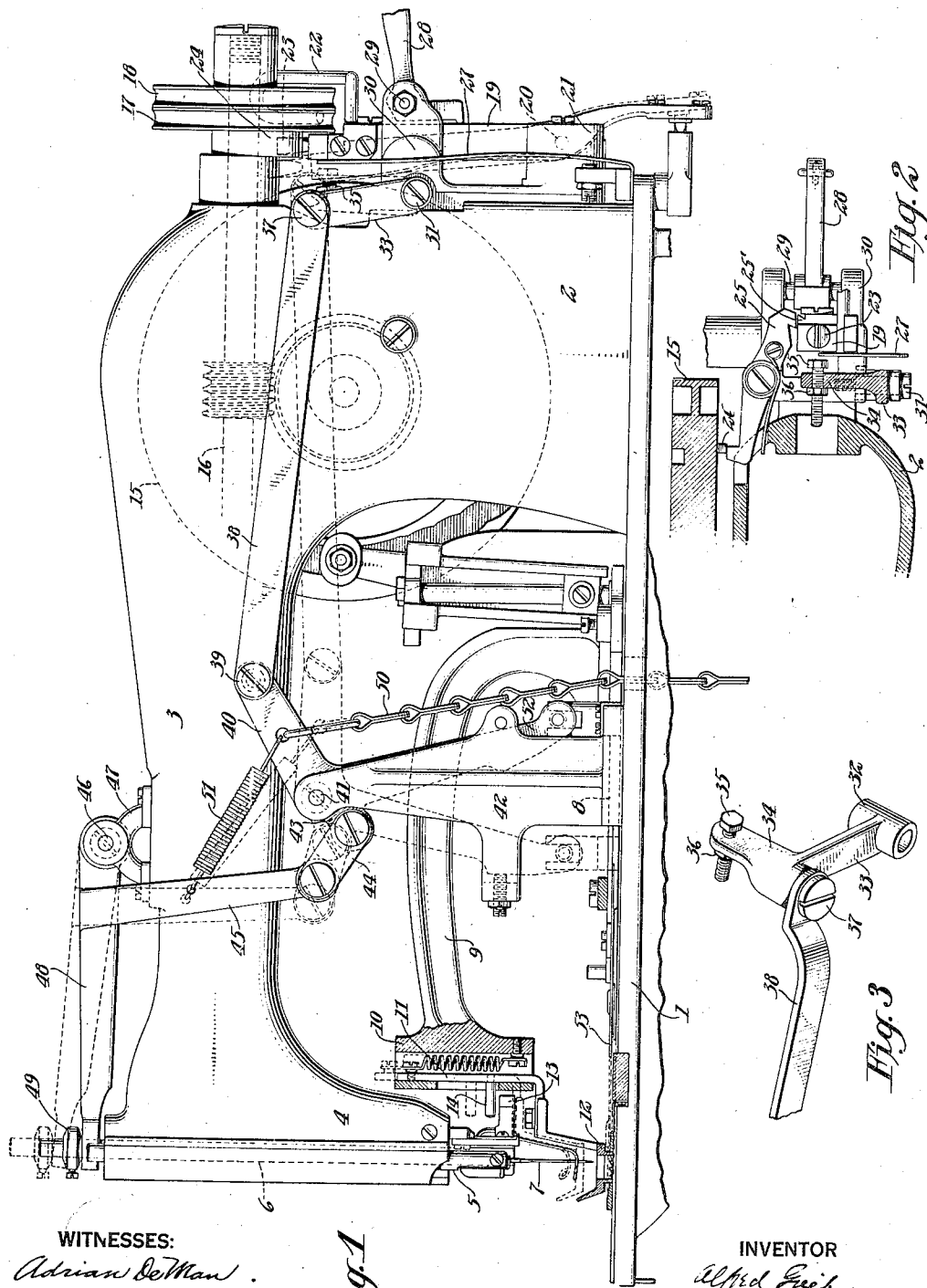


Jan. 9, 1923.

1,441,679.

A. GRIEB.
INTERLOCK FOR SEWING MACHINES.
FILED APR. 21, 1921.



WITNESSES:
Adrian DeMan

Fig. 1

INVENTOR
Alfred Grieb
BY *Henry J. Miller*
ATTORNEY

UNITED STATES PATENT OFFICE.

ALFRED GRIEB, OF ELIZABETH, NEW JERSEY, ASSIGNOR TO THE SINGER MANUFACTURING COMPANY, OF ELIZABETH, NEW JERSEY, A CORPORATION OF NEW JERSEY.

INTERLOCK FOR SEWING MACHINES.

Application filed April 21, 1921. Serial No. 463,257.

