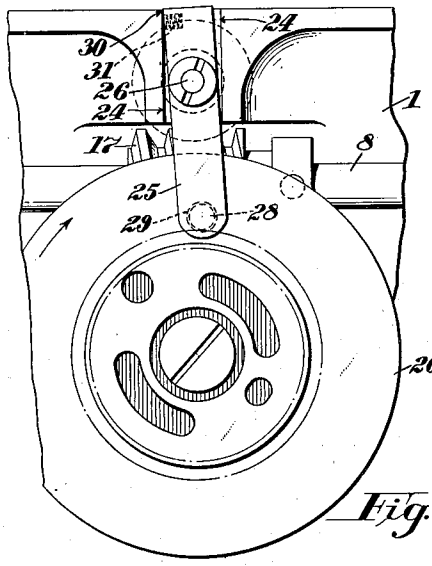


Fig. 3.

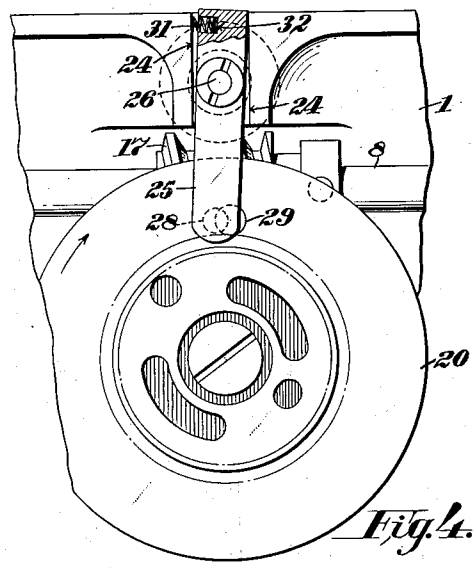


Fig. 4.

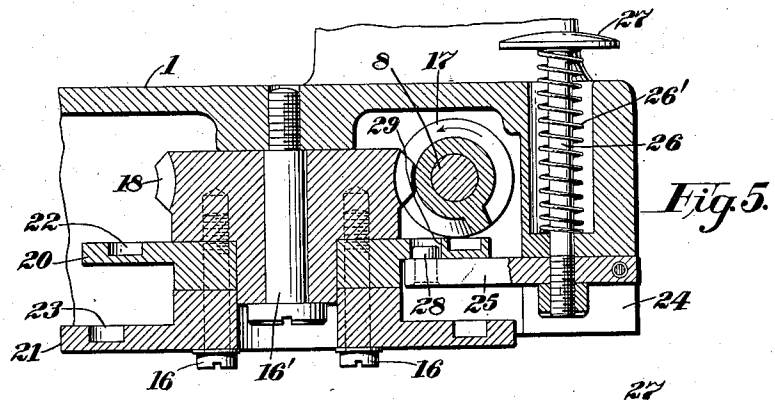


Fig. 5.

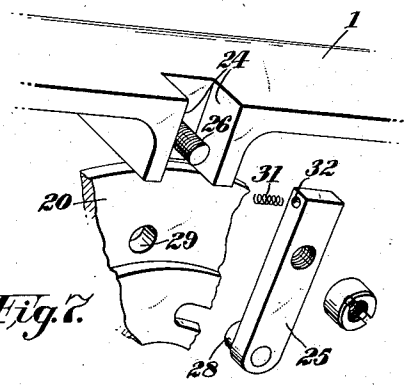


Fig. 7.

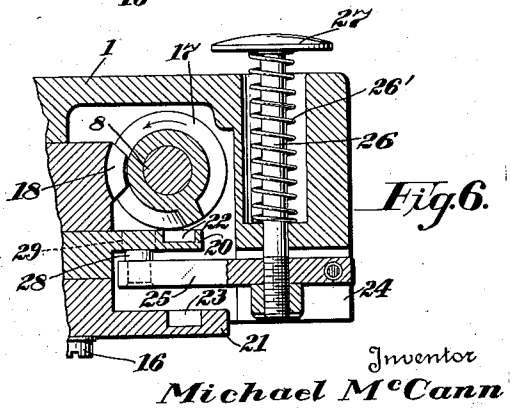


Fig. 6.

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UNITED STATES PATENT OFFICE

2,005,679

STOP-MOTION DEVICE FOR SEWING MACHINES

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Application October 18, 1934, Serial No. 748,920

4 Claims. (Cl. 112—219)

This invention relates to button-sewing machines, more particularly of the hand-operated type customarily used in laundries, hospitals and other institutions where there is considerable occasion for replacement of buttons on garments but where the expense of a power-operated button-sewing machine is not warranted by the amount of work to be done.

In a machine of this type it is desirable that means be provided for automatically predetermining the number of stitches made through the holes of a button, thus insuring uniformity in the work done, without requiring the operator to count the stitches.

In the copending application of Harold W. Morris, Serial No. 682,216, filed July 26, 1933, there is disclosed a hand button sewer in which the means for predetermining the number of stitches includes a spring-pressed arm having a projection or pin adapted to enter a hole in the usual feed-cam which is geared to the main-shaft and controls the stitch-positioning movements of the button-clamp. This arm is manually operated, by means of a push-button, to unlock the machine at the start of a sewing operation and it is necessary to hold the push-button depressed until the hand-crank is turned sufficiently to carry the hole in the feed-cam out of register with the pin on the arm.

The present improvement aims to improve the stop-motion device disclosed in the said Morris application, so that it will not be necessary for the operator to hold the push-button or releasing element in releasing position until the hand-crank is turned.

