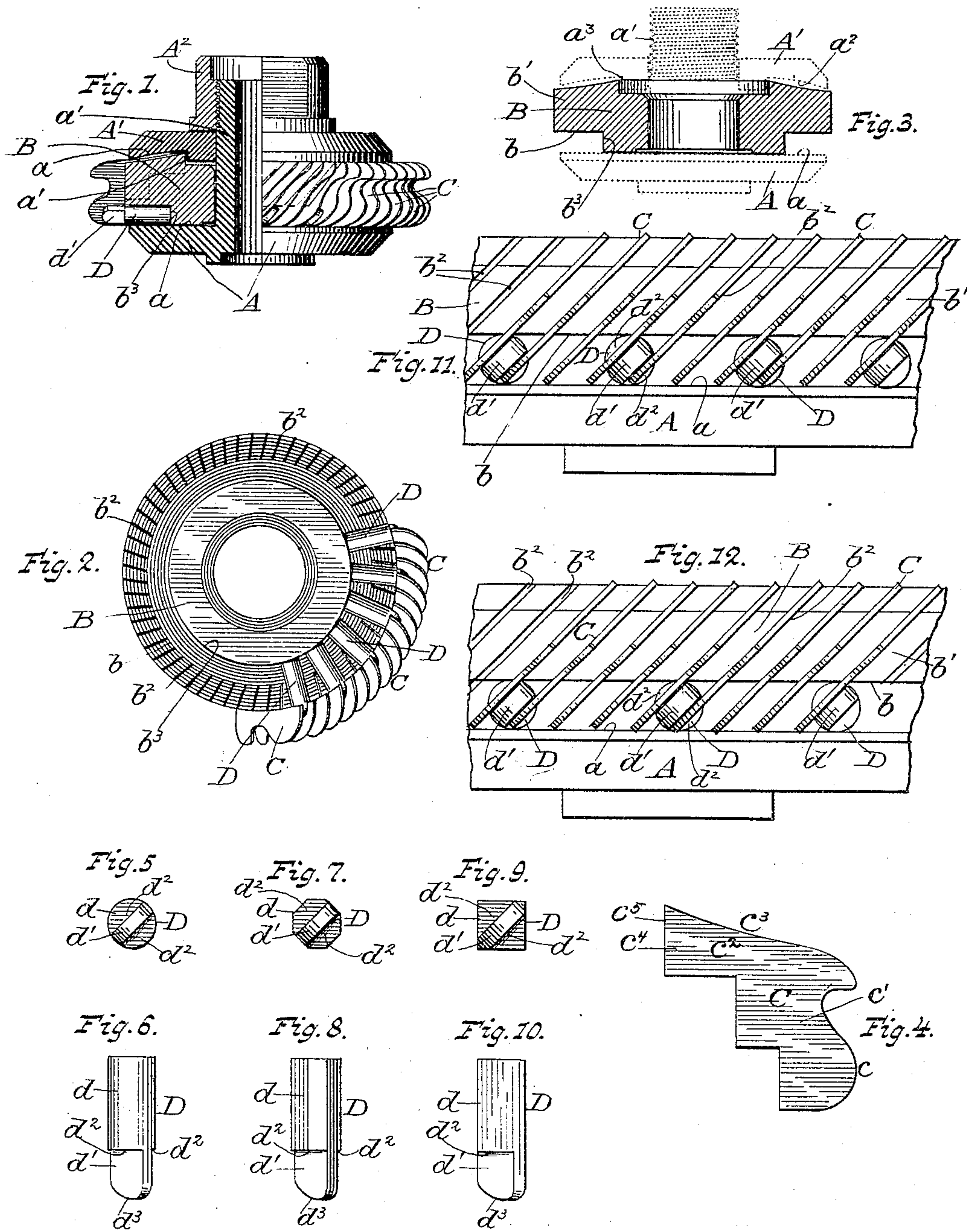


No. 791,902.

PATENTED JUNE 6, 1905.

S. T. HARSHAW.  
BUR WHEEL FOR KNITTING MACHINES.  
APPLICATION FILED SEPT. 14, 1903.



Witnesses.

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# UNITED STATES PATENT OFFICE.

SETH T. HARSHAW, OF TROY, NEW YORK.

