

R. R. MILLER.

Dies for Swaging Carriage-Clips.

No. 139,413.

Patented May 27, 1873.

Fig. 1.

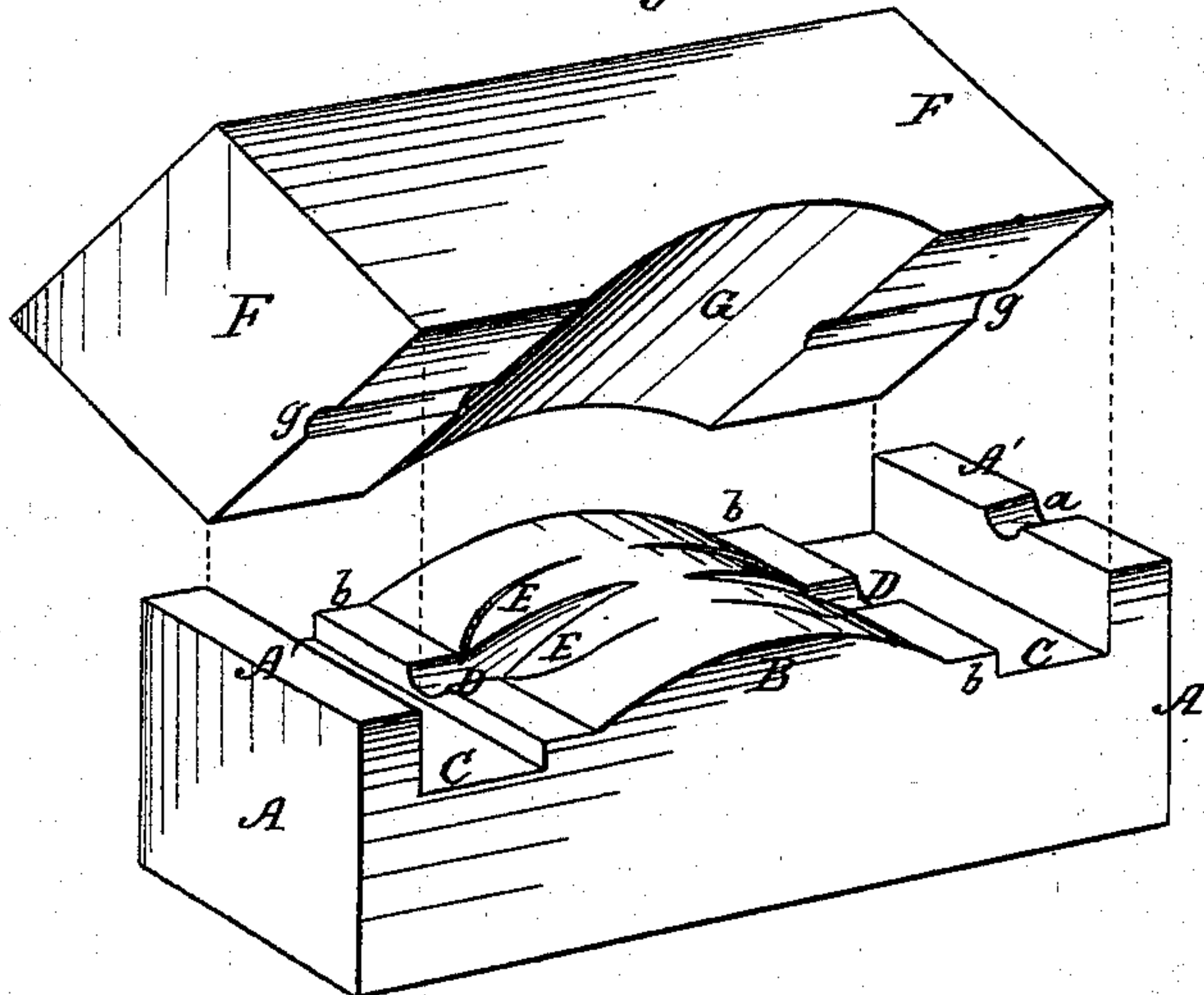


Fig. 2.

