

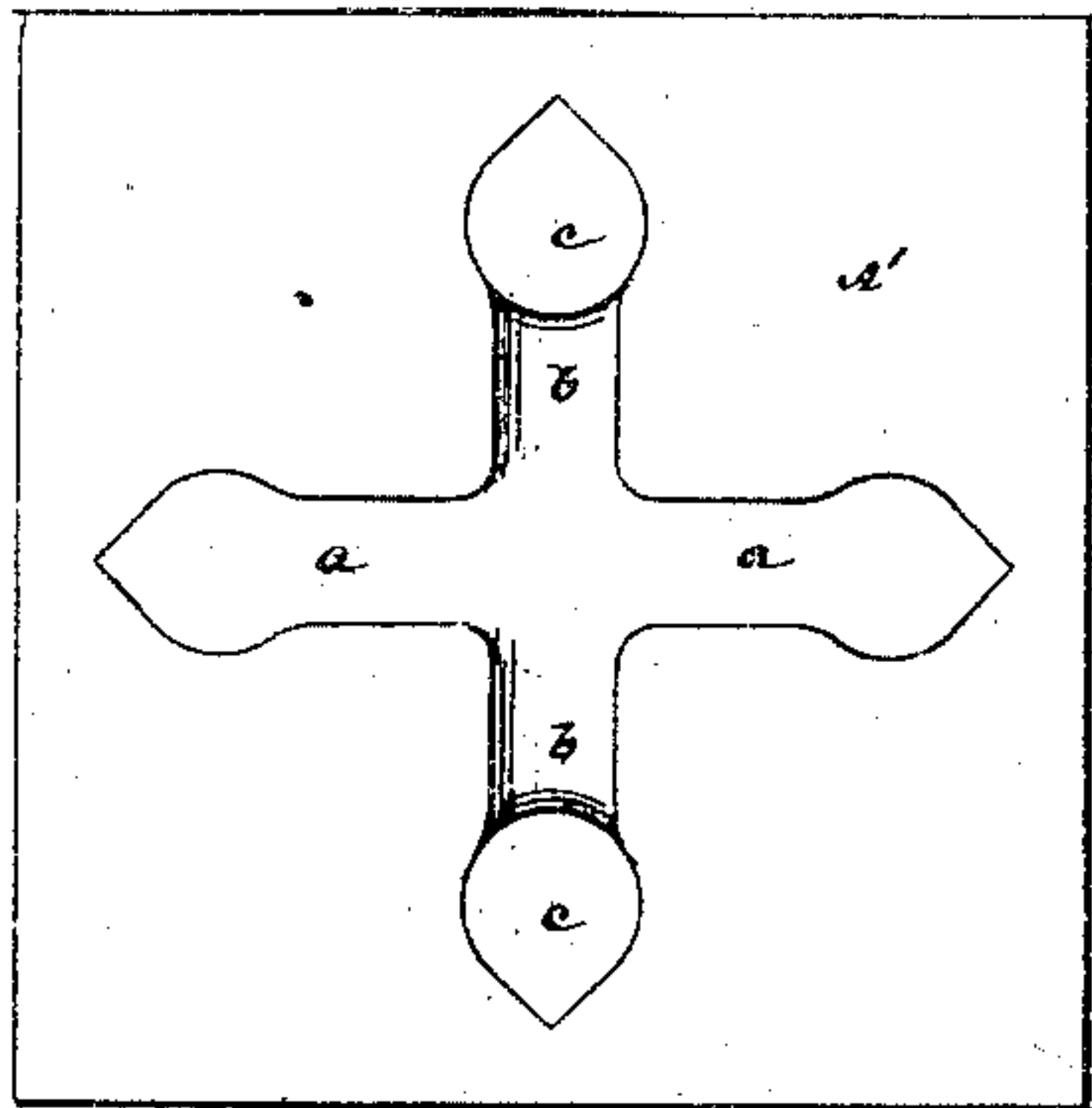
*R.R. Miller,*

*Forging Carriage Shackles.*

