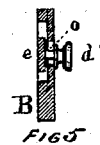
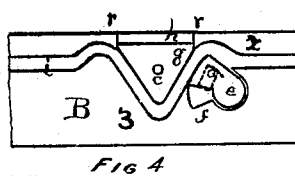
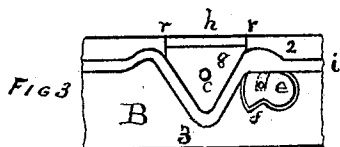
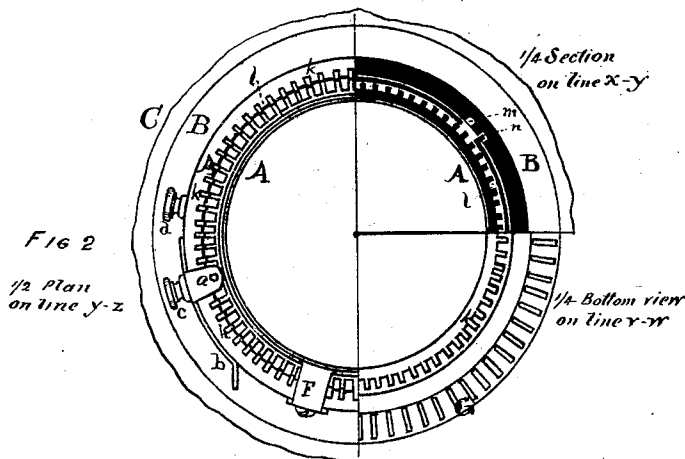
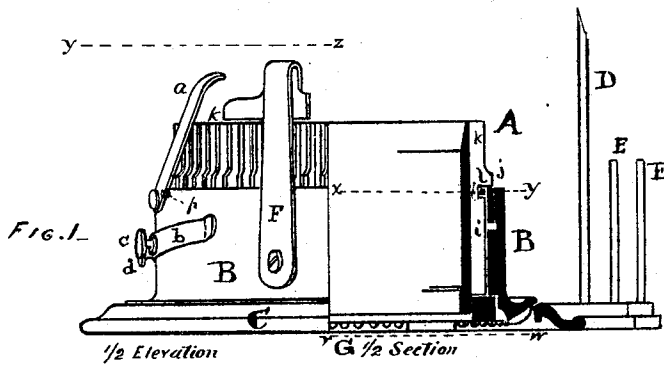


J. L. BRANSON.

Improvement in Knitting-Machines.

No. 127,954.

Patented June 18, 1872.



WITNESSES.

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JAMES L. BRANSON, OF CHICAGO, ILLINOIS.

IMPROVEMENT IN KNITTING-MACHINES.

Specification forming part of Letters Patent No. 127,954, dated June 18, 1872; antedated June 8, 1872.

SPECIFICATION.

I, JAMES L. BRANSON, of the city of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Knitting-Machines, of which the following is a full description, reference being had to the accompanying drawing making a part of this specification, in which—

Fig. 1 represents the machine one-half in elevation and one-half in vertical section. Fig. 2 represents the machine, one-half in plan, one-fourth in horizontal section on line *x y* of Fig. 1, and one-fourth a bottom view on line *v w* of Fig. 1; Fig. 3, a section of the cam-cylinder, showing the adjustable cam depressed; Fig. 4, a similar view, showing the adjustable cam elevated; and Fig. 5, a vertical section, showing the mode of elevating and depressing the adjustable cam.

The nature of my invention consists in a new and improved construction of the needle-cylinder, and in a peculiar device for holding the needles in position.

In the drawing, A is the needle-cylinder; B, the cam-cylinder; C, the frame; D, section of the standard for supporting the thread-distributor; E E, bobbin-spindles; F, loop-holder; G, cogs or teeth for rotating the cam-cylinder; *a*, thread-guide; *b*, spring; *c*, button for operating the cam *g*; *d*, button for operating the adjustable cam *e*; *f*, opening for receiving the cam *e* when depressed; *h*, opening for operating the cam *g*; *i*, cam-groove in cylinder B; *j*, shoulders or projections of the ribs between, having the grooves in A; *k*, needle-grooves; *l*, rod or band for holding the needles in position; *m*, opening for inserting or withdrawing needles; *n*, hook to prevent the rod or band *l* from slipping; *o*, slot in cylinder B, for operating the adjustable cam *e* from the outside; *p*, pins or stops for the thread-guide *a*. The parts A B C are made of iron, as usual. That portion of the needle-cylinder immediately above the cam-cylinder is larger than usual, and larger than the remaining upper part of the cylinder, as shown at *j* in Fig. 1; and the needle-grooves extend out through this enlarged portion of the cylinder. The needle-grooves *k* extend down nearly or quite to the bottom of the cylinder, as usual. Just below *j* is a longitudinal groove, extending around this cylinder. It is not as

