(No Model.) 2 Sheets—Sheet 1.

A. WHITE & D. F. SULLIVAN.

STOP MOTION FOR CIRCULAR KNITTING MACHINES.

No. 588,761. Patented Aug. 24, 1897.

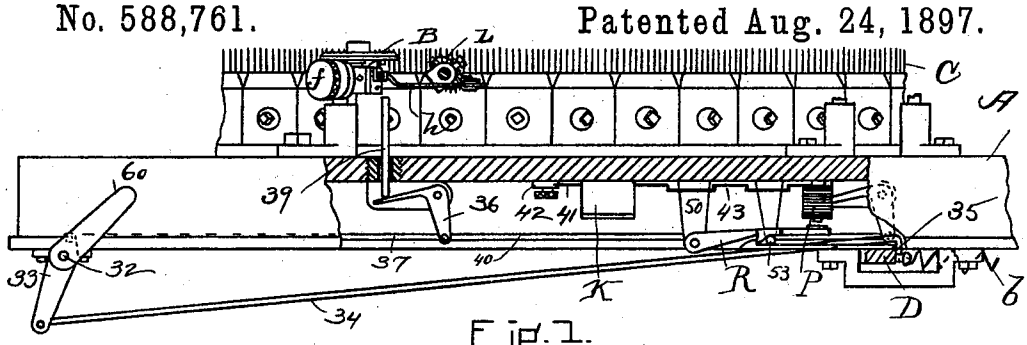


Fig. 1.

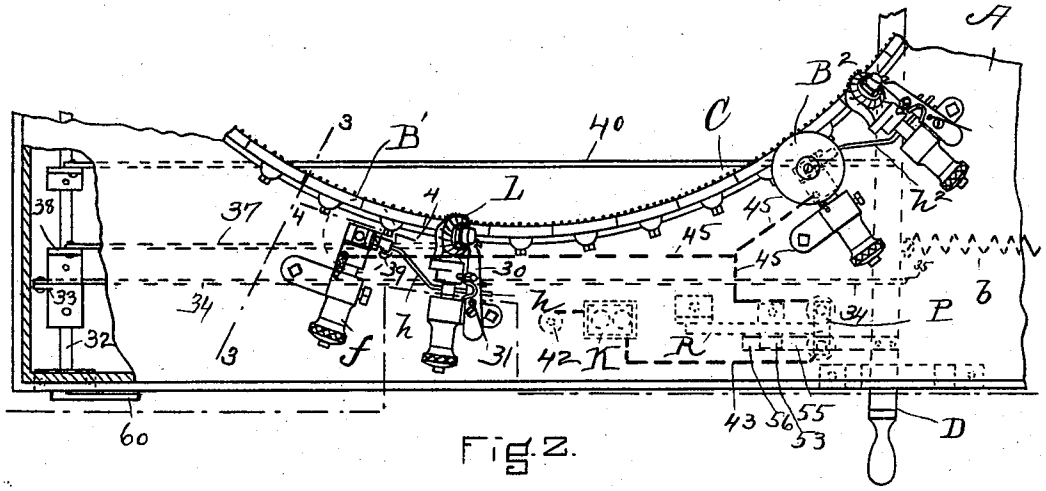


Fig. 2.

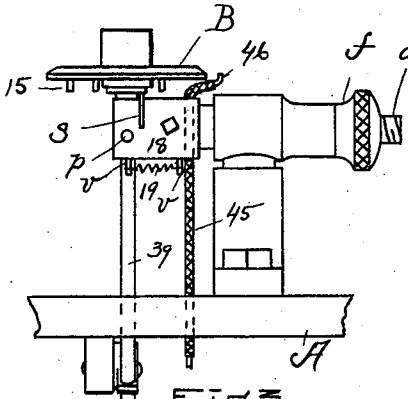


Fig. 3.

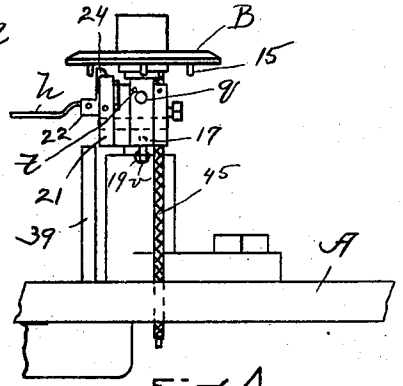


Fig. 4.

