

(No Model.)

J. P. LAVIGNE.

APPARATUS FOR FORMING SLIDING JAWS FOR WRENCHES.

No. 560,038.

Patented May 12, 1896.

Fig. 1

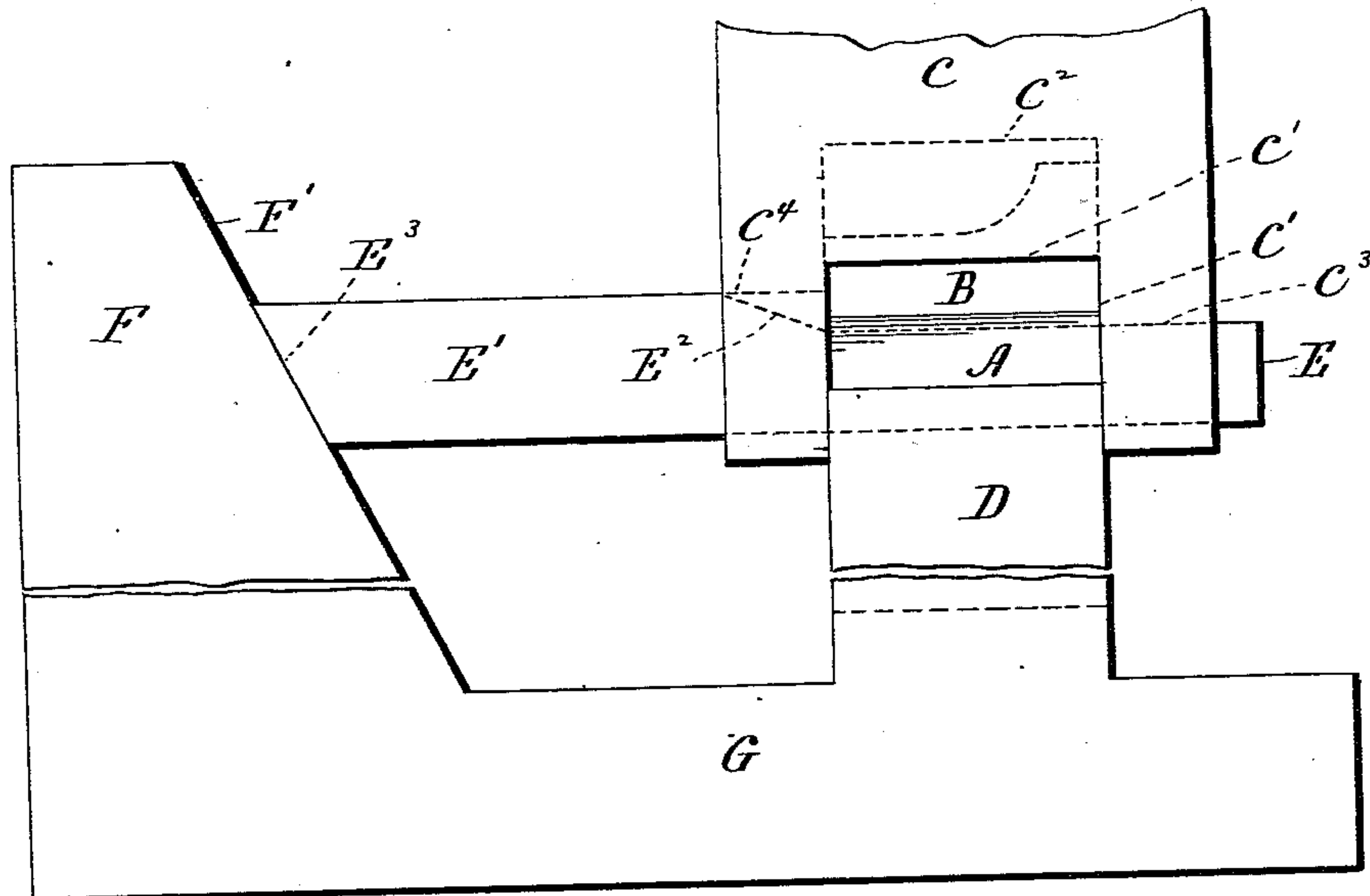


Fig. 2

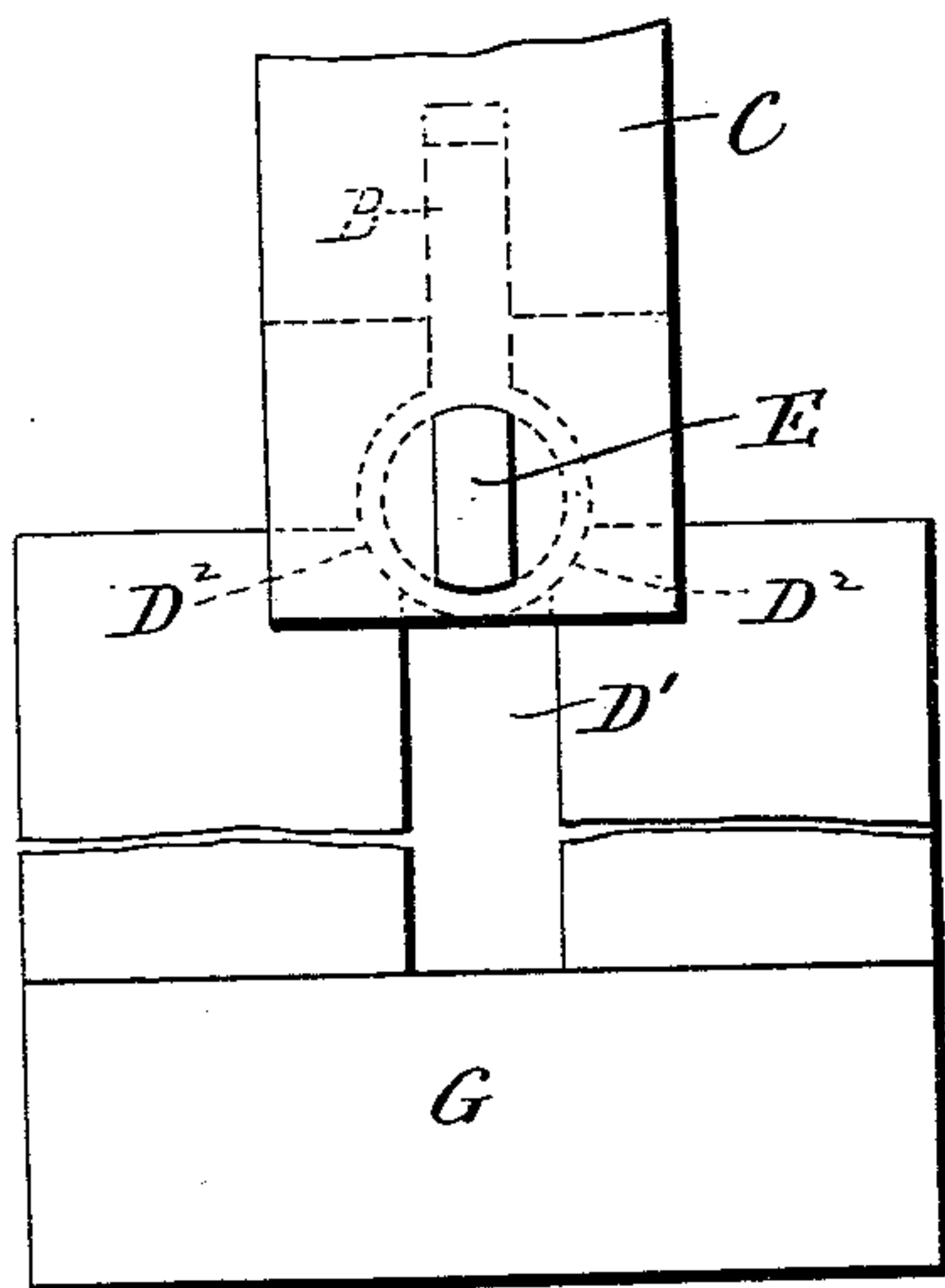


Fig. 4.

