No. 825,679. PATENTED JULY 10, 1906.

H. PULSTER.

LATCH CLOSER FOR KNITTING MACHINES.

APPLICATION FILED OCT. 6, 1905.

Fig. 4.

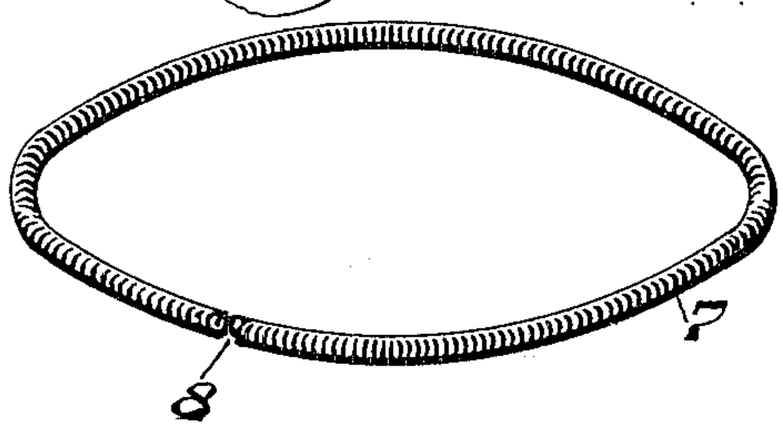


Fig. 3.

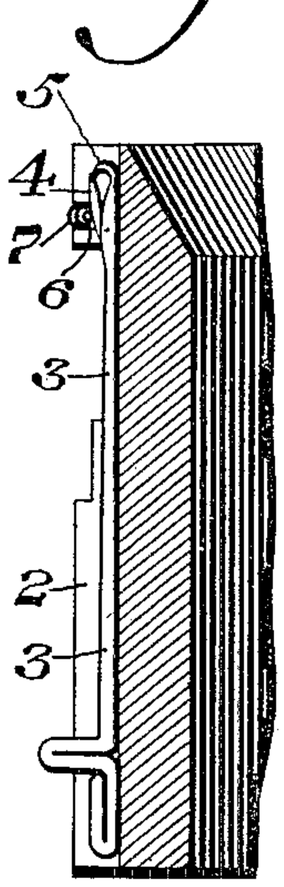


Fig. 1.