According to the present improvement, in its preferred embodiment, provision is made for a lateral motion of the arm under the influence of a spring, in addition to its spring influenced vertical motions to starting and stopping positions, so that when the arm is shifted to starting position it will be automatically shifted laterally sufficiently to carry its pin out of register with the hole in the feed-cam and hence may be immediately released by the operator, before the hand-crank is turned, without fear that the pin will re-enter the hole in the feed-cam and re-lock the machine before it can be started.

In the accompanying drawings, Fig. 1 is a front elevation of a hand button sewing machine embodying the invention. Fig. 2 is a bottom plan view of the machine. Fig. 3 is a bottom plan view of the stop-arm and feed-cam in stopping or locked position. Fig. 4 is a similar view of the parts in unlocked position. Figs. 5 and 6 are vertical sectional views of the parts in locked and unlocked positions, respectively, and Fig. 7 is a disassembled perspective view of the stop-motion parts shown in Figs. 3 to 6, inclusive.

The machine is constructed with a hollow rectangular bed 1 from which rises the standard 2 of the overhanging bracket-arm 3 terminating in the head 4 in which the usual needle-bar 5 carrying the eye-pointed needle 6 is mounted to reciprocate.

The needle 6 cooperates as usual with the rotary chain-stitch looper 7 carried by the main-shaft 8 journaled in the bed 1 and carrying a hand-crank 9; the machine being preferably mounted on a suitable pedestal shown fragmentarily at 10.

The main-shaft 8 is geared at 11 to the vertical shaft 12 which, in turn, is geared at 13 to the usual rotary needle-bar shaft 14 in the bracket-arm 3.

The button- and work-clamp 15 is of usual construction and has stitch-positioning movements imparted to it by the usual connections with the feed-cam disks 20, 21 which are mounted for rotation on the worm gear 18; the latter being journaled on the stud-screw 16' and slowly driven from the main-shaft 8 by means of the worm 17. The feed-cam disks 20, 21, are rigidly secured to the worm-gear 18 by screws 16 and are formed in their upper faces with the feed-cam grooves 22, 23, respectively.

Through suitable connections, such as illustrated in said Morris application, the feed-cams impart the necessary motions to the button-clamp to present the various holes of the button (either two-hole or four-hole) in stitch-receiving position.

My improved stop-motion device is preferably constructed as follows:—

The bed 1 is provided with a guide-channel 24 which is somewhat wider, Figs. 3 and 4, than the arm 25 received therein and guided thereby. The arm 25 is rigidly secured to the lower end of the plunger 26 having a push-button 27 at its upper end and urged upwardly by the spring 26'. The arm 25 has fixed to its free end the pin 28 which is caused by the spring 26' to automatically enter the slightly larger hole 29 in the feed-cam, as shown in Figs. 3 and 5, to lock the machine against further movement at the completion of a predetermined number of stitches.

It will be observed in Fig. 3 that after interlocking engagement of the pin 28 with the walls of the hole 29 the arm 25 is rocked slightly, in a horizontal plane, until arrested by the corner 30 of the guideway 24 to stop the machine.

When the operator pushes the button 27 downwardly to withdraw the pin 28 from the hole 29 preparatory to starting the machine, the small spring 31 housed in the hole 32 in the arm 25 and pressing at its outer end against one side wall of the guideway 24, immediately rocks the arm 25 in a horizontal plane to the position shown in Fig. 4, in which position the pin 28 is out of register with the hole 29 and will not re-enter such hole until the machine is turned through a complete cycle. Hence it is not necessary to hold the push-button 27 depressed until the hole 29 is turned by the crank 9 out of register with the pin 28. The walls defining the hole 29 constitute a stop-control element on the feed-cam since they permit the pin 28 to move to stopping position after a predetermined number of stitches have been made.

Having thus set forth the nature of the invention, what I claim herein is:—

1. In a sewing machine, a frame, stitch-forming mechanism including a reciprocatory needle, a work-clamp, a main-shaft connected to drive the stitch-forming mechanism, a feed-cam connected at all times to be driven by said main-shaft and making one revolution for a plurality of stitch-forming cycles, said feed-cam having a stop-control element, a cooperating element mounted on the machine frame and movable to a position to interlock with said stop-control element, manually operated means for disengaging said elements to unlock the machine, and automatic means for relatively moving said elements out of register immediately upon their manual disengagement and while said feed-cam remains stationary.

2. In a sewing machine, a frame, stitch-forming mechanism including a reciprocatory needle, a work-clamp, a main-shaft connected to drive the stitch-forming mechanism, a feed-cam connected at all times to be driven by said main-shaft and making one revolution for a plurality of stitch-forming cycles, said feed-cam having a stop-control element, a cooperating element mounted on the machine frame and movable to a position to interlock with said stop-control element, manually operated means for disengaging said elements to unlock the machine, and automatic means for moving said cooperating element a limited distance in a direction opposite to the direction of travel of said feed-cam, immediately upon disengagement therefrom.

3. In a sewing machine, a frame, stitch-forming mechanism including a reciprocatory needle, a work-clamp, a main-shaft connected to drive the stitch-forming mechanism, a feed-cam driven by said main-shaft and having a hole, means actuated by said feed-cam for relatively moving the stitch-forming mechanism and work-clamp to position the stitches, a spring-energized arm mounted on the machine frame and having a projection adapted to enter the hole in the feed-cam, manually operated means for disengaging said projection from said hole, and a spring for shifting said arm in a direction to carry said projection out of register with said hole when disengaged from the latter.

4. In a hand-driven button-sewing machine having stitch-forming mechanism, a button-clamp, a main-shaft, and a feed-cam driven by the main-shaft for imparting stitch-positioning movements to the button-clamp, a stop-control element on the feed-cam, a manually releasable element mounted on the machine frame in position to interlock with the stop-control element, and spring means for shifting said manually releasable element backwardly relative to the direction of travel of said feed-cam upon its manual disengagement from the stop-control element.

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