May 7, 1929. J. H. SHAFFER ET AL 1,712,052

KNITTING MACHINE

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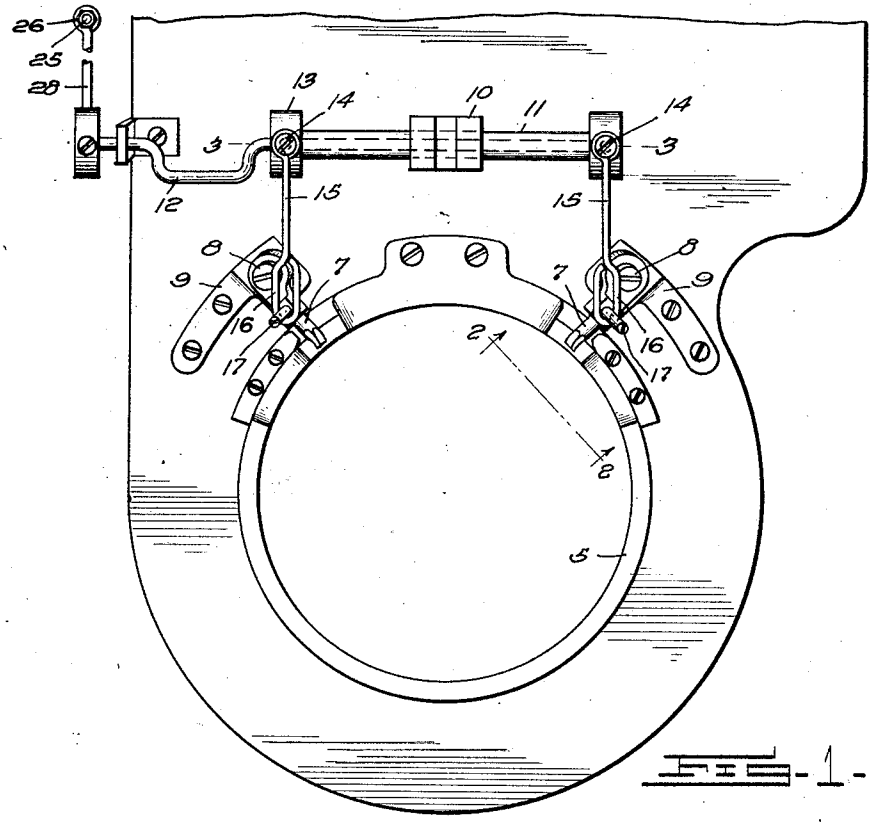


FIG. 1.

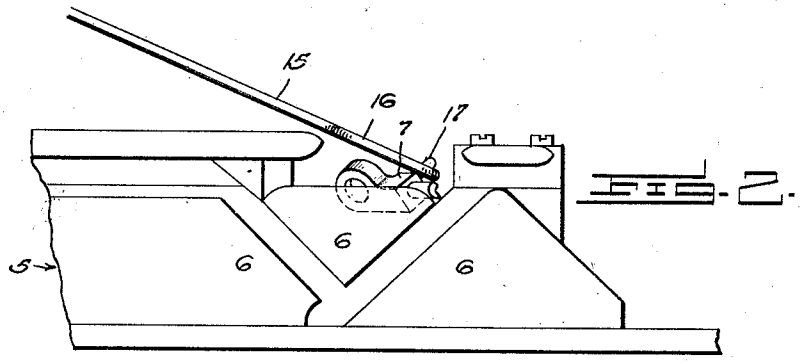


FIG. 2.

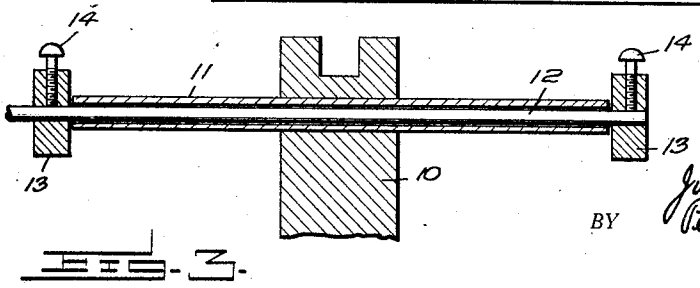


FIG. 3.

