

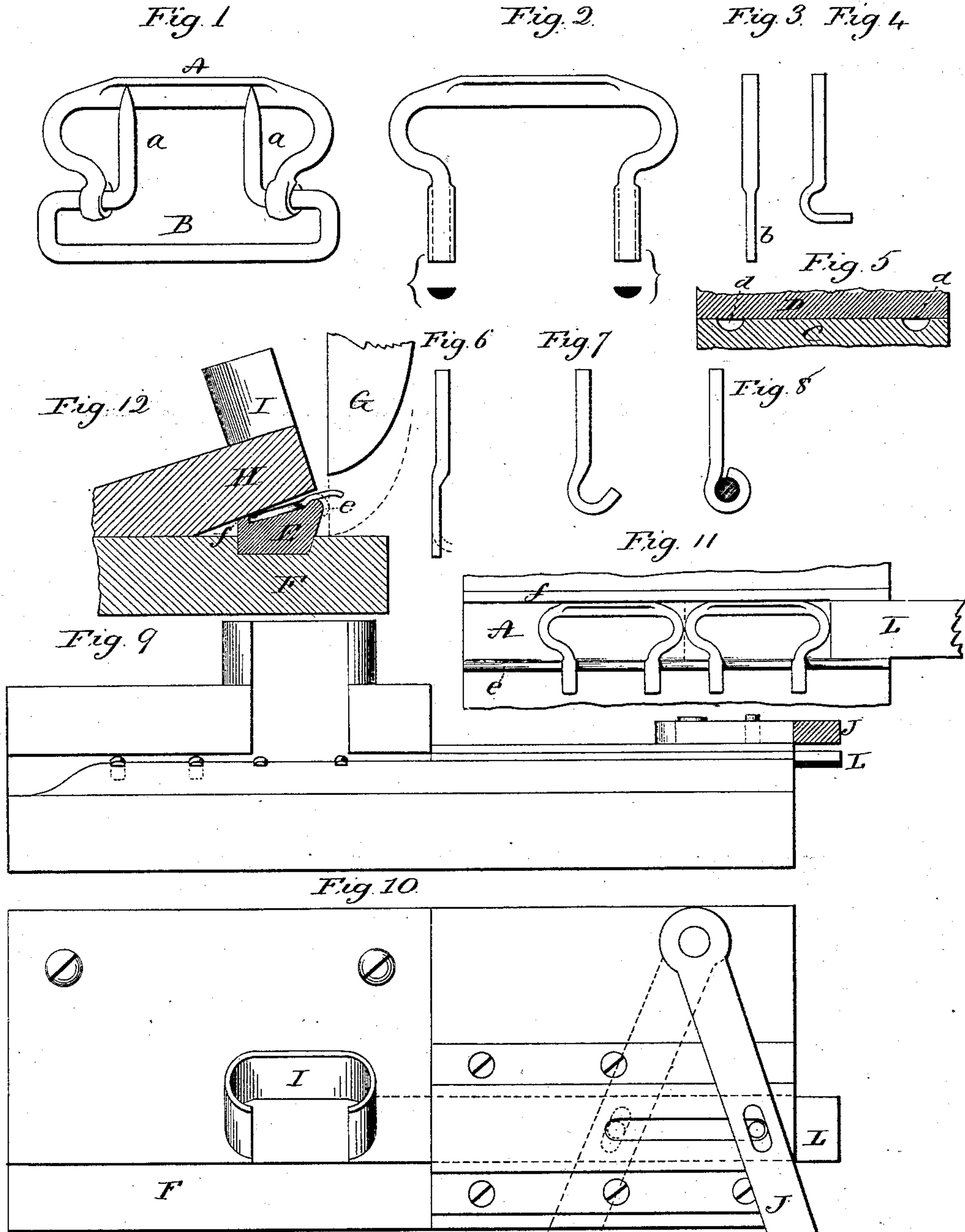
(No Model.)

G. R. KELSEY.

APPARATUS FOR BENDING THE HINGE ENDS OF BUCKLES.

No. 317,374.

Patented May 5, 1885.



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# UNITED STATES PATENT OFFICE.

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## APPARATUS FOR BENDING THE HINGE ENDS OF BUCKLES.

SPECIFICATION forming part of Letters Patent No. 317,374, dated May 5, 1885.

