

(No Model.)

2 Sheets—Sheet 1.

E. W. MERRILL & J. BASS.  
ART OF MAKING TURN BUCKLES.

No. 462,499.

Patented Nov. 3, 1891.

Fig. 1.

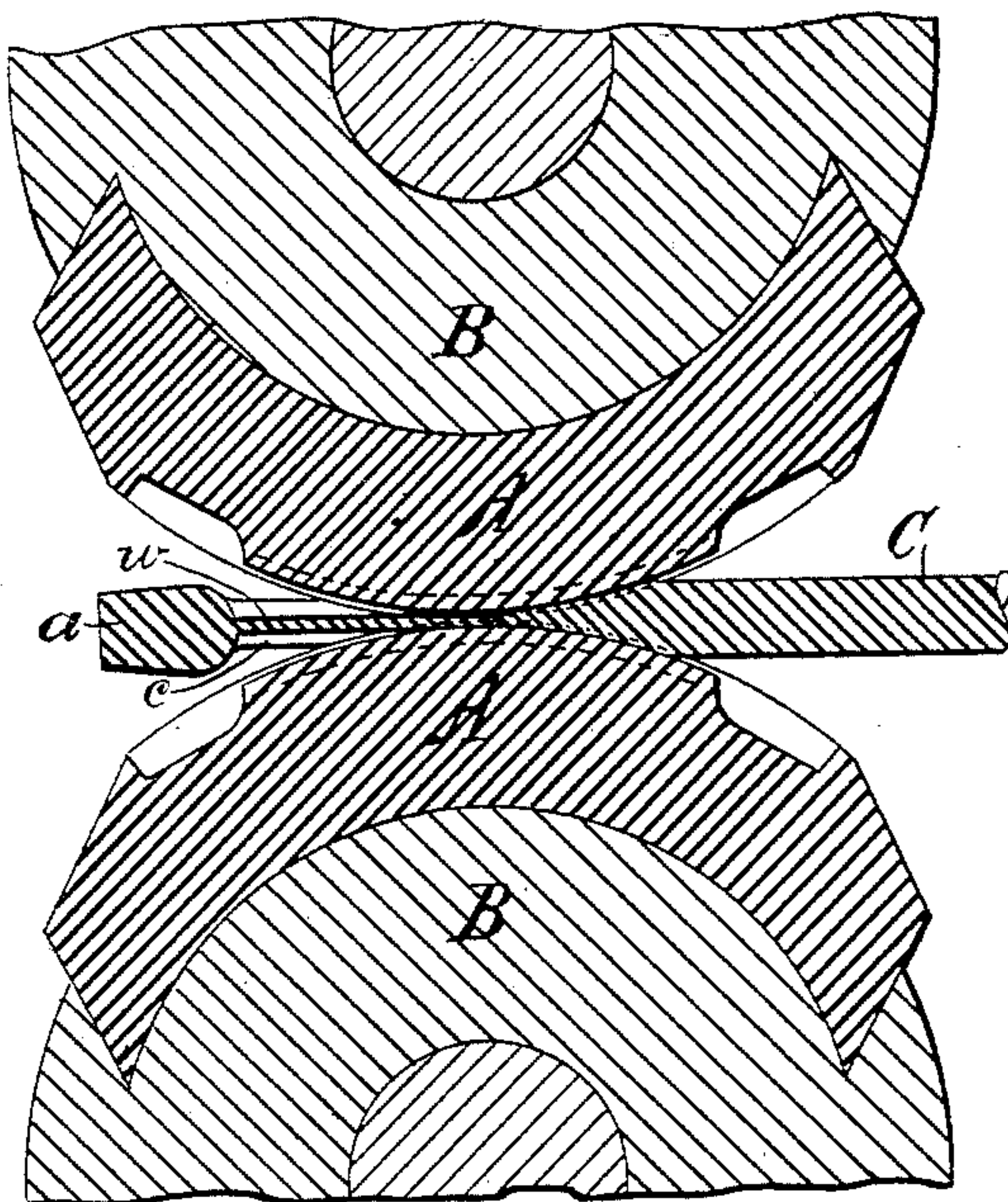


Fig. 2.

