

Wilson W. Knowles & Le Roy S. White.  
Imp't in the manufacture of Saddle-Clips.

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Fig. 1.

PATENTED JUN 27 1871

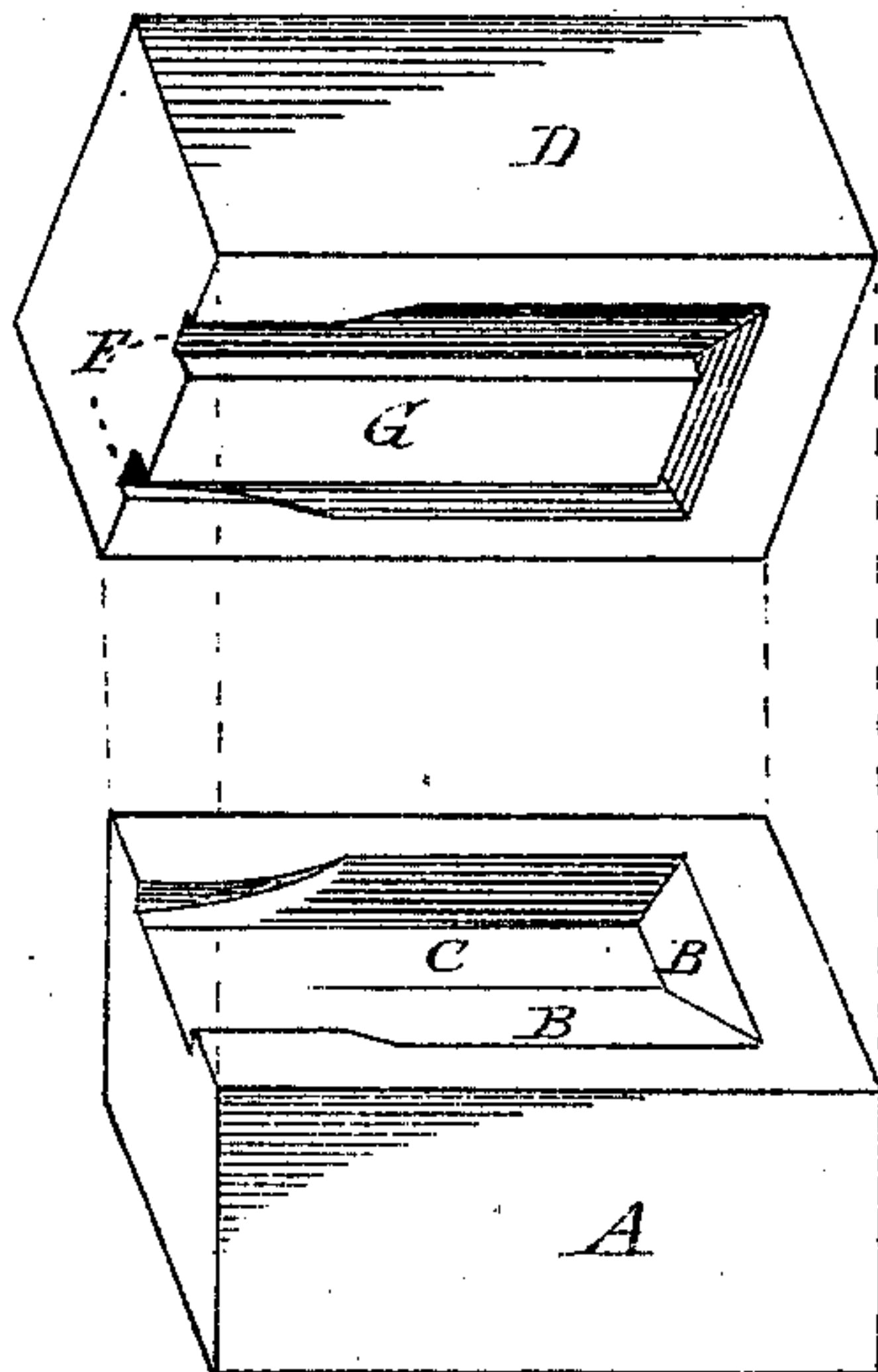
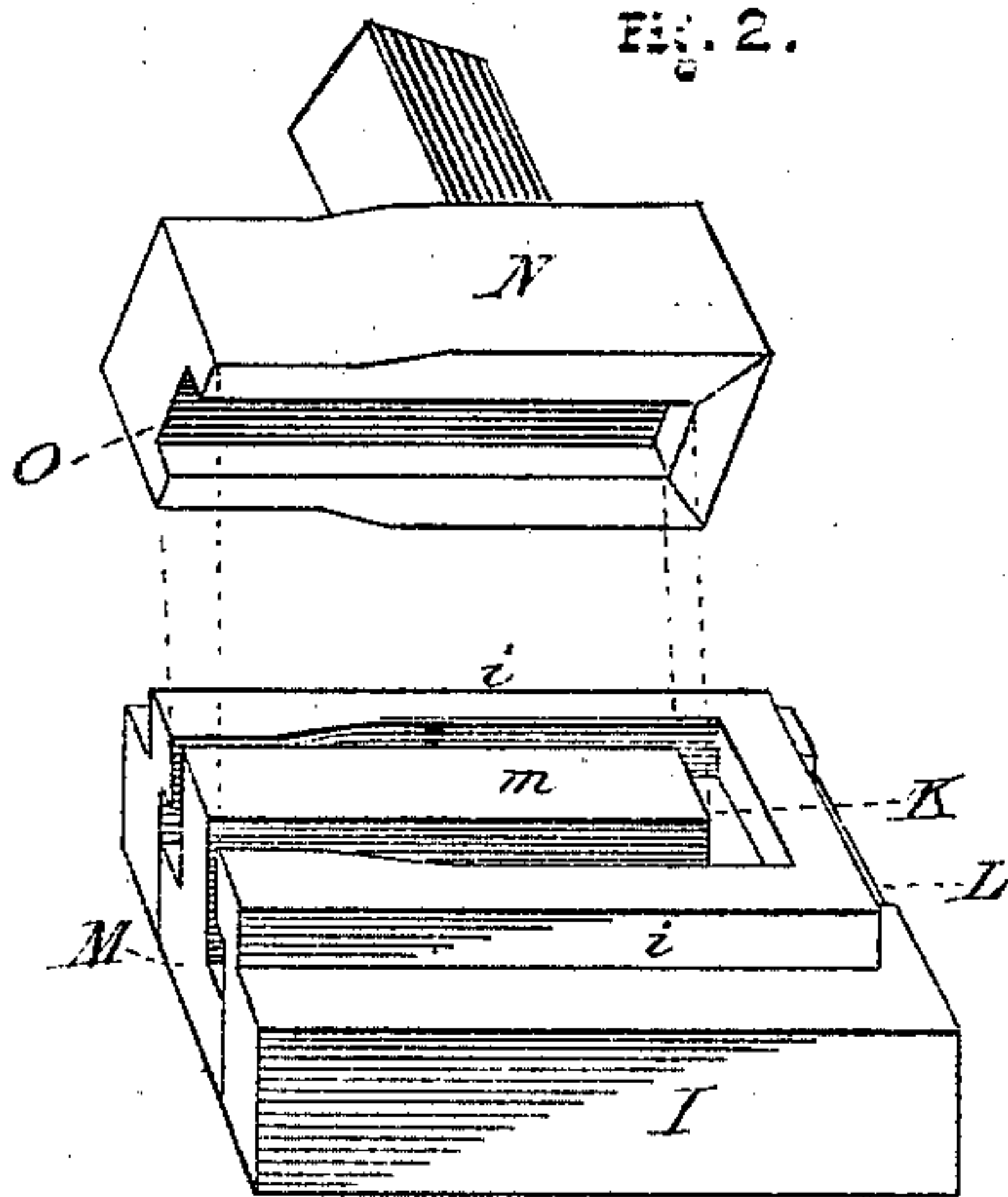


