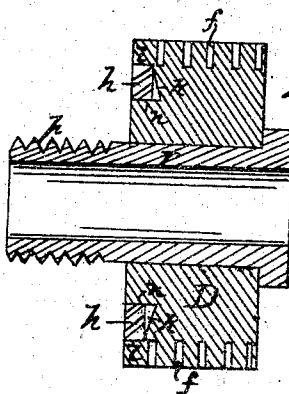
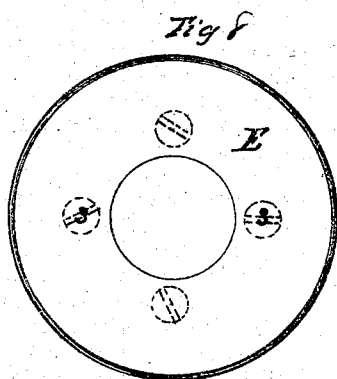
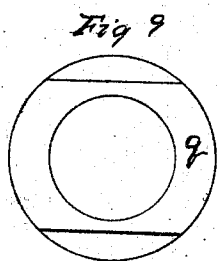
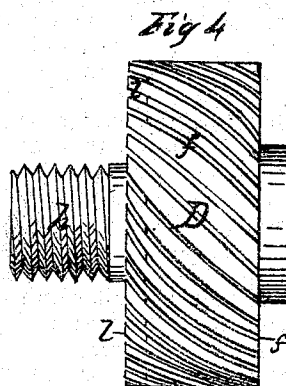
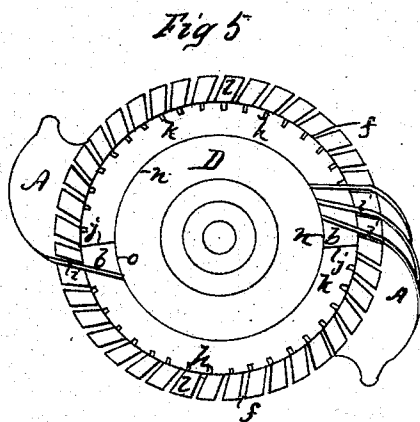
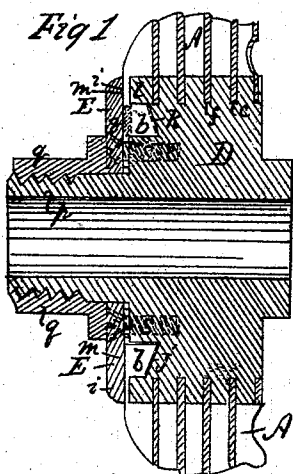
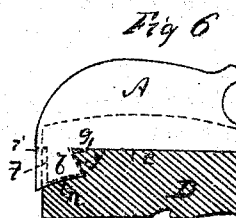
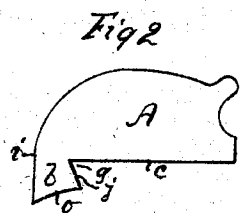


Luke Kavanaugh's Imp^d Knitting Burr.

117299

PATENTED JUL 25 1871



Witnesses.
Leslie Smyth
Austin F. Park

Inventor.
Luke Kavanaugh

UNITED STATES PATENT OFFICE.

LUKE KAVANAUGH, OF WATERFORD, NEW YORK.

IMPROVEMENT IN BURS FOR KNITTING-MACHINES.

Specification forming part of Letters Patent No. 117,299, dated July 25, 1871; antedated July 21, 1871.

To all whom it may concern:

Be it known that I, LUKE KAVANAUGH, of Waterford, in the county of Saratoga and State of New York, have invented certain new and useful Improvements in Knitting-Machine Burs, of which the following is a full and exact description, reference being had to the accompanying drawing, in which—

Figure 1 is an axial section of a knitting-machine bur which embodies the distinguishing features of my invention. Fig. 2 is a side view, and Fig. 3 an edge view of one of the wings; Fig. 4, a side view of the obliquely-slotted hub with a screw-threaded shank; Fig. 5, an end view of the hub with a few wings inserted; Fig. 6, a partial section of the hub in the plane of one of the oblique slots, with a wing in the slot; Fig. 7, a section of the hub with a removable screw-threaded bush; and Figs. 8 and 9, plans of a clamping-nut and washer or follower—all of the same or a similar knitting-machine bur.