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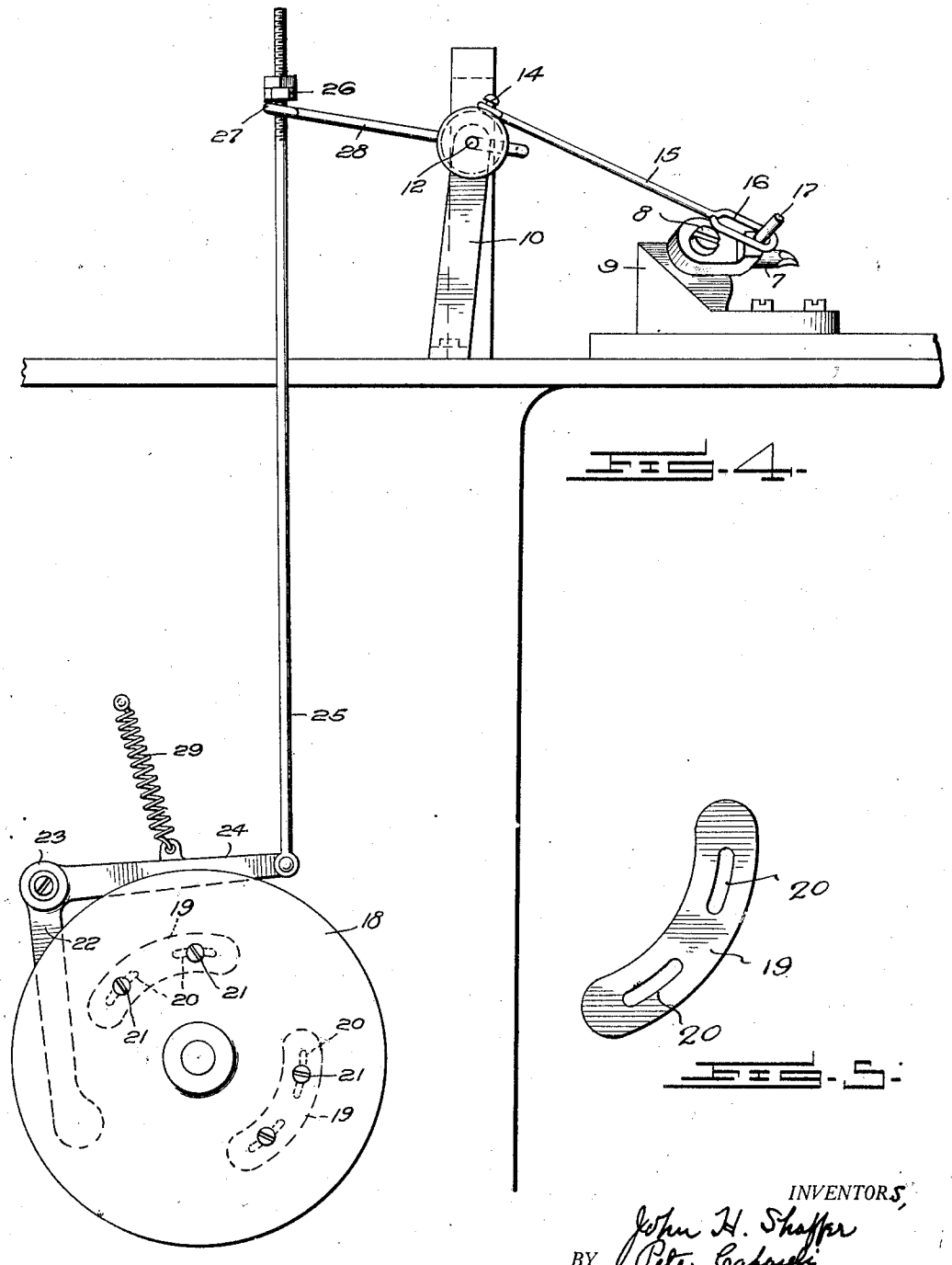


FIG. 4.

FIG. 5.

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Patented May 7, 1929. 1,712,052

UNITED STATES PATENT OFFICE.

JOHN H. SHAFFER, OF PALMYRA, NEW JERSEY, AND PETER CAPARELI, OF NORRISTOWN, PENNSYLVANIA.

KNITTING MACHINE.

Application filed August 31, 1927. Serial No. 216,572.

The present invention relates to knitting machines of the circular type, and preferably those employing spring needles. The object is to provide mechanism of a simple, effective, and novel character for periodically moving the pickers to inoperative positions. This mechanism is in addition to the usual picker operating devices, and is particularly useful in the knitting of the heels and toes of stockings during the widening thereof.

In the accompanying drawings:—

Figure 1 is a plan view of a cylinder, cams and pickers of a circular knitting machine equipped with the preferred embodiment of the picker operating mechanism.

Figure 2 is a detail inner face view on an enlarged scale and taken substantially on the line 2—2 of Figure 1.

Figure 3 is a sectional view taken on the line 3—3 of Figure 1.

Figure 4 is a side elevation of the operating mechanism, and one of the pickers.

Figure 5 is a detail view of one of the cams.

The complete machine has not been illustrated because it is believed to be unnecessary to an understanding of the invention by those skilled in the art. It may be a Wildman spring needle knitter or is applicable to machines of the type shown in the patent to Hemphill 933,443, September 7, 1909.

In the drawings, the cylinder of the machine is designated generally by the reference numeral 5, and contains the usual needle directng cams 6. Conventional pickers 7 are pivotally mounted at 8 on the usual picker brackets 9, and are adapted to be operated in the usual manner. The structure thus far is standard and well known.

As is well known in ordinary practice on the last half of the heel and toe, these pickers operate so as to permit two needles to be dropped and to raise one. The present invention comprises means for drawing the pickers out of operative position so that on each operation, the needles are dropped and none are raised by said pickers.