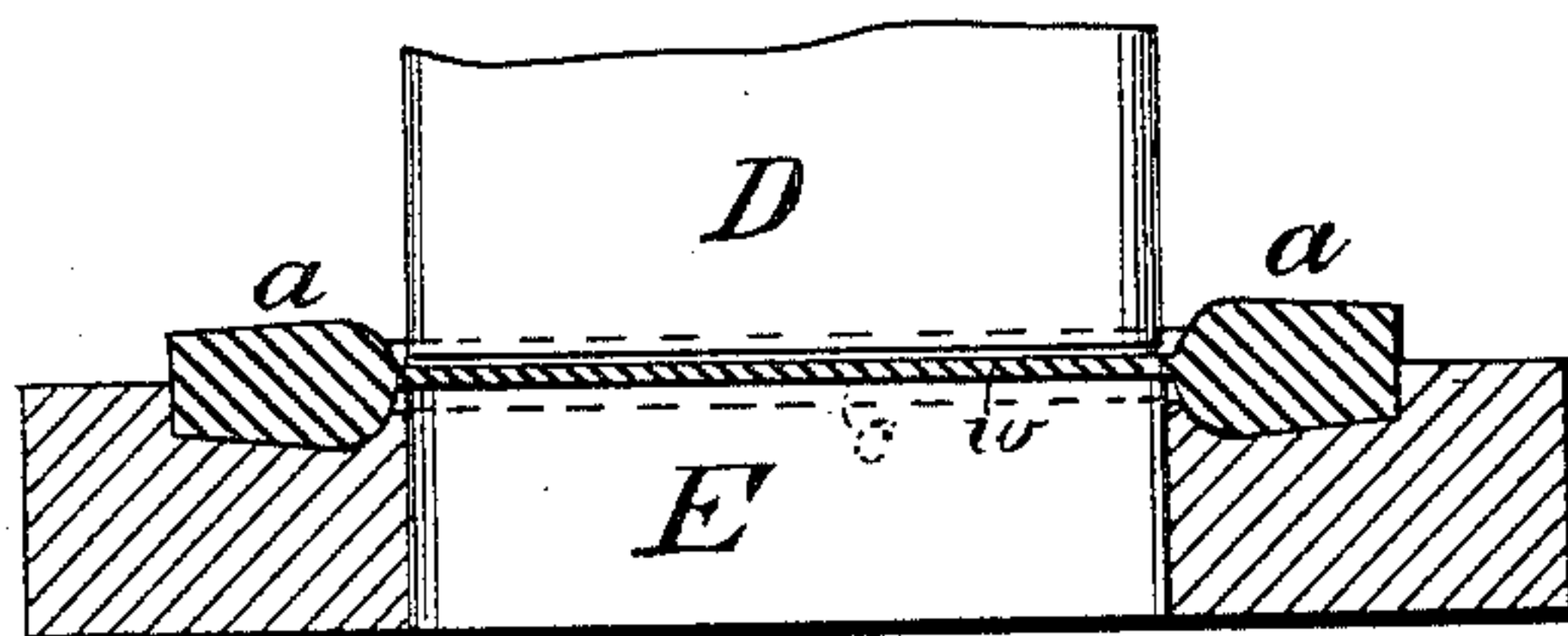


Fig. 3.

