(No Model.) 2 Sheets—Sheet 1.

P. PERSSON.

KNITTING MACHINE.

No. 569,347. Patented Oct. 13, 1896.

Fig. 1.

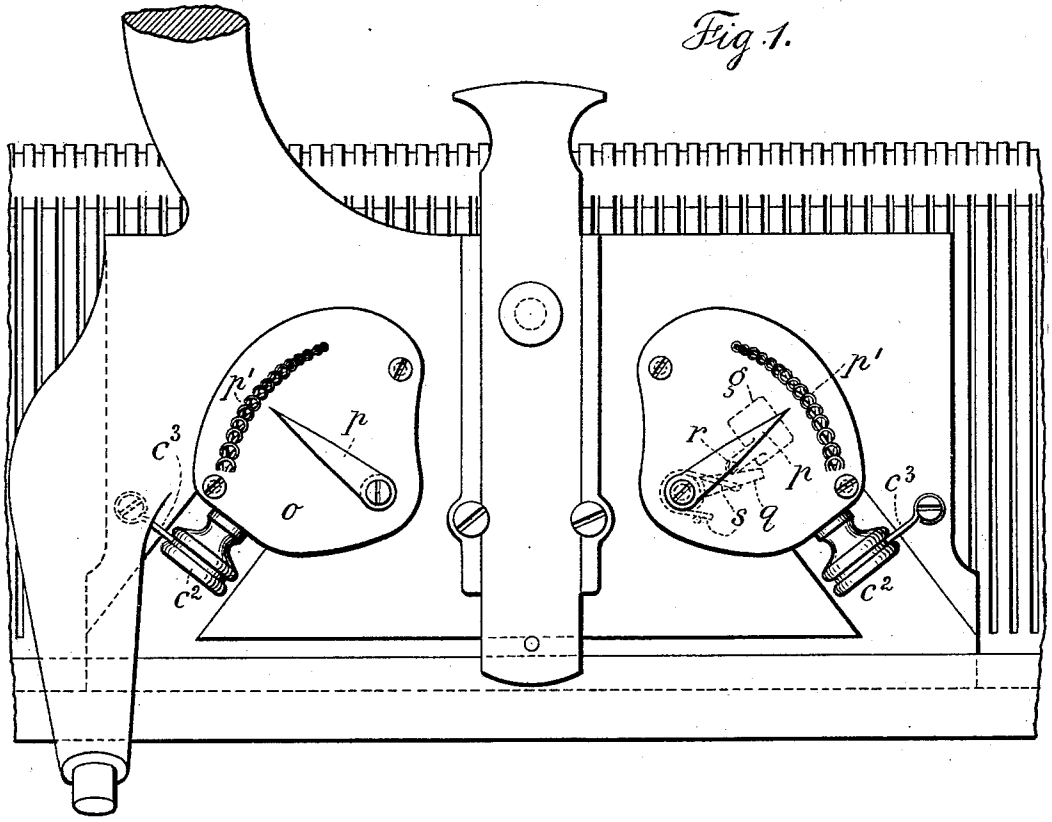


Fig. 7.

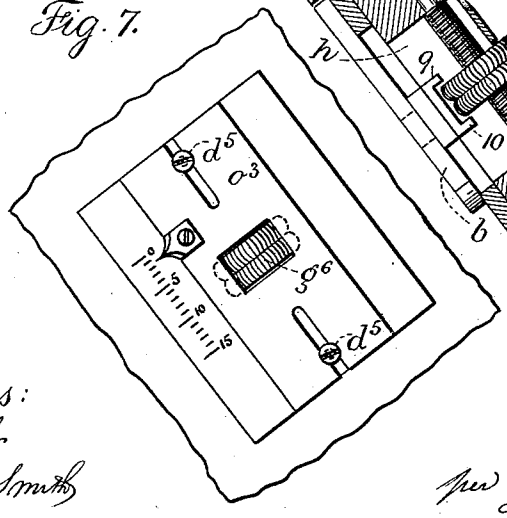
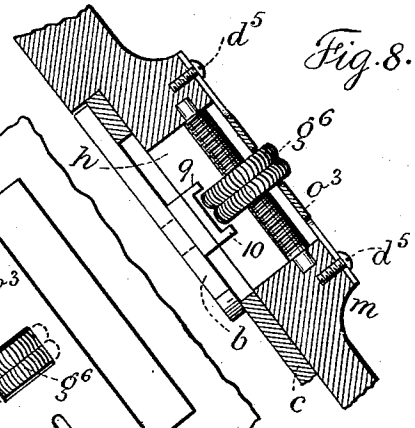


Fig. 8.



