

No. 623,595.

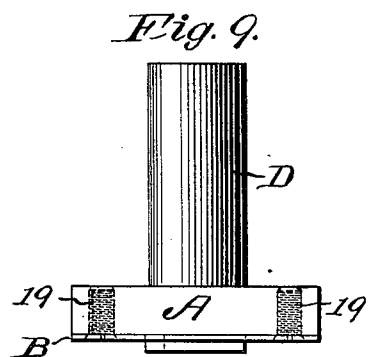
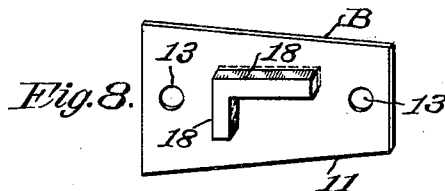
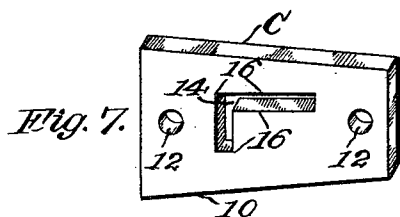
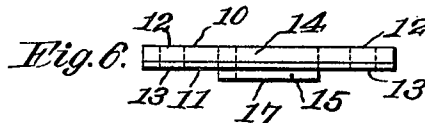
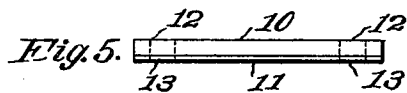
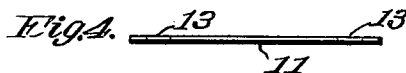
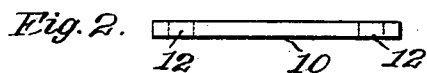
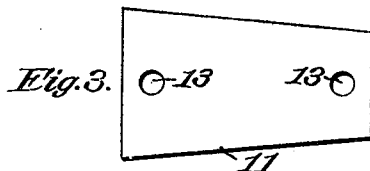
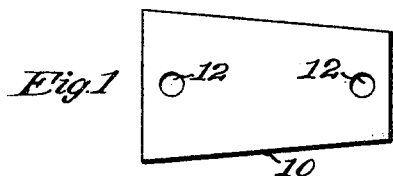
Patented Apr. 25, 1899.

E. E. CLAUSSEN.

MANUFACTURE OF PUNCHES AND DIES.

(Application filed Apr. 28, 1898.)

(No Model.)



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UNITED STATES PATENT OFFICE.

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MANUFACTURE OF PUNCHES AND DIES.

SPECIFICATION forming part of Letters Patent No. 623,595, dated April 25, 1899.

Application filed April 28, 1898. Serial No. 679,060. (No model.)

To all whom it may concern:

Be it known that I, EDWARD E. CLAUSSEN, a citizen of the United States of America, and a resident of Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in the Manufacture of Punches and Dies, of which the following is a specification.

This invention relates to an improvement in the manufacture of punches and dies, and particularly relates to the manufacture of punches and dies of the characters for letters and figures as used for various commercial purposes for perforating paper, as check-punches and the like, but is especially designed for producing punches and dies for letters and figures as used in stencil-cutting machines for cutting stencil-blanks for marking the addresses on boxes of manufactured articles.

The object of my invention is to produce any number of duplicates of both punches and dies by means of a single master-punch, thus producing the same extremely economically and absolutely interchangeable by a single operation, thus enabling me to place on the market a stencil-cutting machine which is within reach of every merchant, manufacturer, and producer, which has heretofore been impossible on account of the expense of the punches and dies, which are the principal source of the expense and trouble of the present existing machines.

In order that those skilled in the art to which my invention appertains may fully understand the nature and construction of the same, I will proceed to a detailed description thereof, reference being had to the accompanying drawings, which form a part of this specification, and in which—

Figures 1 and 2 represent a plan and an edge view of the blank of sheet metal of a ductile, homogeneous, and tenacious character and which is adapted to be hardened for the purpose, as will be seen hereinafter. Figs. 3 and 4 represent plan and edge views of a similar blank of sheet metal, but much thinner than that represented in Figs. 1 and 2. Fig. 5 represents an edge view having the two blanks superimposed in such a manner that the thicker blank is placed on top of the thinner one. Fig. 6 is an edge view of that which

is shown in Fig. 5 after the first operation for producing the punch and die has been performed. Fig. 7 is a perspective view of the die when completed. Fig. 8 is a perspective view of the completed punch. Fig. 9 is a front view representing the punch securely fastened to a plunger or a handle and adapting the same for use.

In the accompanying drawings like numbers of reference designate corresponding parts throughout.

In order to show clearly the nature and scope of my invention and its relation to the prior art, it is deemed necessary to set forth as briefly as possible the state of this particular art and the conditions thereof under which arise the desirability and importance of my invention.

Punches and dies have heretofore been made by forcing the desired character part way through the sheet-metal blank by a master-punch, thereby producing the punch of the stencil-cutting machine, and then using the same master-punch and forcing the metal of the character out of another blank, thus producing the die of the stencil-cutting machine. It has been found by experience after a short time of use that the projecting metal forming the punch works itself gradually back, and therefore is not very durable and must be frequently replaced. Another form of punch used consists of cutting the same out of a solid steel block or casting the same in molds and then dressing or filing the same to exact shape and configuration; or still another method consists of punching out the sheet-steel letters and figures and riveting the same upon a base-plate. All of these methods are, however, expensive to produce or do not meet the requirements for which they are designed; and having thus as briefly as possible stated the nature of the objections that exist in practice I will now describe the features of my improved punch and die which are produced at a single operation and whereby the objections above cited are eliminated.