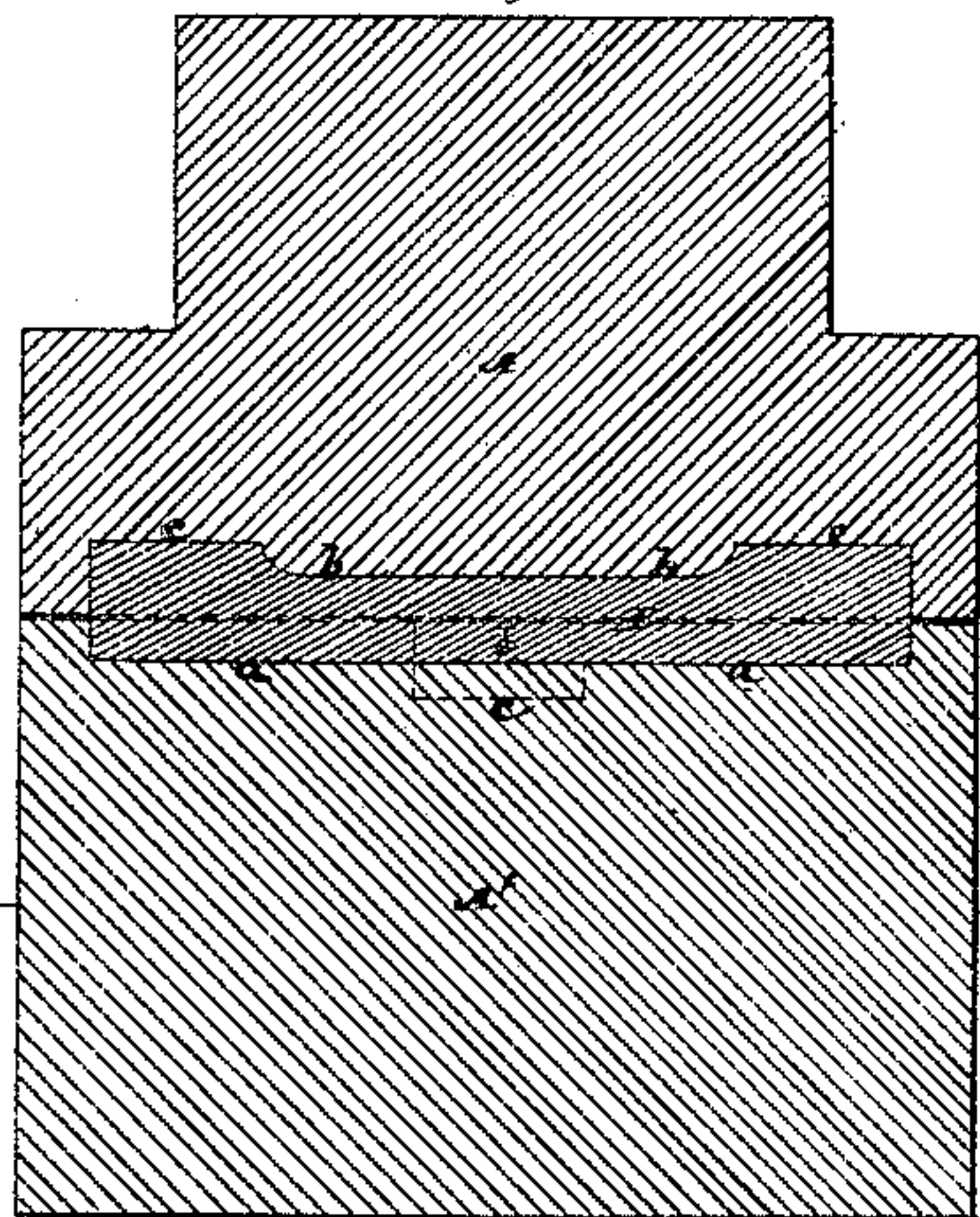
*No. 98610,*

*Patented Jan. 4, 1870.*

