

D. W. DODSON.
DIE.

APPLICATION FILED AUG. 31, 1896.

911,956.

Patented Feb. 9, 1909.

2 SHEETS—SHEET 1.

Fig. 6.

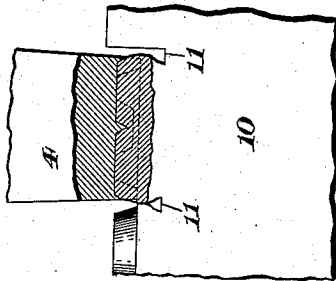


Fig. 5.

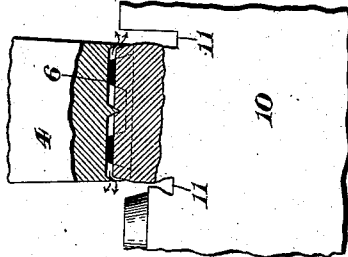


Fig. 4.

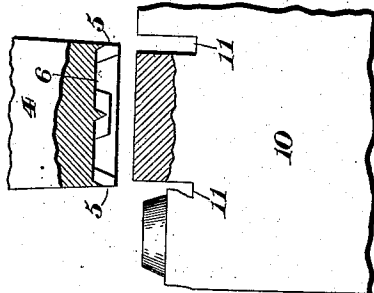
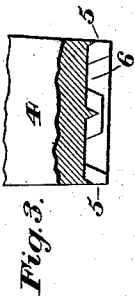


Fig. 3.

Fig. 1.

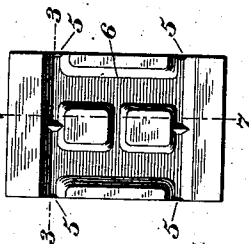


Fig. 2.

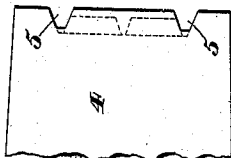


Fig. 12.

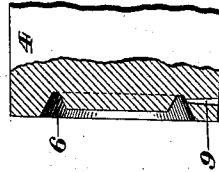


Fig. 11.

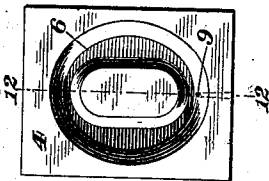


Fig. 10.

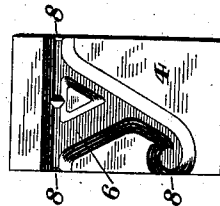


Fig. 9.

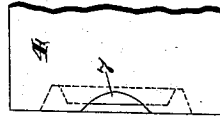


Fig. 8.

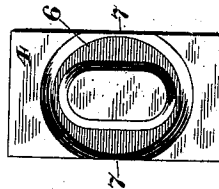
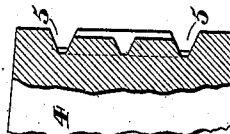


Fig. 7.

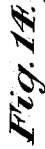
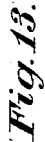


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APPLICATION FILED AUG. 31, 1896.

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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

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No. 911,956.

Specification of Letters Patent.

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Application filed August 31, 1896. Serial No. 604,467.

To all whom it may concern:

Be it known that I, DARIEN W. DODSON, a citizen of the United States, residing in Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Dies, of which the following is a specification.

This invention relates to dies, and more especially to those employed for forming characters—such as type or the like—in soft metal bars or other material by compression.

It has been found in practice that air is confined within the hollow portions or inclosed spaces of dies, and that upon the impact of the die this air becomes so greatly compressed as practically to constitute a solid substance forming a part of the die itself, thereby increasing the effective area or working-surface of the die and causing either distortion in, or lack of clearness or sharpness of outline of, the impression produced by said die.

