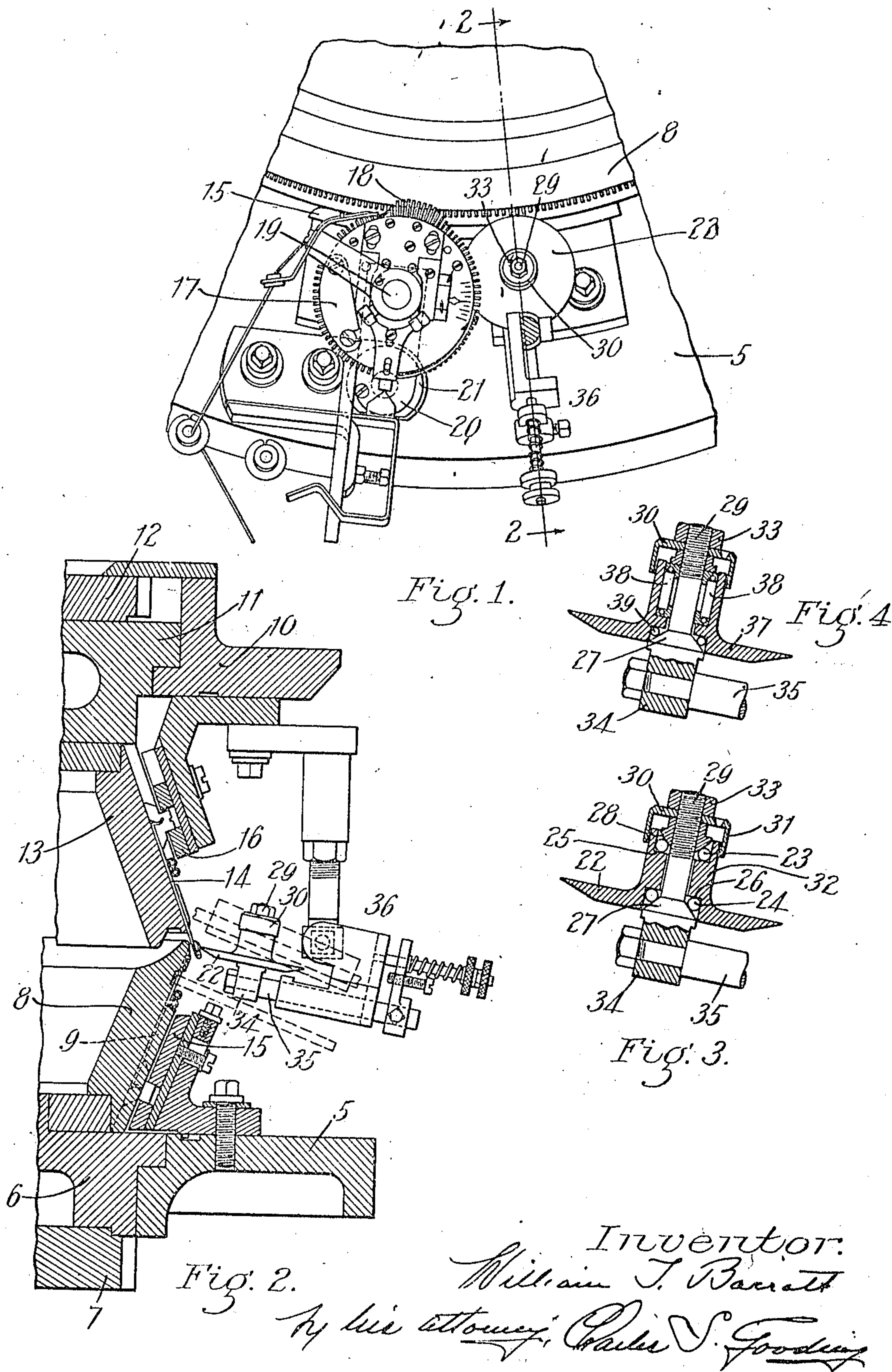


W. T. BARRATT.
PRESSER WHEEL.
APPLICATION FILED SEPT. 10, 1917.

1,298,436.

Patented Mar. 25, 1919.



Inventor:
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By his attorney: Charles V. Gooding

UNITED STATES PATENT OFFICE.

WILLIAM T. BARRATT, OF BENNINGTON, VERMONT, ASSIGNOR TO CHARLES S. KEHOE, ANNIE COOPER, AND ALEXANDER J. COOPER, EXECUTORS OF CHARLES COOPER, DECEASED.

PRESSER-WHEEL.

1,298,436.

Specification of Letters Patent.

Patented Mar. 25, 1919.

Application filed September 10, 1917. Serial No. 190,454.

To all whom it may concern:

Be it known that I, WILLIAM T. BARRATT, a citizen of the United States, residing at Bennington, in the county of Bennington and State of Vermont, have invented new and useful Improvements in Presser-Wheels, of which the following is a specification.

This invention relates to an improved rotary presser for spring needle knitting machines.

