

J. W. LATCHER.
 LOOPING DEVICE FOR KNITTING MACHINES.
 APPLICATION FILED JAN. 13, 1908.

949,376.

Patented Feb. 15, 1910.

3 SHEETS—SHEET 1.

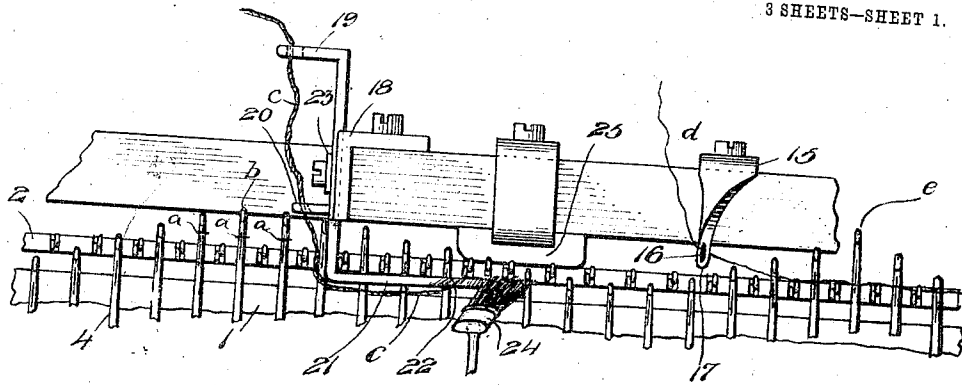


Fig. 1.

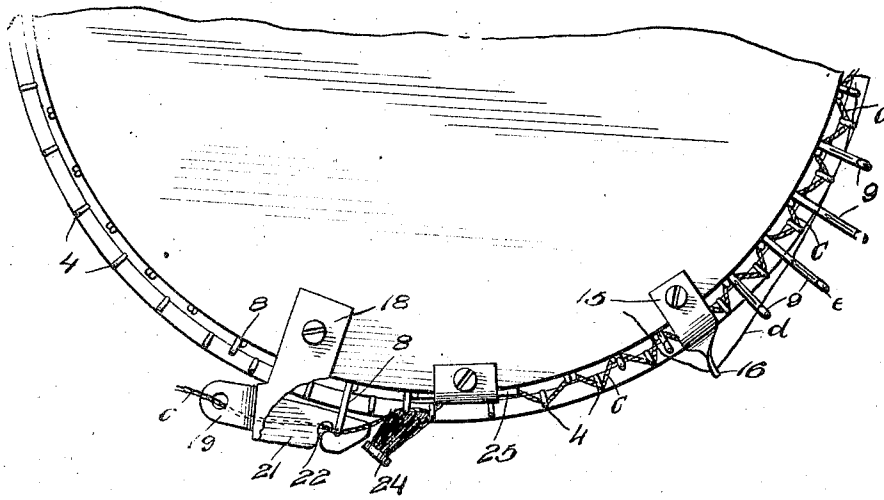


Fig. 2.

WITNESSES:

