(No Model.)

E. VERMILYEA.

KNITTING MACHINE CYLINDER.

No. 604,440. Patented May 24, 1898.

Fig. 1.

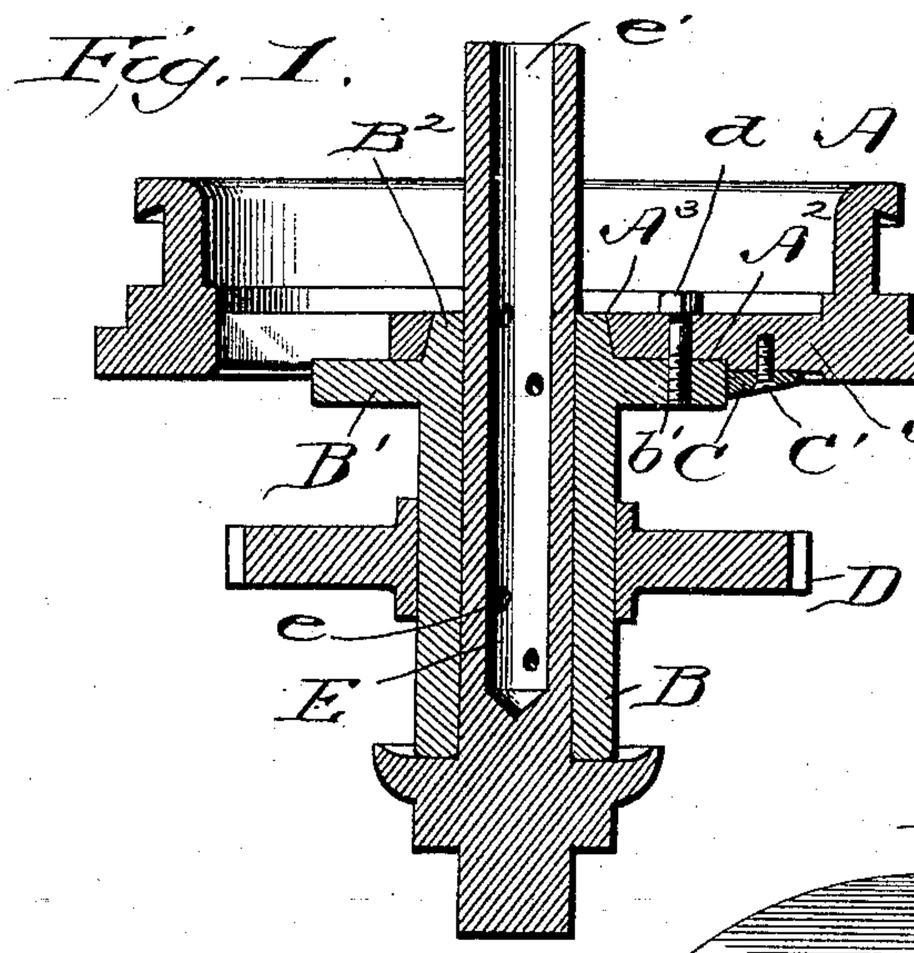


Fig. 2.