Like parts are marked by the same letters in the different figures.

Sinker-burs for knitting-machines have been heretofore made with the wings fastened in oblique radial slots in a cylindrical hub, by means of clamping devices, in such manner that, when the wings became worn out or defective, they could be readily released and removed from the hub and new ones inserted upon simply loosening or removing such wing-clamping devices.

My invention consists in making a knitting-machine bur with a complete circular series of wings, A, each having an inwardly-projecting dovetail or flaring shank, *b*, at one end, and all secured, by a follower, E, and its clamping device, in the oblique radial slots *f* of a knitting bur-hub, D, with the inner edges *j* of the shanks against the bottom *k* of an annular or circular recess in one end of the hub, and with the outer edges *i* of the shank ends of the wings against the inner face *m* of the follower, and with the shank-end portion of the wings supported by an obliquely-slotted endwise-projecting rim or flange, *l*, surrounding the recess in the end of the hub.

In carrying out my invention I make the internally-projecting dovetail or flaring shanks *b* of any suitable size and shape, on either the front or the rear ends of the inner edges of the wings; but I commonly prefer to have the shanks on the rear ends of the wings, as shown in the

drawing, so that while the clamping device shall hold the rear ends of the wings firmly the pressure of the yarn on the outer edges of the forward parts of the wings, in knitting, shall tend to hold the forward portion of the inner edges of the wings down on the bottoms of the slots in the hub. By having the shanks *b* project inward at one end of the inner edges of the wings the shanks will extend inward at one side of the axis of the hub, and may therefore extend much further inward, and the hub and whole bur may consequently be much smaller in diameter than if the shanks projected from the middle of the inner edges of the wings and directly toward the axis of the hub, and where the slots in the hub are much deeper than at its ends. The endwise-projecting slotted rim or flange *l* of the hub D will so support those portions of the wings which are back and outside of the inner edges *j* of the shanks that such parts of the wings will be less liable to be bent sidewise or broken off by pressing and clamping the follower E against the ends *i* of the wings in the oblique radial slots of the hub than if no slotted rim or flange extended endwise from around that part *k* of the hub against which the inner edges *j* of the shanks *b* of the blades are clamped. I make the bottom *k* of the shank-receiving recess in the hub and the inner face *m* of the follower E of such shape that they shall, respectively, fit against the inner edges *j* of the dovetail or flaring shanks, and the outer edges *i* of the shank-ends of whatever particular form of dovetail or flaring shanks shall be on the wings that are to be secured in the hub; and I have the outer diameter of the face *m* of the follower E either larger or no greater than the inside diameter of the slotted rim *l*, and make the hub either with or without a bearing, *n*, for the bottom edges *o* of the shanks of the wings to rest against when the wings shall be secured in the hub; and I employ any suitable known clamping device for pressing and holding the follower E against the ends of the series of wings in the hub. In Fig. 1 a screw-shank, *p*, is formed on the hub D, and *q* is a nut on the screw-shank for pressing and holding the follower against the shank ends of the wings A in the hub. In Fig. 7 a removable bushing, *r*, extends through the hub D, and has a screw-shank, *p*, for a clamping-nut *q*. In Figs. 1 and 8 the lines at *ss* indicate screws extended through

the follower E and screwed into the hub D, so as to thereby clamp the follower against the wings in the hub without the use of the shank *p* or nut *q*.

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

A knitting-bur having a series of wings, each formed with an inwardly-projecting dovetail or flaring shank at one end, and all secured by a follower and clamping device in an obliquely-

slotted hub having at one end a shank-receiving recess, *h*, surrounded by an endwise-projecting slotted rim, *l*, substantially as herein set forth.

In testimony whereof I hereunto subscribe my name this 9th day of June, A. D. 1869.

LUKE KAVANAUGH.

Witnesses:

LESLIE SMYTH,
AUSTIN F. PARK.