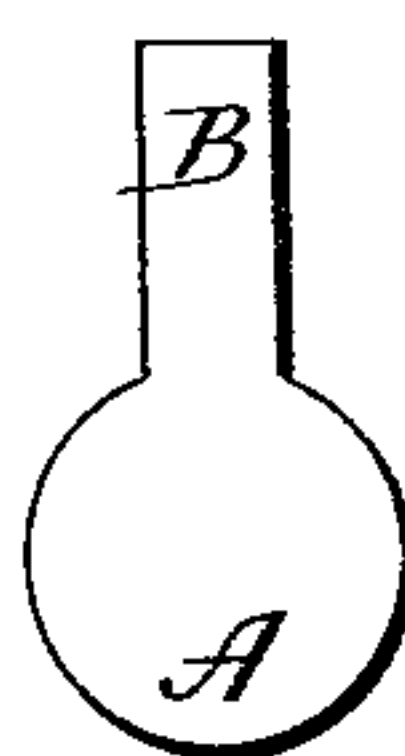


Fig. 5



Fig. 6

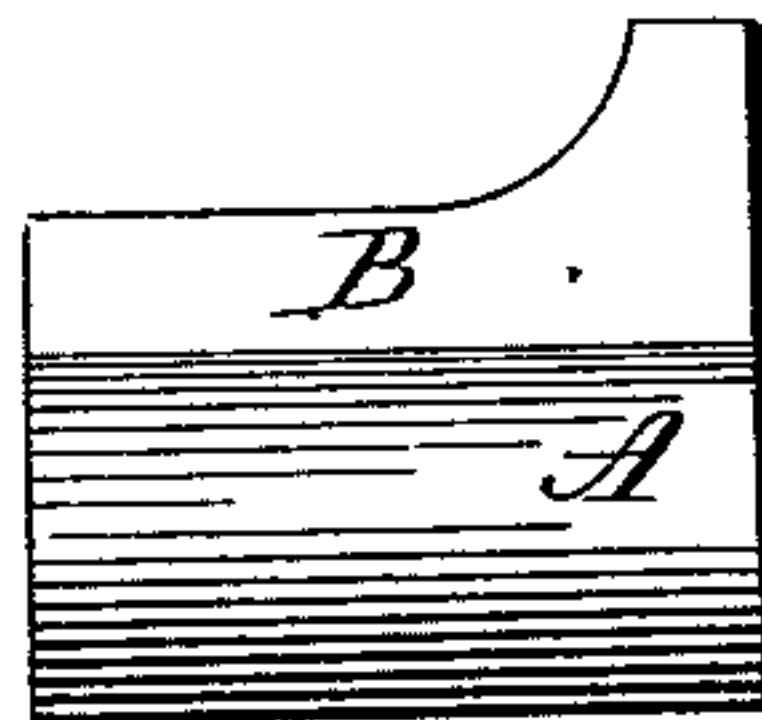


Fig. 3.