Referring to the drawings, the numeral 10 indicates a blank of sheet metal, preferably made of bright sheet-steel and being provided with such an amount of carbon as to make it of a homogeneous nature and capable of being hardened.

11 is a blank the exact outer contour of 10, made of similar stock or material, but not necessarily requiring the qualification of being hardened. The difference in the thickness of the sheet metal from which the blanks 10 and 11 are punched is such that the metal of the blank 10 is from two to three times as thick as that of the metal of the blank 11.

12 and 13 are holes in the blanks 10 and 11, respectively, whereby the respective blanks or members are held in their proper position in the stencil-cutting machine when in use.

As a means for economically manufacturing interchangeable punches and dies I first make a master-punch and a master-die of all characters and numerals which are desired to be produced, (generally forty sets,) and they are made in the best manner, and in the most approved practice are hardened, ground, and lapped. Having thus produced the master punch and die of any letter or figure, I will now describe the successive operations for producing the punches and dies for the stencil-cutting machine and have selected and shown in the drawings the letter "L;" but the punch and die of any letter or figure can be equally well produced. The master-punch of the desired character having been produced is placed in a punch-press in such a manner that

when the punch descends to its extreme downward position the lower or cutting surface of the master-punch is a distance away from the top surface of the die equal to the thickness of the sheet-metal blank 11. The press having been set and the dies adjusted to their proper position, two blanks 10 and 11 are placed between the master-punch and master-die. It will be observed that the upper blank 10 is of considerably greater thickness than the

blank 11 and that the blank 10 is placed on top of the blank 11 and that the holes 12 and 13 are exactly in alinement and held in that position by dowels or pins projecting from the top surface of the master-die. As the master-punch descends to the depth as previously described a portion of the blank 10 of exact counterpart of the master-punch is forced through the blank 11 into the master-die, and being of greater thickness than the

plate 11 will form a projection 15. As the master-punch returns to its upper normal position the blanks 10 and 11 may be removed, thus producing two distinct members, the upper one being a perforated member, the perforation 14 of that member being the exact configuration or counterpart of the master-die, which member will serve as a die for the stencil-cutting machine after having the same hardened and both sides ground so as to produce cutting edges and sharp corners 16, as shown in Fig. 7. The other member will be a plate 11, with the projecting portion 15, adapted to form the punch of the stencil-cutting machine after having the projecting surface 17 hardened and ground and producing cutting edges 18, as shown in Fig. 8. It will

be observed that the projection 15 is equal to the difference between the thickest and thinnest blank. The punch, (designated in a general way as B,) is then completed, and when securely fastened, by means of the screws 19, to the base A, which is provided with a handle or plunger D, is adapted for use in conjunction with the die C.

It is of considerable importance from a commercial point of view that the same master punch and die are used to produce both the punch and the die of the stencil-cutting machine by a single operation of the punch-press and that all are strictly interchangeable.

It is obvious that when the punch in the stencil-cutting machine is worn after a certain amount of usage and the cutting edges are dull some fibers may not be cut and forced between the sides of the punch and die, and as the punch is withdrawn from the die there is a tendency for the punch to stick in the die, and therefore a chance exists to draw the projection 15 out of the plate 11; but to overcome this difficulty in practice I preferably solder or rivet over a portion of the letter on the back of the plate 11.

In the specification and drawings I have described and shown the upper plate to be the thicker one, and therefore the master-punch moves downward, striking the thicker plate first and then forcing the letter-blank into the inner plate; but it is obvious that the thinner blank can be placed on top and the master-punch forced upward, giving the same result.

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

1. The herein-described method of producing punches and dies, which consists of superimposing two sheet-metal blanks of different thicknesses, and forcing a part of the thicker blank through the thinner blank until the punched-out portion is substantially flush with the thinner blank, substantially as described and set forth.

2. The herein-described method of making punches and dies of characters for stencil-cutting machines, which consists of placing a thicker blank of sheet metal upon a thinner blank of sheet metal and forcing the character of the thicker blank through into the thinner blank until the punched-out portion is substantially flush with the thinner blank, so that the excessive thickness is left projecting from the front of the thinner blank, forming the character substantially as described.

3. In the manufacture of stencil characters, punches and dies, as herein shown, superimposing the thicker blank 10 on the thinner blank 11, forcing a part of the thicker blank, forming a character, through the thinner blank until the thicker punched-out portion is substantially flush with the thinner blank, so that the excessive thickness is left pro-

jecting from the front of the thin portion, thus producing a punch and die at a single operation, substantially as described.

4. The herein-described stencil-character punch, consisting of a sheet-metal blank 11 having a character forced into the same from a superimposed sheet-metal blank 10, of greater thickness, substantially as described, so that the excessive thickness of the thicker blank forms the projecting character-punch, and mounted on a suitable base.

5. The herein-described stencil-character punch, consisting of a sheet-metal blank 11 having a character forced into the same from a superimposed sheet-metal blank 10, of greater thickness, substantially as described, so that the punched-out portion of the thicker blank is flush on one side with the thin blank and projecting on the other, the excessive

thickness forming the punch, and the projection hardened and ground to form cutting edges, all as described and set forth.

6. The herein-described stencil-character punch consisting of a sheet-metal blank 11 having a character forced into the same from a superimposed sheet-metal blank 10, of greater thickness, substantially as described, so that the punched-out portion of the thicker blank is flush on one side with the thin blank and projecting on the other, the excessive thickness forming the punch, and with the character soldered on the flush side to the thinner plate, all as described and set forth.

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Witnesses:

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