

No. 763,825.

PATENTED JUNE 28, 1904.

F. WILCOMB.
CIRCULAR SPRING NEEDLE KNITTING MACHINE.
APPLICATION FILED JUNE 5, 1902.

NO MODEL.

Fig. 1.

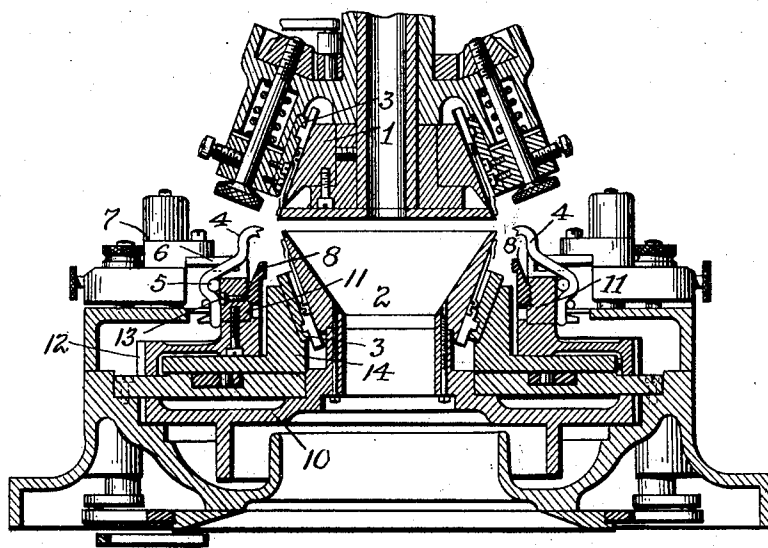
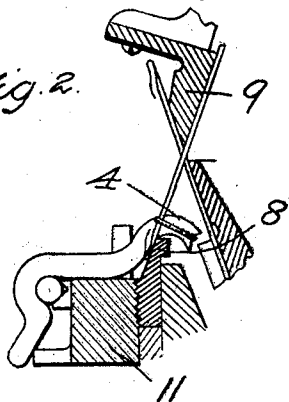


Fig. 2.



Attest:
Commissioner
Edw. L. Reed.

Inventor.
Frank Wilcomb.

By *W. H. Spear* *ATTY.*

UNITED STATES PATENT OFFICE.

FRANK WILCOMB, OF NORRISTOWN, PENNSYLVANIA.

CIRCULAR SPRING-NEEDLE KNITTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 763,825, dated June 28, 1904.

Original application filed August 7, 1900, Serial No. 26,157. Divided and this application filed June 5, 1902. Serial No. 110,374. (No model.)

To all whom it may concern:

Be it known that I, FRANK WILCOMB, a citizen of the United States, residing at Norristown, Montgomery county, State of Pennsylvania, have invented certain new and useful Improvements in Circular Spring-Needle Knitting-Machines, of which the following is a specification.

My invention relates to circular-knitting machines, the present case being a division of my application for Letters Patent of the United States for improvements in circular spring-needle knitting-machines, filed August 7, 1900, Serial No. 26,157.

My present invention relates to a support for the hook ends of the needles when advanced to take the thread.

In the accompanying drawings, Figure 1 is a vertical sectional view of so much of a knitting-machine as will enable my invention to be understood. Fig. 2 is a detail view.

In the drawings, 1 is a cylinder or cone of the upper or first set of needles, and 2 is the cone-shaped bed of the lower or second series of needles. Each needle of each series is operated independently, the needle-beds rotating and the needles being operated by cams 3, fixed to suitable stationary cam-rings 14. With these independently-operating spring-needles a series of independently-operating sinkers 4 are employed, pivotally supported at 5 and operated by a cam 6, which is supported upon a bracket 7, fixed in relation to the rotary parts of the machine. These sinkers are arranged in a row encircling the needle-rows.

The yarn is fed to the first set of needles, and the pivotally-supported sinkers draw sufficient yarn across the stems of these needles for both sets of needles, the yarn being fed to the second set of needles by the first set.

At 8 I show a support for the hook ends of the needles when advanced to take the thread. This support will prevent the needles from being sprung out of their normal plane when the yarn is fed thereto. This is liable to occur with the finer gages of needles; but by employing the support as devised by me this action will be prevented and the same amount

of yarn will be fed to the needles at each action of the sinkers. This will be true also even should the needles be slightly bent or be otherwise out of line, as the support will hold the stems when the feeding takes place in a definite position when the sinkers feed the yarn thereto. As shown in Fig. 2, this support can be applied to both rows of needles, and it may be a made a part of the gib of the first or upper set of needles.

The lower needle-cylinder or cone is driven through a gear 10, connected therewith, and the upper cone is driven in a similar manner not necessary to illustrate. The support 8 for the hook ends of the needles is in the form of a ring encircling the needle-rows and is carried by the sinker-bed 11, which in turn is supported on and rotated by a gear-wheel 12, so that the sinkers, the support 8, which is of ring form encircling the needle-bed, and the needle-beds all rotate in unison.