deep as the needle-grooves, and receives the rod or band *l*, which does not extend quite around the cylinder; and at one end of it is a hook, *n*, which passes into a vertical groove in the cam-cylinder when the several parts are in place, as shown in Fig. 2, which prevents it from becoming displaced. It has been customary to use a hinged band, covering the space, covered by the enlarged portion *j* of this cylinder, which band it was necessary to remove in order to insert or remove any of the needles. The construction described dispenses with this band, and enables the operator to insert or remove the needles with great facility, by inserting them simply in or through the groove *m*, opposite to which there is an opening or space between the ends of the ring or bar *l*. The interior groove *i* of the cylinder B, and in which the projections at the lower ends of the needles move, is made in the most usual form, except that said groove at one side of the descending portion of the groove *i*, is provided with an adjustable cam, as shown at Figs. 3 and 4. This cam *e* is fitted into a recess, *f*, and is adjusted by means of the button or thumb-screw *d*, which passes through a slot, as shown at Fig. 5, by means of which the cam *e* can be raised and fastened, as shown at Fig. 4, or lowered, as shown at Fig. 3, so that the machine can be operated by revolving the cylinder B in either direction, or a double movement be given to the needles, if desired.

In knitting tubular web, the adjustable cam *e* is depressed so that the needles do not rise at this point, as it is unnecessary and creates a liability to drop the loops by the latch closing over the end of the hook of the needle in advance of the thread-guide in the next revolution. When the adjustable cam is depressed, the loops remain on the latches until they are raised, just in advance of the end of the thread-guide. A similar cam may be placed on the opposite side of the cam *g*, so that the machine can be made to knit a tubular web in either direction.

In knitting a flat web, the thread-guide *a* is held by the hand, and is reversed whenever the movement of the machine is reversed, and the needles not in use are taken out, which is readily done by means of the opening *m*. It will also be advisable to remove the loop-holder F in knitting flat webs. The cam *g* fitting

in the groove *h*, and which is operated from the outside by the spring *b* and button or thumb-screw *c*, is made in the usual manner for adjusting the height of the ascent or the depth of the descent of the needles.

In order to operate the machine in either direction, the thread-guide *a* is made moveable in either direction, the movement being limited by the stops or pins *p*, shown on one side in Fig. 1.

In order to prevent the loop of the yarn or thread from rising with, or binding on the needles, the loop-holder *F* is employed, the enlarged portion of which is made on the same curve as the cylinder *A*, and is placed just behind the needles, so as to hold the loops down when the needles rise, and insure perfect work under all circumstances. The cylinder *B* is provided on its lower edge with teeth or gearing *G*, which said teeth are made to engage with any suitable gear-wheel operated by a crank or otherwise to communicate motion to the cylinder.

Heretofore it has been found difficult to make those portions of the horizontal groove *i*, which give the vertical movement to the needles. In order to obviate this difficulty, I

cut away from the interior of the cylinder *B* about one-half its thickness, and about one-quarter of its interior circumference, and fill this space so cut away with three separate pieces, marked, respectively, 1 2 3 in Figs. 3 and 4, which are inserted so as to leave a perfectly-formed groove of the desired configuration. The pieces 1 and 2 form shoulders *r* for the support of the upper end of the cam *g*, so that it is held in position by the single pin or thumb-screw *c*.

What I claim as new is as follows:

1. The needle-cylinder, having the ribs between the needle-grooves, provided with the projections *j*, substantially as and for the purpose set forth.

2. The wire or band *l*, having an opening between its ends, and located in a groove in the needle-cylinder, below the projections *j*, in combination with the cam-cylinder, provided with the opening or groove *m*, substantially as described.

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Witnesses:

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