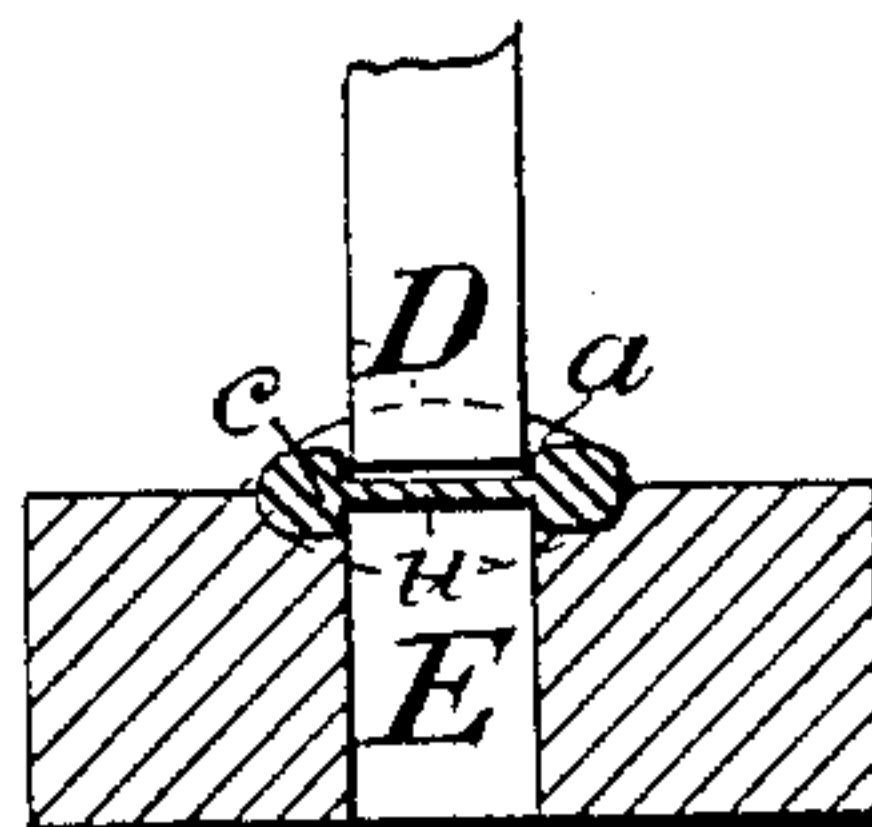


Fig. 4.

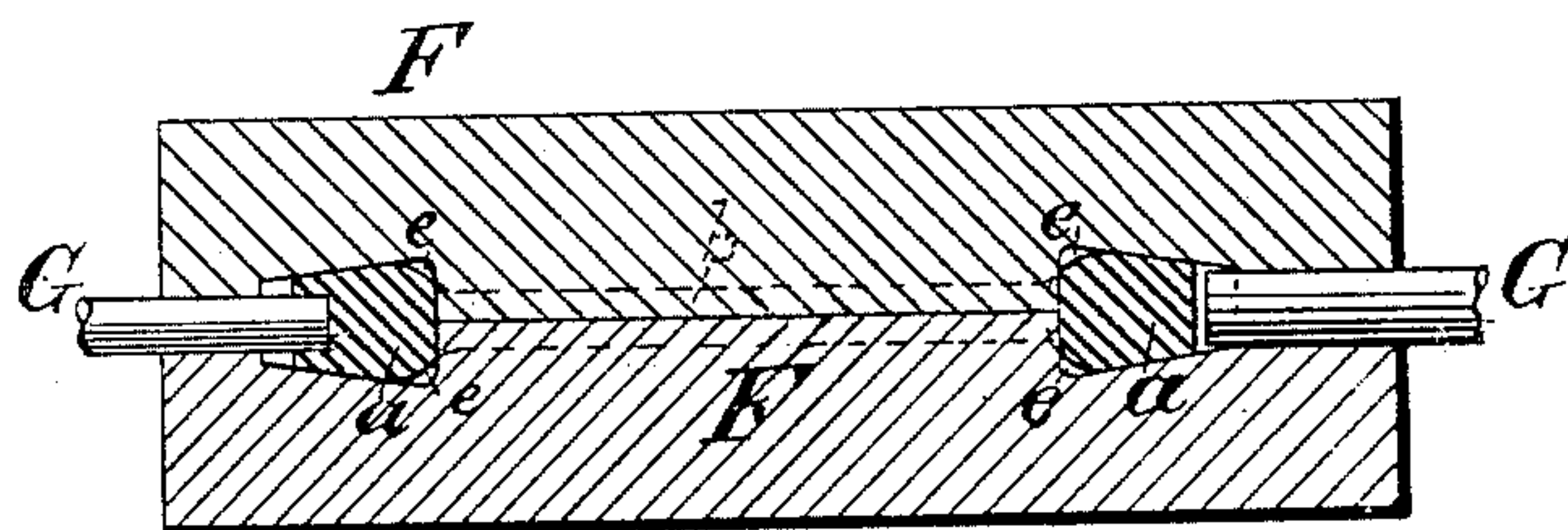
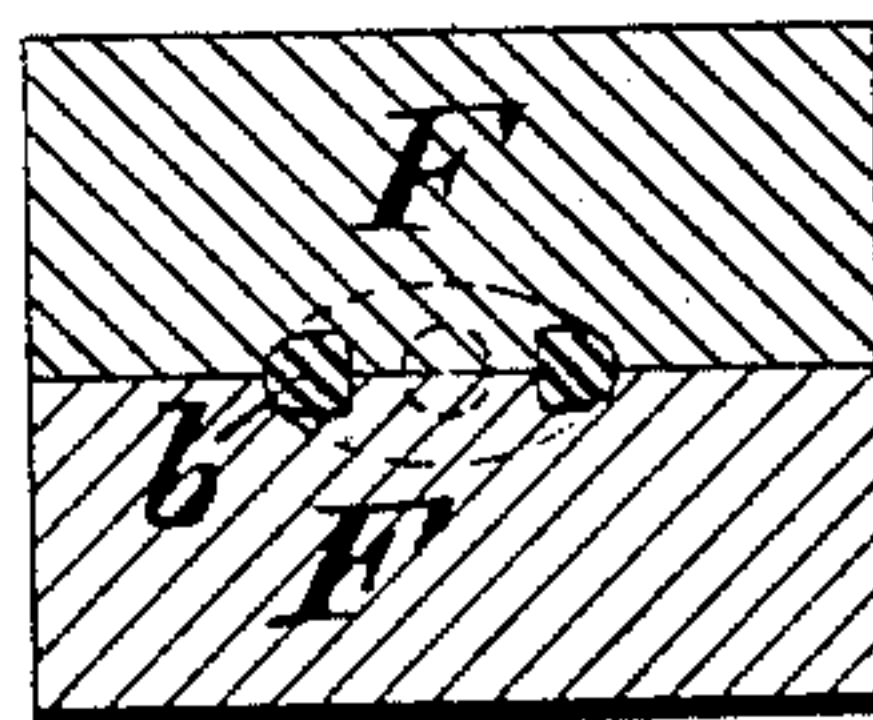


