No. 769,378. PATENTED SEPT. 6, 1904.

W. HAMMOND.

STOP MOTION FOR KNITTING MACHINES.

APPLICATION FILED APR. 5, 1904.

NO MODEL. 2 SHEETS—SHEET 1.

Fig. 1.

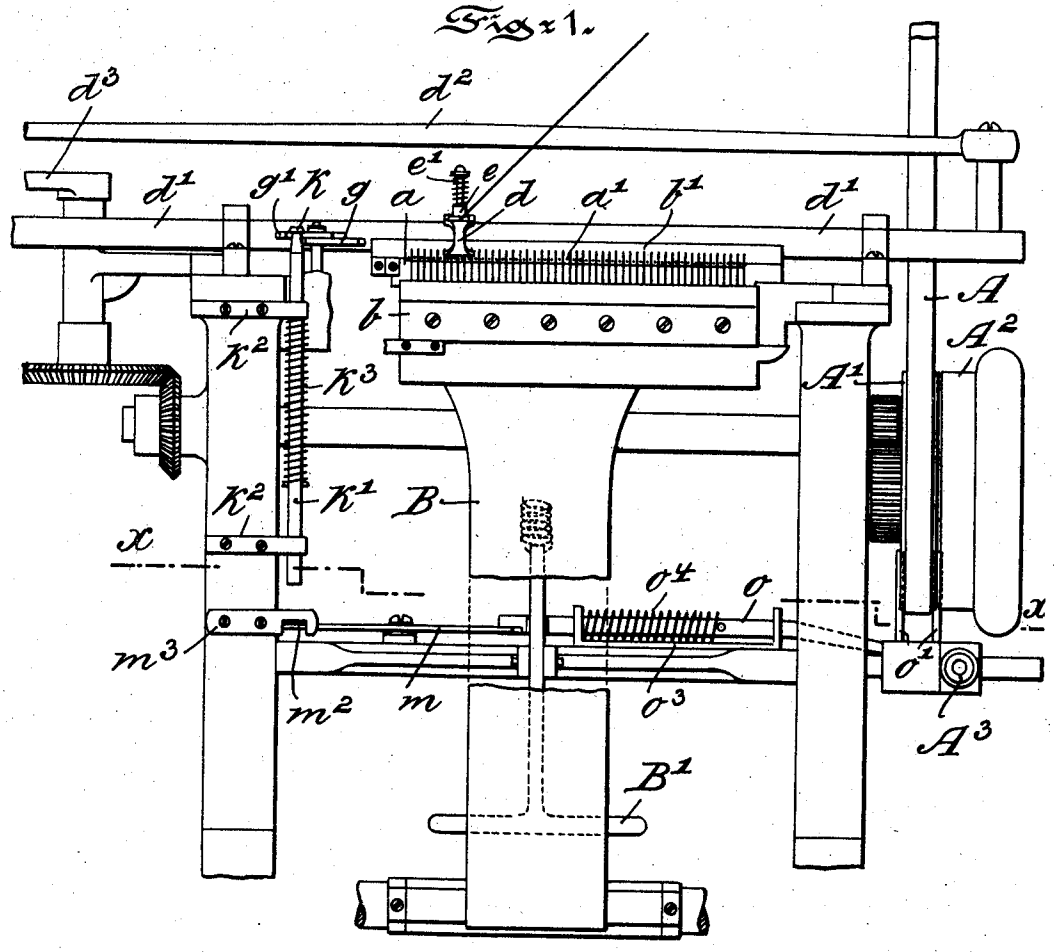
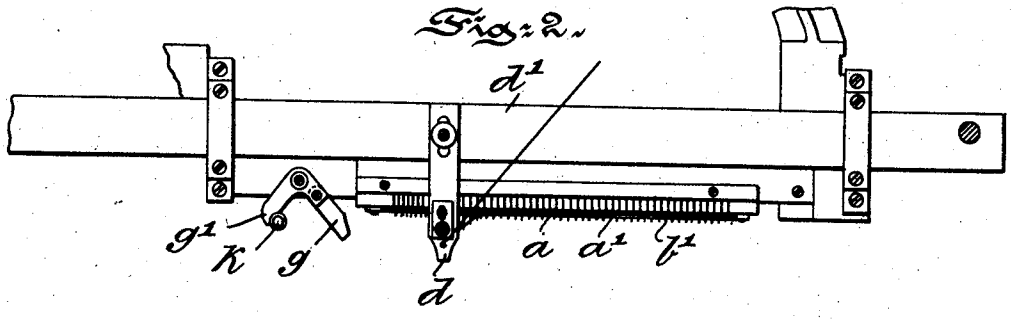


Fig. 2.



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NO MODEL. 2 SHEETS—SHEET 2.

Fig. 3.

