

(Model.)

F. P. ARNOLD.
SECTIONAL DIE.

No. 541,306.

Patented June 18, 1895.

Fig. 1.

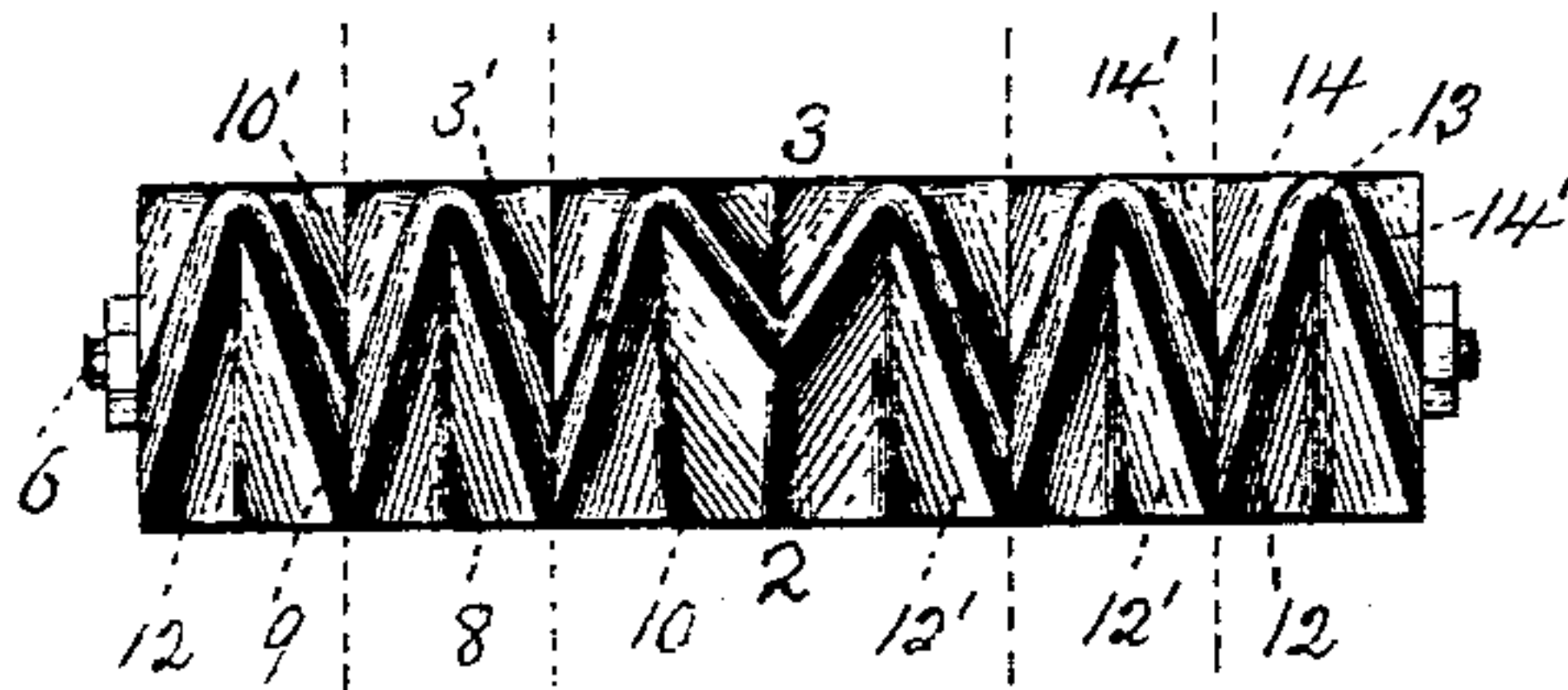


Fig. 2.

