(No Model.)

P. P. OLSSON.

KNITTING MACHINE.

No. 462,957. Patented Nov. 10, 1891.

Fig. 2.

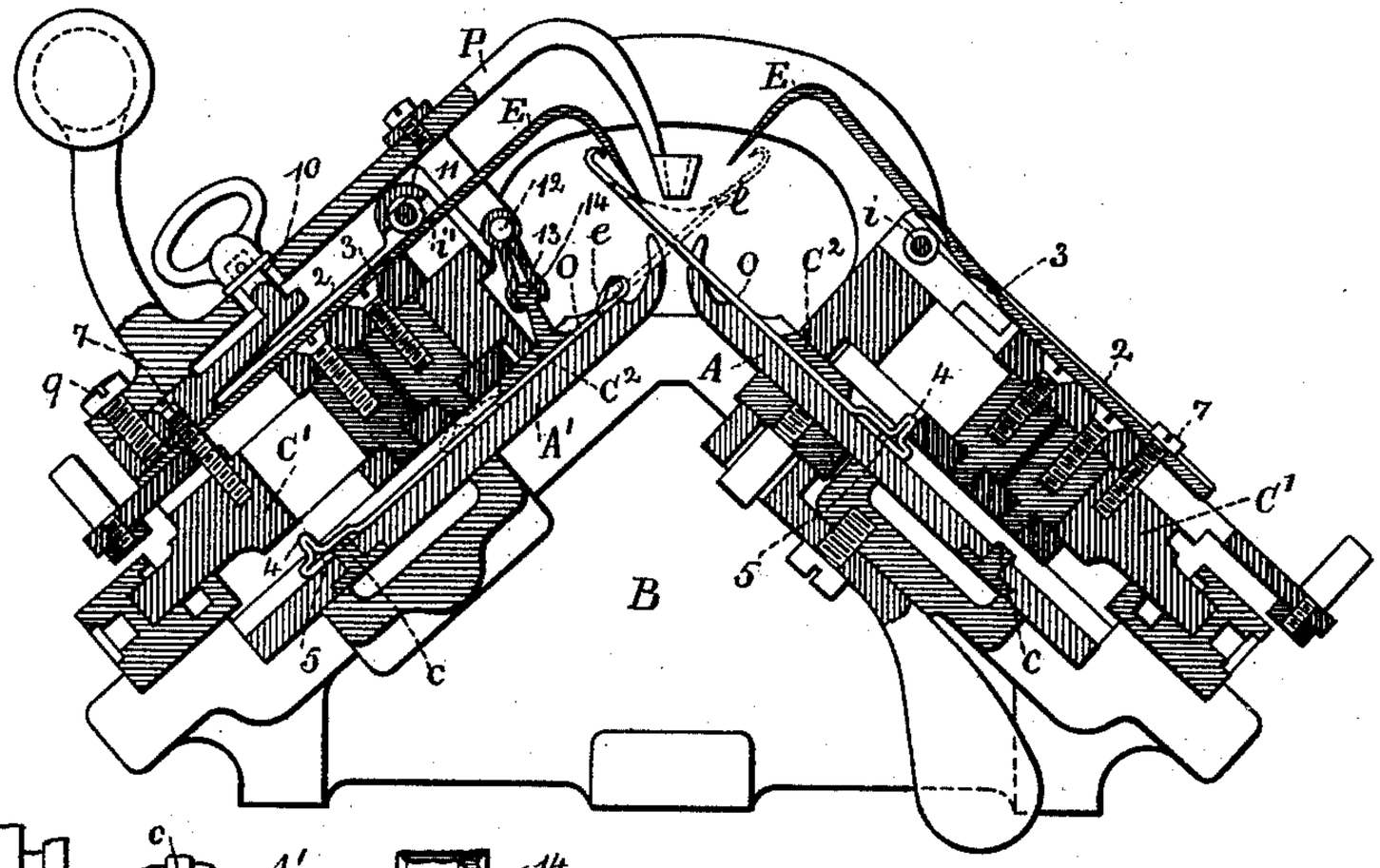


Fig. 4.

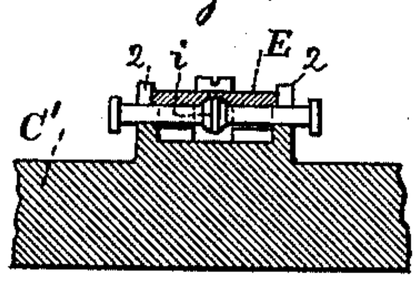


Fig. 1.