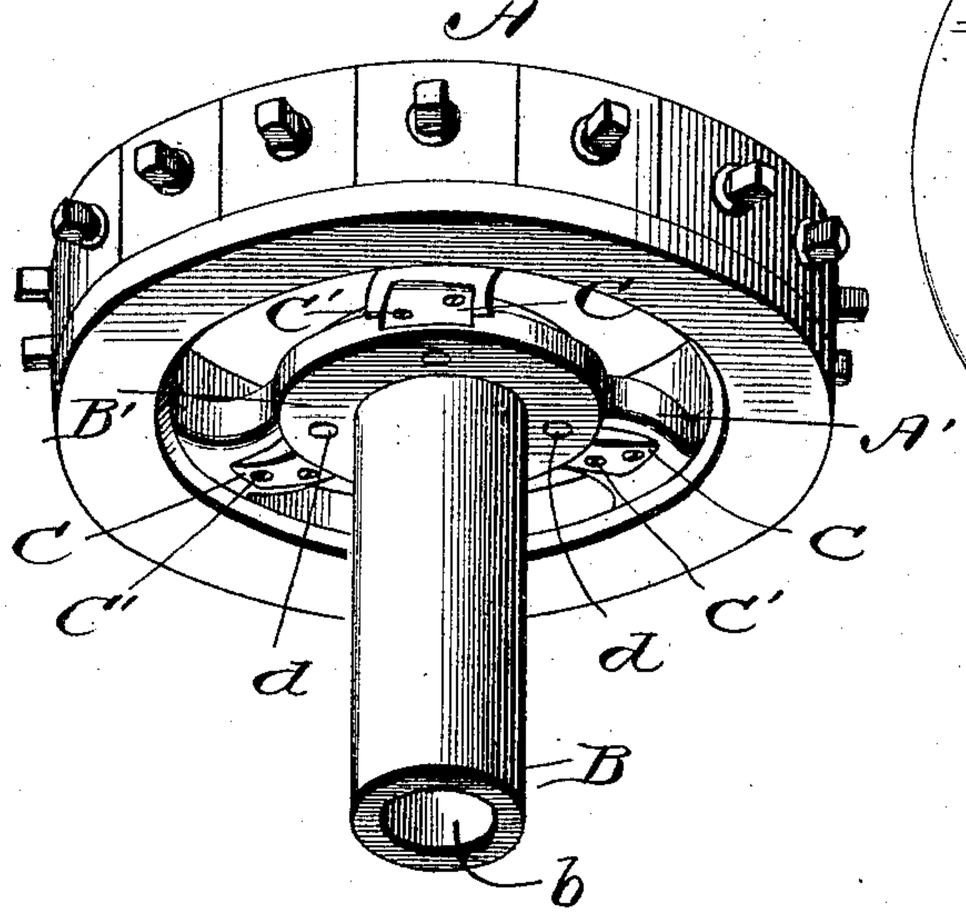
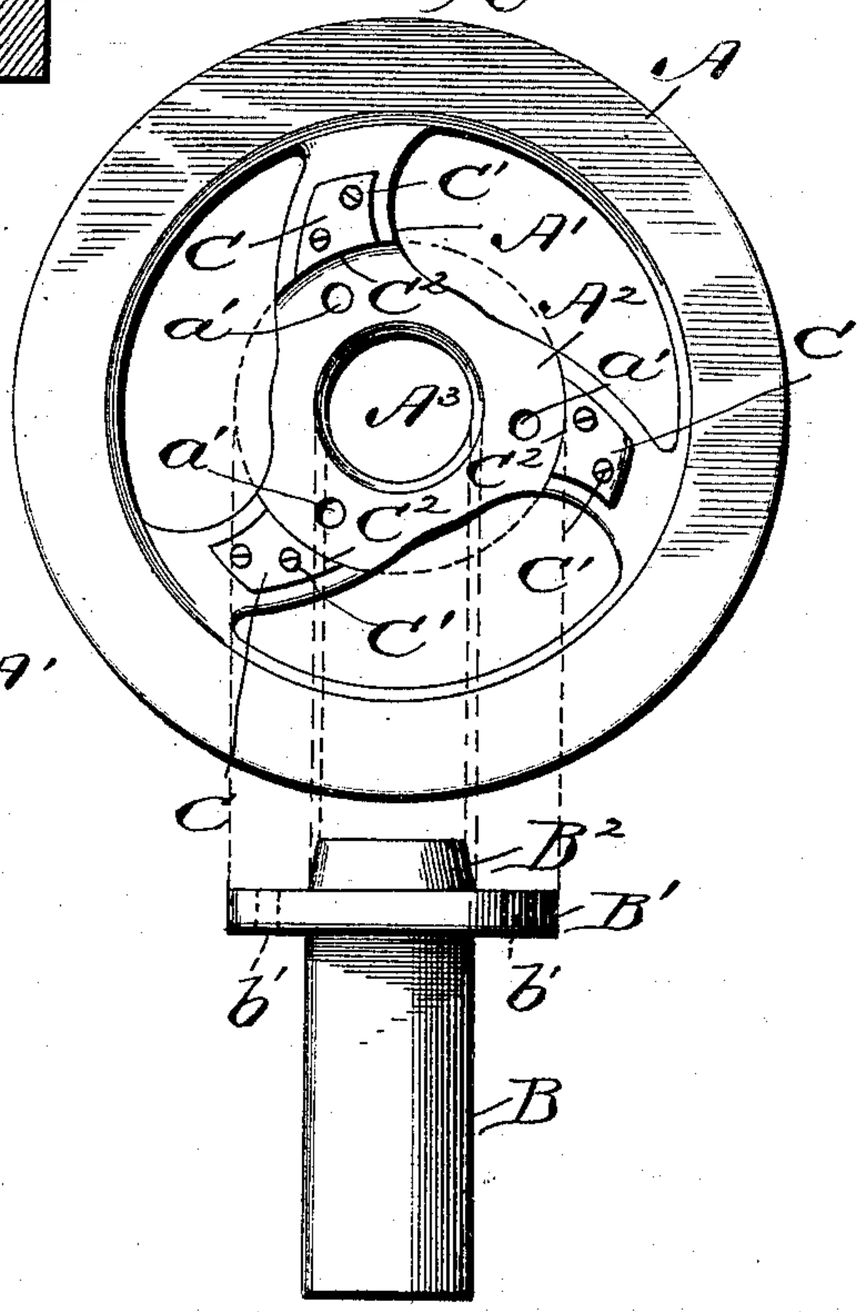