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May Ermoore

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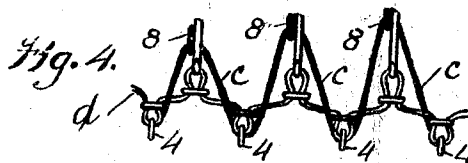
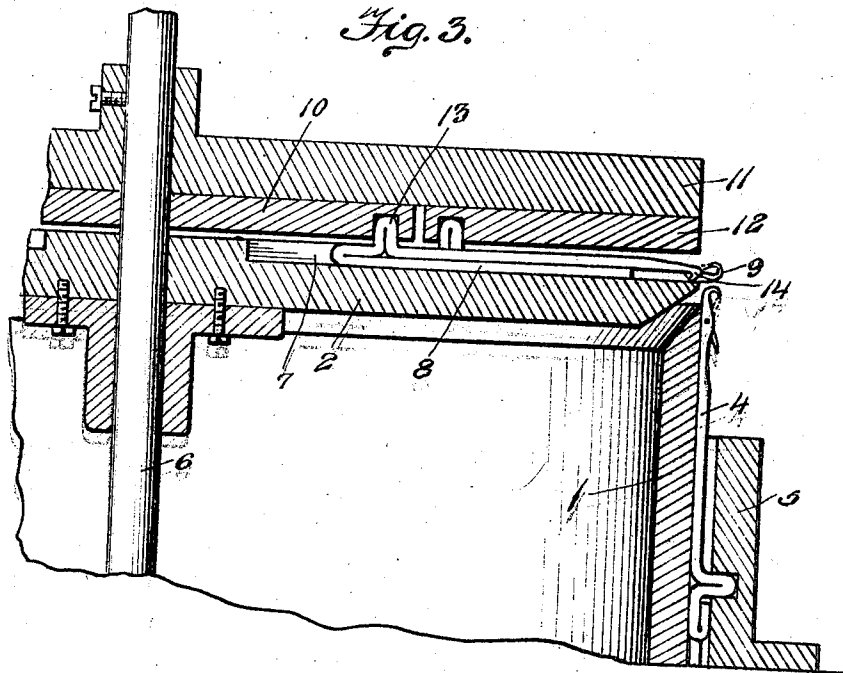
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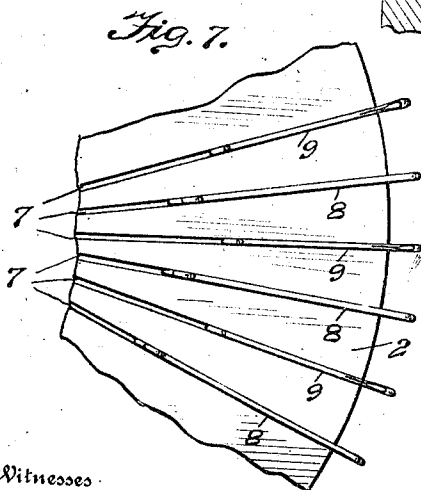
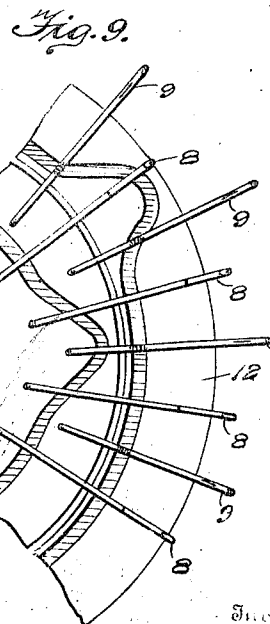
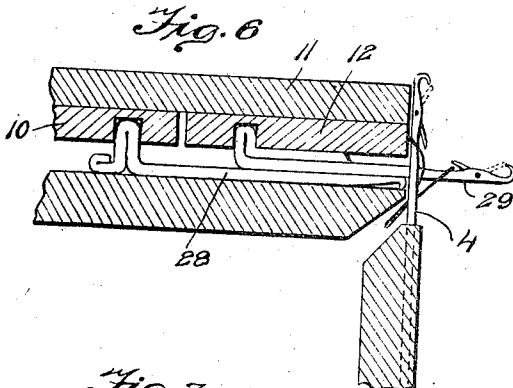
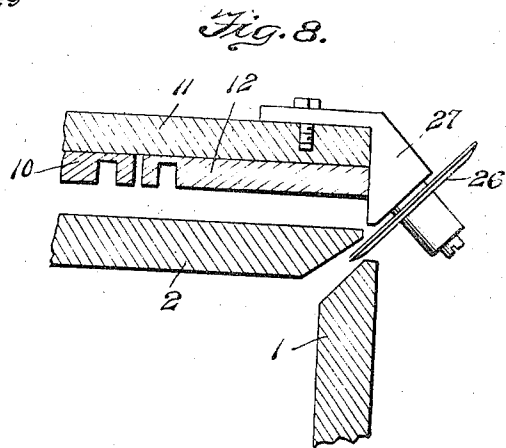
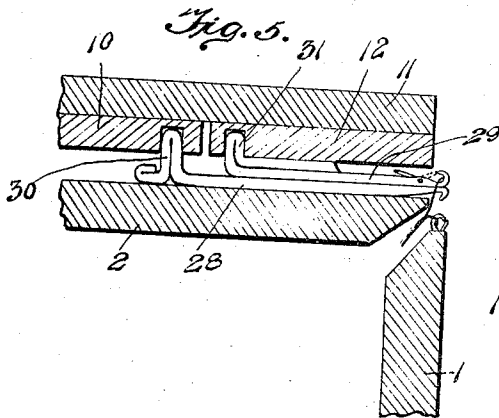
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Witnesses
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UNITED STATES PATENT OFFICE.