Witnesses:
J. Stair
Chas. A. Smith

Inventor:
Per Persson
per L. W. Serrell & Son
Attys

(No Model.) 2 Sheets—Sheet 2.

P. PERSSON.

KNITTING MACHINE.

No. 569,347. Patented Oct. 13, 1896.

Fig. 2.

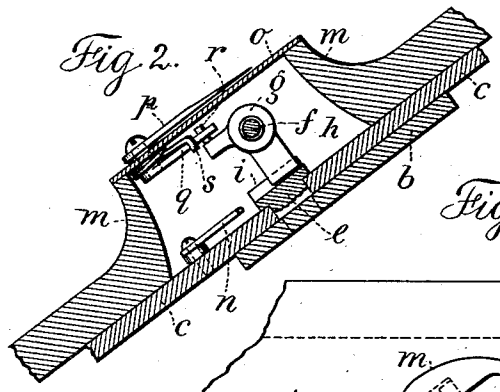


Fig. 3.

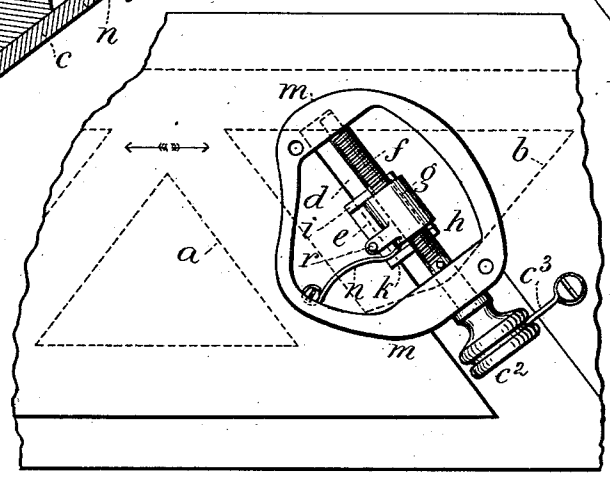
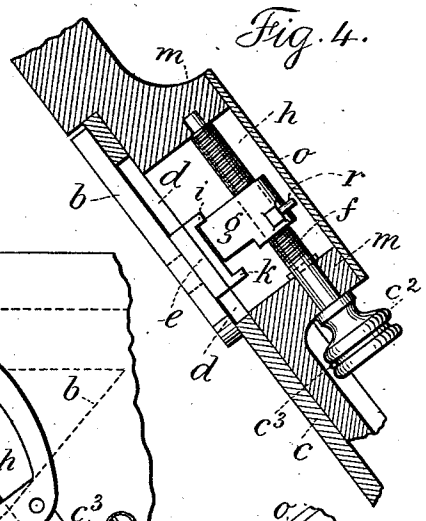


Fig. 4.



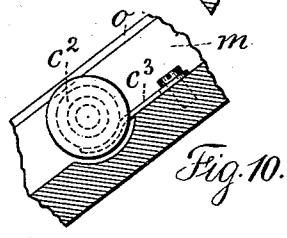


Fig. 10.

Fig. 5.

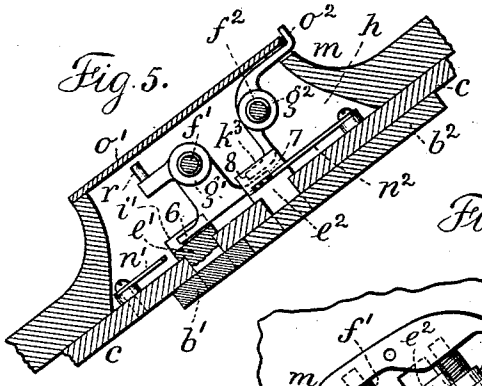


Fig. 6.

