

No. 688,316.

Patented Dec. 10, 1901.

H. I. KIMBALL.

METHOD OF PRODUCING INTERCHANGEABLE LETTER OR FIGURE DIES.

(Application filed Apr. 13, 1901.)

(No Model.)

Fig. 1.

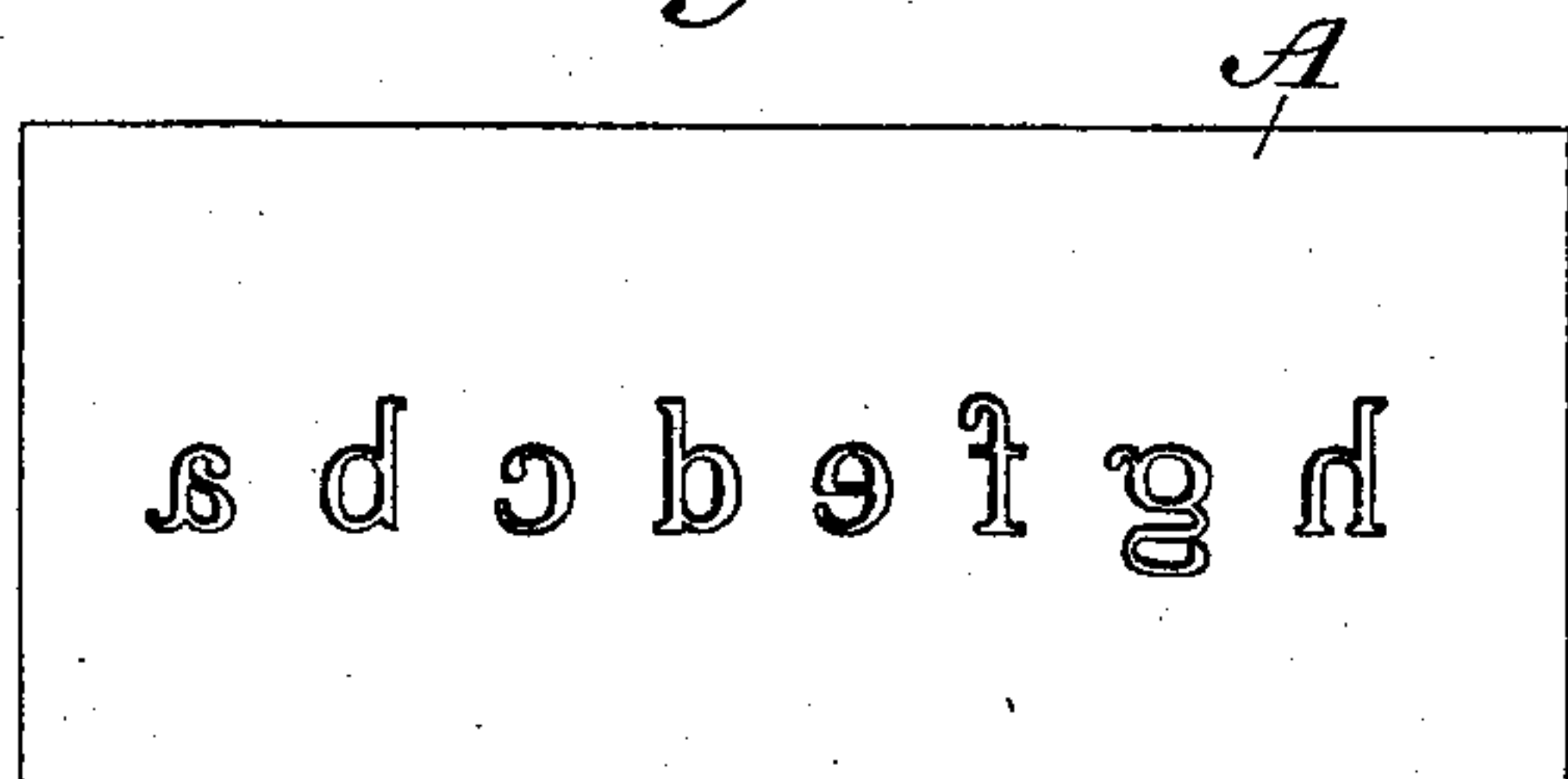


Fig. 2.