Application filed February 24, 1885. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE R. KELSEY, of West Haven, in the county of New Haven and State of Connecticut, have invented a new  
5 Improvement in Apparatus for Bending the Hinge Ends of Buckle-Frames; and I do hereby declare the following, when taken in connection with accompanying drawings, and the letters of reference marked thereon, to be a  
10 full, clear, and exact description of the same, and which said drawings constitute part of this specification, and represent, in—

Figure 1, a perspective view of the buckle complete; Fig. 2, the frame, showing its ends  
15 as prepared for the operation of bending. Figs. 3 and 4 illustrate the previous method of forming and bending the ends of the frame; Fig. 5, a section through the dies employed in shaping the ends of the frame; Fig. 6, an edge  
20 view of the frame after the operation of the dies shown in Fig. 5; Fig. 7, the ends bent preparatory to the introduction of the tongue-piece; Fig. 8, an edge view of the frame, showing section of the tongue-piece, the ends of the  
25 frame bent about it to complete the hinge; Fig. 9, a face view of the die upon which the ends are bent; Fig. 10, a top view of the same, showing the feeding slide and chute; Fig. 11, a top view of the die, the support removed, and  
30 showing the slide by which the blanks are fed; Fig. 12, a vertical section through the die and support, showing a side view of the chute and follower.

This invention relates to an improvement  
35 in the manufacture of that class of buckles which are made from wire, such as known as the "Hartshorn Buckle," and as seen in Fig. 1. This buckle is composed of two parts, one  
40 part, A, forming the frame, the other part forming the tongues *a a* and loop B. These parts are each made from wire bent into the proper shape. The ends of the frame are bent around the upper bar of the loop, to form the hinge upon which the tongues and  
45 loop may turn. It is to the shape of the ends of the frame or hinge portion that my present invention particularly relates.

In the usual method of making this class of  
50 buckles the frame is bent into shape, leaving the two ends extending therefrom, as seen in

Fig. 2, broken lines indicating the extending ends. These ends require to be reduced in thickness, in order to make the bend to form the hinge. This has been done by striking the ends between flat surfaces, reducing the  
55 thickness from each side, as seen in Fig. 3, leaving a thin flat projecting end, *b*. This striking of the two ends and flattening it from both sides so hardens the metal that it is necessary to anneal it before the bend can be  
60 made in the end portion to encircle the tongue portion. Thus in many cases the surface of the metal will be broken at the shoulder or points where the flattening commences, and very many frames are lost because of  
65 the separation of the flattened portion in the bending operation. Again, the annealing operation so softens the entire frame that it is very much weaker than it would be were it not for such annealing. Consequently a very  
70 much larger wire must be employed to produce a buckle of the same strength than would be necessary were it not for this annealing operation. In making the bend in the usual  
75 construction, the flat portion is struck to turn the extreme end up at right angles to the plane of the frame and carry the bent or U-shaped part backward, as seen in Fig. 4. Then the tongue portion is laid into the bend, and the  
80 ends of the frame turned down over the tongue portion. In this method of bending, the bend commences near the shoulders or weakest part of the frame, and many frames are broken because of this method of bending. To over-  
85 come these difficulties, I have devised a new method of forming the hinge part of the buckle-frame, which consists in flattening the ends upon one side only, leaving the other  
90 side in its rounded shape, and so as to preserve the natural surface of that side, and then making the bend from the extreme end toward the frame. This method constitutes the subject of an independent application.

In carrying out the said invention, the frame is cut from wire of the required size, bent to  
95 shape, as seen in Fig. 2, broken lines indicating the ends of the frame. The ends are reduced in dies, such as seen in Fig. 5, C representing one die, in which cavities *d d* are made, corresponding in relative position to  
100



the two ends of the frame, these cavities being concave in transverse section. The other die, D, presents a corresponding flat surface. The ends of the frame laid into the cavities *d* 5 *a*, the flat-faced die brought forcibly thereon will flatten the end of the frame upon one side, leaving the other convex in transverse section, as seen in Fig. 6, and in section representing the ends in Fig. 2. This leaves the 10 rear or rounded side of the frame without any material displacement of metal. Thus flattened the ends are bent into shape, beginning from the extreme end, as indicated in broken lines, Fig. 6, the end carried over toward the 15 frame, as seen in Fig. 7. Then the tongue is laid into the bent end of the frame, and the ends of the frame closed over the bar of the tongue, as seen in Fig. 8. In this construction the hinge or knuckle on the frame pre- 20 sents a nicely-rounded surface, and because the texture of the metal on one side is not materially disturbed, and because the bend is made from the end toward the frame, no such distress of metal occurs as when the frame is flattened and bent from the frame outward, as 25 in the old method of manufacture, and because of this method of striking and bending the ends avoiding such distress of the metal the annealing heretofore necessary is obviated, 30 and I am enabled to produce a frame of the same strength of much lighter material than can be done under the old method of manufacture.