Fig. 5.



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2 Sheets—Sheet 2.

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Fig. 6.

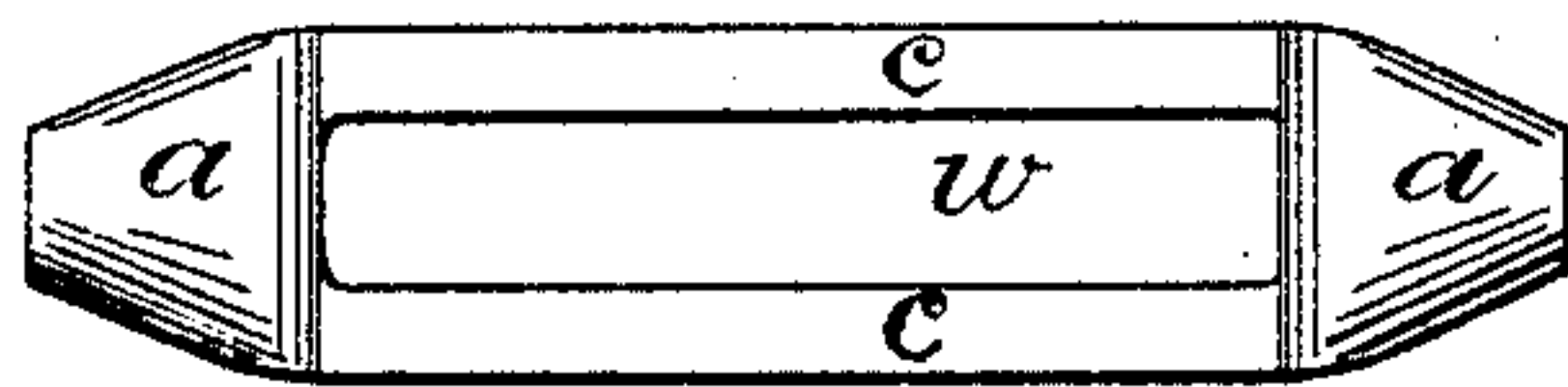


Fig. 7.

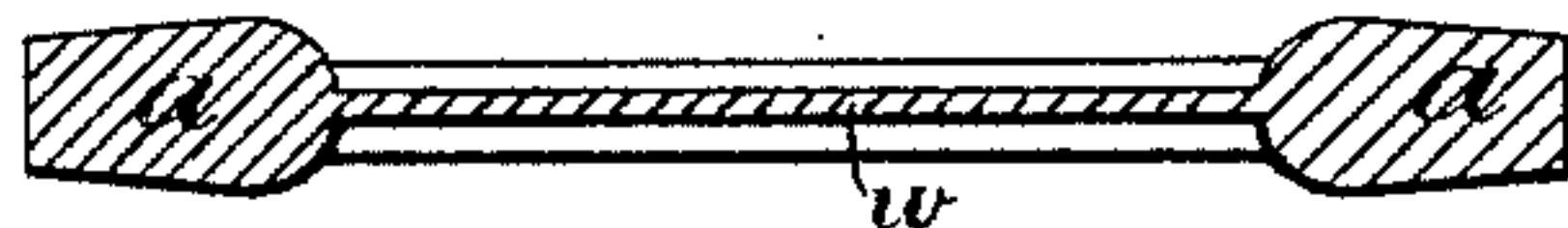


Fig. 8.