To remedy this defect, and to produce a die capable of forming a perfect, clear, sharp, and well-defined impression is the object of my invention; and as one means of accomplishing this object, and thereby effecting a perfect result, I form in the walls of the die passages or outlets through which, on the impact of the die, the highly-compressed air may escape and hence be prevented from acting as a plunger or die-face to distort, blur, or otherwise injure the impression. I prefer to produce this result by removing a small portion of the metal from the sides of the die at suitable points where the flow of the impression material will not be materially affected, thereby leaving the inclosed space within the die open to the atmosphere at the time complete compression takes place.

In the drawings accompanying and forming part of this specification, Figures 1 and 2 are plan and side views, respectively, of one form of my improved die. Fig. 3 is a transverse sectional view thereof, on line 3—3, Fig. 1. Figs. 4, 5, and 6 are sectional views, illustrating the action of the die in forming an impression in a soft metallic bar, which when completed will constitute a type-bar or linotype. Fig. 7 is a longitudinal section, on line 7—7, Fig. 1. Figs. 8 and 9 are plan and side views, respectively, of another form of die. Fig. 10 is a plan view of a die for

forming the letter Y, showing my invention embodied therein. Fig. 11 is a plan view of still another form of die. Fig. 12 is a section on line 12—12, Fig. 11. Fig. 13 is a detail sectional side elevation of a die and operating mechanism therefor; and Fig. 14 is a detail view of a rolling-die, showing the action thereof upon the blank. The first twelve figures and Fig. 14 are drawn to a greatly-enlarged scale.

Similar characters designate like parts in all the figures of the drawings.

Referring to Figs. 1 to 7, inclusive, the numeral 4 indicates the die, and the numeral 5, reduced or removed portions of the side wall thereof constituting small passages communicating with the inclosed part or "cup" 6 of said die through which, as shown by arrows in Fig. 5, the air, compressed on the descent of the die, may escape just prior to the final compressive action thereof in forming the character or other impression, the final position of the die being represented by Fig. 6.

As will be seen by Fig. 1, the passages leading to the interior of the die are so disposed, and the walls of said passages are so inclined or otherwise formed, that any small displacement or flowage of the material in which the impression is made will not affect the shape of the character or impression, but will be deflected outward and downward to one side of said impression.

In Figs. 8 and 9, a die is illustrated for forming the letter O, and metal of the side walls of said die is reduced or cut away, as at 7, to afford passages leading to the interior of the die, through which passages the compressed air may readily escape in the manner above set forth.

In Fig. 10, a die is illustrated for forming the letter Y, and passages 8—8, communicating with the chamber of the die are shown disposed at what may be termed "three corners of the letter", so that air carried down and compressed by the cup of the die may readily escape at three different points.

In Figs. 11 and 12, a small perforation 9, extending through the wall of the die below the top or end thereof, is illustrated for the same purpose, and the walls of said perforation are shown slightly diverging outward, in order that any small particles of the metal or

other impression material may be readily forced out of the same.

In all of the dies shown the passage-ways or vents for the escape of air must, as is obvious, be of very small size.

The improved die herein shown and described is especially designed and intended for use in a type-making machine for forming type on the edge of a suitable type-bar blank, a machine for this purpose constituting the subject-matter of an application filed by me July 22, 1896, Serial No. 600,151. In the present case I have represented in Fig. 13 a portion of such a machine sufficient for the purpose of illustrating the manner in which type are formed by my improved die. In this view, the die 4 preferably forms part of a die-carrier C, mounted for rotation on a turret T while revolving with said turret. The die, therefore, travels in a hypocycloidal path, and is carried with a rolling movement into engagement with the face of a type-blank segment of the type-bar blank 10, the blank being supported by means of a carrier—such as F. In this instance the axial rotation of the die is effected by means of a pinion 20 in fixed relation with the die, the teeth of this pinion meshing with those of an internal gear or resistance driving-gear 38 and being driven thereby, when the turret is rotated, in a direction opposite to the direction of rotation of said turret.

It is obvious that the narrow channel-ways or passages for the escape of air, may be formed in other parts of the die than as represented—as, for instance, across the projecting walls or sides of the character portion thereof—but I prefer the construction above set forth.