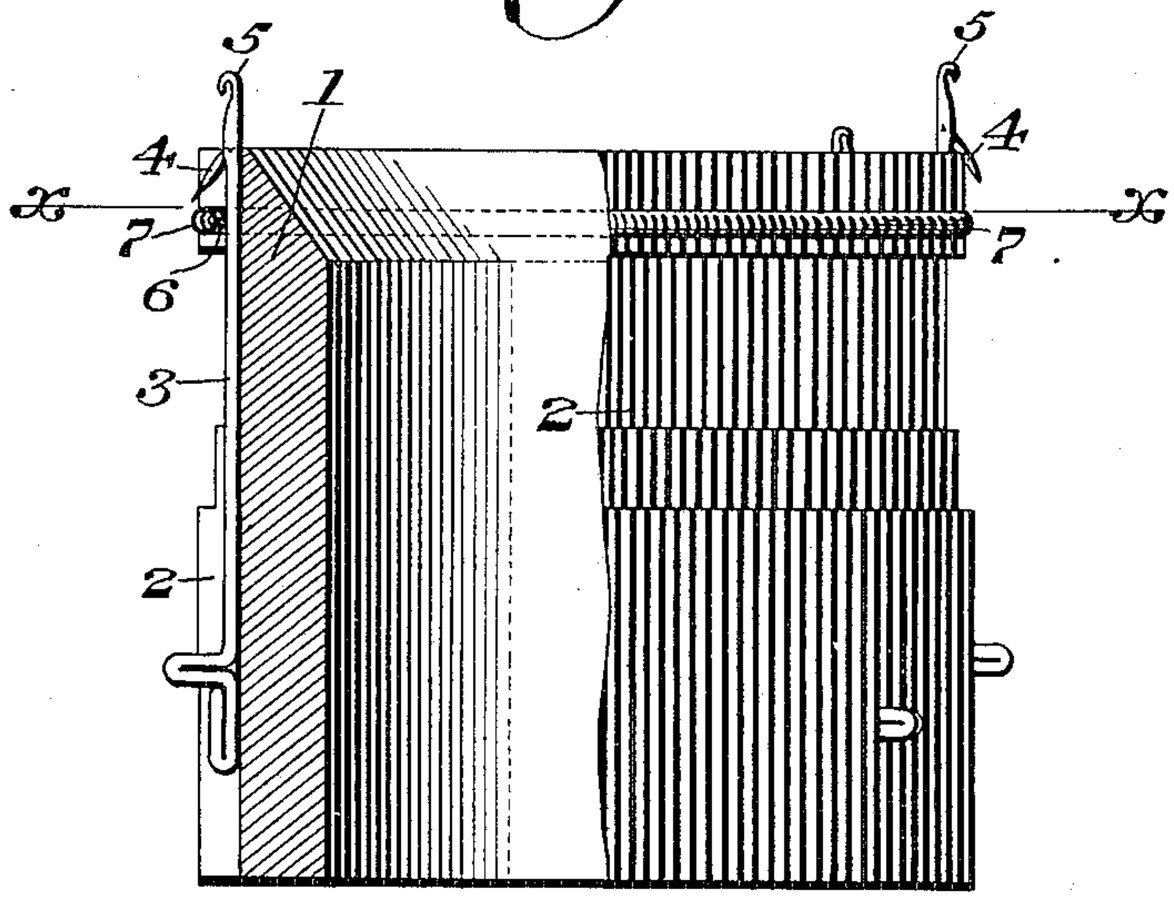
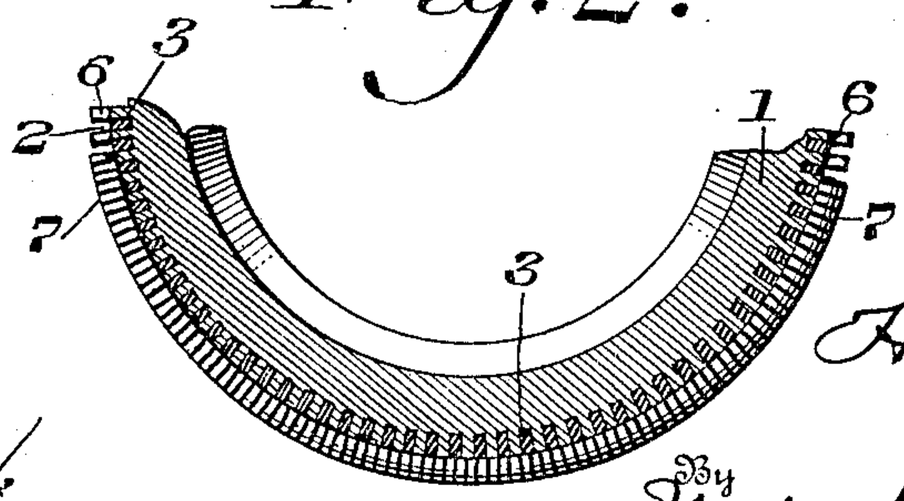


Fig. 2.



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LATCH-CLOSER FOR KNITTING-MACHINES.

No. 825,679. Specification of Letters Patent. Patented July 10, 1906.

Application filed October 6, 1905. Serial No. 281,606.

To all whom it may concern:

Be it known that I, HENRY PULSTER, a citizen of the United States, residing in the city and county of Philadelphia, State of Pennsylvania, have invented a new and useful Latch-Closer for Knitting-Machines, of which the following is a specification.

My invention relates to knitting-machines; and it consists of a novel construction of a needle-cylinder by means of which large loose courses and slack work are produced in a reliable and accurate manner and the imperfect work due to the dropping of stitches entirely prevented.

In machines for knitting hosiery, underwear, or any fabric having a loose course, especially when working with lisle, worsted, or cotton thread, the large loops formed when the cam draws the needles down to make the loose course or slack fabric have a tendency to fall off the needles as the latter are raised by the cam, thus causing drop-stitches. My invention presents, broadly, positive means for preventing this stitch-dropping.

My invention further consists of a novel construction of a needle-cylinder having a preferably external guard-band for engagement with the latches to close them and keep them closed. This band is held upon the cylinder by any suitable means, as by a groove or projection.

It further consists of novel features of construction, all as will be hereinafter fully set forth.

Figure 1 represents a side elevation, partly in section, of a device embodying my invention. Fig. 2 represents a sectional view on line *x x*, Fig. 1. Fig. 3 represents a longitudinal section of a portion of the needle-cylinder. Fig. 4 represents a perspective view of the spring in detached position.

Similar numerals of reference indicate corresponding parts in the figures.

