

No. 677,883.

Patented July 9, 1901.

F. A. NEIDER.

PROCESS OF MAKING METAL WASHERS.

(Application filed Oct. 27, 1900.)

(No Model.)

Fig. 1.

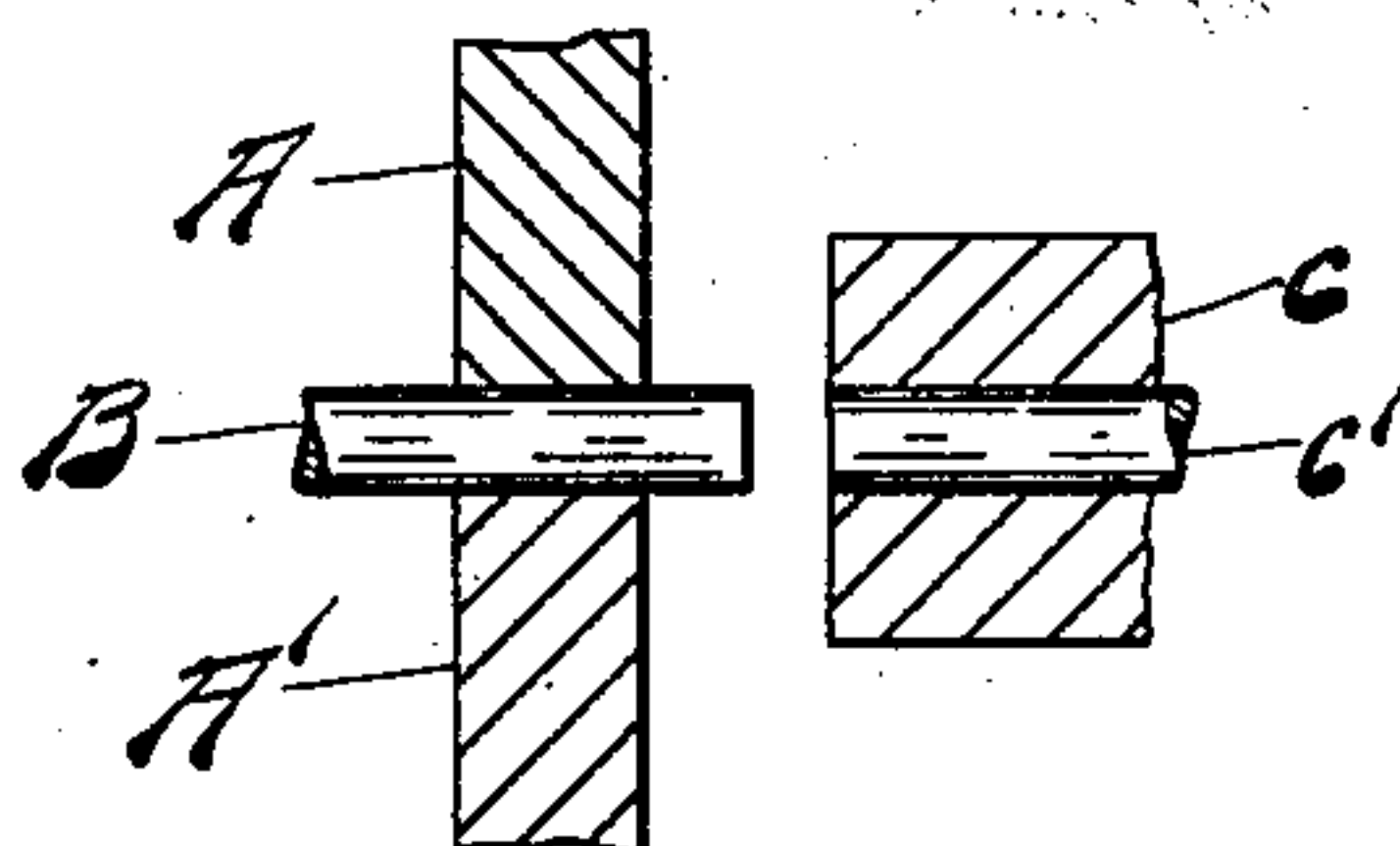


Fig. 2.