While I have illustrated my improved die as employed for producing impressions in a soft metal bar or linotype-blank provided with kerfs or reduced portions 11, to permit the displacement or flowage of material under the action of the die, no claim is herein made for such bar, or to the method of producing the same, as they constitute the subject-matter of my application, filed July 22, 1896, Serial No. 600,152.

Having described my invention, I claim—

1. A die, the interior space of which communicates with the atmosphere at a point in a wall of the die to one side of that face of the die which operates to form the impression-face of the type, said wall being inclined outwardly from said face to said point.

2. A die having its side reduced or cut away to intersect a wall of the die adjacent to that face of the die which operates to form the impression-face of the type, the portion of the die-wall between said face and the point of intersection being inclined to cause the metal to be deflected outwardly and downwardly.

3. A die having its side reduced or cut away at different points to intersect walls of the die adjacent to that face of the die which operates to form the impression-face of the type, the portion of the wall between said face and the point of intersection being inclined to cause the metal to be deflected outwardly and downwardly.

4. A die, which has a cavity which is wholly inclosed except at the end-face of the die, said die having an air-vent; in combination with a carrier for a blank and means for actuating the die and the carrier with relation to each other to cause the die to roll over a blank held in the carrier.

5. A die, which has a cavity which is wholly inclosed except at the end-face of the die, said die having an air-vent; in combination with a carrier for a blank and means for actuating the die and the carrier with relation to each other to cause the die to roll transversely of a blank held in the carrier.

6. The combination with a carrier for a blank, of a die, and means for actuating the die and the carrier with relation to each other to cause the die to roll over a blank held in the carrier, the cavity of said die having an air vent intersecting a side wall of the die disposed transverse to the plane of rolling at a point above the bottom wall of the cavity and below the plane of the mouth of the cavity.

7. A die which has a cavity which is wholly inclosed except at the end-face of the die, said die having a plurality of air-vents; in combination with a carrier for a blank and means for actuating the die and the carrier with relation to each other to cause the die to roll over a blank held in the carrier.

8. A die which has a cavity which is wholly inclosed except at the end-face of the die, said die having a plurality of air-vents; in combination with a carrier for a blank and means for actuating the die and the carrier with relation to each other to cause the die to roll transversely of a blank held in the carrier.

9. A type die which has a type-forming die-cavity for forming types by impressing a solid surface of type-formable material and which has an outwardly-flaring air-vent intersecting a side forming wall of said cavity.

10. A die which has a type-forming die-cavity for forming types by impressing a solid surface of type-formable material and which has an outwardly-flaring air-vent intersecting a wall of said cavity at one side of and adjacent to that face of the die-cavity which operates to form the impression face of the type.

11. A die which has a type-forming die-cavity for forming types by impressing a solid surface of type-formable material and which has an outwardly-flaring air-vent intersecting an inclined wall of said cavity at

one side of and adjacent to that face of the die-cavity which operates to form the impression face of the type.

12. A type-die having a wall cut away to intersect a side wall of the die cavity at a point above the bottom wall thereof, and inclined in a direction away from the face of said wall and thereby provide an air vent for the die cavity.

13. An intaglio die, the working cavity of which has an air vent intersecting a side wall of the die cavity at point below the plane of the mouth of the cavity, and inclined away from the impression face forming face of the die.

14. An intaglio die, the working cavity of which has a plurality of air vents intersecting a plurality of side walls of the die cavity at points below the plane of the mouth of the

cavity, and inclined toward said mouth and away from said impression face forming face of the said die.

15. The combination of a carrier for a blank, of a die, and means for actuating the die and the carrier with relation one to the other, to cause a resultant relative movement of the die rolling over a blank held in the carrier, the chamber of the die having an opening intersecting its side-walls and so disposed relatively to the line of rolling, the bottom wall of the die, and the face of the type being formed as to have a vent for the air within the die chamber when the die is rolling in the opposite direction.

DARIEN W. DODSON.

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