The invention consists in so supporting the rotary presser with relation to the needles of a knitting machine that the presser will always coact with the beards of the knitting machine needles to form a rolling contact and will not slip upon the needle beards transversely thereof. Heretofore in knitting machines employing spring needles and rotary pressers the presser has been rotatably mounted upon a stud and has direct contact with said stud which forms a bearing for the presser.

This construction is practical as witness a large number of machines which have employed rotary pressers so mounted, but applicant has discovered that in the operation of spring needle knitting machines in which there is a relative movement between the rotary pressers and the knitting machine needles transversely of the needles, as, for example, in circular spring needle knitting machines in which the needle cylinders rotate and the needles are in contact with the rotary pressers, there are times when the rotary pressers do not have the same peripheral speed as the needles with which they are in contact, even though the rotary presser may be rotating, but on the contrary that the peripheral speed of the rotary presser is oftentimes less than the peripheral speed of the needles upon their rotating cylinders and therefore it follows that there is a sliding contact of the presser with the needles transversely thereof.

The results which follow from this condition of affairs especially in connection with the operation of a rotary presser and a secondary knitting cylinder, are as follows:

First, if the presser drags and does not turn at the same speed as the needles with which it contacts there is considerable wear upon the light, delicate spring needle beards.

Second, the friction on the needle may be

such that the beard will be pushed to one side of the eye and the stitches not cleared, thus causing "tuck" stitches.

Third, the needle beard may be pushed entirely outside of the eye and when the needle is drawn up by the cam the beard will collide with the edge of its cylinder and be bent up or broken off.

If, on the contrary, the rotary presser turns freely and the peripheral speed of the same is the same as that of the needles with which it contacts, the only wear is that caused by the action of the cam moving the needle up. The device of my invention is intended to be used particularly with the needles of the secondary cylinder in which great precision is necessary in order to make the same operate perfectly for the reason that the stitches on the secondary needles are arranged in two parallel rows necessarily very close together, and this means that the points of the needle beards of the secondary needles have to be aligned centrally of the rows of stitches so that one of the rows of stitches will be under the beard while the other may be pressed to go over the beard and the action of the presser in this case is directly against the side of the needle so that the presser rolls the beard down.

In order to accomplish the perfect rotation of the rotary presser and to insure a movement of the periphery of the rotary presser at the same speed as that of the needles with which it contacts the invention consists in a presser wheel for spring needle machines, a support therefor and a series of rotatable members contacting with said support, forming a bearing upon which said presser wheel is rotatably mounted and further the invention consists in the combination and arrangement of parts set forth in the following specification and particularly pointed out in the claims thereof.

In the drawings forming part of this application my improved presser wheel is illustrated in connection with the upper and lower needle cylinders of a rotary spring needle knitting machine and with a sinker wheel for feeding yarn to the primary needles, the general arrangement of the combination of parts being similar to that shown and described in a co-pending application filed by me on February 11, 1916, Ser. No.

77,782, Patent No. 1,286,913, Dec. 10, 1918, entitled "Circular knitting machines".

Referring to the drawings:

Figure 1 is a plan view of a portion of a circular knitting machine with my improved presser wheel attached thereto.

Fig. 2 is a sectional elevation taken on the line 2—2 of Fig. 1, the sinker wheel being shown in dotted lines.

Fig. 3 is an enlarged sectional elevation taken on the line 2—2 of Fig. 1, illustrating the manner in which the presser wheel is rotatably mounted.

Fig. 4 is a sectional elevation, similar to Fig. 3, showing a modified form of bearing for the presser wheel.

Like numerals refer to like parts throughout the several views of the drawings.

In the drawings, 5 is the lower bed plate of a knitting machine, 6 the running ring mounted on said bed plate, 7 the gear by which the running ring is rotated, 8 the lower needle cylinder and 9 the spring needles on said lower cylinder, 10 is the upper bed plate, 11 the upper running ring, 12 the gear fast to said upper running ring and by which said running ring is rotated. 13 is the upper or secondary needle cylinder and 14 the secondary spring needles. 15 is one of the needle cams for the lower cylinder needles and 16 is one of the needle cams for the upper cylinder needles. 17 is a sinker wheel with sinkers 18 thereon which feed yarn to the needles 9. Said sinker wheel is rotatably mounted upon a stud 19 which is fast to a rocker frame 20. The rocker frame 20 is rotatably mounted upon a standard 21 which is fast to the lower bed plate 5 and said sinker wheel projects at an angle downwardly from the needles of the primary cylinder.

A rotary presser wheel 22, Figs. 1, 2 and 3, is mounted upon ball bearings 23 and 24. The ball bearings 23 and 24 run in races 25 and 26 formed in the presser wheel 22 and run against conical races 27 and 28 on a stud 29. The race 28 has screw threaded engagement with said stud 29 and may be adjusted longitudinally thereof to take up wear in the ball bearings.

A cap 30 is mounted on the stud 29 and has a flange 31 thereon which projects downwardly around the outside of a hub 32 on the presser wheel 22. A set nut 33, having screw threaded engagement with the stud 29, locks the cap 30 to the stud 29 and presses it against the race collar 28. The lower end of the stud 29 terminates in a hub 34 and said hub is clamped to a rod 35 which is supported upon a presser stand 36 which, in turn, is supported upon the upper bed plate 10 of the machine.