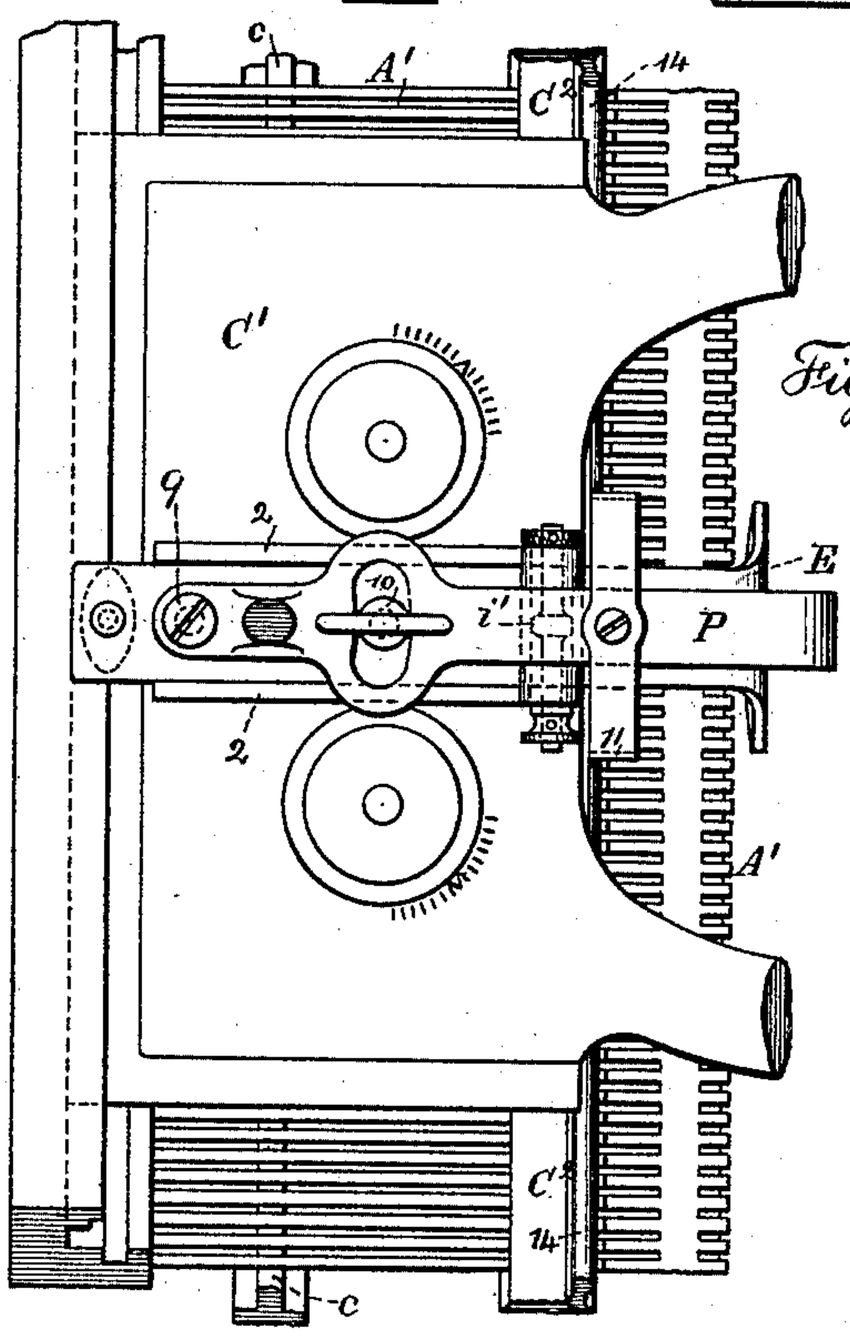
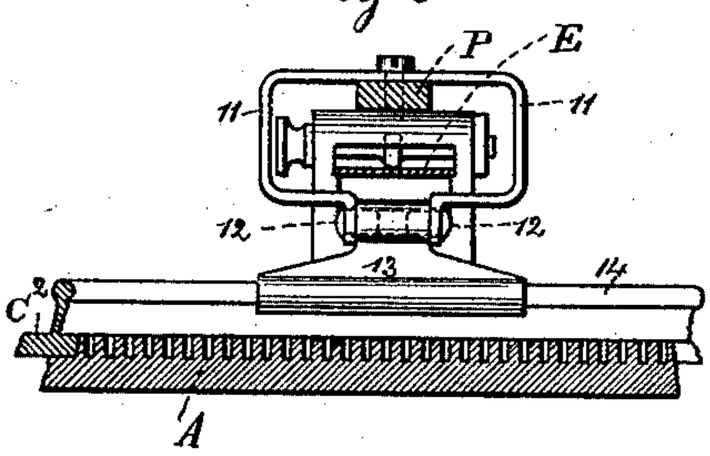


Fig. 3.



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UNITED STATES PATENT OFFICE.

PER PERSSON OLSSON, OF STOCKHOLM, SWEDEN.

KNITTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 462,957, dated November 10, 1891.

Application filed February 18, 1891. Serial No. 381,886. (No model.)

To all whom it may concern:

Be it known that I, PER PERSSON OLSSON, a subject of the King of Sweden, residing at Stockholm, Sweden, have invented an Improvement in Knitting-Machines, of which the following is a specification.

This invention relates to that class of knitting-machines usually known as the "Lamb" knitting-machine, in which the ranges of needles work at right angles to each other; and the invention consists in the construction and combination of devices hereinafter set forth and claimed.

