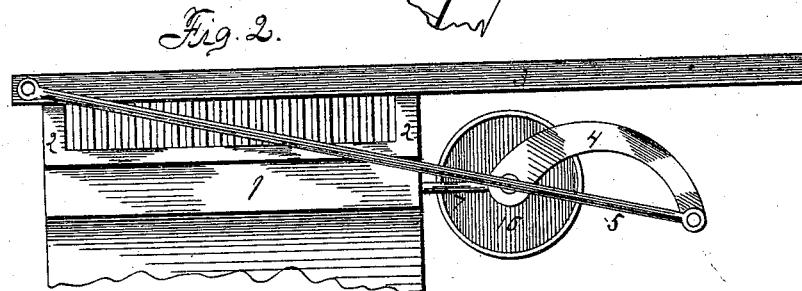
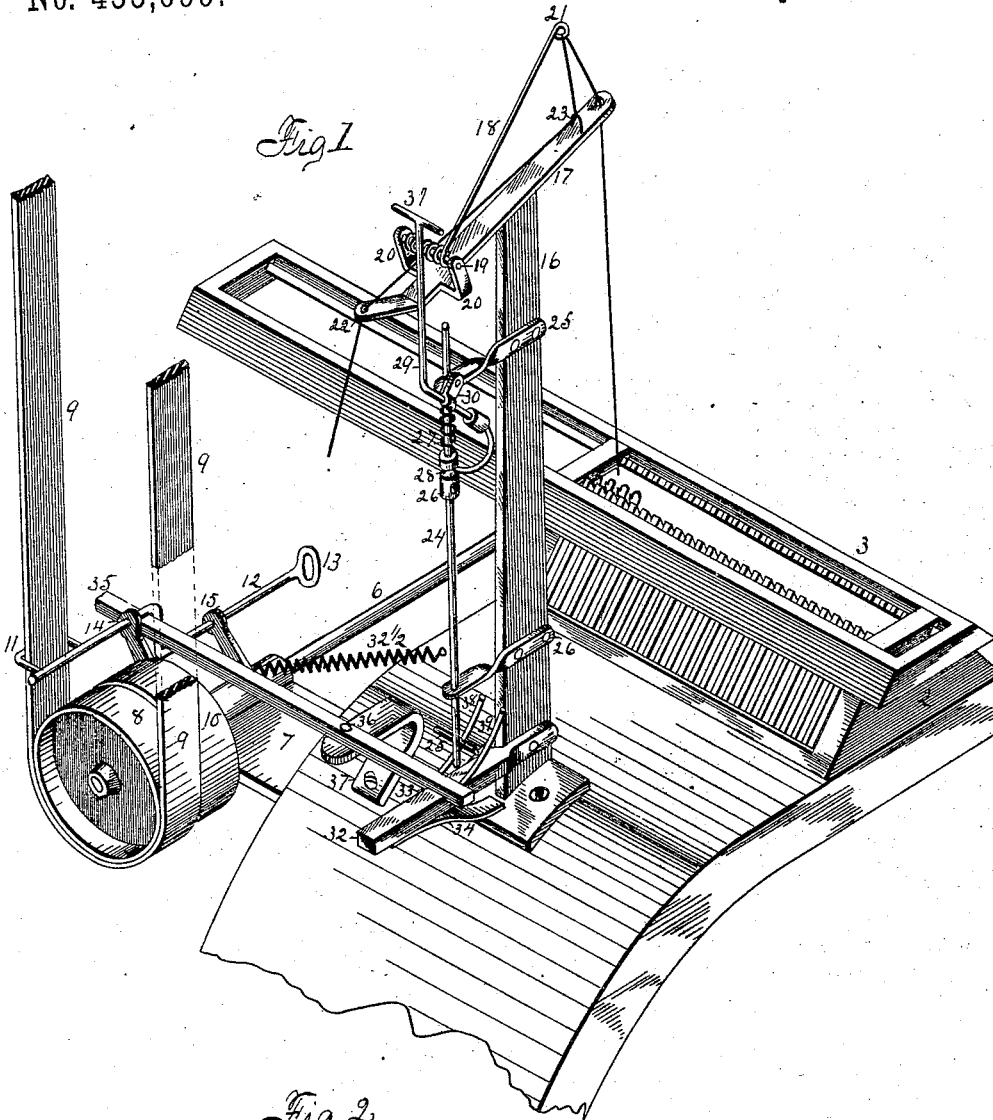


(No Model.)

A. BOEHMEN.
STOP MOTION FOR KNITTING MACHINES.

No. 455,699.

Patented July 7, 1891.



Witnesses:
Louis Clark
E. Behel.

Inventor:
Adolph Boehmen
By A. D. Behel
Atty.

UNITED STATES PATENT OFFICE.

ADOLPH BOEHMEN, OF ROCKFORD, ILLINOIS, ASSIGNOR TO THE ROCKFORD MITTEN AND HOSIERY COMPANY.

STOP-MOTION FOR KNITTING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 455,699, dated July 7, 1891.

Application filed October 24, 1890; Serial No. 369,252. (No model.)

To all whom it may concern:

Be it known that I, ADOLPH BOEHMEN, a citizen of the United States, residing at Rockford, in the county of Winnebago and State of Illinois, have invented certain new and useful Improvements in Stop-Motions for Knitting-Machines, of which the following is a specification.

The object of this invention is to automatically stop a knitting-machine when from any cause a yarn becomes broken, the supply exhausted, or the tension slackened.

In the accompanying drawings, Figure 1 is an isometrical representation of a portion of a knitting-machine and its driving mechanism, showing my improvements in connection therewith. Fig. 2 is an elevation illustrating the parts for imparting motion to the needle-operating slide.

