

(No Model.)

J. F. FOSS.
SPINNING MACHINERY.

No. 472,477.

Patented Apr. 5, 1892.

Fig. 1.

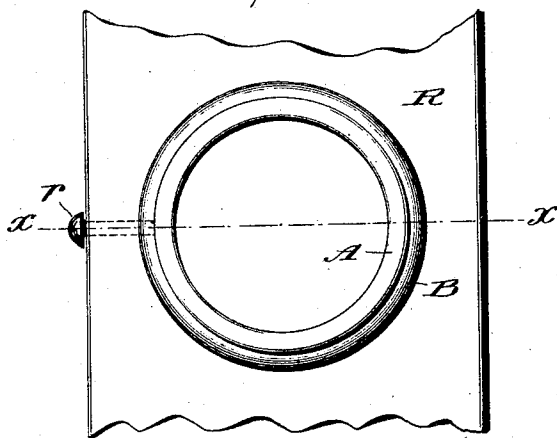


Fig. 2.

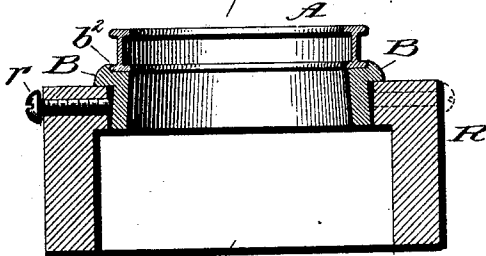
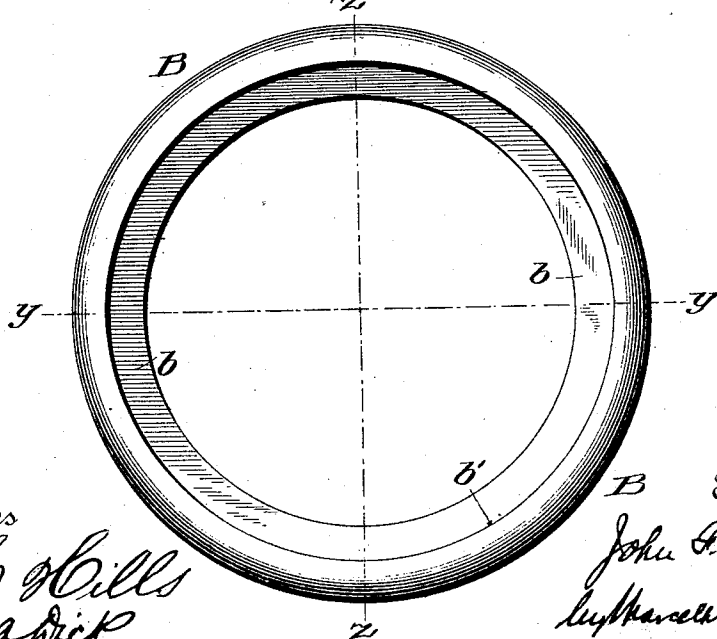


Fig. 3.



Witnesses

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SPINNING MACHINERY.

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Application filed January 9, 1892. Serial No. 417,512. (No model.)

To all whom it may concern:

Be it known that I, JOHN F. FOSS, of Lowell, in the county of Middlesex and State of Massachusetts, have invented a certain new and useful Improvement in Spinning Machinery, of which the following is a specification.

My invention has relation to the rings and ring-holders of spinning-frames, and has for its object to securely hold the ring to its holder without the employment of the various extraneous fastening devices which hitherto have in practice been employed for the purpose.

By this improvement I am enabled to securely fasten the usual circular double-race spinning-ring to the holder without the use of any outside adjunct and without requiring any change in the structure of the ring. To this end I combine with the usual circular spinning-ring a holder formed with a ring-receiving recess slightly elliptical in shape, with its shorter diameter somewhat less than the outside diameter of the part of the spinning-ring to be contained in said recess, and of such dimensions otherwise that by subjecting the holder to compressive force in the line of the longer diameter of the elliptical recess (the holder being sufficiently elastic to yield to this compression) the recess can be brought from the elliptical to a circular form of dimensions to receive the ring. When the holder is released from compression, it will tend to resume its normal shape, and in so doing the walls of the recess will close upon and tightly clasp the ring and thus secure it firmly in position. It is in this feature that my invention is essentially comprised. I am aware that efforts have been made to unite a ring with its holder without the aid of extraneous fastening devices; but in all such cases dependence has been placed either upon some special construction of the ring or upon the distortion of the ring itself from its normal shape. I know of no instance in which a holder having a normally-elliptical ring-receiving recess has been capable of compression to bring that recess to circular form to receive the ordinary spinning-ring and has been so compressed, and has also been elas-

tic, so that when released from compression it would by its tendency to return to its normal shape close upon and clasp the ring.

The nature of my invention will be readily understood by reference to the accompanying drawings, in which—

Figure 1 is a top plan view of a portion of the ring-rail of a spinning-frame with my ring-holder and ring inserted therein. Fig. 2 is a vertical section of the same on line $x x$, Fig. 1. Fig. 3 is an enlarged top plan view of the ring-holder detached from the rail and ring.

R is the ring-rail, which is of the ordinary construction and provided with a circular hole to receive the ring-holder B, which is secured therein in place by set-screws, such as r , usually three in number.