Referring to the drawings, 1 designates the needle-cylinder, which is provided with grooves or slots 2, forming guides in which the needles 3 are carried. I have deemed it unnecessary to show or describe the cam mechanism for actuating the needles, since the same is old in the art and forms no part of my present invention, it being apparent that any suitable or conventional type of cam mechanism may be employed. The needles 3 are of the usual construction and are provided with a latch 4 and a hook 5.

Outside of the needles or in such other relation thereto as to make contact with the latches of the needles when these are moved in operation I provide means for positively engaging the latches to hold them in position. In the particular means which I have illustrated I have preferred to supply common means for this purpose for all of the needles, although this is evidently not necessary, and I have made this means resilient, because I have preferred to make it separable from the cylinder, although these also are evidently both unnecessary to the invention. In my illustration therefor 6 designates an annular groove or space formed by projections, resulting in a support at the upper end of the cylinder in which a spring or spring-band 7 is adapted to be seated. The band 7 is shown in the present instance as consisting of a coiled spring suitably secured together, as at 8, so as to form a continuous band, for the reason that such a structure may be readily inserted or applied. A non-resilient band could, of course, be secured by screws or pins.

The operation is as follows: As the needle is lowered the latch engages the band 7 and is closed. The latch is maintained in closed position as the needle is moved upwardly by the cam mechanism until the needle has been raised a sufficient height above the band for the latch to open. This prevents the large loop which is formed by the hook from slipping off the hook during the operation. The loop slipping from the hook as the needle is being raised is the cause of drop-stitches and, hence imperfect work. It will be readily apparent that there is a great advantage in preventing the stitches dropping from the hook and also in the making of a loose course, as the operator can work with much greater rapidity in knitting the tops and also in knitting the feet of hosiery.

This device when a slack fabric is being made would be in constant use; but in tight webbing it is only used when the loose course is being made, and the device does not interfere in any way with the making of the tight webbing.

It will be apparent that machines now in use may be readily equipped with my novel device, since it is only necessary to attach a band, resilient or non-resilient, in any of the ways described, as by milling an annular groove at a suitable point near the upper end of the needle-cylinder and placing therein a spiral spring-band or a non-resilient band with which the latches of the needles come in

contact and by means of which said latches are kept closed after the loop is formed and the needles are being raised by the cams.

It will be evident that various changes may be made by those skilled in the art which may come within the scope of my invention, and I do not, therefore, desire to be limited in every instance to the exact construction herein shown and described.

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

1. In a device of the character described, a needle-cylinder having grooves longitudinally thereof, needles lying in said grooves and means fixed with relation to the cylinder in proximity to said needles for engaging latches thereon and maintaining said latches in closed position during an interval in the upward movement of said needles.

2. In a device of the character described, a needle-cylinder having external longitudinal grooves therein, needles located in said grooves and an annular band external of said needles in proximity thereto and adapted to engage the latches of the needle.

3. In a device of the character described, a needle-cylinder, a needle carried thereby and having a latch at the upper end of said needle and positive means for closing said latch, normally located below the same and fixed with relation to the cylinder.

4. In a device of the character described, a needle-cylinder, guides therein, needles lying in said guides and provided with latches and positive means connected with said cylinder for engaging the latches when the needles are moved.

5. In a device of the character described, in combination a needle-cylinder provided with an annular groove near its upper end, needles carried by said cylinder, and means engaging said groove, adapted to close the latches on the downward movement of said needles and maintain said latches in closed position during a portion of the upward movement of said needles.

6. In a device of the character described, a needle-cylinder provided with an annular groove near its upper end, having longitudinally-disposed slots therein, needles adapted to travel in said slots, and a resilient band in said groove to keep the latches of the needles closed after the loops are made.

7. In a device of the character described, a needle-cylinder, a needle carried thereby and having a latch thereon and positive means for maintaining the latch in closed position while the needle is in motion.

8. In a device of the character described, a needle-cylinder, a needle carried thereby and having a latch thereon, a support on the cylinder and means carried by the support for closing said latch and maintaining it in a closed position.

9. In a device of the character described, a needle-cylinder having external needle-guides, longitudinal thereof, needles lying in said guides and provided with latches and an annular spring embracing the cylinder and making contact with said latches.

10. In a device of the character described, a needle-cylinder, a needle carried thereby having a latch at the upper end thereof, an annular support upon the cylinder and a spring retained in said support making engagement with said latch upon movement of the needle.

11. In a device of the character described, a needle-cylinder, a needle carried thereby and having an outwardly-directed latch at its upper end, an annular support upon said cylinder external to said needle and means carried by said support for making engagement with said latch to keep the latches of the needles closed after the loops are made.

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