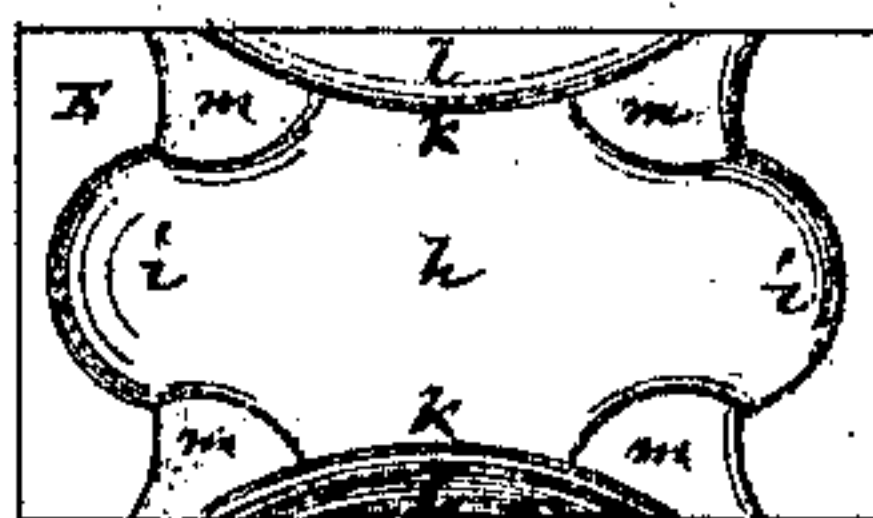
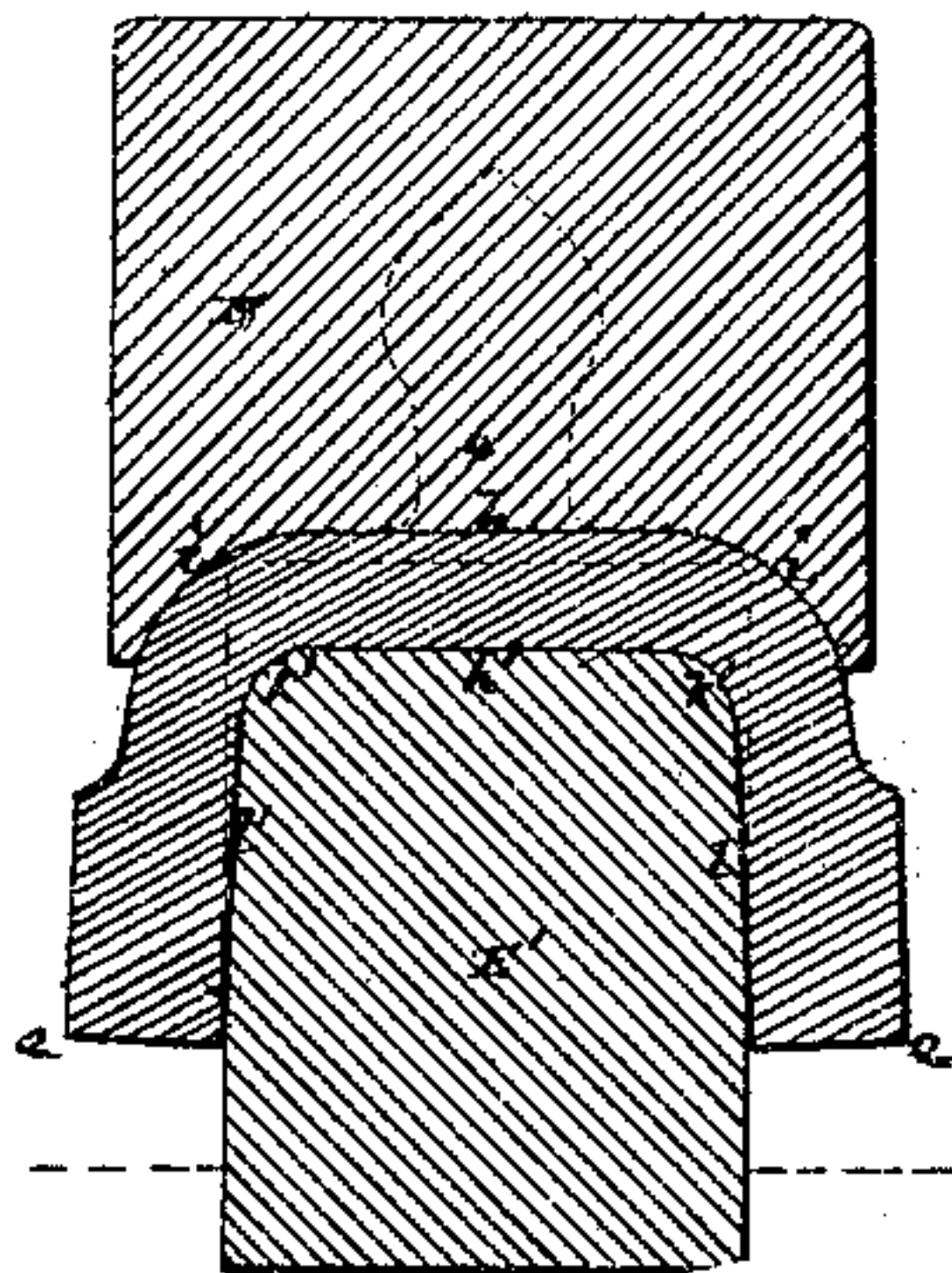
*Fig. 1.*



