(No Model.)

H. S. SCHAADT.

DIE PUNCH AND PROCESS OF AND MEANS FOR MAKING SAME.

No. 531,600. Patented Dec. 25, 1894.

Fig. 1.

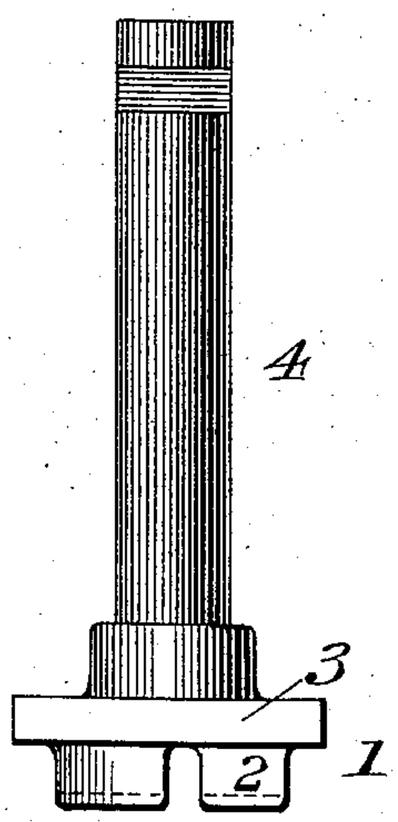


Fig. 2.

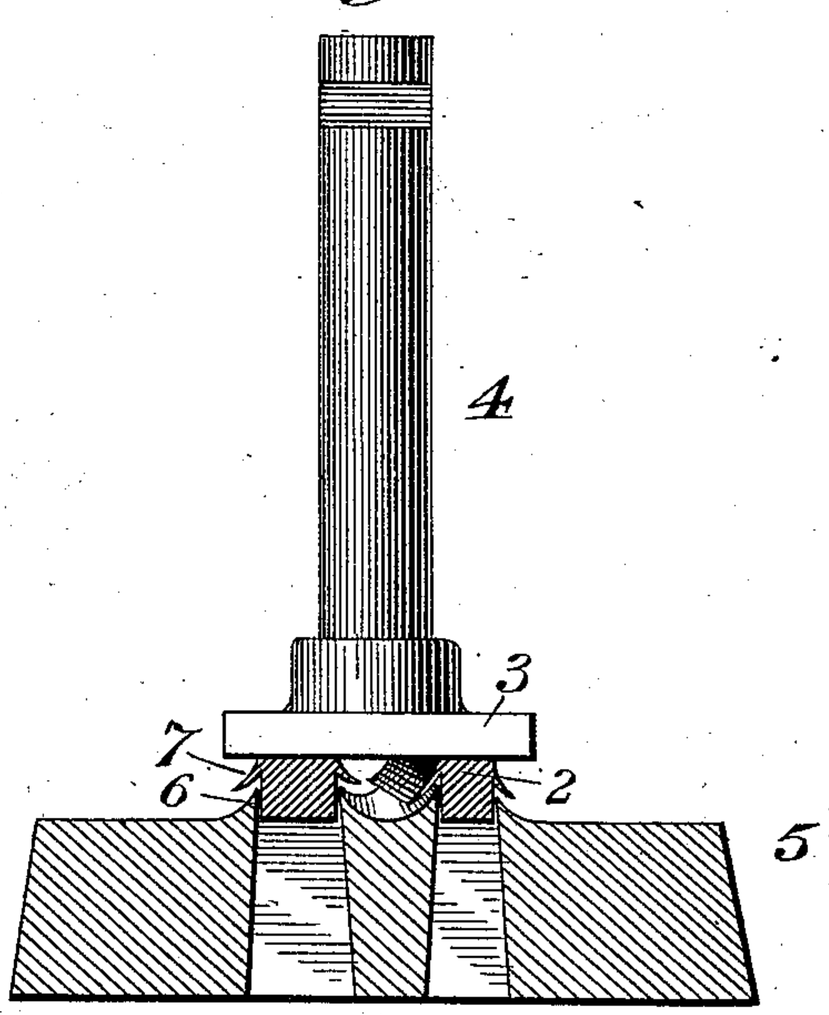


Fig. 3.

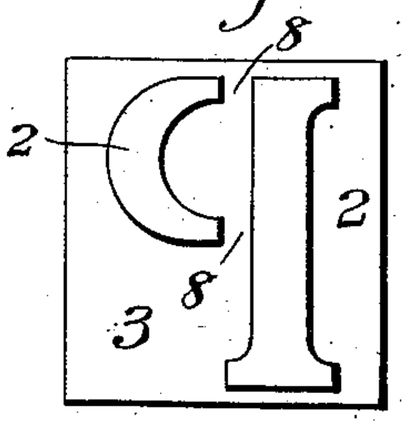


Fig. 4.