The operation of the mechanism hereinbefore specifically described is as follows:

The needle cylinders 8 and 13, with their

needles 9 and 14, are rotated by means of the gears 7 and 12 respectively. The needles 9 and 14 are given a reciprocatory motion by means of the cams 15 and 16 and the yarn is then manipulated by means of the needles and pressers in a manner well known to those skilled in the art, to knit the cloth and in this knitting operation the presser 22 bears against the beards of the needles 14 at the proper time to assist the same in casting off an old loop for a new loop, held in the beard of the needle.

In the operation of the machine the presser wheel 22 is constantly rotated by frictional contact with the needles of the upper cylinder at the same speed as that of the needles with which it is in contact. Although I prefer to employ ball bearings, such as illustrated in Fig. 3, I do not wish to limit my invention to that specific embodiment of the same as the presser wheel may be mounted to rotate upon roller bearings, as illustrated in Fig. 4, which is of substantially the same construction as that illustrated in Fig. 3, except that the presser wheel 37 is rotatably mounted upon roller bearings 38, which are mounted upon the stud 29, the end thrust being taken by ball bearings 39.

The cap 30 and lock nut 33 are also used in this embodiment of my invention as well as the embodiment thereof illustrated in Fig. 3. It will be seen, therefore, that the stud 29 and the races 27 and 28 on said stud constitute a support for the presser wheel 22 and that the balls 23 and 24 form two series of rotatable members which contact with said support and form bearings upon which the presser wheel is rotatably mounted.

It will also be noted that the presser 22 projects downwardly away from the needles of the upper cylinder and projects beneath the sinker wheel 17. The particular purpose of this construction and arrangement is set forth and claimed in said co-pending application. This arrangement of the presser wheel and sinker wheel leads to a great saving in space around the needle cylinders and therefore makes it possible to introduce a larger number of feeds in the same diameter machine but the tipping of the presser wheel at an angle to the upper needles with which it contacts increases the possibility of causing the presser wheel to move at a different speed upon its periphery than the circumferential speed of movement of the needles with which it contacts, that is, the peripheral speed of the presser wheel is liable to lag behind that of the needles and thus lead to the different difficulties and undesirable results hereinbefore set forth.

While I have illustrated and described my invention as embodied in that type of knit-

ting machine in which the needle cylinders rotate, it is evident that it would be of equal benefit and efficiency if applied to other types of knitting machines employing
 5 spring needles, as, for example, in which the needle cylinders are stationary and the presser wheel, sinker wheels and needle cams rotate about the needle cylinders. Furthermore, my invention is equally applicable
 10 to a single cylinder spring needle machine and also to a spring needle knitting machine which embodies a sinker ring instead of a sinker wheel, as, for example, in the type of machine disclosed in Patent No. 729,074 to
 15 F. Lasher, patented May 26, 1903.

I, therefore, wish it to be distinctly understood that my invention consists in a presser wheel mounted upon a bearing consisting of rotatable members and also in the combi-
 20 nation of such a presser wheel and bearing with a needle support having spring needles mounted thereon, whatever the particular type of spring needle knitting machine may be in which said presser wheel and needles
 25 are embodied.

Having thus specifically described my invention what I claim and desire by Letters Patent to secure is:

1. A presser wheel for spring needle knitting machines, a support therefor, and a series of rotatable members contacting with said support and forming a bearing upon which said presser wheel is rotatably mounted.

2. A presser wheel for spring needle knitting machines, a support therefor, and a series of balls contacting with said support and forming a bearing upon which said presser wheel is rotatably mounted.

3. A presser wheel for spring needle knitting machines, a stud extending through said presser wheel and constituting a support therefor, a pair of conical races on said stud,

and a series of balls contacting with said races upon which said presser wheel is rotatably mounted.

4. A circular knitting machine having, in combination, a needle cylinder, a series of spring needles on said cylinder, a presser wheel for said needles, a support for said presser wheel, and a series of rotatable members contacting with said support and forming a bearing upon which said presser wheel is rotatably mounted.

5. A knitting machine having, in combination, a needle support, a series of spring needles on said support, a presser wheel for said needles, a support for said presser wheel and a series of rotatable members contacting with said presser wheel support and forming a bearing upon which said presser wheel is rotatably mounted.

6. A circular knitting machine having, in combination, an upper and a lower needle cylinder, a series of spring needles mounted on each of said cylinders, a sinker wheel with sinkers constructed and arranged to feed yarn to the needles of said lower cylinder, a rotary presser for the needles of said upper cylinder, adjacent to and projecting downwardly away from the needles of said upper cylinder and beneath said sinker wheel, a support for said rotary presser, and a series of rotatable members contacting with said support and forming a bearing upon which said presser is rotatably mounted.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

WILLIAM T. BARRATT.

Witnesses:

ELLA M. MURRAY,
 CHARLES S. KEHOE.