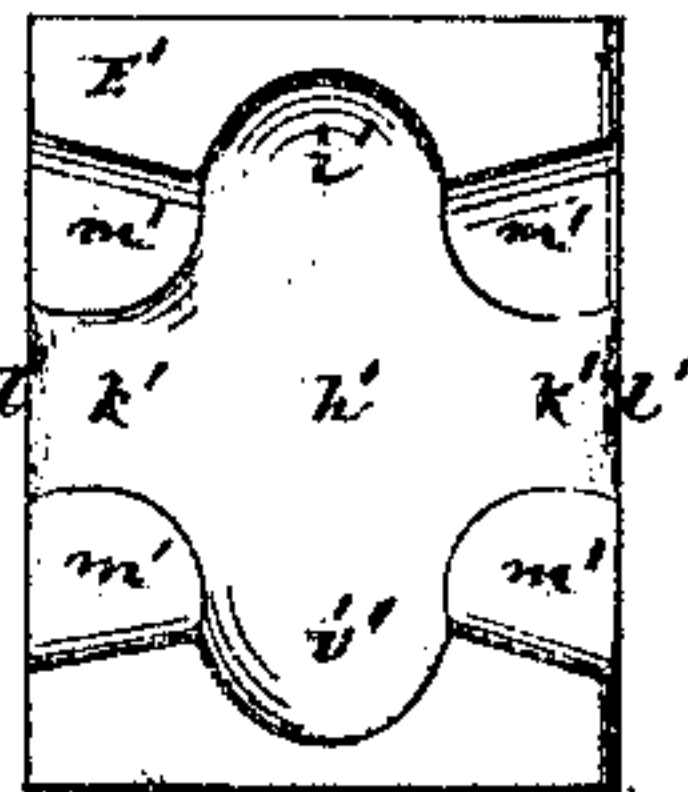
*Fig. 2.*



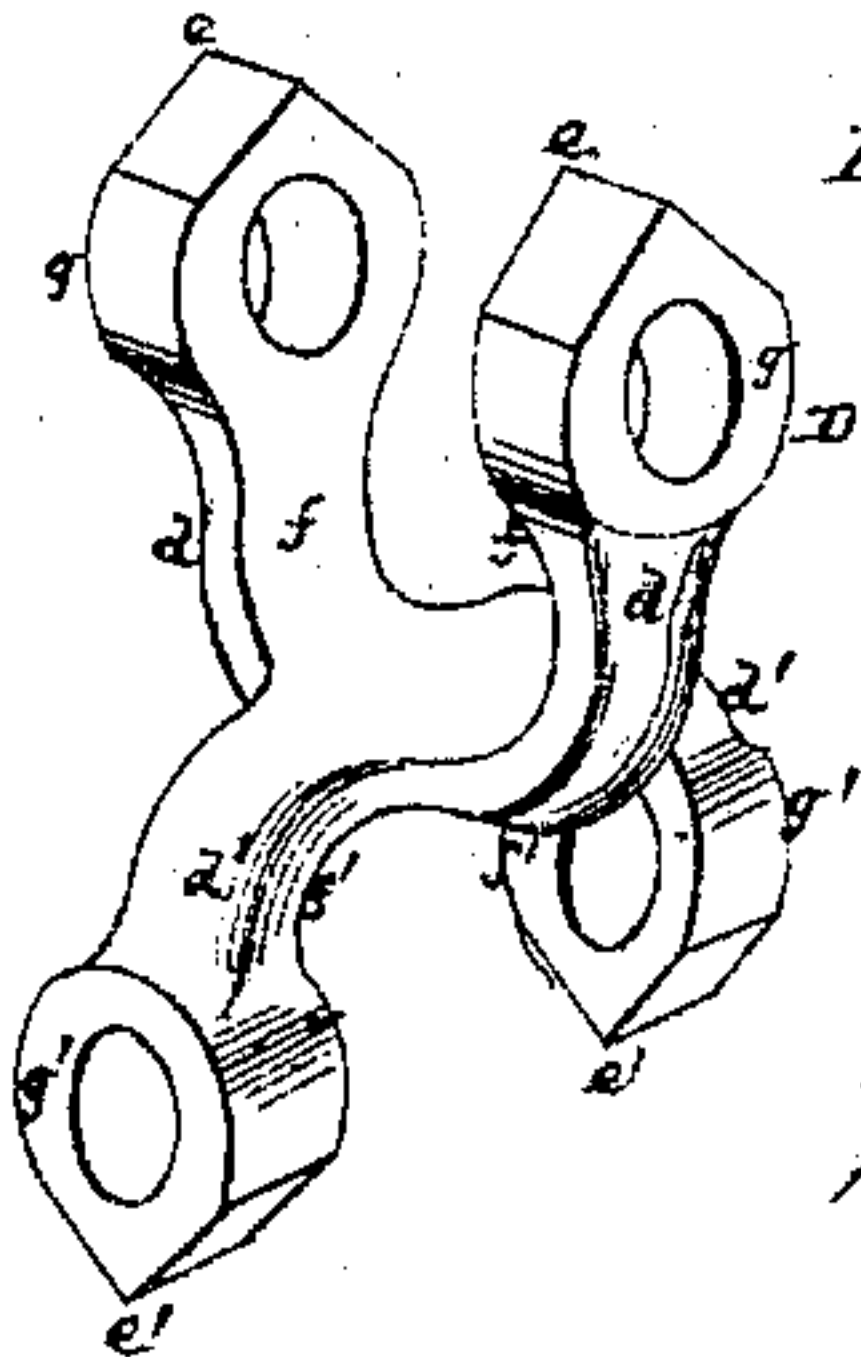
*Fig. 4.*



*Fig. 3.*



*Fig. 5.*



*Witnesses:*  
*Fred. Haynes*  
*R. R. Miller*

*R. R. Miller*

*per Crown Corbin & Co.*

*Attorney*



# United States Patent Office.

ROBERT R. MILLER, OF PLANTSVILLE, CONNECTICUT.

Letters Patent No. 98,610, dated January 4, 1870.

## IMPROVED DIE FOR FORMING CARRIAGE-SHACKLES.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, ROBERT R. MILLER, of Plantsville, in the county of Hartford, and State of Connecticut, have invented a new and useful Improvement in Dies for Carriage-Shackles, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing, forming part of this specification, and in which—

Figure 1 represents a face view of one of the primary dies constituting part of my invention, and

Figure 2, a transverse or vertical section of a pair of such dies in working position, and with a partially-formed carriage-shackle in between them.