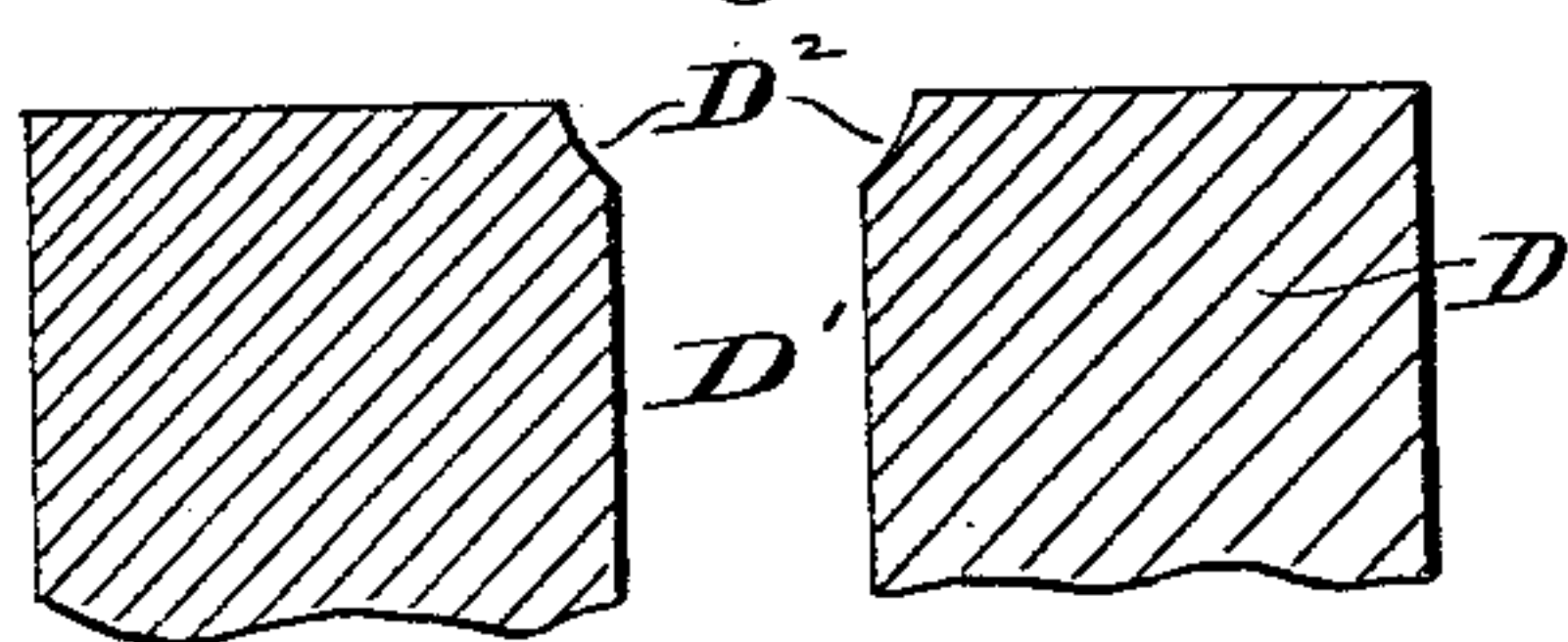
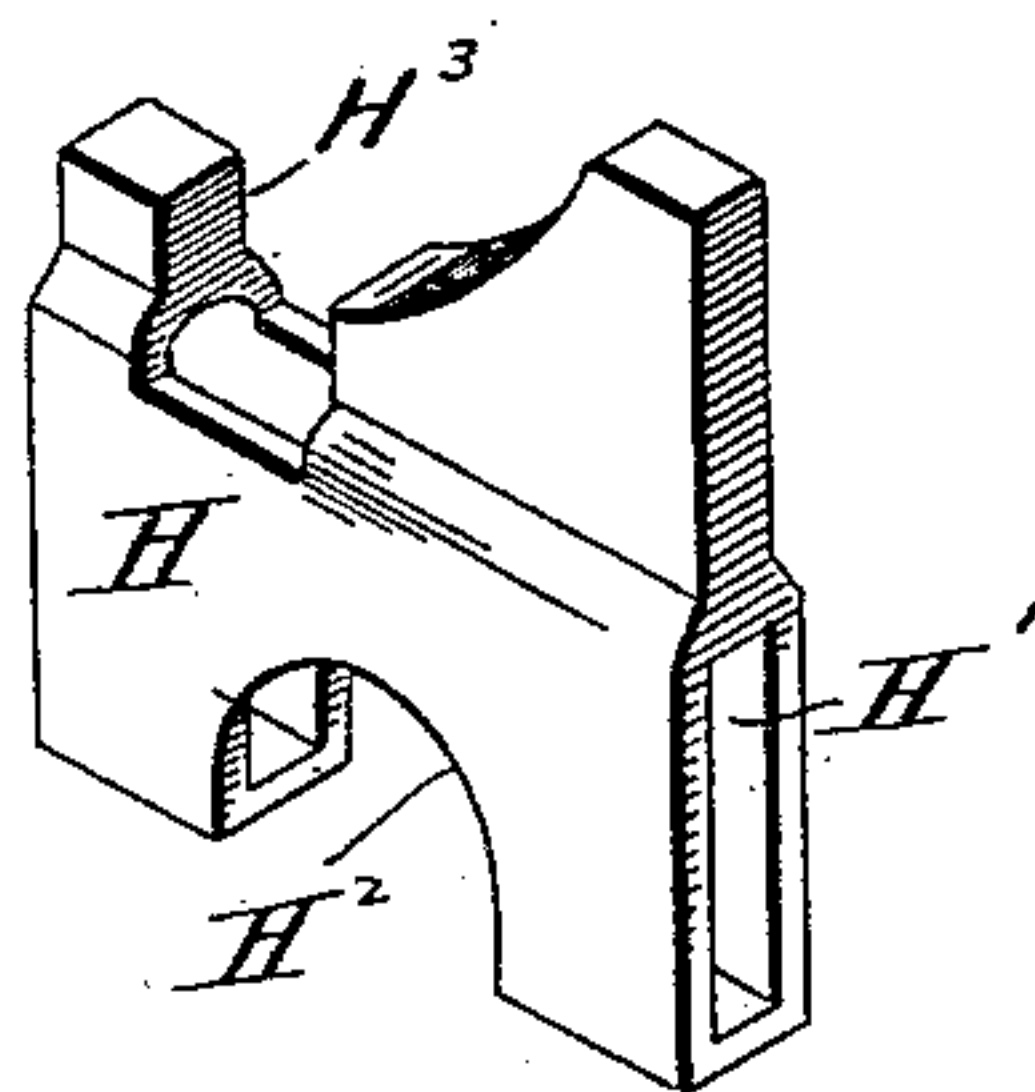