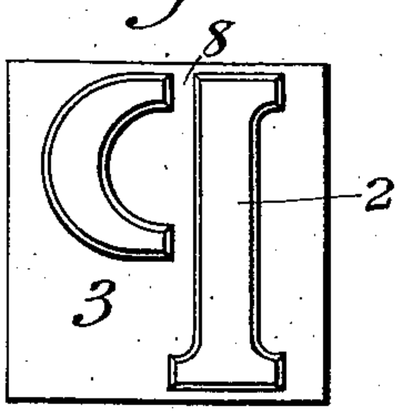
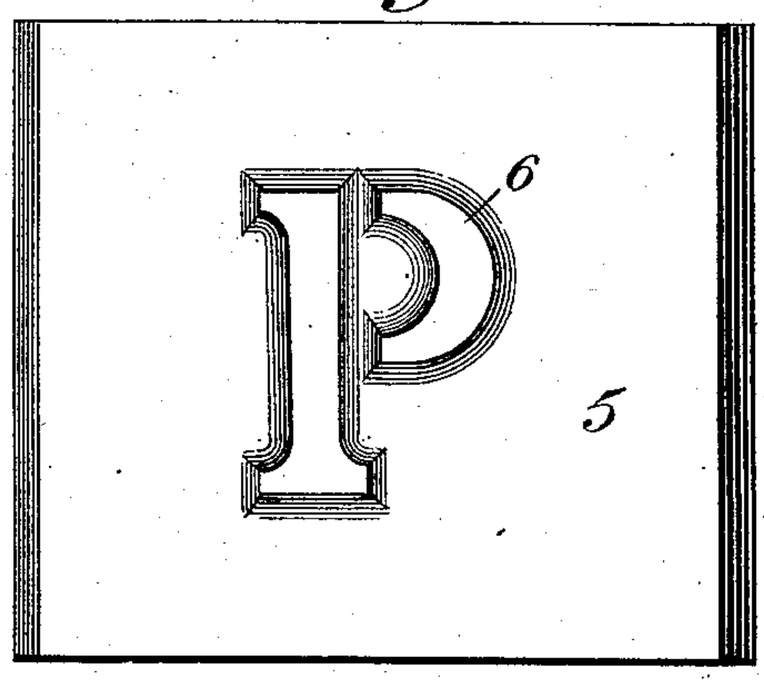


Fig. 5.



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UNITED STATES PATENT OFFICE.

HENRY S. SCHAADT, OF ST. LOUIS, MISSOURI, ASSIGNOR TO THE BRADLEY STENCIL MACHINE COMPANY, OF MISSOURI.

DIE-PUNCH AND PROCESS OF AND MEANS FOR MAKING SAME.

SPECIFICATION forming part of Letters Patent No. 531,600, dated December 25, 1894.

Application filed October 13, 1894. Serial No. 525,839. (No model.)

To all whom it may concern:

Be it known that I, HENRY S. SCHAADT, a citizen of the United States, residing in the city of St. Louis, State of Missouri, have invented a certain new and useful Die-Punch and a Process of and Apparatus for Making the Same, of which the following is a complete specification.

My invention relates to die punches and also to a process of and apparatus for making punches. Its principal object is economy of labor and material and it consists in the process and in the articles hereinafter described and claimed.

In the accompanying drawings which form part of this specification, Figure 1 is an elevation of a casting or rough blank from which the punch is made. Fig. 2 is a cross section of the "skinning" die with the punch blank or casting in the process of being "skinned." Figs. 3 and 4 are respectively face views of the punch blank or casting before and after it has been skinned and dressed; and Fig. 5 is a plan of the "skinning" die.