Fig. 2.



Witnesses.

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Attys.

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Fig. 3.

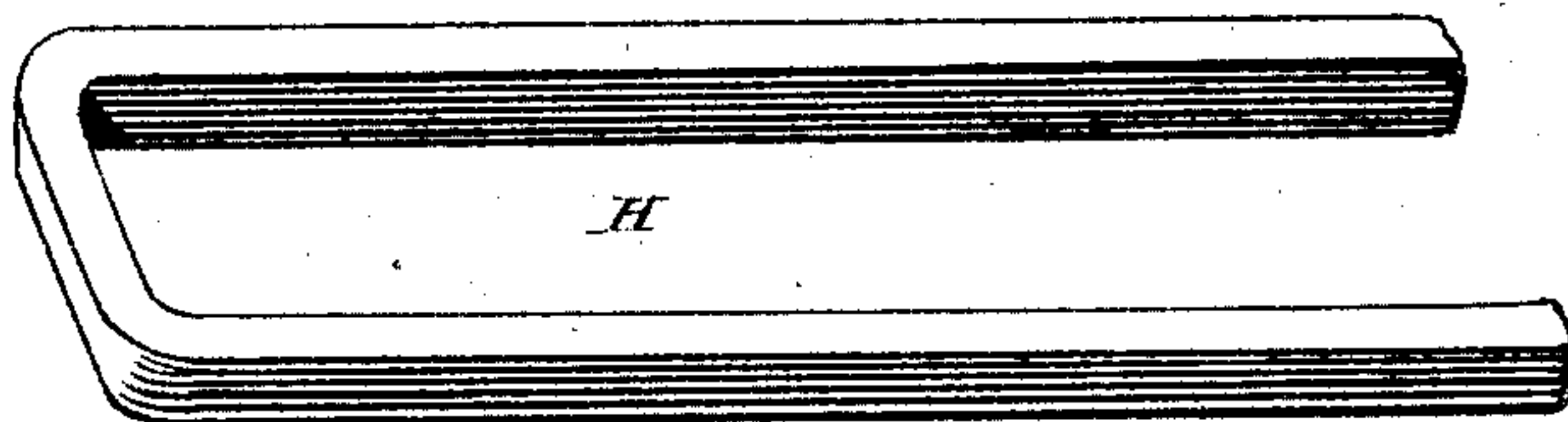


Fig. 4.

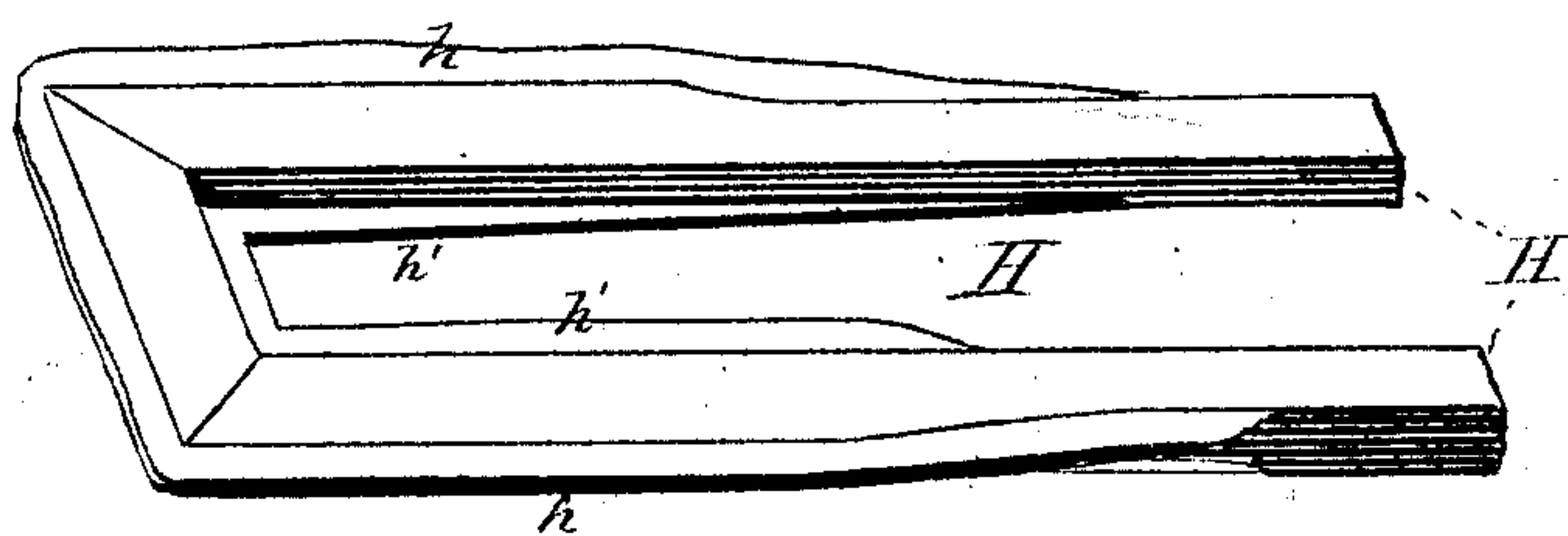


Fig. 5.