It will be observed that the pivoted sinkers cooperate with the needles of the upper set when they are advanced to take the thread, and said sinkers, with their bed, are thus located almost wholly below the knitting plane. It will be observed also that the hook-end support 8, which cooperates with the needles of the upper or first set across which the thread is first measured off by the sinkers, is located wholly beneath the knitting plane. This is true also of the cams for operating the pivoted sinkers. By this construction and arrangement of parts the knitting is left exposed at the knitting-point, so that the operator may observe the progress of the knitting and may have ready access to the knitting elements. It will be seen also that the ring-shaped hook-end support is attached to the sinker-bed by means of a screw-thread, thus enabling it to be readily adjustable vertically, and it may be held in any position to which it is adjusted by a set-screw 13. In practice it is necessary to change the relative position of the two cone-cylinders frequently. Changes of yarn sizes and changes of stiffness of stitch to make looser or tighter meshes often require a resetting of the cylinders, bringing the edges of cylinders nearer together or far-

ther apart. When I set up a very fine gage machine, the two cylinders are about one-sixteenth of an inch apart. When I set up coarse gages, the two edges of cylinders are sometimes three-sixteenths of an inch apart. In actual practice knitters raise or lower the upper cone (or dial) many times in a month. The good or bad results of knitting are often the result of the proper or improper location of the two cylinders with relation to each other.

Now a fixed needle-support is not practicable, because if a fine yarn is being used on a fine-gage machine and the needles rest on the needle-support and then a change is made to a coarser yarn the knitter separates the cylinders, and this brings the needles above the fixed needle-support, where they would not rest on it, thus destroying the usefulness of the said support for this gage of knitting.

When I build fine and coarse gage machines, I can make the support work in either case by making the support adjustable and raising it just as much as I raise the cone or dial.

The relative arrangement of the pivoted sinkers and supporting-ring is such and the form of the pivoted sinkers is such that both of these elements can be employed in cooperation. The sinker, it will be noticed, is pivoted in such a position and it is of such shape that its nose or sinking end can pass over the top of the supporting-ring and sink the yarn without interference between the body of the sinker and the supporting-ring. In other words, the sinker is of such form as to reach in over the top of the supporting-ring without striking the same, notwithstanding the fact that it is pivoted at a point below the plane of the upper edge of the supporting-ring. By this construction I am enabled to combine the advantages of a multiplied movement of the nose end of the sinker with those arising from the use of a supporting-ring.

The sinker, it will be noticed, has its nose end extended inwardly from the main part of the sinker.

What I claim is—

1. In combination in a circular spring-needle rib-knitting machine, two rows of independently-operated spring-needles, a row of independently-operated sinkers encircling one of the needle-rows, a bed for said sinkers encircling the needle-row, a supporting-ring encircling the needle-row for the hook ends of the needles of the other row, said supporting-ring being carried by the sinker-bed, substantially as described.

2. In combination in a circular spring-needle rib-knitting machine, two rows of independently-operated spring-needles, a row of independently-operated sinkers encircling one needle-row, a bed for said sinkers encircling the needle-row, a supporting-ring encircling the needle-row for the hook ends of the needles of the other row, said supporting-ring being carried by the sinker-bed, and having a screw-thread connection therewith whereby the supporting-ring may be adjusted in relation to the needle-row, substantially as described.

3. In combination in a circular spring-needle knitting-machine, the independently-operated needles, a supporting-ring for the hook ends of the advanced needles and sinkers pivotally supported and having notched noses at their free ends with arched stems back of said noses to reach in across and below the edge of the supporting-ring to sink the yarn across the stems of the advanced needles, said supporting-ring being located between the vertical pivotal plane of the sinkers and the needles, substantially as described.

4. In combination, the needles, a supporting-ring for the hook ends of the advanced needles, and pivoted sinkers having their free ends to pass across the edge of the supporting-ring and in behind the said ring to sink the yarn across the stems of the advanced needles, said ring being located between the pivots of the sinkers and the needles, substantially as described.

5. In combination in a circular-knitting machine with independently-operated needles and sinkers encircling the needle-row, needle-beds and a hook-end support for the needles when advanced consisting of a ring supported independently of and adjustably in relation to the needle-beds, substantially as described.

6. In combination with the spring-needles of a circular-knitting machine, a ring for supporting the ends of the needles when advanced and an encircling row of pivoted sinkers, the pivots of which are below the plane of the upper edge of the said ring, said sinkers having arched stems to extend over and within the upper edge of the ring, said arched stems ending in notched noses, substantially as described.

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

FRANK WILCOMB.

Witnesses:

C. G. CORSON,
HAROLD CORSON.