

(No Model.)

A. TOWNSEND.
KNITTING MACHINE.

No. 552,016.

Patented Dec. 24, 1895.

Fig. 1.

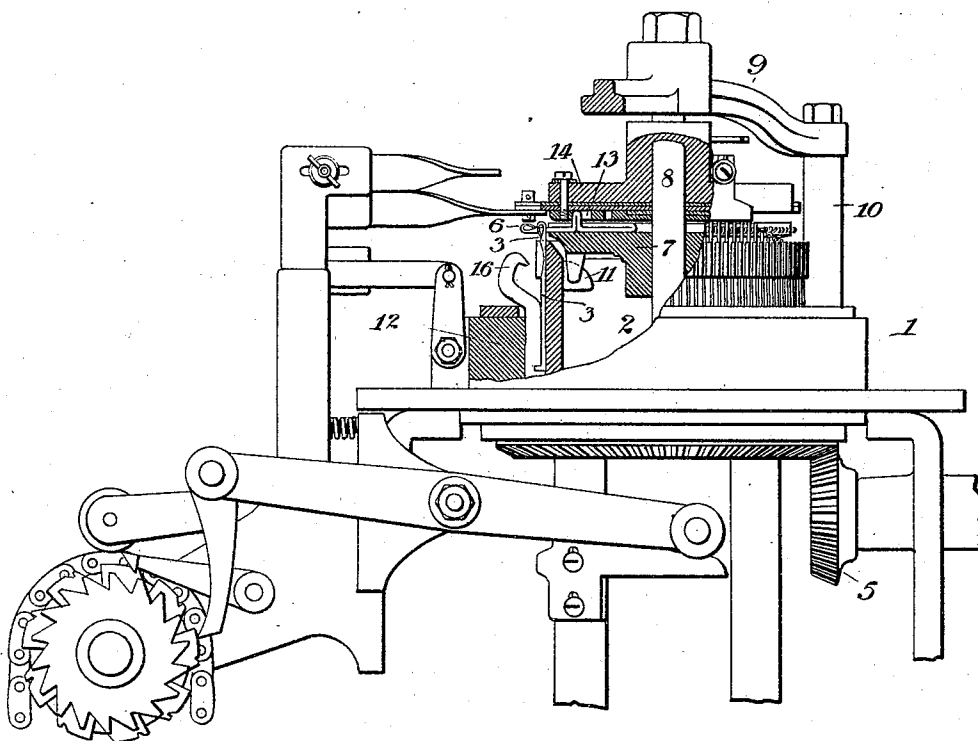


Fig. 3.

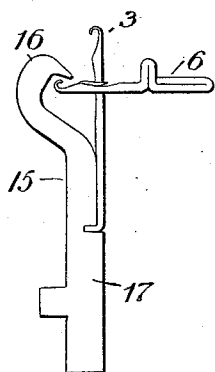
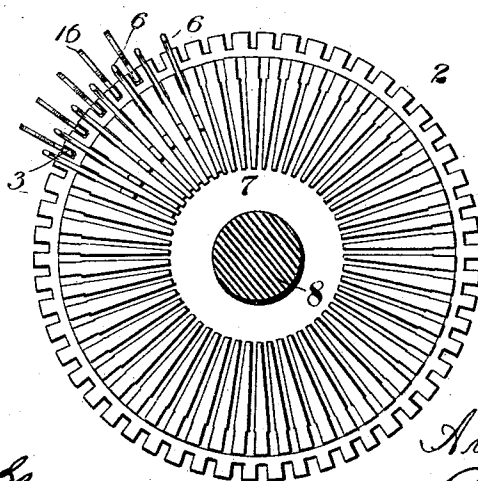


Fig. 2.



Witnesses

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UNITED STATES PATENT OFFICE.

ARTHUR TOWNSEND, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO
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KNITTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 552,016, dated December 24, 1895.

Application filed September 3, 1895. Serial No. 561,338. (No model.)

To all whom it may concern:

Be it known that I, ARTHUR TOWNSEND, of Philadelphia, county of Philadelphia, and State of Pennsylvania, have invented a new and useful Improvement in Knitting-Machines, of which the following is a specification.

This invention has reference to that class of circular-knitting machines designed for the production of ribbed fabrics, and comprising two sets of coacting needles, one set mounted in a cylinder and the other in a dial, suitable cams being provided to cause the needles to partake of the proper movements to form the stitches. In connection with machines of this character devices termed "sinks" have been employed, their functions being to sink or push the yarn in between the needles, to insure its being taken up by them with certainty, and to provide for the supply to the needles of yarn sufficient for the formation of the stitches. These sinks have been mounted in various ways to coact with the needles, and the present invention consists of a novel manner of applying the sinks, whereby their action is rendered more effective and their operation and application more simple. This novel manner of applying and mounting the sinks consists in attaching them to one of the sets of needles, either the cylinder or dial needles, but preferably the former, their action being, when thus applied, to move with the one set of needles and sink the yarn between the needles of the other set. The form of the sinks is such that the needles of the set between which the yarn is sunk act in retracting to disengage the yarn from the sinks, so that it is prevented from being carried by them beyond the proper point.