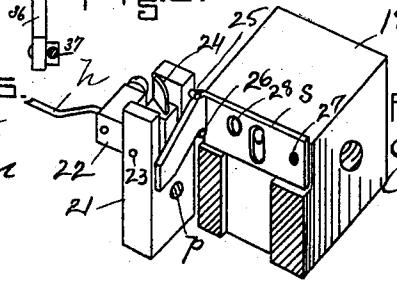


Fig. 5.

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(No Model.) 2 Sheets—Sheet 2.

A. WHITE & D. F. SULLIVAN.

STOP MOTION FOR CIRCULAR KNITTING MACHINES.

No. 588,761. Patented Aug. 24, 1897.

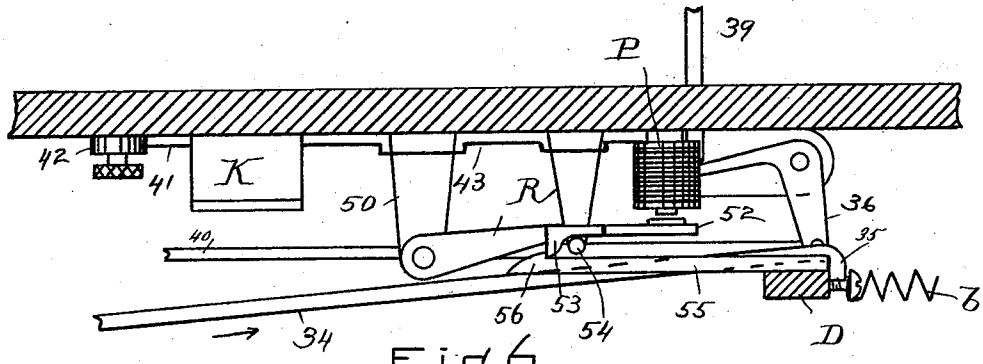


Fig. 6.

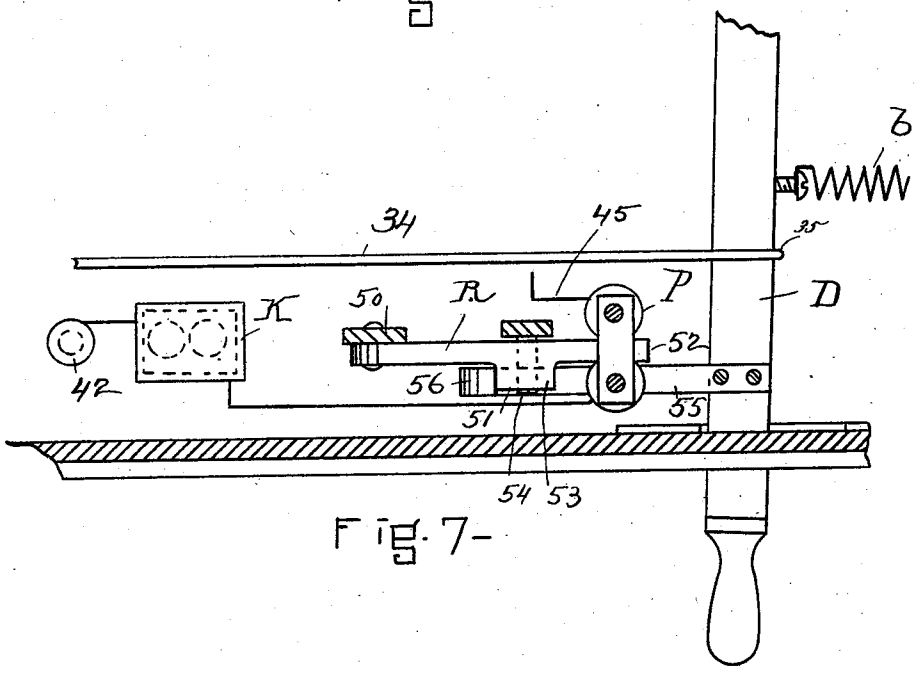


Fig. 7.

