

(No Model.)

2 Sheets—Sheet 1.

F. A. NYE.
KNITTING MACHINE.

No. 573,527.

Patented Dec. 22, 1896.

Fig.1.

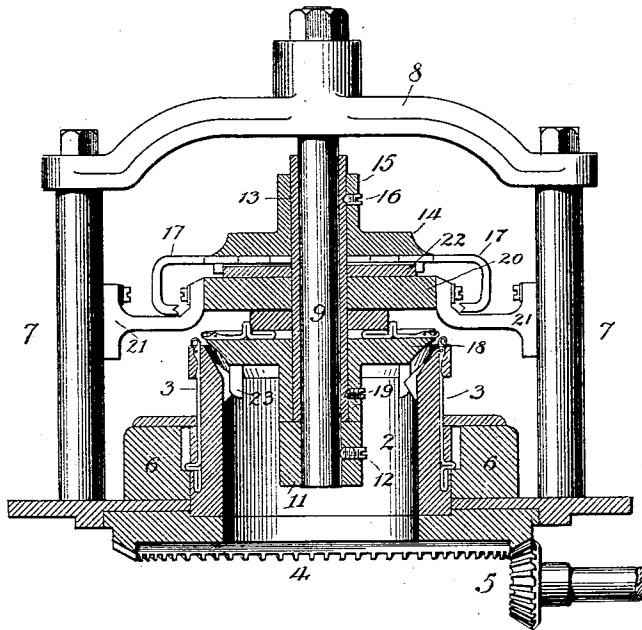


Fig. 3.

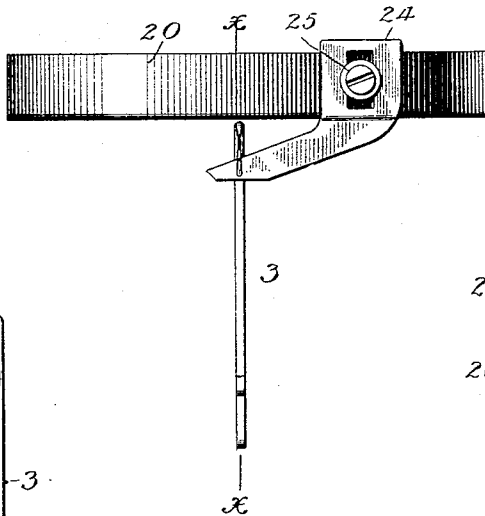


Fig. 4

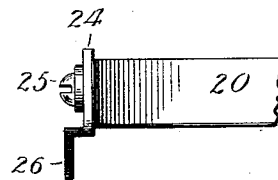
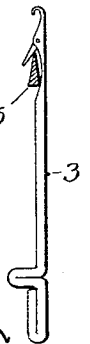


Fig. 5.
on line JE 2.26



Witnesses:

J. S. Elmore
N. R. Kennedy

Inventor:

J. A. Nye
By C. T. Dodge
Att'y

(No Model.)

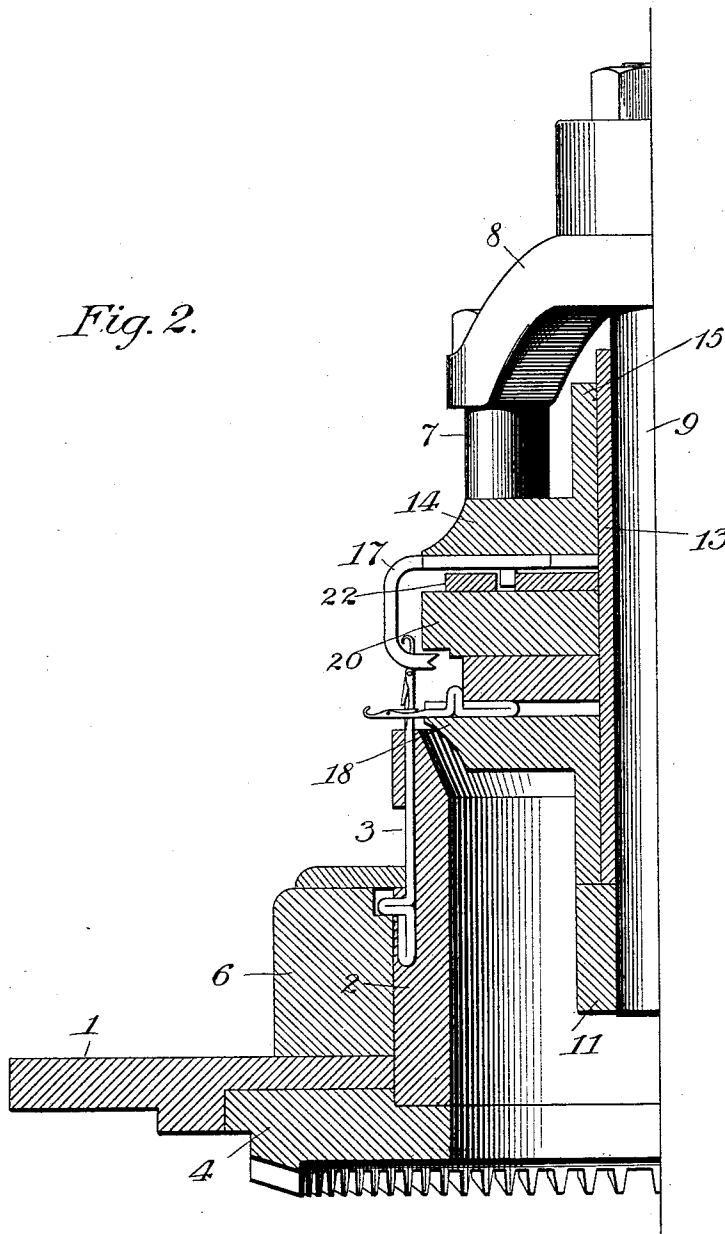
2 Sheets—Sheet 2.