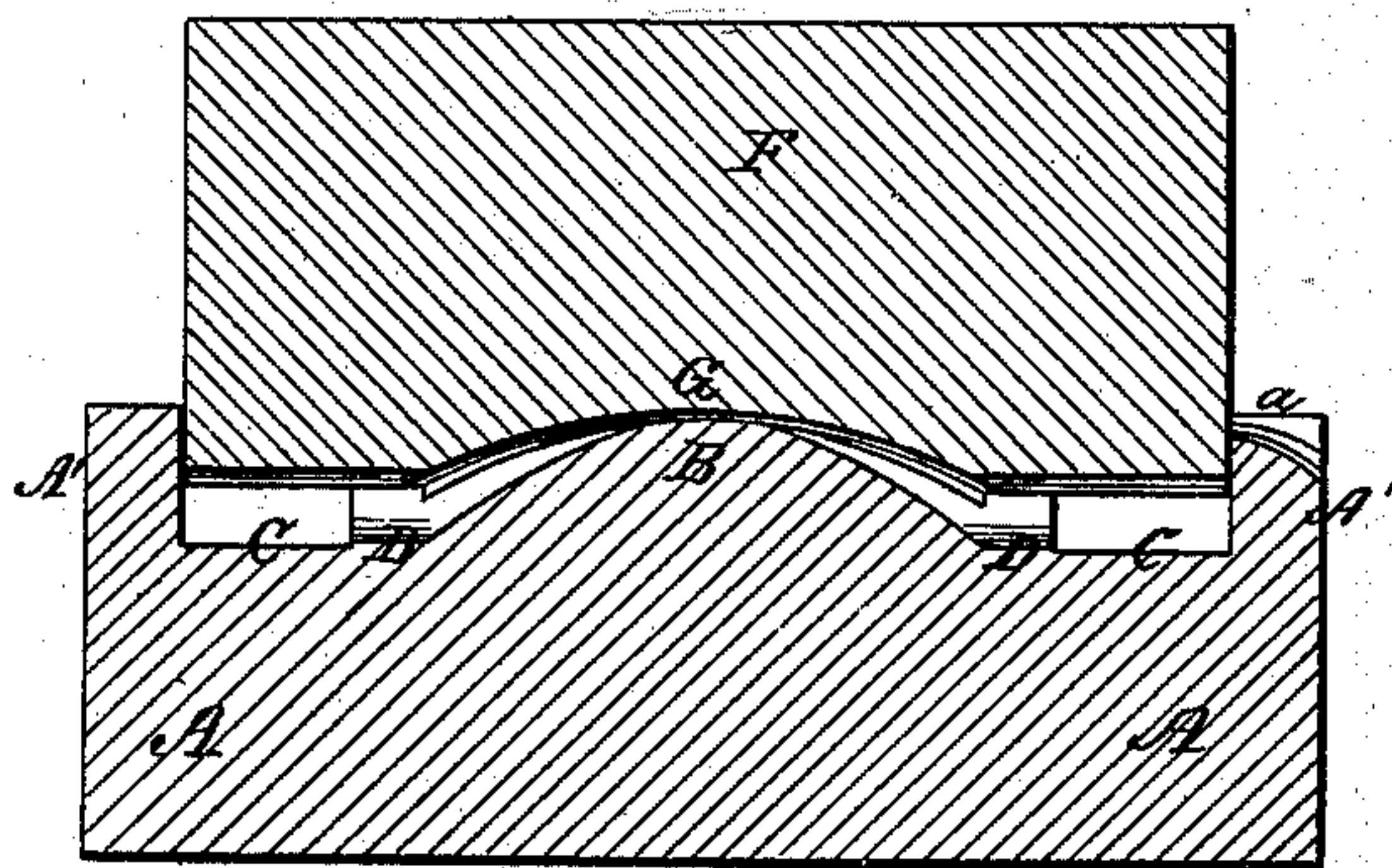
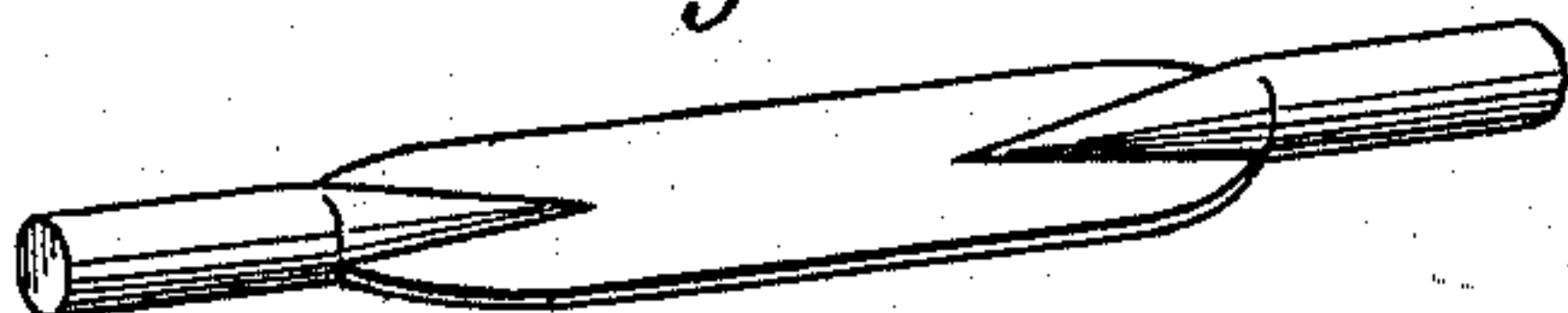


Fig. 3



Fig. 4.



Witnesses.

Edmund Masson

John R. Young

Inventor

R. R. Miller, by  
Pirndle and Co., his Attys



# UNITED STATES PATENT OFFICE.

ROBERT R. MILLER, OF PLANTSVILLE, CONNECTICUT.

