S. FOREHAND & H. C. WADSWORTH.

Blank for Spinning-Rings.

No. 161,943. Patented April 13, 1875.

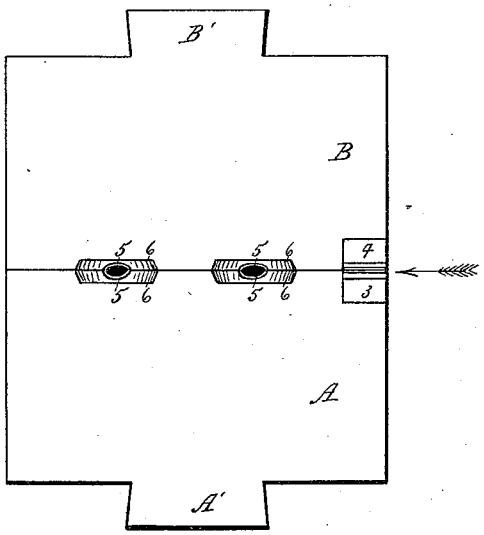

Fig. 1.

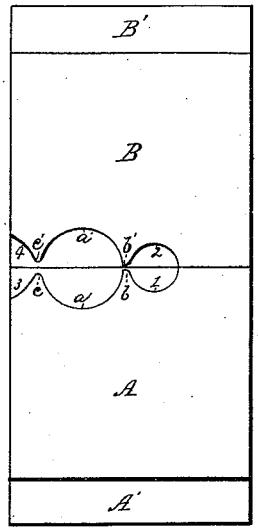

Fig 2.

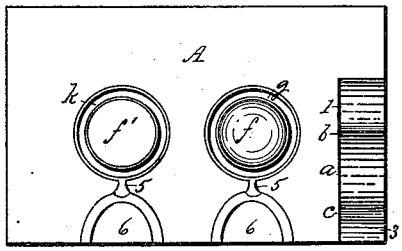

Fig. 3.

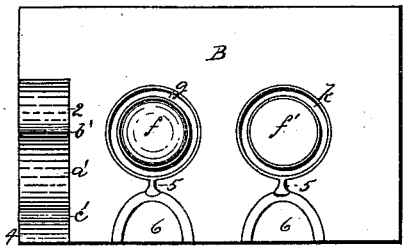

Fig. 4.

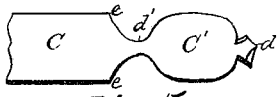

Fig. 5.

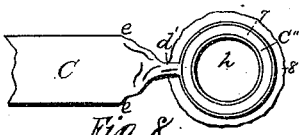

Fig. 8.

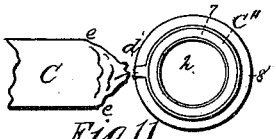

Fig. 11.

Fig. 6.

Fig. 9.

Fig. 12.

Fig. 7.

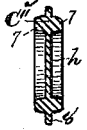

Fig 10.

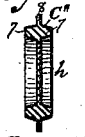

Fig 13.

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UNITED STATES PATENT OFFICE.

SULLIVAN FOREHAND AND HENRY C. WADSWORTH, OF WORCESTER, MASSACHUSETTS.

IMPROVEMENT IN BLANKS FOR SPINNING-RINGS.

Specification forming part of Letters Patent No. **161,943**, dated April 13, 1875; application filed February 20, 1875.

CASE C.

To all whom it may concern:

Be it known that we, SULLIVAN FOREHAND and HENRY C. WADSWORTH, both of the city and county of Worcester and Commonwealth of Massachusetts, have invented certain new and Improved Iron or Steel Blanks for Making Single and Double Rings for Spinning-Frames; and we do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, and in which—

Figure 1 represents a front view of one portion of the mechanism employed in making our said improved blank. Fig. 2 represents an end view of the mechanism shown in Fig. 1 looking in the direction of the arrow. Fig. 3 represents a top or plan view of the lower half of Fig. 1. Fig. 4 represents a bottom view of the upper half of Fig. 1, it being shown bottom side up, to illustrate its construction more fully. Fig. 5 represents a side view of a section of the bar from which our improved blanks are made after the end has been heated and subjected to the first operation of the forming mechanism, as will be hereafter explained. Fig. 6 represents an edge view of the parts shown in Fig. 5. Fig. 7 represents a section on line A B, Fig. 6. Fig. 8 represents a side view of the parts shown in Fig. 5 after they have been subjected to the second operation of the mechanism, as will be hereafter explained. Fig. 9 represents an edge view of the parts shown in Fig. 8. Fig. 10 represents a cross-section on line B C, Fig. 9. Fig. 11 represents a side view of the parts shown in Fig. 8 after they have been subjected to the third operation of the mechanism, as will be hereafter explained. Fig. 12 represents an edge view of the parts shown in Fig. 11; and Fig. 13 represents a cross-section on line C D, Fig. 12.

To enable those skilled in the art to which our invention belongs to make and use the same, we will proceed to describe it more in detail.

In the drawings, the part marked A represents the lower half, and B the upper half, of the first set of dies employed in the manufacture of the blank-ring. It will be understood that the tongue A′ of the die A is to be fitted and wedged into a suitable bed, while the tongue B′ of the die B is to be fitted and wedged securely into a suitable hammer head, so that, as the upper half of the hammer-head is raised and lowered, it will always register with the stationary die A.

