H. F. BERRY.

EVENER FOR SPRING NEEDLE KNITTING MACHINES.

APPLICATION FILED NOV. 18, 1910.

1,066,367. Patented July 1, 1913.

Fig. 1.

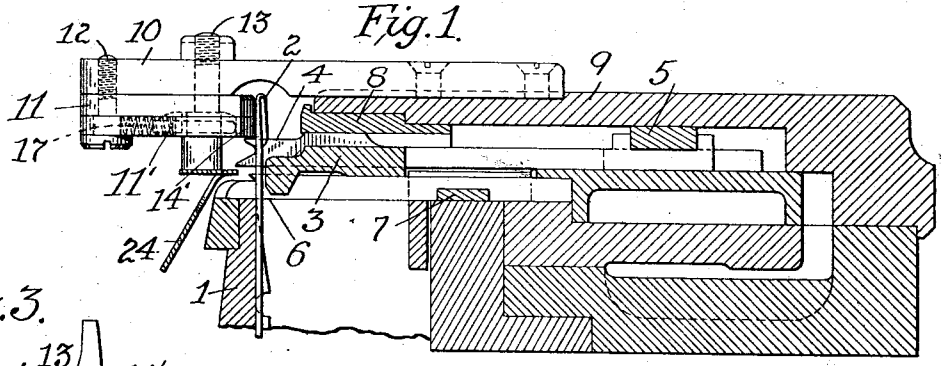


Fig. 3.

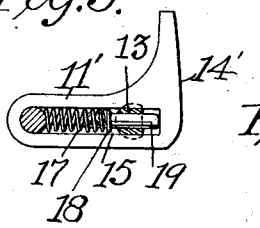
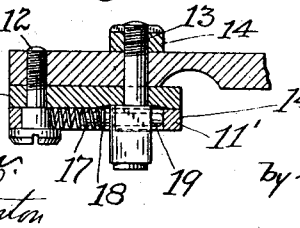


Fig. 2.

Fig. 5.

Fig. 4.



Attest:

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UNITED STATES PATENT OFFICE.

HARRY F. BERRY, OF NORRISTOWN, PENNSYLVANIA, ASSIGNOR TO WOLCOMB MACHINE COMPANY, OF NORRISTOWN, PENNSYLVANIA.

EARLIER FOR SPRING-NEEDLE KNITTING-MACHINES.

1,066,367. Specification of Letters Patent. Patented July 1, 1913.

Application filed November 18, 1910. Serial No. 593,097.

To all whom it may concern:

Be it known that I, HARRY F. BERRY, citizen of the United States, residing at Norristown, Pennsylvania, have invented certain new and useful Improvements in Eveners for Spring-Needle Knitting-Machines, of which the following is a specification.

My invention relates to eveners for spring needle knitting machines, and particularly to an evener of yielding form which will automatically compensate for any unusual pressure brought to bear upon the needles by reason of lumps, knots or other irregularities, occurring in the yarn or by the presence of a foreign substance such as a broken needle, the yielding of the evener preventing the needle to which the yarn is sunk from being bent and interfering with the succeeding sinker, and thus, in turn, affecting the succeeding needle and finally causing a smash up.

The invention consists in the features and combination and arrangement of parts hereinafter described and particularly pointed out in the claims.

In the accompanying drawings:—Figure 1 is a sectional view of a part of a knitting head embodying my invention, parts being in elevation; Fig. 2 is a plan view of the parts shown in Fig. 1; and Fig. 3 is a view of one member of the evener detached; Fig. 4 is a detail sectional view; Fig. 5 is a detail view of a modified form of the evener.

The invention is shown applied to that type of machine disclosed in an application for Letters Patent of the United States filed by Frank Wilcomb, Feb. 16, 1909, #478,180, though it will be understood that I do not limit myself in this particular.

In these drawings, 1 indicates a part of the needle cylinder in grooves on the outside of which the spring needles 2 work.

3 is the presser ring encircling the row of needles, 4 the sinkers, 5 the sinker cam, 6 the web holders, 7 the web holder cam, 8 the cover ring for the sinkers and 9 the top plate of the knitting head.