Fig. 3.



Witnesses
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UNITED STATES PATENT OFFICE.

EUGENE VERMILYEA, OF WATERFORD, NEW YORK, ASSIGNOR OF ONE-HALF TO SAMUEL SNYDER AND JOHN METCALF, OF SAME PLACE.

KNITTING-MACHINE CYLINDER.

SPECIFICATION forming part of Letters Patent No. 604,440, dated May 24, 1898.

Application filed November 17, 1897. Serial No. 658,799. (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 certain new and useful Improvements in Knitting-Machine Cylinders; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to knitting-machines which use a revolving cylinder having a central tubular hub or sleeve that turns on a bearing-stud, as in the Campbell and Clute machine and the Tompkins machine. Hitherto the cylinder and hub have been cast in one piece, being afterward turned and bored to receive the needles and stud. The sleeve or hub has gear-wheels clamped on it, whereby it is driven.

In practice it often becomes necessary to change the size of the cylinder. For this purpose the gears are loosened, the cylinder is lifted off the stud, and another one is substituted; but as each cylinder is made for its own stud such changes result in imperfect fitting, and as a consequence both the cylinder and the stud are worn so as to injure them. Indeed, a cylinder which has frequently been changed in this way will rarely run quite true on any stud. To obviate this defect, I make my hub or sleeve detachable from my cylinder in order that the hub and gears may be left in place and the cylinders exchanged without disturbing the accurate fit of the sleeve and stud. I also provide for bracing the hub or sleeve at its point of attachment to the cylinder by means hereinafter more particularly set forth and claimed. I also provide for lubricating the bearing-surface by making the stud hollow, with perforations whereby the oil supplied to the interior of the said stud may pass out over its exterior, which is in contact with the interior of the hub or sleeve.

In the accompanying drawings, Figure 1 represents a vertical section of a knitting-machine cylinder, hub, gears, and bearing-stud embodying my invention, the remaining parts of the knitting-machine being omitted as old and irrelevant to the invention. Fig. 2 represents a detail perspective view of the cylinder and hub; and Fig. 3 represents these latter parts detached, the cylinder being shown in plan from below the hub in its normal vertical elevation.