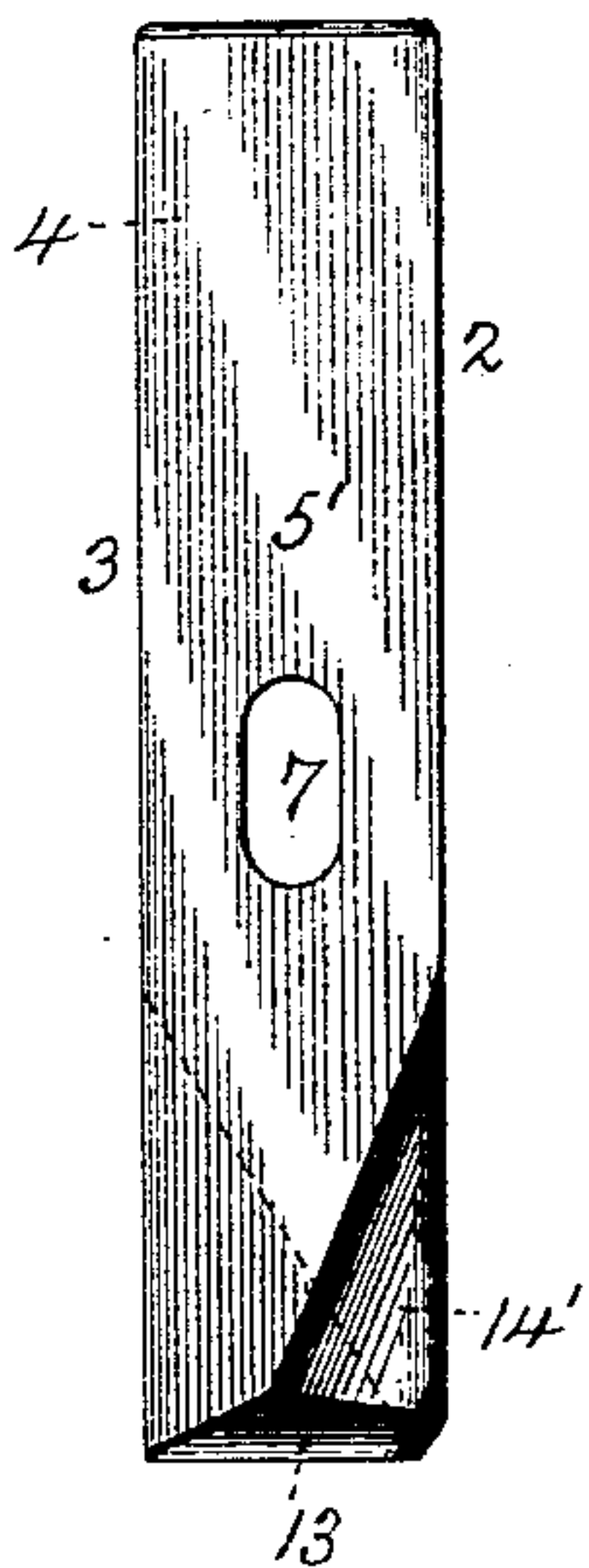


Fig. 3.