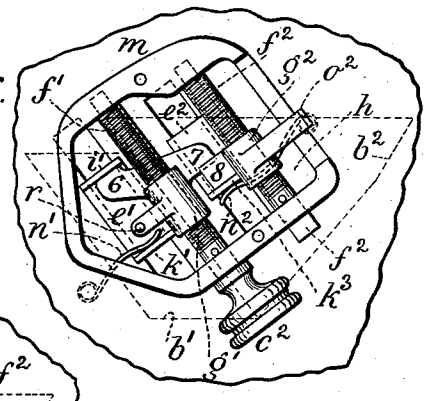
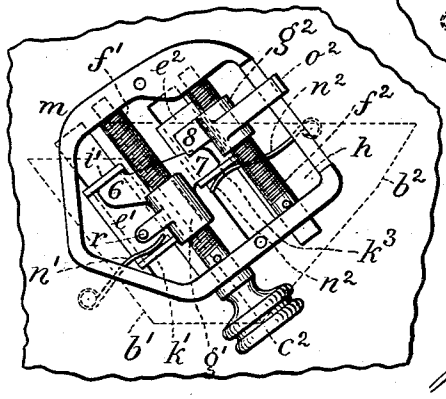


Fig. 9.



Witnesses:
J. Stair
Chas. H. Smith

Inventor:
Per Persson
per L. W. Serrell & Son
Attys

UNITED STATES PATENT OFFICE.

PER PERSSON, OF STOCKHOLM, SWEDEN, ASSIGNOR TO THE AKTIEBOLAGET PER PERSSONS VAF-OCH STICKMASKIN, OF SAME PLACE.

KNITTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 569,347, dated October 13, 1896.

Application filed January 6, 1896. Serial No. 574,429. (No model.) Patented in France April 18, 1895, No. 246,721.

To all whom it may concern:

Be it known that I, PER PERSSON, a subject of the King of Sweden and Norway, and a resident of 21 Drottninggatan, Stockholm, in the Kingdom of Sweden, have invented certain new and useful Improvements in or relating to Knitting-Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

Letters Patent for this invention were granted in France April 18, 1895, No. 246,721.

The improvements in knitting-machines, which form the subject of this invention, relate to an improved adjusting mechanism for the side needle-drivers and an improved device for indicating the closeness of the knitting.

Hitherto the adjustment of the side needle-driver has commonly been performed by loosening the screw which holds the needle-driver and passes through a slot in the lock-cover by moving the needle-driver and by tightening the screw. This mode of adjustment is unsatisfactory, as it is not exact, especially if the needle-driver is under a pressure caused by the needles, and also because it may happen that the needle-driver changes its position during the tightening of the screw.

The present invention is for obtaining a more easy and accurate adjustment, and I use a screw placed parallel with the lock-cover and connected to the needle-driver, so that this latter slides when turning the screw. In this manner the screw is made to effect a reliable adjustment of the needle-driver and to hold such driver correctly in position.

Figure 1 shows the lock-cover in plan. Fig. 2 is a cross-section, and Fig. 4 a longitudinal section, of the lock mechanism, which is shown in plan in Fig. 3, in which the plate covering the mechanism is removed. The arrows in Fig. 3 indicate the line along which the slide (lock-cover) moves to and fro on the needle-bed. Figs. 5 and 6 show a vertical section and a plan, respectively, of the adjusting mechanism when using a divided side needle-driver. Figs. 7 and 8 show in plan and longitudinal section a modified form of the adjusting mechanism. Fig. 9 shows from above the lock members in another position than in Fig. 6, and Fig. 10 shows the head of the screw and its spring.

