

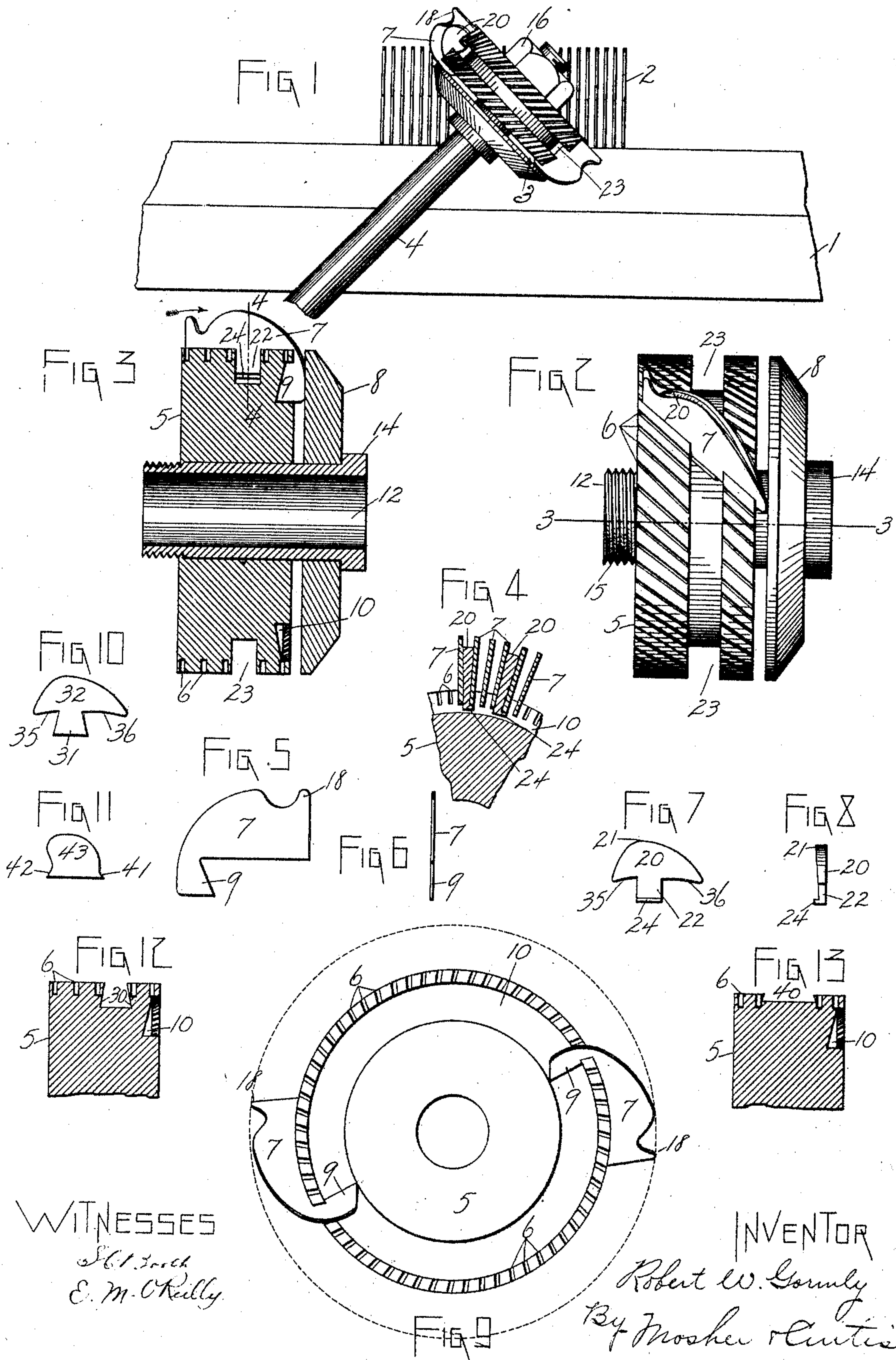
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PATENTED DEC. 6, 1904.

R. W. GORMLY.  
BUR WHEEL.

APPLICATION FILED AUG. 7, 1903.

NO MODEL.



WITNESSES  
S. I. Birch  
E. M. O'Reilly

INVENTOR  
Robert W. Gormly  
By Mosher & Curtis  
attys.



# UNITED STATES PATENT OFFICE.

ROBERT W. GORMLY, OF TROY, NEW YORK.

## BUR-WHEEL.

SPECIFICATION forming part of Letters Patent No. 776,588, dated December 6, 1904.

Application filed August 7, 1903. Serial No. 168,583. (No model.)

