

(No Model.)

2 Sheets—Sheet 1.

E. VERMILYEA.  
KNITTING MACHINE.

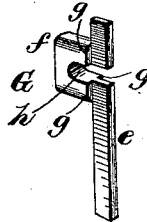
No. 304,978.

Patented Sept. 9, 1884.

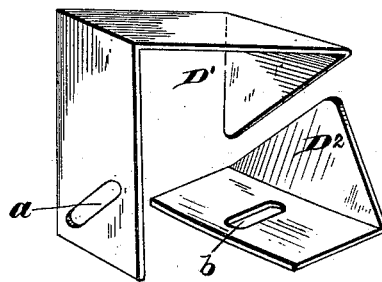
*Fig. 1.*



*Fig. 2.*



*Fig. 3.*



*Witnesses.*

*Robert Everett.*

*J. A. Rutherford.*

*Inventor.*

*Eugene Vermilyea.*

*By James L. Norris.*  
*Att'y.*

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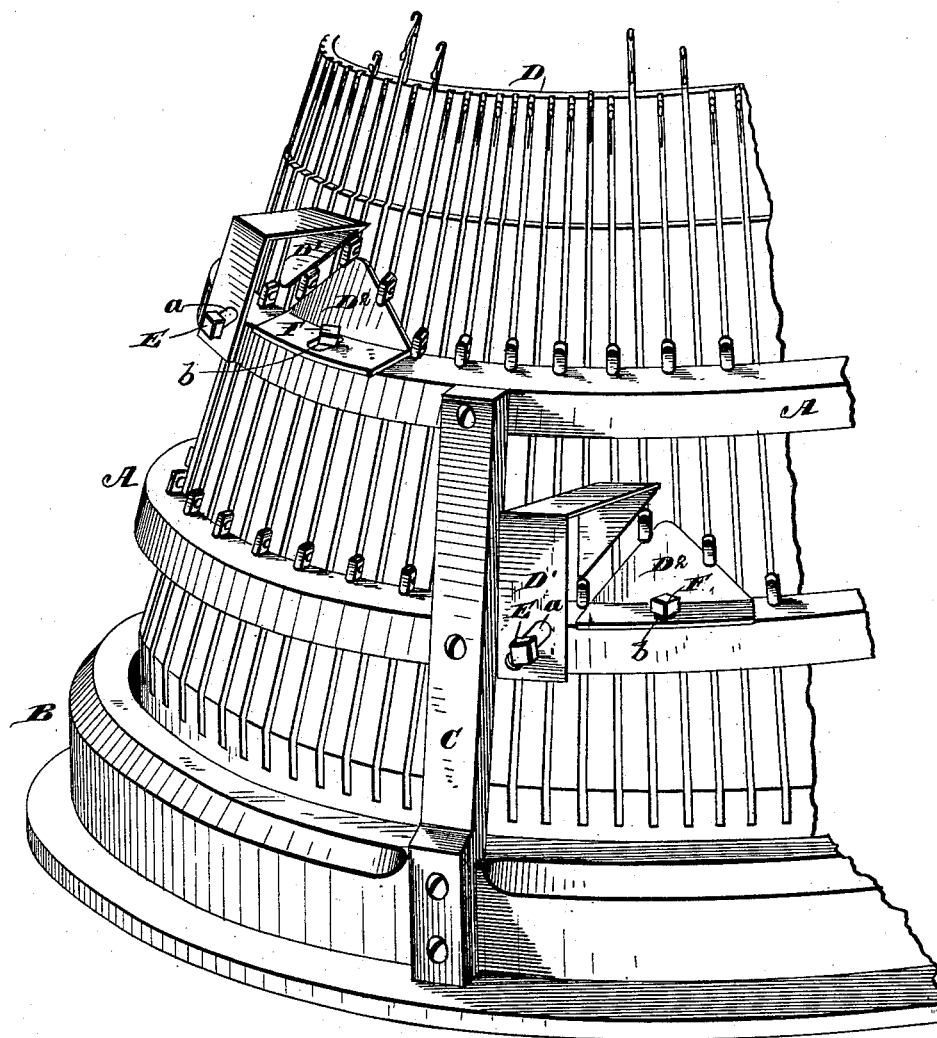
2 Sheets—Sheet 2.

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*Fig. 4.*



*Witnesses.*

*Robert Everett,*

*J. A. Rutherford*

*Inventor,*

*Eugene Vermilyea,*

*By*

*James L. Norris,*

*Atty.*

# UNITED STATES PATENT OFFICE.

EUGENE VERMILYEA, OF WATERFORD, NEW YORK.

## KNITTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 304,978, dated September 9, 1884.

Application filed November 2, 1883. (No model.)