## BUR-WHEEL FOR KNITTING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 791,902, dated June 6, 1905.

Application filed September 14, 1903. Serial No. 173,160.

*To all whom it may concern:*

Be it known that I, SETH T. HARSHAW, a citizen of the United States, and a resident of Troy, in the county of Rensselaer and State of New York, have invented new and useful Improvements in Bur-Wheels of Knitting-Machines, of which the following is a specification.

My invention relates to bur-wheels of knitting-machines, which are provided with blades for dividing the needles of the machine and for landing the backing-thread partly to the outer side and partly to the inner side of the needles; and it consists of the novel parts and elements and novel combinations and arrangements of parts and elements hereinafter described, and set forth in the claims.

The object of this invention is to produce bur-wheels for knitting-machines in which certain parts may be removable at pleasure and be variously placed so as to bind the backing-thread at front and at rear of the needle in proportion as one to one, or one to two, or one to three, or in other proportions or numbers, and thereby obviating the necessity of constructing special bur-wheels or special parts to be employed when changes are to be made and also to reduce the number of parts and simplify the construction of the wheel, and thereby reduce its cost of production.

Other objects and advantages will be readily understood from the following description when taken in connection with the accompanying drawings, in one sheet, forming a part of this specification, in which—

Figure 1 is a view showing a part of the bur-wheel in elevation and part in section. Fig. 2 is a plan with some of the parts removed for uncovering other parts. Fig. 3 is a vertical section with part in full lines and the lower and upper plates for clamping the removable parts of the wheel indicated by dotted lines. Fig. 4 is a side view, on an enlarged scale, of a blade of the wheel. Fig. 5 is an end view of a blade-dividing tongue and its circular form of body of block carrying said tongue. Fig. 6 is a view from above of the same. Fig. 7 is a view of the tongue and its block of modified form. Fig. 8 is a view from above

of the same. Fig. 9 is a view of the tongue carried by a block of modified form, and Fig. 10 is a view from above of the same.

Similar letters of reference refer to similar parts throughout the several views.

In the drawings, A is the base clamping-plate of the bur-wheel, which is made with a uniformly-level upper surface  $a$  and a hollow central screw-threaded stem  $a'$ .

B is the blade-plate, which is made circular and has projected above its level surface  $b$  the flange  $b'$ , having its outer sides vertical or at right angles to the level surface  $b$ , and extending from the surface  $b$  is a reduced hub  $b^3$ . The peripheral portion of this plate B is provided with a series of inclined slots  $b^2$ , which are equally spaced apart and made at an angle to the surface  $b$ , as shown, and receive the inner portions of the blades C.

The blades C are each a duplicate of the other, and a description of one will suffice for that of the others. Blade C is provided with an extended portion  $c$ , made with convex and concave outline of form, as shown and as is general. The body  $c'$  of this blade is made of thin sheet-steel with its edge  $c$  with concave and convex outline, and a tongue  $c^2$ , preferably with a curved form of outline  $c^3$  and with its inner end terminal  $c^4$  made with vertical edge  $c^5$  for abutting against a suitable support provided with the upper side clamping-plate  $A'$ , which clamping-plate by its concave lower surface  $a^2$  and supporting-shoulder  $a^3$  prevents said blades from moving outwardly when clamping-nut  $A^2$  is screwed down tight on said plate  $A'$ . The slots in the blade-plate are arranged at an angle to the axis of the bur-wheel, and the extended portion  $c'$  of blades C when fitted in the slots overhang the peripheral edge of the blade-plate, and between the overhanging portions the tongues of the blades fit.

Supported on or against the level side or surface  $b$  of blade-plate B are a series of presser-blocks D, provided with outwardly-projected tongues. A description of one of these blocks will suffice for that of all the others. This block D is made preferably of hard-drawn