Upon the top plate or sinker cam section is mounted a bar 10 extending radially inward and carrying the needle evener. This evener may be variously constructed, but in the form shown it consists of an upper member 11 fixed to the bar 10 by a shouldered screw 12 and by a shouldered stud 13, the latter being held by a nut 14, and the evener also consists of a member 11′, having its face 14′ which contacts with the needles normally flush with the upper fixed part of the evener. This lower part is yieldingly mounted to have movement radially in relation to the center of the machine, and for this purpose it is slotted at 15 and is held up to the upper member, and guided in its movement by the shouldered screw and stud above mentioned, which pass through the slot. A spring 17 is arranged within the slot, bearing at its inner end upon the shouldered screw, and at its outer end upon a shoulder 18 on a pin 19 which passes through an opening in the shouldered stud, and bears at its outer end upon the interior wall of the movable member of the evener. The evener, in its outward movement under the action of the spring, is limited by its rear interior wall striking the shoulder on the screw, and this maintains the movable part of the evener flush with the fixed portion as above described.

The purpose of the evener is primarily to even up the needle row at the point where the yarn is sunk by causing any needle which is bent out of shape, or for other cause is not in proper position, to be straightened up to assume proper position in relation to the sinkers, thereby insuring the even sinking of the yarn and the formation of loops of equal length.

By my construction the lower member of the evener is free to slide radially to compensate for any excessive pressure on the needles, this yielding action being permitted by the spring connected with the lower member of the evener allowing it to retract and permitting the needle to bend toward the center of the machine without creating sufficient resistance to cause interference with the succeeding needle or sinker. After the obstruction has passed, the evener is returned to normal position by its spring. As above stated, the yielding evener may be variously constructed and arranged, the essential feature of the invention being an evener that will automatically take care of any excessive pressure brought to bear upon the needles at the time the sinking of the yarn takes place. Instead of a two-piece construction, the evener may be made in one

piece, and yieldingly mounted by a spring, or, as shown in Fig. 5, a single evener member may be used pivoted at 20 and pressed by a spring 21 against a stop 22 on the bar 10, so that when excessive pressure occurs, the evener will yield in the direction of travel of the needles indicated by the arrow, the evener being returned by the spring against the stop when the undue pressure is relieved by the passing of the obstruction. I have also illustrated at 24 the clearer plate for smoothing down the fabric and clearing it of obstructions, and at 23 is shown the presser wheel, but these parts form no part of the present invention.

As one instance of the utility of this invention, I would mention that the evener will yield when an obstruction occurs in the throat of the sinker and is pressed against the needle by the advance of the sinker, and this obstruction may be present at either a single sinker or may span several sinkers. This condition is liable to occur with some frequency in the operation of the machine, and the yielding evener will take care of this obstruction and prevent disastrous results.

I claim as my invention:—

1. In a spring needle knitting machine, the combination of the needle bed, spring needles, sinkers, an evener for the spring needles maintaining normal position under ordinary conditions, said evener being yieldingly mounted and automatically yielding relatively to the needles upon the contact of any obstructive substance and returning to its normal position after the passage of the obstructive substance, substantially as described.

2. In combination in a spring needle knitting machine, a needle bed, needles, sinkers, a sinker cam and a two-part needle evener to engage and even up the needles, one part being rigidly mounted and the other part being yieldingly mounted, substantially as described.

3. In combination in a spring needle knitting machine, a needle bed, needles, sinkers, a sinker cam and a two-part needle evener to engage and even up the needles, one part being rigidly mounted and the other part being yieldingly mounted, the rigid member being above the yielding member, and stop means to hold the yielding member in a certain relation to the rigid member, substantially as described.

4. In a spring needle knitting machine, a needle bed, spring needles, a presser ring outside of the needle row, a presser inside of the circular row of needles, radial sliding sinkers on the outside of the needle row, and a yielding evener on the inside of the needle row to engage the hook ends of the needles when raised, said yielding evener being located adjacent the point where the yarn is sunk to the needles, substantially as described.

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

HARRY F. BERRY.

Witnesses:
H. J. Mauck,
John J. Corson,
Henry F. Corson.