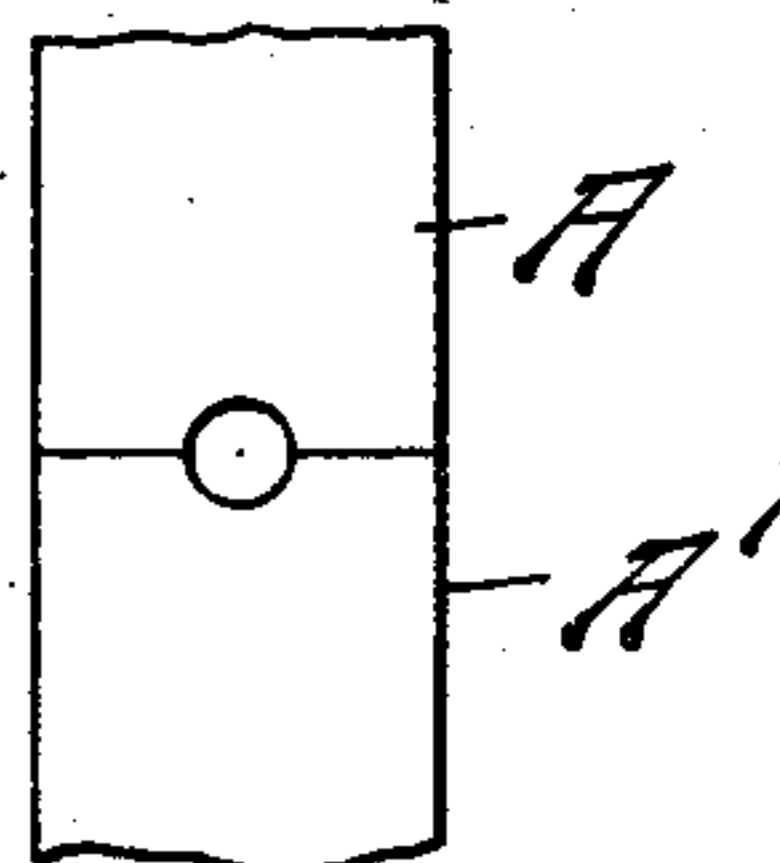


Fig. 3.