In the drawings, Figure 1 is a partial plan view of the traveling carriage. Fig. 2 is a vertical cross-section, and Fig. 3 is a detached view, of the friction device upon the yarn-holder. Fig. 4 is a section of the knife-shank and carriage.

The needle-beds A A′ are at an inclination so as to stand nearly at right angles to each other, and they are supported at the ends by the stands B, and the needle-beds are grooved transversely for the reception of the needles O. The needle-hooks and the latches *e* are of ordinary construction. The wire of each needle is bent with the projection 4, upon which the lock-cams act, as usual, in projecting and retracting the needle, and the end of the wire is folded back upon itself, as at 5, so that there is a recess for the reception of the rib *c* in the bottom of the needle-groove. This rib *c* may be a separate strip of metal introduced at the proper place in each needle-bed, or such rib may be left in the metal of the needle-bed in forming the grooves, and the needle-bars C^2 are introduced over the needles and held in their proper position upon the respective needle-beds A A′.

The needles O slide freely under the needle-bars C^2; but when the needles are in use the ribs *c* form stops to limit the downward movements of the respective needles, so that they may not slide down too far during the knitting operation; but when any needles are to be thrown out of use they are pressed down and the lower ends spring up and pass over the ribs *c*, and are held by the downward spring of the needle causing the recess of the needle to set over the rib *c*, as indicated at one side of Fig. 2, and the needles can be brought up into position for use with rapidity by springing them over the rib *c* into the operative position for work.

In knitting-machines having the latches *e* to the needles, it is necessary to open the latches in commencing work, and for this purpose knives are usually provided in such positions that the knives, as they are carried along by the carriage, travel close to the points of the hooks and between such hooks and the latches, so as to swing over the latches into their downward positions.

I find that the needles are liable to become injured by the action of the knives when such needles are exposed to any unusual tension by the yarn or when a knot or thick yarn may be within one or more of the hooks, and in consequence of the knives coming in contact with the hooks of the needles the needles are injured and often have to be replaced, and the fabric often is injured. I prevent these difficulties by making the knives E with spring-shanks, the metal of the shank of each knife being preferably thinned, as shown at 3, to render the shank of the knife more elastic at this part, and the shank of the knife is received between the ordinary ribs or flanges 2 upon the plates *c′* of the carriage and secured by the screws 7, and I place adjacent to the shank of each knife a cam *i*. If the cam is above the shank of the knife, as seen at *i′*, the cam is used for pressing the knife into its operative position, and when the cam is released the spring 3 of the shank throws the knife upwardly and away from the hooks of the knitting-needles. When the cam *i* is below the shank of the knife, it is used for raising the knife out of its operative position, the shank of the knife springing at 3 when the cam is pressed out of its recess in the knife, and the spring throws down the knife into its operative position when the cam *i* is moved to allow this to take place.

I have shown the cam *i* as adapted to be turned or rotated to bring it into or out of action, and I have shown the cam *i* in the form of a boss or ridge upon a longitudinally-movable pin, there being a recess on the under side of the shank of the knife to receive this boss or rib when the knife is in an operative position; but when end motion is given

to this cam *i* the boss or rib thereof in passing out of the groove raises the knife and throws it out of action. By this construction the knives can be thrown into action upon commencing the knitting operation, and then moved out of action to prevent injury to the needles as the latches *e* are opened and closed by the loops during the knitting operation.

The yarn-carrier P is pivoted at 9, and a limited amount of swinging motion is allowed to the yarn-carrier upon this pivot by the stud 10 within the slot near the lower end of the yarn-carrier, and there is a pendent arm 11 fastened to the base of the yarn-carrier and provided with gudgeons 12, around which is received a spring-clip 13, formed of a folded piece of sheet metal, the ends of which are adapted to grasp the rib 14 upon the needle-bar C^2, and it will be apparent that the spring-clip 13 applies a friction which detains the yarn-carrier as the carriage starts in the opposite direction, thereby bringing the yarn into the proper position and allowing for the needles to be changed ready for receiving the yarn, and in this movement the pendent arm 11 may turn upon its attaching-screw and the clip 13 swing upon its gudgeons, and the clip acting as a spring gives a uniformity of friction in the detention of the yarn-carrier.

I claim as my invention—

1. The combination, with the knitting-needles, of a knife for opening the latches of the knitting-needles, and a cam for throwing the knife out of action and away from the needles, substantially as set forth.

2. The combination, with the knitting-needles having hooks and latches, of a knife for opening the latches, a spring-shank to the knife, and a cam for moving the shank and knife, substantially as set forth.

3. The combination, in a knitting-machine, with the grooved needle-beds, of a needle-bar having a rib, a yarn-carrier pivoted to swing, a pendent arm connected with the yarn-carrier, and a spring-clip between the pendent arm and the rib upon the needle-bar, substantially as set forth.

Signed by me this 13th day of February, 1891.

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Witnesses:
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