To all whom it may concern:

Be it known that I, ALFRED GRIEB, a citizen of the United States, residing at Elizabeth, in the county of Union and State of New Jersey, have invented certain new and useful Improvements in Interlocks for Sewing Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

10 This invention relates to sewing machines such as are customarily operated by power in factory installation and has for an object to provide a simplified and improved interlock for preventing the starting of the machine while the work-clamp, presser-foot or other manually operated part is displaced from sewing position, and to prevent accidental displacement of such part from sewing position while the machine is running.

20 The invention is adapted, more particularly, for use on a machine having a stop-motion device of the well known type illustrated in the United States patent to Barron No. 1,093,241 of April 14, 1914. Such a stop-motion device comprises a starting lever which may be swung manually in one direction to start the machine and which swings automatically in the opposite direction to stop the machine at a predetermined time.

30 The invention comprises a stop which is shiftable into and out of the path of movement of the stop-motion lever, and which is connected to be positioned within the range of starting movement of said lever when another manually controlled part of the machine, such for example as the work-clamp, is opened, or displaced from the position it should occupy during the sewing.

40 Preferably, the stop is in the form of a swinging element, pivoted on a horizontal axis in bearings on the bracket-arm standard or goose-neck of the machine.

45 In the accompanying drawings, Fig. 1 is a side elevation of a sewing machine, embodying the invention. Fig. 2 is a fragmentary horizontal section through the bracket-arm standard and Fig. 3 is a perspective view of the stop element.

50 In the preferred embodiment of the invention chosen for the purpose of the present disclosure the invention is embodied in a label cutting, folding and stitching machine, the constructive features of which are more fully disclosed in my copending appli-

cation Serial No. 416,927, filed Oct. 14, 1920.

The frame of the machine comprises the bed 1, and the usual bracket-arm including the standard 2 and horizontal member 3 terminating in the head 4 in which is journaled the reciprocating needle-bar 5 and presser-bar 6; the former carrying the needle 7.

Mounted to slide over the bed 1 is the usual work-clamp including the lower supporting bar 8 and upper clamp-carrying arm 9 terminating in the head 10 in which is mounted the spring-actuated slide-bar 11 carrying at its lower end the shiftable work engaging element or label-clamping foot 12. The presser-bar 6 carries at its lower end the usual bracket-piece 13 which extends under and is adapted to lift the lateral pin 14 carried by the slide-bar 11.

The front end of the work-clamp is moved in a rectangular path over the bed 1 by means of the usual connections with the pattern-wheel 15 which is geared to the main-shaft 16 carrying at its rearward end the tight and loose pulleys 17 and 18, respectively.

The running of the machine is controlled by the usual stop-motion device disclosed in said Patent No. 1,093,241 and comprising the stop-motion lever 19, pivoted at 20 to the bracket 21 and carrying the belt shipper 22 and the stopping plunger 23 which cooperates with the stopping cam 24 to stop the machine when the lever 19 occupies full line position, Fig. 1.

When the lever 19 is shifted inwardly or toward the bracket-arm, Fig. 1, the belt is shifted onto the tight pulley 17 to start the machine; the lever 19 being retained in running position for a predetermined time by the spring-pressed latch 25 which engages the tooth 25' on the lever 19. The tripping time of the latch 25 is governed by a lug 26 on the pattern-wheel 15. A spring 27 forces the stop-motion lever to stopping position when the latch 25 is tripped. The lever 19 is shifted to running position by a downward pull on the usual treadle-operated bellcrank-lever 28 pivoted at 29 to the bracket 30.

Pivoted horizontally on the screw 31 carried by the bracket 30 is the hub 32 of the stop-arm 33 having at its upper end a lateral extension 34 the free end of which is threaded to receive a stop-screw 35 which is held

in adjusted position by means of the lock-nut 36. Connected to the stop-arm 33 at 37 is one end of the toggle-link 38 the opposite end of which is connected at 39 to one arm 40 of a manually controlled three-armed lever pivoted at 41 to an upstanding bracket 42 mounted on the bed 1. Another arm 43 of the three-armed lever is connected by the link 44 to the depending arm 45 of a bell-crank-lever pivoted at 46 to a bracket 47 mounted on the bracket-arm 3. The horizontal arm 48 of the bell crank-lever extends beneath a collar 49 on the presser-bar 6 and embraces said presser-bar, whereby when a pull is exerted by the operator upon the chain 50 connected to the arm 40, the presser-bar and clamping foot 12 will be lifted to release the work. The spring 51 connected at its opposite ends to the arms 40 and 45 tends to restore the parts to their full line position, Fig. 1, when the pull on the chain 50 is relieved. The three-armed lever also includes a depending arm 52 which is the embodiment of the invention illustrated is adapted to operate a shiftable element in the form of a label feed slide or pusher 53 more fully disclosed in my said copending application.