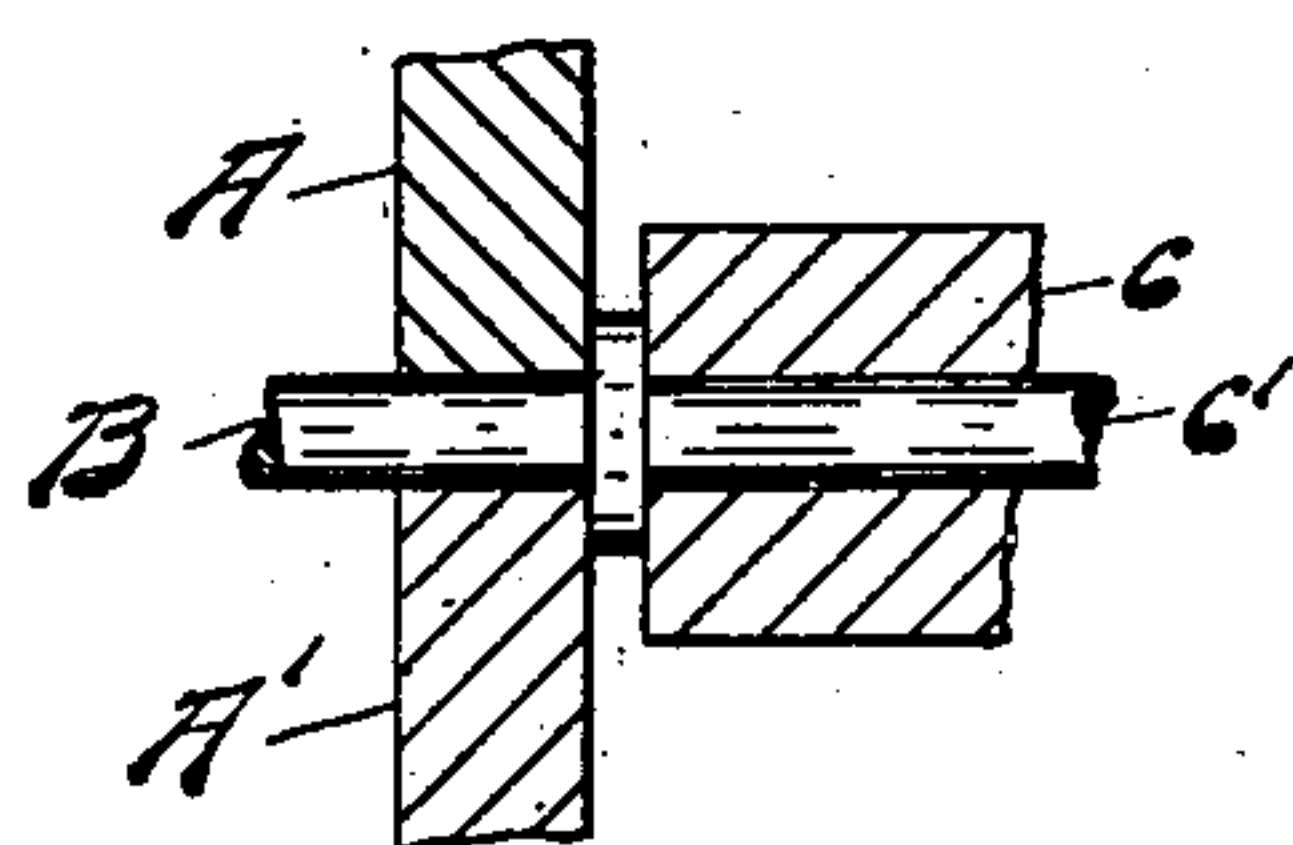


Fig. 4.