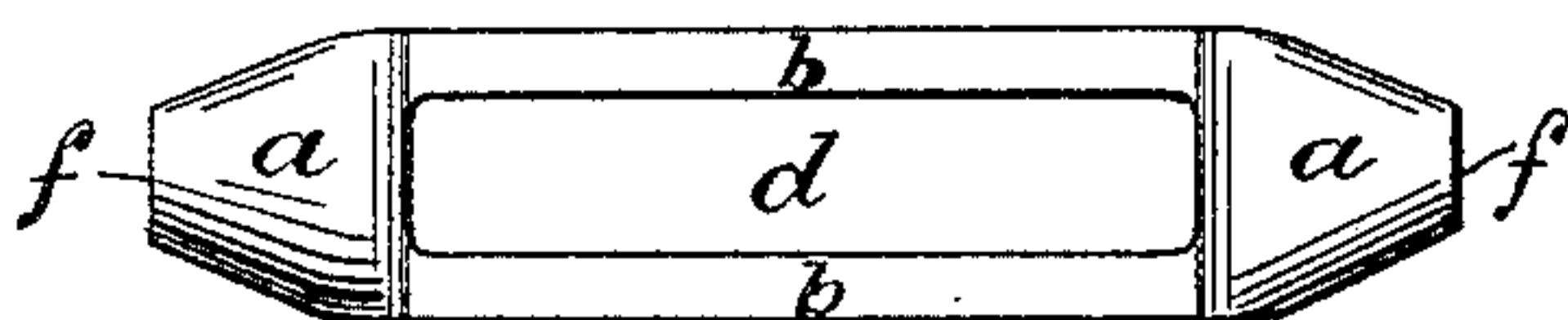


Fig. 9.

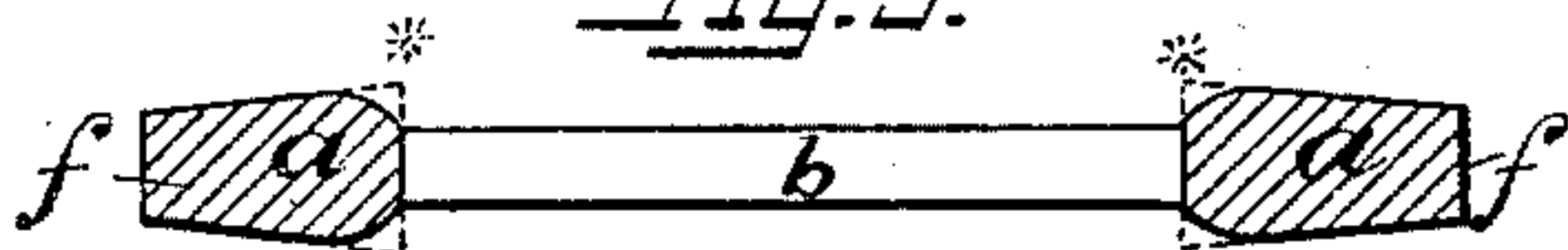


Fig. 10.