In carrying out my process, the metal blank, preferably of steel, is cast, forged or otherwise formed as nearly as practicable of the shape and size of the punch to be made. This casting or blank 1, includes the cutting or punching portion or portions proper, 2, and the base portion, 3, on which the punching portion is mounted integral therewith. The shank or stem, 4, is preferably integral with the face portion of the punch, though it may be a separate piece fixed thereto in any suitable manner. That portion, 2, of the casting or blank, 1, which is to be finished off to cooperate with the corresponding die, is made very slightly larger near the base, 3, than the size of the finished punch, and its sides taper more or less toward one another so as to make the outer face of said casting or form smaller than the face of the finished punch. The portion, 2, to be finished off is then inserted into a die, 5, of the exact size and shape which the finished punch is intended to have. As the outer face of the portion, 2, is smaller than this die, 5, the portion to be finished off is well centered in the die, 5, before any of the material is removed. This die, 5, is made in any suitable way, being the exact counterpart of the punch to be made. Instead, however, of having a flat upper face, as in the ordinary die, it is preferable to have its upper face raised or inclined to the edges of the die opening, as shown in an exaggerate degree at 6, in Figs. 2 and 5, thus forming a sharper angle at such edges than in the ordinary dies. For this purpose, where the upper face of the die is mainly flat, the portion immediately around the die opening is raised above the general level of the upper face of the die, being inclined upwardly therefrom to make an acute angle with that side face of the die opening which it meets at the edge of the opening, whether such side face is perpendicular or inclined to the general level of the upper face. The portion, 2, to be finished off being thus centered in the die, 5, is pressed or forced by any suitable means, such as a power press, into said die, 5, as far as is necessary for the purpose hereinafter explained. The narrower outer part of the portion, 2, to be finished easily enters the die, but when this portion has entered so far that its sides bear against the edges of the die, 5, the further inward movement brings the sides of the portion, 2, against the sharp edges of the die, 5. These sharp edges act as planers or trimmers to plane off or "skin" the sides of the portion, 2, in straight parallel lines. The shavings thus cut bear against the inclined portions of the die face whereby they are turned or curved back, as shown at 7, in Fig. 2, and break off or are removed by any suitable means, as, for instance, by a file. The portion, 2, thus trimmed or "skinned" is then finished by grinding or cutting off all of its tapering outer portion, which served for centering it in the die, 5, down to a plane where all sides of the portion, 2, have been planed off or "skinned" by the edges of the die 5, such a plane being indicated by dotted lines in Fig. 1. The portion, 2, is thus the exact counterpart of the die, 5, and therefore is of the size and shape desired. Its depth, that is, the distance it extends beyond the base, 3, is determined as in an ordinary die and the punch is "skinned" almost, if not quite, to its base.

The punch may be finished off in any desired style, such as a shear edge by making its face slightly inclined to its line of motion,

or such as hollow face punch. The die, with which this punch is intended to co-operate, may be made by any suitable process, being of the size and shape of the die, 5, except as to the raised edges of the opening.

In cutting stencils, many letters and characters require stays or small portions left in the stencil blank to connect the portion forming the inner contour of the character integrally with the outer portion. Punches for such characters provide for the stays by open spaces, as shown at 8, thus practically separating the punch into two parts or portions; and the "skinning" die therefor also has two openings to match such portions. The portion of the face of the die near these openings is raised or inclined to the edges of the openings, as shown in Fig. 2. So far as the operation of "skinning" is concerned, each portion of the blank and its corresponding die opening coact as a separate casting or blank; but where the shavings of the two portions interfere, it becomes necessary to remove the shavings before completing the stroke and to begin the operation of "skinning" again where it was left off.

The principal advantages of this process are its quickness and economy and the practically absolute interchangeability of all punches made from the same die.

What I claim as new, and desire to secure by Letters Patent, is—

1. The process of making punches, which consists in forming a metallic blank of approximately the shape of the punch to be made but slightly larger than such punch, and forcing said blank into a die of the size and shape of the punch to be made, substantially as and for the purpose specified.

2. The process of making punches, which consists in forming a metallic blank consisting of a base and a projecting portion of the shape of but slightly larger than the punch to be made, the sides of the outer part of said projecting portion tapering so as to make the outer face thereof narrower than the punch to be made, and forcing said projecting portion of said blank into a die which is the counterpart of the punch to be made, and cutting off the narrower outer part of said projecting portion, substantially as and for the purpose described.

3. The process of making punches, which consists in forming a metallic blank of approximately the shape of the punch to be made, but slightly larger than such punch, and forcing said blank into a die of the exact size and shape of the punch to be made and whose face inclines upwardly to the edges of its opening, all substantially as and for the purpose described.

4. The process of making punches which consists in casting a metallic blank of approximately the shape but slightly larger than the punch to be made, and forcing said blank into a die which is the counterpart of the punch to be made, substantially as and for the purpose described.

5. A punch blank consisting of a base portion and a projecting portion of the shape but slightly larger than the punch to be made, the sides of said projecting portion tapering so that the outer face of said projecting portion is smaller than the punch to be made, substantially as and for the purpose specified.

6. A die having the portion immediately around the die opening raised above the general level of the upper face of the die, said raised portion being inclined upwardly from such general level to make an acute angle with the side face of the die opening, substantially as and for the purpose set forth.

7. A die having its upper face inclined upwardly to the edges of its opening, substantially as and for the purpose set forth.

Signed this 10th day of October, 1894.

HENRY S. SCHAADT.

In presence of—

JAMES A. CARR,

A. J. BRADLEY.