With reference to Figs. 2 to 4, a is the middle needle-driver, and b the side needle-driver. The latter is retained and guided by the plate c, provided with a slot d, into which enters a stud e, mounted on the needle-driver and overlapping the borders of the slot. Parallel with the slot d and about in level with the upper side of the cover extends the adjusting-screw f, provided with a nut g, which can move in the opening h in the cover and which enters between the two projections i and k on the stud e without being fixed to said stud. The nut g is prevented from turning, as it is situated close to the stud e; but it can be moved along when the screw is turned, thereby carrying the needle-driver with it.

In order to be able to turn the screw, it is provided with a rather large milled head c^2, situated outside the elevation m, wherein the above-mentioned opening h is made. By not connecting the needle-driver directly to the nut the advantage is obtained that the screw need not be quite parallel with the needle-driver, which otherwise would be necessary for avoiding strains. Further, the distance between the projections i and k is greater than the width of the nut entering between them, and a spring n acts on the inside of the projection k, so as to pull the needle-driver downward in such a position that the projection i bears against the nut. By turning the screw in the one or the other direction the needle-driver is thereby moved to a corresponding extent without the driver being prevented from moving upward, as is required in some cases.

By the before-described construction an advantage is gained that the index indicating the nature of the knitting, whether "hard" or "loose," can be arranged in a convenient manner for observation by the workman.

The index p, moving over the cover-plate o, Fig. 1, has on its shaft below the plate o an arm q, resting against a pin r on the nut g. A spring s tends to turn the arm q upward. The index p is thereby caused to move along the scale on the plate o, according as the nut g is moved up or down by turning the screw f.

In order that the screw may not turn in case of being acted upon unintentionally, a spring c^3 is fixed to the cover, said spring entering into the groove in the head c^2 of the screw, and presses against said head, Fig. 10, to prevent the same turning too easily.

It is evident that when employing a side needle-driver, divided into two parts b' and b^2, (see Figs. 5, 6, and 9,) it is possible to employ such an adjusting mechanism as before described, one for each part, so that the parts can be adjusted independently of each other by means of an adjusting-screw for each part.

I have shown in the drawings two adjusting-screws f' and f^2, but these are arranged in a particular manner for certain reasons with respect to the adjustment as well as the knitting. The parts b' and b^2 are guided in the same manner as described above by studs e' e^2, that pass through slots in the plate c. The nut g' on the screw f' has an arm 6, on which rests the projection i' on account of the pressure of the spring n' on the projection k', and there is another arm 7, on which rests the projection k^3 on the stud e^2 by the pressure of the spring n^2 on said projection. The nut g^3 on the screw f^2 is also provided with an arm 8, under which the arm 7 can pass and which can also act on the projection k^3, which is comparatively high, if said arm 8 is caused to move toward said projection k^3 when turning the screw f^2. From the nut g^2 an index o^2 extends beyond the border of the plate o'. (See Fig. 5.) If the screw f' is turned, the part b^2 partakes in the movement of the part b' through the nut g' and its arms 7 and 8, as illustrated in Fig. 9; but if the movement is given upwardly, with the parts in the position shown in Fig. 6, the projection k^3 will finally stop against the arm 8 and the part b^2 will be stopped. This may be made to occur sooner or later by the adjustment of the nut g^2 by turning the screw f^2. The part b' can be moved upward independently of the arm 6, and the part b^2 can move downward independently of the arm 7. A downward movement of the part b^2 can be made by the nut g^2 as well as an upward movement of said part, so far as the arm 7 will permit. If the parts b' and b^2 are to be moved simultaneously, which is the most common adjustment, said parts are moved together as side needle-drivers by turning the screw f'; but if required, the parts b' and b^2 may also be adjusted relatively to one another, as before described.

Fig. 9 shows the parts b' and b^2 in another position compared with Fig. 6. The nut g' may be connected to an index mechanism similar to that described above and shown in Figs. 1 and 2. A scale for the index o^2, Fig. 5, is to be made on the cover-plate o'.

One of the reasons why the nut is not directly connected to the needle-driver is, as mentioned above, to prevent the parts wedging in case the screw should not be quite parallel with the sliding plane of the needle-driver. I do not limit myself to the devices represented as between the screw and the needle-driver.