## IMPROVEMENT IN DIES FOR SWAGING CARRIAGE-CLIPS.

Specification forming part of Letters Patent No. **139,413**, dated May 27, 1873; application filed December 3, 1872.

*To all whom it may concern:*

Be it known that I, ROBERT R. MILLER, of Plantsville, in the county of Hartford and in the State of Connecticut, have invented certain new and useful Improvements in Dies for Swaging Carriage-Clips; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing making a part of this specification, in which—

Figure 1 is a perspective view of my improved dies as relatively arranged. Fig. 2 is a vertical cross-section of the same. Fig. 3 is a perspective view of the upper side of a clip as formed by said dies; and Fig. 4 is a like view of the clip after having passed through the trimming-dies.

Letters of like name and kind refer to like parts in each of the figures.

In the construction of carriage-axle clips much difficulty has heretofore been experienced in producing a perfect article without a considerable waste of iron and the use of two or more sets of forming-dies. To remedy these objections is the design of my invention, which consists, principally, in the peculiar construction of the forming-dies, substantially as and for the purpose hereinafter specified.

In the annexed drawing, A represents the lower die, provided upon its face with an elevation, B, which has a semicircular form lengthwise of said die and has a length corresponding to the length of the band portion of the article to be constructed. From the ends of the elevated portion B the face of the die extends horizontally outward for about one-half of an inch, where said die may either end or, if extended further, a groove, C, may be formed at or within said face. Within each of the horizontal portions *b* of the face of the die, and at the transverse center of the same, is provided a half-round groove, D, which extends horizontally inward to the inner end of said portions *b*, and thence upward and inward upon or within the raised part B and ends at a point near the longitudinal center of the latter, said groove having a uniform size from its outer end inward until it commences to curve upward, and from thence to its inner end a regularly-decreasing width and depth. Within each end of the curved or elevated portion B is provided a depression, E, which,

in plan view, corresponds in size and shape to the like features of the band ends of the clip, and at its outer end has a depth of about one-sixteenth of an inch, from whence, as said groove extends inward, it regularly decreases in depth and finally terminates at a point somewhat short of the corresponding end of the groove D. The upper die F is provided with in its lower face with a semicircular transverse depression, G, which corresponds to the elevation B of the lower die. A half-round groove, *g*, extends longitudinally outward through the plane portions of the face of said die and corresponds in general dimensions and position to the like features of the groove D.

As thus constructed, the dies are placed within a drop or other suitable press and operated in the usual manner, the heated blank consisting of a straight piece of round iron, being placed between said dies and subjected to one blow of the upper one. The effect of said blow of the upper die is to spread the metal laterally along the whole of the curved elevated portion of the lower die, and at the center of said portion to reduce the blank to a thickness of about one-sixteenth of an inch, while at the ends of said raised portion the metal, being caused to fill the depressions E, has about twice the thickness named. The ends of the blank, being contained within the grooves D, are not changed in size or shape, but are set downward so as to bring their upper sides upon a line with the corresponding flattened side of the central portion.

It is found that by making the flattening portions of the dies semicircular the effect produced is to throw the metal longitudinally outward to the points where a greater thickness is required, thus enabling a smaller rod of metal to be used than would otherwise be the case.

In order that still further advantage may be taken of the longitudinal drawing of the blank the ends of the die A are provided with suitable vertical lugs A', which are relatively placed so as to just admit of the insertion of the blank, and which, when the upper die impinges upon said blank, confine the ends of the latter and, by preventing the same from being lengthened, cause all of the excess of metal in the central portion of said blank to be thrown into the grooves D and E, where most needed.

By providing within the upper central por-



tion of one of the lugs A' a half-round groove, *a*, and causing the upper die to closely fill the space between said lugs, the blank may be cut from the bar by the same blow that forges the clip, by which means one machine and one operation are saved.

The blank clip produced by this operation, shown in Fig. 3, is completed by being passed through suitable trimming-dies, so as to remove the surplus metal from its central portion.

The advantages possessed by these dies are: First, they enable the clip to be forged at one heat and by one operation of the dies, thus effecting an important saving in time and labor and preventing the usual loss from oxidization caused by heating the metal several times; second, it effects a material saving in metal, as the diameter of the blank employed just equals the diameters of the bolt ends of the clips, while, by the use of ordinary means for constructing said article, a larger size of metal

is required and the bolt ends drawn down, in order that a sufficient quantity of metal may be had for forming the central portion.

I am aware that the lugs formed upon the ends of the lower die and used in connection with the upper die for cutting the clip-blank from the bar are not new, the same having been known and used before.

Having thus fully set forth the nature and merits of my invention, what I claim as new is—

The swaging-dies A and F provided with the grooves D and *g*, and made respectively convex and concave longitudinally, substantially as and for the purpose specified.

In testimony that I claim the foregoing, I have hereunto set my hand this 29th day of November, 1872.

ROBERT R. MILLER.

Witnesses:

SIMEON H. NORTON,  
CHAS. E. HILL.