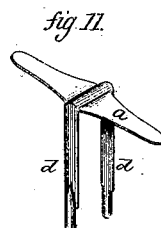
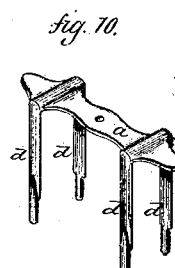
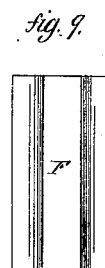
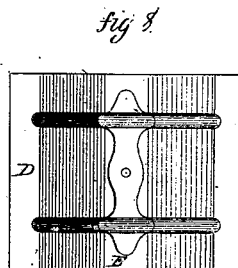
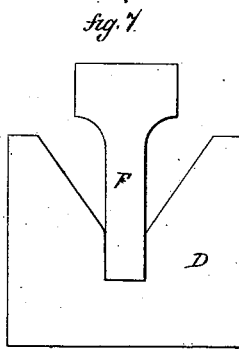
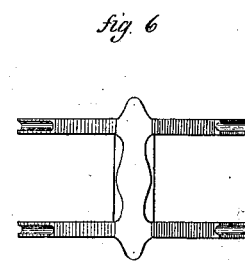
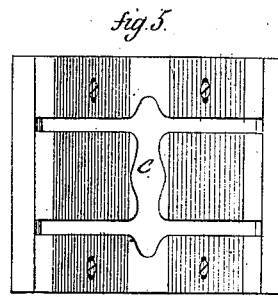
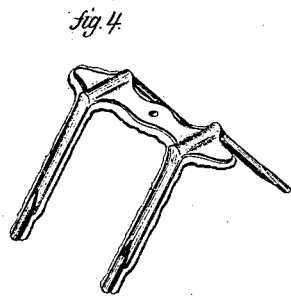
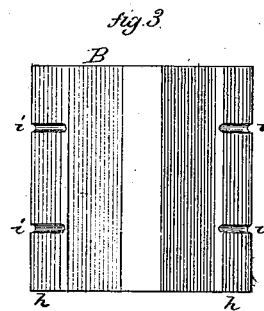
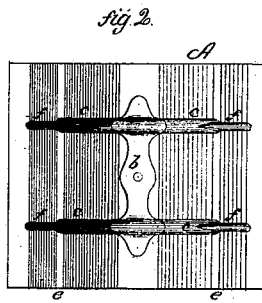
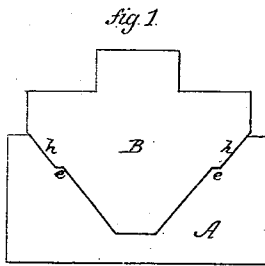


F. B. MORSE.
Making Carriage Clips.

No. 111,668.

Patented Feb. 7, 1871.



Witnesses.
J. W. Hummer
A. J. Ribbitt

F. B. Morse.
Inventor.
By his Attorney,
John E. Eide

UNITED STATES PATENT OFFICE.

FRANCIS B. MORSE, OF PLANTSVILLE, CONNECTICUT, ASSIGNOR TO H. D. SMITH & CO., OF SAME PLACE.

IMPROVEMENT IN DIES FOR FORGING, TRIMMING, AND SHAPING SPRING-CLIPS FOR CARRIAGES.

Specification forming part of Letters Patent No. 111,668, dated February 7, 1871.

To all whom it may concern:

Be it known that I, FRANCIS B. MORSE, of Plantsville, in the county of Hartford and State of Connecticut, have invented a new Improvement in Dies for Forging Spring-Clips for Carriages; and I do hereby declare the following, when taken in connection with the 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, an end view of the welding and forming dies; Fig. 2, a top view of the lower die; Fig. 3, an under side view of the upper die; Fig. 4, an inverted view of the blank as it comes from the said dies; Fig. 5, a top view of the lower trimming-dies; Fig. 6, an under side view of the upper die or follower; Fig. 7, an end view of the finishing-dies; Fig. 8, a top view of the lower finishing-die; Fig. 9, an under side view of the upper finishing-die; Fig. 10, a perspective view of the finished clip as it comes from the last-named dies, and in Fig. 11 a perspective view of a spring-clip with single bolts as made in substantially the same dies.

This invention relates to the construction of dies for forming clips used for securing springs in carriages, such as are shown in Figs. 10 and 11, that in Fig. 10 being a double clip and Fig. 11 a single clip. A bar or plate, *a*, is formed to lie upon the inner surface of the spring, and clip-bolts *d* extend down each side of the axle, to which they are secured by bars beneath the axle and nuts on the bolt ends. These are formed sometimes with double bolts, as in Fig. 10, and sometimes with single bolts, as in Fig. 11; but when forged by hand constitute an expensive and difficult part of carriage-forging.

The object of my invention is the construction of a series of dies whereby these clips are produced at comparatively trifling expense, and with a much greater degree of nicety than has heretofore been done.

I have illustrated the dies as for the con-

struction of the double clip. (Shown in Fig. 10.)

A is the lower die of the first of the series, and B the upper. In the center of the lower die an impression, *b*, is made the shape of the plate required. From the center of the die the sides are inclined upward, and in each side an impression, *c*, is formed for the clip, and higher up an impression, *f*, for one-half the bolt, an offset, *e*, being made in the lower die for this one half impression. The upper die, B, is made to set into the lower die, and corresponding to its shape, with projections *h* to set over the offset *e* on the lower die, and in these projections impressions *i* are made corresponding to the impressions *f* in the other half for the bolt end. Into this die the blanks for the plate *a* and for the clips and bolts are placed when heated to a suitable or welding heat, and placed in proper relative position in the lower die. Then the upper die is struck down onto the blanks, welding the parts together and bringing the blanks to the shape denoted in Fig. 4, which naturally leaves a slight fin around the edges. By preference I weld the parts in this die, they being first temporarily secured together; but the welding may be done by other means. The blank, Fig. 4, is placed in the trimming-die, Fig. 5, which corresponds to the shape of the lower die, with an aperture, C, through the die corresponding to the form of the finished clip. Into this the blank as it comes from the first dies is placed, and the follower, Fig. 6, struck down thereon, trims off the fin and drives the blank through the die. This leaves the blank with the arms or clip spread, as seen in Fig. 4. To close these and bring them to the desired form, (seen in Fig. 10,) a lower die, D, is formed, with the sides inclined down to a central channel, E, and into this channel a follower, F, is fitted. The lower die is formed corresponding to the shape of the parts of the clip, as seen in Fig. 8. The blank as it comes from the trimming-die is placed in the lower die, D, and the follower F, struck down thereon, drives the

plate *a* down into the channel and draws the arms up against the sides of the follower parallel with each other, as seen in Fig. 10, in which condition the clip is ready for market as an article of manufacture.

The single clip seen in Fig. 11 is formed in the same manner, simply constructing the dies for the formation of the single clip centrally on the plate, instead of double, as before described.

I claim as my invention—

The series of dies constructed substantially as described, for forging, trimming, and shaping spring-clips for carriages.

F. B. MORSE.

Witnesses:

A. J. TIBBITS,
J. H. SHUMWAY.