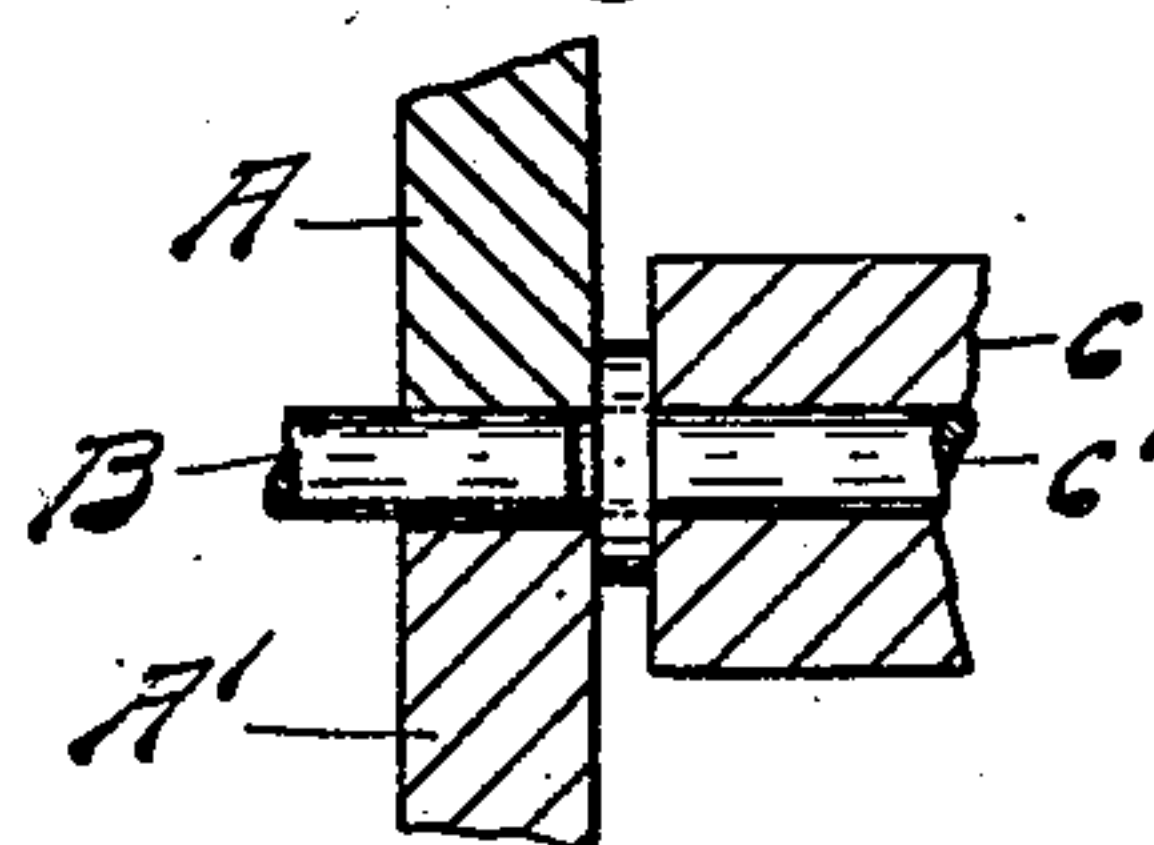
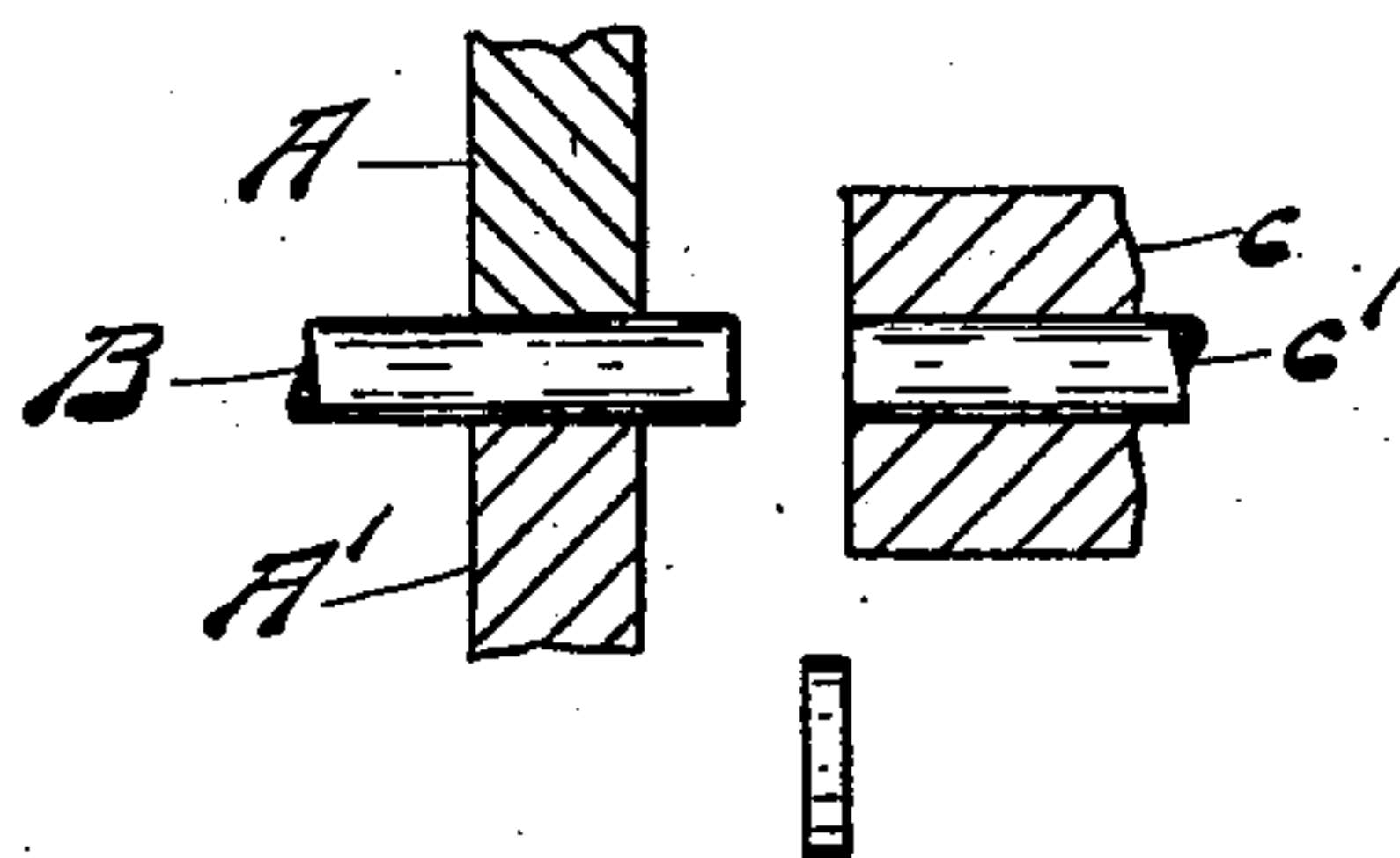