I prefer to make the outer portion of the shank of the holder (by "shank" I intend that part of the holder which is seated in the ring-rail) slightly conical, being broadest at the bottom and thence tapering toward the top. The result of this construction is that as the set-screws r are tightened up they tend to draw and hold the ring-holder down, and to prevent it from working up or rising in its seat, as with the ordinary straight shank it sometimes will do when under the influence of the jar of machinery and when the machine is running at high speed.

A is the usual circular double-race spinning-ring. It is designed to be seated in the annular recess formed for that purpose in the top of the holder, said recess having, as usual, the horizontal abutment or inwardly-projecting shoulder b and the surrounding vertical wall b' . The vertical wall of the recess is normally slightly elliptical in contour, the smaller diameter of the ellipse being slightly less than the diameter of the flanged part of the ring A, which is to be seated in the recess. This will be understood by reference to Fig. 3, which represents the holder normal. In this figure the shorter diameter of the elliptical recess on the line $z z$ is less than the diameter of the circular flanged part of the ring A to be seated in that recess, and is, say, three one-hundredths of an inch less than its longer

diameter, which is on the line $y y$ and which is greater than the diameter of the said circular flanged part of the ring A; and the parts are so proportioned that if the holder
5 be compressed sufficiently in the line of its longer diameter $y y$ the recess will take on a circular form, at which time it is in shape to receive the flange of the spinning-ring. The moment the holder is released from this com-
10 pression the recess tends to resume its elliptical shape, and in so doing its wall b' will close upon and clasp tightly and immovably the flange of the ring.

I can provide the holder with a ring-receiving recess of normally elliptical shape in various ways—as, for example, by turning it out in that shape originally by a lathe-tool having the proper motion imparted to it for that purpose; but I find it most convenient and
20 preferable on the whole to proceed as follows: I first place the cylindrical portion of the holder (and preferably the shank portion) in a universal four-jawed chuck, which grasps the holder at points equidistant from each other—as, for example, the points $y z y z$, Fig. 3. Two of the opposite jaws of the chuck—
25 those, for example, at the points $y y$ —are so arranged as to be advanced inwardly in grasping the ring-holder three one-hundredths of an inch nearer to each other than the other two jaws at $z z$. The body of the holder is thus compressed from the cylindrical into the form of an ellipse whose shorter diameter is at $y y$, and whose longer diameter is at $z z$. With the
30 holder thus compressed the lathe-tool turns out in the holder a ring-receiving recess of true cylindrical or circular shape and of substantially the same diameter as that of the flanged part of the ring which is to be seated in the recess. The ring-holder is then removed
40 from the lathe, and when released from the compression of the chuck at once springs back to its original cylindrical form; but in so doing its ring-receiving recess is changed from circular to elliptical form, the recess expanding in the direction $y y$, which becomes the
45 longer diameter of the ellipse, and contracting in the direction of $z z$, which becomes the shorter diameter of the ellipse, the structure then appearing as in Fig. 3. Having brought the holder to this condition all that remains is to insert the ring. This I accomplish by placing the holder in a vise, so that the jaws shall grip it in the direction of its longer di-
50 ameter $y y$, and then compressing the holder in the vise until the recess assumes a cylindrical shape. The ring is then inserted and seated in the recess, the vise is unscrewed, and the released holder springs back into shape,

thus closing the wall b' of the recess tightly 60 and firmly upon the flange of the ring. The holder thus serves to secure the ring firmly in it, while the ring, being sufficiently strong to resist the compression upon its lower flange, will not have the circumferential form of its
65 upper flange materially varied by the compression. The holder is then placed in the ring-rail and secured in the ordinary manner by the set-screws r .

When it is desired to remove the ring from 70 the holder, the ring and holder are removed from the rail and the holder is inserted in the vise and compressed as before, which allows the ring to be readily removed therefrom.

I am able to employ ordinary cast-iron for 75 a holder of this construction, as it possesses sufficient elasticity to permit of its springing, as described.

The difference in the two diameters of the elliptical wall b' above given may be varied 80 according to the metal used for the holder and the power with which the ring is to be grasped by it. The proportions I have stated are given for the general guidance of the manufacturer, using soft cast-iron for the
85 holders; but any other proportions may be adopted which will accomplish the result.

The wall b' may be hollowed out or undercut slightly, if desired, as shown at b^2 in Fig. 2, in order to give a firmer grasp upon the
90 correspondingly-shaped flange of the ring; but in any case it will be observed that the holder B is a complete ring of itself and capable of retaining its cylindrical form better under compression from the set-screws r than
95 if it were slotted or cut through on one side, thus insuring the more accurate holding of the ring in position in the ring-rail.

Having described my improvement and the best way now known to me of carrying the 100 same into effect, what I claim, and desire to secure by Letters Patent, is—

The combination, with the spinning-ring, of the holder formed of a continuous elastic metallic ring having a ring-receiving recess 105 normally elliptical in shape and adapted by compression of the holder in the line of the longer diameter of the ellipse to be brought to the circular form requisite in order to permit the insertion of the spinning-ring, substantially as and for the purposes hereinbefore set forth.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN F. FOSS.

Witnesses:

H. A. BROWN,
EDWARD B. PEIRCE.