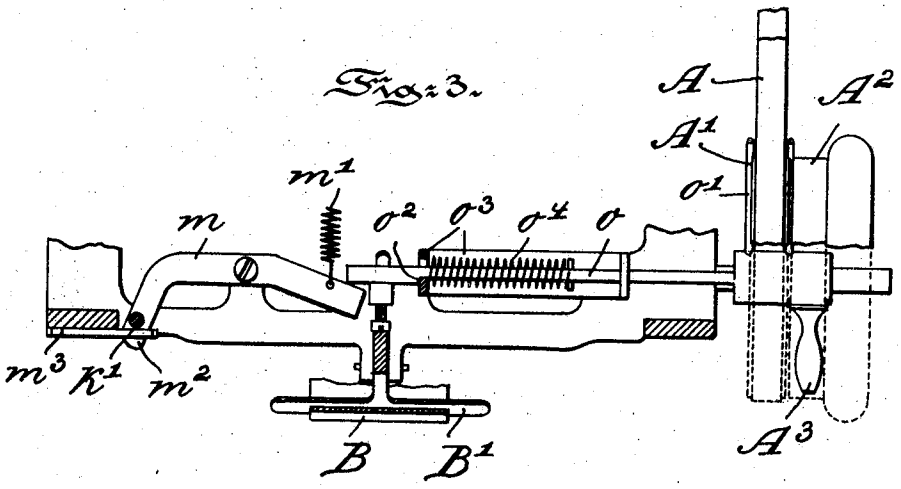


Fig. 4.

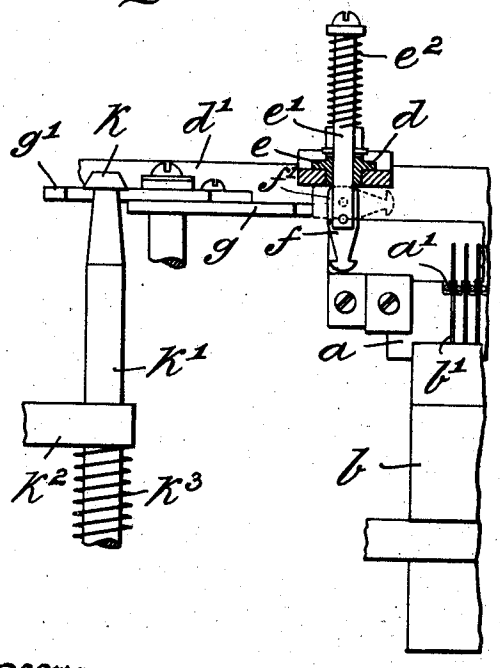
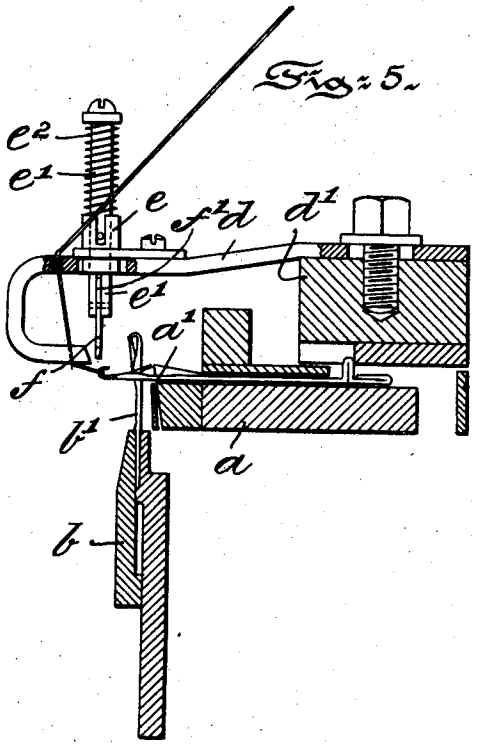


Fig. 5.



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UNITED STATES PATENT OFFICE.

WILLIAM HAMMOND, OF GERMANTOWN, PENNSYLVANIA.

STOP-MOTION FOR KNITTING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 769,378, dated September 6, 1904.

Application filed April 5, 1904. Serial No. 201,636. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM HAMMOND, a citizen of the United States, residing at Germantown, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Stop-Motions for Knitting-Machines, of which the following is a specification.

My invention has relation to a stop-motion attachment especially adapted for use upon knitting-machines of the flat type, and in such connection it relates to the construction and arrangement of such a stop-motion attachment.

The principal object of my present invention is to provide in a knitting-machine a stop-motion attachment of simple construction and so arranged that upon the snarling of the thread upon a needle during the knitting operation the attachment will be operated to stop the machine by the shifting of the belt.

The nature and scope of my present invention will be more fully understood from the following description, taken in connection with the accompanying drawings, forming part hereof, in which—

Figure 1 is a front elevational view of the stop-motion attachment embodying main features of my invention and of such parts of the knitting-machine to which it is attached as are necessary to an understanding of the operation of the attachment. Fig. 2 is a top or plan view of Fig. 1. Fig. 3 is a horizontal sectional view taken partly on the line $x\,x$ of Fig. 1, the belt and pulleys being shown in front elevation and broken away. Fig. 4 is an enlarged detail view illustrating a portion of the attachment, partly in front elevation and partly in vertical section; and Fig. 5 is a cross-sectional view of Fig. 4.

