

(No Model.)

J. S. CRANE.  
KNITTING MACHINE BURR.

No. 441,612.

Patented Nov. 25, 1890.

Fig. 1.

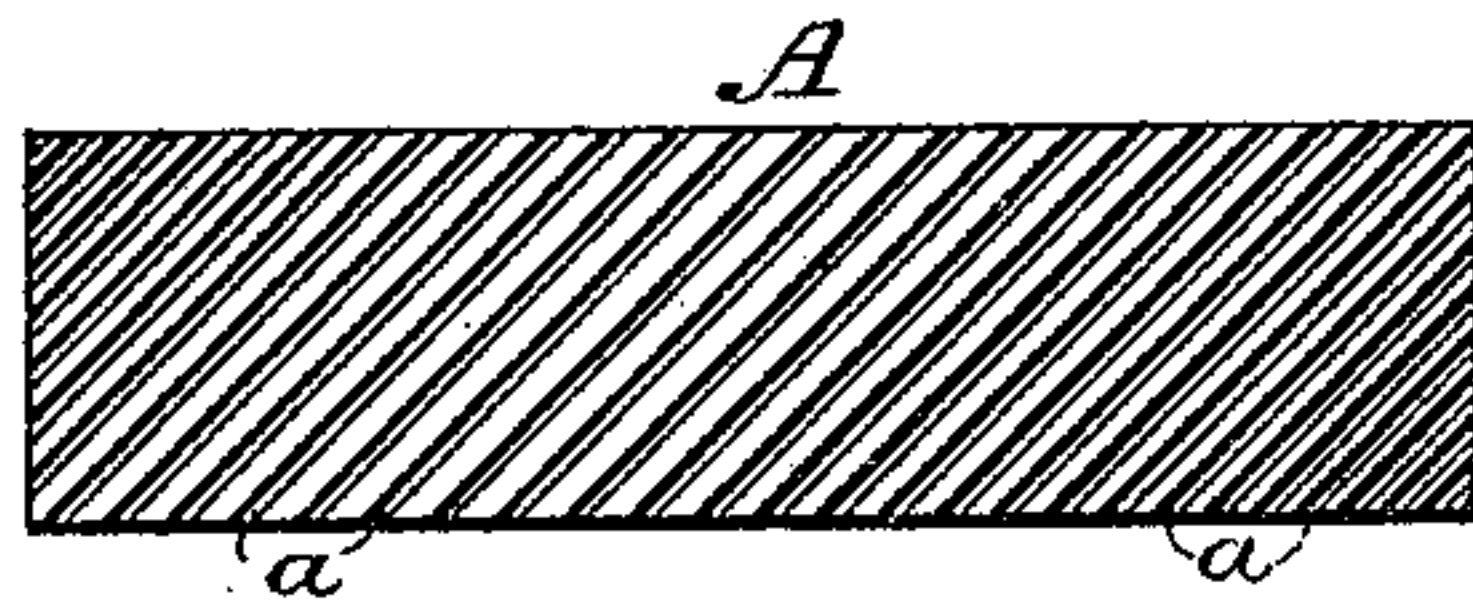


Fig. 2.