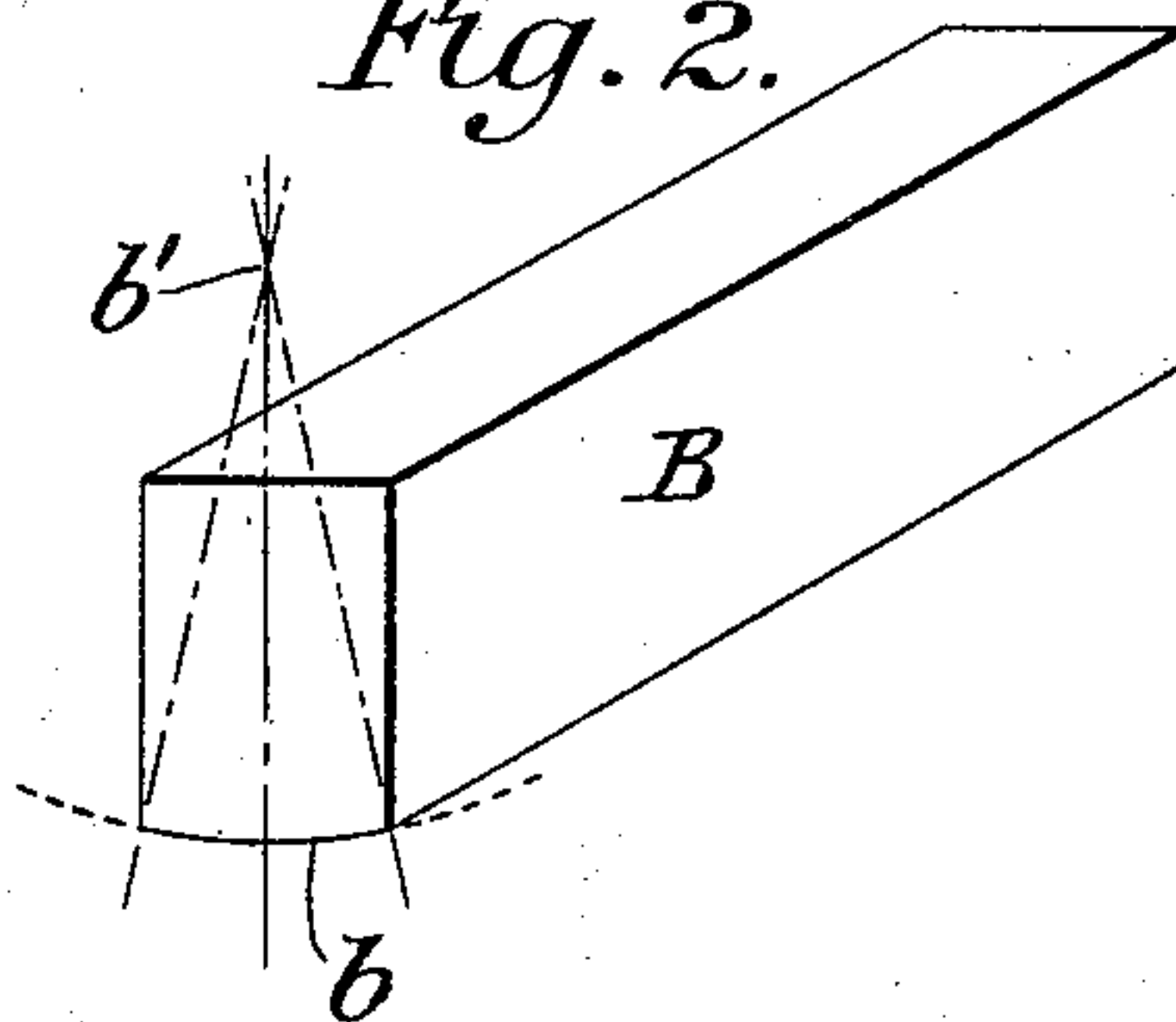


Fig. 3.