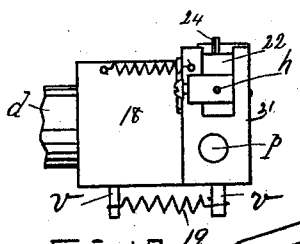


Fig. 8.

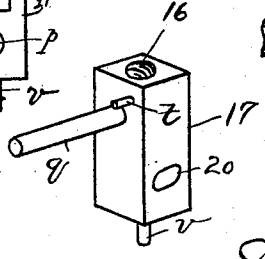


Fig. 10.

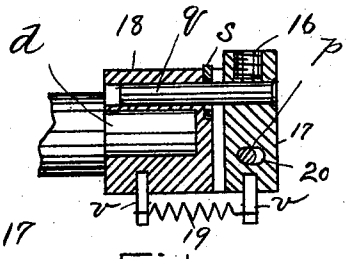


Fig. 9.

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UNITED STATES PATENT OFFICE.

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STOP-MOTION FOR CIRCULAR-KNITTING MACHINES.

SPECIFICATION forming part of Letters Patent No. 588,761, dated August 24, 1897.

Application filed December 11, 1896. Serial No. 615,293 (No model.)

To all whom it may concern:

Be it known that we, ALBERT WHITE and DANIEL F. SULLIVAN, of Lowell, county of Middlesex, and State of Massachusetts, have made certain new and useful Improvements in Stop-Motions for Circular-Knitting Machines, of which the following is a description sufficiently full, clear, and exact to enable any person skilled in the art or science to which said invention appertains to make and use the same, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a side elevation, partly in section, showing the bed and a portion of the needle-cylinder of a circular-knitting machine provided with our improvement; Fig. 2, a top plan view of the same; Fig. 3, a side elevation, enlarged, of the presser-wheel and its support, looking from the left, on line 3 3 in Fig. 2; Fig. 4, a front elevation of the same on line 4 4 in Fig. 2; Fig. 5, a perspective view, partly in section, showing the presser-wheel-locking mechanism; Fig. 6, a sectional elevation, enlarged, showing the hand-shipper and magnet release mechanism; Fig. 7, a top plan view of the same; Fig. 8, a side elevation of the block containing the presser-wheel support; Fig. 9, a vertical transverse section of the same, and Fig. 10 a perspective view of the support detached from the star-box.

Like letters and figures of reference indicate corresponding parts in the different figures of the drawings.

Our invention relates especially to an improvement in stop-motions which embodies a thread-supported drop-wire, and is designed particularly as an improvement on the device shown and described in our application for Letters Patent, filed September 17, 1896, Serial No. 606,121, the object being to adapt an electrically-actuated mechanism to operating said support.

The nature of the improvement will be understood by those conversant with such matters from the following explanation.

In the drawings, A represents the base or bed of the machine, and C the needle-cylinder, these parts being of the usual form and arrangement.

D represents the hand-shipper, which is pulled by a spring *b* in the usual manner.

The rotary presser-wheel B, having pendent projections 15 on its under side, is mounted on a stud, which screws into a socket 16 (see Fig. 9) in the presser-support 17. This support is fitted to slide laterally on a block 18, mounted on spindle *d* and adjustable longitudinally by means of star-box *f*. A pin *q*, fast in the support 17, slides in a suitable socket in block 18, and a pull-spring 19, connecting pins *v* on said support and block, tends to draw them together. A pivot *p* passes through an oblong opening 20 in the support and permits a lateral movement of the same. This construction varies from that in the application referred to in that the presser-wheel instead of rocking or tilting against the needles is moved horizontally.

On the pivot *p* a block 21 is mounted to rock, and in said block a support 22 is pivoted at 23 to rock vertically at right angles to said block and carries the drop-wire *h* and a blade 24, which may be projected into the path of the fingers 15 on the presser-wheel B. A right-angle lever *s* is pivoted at 27 on the block 18 and is provided with an opening 28, which may be registered with the pin *t* on the support 17. On the block 21 are two pins 25 and 26, which engage, respectively, the upper and lower edges (see Fig. 5) of the free arm of the right-angle lever *s*, actuating said lever to register its opening 28 with the pin *t* when the block 21 is rocked, thus permitting the spring 19 to retract the presser-wheel support. The drop-wire *h* passes under the looper-support L and under the thread-guide 30, resting on the thread 31 in the usual manner and as described in the application before referred to.