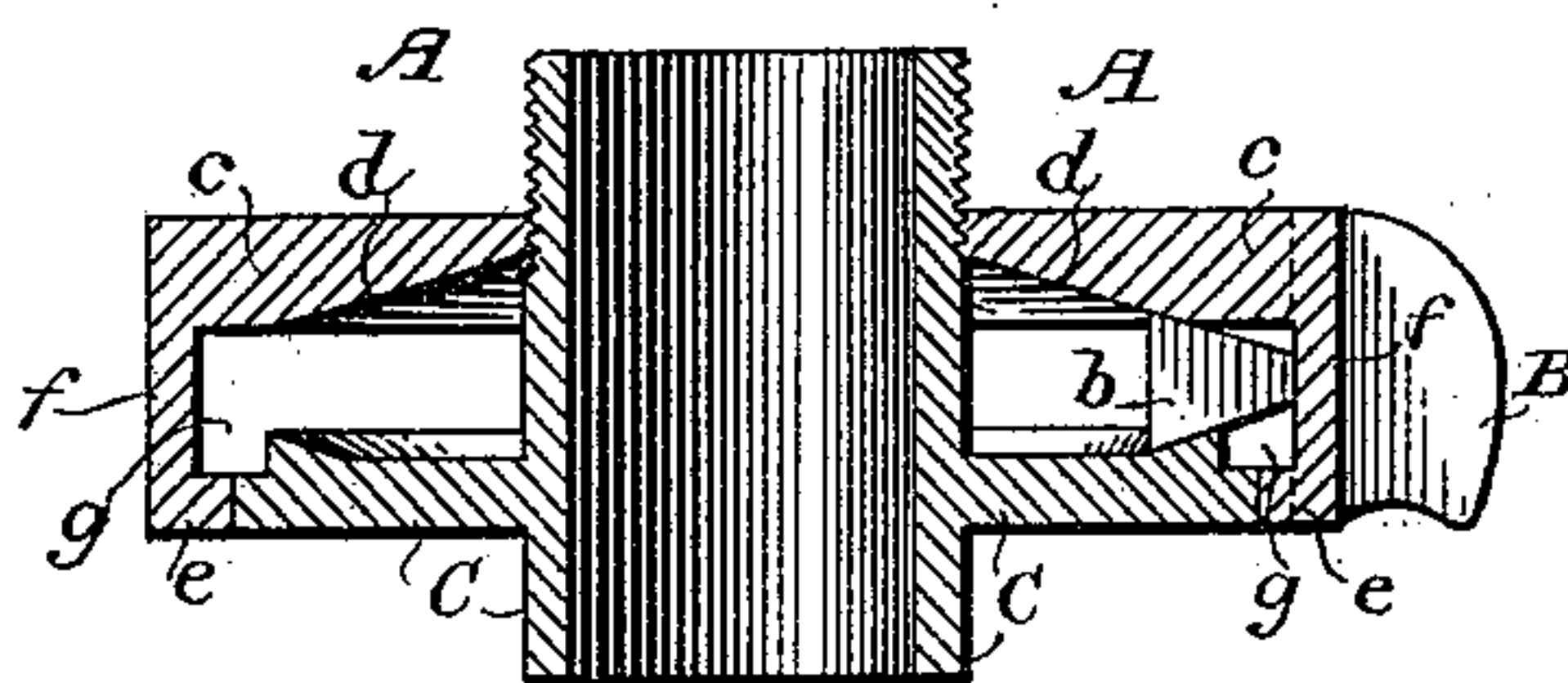


Fig. 3.