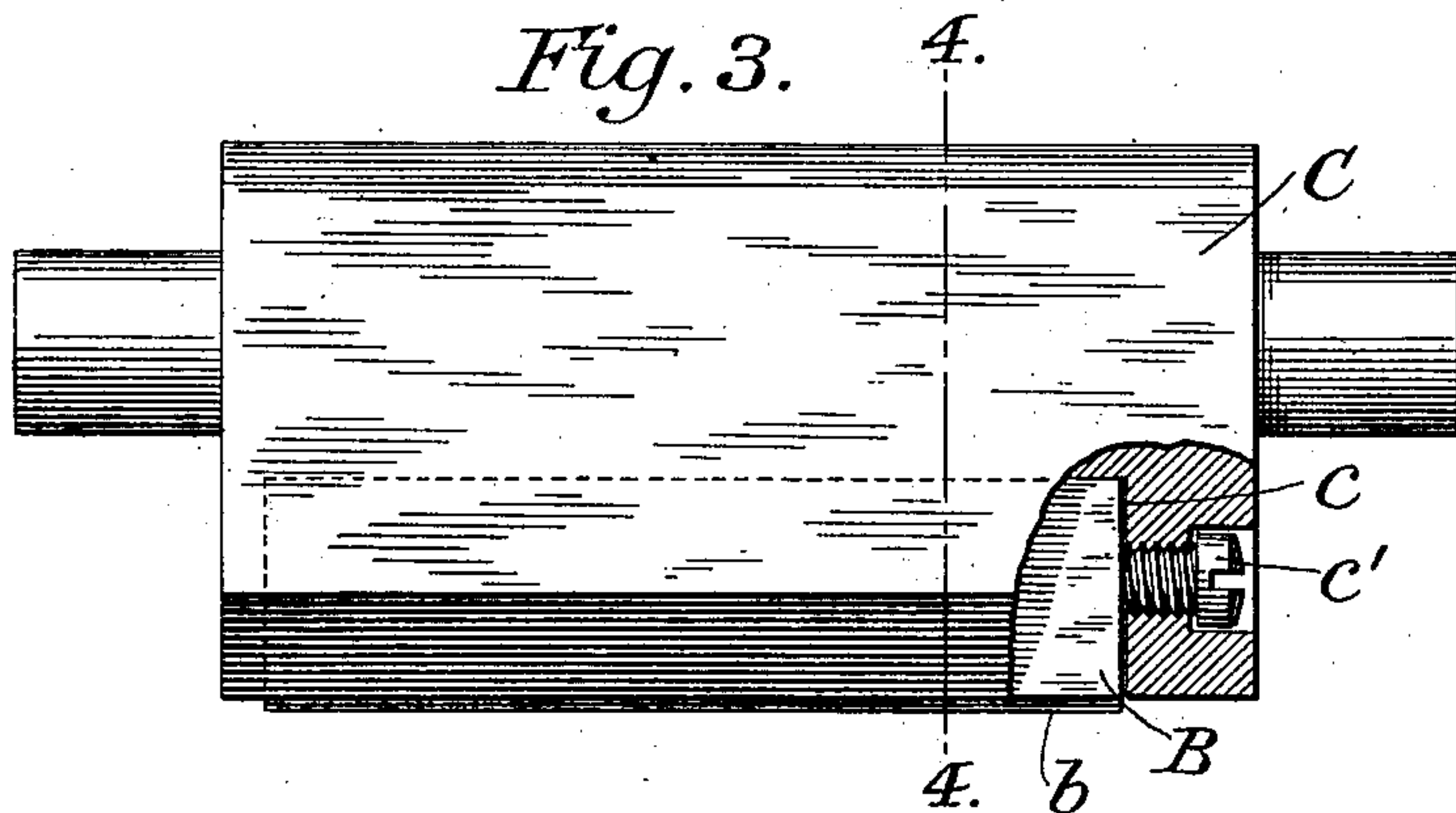


Fig. 4.