It will be observed that when the clamping foot 12 has been lifted, or the pusher 53 advanced to dotted line position, Fig. 1, the stop-arm 33 has necessarily been shifted by the straightening action of the arm 40 and toggle-link 38 so as to position the stop-screw 35 directly in the path of inward movement of the stop-motion lever 19. Consequently as long as the parts controlled by the manually operated arm 40 are out of sewing position or occupy dotted line position, Fig. 1, inward movement of the lever 19 to start the machine is blocked by the stop-screw 35 on the stop-lever 33. On the other hand, when the machine is running, the stop-motion lever 19 is in its inward position and acts through the stop-arm 33 and link 38 to block the advance of the pusher 53 and to prevent the lifting of the clamping foot to release the work. Thus, when the machine is running, the work cannot be released or otherwise interfered with nor can any manually controlled part be shifted to an unsafe position. When the work is being shifted or fed to the machine, the latter cannot be started until the work-clamp is closed and all parts have been returned to safe running positions.

It will also be observed that when the toggle 40 and link 38 are straightened, the stop-motion lever 19 is locked in stopping position. Accidental starting pressure upon said lever 19 will not be transmitted to the work-clamp operating connections until the toggle 38, 40 is broken, whereupon inward movement of the stop-motion lever 19 will force the pusher 53 rearwardly and the clamping foot lifting arm 48 downwardly,

thereby forcibly restoring the parts to safe running positions before the machine starts.

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

1. A sewing machine having, in combination, stitch-forming mechanism, power means, a stop-motion device including a stopping cam and a starting and stopping control lever adapted to cooperatively engage said cam and movable to establish and interrupt driving relation between the power means and the stitch-forming mechanism, a shiftable element and connections for manually operating the same between sewing periods, and a stop movable into and out of the range of movement of said starting and stopping lever and connected to be positioned by the operating connections for said shiftable element, substantially as and for the purposes specified.

2. A sewing machine having, in combination, stitch-forming mechanism, power means, a stop-motion device including a stopping cam and a starting and stopping control lever adapted to cooperatively engage said cam and movable to establish and interrupt driving relation between the power means and the stitch-forming mechanism, a shiftable element and connections for manually operating the same between sewing periods, and a stop-arm pivoted to swing into and out of the range of movement of said starting and stopping lever and connected to be positioned by the operating connections for said shiftable element, substantially as and for the purposes specified.

3. A sewing machine having, in combination, stitch-forming mechanism, power means, a stop-motion device including a stopping cam and a starting and stopping control lever adapted to cooperatively engage said cam and movable to establish and interrupt driving relation between the power means and the stitch-forming mechanism, a shiftable element and connections for manually operating the same between sewing periods, and a stop-arm horizontally pivoted to swing into and out of the range of movement of said starting and stopping lever and connected to be positioned by the operating connections for said shiftable element, substantially as and for the purposes specified.

4. A sewing machine having, in combination, a frame including a bed and a hollow bracket-arm rising therefrom, stitch-forming mechanism incorporated in said frame, power means, a stop-motion device including a stopping cam and a starting and stopping lever adapted to cooperatively engage said cam and movable to establish and interrupt driving relation between the power means and the stitch-forming mechanism, a shiftable element and connections for manually operating the same between sewing periods, and a stop-arm pivotally carried by

said bracket-arm and movable into and out of the range of movement of said starting and stopping lever and connected to be positioned by the operating connections for said shiftable element, substantially as and for the purposes specified.

5 5. A sewing machine having, in combination, stitch-forming mechanism, a starting and stopping device including a shiftable starting and stopping element for controlling the period of action of the stitch-forming mechanism, a work-engaging element and connections for manually operating the same between sewing periods, a stop movable into and out of the range of movement of said starting and stopping element in the direction of movement of the latter, and a toggle link connection between said stop and the connections for operating the work-engaging element.

10 6. A sewing machine having, in combination, stitch-forming mechanism, a frame

including a bed and bracket-arm, power means, a stop-motion device including a stopping cam and a starting and stopping lever pivotally carried by the bracket-arm and shiftable out of engagement with said cam and toward the bracket arm to establish driving relation between the power means and the stitch-forming mechanism, a shift-able work-engaging element and connections for manually operating the same between sewing periods, a stop located intermediate said starting and stopping lever and said bracket-arm, and adapted to be shifted into and out of the range of inward movement of said lever, and an operative connection between said stop and the connections for operating the work-engaging element, substantially as and for the purposes specified.

In testimony whereof, I have signed my name to this specification.

ALFRED GRIEB.