Figure 3 represents face views of a pair of secondary dies used to form the shackle, and

Figure 4, a transverse or vertical section of a pair of said dies, as in the act of bending the shackle.

Figure 5 is a view, in perspective, of the finished shackle.

Similar letters of reference indicate corresponding parts.

My invention consists in the use of a series of peculiarly-constructed dies for forming or shaping carriage-shackles, whereby time and labor are economized in the construction of such articles, and a better or more accurate shape secured to them, as well as a general uniformity insured in the manufacture of a series of said shackles.

In the manufacture of carriage-shackles by or under my invention, I use two pairs of dies, the one of which sets is primary, and the other secondary, as regards their operation to produce the shackle.

Said dies are designed to be used in connection with a drop-press or presses, the lower one of each pair of dies being stationary in a bed-plate, while the upper one is carried by a ram or drop, and caused to come down upon the work in or on the lower die, for the purpose of giving to the work its requisite form or finish.

The shackle-blank is first formed into two straight pieces of equal length, arranged to cross each other at right angles through their middle, and which may be done by splitting them from a suitable-sized bar, or making them of separate pieces and forging or welding them together where they cross each other.

Such a blank is then introduced, in a heated state, between the primary dies A A', over the grooves or formations in the lower of such dies.

These dies A A' are both formed alike, with a straight or flat groove, *a a*, and half or partially-rounded cross-groove, *b b*, arranged to intersect each other at right angles, through their middles, and of equal length, or thereabout, with their ends of angular, or it may be, curved shape, and with indenta-

tions, *c c*, made in the bases of the half-rounded grooves *b b*, at their extremities.

As arranged in the press, these dies are made to occupy reverse positions; that is, the grooves *a a*, of either one die, are made to face the grooves *b b*, of the other die, which shapes the blank B, when said dies are brought together, to give the necessary rounded finish, *d d* and *d' d'*, to the exterior of both pairs of arms, *e e* and *e' e'*, of the shackle D, and a flat finish to the inside surfaces, *f f* and *f' f'*, thereof, and outside end swell or finish, *g g* and *g' g'*.

After the blank B has been thus preparatorily shaped in the primary dies A A', and the lengths or pieces composing it firmly pressed or welded together where they intersect, said blank, while still in a straight form, as regards its general contour, is transferred to the secondary dies E E', which serve to give the requisite bend to the arms *e e* and *e' e'*, or cross saddle-shape to the shackle, and to otherwise press or shape it for after-dressing, puncturing, and finishing by hand.

Said dies E E' are, for the most part, formed alike, with flat indentations *h h*, in their middle, terminating in opposite curved and hollow rising surfaces *i i* and *i' i'*, and with cross-outlets *k k* and *k' k'*, on opposite sides of their middle, and which are extended, by indentations *l l* and *l' l'*, down or up either side of the die, at its middle, and the ends of the cross-outlets *k k* and *k' k'*, terminating or being bound by shelving formations *m m* and *m' m'*.

In regard to these several indentations and formations, the one die E is made somewhat larger than its fellow, and the two dies E E' are set in the press so as to cross each other; that is, the one die is arranged to lie lengthwise of the width of the other, so that in bringing the two dies together, with the blank arranged so that the flat sides or surfaces of two of its arms overhang the side indentations *l l*, in the lower die, said blank, at two of its ends, is turned up over or into the sides of the top die, and, at its other two and opposite ends, turned down over and into the sides of the other die, as shown in fig. 4.

This gives to the shackle its general finished shape, and forms a much more perfect and sounder article, in much less time and with less labor, than can be made under the ordinary process of forging such work.

What is here claimed, and desired to be secured by Letters Patent, is—

The series of dies A A' and E E', constructed as described, to form carriage-shackles.

R. R. MILLER.

Witnesses:

W. E. STANNARD,  
HENRY R. BRADLEY.