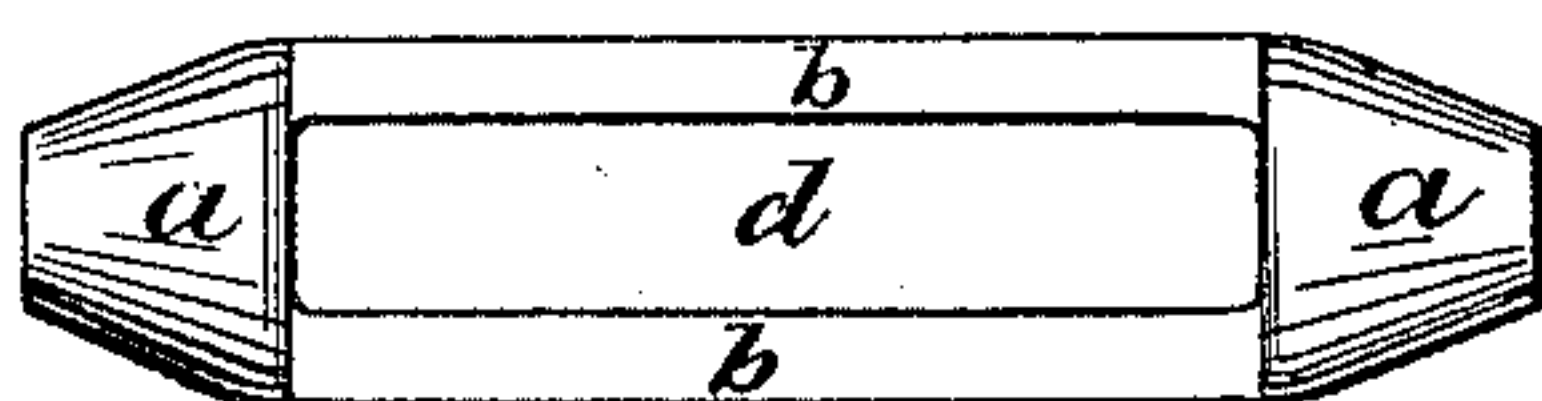
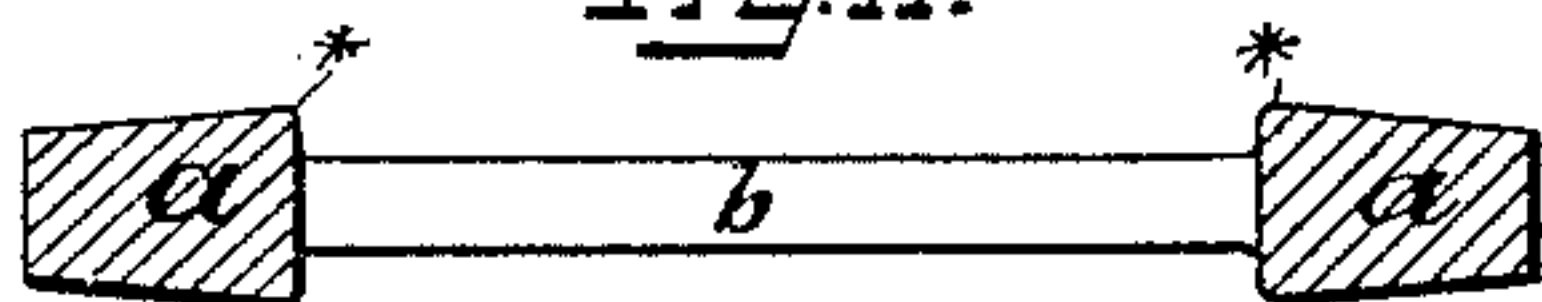


Fig. 11.



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# UNITED STATES PATENT OFFICE.

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ASSIGNORS TO MERRILL BROTHERS, OF SAME PLACE.

## ART OF MAKING TURN-BUCKLES.

SPECIFICATION forming part of Letters Patent No. 462,499, dated November 3, 1891.

Application filed January 24, 1891. Serial No. 378,880. (No model.)

*To all whom it may concern:*

Be it known that we, EDWARD W. MERRILL and JAMES BASS, both of the city of Brooklyn, in the county of Kings and State of New York, have invented a new and useful Improvement in the Manufacture of Turn-Buckles, of which the following is a specification, reference being had to the accompanying drawings.

In the manufacture of wrought-iron turn-buckles by machinery it has long been recognized as desirable to make use of the operation of rolling for the manufacture of blanks to be afterward finished by other operations. There has, however, been a defect in the rolled blanks, consisting in the want of sufficient fullness of the metal in the heads or end portions at and near where they unite with the side straps of the turn-buckle.

The object of our invention is to overcome this defect; and to this end our invention consists in the manufacture of turn-buckles by the successive rolling, punching, and upsetting operations hereinafter described.

