

(No Model.)

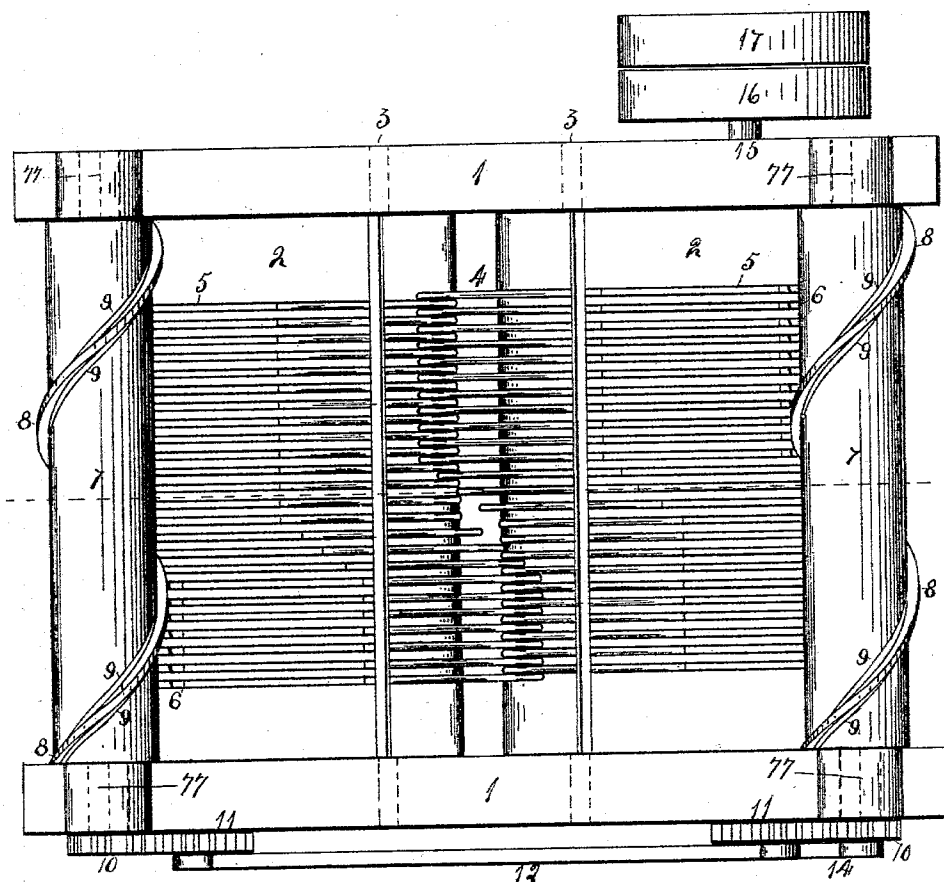
2 Sheets—Sheet 1.

E. G. JOHANSON.
KNITTING MACHINE.

No. 559,850.

Patented May 12, 1896.

Fig. 1.



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E. Behl.

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Emil E. Johanson
By A. D. Behl
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(No Model.)

2 Sheets—Sheet 2.

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Fig. 2.

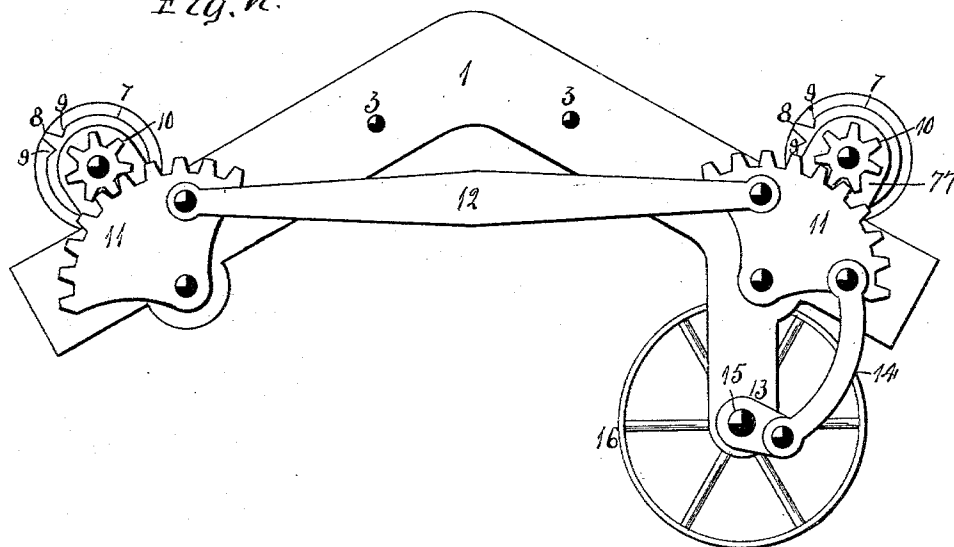
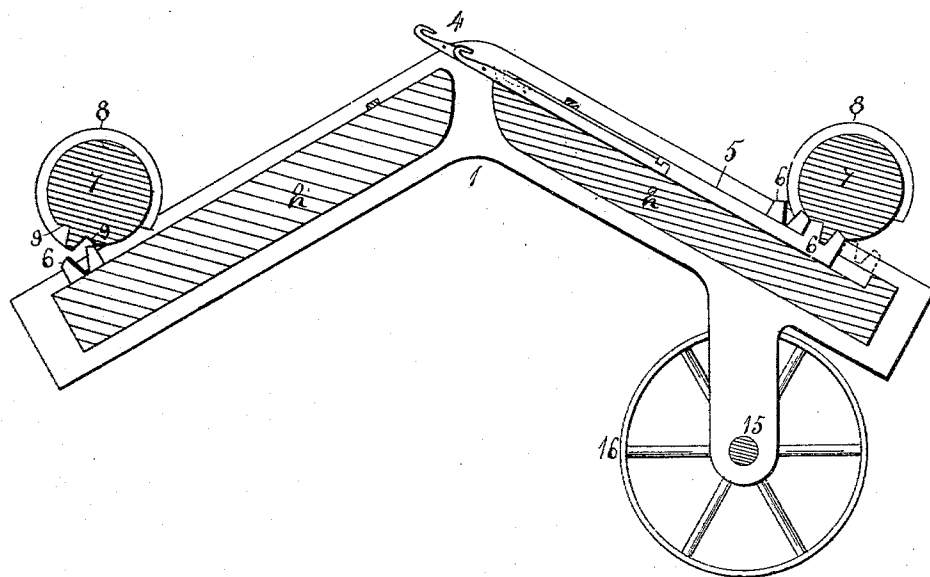