Figs. 7 and 8 show a modification wherein the nut can be turned on the immovable screw, taking along with it the needle-driver. The nut g^6 projects somewhat above the upper side of the cover-plate o^3, so that it can be turned. The nut at one side is between the projections 9 and 10 on the stud of the needle-driver, so that it moves the needle-driver when the nut is turned upon the stationary screw. The plate o^3 has an opening in which the nut can be turned, and the plate moves with the nut, and there are slots for the screws d^5 to allow for this movement, and the index-pointer and divisions, Fig. 7, denote the position of the needle-driver b. A more tight or loose knitting is obtained by adjusting the needle-driver, as before shown. The indicating devices, however, consisting simply of division-lines, do not in fact give any indication how tight or loose the knitting will be, but this must be examined upon the fabric, which is rather difficult, as the knitting is hidden by the needle-beds. By my improvement this inconvenience is avoided, as I provide a representation of knitting with loops graded from the smallest to the largest sizes.

Fig. 1 shows a representation or pattern p', engraved or made in any suitable way in the cover-plate o. If the needle-driver is moved so as to make the knitting tighter, the index is moved along the scale to a point on the pattern where a corresponding degree of tightness is indicated, and inversely, if the needle-driver is moved so as to make the knitting looser.

It is evident that the pattern may easily be varied. For instance, a series of circles having increasing diameters may be substituted.

I claim as my invention—

1. The combination with the needle-driver in a knitting-machine, the slotted supporting-plate and a stud extending up from the needle-driver through the slot, of a screw supported at its ends in the plate and a nut upon the screw acting upon the stud for adjusting the needle-driver, there being projections upon the stud extending up at each side of the nut, substantially as set forth.

2. The combination with the needle-driver in a knitting-machine, the slotted supporting-plate and a stud extending up from the needle-driver through the slot, of a screw supported at its ends in the plate and a nut upon the screw acting upon the stud for adjusting the needle-driver, there being projections upon the stud extending up at each side of the nut, and a spring acting upon the stud to keep one of the projections toward the nut, substantially as set forth.

3. The combination with the needle-driver in a knitting-machine, the slotted supporting-plate and a stud extending up from the nee-

dle-driver through the slot, of a screw supported at its ends in the plate and a nut upon the screw acting upon the stud for adjusting the needle-driver, a cover-plate and index-arm above the cover-plate, an arm beneath the cover-plate, a projection on the nut and a spring to press the arm against the projection, substantially as set forth.

4. The combination in a knitting-machine, of a two-part needle-driver, a slotted supporting-plate and studs extending up from the two-part needle-driver through such slots, two separate screws one for each portion of the needle-driver and nuts upon the screws for adjusting the respective parts, projections upon the respective studs for the nuts to act against, two arms upon one of the nuts to act simultaneously on both portions of the two-part needle-driver and springs for holding the studs toward the arms, substantially as set forth.

5. The combination in a knitting-machine, of a two-part needle-driver, a slotted plate and studs projecting through the slots for supporting the two-part needle-driver, an adjusting-screw with arms adapted to act upon the two studs for adjusting them simultaneously, a second screw and nut with an arm acting against the stud upon one portion of the two-part needle-driver to adjust the same independently of the other part, substantially as set forth.

6. The combination in a knitting-machine with the slotted supporting-plate, of a two-part needle-driver, a projection or stud upon each part passing through a slot in the supporting-plate, two screws and nuts moved by the screws, arms projecting from one of the nuts and acting against projections upon both of the studs, springs for moving the studs with their projections toward the arms, an arm upon the second nut passing above one of the arms that extends from the other nut to act against the projection from the stud in adjusting the relative position of the two-part needle-driver, substantially as set forth.

7. The plate for a knitting-machine index having a pattern representing a row of knitted loops of gradually-decreasing size for indicating the size of loop by the index-arm, substantially as specified.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

PER PERSSON.

Witnesses:
CARL T. GERELL,
ERNST SVANGIRST.