

Wilson W. Knowles.

Imptin manufacture of Carriage Clips.

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PATENTED JUN 27 1871

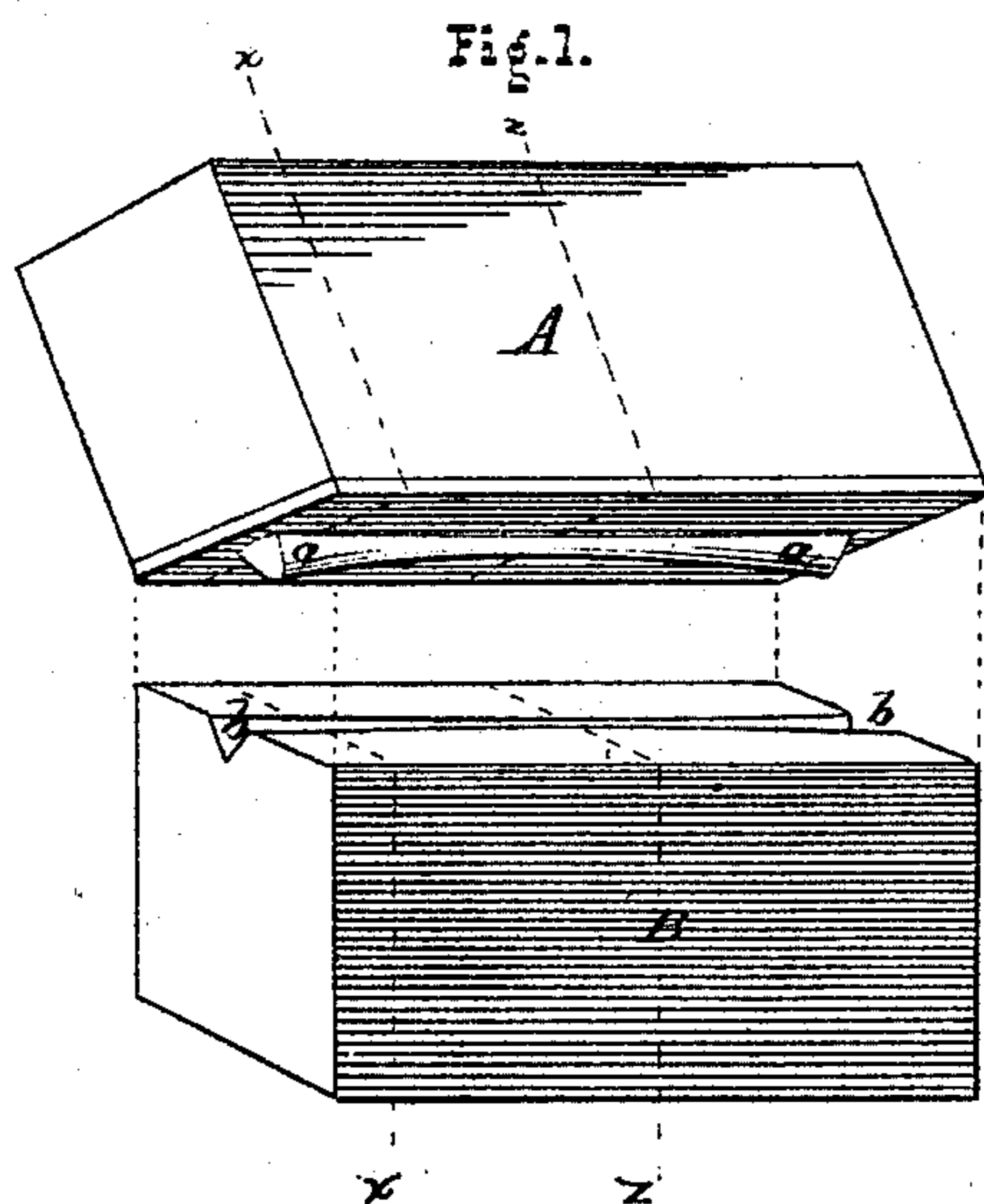


Fig. 2.