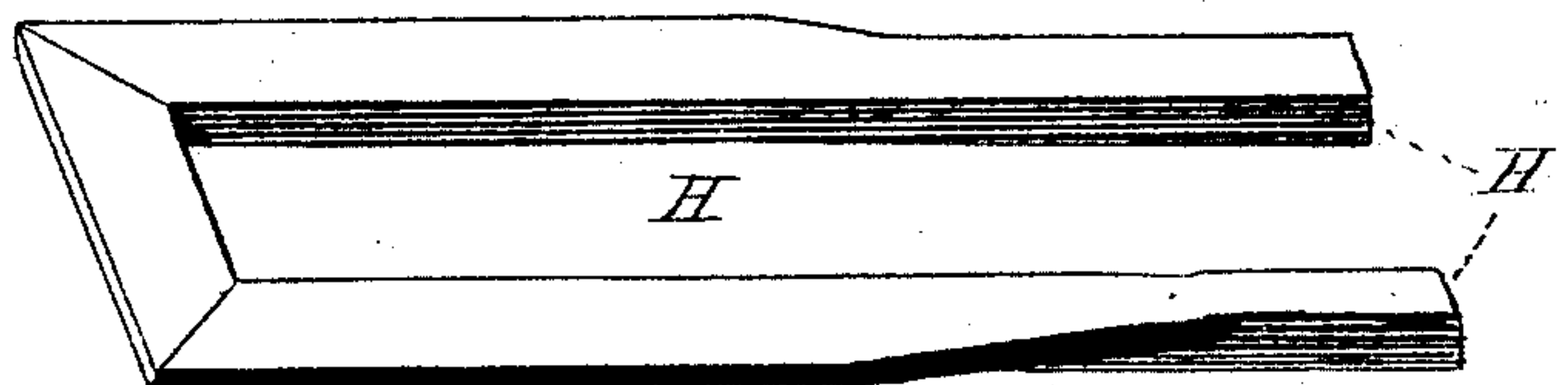
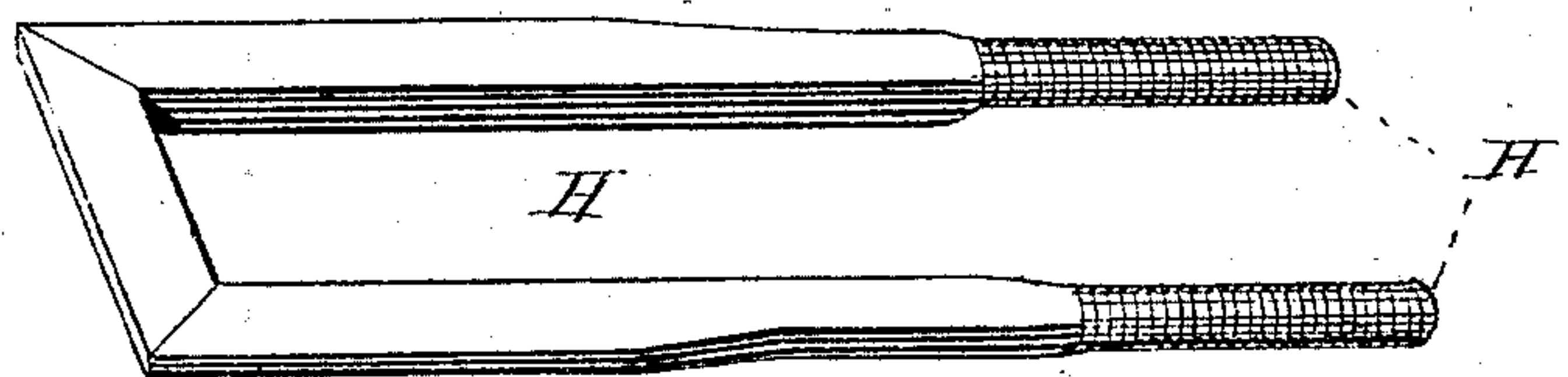


Fig. 6.



