(No Model.)

T. D. WORRALL.

TYPE OR DIE FOR FORMING IMPRESSIONS IN METAL SURFACES.

No. 339,609. Patented Apr. 6, 1886.

Fig. 1.

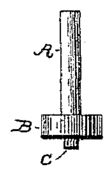


Fig. 2.

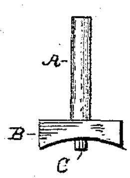


Fig. 3.

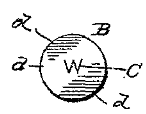


Fig. 4.

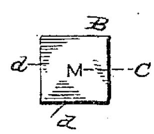


Fig. 5.

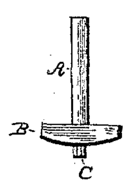
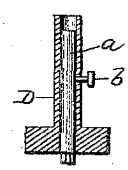


Fig. 6.



WITNESSES

Edwin L. Yewell,
C. L. Emmons

INVENTOR

Thos D Worrall
By S. W. Linsabaugh
Attorney

N. PETERS, Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

THOMAS D. WORRALL, OF WASHINGTON, DISTRICT OF COLUMBIA.

TYPE OR DIE FOR FORMING IMPRESSIONS IN METAL SURFACES.

SPECIFICATION forming part of Letters Patent No. 339,609, dated April 6, 1886.

Application filed June 16, 1885. Serial No. 168,868. (No model.)

To all whom it may concern:

Be it known that I, THOMAS D. WORRALL, a citizen of the United States, residing at Washington, in the District of Columbia, have invented certain new and useful Improvements in Types or Dies for Forming Impressions in Metal Surfaces, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to improvements in types or dies for forming impressions or characters in metal or other surfaces.

The object of my invention is to produce a type or die which will form an impression or character in metal cylinders, plates, or other surfaces to be printed from, which will prevent such surfaces from being raised or made uneven, so that the plate or cylinder can be at once used for printing purposes without having to be surfaced or turned down in a lathe.

A further object of my invention is to form a type or die adapted to be used in a type-writing machine, in which the metal cylinders or plates are brought automatically under said dies to effect the proper spacing of the letters or characters, and to make such impressions, characters, or letters of uniform depth in said cylinders or plates, so that they may be used either for direct printing or as matrix for stereotyping.

Referring to the drawings, Figure 1 is a view in elevation of my improved type or die for making impressions on plane or level surfaces. Fig. 2 is a similar view of a type or die for making impressions on cylinders or convex surfaces. Figs. 3 and 4 are end views of the types or dies, in which the shoulders are shown both square and round, for purposes which will hereinafter appear. Fig. 5 is a view of a type or die for forming impressions in concave surfaces. Fig. 6 is a sectional view of a modification in which the type or die is adjustable in a flanged holder.

A indicates the type or die, made of steel or other suitable material, and having a flanged or enlarged portion, B, near its lower end, for a purpose which will be more fully hereinafter described.

C is the letter or character of the type or die, which is cut out and extends up to the shoulder or enlarged portion B, as shown in Fig. 1, so that it can be driven into the metal cylinder or plate its full length, and form a clean-cut and well-defined impression in said plate or cylinder.

As before indicated, the shoulder or offset B is for the purpose of limiting the distance to which the types are driven into the metal so as to form impressions or letters of uniform depth, and also to compact the metal around the letter or character, so as to form a smooth and uniform surface, which will not need to be turned down in a lathe or otherwise surfaced.

For making impressions on flat surfaces, the lower face of the offset or shoulder is level, as shown in Fig. 1, and for making impressions, characters, or letters in the periphery of cylinders the lower face of the shoulders is made concave, as shown in Fig. 2, the concavity being made to conform to the convexity of the cylinder, in order that the shoulder or enlarged portion may press evenly over its entire surface onto the cylinder.

The surfaces formed by the types or dies just described are designed for printing-surfaces which will have or show a white letter, or a letter of the color of the paper used, on a colored background. Where it is desired to produce a surface having shade-lines, a watered surface, or other like ornamental effect, I engrave in the lower face of the shoulder B lines or other ornamental impressions or elevations, *d*, as shown in Figs. 3 and 4, which will give to the background the desired ornamental appearance.

In Fig. 5 I have shown a type or die for forming or impressing letters or characters in concave surfaces, as in segments of cylinders, and in this instance the bottom or face of the shoulder B is made convex to conform to the convexity of the segment to be impressed. In this instance the segments of cylinders so printed upon or impressed are used for a matrix in which the type-metal is poured. This will form a stereotype-plate, which is capable of being attached to a cylinder having the letters or characters in relief, which can be used to print in the usual manner.

In Fig. 6 I have shown a type-pin, *a*, adapted to be adjusted in the holder D by means of a set-screw, *b*, or an equivalent device, and by which impressions or characters of vary-

ing depth can be made. In this form the holder D is provided with the shoulder B, which may be plane, concave, or convex. It will be seen that should ordinary dies or letters be used, the act of impressing would cause the metal to rise around the letter or character, thus destroying the evenness of the inking-surface, and any attempt to remove these elevations would destroy the sharpness or clearness of the letter or character; and, furthermore, that such types are alone adapted for use in a type-writing machine, where the material to be impressed travels under the types in order to make the proper spacing, whereas in other machines the types must be placed close together, so that a type having the enlarged portion could not be used.

Having thus described my invention, what I claim is—

1. A type or die for forming letters and characters in metal plates and cylinders, provided with a flange or enlarged portion above the letter or character, extending a uniform distance on every side from the center of said character, whereby the depth of the impression is regulated and the even surface of the plate or cylinder preserved, as set forth.

2. A type or die for forming letters and characters in metal plates and cylinders, provided with a flange or enlarged portion, the lower face of which is curved, as set forth.

3. A type or die, in combination with and adjustable in a holder, having a flange or enlarged portion above the letter or character, which acts as a gage thereto, for the purpose of regulating the depth to which said letters or dies shall enter the surface of metals or other substances, for the purpose herein described.

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

THOS. D. WORRALL.

Witnesses:
N. D. ADAMS,
JACOBUS S. JONES.