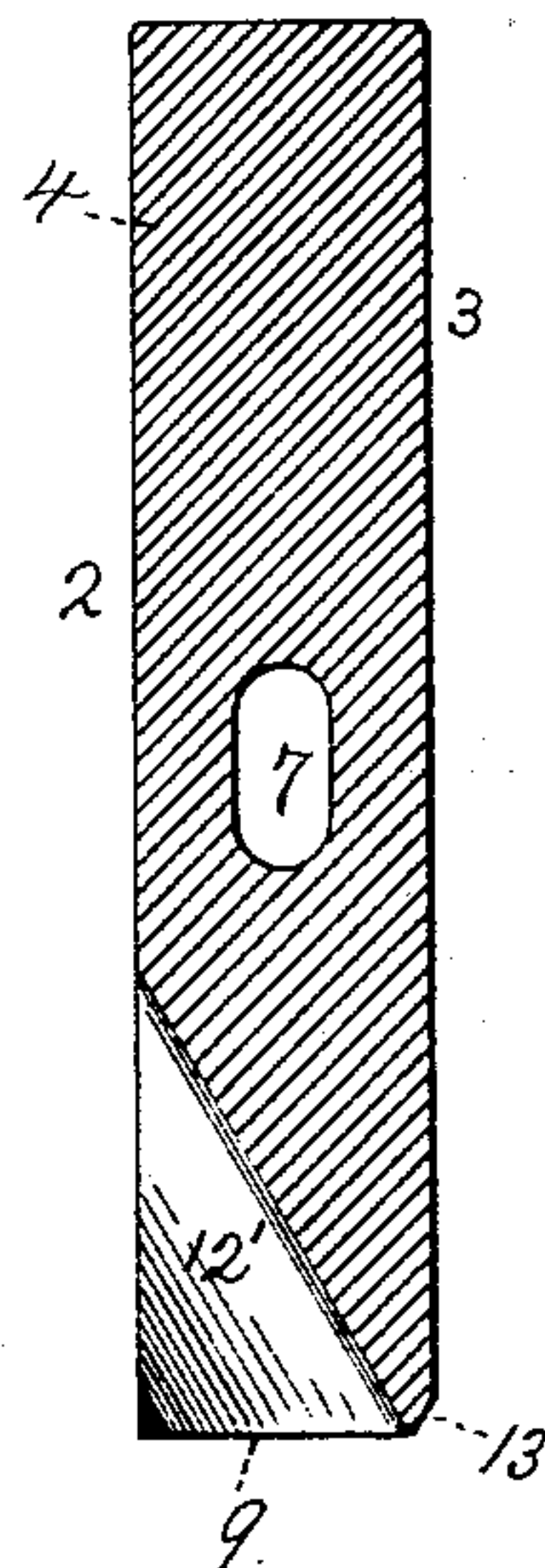
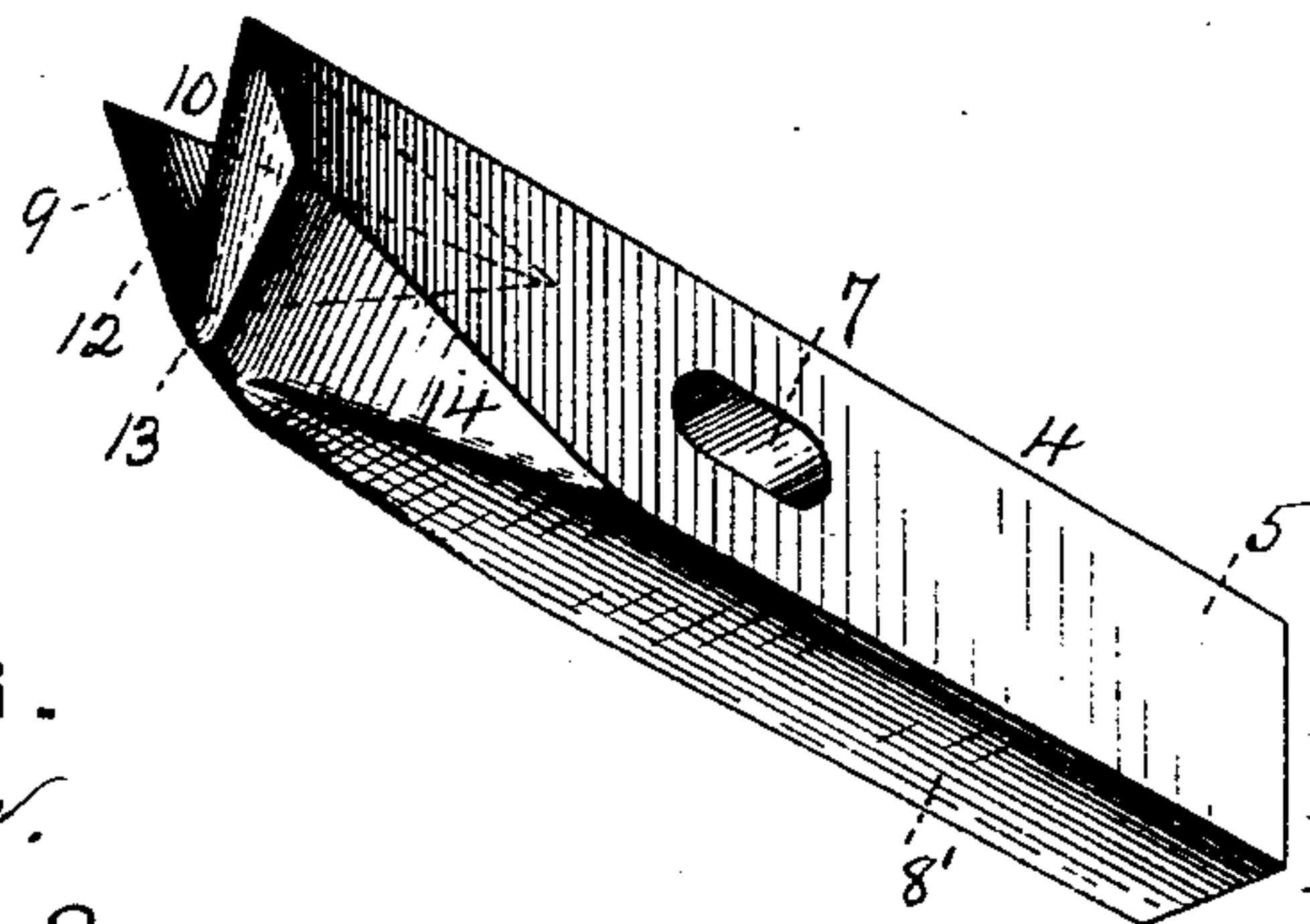