The operation of making our improved blank ring is as follows: The operator takes a bar of iron or steel, C, after the end has been properly heated, and places the heated end edgewise between the dies A and B, so that when the die B descends the heated end of the bar will be caught between the recessed parts *a a′*, *b b′*, *c c′*, and 3 and 4 of the dies A and B, and by which operation the end of the bar is swaged or forged into the form shown at C′, Fig. 5, the parts *b b′* of the dies bending and turning down the ends of the fibers of the iron of the end of the bar, as shown in same figures, the small projection *d* being crowded or forced by said parts *b b′* into the spaces 1 and 2, while the parts *c c′* of the dies form the neck *d′*, connecting the part C′ to the bar C, the parts 3 and 4 of the dies forming the concaved shoulders *e e*, as shown in Figs. 5 and 6, Fig. 6 being an edge view of Fig. 5. The operator now places the part C′ flatwise upon the rounded projection *f* of the die A, the neck *d′* resting in the small concavity 5, while the shoulder part *e e* rests in the concavity 6, whereby, when the upper die B descends, the projection *f* upon the under side of die B will strike the center of the part C′, which being swaged and pressed between the corresponding convex parts *f f* of the dies, the metal composing the central part is forced out, and at the same time is forced into the circular concavities *g g* of the respective dies, whereby the part C′ is forced or swaged into the shape shown at C″, Figs. 8, 9, and 10, and having a thin central web, *h*, in the center, and a thick circular flange, 7, on each side of the web, and a thin flange, 8, upon the outside, as indicated in the same figures. The operator now places the part C″ between the

dies A and B, so that web *h* will be compressed between the rounded, but less convex, projections *f' f'* of said dies when the die B descends, whereby web *h* will be flattened out still thinner, while the flanges 7 7 will be compressed into the circular grooves *k k*, and compressed and worked still more, and by which operation the flange or rib 8 will also be compressed and flattened still more, and the neck *d'* will be severed, or so nearly so that the operator, by a slight blow, can break the neck, thus separating the part C'' from the bar C. If preferred, after the part C' has been subjected once to the convex projections *f f*, and flange 8 thrown out, the latter may be trimmed off before the part C'' is submitted to the action of the projections *f' f'*, and in which case a new flange will be thrown out, having a more uniform exterior, as shown in Fig. 11. The part C'', Figs. 11, 12, and 13, now constitutes a blank for a spinning-ring.

If the blank is to be finished into a double ring, the central web *h* is to be punched out or removed by any suitable mechanism, the flange 8 being left and finished as a means of support to the ring when it is first placed in the spinning-frame, and also as a central support to the ring when turned. If, however, the blank is to be finished for a single ring, not only the central web *h* is to be punched out, but the flange 8 may also be trimmed off. One good way of accomplishing both of these operations is shown and described in our two other applications for Letters Patent, of even date herewith, one of which applications relates to the mechanism for making blank rings, and the other to the improved mode or process of making them.

It will be observed that the upper surfaces of the projections *f f* are more convex than the upper surfaces of the projections *f' f'*; consequently they tend to force the metal, while in a highly-heated state, from the center outward, while at the same time the same metal is being forced into the circular grooves *g g* to form the flanges 7 7. It will also be observed that the metal of the end of the bar C, after the first blank ring has been made, and all subsequent blank rings, is left rounded or turned down, as shown at *e e*, thus insuring the production of perfect rings, with but little waste of metal at the end *d*.

From the foregoing description it will be seen that our blanks for spinning-rings can be made from flat bars of iron or steel, and in such a manner as to use or utilize in the manufacture thereof a greater part of the metal, while at the same time, by the process of working the metal into the blank-ring form shown in the drawings, the fibers of the metal are bent around into circular form, so that when the ring is finished up there will be great uniformity of texture of metal upon those parts upon which the traveler runs, or over which it is drawn during the operation of spinning. Then, again, the process of making the blank ring, as above described, is such as to greatly refine the iron or steel, thereby remedying any defects which exist in the bar C; and those skilled in the art to which our invention belongs will readily appreciate this important advantage, which results from our improved mode or process of manufacturing blank spinning-rings from flat bars of metal, as above described.

Aside, however, from the foregoing advantages, the manufacturer can produce our blank spinning-rings at a much less expense than blanks can be produced by the old modes of welding the ends of a bar to form a ring, or of punching out blank rings, while the blank ring made by our improved process is free from the many serious objections which are found to exist in rings made by welding the ends or punching the blank ring, as before alluded to.

Those skilled in the art know that welded and punched blanks, when finished into rings, have hard and soft places, which render them far less useful than ours.

Having described our improved blank for making rings for spinning-frames, what we claim therein as new and of our invention, and desire to secure by Letters Patent, is—

A spinning-ring blank, C'', having a flange, 8, and made from a single bar of metal, C, substantially as shown and described.

SULLIVAN FOREHAND.
HENRY C. WADSWORTH.

Witnesses:
THOS. H. DODGE,
EDWIN E. MOORE.