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STEP IN THE MODE OF MAKING DIE STAMPS OR THE LIKE.
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Fig. 1.

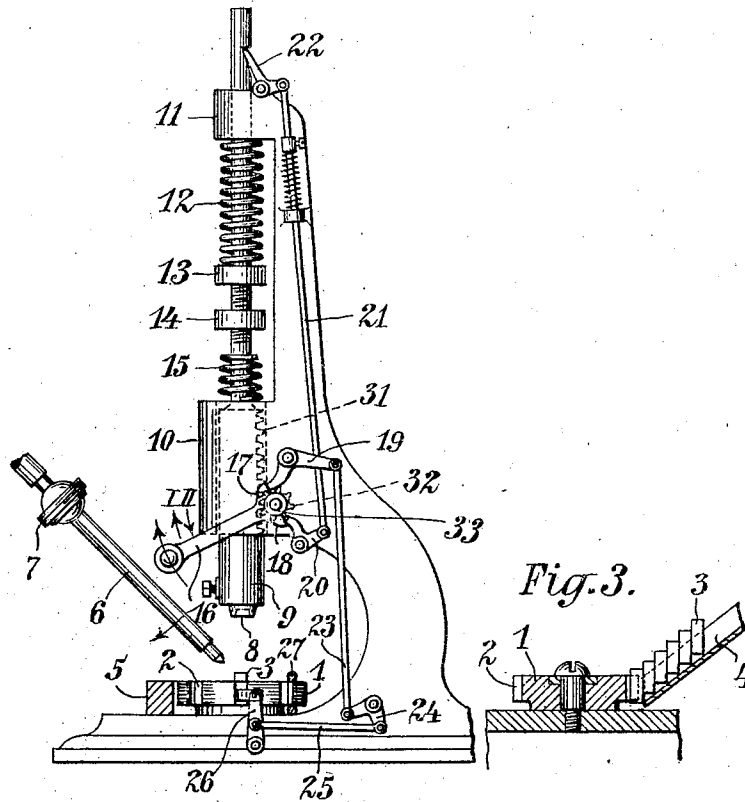
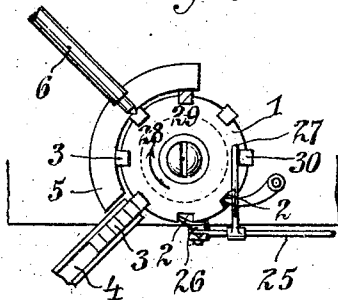


Fig. 2.



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STEP IN THE MODE OF MAKING DIE-STAMPS OR THE LIKE.

1,046,146

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, FRANZ DE BUIGNÉ, engineer, a subject of the Emperor of Austria-Hungary, and a resident of V. Zentgasse 8, Vienna, in the Empire of Austria-Hungary, have invented a new and useful Step in the Mode of Making Die-Stamps or the Like; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The invention relates to a step in the manufacture of stamps, such as printing stamps, punches, press- and stamping-out dies and similar articles, such as typewheels for numerators or press rolls.

In such connection my said invention relates particularly to a step in the mode of making such stamps, which consists in taking a hard metal blank and subjecting it to an intense and non-oxidizing heat so as to soften only that portion which is to receive the impress of a master die.

The object of my invention is an improved method to produce such articles of the desired hardness by a mechanical process in a quick, easy and cheap way.

In the accompanying drawings a construction of an apparatus is represented by way of example.

Figure 1 is an elevation of an apparatus. Fig. 2 shows the blank holder in plan and Fig. 3 a cross section through the blank holder with the feeding device.

For carrying out the process, a negative of the stamp to be produced, which can be a male or female die, is made in the well known manner of a softer, that is to say, easily treatable material, or an existing stamp of some hard or soft material may be used. The process consists in the blank on which the stamp is to be produced, being quickly softened only locally or rendered softer but at that place or surface which is to be shaped, by means of a very hot flame acting on it only for a very short time (a few seconds), and immediately afterward the stamp which is to be reproduced, is pressed against it. If a stamp composed of soft material is used as pattern, it is pressed but for a very short time, namely a fraction of a second (say 1/100 of a second), against the softened surface and then it is quickly withdrawn, whereupon the work

can be cooled. In this way it is possible to produce dies and the like with the finest recesses or reliefs, but care must be taken that no oxid layer should be formed. That can be effected by using an oxygen blower or by placing on the heated surface borax. It is also possible to blow, simultaneously with the flame, a gas jet, for instance water gas, against and around the surface to be treated, the said jet preventing access of air to the said surface and remaining effective even after the flame action has ceased, up to the time when the surface treated has cooled down. The gas current can, of course, be utilized to assist the cooling of the article.