Referring to the drawings, a represents the needle-bed in which the horizontal needles a' are actuated, and b the carrier for the vertical needles b'. Above the needle-bed a is the yarn-carrier d, which is secured to the cam-plate d', actuating the needles a', and travels with said cam-plate. At the free end of the carrier d, adjacent to the needles a' and b', is arranged a stud e, through which projects a pin e, arranged to be normally raised in the stud e by means of the spring e^2. In the lower end of the pin e' a latch f is pivoted, so as to swing in a plane diametrically through the pin e'. The base f' of the latch f is a cam which when the latch assumes a vertical position serves to draw the pin e' through the stud e against the tension of its spring e^2 and which when the latch f is knocked over by the snarling of the thread on the needles a' and b' permits the pin e to be elevated in the stud to hold the latch in horizontal position against the under face of the carrier d, as clearly illustrated in full and dotted lines in Figs. 4 and 5.

The yarn-carrier d receives its reciprocatory motion through the cam-plate d', which in turn is shifted by a bar or rod d^2, operated by a crank-rod d^3. The motion of the crank-rod d^3 is secured in the manner usual in machines of this well-known type. The yarn-carrier d in its movement toward one end of the machine approaches one arm of a bell-crank lever g, which is pivoted horizontally to a fixed portion of the machine. The other arm, g', of the lever g normally fits under a head k, formed upon the end of a vertically-disposed rod k', which is arranged to slide downward in bearings k^2 in the framework of the machine under the influence of a spring k^3 when the lever-arm g' clears the head k. When the latch f is in its vertical position, the yarn-carrier d in its reciprocation will bring the latch f closely to the bell-crank lever g, but will not permit the latch f to strike the lever g. When, however, the latch is in horizontal position, its cam-butt f' or its face end projects far enough to strike against the bell-crank lever g and to operate the same to release the rod k'. When the rod k' is released, the spring k^3 forces the rod downward and causes it to strike upon the face of a horizontally-disposed lever-arm m. This lever-arm m is pivoted intermediate of its ends in the framework of the machine, and one of its ends is normally retracted by a spring m'. The other end m^2 of the arm m, which extends below the rod k', is normally held in a keeper-plate m^3, fixed to a portion of the framework of the machine, so that the lever m cannot turn in response to its spring m'. When, however, the rod k' descends, the end m^2 is struck and springs

away from the keeper-plate m^3 to permit the lever-arm m to swing under the influence of its spring m'. When so swung, the lever-arm m sets into operation a belt-shifting device of well-known construction to shift the belt A from the fast pulley A′ to the loose pulley A^2. As illustrated in the drawings, such a belt-shifting device consists, essentially, of a spring-controlled shaft o, operating the belt-fork o' and arranged to be locked in the framework of the machine, when a notched projection o^2 of the shaft o engages the keeper o^3 on the framework. When the lever-arm m responds to its spring m', it knocks the notched projection o^2 out of the keeper o^3 and permits the shaft o to respond to its spring o^4 to shift the fork o' into a position in which the belt A rests upon the loose pulley A^2. A handle A^3 on the fork o' serves as a means whereby the fork o' and shaft o may be shifted backward to lock the shaft o in its keeper and to shift the belt A to the fast or driving pulley A′.

The fabric B knit upon the machine travels in the usual manner over a handle B′ upon a second belt-shifting mechanism, which also acts upon the notched end of the shaft o when necessary.

Having thus described the nature and object of my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a machine of the character described, a yarn-carrier and means for reciprocating the same, a spring-controlled pin traversing the free end of said carrier, a latch pivoted in the under end of said pin adjacent to the needles of the machine, said latch arranged normally in vertical position and adapted when tripped to rest in horizontal position, in combination with a belt-shifting mechanism arranged to be operated when said latch is tripped to horizontal position.

2. In a machine of the character described, a yarn-carrier and means for reciprocating the same, a latch adapted normally to project vertically below the yarn-carrier and to be tripped into horizontal position, and means adapted to hold the latch under tension in either position, in combination with a belt-shifting mechanism adapted to be operated by the latch when said latch is tripped to horizontal position.

3. In a machine of the character described, a yarn-carrier and means for reciprocating the same, a latch projecting normally in vertical position from said carrier and adapted to be tripped into horizontal position in said carrier, means adapted to hold said latch in said operative positions, a belt-shifter, a lever-arm adapted to control said belt-shifter a rod adapted to operate said lever-arm, and means controlled by the latch in its horizontal position for operating said rod.

In testimony whereof I have hereunto set my signature in the presence of two subscribing witnesses.

WILLIAM HAMMOND.

Witnesses:

J. WALTER DOUGLASS,

THOMAS M. SMITH.