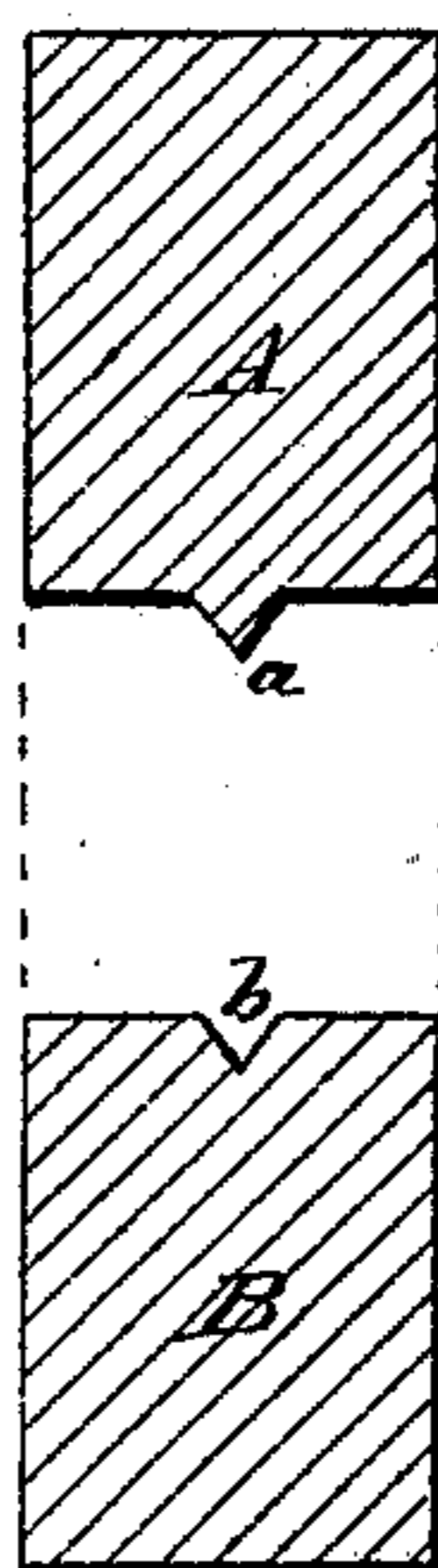


Fig. 3.

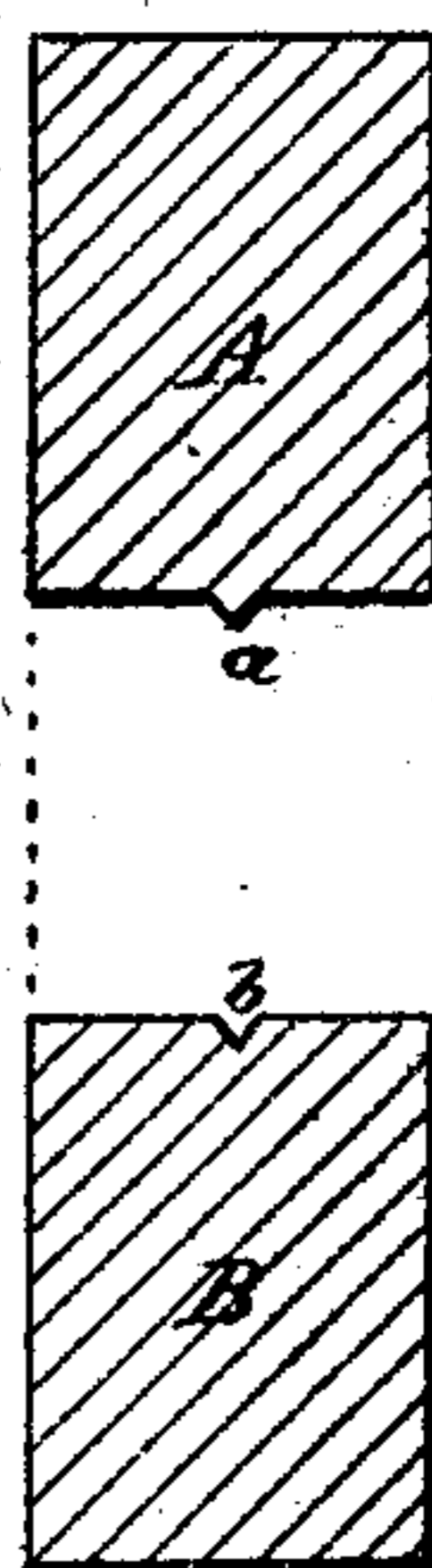


Fig. 4.

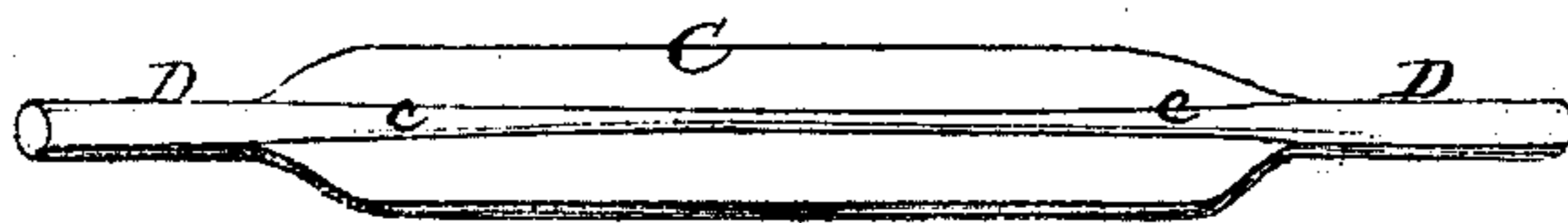


Fig. 5.



Fig. 6.



Fig. 7.



Witnesses.

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# UNITED STATES PATENT OFFICE.

WILSON W. KNOWLES, OF PLANTSVILLE, CONNECTICUT.