JOHN WALTHART LATCHER, OF EDINBURG, NEW YORK, ASSIGNOR OF ONE-HALF TO SEYMOUR DE WITT LATCHER, OF UTICA, NEW YORK.

LOOPING DEVICE FOR KNITTING-MACHINES.

949,376.

Specification of Letters Patent. Patented Feb. 15, 1910.

Application filed January 13, 1908. Serial No. 410,571.

To all whom it may concern:

Be it known that I, JOHN WALTHART LATCHER, a citizen of the United States, residing at Edinburg, in the county of Saratoga and State of New York, have invented certain new and useful Improvements in Looping Devices for Knitting-Machines, of which the following is a specification, reference being had therein to the accompanying drawing.

My invention relates to improvements in looping devices for knitting machines.

The object of my invention, is to prevent the spreading or springing of the needles during the operation or formation of the fleecing loops, by arranging the loopers in the dial parallel or nearly so with the dial's needles, and thus drawing inward below and within the needles the fleecing yarn in line with the dial needles; that is to say, drawing in the direction of motion or endwise of the dial needle, and of holding the fleecing loops by a sort of "dwell" sufficiently long to enable the succeeding body wale or wales to press down upon it; to the end that the fleecing loops will not recede or draw back into the body web, thus avoiding an uneven appearance of the fleecing loops. By this arrangement of loopers and needles, the fleecing loops are formed on the reverse or inside from "face" of the ribbed fabric.

In mounting the loopers, they may be carried in the dial, either in the same groove, below or beside the needle, the looper being so mounted and operated as to engage the yarn and form the loop with the assistance of the cylinder needle just previous to the operating of the dial needle, the looper, operating below and within the needles, and pulling the loop, instead of pushing, as is the general practice.

To more clearly illustrate my invention, attention is invited to the accompanying drawings, in which:—

Figure 1 is a side elevation in flat condition to illustrate the positions of the cylinder needles, prior to forming the loop and after such forming of the loop. Fig. 2 is a top plan thereof, the same being in its operative form. Fig. 3 is a central vertical section of one half of the machine. Fig. 4 is a diagrammatic view, illustrating the formation of the loops. Fig. 5 is a detail view of a modified form of arrangement of loopers. Fig. 6 illustrates another modified

form of looper. Fig. 7 is a top plan of a dial, having needles and loopers mounted in separate and alternating grooves. Fig. 8 is a detail of the web-depressing wheel; and Fig. 9 is another detail view.

Referring to the drawings:—The numeral 1 designates the cylinder, and 2 the dial, both of which are rotated simultaneously in the usual manner. Carried by the cylinder are the usual vertically-movable needles 4, which are operated by the cam 5. The dial which is rotatably supported on the vertical shaft or stud 6, is provided with the radial slots or grooves 7, in its upper face, and slidably mounted in each groove, as shown in Figs. 1, 2 and 3, is a looper 8, and the needle 9, the looper being in this case beside and on the same horizontal plane with the needle. In order to operate the loopers at the proper time, I employ the inner cam 10, carried by the upper circular plate or disk 11, while carried by said disk 11, and concentric exteriorly of the cam 10, is the dial needles' operating cam 12.

As is usual, I employ two web-forming yarns, to one loop-forming yarn, and thus my machine can be constructed to use any number of loop-forming yarns, and yet be within the scope of my invention.

My looper, is preferably made with the butt 13, adapted to enter the groove of its cam, whereby the looper is projected and withdrawn, the looper hook 14, operating at all times, to engage or release the yarn below and within the cylinder and dial needles, the yarn being drawn or pulled in by this hook and not pushed outwardly and over the needles, as is usual, to form the loops.

In order that the yarn for forming the web, may be properly fed to the needles, I provide the lug 15, which is secured to the disk 11 at its periphery so that its reduced end 16, depends below the disk to present its yarn guiding eye 17, so that the cylinder needles and the dial needles can engage the yarn without catching the end 16, and thus render the possibility of breaking a needle nil.

