(No Model.)

J. E. GEARHART.

CIRCULAR KNITTING MACHINE.

No. 457,643. Patented Aug. 11, 1891.

Fig. 1.

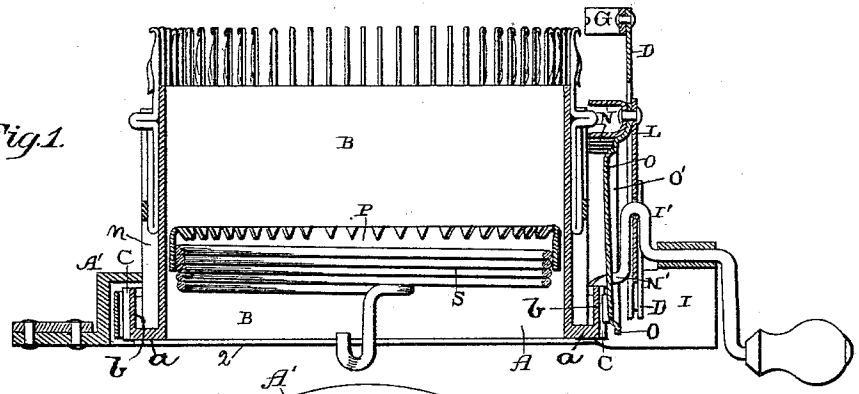


Fig. 2.

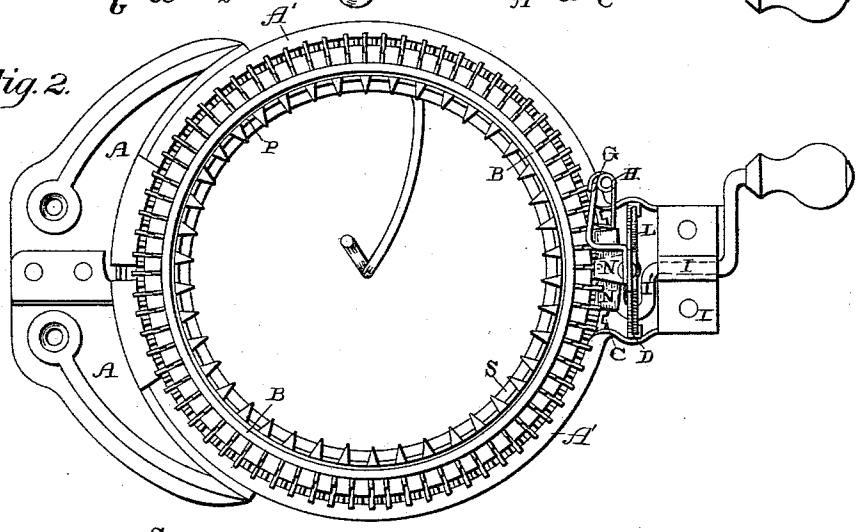


Fig. 3.

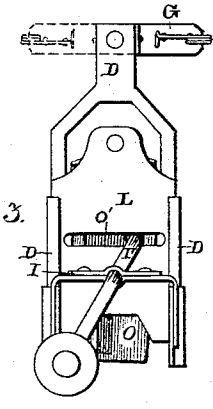


Fig. 4.

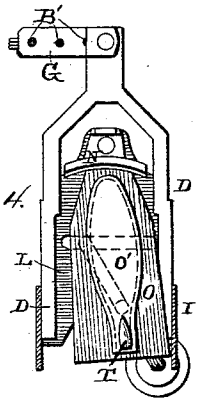
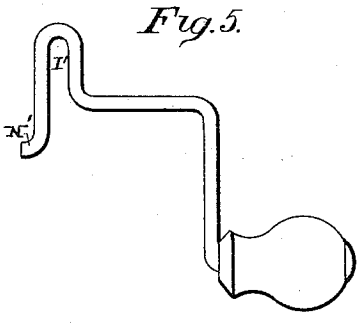


Fig. 5.



Witnesses:
E. P. Ellis,
B. Brockett.

Inventor
J. E. Gearhart,
per Lehmann & Pattison,
Attys.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

JOSEPH E. GEARHART, OF CLEARFIELD, PENNSYLVANIA.

CIRCULAR-KNITTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 457,643, dated August 11, 1891.

Application filed December 2, 1890. Serial No. 373,290. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH E. GEARHART, of Clearfield, in the county of Clearfield and State of Pennsylvania, have invented certain new and useful Improvements in Circular-Knitting Machines; 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 pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to knitting-machines; and it consists in the construction and arrangement of parts, which will be fully described hereinafter.

The object of my invention is to operate the cylinder by means of a pivoted toothed plate, which is operated by the crank-shaft.