F. A. NYE.
KNITTING MACHINE.

No. 573,527.

Patented Dec. 22, 1896.

Fig. 2.



Witnesses:
J. S. Emory.
M. R. Kennedy.

Inventor:
F. A. Nye
By *P. T. Lodge*
Atty

UNITED STATES PATENT OFFICE.

FRANK A. NYE, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO NYE
& TREDICK, OF SAME PLACE.

KNITTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 573,527, dated December 22, 1896.

Application filed October 23, 1895. Serial No. 566,625. (No model.)

To all whom it may concern:

Be it known that I, FRANK A. NYE, 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 circular-knitting machines, and relates more particularly to the manner of sustaining and operating certain devices termed "sinkers," which devices act to force or sink the yarn between the needles to insure its being taken up by them with certainty.

The invention is applicable either to machines for forming plain work employing a single set of cylinder-needles or to machines for forming ribbed work employing two sets of needles.

The invention 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 knitting-machine having my invention embodied therein. Fig. 2 is a similar view, on an enlarged scale, with the sinkers in a different position. Fig. 3 is a side elevation, on an enlarged scale, of the latch-closer and a latch-needle, showing the relative positions of the same. Fig. 4 is an end elevation of the same. Fig. 5 is a vertical section on the line *xx* of Fig. 3.

In the drawings, 1 represents a frame in which is mounted a vertical rotary cylinder 2, having a series of vertical grooves in its outer side in which needles 3 are mounted. The lower edge of the cylinder is provided with gear-teeth 4, driven by a pinion 5, which may be rotated from any suitable source, and the needles in the cylinder are caused to reciprocate in the proper manner to form the stitches by being moved into engagement with cams carried by a fixed cam-ring 6. Extending upward from the frame are two posts 7, sustaining at their upper ends a crosstree 8, from the center of which a fixed hanger-rod 9 depends, its lower end terminating some distance below the upper edge of the cylinder, where it has fixed to it a sleeve 11 by means of a set-screw 12. This hanger is loosely encircled by a collar 13, whose lower

end rests and bears upon the sleeve. At its upper end the collar is encircled by a disk or bed 14, having an upwardly-extending integral sleeve 15, which is fixed to the collar by a set-screw 16. In its under side this bed is formed with radial grooves, in which are mounted a series of sinkers 17 in the form of flat plates straight at their inner ends where they slide in the grooves, and extending outward, then downward, and finally inward at their outer ends and terminating adjacent to the cylinder-needles. The inner ends of these sinkers are notched, so as to readily engage the yarn. Below the bed the collar is encircled by a second disk 18, from the center of which a sleeve depends, which is fixed to the collar by a set-screw 19. Intermediate of these two disks the sleeve is encircled by a third disk or plate 20, which is sustained in a fixed position by means of two brackets 21, having their outer ends fastened securely to the posts 7 and their inner ends attached to the plate. This plate is provided on its upper side with cams 22, in engagement with which the heels of the sinkers are moved and by which the sinkers are caused to partake of the proper movements to sink the yarn between the needles. The sinker bed or disk receives its motion through the collar, which latter is rotated by the cylinder through the medium of the usual lugs 23.

From the foregoing description it will be understood that, rotary motion being given by the pinion to the cylinder, the sleeve will be revolved through the medium of the lugs and will cause the sinker-bed to revolve, and the sinkers therein being successively moved in engagement with their actuating-cams they will be reciprocated and will sink the yarn.