Witnesses.

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# UNITED STATES PATENT OFFICE.

WILSON W. KNOWLES AND LE ROY S. WHITE, OF PLANTSVILLE, CONNECTICUT.

## IMPROVEMENT IN DIES FOR FORMING CARRIAGE-CLIPS.

Specification forming part of Letters Patent No. 116,456, dated June 27, 1871.

*To all whom it may concern:*

Be it known that we, WILSON W. KNOWLES and LE ROY S. WHITE, of Plantsville, in the county of Hartford and in the State of Connecticut, have invented certain new and useful Improvements in the Manufacture of Saddle-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 forming-dies employed in swaging up the clip. Fig. 2 is a like view of the trimming or finishing dies. Fig. 3 is a perspective view of the blank from which the clip is made. Fig. 4 is a like view of said blank after having been operated upon by the forming-dies. Fig. 5 shows the blank as it leaves the trimming-dies, and Fig. 6 shows the finished clip.

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

The article of carriage-hardware known as a saddle-clip has heretofore been formed entirely by hand, by reason of which the finished articles have lacked uniformity, and in cost have far exceeded corresponding portions of the iron-work of a carriage.

To obviate these objections is the design of our invention, which consists in the dies used for forming said clips, substantially as is hereinafter set forth.

In the annexed drawing, A represents the lower forming-die, provided upon its upper face with a depression, B, which corresponds in size and shape to the exterior of one side of a saddle-clip. The intervening metal between the parallel arms of the groove is removed, so as to leave a plane face, C, having its surface on a line with a lower surface of said groove. The upper die D corresponds in size and general shape with that before described, except that its groove F is formed within the lower face, and that the metal G, between the arms of said groove, projects sufficiently beyond said lower face to cause it to come in contact with the depressed face C of the lower die when said dies are placed together.

As thus constructed the dies are placed within a drop-press or other suitable mechanism, whereby the upper die may be caused to impinge heav-

ily and at will upon the lower die, and a blank, H, constructed of square iron, in the form shown in Fig. 3, and by means of any suitable mechanism is placed within the cavity of said lower die, and caused to fill the same by one or more blows, of said upper die, by which operation said blank receives the form shown in Fig. 4, the surplus metal being pressed outward from its edge and vertical center in the form of a fin, *h*, and inward from its edge at its lower side in the form of a similar fin, *h'*. The blank thus advanced is now ready for the trimming-dies, which are constructed as follows: The lower die I is provided with a raised part, *i*, corresponding therewith in general shape, but somewhat less in size, within which is formed an opening, K, corresponding in size and shape to the exterior of the finished clip. Immediately beneath said raised part *i* is formed an opening, L, having a width somewhat greater than that of the widest portion of the clip, which opening, extending through said die vertically and longitudinally from beneath said raised part, has fitted therein a block, M, which fills its lower portion, and is provided with a central portion, *m*, that corresponds in size and shape horizontally with the interior of the finished clip, and extends upward so as to bring its upper face above a line with that of the part *i*. The upper die N corresponds in size and shape exteriorly and horizontally with the exterior of the opening K, and is provided, within its face, with a recess, O, that corresponds with and receives the central portion *m* of the block M when said die is pressed downward within said opening, said recess having a sufficient depth vertically to permit the lower face of said die to pass somewhat below the raised part *i* of the lower die. The blank being now placed upon the lower trimming-die, and the corresponding upper die forced downward upon or within the latter, said blank is carried with the former into the opening L, from which it may be readily withdrawn endwise, having, in its passage, been separated from the fins *h* and *h'*, so as to give to it the form shown in Fig. 5. The shanks H' being now rounded and threaded, the clip is ready for use.

The especial advantages obtained by constructing the clips with dies in this manner is that the finished articles are perfectly uniform in size,

shape, and quality, while the time and labor required are lessened, and the waste of stock materially reduced, so as to correspondingly affect the cost of said clips.

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

The series of dies A, D, I, and N, for constructing saddle-clips, substantially as shown and specified.

In testimony that we claim the foregoing we have hereunto set our hands this 1st day of June, 1871.

WILSON W. KNOWLES.  
LE ROY S. WHITE.

Witnesses:

SIMEON H. NORTON,  
LEWIS C. HULL.