The very hot flame, etc., acts only for a short time on the surface in question, while the surfaces immediately below or adjoining the same, are heated to a negligible degree, and the portions situated a little farther off are scarcely heated at all. Thereby it is attained that but the surface which has to be shaped is softened, while all the other parts of the working piece remain hard and while pressing form the resistance necessary for an exact copy of the pattern stamp. Owing to the extremely short time during which the stamp or die acts on the article to be treated, the finest lines are reproduced and owing to the quick cooling of the article, they are rendered permanent, and at the same time an adhesion of the die to the blank, or a melting of the same, is absolutely impossible. More particularly, in the manufacture of stamps in relief, a neat filling up of the die by the hot material is obtained. The quick cooling of the hot surface which as a rule is only very small, results in the said surface regaining the original and sometimes even greater hardness. Experiments have proved that the hot surface of wrought iron articles becomes hard.

When treating blanks of large surface and using one or more flames, the blank may be caused to rotate quickly, whereby the flame or flames, coming in contact with one portion of the surface, are, so to say, carried along and in that way the whole surface is uniformly softened or rendered softer. In reproducing stamps and the like of soft material for instance, lead type, a negative of harder metal, for instance nickel, is obtained from them, say, by a galvano-plastic process, and the said negative is best set in hard lead. This is done not because the melting point

of lead is comparatively low, but because, when a lead stamp is used, the outline is not sufficiently sharp.

The apparatus for carrying out the process according to this invention chiefly consists of a holder for the blanks, a burner pipe and a stamp arranged above the blank holder. The latter consists of a rotatable disk 1, provided at its circumference with a number of recesses or notches 2, adapted to receive the blanks to be treated. The blanks 3 are supplied to the disk by means of an inclined plane 4, and secured against falling out of the notches by a segment 5 surrounding the same to the extent of about 180°. The burner 6 is rotatable about a joint 7 and hence can be turned from the operative into the inoperative position. The die 8 is fixed in a die-holder 9 which is guided in guides 10, 11 above the working place and can be forced downward by means of a spring 12. This spring rests, with one end, against the guide 11 and with the other end against a collar 13 on the die holder. Between the guide 10 and a second collar 14, is inserted a short spring 15. The machine is operated by means of a lever 16 which, by means of two projections or cams 17, 18, can act on two bell-crank levers 19, 20, the lever 20 acting by means of a rod 21 on a supporting lever 22 for holding the die holder 9 in its raised position, while the bell crank lever 19 acts by means of a rod 23, bell crank lever 24 and rod 25 on a spring pawl 26 engaging the disk 1. The rod 25 operates further a bifurcated ejector 27 for the blanks already treated.

The working of the machine is as follows: The blank which is at the working place 28 is locally intensely heated by the action of the hot flame on its upper surface and then the lever 16 is turned in the direc-

tion of the arrow I, whereby the disk is advanced to the extent of the pitch of the notches in the direction of the arrow (Fig. 2). In this way, a second blank is brought to the working point 28, while the blank which was previously exposed to the flame is now at the point 29 below the die 8. At the same time the die 8 is raised by means of a tooth rack 31 and of a toothed wheel 32 secured to the spindle 33 of the lever 16 and held up by the supporting lever 22. If the lever 16 is then moved in the direction of the arrow II, the spindle 33 being moved, the die holder 9 will be released, and, under the action of the spring 12, will strike against the blank and stamp upon the heated material. Owing to the collar 14 striking the spring 15, the latter is compressed by this movement, and the consequence is an exceedingly quick withdrawal of the die 8 from the blank. Finally, the blank when in the position 30 is laterally ejected by the ejector 27. At that place of the disk where the flame is acting, an arc light may be substituted or a contact to shut the electrical current may be arranged.

What I claim as my invention and desire to secure by Letters Patent is:

A step in the mode of making die-stamps, which consists in taking a hard metal blank and subjecting it to an intense and non-oxidizing heat so as to soften only that portion which is to receive the impress of the master-die, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

FRANZ DE BUIGNÉ.

Witnesses:

FRANZ REITER,
ALVESTO S. HOGUE.