To properly feed the loop yarn to the looper, I secure the frame 18, to the periphery of the disk 11, so that the upper outwardly projecting yarn guide 19, will allow the yarn to be fed through the eye 20, to the lower guide arm 21, having the yarn receiving eye 22, over which the extreme end of the loopers or jacks pass, to engage the

yarn fed through said opening or eye 22. The height of this arm 21, is regulated by means of the slot and screw adjustment 23. As the yarn is thus engaged by the looper's hook, the stationary brush 24 prevents the yarn from moving outwardly, so that as the looper is withdrawn or recedes, the yarn is carried with it, and the loop is formed in connection with the cylinder needles, the yarn being alternately engaged with the looper hooks and cylinder needle and held until same has passed the body wales or web-forming point. Opposed to the brush 24, and carried removably upon the periphery of the disk 11, is the looper retainer 25, the purpose of which is to prevent any upward movement of the loopers as they are projected to engage the yarn and return with the same.

After the web has been formed, and to properly feed the same within the cylinder and not injure or break the web, as is customary with the stress devices now used, I employ the rotary depressor or feeder 26, which is journaled upon the angular frame 27, carried upon the periphery of the disk 11; the wheel being disposed at such an angle as to have its peripheral edge enter the space between the disk and cylinder far enough to press the finished web below the needles. The web-pressing wheel or disk 26 is pivoted in oblique fixed bearings at the extreme recession point of the cylinder and dial needles, and therefore retains this relative position at all times.

In Figs. 5 and 6, the loopers 28, are mounted in the same vertical line, as the needles 29, the loopers being below and of course having their shanks 30, in the same radial line, but nearer the center than the shanks 31 of the needles.

From the foregoing description, taken in connection with the drawings, the operation of my machine is readily understood, but briefly stated, it is as follows:—Referring to Fig. 1, and to the left hand side thereof, the cylinder needles have and retain the web yarn *a*, and are gradually rising as at *b*, to insure the latches falling, but not high enough to cause the yarn *a*, to fall below the latches. The loopers as they pass the yarn guide, hook the yarn *c* and as the cylinder needles pass this point, they catch the yarn *c*, the loopers receding to form the loop, while the cylinder needles assist them by holding the yarn. As the

dial and cylinder revolve toward the right, the yarns *a* and *c*, are carried by the needles and the loopers, the cylinder needles as they approach the yarn *d*, at *e*, being projected higher than at *b*, the yarns *a* and *c* slide down below the latches, so that after the cylinder and dial needles have engaged the yarn *d*, the yarns *a* and *c* are released, by the cylinder needles, the dial needles having moved outwardly and engaged the yarn *d*, and receded to form the web, and lock the loop, thus formed, in the web. The loop formed by the yarn *c*, is carried farther, and is released just prior to the operation of the rotary presser wheel 26, the yarn *d*, still remaining in the cylinder and dial needles.

In Fig. 4, I have illustrated the operation of the needles and loopers, with the looper yarn, in diagram. From this it will be clearly seen that the loops *f*, are formed and secured in the web, the loopers for forming the loops, at all times, operating below and within the needles of both the cylinder and dial, and upon the receding or pull stroke of the loopers.

What I claim, as new, is:—

1. In a knitting machine, the combination of a cylinder and a dial, needles carried by the cylinder and dial, loopers carried by the dial, said dial having radial grooves to receive a needle and a looper in one and the same groove so as to permit said needle and looper to slide longitudinally in the groove, and means for operating the needles and loopers independently of each other, said loopers operating to engage the looping yarn from below and within the needles to form loops upon the pull stroke.

2. In a knitting machine, the combination of a cylinder, needles mounted therein, a cam to operate said needles, a dial provided with radial grooves fitted to receive and permit a needle and looper to slide longitudinally in each groove, a cam for operating the needles, and a cam for operating the loopers, said loopers operating to engage the looping yarn from below and within the needles to form loops upon the pull stroke.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN WALTHART LATCHER.

Witnesses:

A. M. PARKINS,
DAVID P. MOORE.