*To all whom it may concern:*

Be it known that I, ROBERT W. GORMLY, a citizen of the United States, residing at Troy, county of Rensselaer, and State of New York, have invented certain new and useful Improvements in Bur-Wheels, of which the following is a specification.

The invention relates to such improvements; and it consists of the novel construction and combination of parts hereinafter described and subsequently claimed.

Reference may be had to the accompanying drawings, and the reference characters marked thereon, which form a part of this specification.

Similar characters refer to similar parts in the several figures.

Figure 1 of the drawings shows in elevation a small portion of the needle-cylinder of a circular-knitting machine with the improved bur-wheel in position for use, most of the wings or blades of the bur-wheel being detached from the hub. Fig. 2 is a side view of the bur-wheel hub, containing two blades and a presser-block between the blades in position in the hub with the clamping-nut removed. Fig. 3 is a central section taken on the broken line 3 3 in Fig. 2. Fig. 4 is a vertical section taken on the broken line 4 4 in Fig. 3, showing a few of the blades and presser-blocks in the hub. Fig. 5 is a plan view of one of the bur-wheel blades detached. Fig. 6 is an edge view of the same. Fig. 7 is a plan view of one of the presser-blocks detached. Fig. 8 is an edge view of the same. Fig. 9 is an end view of the hub detached, showing two blades in position therein and the position of the other blades indicated by a circular dotted line. Figs. 10 and 11 are plan views showing modified forms of presser-blocks. Figs. 12 and 13 are cross-sections similar to that shown in Fig. 3 of a portion of the hub, showing modified forms of circumferential grooves.

The numeral 1 represents a segmental portion of the needle-cylinder of a circular-knitting machine, and 2 a portion of the needles employed therewith.

The bur-wheel 3 is rotary upon a fixed spindle 4, inclined to the vertical axis of the needle-cylinder, as shown in Fig. 1.

The hub 5 is provided with oblique slots 6, adapted to contain the wings or blades 7, which are secured in their slots by means of an annular clamping-plate 8, which presses upon the shanks of the blades and holds the beveled part 9 on each blade in a side groove 10, formed in the hub, the clamping-plate being forced against the shanks of the blades by means of the bearing sleeve or bushing 12, which passes through central apertures in the hub and clamping-plate and is provided on one end with a head 14, adapted to bear upon the plate, and on its other end with the screw-threaded portion 15, adapted to receive clamping-nut 16. (Shown in Fig. 1.)

The construction as above described is old and well known, having been described in the Kavanaugh patent, No. 117,299, dated July 25, 1871.

It is well known to those skilled in the art of knitting that it is desirable in making certain kinds of goods to omit the knitting of a stitch by certain of the needles during certain revolutions of the knitting-cylinder. This has been accomplished by filling or partly filling the needle-spaces between two blades of the bur-wheel with a block, which may be called a "presser-block."

The bur-wheel is rotated upon the spindle by the needles of the rotary cylinder, which severally enter the spaces between the blades, and the blades, with their nibs 18, feed the yarn to the needles. When the space between two blades is filled or partly filled by the presser-block, the block presses upon the beard of the needle and closes the same, so that the yarn does not enter the needle, but slips over the end and no loop is formed. Presser-blocks have been heretofore used and are well known in the art, and the object of my invention is to cheapen the construction of bur-wheels employing presser-blocks and to make a durable presser-block which will at all times be efficient to properly do its work and that can be easily attached or detached to change the position of the blocks in a bur-wheel when desired for the purpose of knitting differing patterns.

I have shown a preferred form for my improved block 20 in Figs. 7 and 8.



The block-receiving slots 6 in the hub occupy planes which are radial to the center of the hub, though arranged obliquely to its axial line, and the spaces between the blades 7 inserted in the oblique slots taper toward the center of the hub. For this reason the blocks are made thicker at their upper needle-engaging edge 21 than at their lower attaching edge, tapering to correspond with the needle-spaces, so that they will approximately fill the same when inserted therein, as shown in Fig. 4.

As a means for securing the blocks securely in the spaces they are severally provided on their lower edges with an attaching part 22, adapted to enter the circumferential groove 23 in the hub, which is cut deeper than the oblique slots. The lower edge of the attaching part is provided with an offset or hook 24, adapted to pass under the lower edge of a neighboring blade and engage therewith to prevent the removal of the block, as seen in Figs. 3 and 4. The attaching part or shank 22 may be a little wider than the groove 23, because this part extends obliquely or diagonally across the groove.