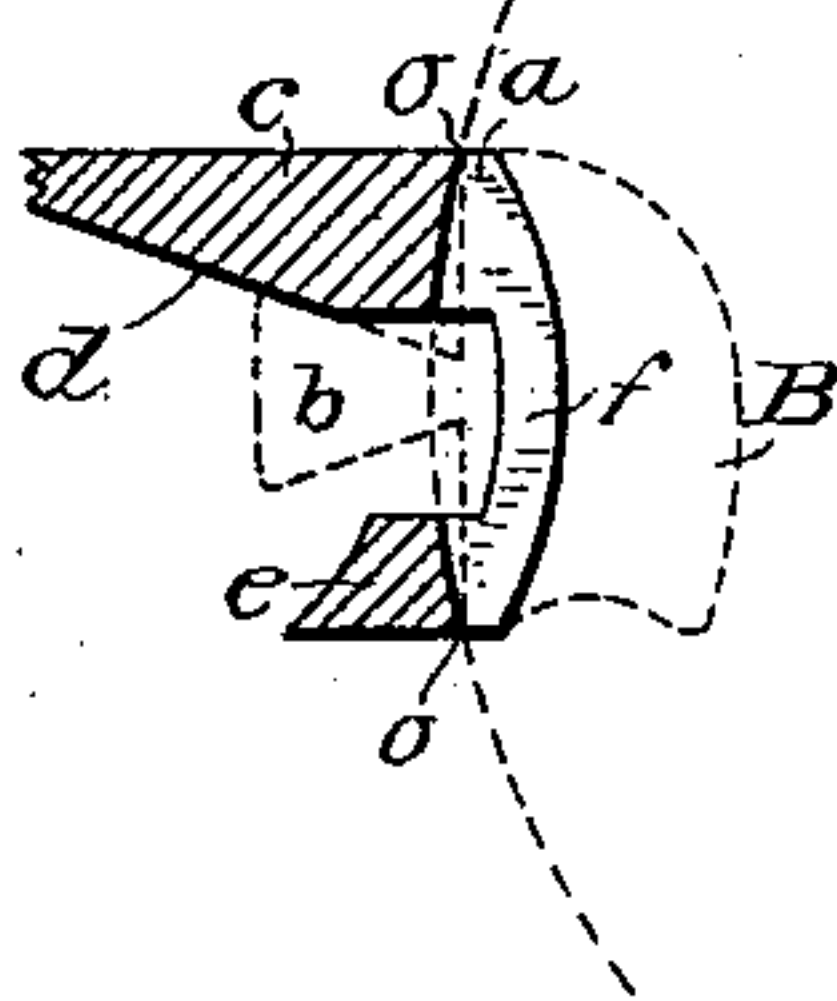


Fig. 4.

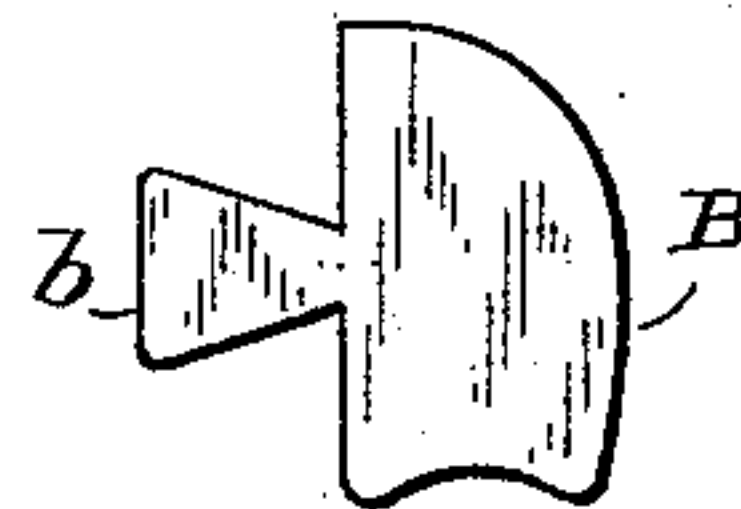


Fig. 5.