Fig. 7



Witnesses.

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By Atty. Earle Heywood

UNITED STATES PATENT OFFICE.

JOSEPH P. LAVIGNE, OF NEW HAVEN, CONNECTICUT, ASSIGNOR TO THE
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APPARATUS FOR FORMING SLIDING JAWS FOR WRENCHES.

SPECIFICATION forming part of Letters Patent No. 560,038, dated May 12, 1896.

Application filed September 3, 1895. Serial No. 561,216. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH P. LAVIGNE, of New Haven, in the county of New Haven and State of Connecticut, have invented a new Improvement in Apparatus for Forming Sliding Jaws for Wrenches; 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, a broken view in side elevation of one form which my improved apparatus may assume; Fig. 2, a broken end view of the same; Fig. 3, a detached broken end view of the die with the punch removed; Fig. 4, an end view of a blank such as is employed in the production of the jaws; Fig. 5, a corresponding view of the blank after its central portion has been bored out to form a hollow cylindrical jaw-body; Fig. 6, a side view of the blank; Fig. 7, a perspective view of a finished jaw produced in my improved apparatus.

My invention relates to an improved apparatus for forming integral wrought-metal sliding jaws for wrenches, the object being to provide a simple and effective apparatus for the purpose named.

With these ends in view my invention consists in an apparatus having certain details of construction, as will be hereinafter described, and pointed out in the claims.