The dies of my present invention are designed to make the bend, as seen in Fig. 7, 35 preparatory to closing the ends upon the bar of the tongue; and the invention consists in the construction of dies for this purpose, as hereinafter described, and particularly recited in the claims.

E represents the die upon which the frame-blank is placed for bending. As here represented, it lies upon the bed-piece F.

G represents the follower. The die and follower may be arranged in any common power-press, so that the follower will be carried by the slide, and moved up and down toward and from the bed, in the usual manner for such work. The upper surface of the die E 50 stands at an obtuse angle to the path of the follower. At its front edge, or edge next the follower, is an oval-shaped longitudinal rib, *e*, and at the back of the die is a flange, *f*, which forms a rest, against which the back 55 of the frame may bear, as seen in Fig. 11. The width of the die with relation to the flange *f* at the back is such that when the frame lies upon the die, as seen in Figs. 11 and 12, the ends of the frame project over the 60 rounded rib *e*. The path of the follower G in its descent is distant from the front edge of the die equal to the thickness of the extending ends of the frame. The front of the die E is undercut, as seen in Fig. 2. The blank-frame before it is applied to the die has the 65 extreme ends bent, as indicated in Fig. 6—that is, toward the flat side. Thus bent the frame

is laid upon the die, there being a support, H, over the die, between which and the face of the die the frame rests, and as seen in Fig. 12. 70 Then the follower G descends, and striking the projecting ends of the frame turns the ends downward around the rib *e*, as indicated in broken lines, Fig. 12, bringing the ends of the frame into shape as seen in Fig. 7, which 75 is the proper shape for the introduction of the tongue-piece. The bend thus made is an easy one, and does not distress the metal to any considerable extent. The die E is made of a length little more than two frames, as seen in 80 Fig. 11, and adjacent to the point where the bending is to be performed a chute or hopper, I, is provided, standing at right angles to the face of the die E, said chute being adapted to receive a number of frames lying 85 one upon another, and so that they will readily pass therefrom onto the surface of the die. In line with the face of the die, and between it and the support H, a slide, L, is arranged to be operated by a lever, J, the path of move- 90 ment of the slide L being in line with the surface of the die A, and between it and the support H, and so that the slide standing as seen in Figs. 10 and 11, the lowest frame in the chute rests upon the die, as seen in Fig. 11. 95 The slide then moved forward, as indicated in broken lines, Figs. 10 and 11, will force the lowest frame from the column of frames in the chute into the position for bending, as seen in the second position, Fig. 11, and when the 100 ends of the first frame have been bent, as before described, a second frame is brought forward, the said second frame forcing the first or bent frame from its place, and the second frame, taking the place of the first, is in its 105 turn bent, and so on, each successive frame introduced will discharge the previous frame, and be presented for bending.

The feeding-slide L may be operated by hand, or automatically, in the usual manner of operating such feeding-slides in power-presses, 110 mechanism too well known to require description, and constituting no essential part of this invention.

I claim—

1. The combination of the die E, presenting a rounded edge at its front and undercut at the front edge adapted to receive a buckle-frame and leave the ends of the frame projecting over the said rounded edge, with a 120 follower adapted to work in a path at an obtuse angle to the surface of said die, substantially as described.

2. The combination of the die E, presenting a rounded edge, *e*, at its front, and undercut, and constructed with a flange, *f*, at its rear edge, a support, H, over said die, and between which and the die the buckle-frames may be introduced, leaving the ends projecting over the said rounded edge, with a fol- 125 lower adapted to work in a path at an obtuse angle to the surface of said die, substantially as described.

3. The combination of the die E, having its



front edge, *e*, rounded and undercut, a flange, *f*, at its rear edge, a support, *H*, over said die, and between which and the die the buckle-frames may pass, a chute, *I*, adapted to receive  
5 several blank-frames and present them upon the surface of said die, a follower adapted to work in a path at an obtuse angle to the surface of said die, and a slide adapted to work between

said support and the die, and by its movement to transfer a blank-frame from the column in the chute to a position in the path of  
10 said follower, substantially as described.

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