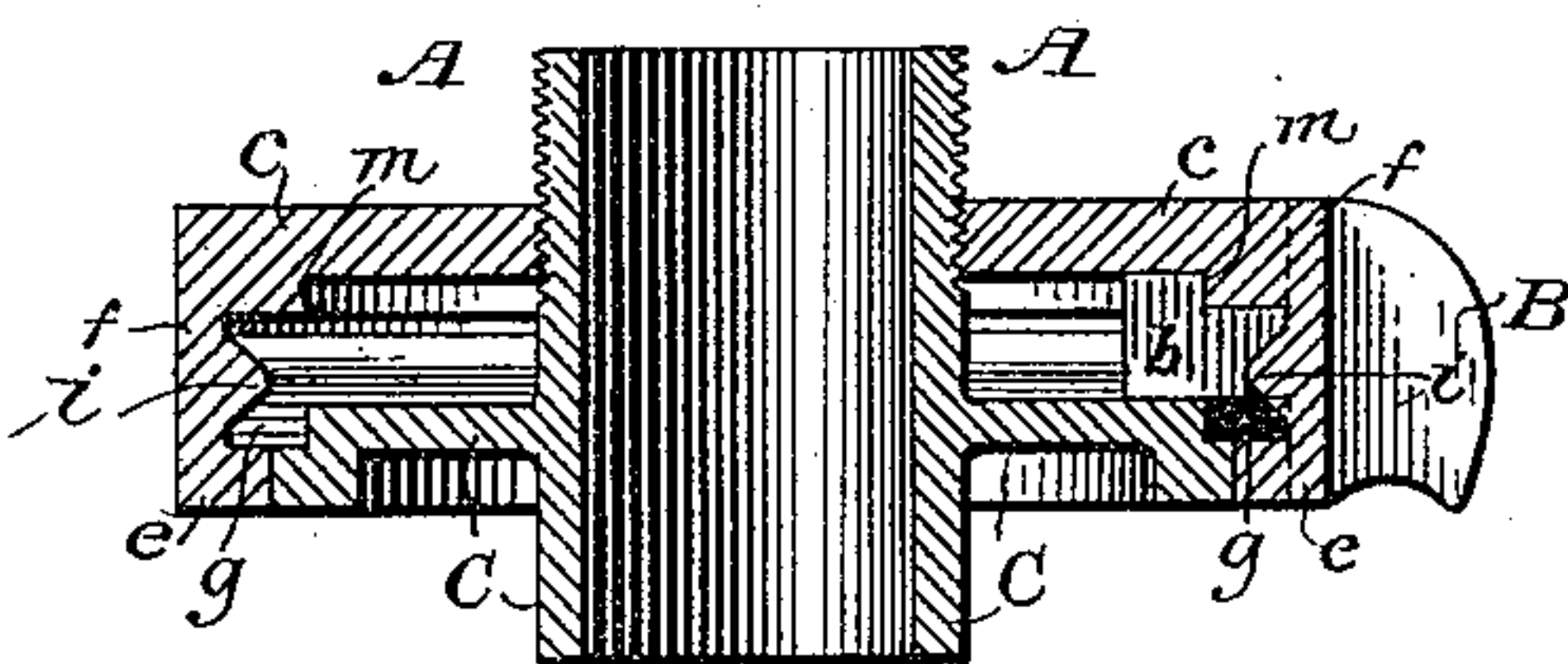


Fig. 6.

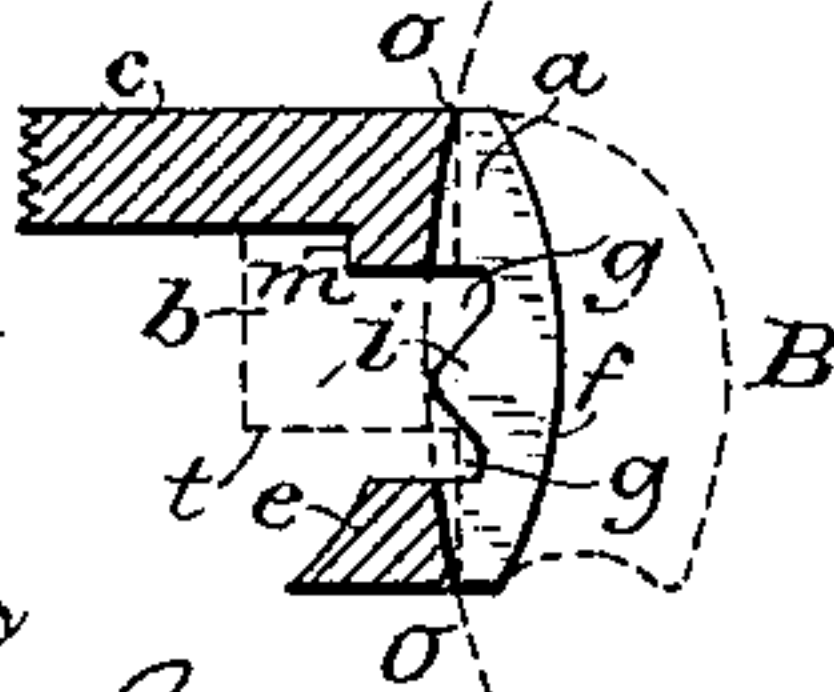
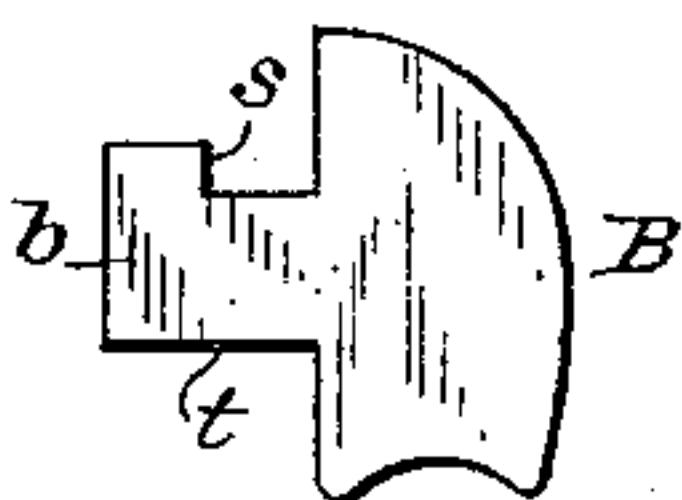


Fig. 7.