Fig. 4.



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UNITED STATES PATENT OFFICE.

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SECTIONAL DIE.

SPECIFICATION forming part of Letters Patent No. 541,306, dated June 18, 1895.

Application filed September 6, 1894. Serial No. 522,271. (Model.)

To all whom it may concern:

Be it known that I, FRANCIS P. ARNOLD, a citizen of the United States, residing at Pembroke, in the county of Plymouth and State of Massachusetts, have invented certain new and useful Improvements in Sectional Dies; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to figures of reference marked thereon, which form a part of this specification.

This invention relates to improvements in punches, particularly that class employed for producing a scalloped or serrated edge after the manner of work accomplished by pinking irons.

My invention is embodied in a sectional punch or one composed of a number of similar parts rigidly fastened together as a unit.

The gist of my invention is embodied in the peculiar construction of the several parts which compose the punch, whereby not only a continuous angular or serrated cutting edge is produced but proper clearance for the tool is obtained while the cutting edge can be easily sharpened. These several and notable features will be hereinafter fully described and explained.

The drawings represent, in Figure 1, a plan of a sectional punch embodying my invention, the broken parallel lines indicating divisional lines of separate sections. Fig. 2 is a side elevation of a section. Fig. 3 is a central section longitudinally of one of the blanks. Fig. 4 is a perspective view of a blank.

Hitherto it has been a difficult matter to produce a punch in a simple manner at a small cost, which shall have an angular, serrated or scalloped cutting edge.

The object of my invention is to produce a punch which shall be capable of cutting metal, leather or other articles without the aid of a die to co-operate with it, and shall be moreover easily sharpened and adapted to perform the duties of a pinking iron, and further one which may be enlarged or reduced in size as circumstances require. In the present instance this punch is particularly designed for

fluting the edge of heel rands, which are formed from straight pieces and subsequently pressed into shape. However as this punch is to be made of steel it is equally adapted for cutting metal, paper or cloth, the facility with which it can be sharpened and the good clearance spaces provided allowing any substance to be operated upon with success.

