

G. R. KELSEY.

MANUFACTURE OF BUCKLE FRAMES.

. 384,449.

Patented June 12, 1888.

Fig. 1

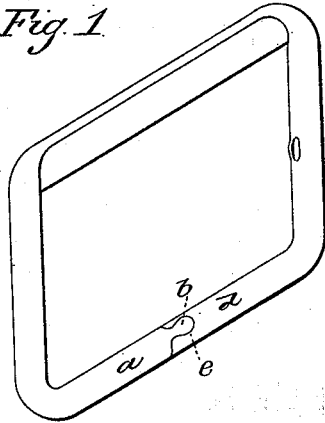


Fig. 2

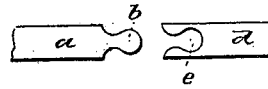


Fig. 3

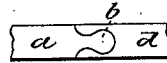


Fig. 4

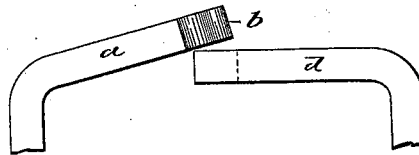


Fig. 6

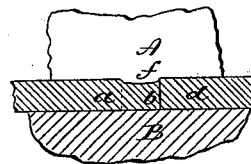


Fig. 5

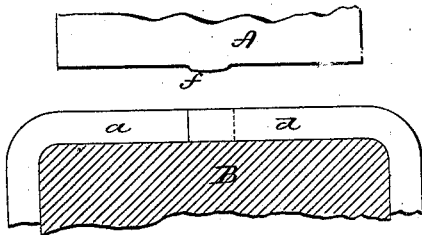


Fig. 7



Fig. 8

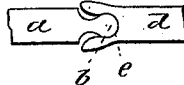
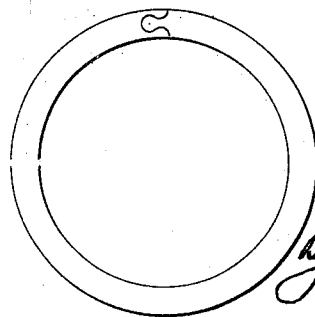


Fig. 9



Fig. 10



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UNITED STATES PATENT OFFICE.

GEORGE R. KELSEY, OF WEST HAVEN, CONNECTICUT.

MANUFACTURE OF BUCKLE-FRAMES.

SPECIFICATION forming part of Letters Patent No. 384,449, dated June 12, 1888.

Application filed April 16, 1888. Serial No. 270,810. (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 Improvement in 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 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-frame complete; Fig. 2, the two ends of the wire as prepared for union in the usual construction; Fig. 3, the same two ends as set together in the usual manner; Fig. 4, the frame as in the act of introducing the tenon into the recess; Fig. 5, a transverse section through the former, showing the frame thereon and the die for bringing the two ends together; Fig. 6, a longitudinal section in the plane of the tenon, illustrating the operation of the die; Fig. 7, a transverse section through the tenon, illustrating the operation of the said die; Fig. 8, a longitudinal section at right angles to the plane of the tenon, illustrating the same operation; Fig. 9, a transverse section through the tenon after the final closing or striking operation; Fig. 10, the invention as applied to a ring.

This invention relates to an improvement in the construction of that class of buckle-frames which are made from wire, the wire being bent to form the two sides and ends of the frame, the two ends of the wire being united at one side, the invention also being applicable to other articles which are made from wire, bent into shape, with the two ends brought together and united. In the more general construction of this class of frames the meeting ends of the wire are compressed to secure them together, but this is necessarily an expensive operation.

To obviate this difficulty various devices have been resorted to for uniting the ends of the wire. One of these devices I represent in Fig. 2, where the adjacent ends of the wire are shown enlarged and as prepared for uniting. On the end of one part, *a*, a dovetail-shaped tenon, *b*, is formed, and in the corresponding end of the other part, *d*, a like recess, *e*, is formed, and so that the two may beset together, as represented in Fig. 3. This interlocking connection serves a good purpose to prevent

the possible separating longitudinally; but as usually practiced there is very little strength transversely in the plane of the recess and tenon, and this plane, in the case of a buckle-frame, is necessarily in the plane of the frame itself, so that strain upon the side thus united has a tendency to open the joint or separate the parts.

The object of my invention is to so interlock the two ends thus provided with interlocking tenon and recess that accidental separation is practically impossible.

To this end my invention consists in compressing the tenon in the direction of its plane after it has been introduced into its recess, whereby its depth is reduced, and in such reduction of its depth it will be expanded laterally—that is, will be spread within the recess—which necessarily enlarges the recessed portion, and then striking the united side of the frame in suitable dies, so as to close the expanded portion upon the tenon, and thus cause the recess to engage the tenon in all directions.

The shape of tenon *b* and recess *e* in the respective parts *a* *d*, which I have shown, is probably the best for buckle-frames and like articles—that is to say, the shape of the tenon is produced by curves, and the mortise of like shape, so that there are no angles in the formation of either. The wire for the buckle-frame having its ends thus prepared is bent into shape, as seen in Fig. 4, so as to bring the tenon over the recess, but outside of it—that is, so that the tenon will overlap the recessed end. The frame is bent around the former, in the usual manner or otherwise—that is, leaving the tenon end outside. Then, to bring the two ends together, the closing-die is brought upon that side in the plane of the frame, and so as to force the tenon into the recess, as represented in Fig. 5; but this closing-die *A*, Fig. 5, has on its face a projection, *f*, which corresponds substantially to the shape of the tenon, and so that as the die *A* is forced up against the frame, which is still on the former *B*, the overlapping end will be forced into line with the other portion, as represented in Fig. 5, and as the operation of closing is completed the projection *f* on the face of the die will compress the tenon, so as to contract it in the direction of its plane, as seen in Figs. 6 and 7. This operation upon the tenon spreads it at right

angles to its plane and within the recess, as represented in Fig. 7, and as also seen in Fig. 8. Then in suitable closing or striking dies the frame is struck, so as to reduce the expanded portion of the frame about the recess to its original diameter, as seen in Fig. 9, which closes the metal of the recess around the tenon, and so as to prevent its movement laterally, while the interlocking shape of the tenon and recess holds them together longitudinally. Thus the two ends of the frame are united in the strongest possible manner, and without the necessity of soldering or brazing, and the work of uniting is all performed by machinery, which bends and strikes the frame, it being understood that the bending-dies are the same as commonly used, except as to the projection for striking the tenon, and that the striking-dies are the same as commonly used for this purpose. This illustration of uniting the two ends of the wire in the formation of the buckle-frame will be sufficient to enable those skilled in the art to apply it to a ring, such, for illustration, as seen in Fig. 10, such rings being analogous articles to buckle-frames. By the term "buckle-frame," therefore, I wish to be understood as including other articles which are adapted to be united in the same manner.

It will be understood from the foregoing that I do not claim, broadly, forming a dovetail on one end of the wire with a corresponding mortise in the other end of the wire, so that the dovetail may set within the wire, the essential feature of my invention being the upsetting or spreading of the tenon transversely, so as to make an interlock between the sides of the mortise and the sides of the tenon.

I claim—

The herein-described improvement in the manufacture of buckle-frames, consisting in constructing the meeting ends of the wire, the one with a dovetail-shaped tenon and the other with a corresponding recess, the tenon set within said recess and contracted in the direction of the plane of the tenon, correspondingly expanding the tenon within the recess at right angles to the plane of the tenon, then closing the recessed portion over the tenon, substantially as described.

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