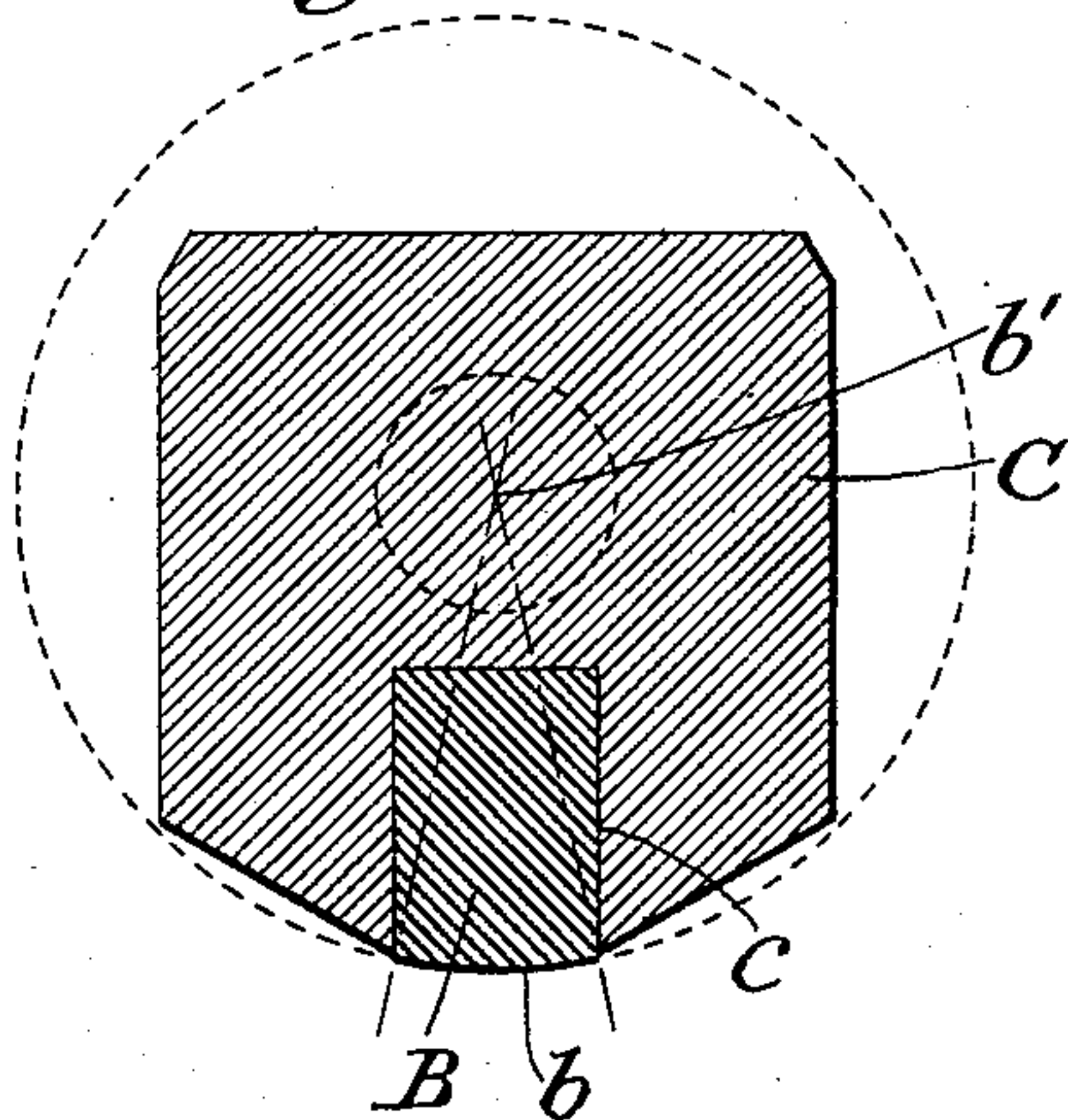


Fig. 5.