Figure 1 is a vertical section of a machine which embodies my invention. Fig. 2 is a plan of the same. Figs. 3 and 4 are detached views of the mechanism for revolving the cylinder. Fig. 5 is a detached view of the crank-shaft.

This invention is intended as an improvement upon the machine of the patent granted to me April 1, 1890, No. 424,877.

A represents the frame, of any suitable construction, in which the lower edge of the revolving grooved cylinder B is held by the upwardly and inwardly extending flanges A′, formed upon the inner edge of the frame A, and which frame not only supports the operating parts, but serves as a means for securing the machine to any suitable support. The lower end of the cylinder B rests upon the inwardly-extending flange 2 of the frame.

Formed upon the lower edge of the cylinder B are a laterally-extending horizontal flange *a* and the vertical flange *b*, in which are made the cogs or teeth C, which are cast as a part of the cylinder instead of being made separate therefrom and then secured in position. Casting the teeth as a part of the cylinder greatly reduces the cost and labor of making the cylinders, and is a great improvement over having to form the teeth separately. These teeth correspond to the grooves *n*, in which the needles are placed, and hence each tooth or cog moves the cylinder just far enough to bring another needle into operation.

Secured to the frame A, upon one side, is a stationary support D, to the upper edge of which is fastened the reversible yarn-guide and tension device, which consists of the bent plate G, which is pivoted to the upper end of the support and can be turned to either side, according to the direction in which the cylinder is moving, and through this bent plate are formed three openings B′, through which the yarn passes. Secured to the end of this bent plate G is a wire take-up spring H, through which the yarn is passed after it has been passed through two of the holes in the bent plate, and from the end of this spring, which exerts a constant outward pull upon the yarn, the yarn is passed through the last one of three holes, as shown. The needles, as the cylinder revolves, cause a constant pull upon the yarn, and this pull has a constant tendency to pull the yarn against the outer side of the bent plate, and this tendency the spring serves to counteract and takes up the slack thread caused by the downward motion of the needle. The spring also prevents any sudden jerk upon the yarn, which would have a tendency to break it.

Journaled upon the top of the plate I, which is secured to the outturned ends of the frame A, is the crank-shaft I′, which is shaped as shown. The opposite edges of the standard D are bent over, as shown, so as to form guides, in which the slotted vertically-moving plate L moves, and which plate has the cranked portion of the shaft to extend through it for the purpose of raising and lowering it as the shaft is revolved. Pivoted to the upper end of this vertically-sliding plate L is the plate N for raising and depressing the needles, and which is made substantially the same and operated in the same manner as described and shown in my said patent. Pivoted also to the standard is a plate O, which extends down below the lower end of the sliding plate L, and which has a tooth T formed on the inner side of its lower end, and which tooth engages with the teeth of the cylinder for the purpose of revolving it. This plate is pivoted at its upper end and has a recess O′ stamped or formed in its side to receive the inner free end N′ of the crank-shaft, which, when made to revolve, gives to this plate a reciprocating motion at its lower end, and this reciprocating motion

causes the teeth to push the cylinder around It is immaterial in which direction the crank-shaft is made to revolve, for this toothed plate will drive the cylinder equally as well in either direction, and it is only necessary to change the yarn-guide and tension device from one side to the other.

Placed inside of the cylinder is the circular toothed plate P, which catches in the work and serves to exert a tension upon it, and secured inside of this circular toothed plate is a spiral spring S, which has its lower end turned inward to the center of the machine and then bent downward, so as to receive a tension-weight upon it. The toothed plate and the spring being secured together, it is only necessary — the weight having been placed upon the inturned end of the spring— to cause the teeth to catch in the work.

Having thus described my invention, I claim—

1. The combination of the standard, the cylinder, the sliding slotted plate, the crank-shaft, the plate for raising and depressing the needles, and a pivoted toothed plate for causing the cylinder to revolve, substantially as set forth.

2. In a knitting-machine, a cylinder having cogs and carrying needles, a standard, a reciprocating slide which raises and depresses the needles, a plate pivoted to the said reciprocating slide having a tooth which engages the said cogs, and a cranked shaft which operates the two plates, the parts combined substantially as shown.

3. In a knitting-machine, a frame, a cylinder having cogs and carrying needles, a standard outside of the cylinder, a reciprocating slide on the standard, a plate pivoted at its upper end to the upper end of the slide and having a tooth at its lower end which engages the said cogs, and a longitudinal guideway, and a shaft having a crank which operates the said slide, its inner end engaging the said guideway of the said pivoted plate, the parts combined substantially as specified.

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

JOSEPH E. GEARHART.

Witnesses:
J. B. McENALLY,
E. M. SCHEURER.