In the accompanying drawings, Figure 1 represents a section perpendicular to their axes of portions of a pair of rolls for rolling a turn-buckle blank, a bar being shown between the said rolls undergoing the operation of conversion into a blank. Figs. 2 and 3 represent vertical sections at right angles to each other of a punch and die, by which the blank rolled by the rolls shown in Fig. 2 has punched in it an opening to form the sides of the turn-buckle, the blank being shown as in the die ready for the action of the punch. Figs. 4 and 5 are sections at right angles to each other of a die and punch for upsetting the heads of the punched blank, the blank being also shown in the die. Fig. 6 represents a face view, and Fig. 7 a longitudinal section, of the blank, which we first produce by rolling from a bar. Fig. 8 is a face view, and Fig. 9 a longitudinal section, of the blank after a longitudinal opening has been punched in it to form the straps or sides of the turn-buckle. Fig. 10 is a face view, and Fig. 11 a longitudinal section, of the turn-buckle completed, except as to the making of the holes in the heads or ends to form the nuts.

Similar letters of reference designate corresponding parts in all the figures.

I will first refer, briefly, to Figs. 10 and 11 of the drawings, in which *a a* designate the end portions or heads of the turn-buckle, and *b b* the side straps. In Fig. 11 the requisite fullness, which it is the particular object of our invention to obtain, is indicated at \* \*. This fullness is also indicated by dotted outline in Fig. 9, in which the want of fullness at the points \* \* is shown by the bold outline within said dotted lines. The absence of this fullness is also shown in Fig. 7. This blank (shown also in Fig. 6) consists of a central portion *c* with two similar end portions *a a* to form the ends, the said central portion being represented as having depressions in its faces, which leave only a thin web *w* to be removed to leave the straps *b b* of the turn-buckle. The external contour of said blank is in all particulars, except as to the want of fullness at \* \* and some excess in length of the end portions *a a*, approximately that which the finished turn-buckle is intended to have. The sides *A A* provided in the rollers *B B* (see Fig. 1) for rolling the blank, Figs. 6 and 7, are each one-half of a horizontally-divided counterpart of the said blank, no attempt being made in the said dies to produce the fullness desired at the points \* \* in the finished turn-buckle. The blank, having been rolled from a bar *C*, which may be of rectangular cross-section, to the form just described, has punched out from its straight portion *c* the thin web *w* to make the opening *d*, Fig. 8, to form the straps *b b*. This may be done by a punch *D* and die *E*, (see Figs. 2 and 3,) of form corresponding with said opening. The opening *d* having been thus punched, all that remains to be done according to our invention is the upsetting of the excessive length of metal in the end portions or heads *a a* from their outer faces. This we propose, generally, to accomplish while the rolled and punched blank is held in a die *F F*, such as is shown in Figs. 4 and 5, by means of punches *G G*, working through the ends of the said die. The die *F F* represented is longitudinally divided, each half being the counterpart of the form which the finished turn-buckle is to have,



except that there is extra space at *ee* (see Fig. 4) to receive the excess of length of metal at the outer extremities *ff* (see Figs. 8 and 9) of the heads or end portions *aa*, whence the upsetting of the metal begins for the production of the fullness at \*\*, Fig. 11. The punches *G G* may be of a transverse section corresponding with and nearly as long as that intended for the outer extremities of the heads *a*, as shown at the right of Fig. 4, or they may be smaller, as shown at the left of the same figure, the punch in the latter case serving not only to upset the head *a*, but to partly punch in it the hole which has to be formed in the head for the nut of the finished turn-buckle. The die *F F* being firmly closed while the punches *G G* are forced in, the pressure produced by the punches upsets the metal of the heads from the outer extremities of the latter and produces the desired fullness at \*\*. It is hardly necessary to mention that the rolling of the blank will be performed while the iron is heated. The punching of the opening *d* may be done cold; but it will be necessary to reheat previous to the upsetting operation.

What we claim as our invention, and desire to secure by Letters Patent, is—

The improvement in the art of manufacturing turn-buckles, consisting in first rolling from a bar a blank consisting of an oblong piece with swelled end portions having approximately the external contour of the turn-buckle, but having no opening, next punching a longitudinal opening in said blank to form the straps of the turn-buckle, and afterward placing the so-punched blank in a die which is the counterpart of the intended external form of the finished turn-buckle and in which its swelled end portions are confined at their junction with the side portions which constitute the straps, and while the blank is so confined upsetting the said swelled end portions to complete the heads of the turn-buckle by pressure applied to their outer faces, substantially as herein set forth.

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