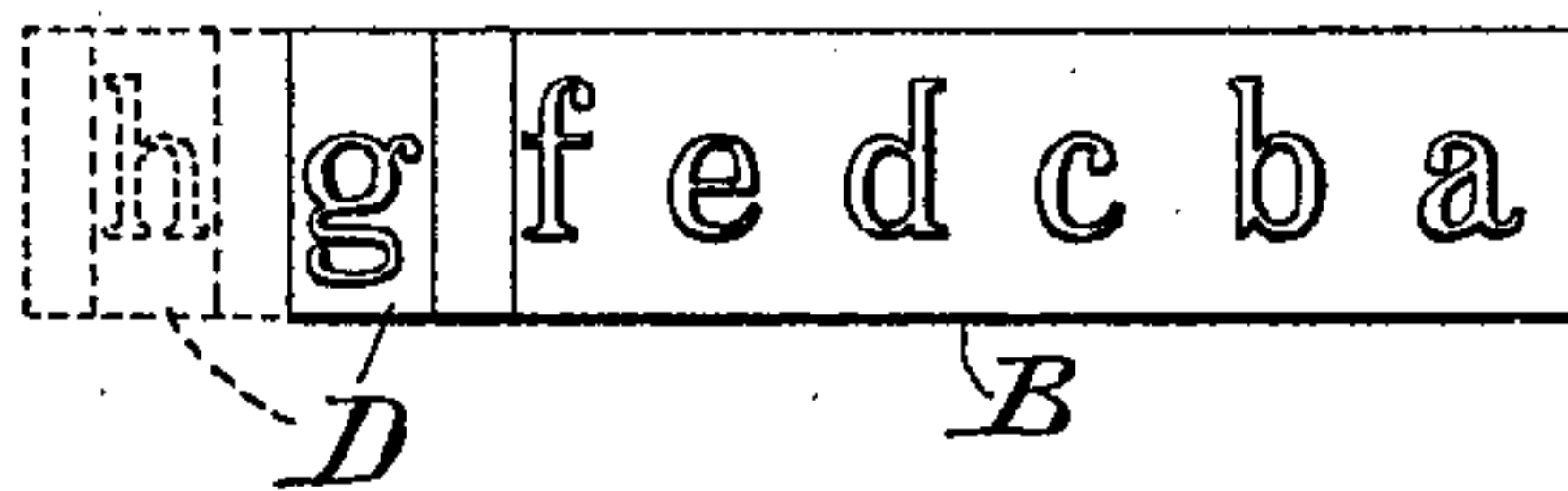
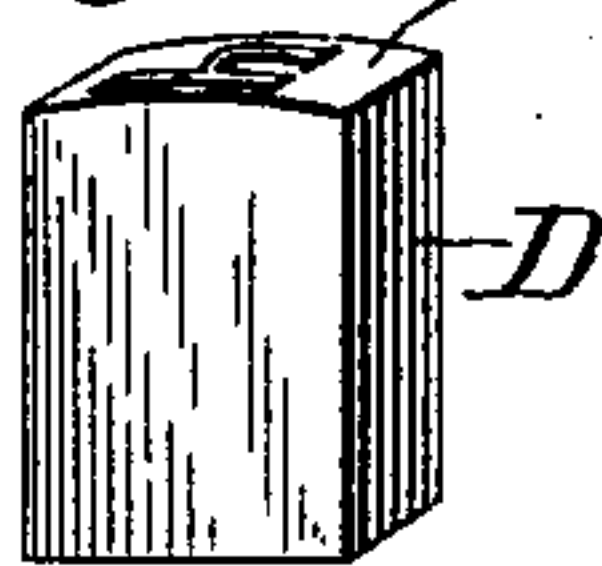


Fig. 6.



