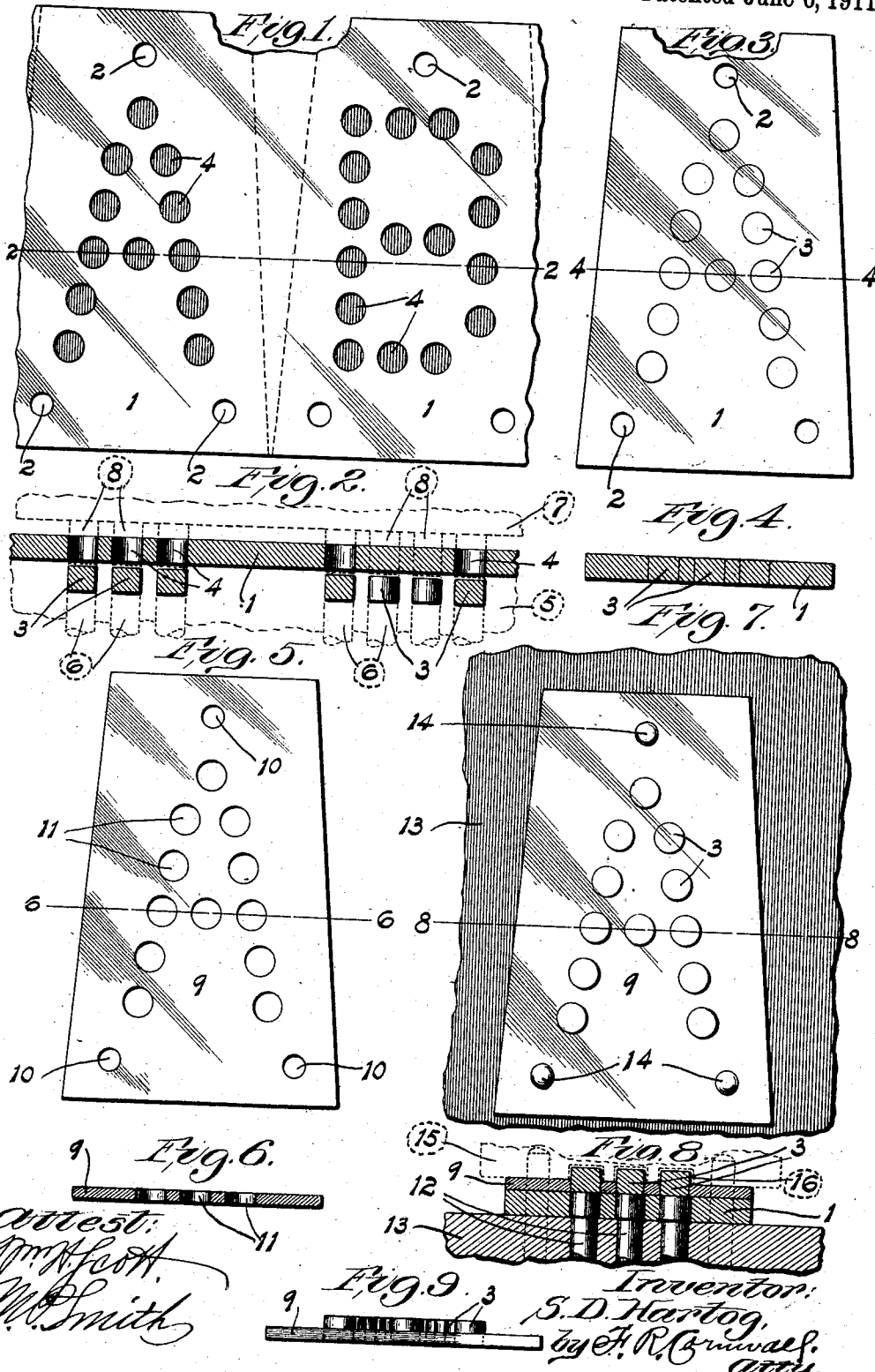


S. D. HARTOG.
METHOD OF MAKING STENCIL MACHINE CHARACTER PUNCHES.
APPLICATION FILED APR. 26, 1910.

994,463.

Patented June 6, 1911.



Attest:
Wm. H. Scott
W. L. Smith

Inventor:
S. D. Hartog
by F. R. Grinnell
att'y.

UNITED STATES PATENT OFFICE.

STEPHEN D. HARTOG, OF ST. LOUIS, MISSOURI, ASSIGNOR TO THE DIAGRAPH COMPANY,
OF ST. LOUIS, MISSOURI, A CORPORATION OF MISSOURI.

METHOD OF MAKING STENCIL-MACHINE CHARACTER-PUNCHES.

994,463.

Specification of Letters Patent.

Patented June 6, 1911.

Application filed April 26, 1910. Serial No. 557,635.

To all whom it may concern:

Be it known that I, STEPHEN D. HARTOG, a citizen of the United States, residing at St. Louis, Missouri, have invented a certain new and useful Improvement in Methods of Making Stencil-Machine Character-Punches, of which the following is a full, clear, and exact description, 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, forming part of this specification, in which—

Figure 1 is a face view of a pair of plates from which portions forming the character punch have been removed in accordance with the first step of my improved method. Fig. 2 is a horizontal section taken approximately on the line 2—2 of Fig. 1. Fig. 3 is a plan view of one of the plates with the punched out portions restored to the plate as contemplated by the second step of my improved method. Fig. 4 is a cross section taken on the line 4—4 of Fig. 3. Fig. 5 is a plan or face view of the plate forming the base of the completed punch, and which plate is perforated with the same set of punches used in punching out portions of the die plate. Fig. 6 is a cross section taken on the line 6—6 of Fig. 5. Fig. 7 is a face view of the punch plate in position on top of the die plate with the punched out portions of said die plate inserted in the punch plate as contemplated by the final step of my improved method. Fig. 8 is a cross section taken on the line 8—8 of Fig. 7. Fig. 9 is an elevation of a completed punch constructed by my improved method.