Fig. 5.



Witnesses:

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FRED A. NEIDER, OF AUGUSTA, KENTUCKY.

PROCESS OF MAKING METAL WASHERS.

SPECIFICATION forming part of Letters Patent No. 677,883, dated July 9, 1901.

Application filed October 27, 1900. Serial No. 34,563. (No model.)

To all whom it may concern:

Be it known that I, FRED A. NEIDER, a citizen of the United States of America, and a resident of Augusta, in the county of Bracken, State of Kentucky, have invented certain new and useful Improvements in Processes of Making Metal Washers, of which the following is a specification.

The object of my invention is to make metal washers without having in the process any waste metal. This object is attained by the means described in the annexed specification and illustrated in the accompanying drawings, in which—

Figure 1 is a view showing a rod from which the washer is formed fed forward and held firmly between the jaws of a vise preparatory to being swaged by a double plunger, the vise and the exterior member of the plunger being shown in vertical longitudinal section and the rod and the interior member of the plunger in elevation. Fig. 2 is a front view of the vise. Fig. 3 is a view similar to Fig. 1, but showing the second step in the process. Fig. 4 is a similar view showing the third step. Fig. 5 is a similar view showing the fourth step.

The vise consists of jaws A A', each with a semicircular groove, forming a cylindrical perforation when closed together of the size of rod B.

The double plunger consists of an exterior member c, having an axial bore of the diameter of interior member c'. Member c' may be clamped within member c, with its end flush with the end of the latter, and it may also be advanced beyond the said end a distance slightly greater than the desired thickness of the washer to be produced.

In the first operation a length of rod B sufficient to form the washer is fed by suitable mechanism beyond the faces of the jaws and clamped between them by closing of the vise, the plunger being retracted, as shown in Fig.

1, the rod being in alinement with the interior member c' and of the diameter thereof. In the second operation the plunger, with the ends of the members flush, is advanced to within a distance of the vise equal to the thickness desired for the washer, thereby swaging a flat disk upon the end of the rod, as shown in Fig. 2. In the third operation jaws A A' of the vise are opened slightly, so as no longer to clamp the rod, and member c' of the plunger is forced forward centrally through the disk, punching the central portion out of it, leaving said portion integral with the rod. In the fourth operation the plunger is retracted, member c' is drawn back into member c, thereby stripping off the completed washer, which falls into a suitable receptacle, and another length of rod is fed forward and clamped in the vise preparatory to forming another washer, the part on the end of the rod which was punched from the center of the washer just completed going to form part of the succeeding washer. It is thus seen that in the operation there is no waste metal.

In describing my invention only so much mechanism is shown as is necessary to give a clear idea of the process.

What I claim is—

The process herein described of forming washers which consists in feeding a rod forward between clamping-jaws a length sufficient to form a washer, clamping the rod between the jaws in that position, swaging a head of the size and thickness desired for the washer upon the end of the rod, unclamping the jaws, and then punching a hole through the head in alinement with the rod to complete the washer pushing the rod back and leaving the portion punched out integral with the rod to form part of the next washer.

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Witnesses:

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