A designates the cylinder, which is provided with an internal rigid spoke-frame A′, but otherwise open. This frame and the body of the cylinder constitute the entire casting. The central part of the said spoke-frame is recessed on the under side, forming a bearing-space A^2, having its edges on each spoke curved to fit the periphery of a disk B′, which is cast with the sleeve or hub B near the upper end of the latter. Said frame has also a central opening A^3, which receives the upwardly-extending end B^2 of the said hub or sleeve, so as to let the said disk fit into said recessed part of the said frame, while the upper end of the said hub will be flush with its upper side. On the under side of the three spokes of said frame three lugs C are fastened by screws C′ and arranged so that their curved inner faces C^2 will fit against the periphery of disk B′.

D designates the gear-wheel on the said hub, through which the said cylinder is driven. E designates the hollow bearing-stud, which fits into the bore *b* of the said hub and is provided with perforations *e* for the lubrication of the bearing-surfaces of the said parts, the oil being supplied to the interior of the said stud through an opening *e*′.

The disk B′ and recessed part A^2 of the frame A′ are provided with bolt-holes *b*′ and *a*′, which register, in order that they may receive bolts *d* for detachably securing the cylinder and hub together. Screws or other detachable fastenings may be employed instead.

The cylinder while in operation is held to its hub and braced laterally on the same with as much practical security as though the two were cast in one piece, by reason of the fitting of the upper end B^2 of the tube into the opening A^3, the fitting of the disk B′ against the lugs C and into the recessed part A^2 of the cylinder spoke-frame, and the clamping action of the bolts or other fastenings.

When the cylinder is to be exchanged for another of different size, the bolts *d* are removed in the usual way, the cylinder is lifted

off, the other cylinder is bolted on in its stead, and the working of the machine goes forward, with no displacement of the gear-wheels and with no change of the bearing-surfaces. The cylinder, being thus rendered independent of the hub or sleeve, may be used very much longer and relied on for much more perfect work. The hub and stud, being used only with parts originally intended for them, will wear but little and run evenly for a long time. The importance of the change to the machine as a whole is obvious and great.

The lugs C might be cast with the cylinder; but it is preferred to have them in separate parts. This makes an easier casting and will allow their adjustment to disks of greater or less diameter.

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

1. A knitting-machine cylinder having a permanent part extending across the bottom of the ring, and provided with a detachable hub or sleeve, and means for detachably fastening the upper end of the said hub to the said part, substantially as set forth.

2. A cylinder having a permanent part extending across the bottom of the ring, having a central, conoidal opening, and provided with a hub or sleeve which is provided with a conical upper end adapted to fit into this opening, and an outwardly-extending part and means for detachably fastening said outwardly-extending part to the said bottom part of the cylinder substantially as set forth.

3. In combination with a cylinder having a permanent part extending across the bottom of the ring and lugs or plates with curvilinear edges detachably fastened to the under side of the said part, a hub or sleeve having a rigid disk or collar on its upper end the periphery of which fits against the said lugs and means for detachably fastening said collar to the said bottom part of the cylinder substantially as set forth.

4. A hub or sleeve having a conoidal top, B^2, and a disk or collar, B', in combination with a cylinder having a permanent part extending across the bottom of the ring and provided with a central, conoidal opening adapted to fit the upper end of the said hub, lugs removably attached to the under side of the said part and having curved, inner edges fitting the periphery of the said disk and means for detachably fastening the latter to the said bottom part of the cylinder substantially as set forth.

5. A cylinder, A, provided with a permanent spider-frame, A', extending across its bottom and having a central, conoidal opening, A^3, in combination with a hub or sleeve having a conoidal, upper end, B^2, adapted to fit into the said opening, and a disk, B', adapted to fit against the bottom of the said frame, means for fastening the said disk to the said frame and lugs which are detachably fastened to the said frame and provided with curved, inner edges which fit against the said disk substantially as set forth.

6. In combination with the tubular, suspending-stud, E, having holes, *e*, the sleeve or hub, B, having a conoidal, upper end, B^2, and the cylinder, A, having a rigid part extending across it at the bottom, and provided with a central, conoidal opening, A^3, the said sleeve and cylinder being detachably fastened together, substantially as set forth.

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

EUGENE VERMILYEA.

Witnesses:
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