Witnesses

Jos. S. Latimer  
Barleton E. Snell.

Inventor

John S. Crane

By his Attorney

Wm. H. Brown



# UNITED STATES PATENT OFFICE.

JOHN S. CRANE, OF LAKE VILLAGE, NEW HAMPSHIRE, ASSIGNOR TO THE  
CRANE MANUFACTURING COMPANY, OF SAME PLACE.

## KNITTING-MACHINE BURR.

SPECIFICATION forming part of Letters Patent No. 441,612, dated November 25, 1890.

Application filed January 22, 1890. Serial No. 337,700. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN S. CRANE, of Lake Village, in the county of Belknap and State of New Hampshire, have invented certain new and useful Improvements in Knitting-Machine Burrs and Sinkers, of which the following is a specification.

The present invention relates to burrs and sinkers of knitting-machines, and particularly to the construction of the hubs or "brasses" thereof, and of the wings or blades employed therewith.

The object of the present invention is to provide a construction of the hubs or brasses such that the inclined wings or blades may be securely and rigidly held therein.

The present improvements over the usual construction of burrs or sinkers and of the wings or blades are illustrated in the accompanying drawings, in which—

Figure 1 is a side view of an ordinary hub or brass of a burr or sinker with the inclined wings or blades removed, showing the inclined position of the slots which receive and hold the wings or blades. Fig. 2 is a central vertical section of a burr or sinker of the usual construction, the wings or blades being shown on one side and removed on the other and the wing-slots being disregarded. Fig. 3 is a central section of a part of an ordinary burr or sinker in a plane parallel with one of the inclined wing-slots, showing in dotted lines a wing in position. Fig. 4 is a view of one of the ordinary wings or blades. Fig. 5 is a central vertical section of the hub or brass of a burr or sinker provided with the present improvements, in this figure, as in Fig. 2, the wing-slots not being shown. Fig. 6 is a section similar to Fig. 3, showing the hub or brass provided with the improvements, and showing in dotted lines one of the wings or blades in position; and Fig. 7 is a view of one of the improved wings or blades.

Referring to all of the figures, A is the hub or brass having the usual inclined slots *a* for the reception of the wings or blades B, and C is the locking-bush which locks the wings or blades in place, clamping the projections *b* of the wings or blades against the seat on the hub or brass, all in the usual and well-known manner.

Referring now to Figs. 2 and 3, illustrating the usual and well-known construction of the hubs or brasses, the hub or brass is seen to consist of an upper inwardly-extending flange *c*, (which is provided with an inclined seat *d*, against which the usual dovetailed projections *b* of the wings or blades are clamped,) a lower inwardly-projecting flange *e*, parallel with the flange *c*, (which strengthens the hub or brass and maintains the locking-bush in proper position,) and an outer rim *f* of comparative thinness connecting the two flanges. In making the hub or brass the lower flange is formed, and the outer rim is made of the proper thickness by reaming or channeling out the material, thus forming a channel *g* between the two flanges. The inclined wing-slots *a* extend entirely across the width of the hub or brass, as shown in Fig. 1, this being essential to enable the dovetailed projections of the wings or blades to be placed in position, and they are cut of sufficient depth so as to pass entirely through the rim *f* throughout its width, as shown in Fig. 3. The slots *a* are formed by means of a rotary cutter which necessarily cuts them in a straight line, (as is necessary for the reception of the wings or blades,) but owing to the inclination of the slots to the axis of the hub or brass a section of the hub or brass in the plane of one of the slots shows a curved line (an arc of an ellipse) for the edges of the rim *f*.

Now, as hitherto constructed, the outer and inner surfaces of the rim *f* have been parallel, so that the rim is of the same thickness throughout, and as the rim is necessarily comparatively thin certain disadvantages and defects have existed in the burrs and sinkers. Generally speaking, the operation of the wings or blades of burrs and sinkers is to divide or pass between the needles of a spring-needle knitting-machine, and consequently it is essential that the wings should be maintained rigidly and fixedly in position with no lateral movement, so that there may be no danger of their striking the bodies of the needles. The only lateral support which each wing or blade receives is from the side walls of the slot in which it fits, and the amount of effective support thus received is limited to the thickness of the rim *f*. In order that the wings or blades



may be inserted in the slots, it is necessary that the width of each slot should be slightly greater than the thickness of each wing or blade, and consequently each wing or blade  
5 is capable of a slight lateral movement, which becomes less and less as the rim *f* is thickened.