Fig. 3.



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UNITED STATES PATENT OFFICE.

EMIL G. JOHANSON, OF ROCKFORD, ILLINOIS, ASSIGNOR TO PETER O. JOHNSON, OF SAME PLACE.

KNITTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 559,850, dated May 12, 1896.

Application filed March 12, 1895. Serial No. 541,510. (No model.)

To all whom it may concern:

Be it known that I, EMIL G. JOHANSON, a subject of the King of Sweden and Norway, residing at Rockford, in the county of Winnebago and State of Illinois, have invented certain new and useful Improvements in Knitting-Machines, of which the following is a specification.

The object of this invention is to operate the needles of a straight-knitting machine by a reversible rotary movement of a cylinder having a spiral extending in its lengthwise direction.

In the accompanying drawings, Figure 1 is a plan view of such portion of a knitting-machine with which my improvements have a connection. Fig. 2 is an end elevation. Fig. 3 is a vertical transverse section.

In the construction of straight-knitting machines it has been impossible to attain a speed approximating the speed of a circular-knitting machine, owing to the fact that at each reciprocation of the cam-slide it must come to a standstill, and in so doing the speed is comparatively slow, and my improvements are calculated to increase the speed of the straight machines.

The main frame may be of any known construction, and in this instance consists of the end bars 1, held separated by the needle-beds 2, by rods 3, passing through the beds and end bars. These needle-beds stand in an inclined position, being lowest at their outer ends, and their upper faces are provided with needle-grooves. Within these grooves are located knitting-needles 4, and to their lower ends are connected jacks 5. These jacks have an upward extension 6, which is vertically slotted transversely of its length.

Over the lower end of each of the needle-beds is located a cylinder or roll 7, supported in bearings 77 in the end bars 1, each having a spiral rib 8, making at least a complete revolution of the roll, and on each side of this projection is formed a groove 9. These rolls are so located with respect to the vertically-slotted projection of the needle-jacks that the spiral rib will enter the slot of the projection.

To one end of each roll is secured a pinion 10, and adjacent to each pinion is pivoted a

toothed segment 11, the teeth of which engage the teeth of the pinions. These segments have a connection through the medium of the link 12, and one of the segments has a connection with the crank 13 by means of the link 14. This crank is carried by a shaft 15, held in bearings depending from the side bars of the main frame, and on its other end are located tight and loose pulleys 16 and 17. If a rotary movement be imparted to the fast pulley 16, its shaft and crank will also be rotated, and through its linked connection with one of the segments and the segments connected together an oscillatory movement will be imparted to the segments, which will impart a reversible rotary movement to the rolls. When the needles and jacks are in the position shown in solid lines at Fig. 3, the upward extension of the jacks will be directly under the rolls, and the upper ends of the projection will lie within the grooves 9 each side of the rib. When the jacks and needles are in their extreme downward position, the upper corner of the projection of the jacks will just free the outer surface of the rolls, and if all of the jacks of one section were down and the roll of that section rotated the rib of the roll would engage the jacks, commencing at one end of the series and moving them alternately upward to their extreme upward position, and upon a reverse movement of the roll they will be moved downward. Thus the needles will be raised and lowered at each two rotations of the roll. The roll for one of the needle-beds is so arranged with respect to the roll of the other needle-bed that while the needles of one bed are being withdrawn the needles of the other bed are being extended. By this arrangement a greater speed can be attained, as it is possible to speed the rollers, and a very short movement is imparted to the segments to make a complete rotation of the rolls, which is equal to one stroke of the cam-slide in the straight machines now upon the market.

I claim as my invention—

1. A straight-knitting machine consisting of two needle-beds having needle-grooves, needles located in the grooves, and a roll for each bed for operating the needles, each roll having a spiral rib extending in its length-

wise direction, and means for imparting a reversible rotary movement to the rolls, there being a groove formed on each side of the rib.

2. A straight-knitting machine consisting
5 of two needle-beds having needle-grooves, needles and jacks located in the grooves, each jack having an upward-slotted extension, a roll for operating the jacks of each bed, each

roll having a spiral rib extending in its length-
wise direction capable of engaging the pro- 10
jection of the jacks, and means for impart-
ing a reversible rotary movement to the rolls.

EMIL G. JOHANSON.

Witnesses:

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