The blades are inserted and secured in the hub in the usual manner, and while the blades are being inserted the required needle-spaces are filled with a block which is placed against the last-inserted blade, with the hook 24 in the groove 23 and under the lower edge of such blade and a blade inserted in the next oblique slot, which prevents the block from being disengaged without removing a blade. After all the oblique slots are filled with blades and the desired needle-spaces filled with blocks, as aforesaid, the plate 8 is clamped upon the shanks of the blades, and all the blades and blocks are thereby securely fastened in place.

By removing the clamping-plate 8 the blades and blocks can be removed and the blocks redistributed in other needle-spaces to form any desired pattern of work with the same wheel.

The blocks being wholly separate and detachable from the hub and blades can be made of differing material, as of steel, which can be highly tempered, so that the needles will not wear the surfaces engaged by them and impair the usefulness of the blocks.

When desired, one or both walls 30 of the circumferential groove in the hub may be undercut, as shown in Fig. 12, and the lower end of the attaching part 31 of the block 32 widened, as shown in Fig. 10, to approximately fit such groove and secure the block in place, in which case the hook engagement with its neighboring blade can be dispensed with, the block being held in place by the engagement of its attaching part with the beveled walls of the circumferential groove.

Whether the attaching part engages with the lower edges of a neighboring blade or the groove-walls the lower edges 35 and 36 engage, respectively, the periphery of the hub on opposite sides of the groove and serve to

increase the stability of the block, making it possible to have a comparatively narrow groove. Stability may likewise be secured without the bearing edges 35 and 36 by increasing the width of the groove and providing its walls with an undercut, as shown at 40 in Fig. 13, adapted to receive the outwardly-inclined or beveled corners 41 and 42 of the block 43. (Shown in Fig. 11.) I am thus able to provide a presser-block for bur-wheels which is not only durable and efficient, but which can be easily and quickly attached and detached and form a part of a wheel employing the usual well-known style of blades and without in any manner changing the form or character of the blades.

The improved presser-block is applicable to all bur-wheels used in feeding yarn to the needles, either to close the beards of the needles or to spring back the needles in producing "backing fabrics" or any style of bur-wheel in which it is desired to fill or partially fill the needle space or spaces between any two blades of the wheel.

It is obvious that the shank of the presser-block may have one side only beveled, in which case only one side wall of the groove need be undercut or beveled to receive such shank.

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination with a hub having a series of slots and a circumferential groove in its peripheral portion; of a series of blades; means for securing the blades in the slots; and a presser-block in the needle-space between two blades having a part projecting into the circumferential groove, and adapted to be secured therein by a neighboring blade, substantially as described.

2. The combination with a hub having a series of slots and a circumferential groove in its peripheral portion; of a series of blades; means for securing the blades in the slots; a presser-block in the needle-space between two blades having a part projecting into the circumferential groove; and means for securing that part by a neighboring blade, substantially as described.

3. The combination with a hub having a series of slots and a circumferential groove in its peripheral portion; of a series of blades; means for securing the blades in the slots; a presser-block in the needle-space between two blades having a part projecting into the circumferential groove and end edges bearing upon the hub respectively upon the opposite sides of the groove; and means for securing the presser-block in such position, substantially as described.

4. The combination with a hub having a series of slots and a circumferential groove in its peripheral portion; of a series of blades; means for securing the blades in the slots; a tapered presser-block in the tapering needle-space between two blades, having a needle-



engaging surface on its outer thicker edge and a hook part on its inner thinner edge adapted to enter the circumferential groove, and engage with a neighboring blade, substantially as described.

5 5. The combination with a hub having a series of slots and a circumferential groove in its peripheral portion; of a series of blades; means for securing the blades in the slots; a  
10 presser-block in the needle-space between two blades having a hook part projecting into the circumferential groove and into engagement with the inner edge of a neighboring blade, substantially as described.

15 6. A detachable presser-block for bur-wheels in which the blades are detachably secured in a slotted hub having a circumferential groove, consisting of a detachable block, adapted to occupy the needle-space between  
20 two blades, having a needle-engaging surface on its outer edge and on its inner edge an at-

taching part adapted to enter the circumferential groove of the hub and be held therein by a neighboring blade, substantially as described.

25 7. A detachable presser-block for bur-wheels in which the blades are detachably secured in a slotted hub having a circumferential groove, consisting of a detachable block, adapted to occupy the needle-space between  
30 two blades, having a tapered body with a needle-engaging surface on its thicker edge and an attaching part on its thinner edge adapted to enter the circumferential groove of the hub, substantially as described.

35 In testimony whereof I have hereunto set my hand this 5th day of August, 1903.

ROBERT W. GORMLY.

Witnesses:

GEO. A. MOSHER,  
E. M. O'REILLY.