To this end, a supporting bracket 10 is placed upon the frame behind the cylinder, and is provided with an extended journal box sleeve 11. In this sleeve is mounted a rock-shaft 12 held against longitudinal displacement by collars 13 fixed to the shaft at the ends of the sleeve 11 by set screws 14. Links 15 engaged with the set screws 14 are provided with looped ends 16 that engage pins 17 on the pickers 7. The loops 16 are sufficiently long to allow the pins to play therein, and thus permit the normal movement of the pickers 7 during the usual knitting operations.

The rock-shaft 12 projects beyond the side of the machine at which the usual fashion drum or stitch wheel 18 is located and this stitch wheel 18 has adjustably secured to its rear side cam plates 19, the plates being provided with longitudinal slots 20 through which the holding screws 21 pass. These cam plates engage one arm 22 of a bell crank lever 23, the other arm 24 of which has pivotally connected to it a link 25. The link 25 has a bearing nut 26 adjustably threaded on its upper end and this bearing nut engages the eye 27 of a crank arm 28 fixed to the rock-shaft 12. The link 25 passes through the eye 27. A coil spring 29 is secured to the bell crank arm 24 to raise the same and oppose movement of the bell crank by the cam plates 19.

The operation of the mechanism may be briefly outlined as follows:

During the main portions of the knitting operations, the cams 19 are disengaged from the arm 22 of the bell crank 23, and consequently the spring 29 will hold the bell crank raised so that the pickers 7 will be in lowered position, and these pickers are free to swing upward during the knitting operations. When the knitting has progressed to a point where the heel or the toe of the stocking is to be widened, one of the cams 19 reaches a position to swing the bell crank 23, thus causing a downward movement of the link 25 and pulling the links 15 so as to raise the pickers out of the path of the needles. The consequence is that instead of dropping two needles and raising one on each operation, two needles are dropped and none are raised. As the result for example, a stocking can be readily produced with a machine equipped with this mechanism, corresponding to that found in the application of Peter Capareli Serial No. 154,795, filed December 14, 1926.

From the foregoing, it is thought that the construction, operation, and many advantages of the herein described invention will be apparent to those skilled in the art, without further description, and it will be understood that various changes in the size, shape, proportion and minor details of construction

may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

What we claim, is:—

1. In a knitting machine, the combination with the usual knitting mechanism, including pivoted pickers, of a rock-shaft, link connections between the rock-shaft and pickers, and means for periodically operating the rock-shaft.

2. In a knitting machine, the combination with the usual knitting mechanism, including pivoted pickers, of a rock-shaft, link connections between the rock-shaft and pickers, and a cam for periodically operating the rock-shaft.

3. In a knitting machine, the combination with the usual knitting mechanism, including pivoted pickers, of a rock-shaft, link connections between the rock-shaft and pickers that permit the pickers to be raised independently of the operation of the rock-shaft, and means for periodically operating the rock-shaft.

4. In a knitting machine, the combination with a cylinder and oppositely disposed pickers pivotally mounted thereon, of a rock-shaft journaled in rear of the cylinder, links connected to the rock-shaft, and having slots, pins on the pickers engaged in the slots and capable of play therein to permit the pickers to be operated independently of the links, a cam, a bell crank periodically engaged by the cam, and a link connection between the bell crank and rock-shaft for operating the latter from the former.

5. In a knitting machine, the combination with a frame and the usual knitting mechanism, including pickers, of a rock shaft journaled on the frame, means for periodically turning the rock shaft, cranks on the rock shaft, and link connections between the rock shaft and the pickers for operating the latter on the turning of the rock shaft.

6. In a knitting machine the combination with a frame and the usual knitting mechanism including pickers, having pins, of a rock shaft journaled on the frame, means for periodically turning the rock shaft, cranks on the rock shaft, and link connections between the rock shaft and having slots in which the pins of the pickers are engaged and are capable of limited movement to permit the normal movements of the pickers, said pickers being moved by the links on the turning of the rock shaft.

7. In a knitting machine, the combination with a frame and the usual knitting mechanism including pickers, of a journal box sleeve mounted on the frame, a rock shaft journaled in the sleeve and projecting beyond the ends thereof, means for periodically turning the rock shaft, collars fixed to the rock shaft at the ends of the sleeve and holding the rock shaft thereon, and links connecting the collars and the pickers for operating the latter on the movement of the rock shaft.

8. In a knitting machine, the combination with a frame, and the usual knitting mechanism including pickers, of a journal box sleeve mounted on the frame, a rock shaft journaled in the sleeve and projecting beyond the ends thereof, means for periodically turning the rock shaft, collars on the rock shaft at the ends of the sleeve and holding the rock shaft therein, set screws fixing the collars to the rock shaft, and links connected to the set screws and having lost motion connections with the pickers.

In testimony whereof, we affix our signatures.

JOHN H. SHAFFER.
PETER CAPARELLI.