For purposes of description I shall designate the side of the punch with the numeral 2, as the front; the rear side at 3 and further state that the several sections or blanks are to be held in a vertical position, as in Fig. 2, which enables the cutting edge to be pressed upon the material in process, and which latter is ordinarily supported in a horizontal position upon a block or table. The several sections or blanks, indicated at 4 and generally identical in shape and construction with one another, are preferably formed from short lengths of steel, rectangular in cross-section. Furthermore the rectangle is an oblong one, the long sides 5, 5', being contiguous, when the several sections are united which is commonly done with a bolt 6, adapted to pass through a transverse opening 7 one in each blank. These openings are elongated to provide for adjustment of the several sections and thus allow long or short pieces to be employed, their lengths varying according to their time of service. The short sides are indicated at 8, 8', and these, when the several sections are grouped together, conjointly form the front and rear surface 2, 3 of the punch.

In order to create the cutting edge shown by the heavy black line at 9 in Fig. 1, the front side of each section is formed with an entering angle or bay 10, one half of which appears in elevation in Fig. 3. This bay taken in plan, as shown in Fig. 1, is a V shaped opening having side walls 12, 12' and with the apex extending almost to the rear side 8'. The small amount of material thus left is intended for the bevel 13, and thus produces a chisel edge for the two cutting blades with which each section is provided. If these sections without further change in their shape are now united, it will be seen that they form a continuous series of entering angles, the serrations depending upon the degree of angle of the several bays which are all

located upon the front side of the punch; but to provide for clearance and in order to create a cutting edge the corresponding lower corners of the sections are removed in order to
 5 create two oppositesloping plane surfaces 14, 14' which in connection with the co-operating walls 12, 12', respectively produce a thin knife-like blade. It will be noticed that two
 10 of these oblique surfaces conjointly serve, when two sections are united, to create a rear entering angle or bay 10', and such is produced by an oblique surface 14 on one section co-operating with a similar meeting surface 14' on the next adjacent section. As a
 15 result similar angles or bays occur oppositely in the punch; one, the front 10, being created in the substance of the material which composes a section, while the opposite angle or bay 10' is formed by the adjacent meeting
 20 surfaces on two contiguous sections. Thus the cutting edge is a continuous or uninterrupted series of straight blades angularly positioned and formed by similar, but oppositely inclined entering angles which are alternately
 25 arranged along the back and front sides of the punch.

In Fig. 1, the face of the punch shows that the central section differs somewhat from the adjacent side section, the entering angles being
 30 wider. This particular punch as before stated is intended for cutting the edge of heel rands and because the greatest flexure of the same occurs at the middle, so more material must be removed to permit a flat bend. Ordinarily however the entire cutting edge of
 35 the punch is of uniform shape.

What I claim is—

1. As a new article of manufacture, a punch composed of a group of sections provided with
 40 a series of straight blades angularly disposed, the ends of each blade being contiguous to the extremities of two other adjacent blades and thus adapted to form an uninterrupted

serrated cutting edge, substantially as and for purposes explained. 45

2. A punch composed of a series of blanks adapted for use in multiple, each blank comprising a rectangular blank having a V shaped cutting blade, said blade being created by an
 50 entering angle on one side of the blank, conjointly with two sloping surfaces oppositely on the other side of the blank, substantially as stated and set forth.

3. A sectional punch composed of two or more blanks rectangular in cross section, each
 55 blank comprising two straight blades angularly disposed and forming when combined a continuous cutting edge, said edge being created by a series of entering angles alternately arranged and oppositely on two sides
 60 of the punch, substantially as described.

4. In combination two or more rectangular blanks or sections, and means for joining them as a unit to form a punch, each blank consisting of blades angularly disposed, said
 65 blades being produced by two opposite entering angles, one angle created by removal of material in one side of the blank, the other angle by removal of material from two adjacent blanks, substantially as specified. 70

5. In punches a section composed of a rectangular blank, each blank containing an entering angle on one side and two sloping surfaces oppositely and exteriorly on the corresponding side, each of said sloping surfaces
 75 producing conjointly with the similar surfaces on the next adjacent blanks, oppositely disposed entering angles to create a continuous serrated cutting edge upon the end of the blank, substantially as explained. 80

In testimony whereof I affix my signature in presence of two witnesses.

FRANCIS P. ARNOLD.

Witnesses:

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