## IMPROVEMENT IN DIES FOR FORMING CARRIAGE-CLIPS.

Specification forming part of Letters Patent No. 116,455, dated June 27, 1871.

*To all whom it may concern:*

Be it known that I, WILSON W. KNOWLES, of Plantsville, in the county of Hartford and in the State of Connecticut, have invented certain new and useful Improvements in the Manufacture of Carriage-Clips; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing making a part of this specification, in which—

Figure 1 is a perspective view of the dies employed in forming the clips. Figs. 2 and 3 are vertical sections of the same on the lines *x x* and *z z*, respectively, of Fig. 1. Fig. 4 is a perspective view of the upper side of a clip formed by said dies. Fig. 5 is a similar view of the lower side of the same, and Figs. 6 and 7 are like views of a modification of said clip.

Letters of like name and kind refer to like parts in each of the figures.

The object of my invention is the production of a carriage and spring-bar clip that, while possessing a maximum of strength, shall have a minimum of weight, and be constructed with less time, labor, and expense than those commonly furnished; and it principally consists in the dies employed, substantially as and for the purpose hereinafter shown. It further consists in the clip itself as a new article of manufacture, substantially as is hereinafter set forth.

In the construction of carriage-clips much difficulty has been experienced in securing a sufficient amount of stock at the junction of the shank and band to give to said part a strength equal to that of other portions of the device, which difficulty has been due to the defective form of the clips. In form the clips above named have been defective in that they required fully one-third more stock at the junction of the shank and band than at any other points, so that in their construction it was necessary to first form a blank by upsetting the ends of round iron having a suitable size to form the shank, or by drawing down the ends of a square or flat bar having a size suitable for the band portion, after which said blank was reheated and placed within the forming-dies and then completed within or by the trimming-dies.

In the annexed drawing, A represents the upper and B the lower die, corresponding in length to the length of the band portion of the clip, and

having any desired breadth. Extending longitudinally across and within the upper face of the lower die B is a groove, *b*, having, preferably, a V-shape at its center, from whence, as it extends outward in either direction, said groove widens and deepens until at its outer ends it has a size and depth corresponding to that of the clip shanks, less the thickness of the band, and at said point has changed its V-shape to that of a semicircle. The upper die A is provided upon its lower or working face with a rib, *a*, that corresponds in general shape to the groove *b*, but is somewhat less in transverse size, and has its ends beveled or rounded inward and downward.

As thus formed, the dies are placed within a drop-press or other suitable mechanism, whereby the upper die may be caused to impinge heavily and at will upon the lower die, after which a piece of round iron, corresponding in diameter to the shanks of the finished clip and in length to the length of said clip, is heated and placed within the groove of said lower die, where, after receiving one or more blows of said upper die, and without reheating, it is converted into a finished clip ready for threading; in which operation the stock is thrown laterally outward to the required distance to form the band portion of said clip, but is not materially increased in length. The clip thus formed is composed of a central portion or band, C, having a general flat upper surface except at its transverse center, where is formed a  $\Lambda$ -shaped rib, *c*, smallest at its longitudinal center, from whence, toward either end, it gradually increases in size until, at the intersection of said band and the shanks D, said rib corresponds in size and shape with the latter and is merged in the same. Within the lower side of the band C is formed a groove, *c'*, that corresponds in position and shape with the rib *c*, but has somewhat less size, and terminates just within the ends of said band where its ends are rounded, as shown in Fig. 5.

By this construction a uniform thickness of metal is secured between the ends of the band portion of the clip, while from its corrugated shape the strength of said part is materially increased, more especially at the junction of the shanks with said band or central portion, which has heretofore been found the weakest portion of a clip. Another advantage arising from this peculiar form is that it enables a considerable re-

duction to be made in the weight of the clip, and consequently in the stock used, so as thereby to correspondingly lessen the expense of the finished article; in addition to which the finished article is produced at one heat and by a few blows of one set of dies, instead of requiring the production of a blank, the employment of two or more sets of dies, and the heating of the metal two or more times, as has heretofore been the case. While the strength of the clip is increased by extending the rib from one shank to the other, said rib might be omitted from the central portion of the band, and the upper face made to correspond to those commonly used, in which event the groove within the lower side of said clip would be disconnected at its center and correspond in size and position to the tapering ends of the shanks, as shown in Figs. 6 and 7, by which construction the

principal object sought—an increase of strength and decrease of metal at the junction of shanks and band—would still be attained.

Having thus fully set forth the nature and merits of my invention, what I claim as new is—

1. The dies A and B, provided, respectively, with the rib *a* and groove *b*, substantially as and for the purpose shown and described.

2. The hereinbefore-described carriage-clip, having a grooved or concave under surface that corresponds in shape with the upper surface, substantially as and for the purpose shown.

In testimony that I claim the foregoing I have hereunto set my hand this 25th day of May, 1871.

WILSON W. KNOWLES.

Witnesses:

SIMEON H. NORTON,  
ANDREW J. SLATER.