Now the first part of the present improvements consists in giving increased effective  
10 thickness to the rim *f*, for the purpose of stiffening the wings or blades, rendering them more rigid and reducing to the minimum their lateral play. This is accomplished by the means shown in Figs. 5 and 6. Instead  
15 of making the inner wall or face of the rim *f* parallel with the outer wall, it is formed bulging inwardly or arched, as shown at *i*, so that while the rim at its upper and lower parts or edges, where it connects with the upper and  
20 lower flanges *c e*, is of the same thickness as hitherto, it is thickened at its center, so that at its thickest part the rim is nearly twice as thick as hitherto made. In this manner the effective thickness of the rim for stiffening  
25 the wings or blades is as great as if the entire rim were as thick as it is at its center, and in this manner the object of the invention is accomplished. In thus providing for the stiffening of the wings or blades there is no inter-  
30 ference with the manner of putting the wings or blades in position, there is no alteration in the dimensions of the burrs or sinkers or of the wings or blades, there is no change necessitated in the mode of manufacture, and  
35 there is no change required in the tools employed in making them, except in the shape of the reaming or channeling tool which forms the channel *g*. There is no change required in the rotary cutter which cuts the inclined  
40 slots. The path of the cutting-edge is indicated in dotted lines in Figs. 3 and 6. It has hitherto been necessary to cut deep enough to cut away the upper and lower portions of the rim, as indicated at *o o*, and the same arc  
45 which includes these two points also includes the bulge or arch *i*. Consequently the wing-slots pass entirely through the rim, as heretofore.

The present invention enables the space  
50 between the inner edge of the rim *f* and the path of the cutting-tool to be utilized to give room for increased thickness to the central part of the rim, and advantage is taken of the fact that an angular section of a cylinder produces an ellipse.

The second part of the present improvements relates to the construction of the locking projections *b* of the wings or blades, and

to the reciprocal construction of the brass or hub and of the locking-bush. As shown in  
60 Figs. 2, 3, and 4, the old-style wings had dovetailed locking projections which were locked between inclined seats on the hub or brass and the locking-bush, respectively. This construction necessitated very careful and nice  
65 manipulations upon the brass, bush, and wing in order to prevent any radial play of the wing.

In accordance with the present improvements, the dovetailed form of the wing-pro-  
70 jection is abandoned, and, as shown in Fig. 7, the wing projection *b* is formed with a square shoulder *s* on one edge and a flat face *t* on its opposite edge. The square shoulder *s* engages an annular square shoulder *m* on the hub or  
75 brass, whereby all radial play of the wing is prevented, and the wing is locked in place by the hub, which simply seats against the flat face *t* of the wing-projection.

The locking-face of the bush *C* requires no  
80 special channeling to enable it to fit the wing projections, but is simply made flat so as to seat against the flat faces *t t* of the wing projections, and so prevent any movement of the wings lengthwise of the wing-slots.  
85

I claim as my invention—

1. A knitting-machine burr or sinker having the rim of its hub or brass through which the inclined wing-slots are cut made thicker at its center than at its edges, substantially  
90 as set forth.

2. A knitting-machine burr or sinker having the rim of its hub or brass through which the inclined wing-slots are cut made thicker at its center than at its edges, the additional  
95 thickness being produced by making the inner wall or face of the rim bulging inwardly at its center, substantially as set forth.

3. The hub or brass of a knitting-machine burr or sinker formed with a square annular  
100 shoulder *m*, and wings or blades the locking projection of each of which is formed on one edge with a square shoulder *s*, engaging said square shoulder *m*, and on the opposite edge with a flat face *t*, in combination with a lock-  
105 ing-bush *C*, having a flat face which seats against the flat faces *t* of said wings or blades, substantially as set forth.

In witness whereof I have hereunto signed my name in the presence of two subscribing  
110 witnesses.

JOHN S. CRANE.

Witnesses:

B. F. DRAKE,  
ARTHUR S. BROWNE.