Running transversely of the bed there is a rock-shaft 32, having a fast crank-handle 33, which connects by means of a pivoted rod 34 with the hand-shipper D, said rod being hooked at 35 to overlap said shipper. Pivoted under the bed there is a bell-crank lever 36, (see Fig. 1,) arranged to swing vertically, one arm thereof being pivotally connected to a rod 37, which connects with the crank-arm 38 on the shaft 32. On the opposite arm of this bell-crank a pin 39 rests and is fitted to

slide vertically through the bed A and engage the drop-wire support 22. One of these rods 37, as indicated at 40 in Fig. 2, is connected with the shaft 32 and operates a similar mechanism for each feed on the machine, as seen at B^2 and h^2 at the right in Fig. 2.

Under the bed is mounted a storage battery K, one wire, 41, of which is connected by a binding-post 42 with the metal of the machine-bed. The other wire, 43, connects with a pole of an electromagnet P. From the opposite pole wires 45, insulated from the machine, lead upward through the bed and the block 18 to a point adjacent the edge of each presser-wheel on the machine. The ends of these wires are exposed, so as to make an electrical contact with said presser when moved outward from the needle-cylinder, as best seen in Figs. 3 and 4. A lever R is pivoted by one end to a support 50 on the under side of the bed and is provided with a laterally-projecting boss 53. The free end of said lever is projected into the field of the magnet and the downward movement thereof is limited by a stop 54. On the hand-shipper D there is a rigid arm 55, provided with a hook end 56, which engages the boss 53 and resists the spring *b*, preventing the movement of said hand-shipper until said arm is freed by the upward movement of the lever R. On the rock-shaft 32 there is a handle 60 for setting the device by hand after the shipper has been operated to stop the machine.

In the use of our improvement when the shipper is operated by hand it is sprung slightly downward, freeing the hook end 56 of the arm 55 and permitting spring *b* to throw it from left to right, as viewed. This carries rod 34, rocks the shaft 32, and by means of the rod 37 operates the bell-crank 36 to project the pin 39 upward into contact with the drop-wire support, preventing the fall of said wire.

When a thread breaks, the wire *h* falls. It throws blade 24 into the path of projections 15 on the rotating presser-wheel, by the engagement of which the block 21 is rocked inward, throwing the right-angle lever *s* upward until its opening 28 registers with the pin *t*. The spring 19 now acts to retract the presser-support and engage the edge of the presser-wheel with the exposed end 46 of the wire 45, closing the electric circuit and charging the magnet P. The armature or free end of lever R is thereby attracted, unlocking the hand-shipper and permitting its spring to move it. This actuates the rock-shaft and projects the support 39 under the drop-wire, as above described, when the shipper is operated by hand.

Having thus explained our invention, what we claim is—

1. In a stop-motion for circular-knitting machines embodying a horizontally-movable presser, the combination with locking mechanism therefor and releasing devices comprising a drop-wire, of an electric circuit closed by the movement of said presser; and mechanism operated by the closing of said circuit for projecting a support under said drop-wire.

2. In a stop-motion for circular-knitting machines embodying a horizontally-movable presser-wheel, locking mechanism therefor and releasing devices embodying a drop-wire, in combination with an electric circuit closed by the movement of said presser; a spring-operated shipper released by the closing of said circuit; and mechanism operated by the movement of said shipper for projecting a support under said drop-wire.

3. The combination with the horizontally-movable presser-wheel of locking mechanism therefor; and releasing devices embodying a drop-wire, of the spring-actuated shipper; locking mechanism therefor; and an electric circuit adapted to be closed by the movement of said presser; an electromagnet in said circuit operating to release said locking mechanism; and devices actuated by the movement of the shipper for projecting a support under said drop-wire.

4. In combination with the rotary presser-wheel mounted on a horizontally-sliding support of a locking mechanism therefor; a drop-wire mechanism for releasing said presser; an electromagnet the circuit of which is closed by the movement of said presser; a vertically-movable support adapted to engage said drop-wire; a spring-actuated shipper; locking mechanism therefor released by the charging of said magnet; and mechanism actuated by the movement of the shipper for engaging said support with the drop-wire.

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