*To all whom it may concern:*

Be it known that I, EUGENE VERMILYEA, a citizen of the United States, residing at Waterford, in the county of Saratoga and State of New York, have invented new and useful Improvements in Knitting-Machines, of which the following is a specification.

My invention relates to knitting-machines, and particularly to those commonly known as "circular;" and has for its object to provide jacks for the needles which can be easily and quickly applied to any needle desired, and shifted from one butt to another of the needles, as occasion may require; and it consists in constructing a removable jack with a shank to fit in the needle-groove, a slot or recess to fit over the butt of the needle, and a shoulder to rest upon the opposite walls of the needle-groove, and in the combination of parts hereinafter particularly described, and then pointed out in the claims.

Figure 1 is a side view of an ordinary double-butt needle; Fig. 2, a perspective view of the improved jack; Fig. 3, a perspective view of the cams detached from the cylinder-rings; Fig. 4, a perspective view of so much of a needle-cylinder and the cylinder-rings as is necessary to illustrate the application of the cams and needle thereto and the jack to the needles.

In the drawings, the letter A indicates the rings to which the cams are attached, B the base-ring, and C the upright supports for the cam-rings, and D the needle-cylinder, all of which parts are of an old and well-known construction. To the rings A, at suitable and desirable distances apart, there will be attached a cam, D', which in this instance is represented as formed of a metallic plate, two sides of which are at right angles to each other, and the third side bent inwardly at an oblique angle, with one edge inclining from right to left, and the point rounded, as shown in Fig. 3. The cam so constructed will be secured to the ring by a set-screw, E, passed through a slot, *a*, in one side of the cam and into the ring, as illustrated in Fig. 4. By forming the cam with the slot it can be adjusted to the extent desired. A second cam, D<sup>2</sup>, is represented as composed of a plate formed with two sides, at right angles to each other, one side projecting upwardly, and hav-

ing its two edges beveled or inclined, as shown, the other side having a slot, *b*, formed therein for the passage of a set-screw, F, to hold the cam to the ring, the slot permitting of the adjustment of the cam to or from the needle-cylinder. These two cams will be attached to the rings, so that the upper end of the obliquely-extending side of cams D' will project over and beyond the point of the upwardly-extending side of the cam D<sup>2</sup>, so that when the jacks, hereinafter referred to, reach and pass from off the point they will strike against the projecting and overhanging portion of cam D' and be directed into the path or space between the two cams.

For the purpose of regulating the throw of the needles, I provide a jack, G, which is formed with a shank, *e*, a head, *f*, which projects beyond the sides of the shank, so as to form shoulders *g* and a recess, *h*, in the head. This jack is fitted to the needle by passing its shank into the needle-groove in the needle-cylinder, so that the butt of the needle will fit into the recess in the head of the jack, and the shoulder of the head will rest upon the opposite walls of the needle-groove.

By constructing and applying the jack as described the butt of the needle will support it in the groove and the shoulder will relieve the edges of the groove from the strain of the needle-butt, as the projection of the needle-butt may be less than in other constructions, and the strain be thrown on the outside of the cylinder by the heads of the jack.

These jacks can be readily and easily applied to any needle without removing it from the cylinder, and they can be readily shifted from one needle to another, or from one butt to another on the same needle, so as to lengthen or shorten the throw of certain needles, as desired, for the same purposes for which other means are now employed.

The operation will be apparent to the skilled in the art, the heads of the jacks on the butts of the needles striking against the cam D<sup>2</sup> in the revolution of the needle-cylinder or the cam-rings, as the case may be, and moved thereby, so as to throw and withdraw the needles.

I do not claim, broadly, a needle-jack; nor do I claim a needle-jack or detachable shank made of a rod with its upper end doubled into

a projecting hook adapted to be hooked over the projecting end of a needle, the said shank fitting through a slot in the supporting-frame of the machine and acted on by a spring to hold the hook over the projecting end of the needle, which end is in the needle-groove below the outer surface of the needle-cylinder. My invention differs therefrom in that under my construction the jack is formed with a head which projects over the sides of the shank, so as to form shoulders to rest against the needle-cylinder outside of and to one side of the needle-groove, thereby relieving the edges of the groove from undue strain from the parts and throwing the same onto the face of the cylinder.

Having thus described my invention, what I claim is—

1. The needle-jack constructed with the

shank, the head projecting over the sides of the shank to form shoulders, as set forth, and the recesses in the head to receive the butt of a needle, substantially as described.

2. The combination of the needle-cylinder, the needles having butts, the jacks constructed with the shanks, the heads projecting over the sides of the shanks to form shoulders, and having recesses formed therein to receive the butts of the needles, and the cams for operating the jacks, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

E. VERMILYEA.

Witnesses:

JAMES L. NORRIS,

JAMES A. RUTHERFORD.