The invention also consists in the details of construction and combination of parts hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a sectional elevation of a portion of the knitting-machine equipped with needles having sinks applied in accordance with my invention. Fig. 2 is a top plan view of the same. Fig. 3 is an enlarged view of one of my improved sinks and its attached needles.

In the drawings, 1 represents a suitable frame supporting a needle-cylinder 2, formed

with the usual vertical grooves in which are mounted needles 3. The cylinder is mounted on the frame so as to rotate and is formed on its lower edge with gear-teeth engaged by a pinion 5, which may be driven from any suitable source. The needles in this cylinder co-operate with a series of needles 6, mounted in radial grooves in a dial 7, which is mounted loosely on a post 8 depending from a cross-tree 9, sustained by standards 10 rising from the frame. This dial is driven from the cylinder by the usual lugs 11. The cylinder-needles are caused to reciprocate by being engaged with cams in a fixed cam-ring 12, while the dial-needles are correspondingly moved by cams 13 in a fixed dial-plate 14, mounted above the dial.

The foregoing parts constitute the well-known circular-knitting machine of the "dial-and-cylinder" type, and except in so far as hereinafter indicated they form no part of the present invention.

In applying my invention each of the cylinder-needles is provided with a sinker in the form of a finger or projection 15, having a hook or angular end 16, as plainly shown in Fig. 3. I prefer to form this finger as a continuation of the needle-jack 17, its upper end being extended vertically and then laterally and terminating a short distance from the active end of the needle. It will be understood, however, that the sinks may be variously formed or applied without departing from the limits of my invention, the essence of which resides in attaching the sinks to the needles, and this irrespective of the manner of application, whether formed as an integral part of the needle or whether applied to the jack or otherwise.

The two sets of cams for causing the cylinder and dial needles to reciprocate in the proper manner to form the stitch are of the usual character, and so formed that the cylinder-needles will successively rise, carrying with them the attached sinks, and at this time, the yarn being guided beneath the angular ends of the sinks, on their descent the sinks will compel or force the yarn between the dial-needles which were by their cams projected at this point. The dial-needles will then be retracted and draw the yarn

from the ends of the sinkers, and the latter will continue to descend in the usual manner to complete its stitch. In this manner the yarn is sunk by the movement of one set of needles between those of the other set, the latter acting to take the yarn and to disengage it from the sinkers.

By my invention the same set of cams effects both the movements of the needles and the sinkers, thereby avoiding the complicated mechanism employed in cases where the sinkers are mounted in a separate bed and driven by intermediate mechanism.

It will be understood, of course, that the dial-needles may be provided with the sinkers instead of the cylinder-needles, in which case the operation is reversed as regards the sinking of the yarn and its disengagement from the sinkers. It will also be understood that the invention is not confined to its application to latched needles, but can be employed as well in connection with needles of a spring-hook type. Further it is to be borne in mind that the invention is not to be confined in its application to circular machines comprising a cylinder and dial, but is applicable as well to straight machines, in which case the function of the sinkers will be precisely the same as in the case described.

Having thus described my invention, what I claim is—

1. In a knitting machine the combination with the two sets of needles and means for reciprocating them to form stitches, of sinkers

fixed to the needles of one set and adapted to sink the yarn between the needles of the other set.

2. In a knitting machine the combination with the two sets of needles, and means for reciprocating them to form the stitches, of the angular sinker fingers fixed to one set of needles.

3. In a knitting machine the combination with the two sets of needles and means for reciprocating them, of jacks applied to the needles of one set and having their upper ends extending laterally and terminating a short distance from the active ends of the needles.

4. The combination with a knitting machine needle of a sinker attached thereto; whereby the sinker is caused to move with the needle and effect the sinking of the yarn.

5. In a knitting machine the combination with the dial its needles and its actuating cams, of the cylinder, its needles and actuating cams and sinking fingers attached to the cylinder needles; whereby the movements of the cylinder needles will cause the sinkers to force the yarn between the dial needles which latter in retracting will disengage the same from the sinkers.

In testimony whereof I hereunto set my hand, this 7th day of August, 1895, in the presence of two attesting witnesses.

ARTHUR TOWNSEND.

Witnesses:

CECIL M. DUFFIN,
JOHN C. BREWER.