In cases where dial-needles are employed in connection with the cylinder-needles to produce ribbed fabric they are mounted in grooves formed in the upper side of the lower disk 18, which in this instance is in effect a dial, and the cams for moving the needles are applied to the under side of the intermediate fixed disk 20, which would in effect be the dial-plate.

The cams for actuating the dial-needles and sinkers are located between the two brackets

and are so formed that when passing these brackets the needles are withdrawn and the sinkers retracted to free them.

My invention is applicable either to machines equipped with the well-known latch-needles or to those employing the spring-hook needle. It has been found in practice, however, that when latch-needles are employed it is desirable, on account of the quantity of loose thread fed by the sinkers, that the latch be closed quickly and with certainty, in order to prevent the loose thread from turning from the top of the needle and missing the stitch. With this end in view I apply to the side of fixed plate 20 a latch-closer consisting of a plate 24, slotted vertically and secured by a set-screw 25, which plate is formed with an inclined finger 26, extending downward from the plate in such position that it will extend beneath the open latch of the needles, as shown in Fig. 6, as they are successively moved into engagement with the finger. By the movement of the needle, both circumferentially and vertically, by the operating-cams the latches will be quickly closed by riding up the inclined edge of the finger and by the downward movement of the needle.

Having thus described my invention, I claim—

1. In a knitting-machine the combination with the needles and their operating mechanism of the radially-projecting sinkers mounted axially with respect to the needle-cylinder above the same and having outwardly, downwardly and inwardly extending ends adapted to act on the yarn and push the same inward between the needles when the sinkers are moved inward, and means for operating said sinkers.

2. In a knitting-machine, the combination with the rotary cylinder and its needles and cams, of a rotary, concentric sinker-bed above the upper edge of the needle-cylinder and having sinkers extending outwardly beyond the plane of the said needles and there projected downwardly and inwardly toward said needles to push the threads therebetween, and a fixed cam for retracting and projecting said sinkers, substantially as set forth.

3. In a knitting-machine, the combination with the frame, the rotary needle-cylinder and needle-operating cams, of a rotary collar or shaft supported concentric with said cylinder and extending down thereinto, a driving connection between the interior of said cylinder and lower end of said collar or shaft, a rotary sinker-bed fixed to said collar or shaft above the upper edge of the needle-cylinder, sinkers mounted on said bed, extending outwardly beyond the plane of the needles and there projected downwardly and inwardly toward said needles to push the threads inwardly therebetween, and a fixed horizontal plate having cams for actuating the said sinkers, substantially as set forth.

4. In a knitting-machine, the combination with the base-plate, its uprights and a cross-piece connecting their upper ends, of the rotary needle-cylinder mounted on the base, the needle-operating cams, a centrally-apertured horizontal plate above the needle-cylinder and rigidly secured to said uprights, cams on the upper side of said plate, a central, vertical, rotary collar or shaft supported from said top cross-piece and extended down through said apertured plate into the needle-cylinder, operating connections between the interior of the needle-cylinder and said collar or shaft, a rotary sinker-bed fixed to said collar or shaft above the said plate, sinkers carried by said bed, operated by said cams and extended outwardly beyond said plate and the plane of the needles and there projected downwardly below said plate and then inwardly toward the needles to push the threads therebetween, substantially as set forth.

5. In a knitting-machine the combination with the rotary needle-cylinder, its latch-needles and their operating mechanism, of a rotary sinker-bed mounted axially above the cylinder, radially-projecting sinkers mounted therein and adapted to engage and sink the yarn between the needles, a fixed plate located between the cylinder and sinker-bed, fixed cams on said plate for operating the sinkers and a latch-closer fixed to said plate in position to be encountered successively by the latches of the needles as they are carried past the latch-closer by the rotation of the cylinder.

6. In a knitting-machine the combination of the rotary cylinder, its needles and cams, a rotary sinker-bed mounted centrally above the cylinder, sinkers mounted in the under side of the bed, a plate sustained below the sinker-bed and provided on opposite sides with cams, a rotary dial-plate sustained below the preceding, and dial-needles mounted in the upper side of said plate.

7. In a knitting-machine the combination of the rotary cylinder, its needles and cams, the depending hanger-rod extending concentrically within the cylinder, the sleeve loosely encircling said rod, the sinker-bed fixed to the sleeve above the cylinder, sinkers mounted in the under side of said bed, a dial fixed to the sleeve below the sinker-bed needles mounted in the upper side of said dial, suitable driving connections between the cylinder and dial and a fixed plate situated between the sinker-bed and dial, and provided on opposite sides with cams for operating the sinkers and dial-needles.

In testimony whereof I hereunto set my hand, this 16th day of August, 1895, in the presence of two attesting witnesses.

FRANK A. NYE.

Witnesses:

CECIL M. DUFFIN,
JOHN C. BREWIN.