wire of cylindrical, octagonal, square, or other suitable form, as shown, and comprises body  $d$  of form described and tongue  $d'$ , made integral with said body and projected outwardly from the same. This tongue is made with a thickness equal to the distance the blades C are to set apart at the shoulders  $d^2$  of the body of the block and has its outer end made with a convex form of outline  $d^3$ , as shown. These blocks are between the base clamping-plate A and the lower side of the blade-plate and so arranged between flange  $b'$  of the latter and the upper surface  $a'$  of the base clamping-plate A that their ends may abut the vertical surfaces  $b^3$  of plate B, while the shoulders  $d^2$ , bearing against the rear edges of blades C, prevent said blocks from moving outwardly, while the tongues  $d'$  will be in the opening between two adjoining blades C. These tongues  $d'$  of blocks D prevent springing of the blades which they separate and also operate to effect the old results of placing the backing-threads in the needle with two or more needles relatively in front of the thread and one back of the same, and, further, these blocks D, together with the blade-plate B and blades C of form described, allow the operator at pleasure to so change or place the said blades in the bur-wheels as to effect a throwing of the backing-thread back of three or four or other number of needles while but one may be allowed to be back of the thread, and also allow backing-thread to run one to one, or one to three, or four, or five, as may be preferred.

It will readily be seen that the changes of backing-thread in relation to the needles may be readily made by simply changing the order of arrangement of blocks D in number in relation to the number of slots in the blade-plate and that these improvements obviate the necessity of making special bur-wheels for use when a variety of changes are to be made in fabrics by reason of the number of threads required to produce them in variety, as one to one, one to two, one to three, and so on indefinitely, as may be required for fabrics for knit goods or for fancy articles, &c., as the trade demands.

Having described my invention, what I claim, and desire to secure by Letters Patent, is—

1. A bur-wheel comprising a clamping-plate, a blade-plate formed with a series of grooves, a series of blades in the grooves, blocks between selected blades, each block comprising an elongated body portion having a tongue, the latter being parallel with the blades, and means clamping the blocks between the clamping-plate and the blade-plate, the clamping-plate also locking the blades to the blade-plate.

2. In a bur-wheel, the combination with a base clamping-plate, a blade-plate having a

flange formed with a series of peripheral equally-spaced inclined slots, a series of blades inserted in said slots, a series of blocks, each block having a tongue set at an angle which corresponds with the angle of the slots, the said blocks being placed between selected blades and held between the blade-plate and the base clamping-plate, and means for locking the base clamping-plate and the blade-plate together.

3. A bur-wheel comprising a base-plate, a blade-plate formed with a series of slots, blades fitting in the slots, each of said blades having an extended portion which projects beyond the periphery of the blade-plate, a hub on the blade-plate, a series of blocks, each block consisting of a body portion and a tongue, the tongues fitting between the extended portions of selected blades, and means locking the base-plate, blocks, blades and blade-plate together.

4. A bur-wheel comprising a base-plate, a blade-plate having a series of angularly-arranged slots in its periphery, blades, each blade having an extended portion, the blades fitting in the angular slots, the extended portions of the blades projecting beyond the periphery of the blade-plate, a series of blocks fitting between the base-plate and the blade-plate, each block consisting of a body portion, and a tongue, the latter corresponding to the angle of the slots in the blade-plate, a threaded stem on the base-plate, and a nut engaging the threaded stem for locking the parts together, substantially as described.

5. A bur-wheel comprising a base-plate, a blade-plate formed with a series of angularly-disposed slots in its periphery, blades, each blade having an extended portion which projects beyond the periphery of the blade-plate, a series of blocks between the base-plate and blade-plate, each block consisting of a body portion and a tongue, the latter arranged at an angle corresponding to the angle of the slots, the tongues of the blocks fitting between the extended portions of selected blades and extending above the line of the angular slots, a threaded stem on the base-plate, and a nut engaging the threaded stem for locking the parts together, substantially as described.

6. A bur-wheel comprising a base-plate having a threaded stem, a blade-plate formed with a series of angularly-disposed slots in its periphery, a series of blades fitting in the slots, each blade having an extended portion  $c$  and a tongue on its opposite side, a series of blocks between the base-plate, and the blade-plate, each block having a tongue arranged at an angle corresponding to the angular slots, a clamping-plate mounted on the stem of the base-plate and bearing against the tongues of the blades, and a nut engaging the threaded stem to lock the parts together, substantially as described.

7. A bur-wheel comprising a base-plate, a  
blade-plate, a series of blades carried by the  
blade-plate, a series of blocks the blocks fit-  
ting between the base-plate and the blade-  
5 plate, each block consisting of a body portion  
and a tongue, the tongues of the blocks fit-  
ting between the blades, and means for bind-

ing the base-plate against the blade-plate to  
lock the parts together, substantially as de-  
scribed.

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