Before proceeding to the description of the apparatus it will be well to state that the blanks submitted to its action are drop-forged, each comprising, in its initial forged form, a solid cylindrical body portion A and a solid lateral jaw extension B. The body portion of each blank then has a central longitudinal circular bore A' formed in it, as shown in Fig. 5, which represents the blank ready to be submitted to the action of the apparatus. The said apparatus comprises a punch C, a die D, a longitudinally-sliding former having differentiated ends E and E', a cam-block F, and a bed G, with which the die and cam-block are formed integral, as shown, although that is not necessary. The said punch C (so described for want of a better name) is constructed with a deep and wide transverse slot C', made just enough wider than the jaw-blank is long to adapt the punch to receive the said jaw-blank, which is introduced into it laterally. A vertically-arranged recess C² leads out of the center of the upper wall of the slot C', and provides for the reception of the jaw extension B of the blank, as shown in Figs. 1 and 2. A vertically-arranged rectangular opening C³ leads out of the forward wall of the slot C' and corresponds in cross-section to the cross-section of the outer end E of the former, while a horizontal opening C⁴, alined with the opening C³ before mentioned, leads out of the rear wall of the slot C' and corresponds in cross-section to the cross-section of the inner end E' of the former. The die D is made just enough narrower than the slot C' is long to permit the punch to move down over it, as shown in Fig. 1. The said die D is constructed with a transverse slot D', having vertical side walls, the said slot corresponding in width to the width of the body portion H of the finished jaw. The upper corners of this slot are cut away, as at D², to form drawing-faces, against which the hollow cylindrical body of the jaw-blank is impinged and by which it is drawn as the punch descends with the blank upon the die. The sliding former before mentioned has its rectangular inner and outer ends E and E' differentiated in cross-section, its outer end being the smaller, and adapted to fit snugly within the circular bore of the body of the blank, and its inner end being larger, and conforming in cross-section to the cross-sectional form of the rectangular opening H' in the body of the finished jaw. The lower edges of the differentiated inner and outer ends of the former are in line; but their upper edges are separated from each other by a drawing-surface E², the pitch of which represents the difference in the cross-section of the two ends of the former. The inner end of the former is constructed with an inclined or cam face E³, which coacts with the inclined face F' of the cam-block F to force the former outward in correspondence with the descent of the punch.

In using my improved apparatus it is mounted in a press of any approved character.

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ter, and a jaw-blank like that shown in Fig. 5 is introduced into the slot of the punch, the jaw extension B of the blank entering into the recess C² thereof. The outer end E of the sliding former is then passed through the openings C⁴ and C³ of the punch and through the bore of the blank, which is thus mounted, so to speak, in the punch. In the action of the press the punch now descends upon the die, whereby the cylindrical hollow body portion of the jaw-blank is forced against the drawing-surfaces D² D² thereof through the medium of the former, which is acted directly upon and moved downward by the punch. As the punch descends the former is moved outward, owing to the coaction of its inclined face E³ and the inclined face F' of the cam-block F, whereby the drawing-face E² of the former is brought into play for assisting in stretching and shaping the body portion of the blank. The hollow cylindrical body portion of the blank is thus gradually transformed from a cylindrical to a rectangular shape. After this the punch is lifted, the former withdrawn, and the blank removed from the punch. It may then be finished in any approved manner. As shown in Fig. 6, its body portion is notched, as at H², for the purpose of lightening it, and its jaw extension, as at H³, for the reception of an operating-nut; but the particular shaping of the blank after it comes from the apparatus may vary and is not material to my invention.

It will be seen that by my improved apparatus integral wrought-metal wrench-jaws may be formed at a comparatively low cost and without the expense of milling and fit-

ting to adapt them to be mounted upon the shank of the wrench. I am aware, however, that it is not broadly new to transform cylindrical wrought-metal wrench-blanks into rectangular shape, and I do not broadly claim an apparatus for the purpose.

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In an apparatus for forming wrought-metal sliding jaws for wrenches, the combination with a punch and a die, of a former differentiated in cross-section to correspond to the cross-section of the hollow body portion of the blank, and the body portion of the finished sliding jaw, and having its differentiated portions separated from each other by means of a drawing-face, substantially as described.

2. In an apparatus for forming wrought-metal sliding jaws for wrenches, the combination with a punch and a die, of a longitudinally-movable former adapted to extend into the punch, having its ends differentiated in cross-section to conform to the cross-section of the jaw-blank and the finished jaw, and means whereby the former is moved longitudinally by cam action to correspond with the descent of the punch upon the die, substantially as set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

JOSEPH P. LAVIGNE.

Witnesses:

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LILLIAN D. KELSEY.