Such portions of a knitting-machine as herein represented, consisting of the base-frame 1, needle-bed 2, needle-operating slide 3, and the device for operating the needle-slide, consisting of the crank 4 and connecting-link 5, may be of any of the known devices, and are here represented for the purpose of showing the application of my improvements. A horizontal shaft 6 is supported from the base-frame by a bracket 7, and a driving-pulley 8 is keyed or otherwise secured to said shaft, motion being imparted to this pulley by means of a belt 9, connected to a prime mover. The rotary motion imparted to the shaft 6 imparts a reciprocating movement to the needle-operating slide through the medium of the connecting-crank 4 and link 5. A loose pulley 10 is also mounted upon the horizontal shaft 6 and upon which the belt 9 may be shifted to stop the running of the machine. A belt-shifting device is employed, consisting of a loop 11, surrounding the belt 9, having a rod 12 extending within easy reach of the operator and having a hand-hold 13 at its free end. This shifting-rod 12 is supported by arms 14 and 15, connected with the bracket 7. By means of this rod 12 the belt may be shifted to stop or start the machine, as desired.

A yarn guide and tension device is mounted upon a standard 16, secured to the base 1.

Upon a plate 17 is mounted the support for the take-up arm 18. This take-up arm has one end coiled around a shaft 19 and the end connected with one of the uprising ears 20. After a number of coils around the shaft the arm 18 extends outward and is provided with a loop 21 at its free end. The yarn passes through the guide 22, thence through the eye 23, up through the loop 21 in the end of the arm 18, and thence down to the knitting-needles. The coils of the arm 18 furnish the necessary tension to the arm to take up the slack of the yarn. A shaft 24 is held in its vertical position by passing through brackets 25 and 26, secured to the upright support 16. A horizontal arm 25 passes through this shaft near its lower end, for a purpose to appear hereinafter. A collar 26 is set-screwed to the shaft 24 below the bracket 25, leaving sufficient distance for a coil-spring 27, which surrounds the shaft. This shaft has a vertical movement in its bearings, and the action of the coil-spring 27 tends to press the shaft downward, carrying the parts attached thereto. The collar 26 has a groove 28 cut in its outer surface. A rod 29, of the form shown, has a pivotal connection with the bracket 25 by means of the clamp 30, connected to the rod and pivotally connected with the bracket. The lower end of this rod is curved and the extreme lower end engages the upper side of the groove 28 of the collar 26. A weight is attached to the rod 29 below its connection with the bracket, so as to insure the engagement of the rod with the collar. The upper end of the rod terminates with a transverse bar 31. Below the bracket 26 is pivoted a horizontal arm 32, having its upper face slightly grooved, as at 33, transversely to its lengthwise direction. A flat spring 34 is connected at one end to the under side of the arm 32 and its free end rests upon the base 1, thus holding the arm in a yielding manner. A horizontal arm 35 is pivoted at 36 to a bracket 37, secured to the base 1. The longer portion of this arm engages the belt-shifting rod 12, its shorter end fitting into the groove 33 in the arm 32. A spiral spring 32½ has one end connected to the longer portion of the arm 35 and its other end connected to

the main frame. From near the end of the shorter portion of the bar 35 project two arms 38 and 39.

The operation of my improved stop-motion is as follows: When the parts are in the position shown in Fig. 1, the machine is in condition for knitting. If from any cause the yarn is broken, the tension slackened, or the supply exhausted, the arm 18, by reason of its spring action, will fly backward and come in contact with the transverse arm 31, thereby rocking it on its pivot and releasing its hold on the collar 26. The action of the coil-spring 27 will force the vertical shaft downward, which, coming in contact with the bar 32, forces it to release its hold on the bar 35, which in turn by turning upon its pivot through the action of the spring 32 $\frac{1}{2}$ will move the rod 12, consequently shifting the belt from the driving-pulley onto the loose pulley, thereby stopping the machine from further knitting. The action of the bar 35 is not only to shift the belt, but in so doing the curved arms 38 and 39 will come in contact with the cross-arm 25, (when it is in its lowest position,) thereby returning the vertical shaft to its original position. The machine is again supplied with yarn, which will return the take-up arm 18 to its original position, relieving the arm 29, permitting it to again engage the collar. By means of the hand-hold 13 in the arm 12 the belt is shifted from the loose pulley onto the driving-pulley and the machine again started. In shifting the belt to start the machine the lever 35 will be returned to its engagement with the lever 32, ready to repeat the operation when occasion should require.

I have shown only one thread; but any number may be employed, and the failure of any one will operate the mechanism by employing a lever 18 for each thread, so that any one of such levers will trip the bolt-releasing device.

I claim as my invention—

1. In a fabric-producing machine, the combination, with a pivoted lever for shifting a belt, of a spring-actuated bolt for releasing the belt-shifting lever, and a detent holding said bolt against its spring action, the detent being released by the slackening of the tension of the thread and the belt-shifting lever in its movement replacing the spring-actuated bolt to its normal position, substantially as set forth.

2. The combination of a vertical spring-actuated shaft having a transverse rod near its lower end, a detent holding said shaft against its spring action, and a belt-shifting bar provided with arms which engage the transverse rod and return it to its normal position, substantially as set forth.

3. The combination, with a belt-shifting mechanism, of a spring-actuated bolt for releasing the belt-shifting mechanism, a collar secured to the spring-actuated bolt, and a weighted detent engaging the collar, said detent being released by the slackening of the tension of the thread, substantially as set forth.

ADOLPH BOEHMEN.

Witnesses:

C. E. HEILYER,
A. O. BEHEL.