My invention relates to a novel and convenient method of making character punches, such as are ordinarily used in stencil machines, and the object of my invention is to simplify and cheapen the manufacture of character punches.

In the first step of my improved method a comparatively thick metal plate 1 is provided at predetermined points with apertures 2 which are adapted to receive pins located in a suitable base for the purpose of rigidly holding the plate 1 during the first step of the method. After the plate 1 is properly positioned a series of portions 3 preferably in the form of circular plugs are punched from the plate 1 thereby leaving corresponding apertures 4 which form the outlines of the character. This step in my

improved method is carried out by the means of a master die 5 through which operates a series of plungers 6 corresponding to the character to be formed and arranged to move vertically above the die 5 is a master punch 7 carrying a series of projections 8 corresponding to the character to be formed.

By means of the mechanism just described the portions 3 are punched out of the die plate after which said portions are again seated in the apertures 4 and at this point in the operation incident to carrying out my improved method the die plate is in the condition illustrated in Fig. 4. A comparatively thin metal plate 9 provided with apertures 10, which coincide with the apertures 2 formed in the die plate is now positioned on the master die 5, and a series of apertures 11 are punched in said plate 9 by means of the master punch 7, thus said plate 9 is provided with a character formed by rows of apertures 11, which apertures correspond with the portions 3, which have been punched from and reinserted in the die plate 1. The die plate 1 with the inserted portions 3 is now positioned on top of a series of pins 12 rigidly fixed in and projecting upwardly from a base 13, and which pins coincide with the inserted portions 3 carried by the die plate 1. The die plate is held in proper position on the base 13 by means of pins 14 seated in said base, and which pins pass through the apertures 2. The plate 9 provided with the apertures 11 is now positioned on top of the base plate 1 with the pins 14 passing through the apertures 10 in said plate 9, and when so positioned the punched out portions 3 coincide with the openings 11 in said plate 9.

A block 15 provided in its under side with recesses 16 coinciding with the apertures 11 in the plate 9 is now firmly positioned on top of said plate 9. The block 15 is now forced downward with pressure, or the base 13 may be forced upward with pressure and by such operation the portions 3 are forced out of the plate 1 into the apertures 11 in the plate 9. When so positioned the plugs or punched out portions 3 are firmly seated in the plate 9 with their upper portions projecting beyond the top surface of said plate 9 and the edges of these exposed or projecting upper portions are provided with and maintain the minute burs formed on said edges at the time said plugs or portions 3

were punched from the plate 1. When the finished plate is hardened these minute burs form sharp cutting edges which is a very desirable feature in stencil machine character punches.

While I have shown a comparatively simple form of apparatus for practicing my improved method it will be readily understood that the method can be practiced in a number of different ways. The essential feature of my improved method is the seating of the punched out portions or plugs in the base plate with the exposed or projecting edges of said plugs or punched out portions bearing the minute marginal burs.

Considerable time and labor and consequent expense is saved in the manufacture of punches by my improved method and the punches formed by such method are comparatively light in weight, have the requisite strength and rigidity, and the exposed edges of the projecting portions of the punch maintain the minute burs formed at the time the punched out portions are removed from the comparatively thick plate.

I claim:

1. The hereindescribed method of making stencil machine character punches, consisting in forming a series of apertures in a plate, punching a series of plugs from a thicker plate, which plugs correspond with the apertures formed in the first mentioned plate, and finally forcing the plugs from the second mentioned plate into the apertures in the first mentioned plate.

2. The hereindescribed method of making stencil machine character punches, consisting in punching a series of plugs from a plate, restoring said plugs to the apertures from which said plugs were punched, forming a series of apertures in a thinner plate, and which apertures correspond with the plugs punched from the first mentioned plate and finally removing the plugs from the first mentioned plate and inserting them in the apertures formed in the second mentioned plate.

3. The hereindescribed method of making stencil machine character punches, which consists in first punching a series of uniform sized portions from a plate, then restoring said portions to the apertures from which

they were punched, then forming a series of apertures in a comparatively thin plate, then placing said comparatively thin plate on top of the first mentioned plate and forcing the portions punched from the first mentioned plate into the apertures formed in the second mentioned plate.

4. The hereindescribed method of making stencil machine character punches, consisting in first forming a series of plugs, then forming a series of apertures in a plate which is thinner than the plugs, and then inserting the plugs in the apertures of the thinner plate.

5. The hereindescribed method of making stencil machine character punches, which consists in forming a series of apertures in a comparatively thin plate and then forcing a series of plugs into said apertures which plugs are thicker than said plate and project from one of the faces thereof.

6. The hereindescribed method of making stencil machine character punches consisting in punching a series of portions from a plate in such a manner as to produce a minute bur on one edge of each punched out portion, and then inserting the punched out portions in a plate in such a manner that parts of the punched out portions project from the face of the plate and which projecting parts carry the minute burs on their exposed edges.

7. The hereindescribed method of making stencil machine character punches consisting in punching a series of plugs or portions from a plate, restoring said plugs to the apertures from which said plugs were punched, forming a series of apertures in a thinner plate, which apertures correspond with the plugs punched from the first mentioned plate, then laying the thinner plate on top of the first mentioned plate and finally forcing the plugs from the first mentioned plate into and partially through the apertures in the thinner plate.

In testimony whereof I hereunto affix my signature in the presence of two witnesses, this 16th day of April, 1910.

STEPHEN D. HARTOG.

Witnesses:

M. P. SMITH,
ALMA GEBHART.