Attest:

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UNITED STATES PATENT OFFICE.

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METHOD OF PRODUCING INTERCHANGEABLE LETTER OR FIGURE DIES.

SPECIFICATION forming part of Letters Patent No. 688,316, dated December 10, 1901.

Application filed April 13, 1901. Serial No. 55,633. (No specimens.)

To all whom it may concern:

Be it known that I, HANNIBAL INGALLS KIMBALL, a citizen of the United States, residing in the borough of Manhattan, city, county, and State of New York, have invented certain new and useful Improvements in Methods of Producing Interchangeable Letter or Figure Dies, of which the following is a specification.

This invention relates generally to the production of plates or blocks from which printed impressions are to be produced as from plates or blocks engraved by hand. It has been proposed heretofore to produce such plates or blocks by first cutting or engraving upon a suitable plate of relatively soft metal a number of letters or figures, then hardening such plate, then taking off from the plate upon a roll or cylinder of soft metal the letters or figures in relief, then cutting the roll or cylinder into disks, each bearing a single letter or figure, then grinding to the proper size and hardening these disks, then assembling such of the letter or figure disks as are required to form the desired name or number, and finally rolling such composite roll or cylinder upon the printing-plate, and thus transferring to the printing-plate in intaglio the desired name or number. The letter or figure disks thus formed can be kept in stock and used as may be required to form any name or number.

In practical use the method above described develops some serious objections. Considerable labor and therefore expense are involved in cutting the roll or cylinder to form the separate letter or figure disks and in grinding such disks to the exact size required. Furthermore, the hardening of such disks, some of which are relatively quite thin, is apt to distort the disks more or less, so that they must be reground, and in some cases become useless.

It is the object of the present invention to provide a substitute for the above-described method which shall retain all of the advantages possessed by the described method in the rapid and economical production of printing plates or blocks and shall be free from the serious practical difficulties above noted.

The invention will be more fully described hereinafter with reference to the accompanying drawings, in which—

Figure 1 is a plan view of a plate having engraved thereon, in intaglio, the desired printing characters. Fig. 2 is a view in perspective of a block or bar to which the printing characters are to be transferred in relief. Fig. 3 is a view in side elevation, partly broken, of a chuck or holder in which the block or bar shown in Fig. 2 or subsequently-formed dies are secured. Fig. 4 is a section on the plane indicated by the line 4-4 of Fig. 3. Fig. 5 is a face view of the block or bar shown in Fig. 2, with the printing characters formed in relief thereon, the cutting of the block or bar to form separate dies being also indicated. Fig. 6 is a view in perspective of one of the dies.

The plate A (shown in Fig. 1) has engraved thereon, preferably while it is in a relatively soft condition, the desired printing characters in intaglio and is then hardened, if it is not already sufficiently hard, to endure the subsequent operations. A block or bar B, which may also be of metal in a relatively soft condition, is then prepared, having such length as may be conveniently handled during the subsequent operations and of a width sufficient to receive the desired printing characters. The depth or thickness of this block or bar is such as to permit it to be securely held in position in the chuck or holder C (shown in Fig. 3) and also to permit the separate dies which are subsequently formed from the block or bar to be securely held in the same or a similar chuck or holder. The face of the block or bar *b* is convex about the longitudinal axis, (indicated at *b'*), such imaginary axis coinciding with the working axis of the chuck or holder C when the block or bar is in position therein, as clearly indicated in Fig. 4. The chuck or holder C is so constructed in any suitable manner as to adapt it to be secured in the press which is employed in the transferring of the letters or figures from the engraved plate to the block or bar and from the block or bar to the printing block or plate and to securely hold the block or bar or the dies during such operations. As represented in Figs. 3 and 4, the chuck or holder C is formed with a longitudinal slot *c*, which is of such depth as to hold the block or bar B or the dies with their faces at the true radial distance from the working

axis of the chuck or holder and of such width and length as to receive the bar or plate or the dies and yet permit them to be held securely therein. As represented in Fig. 3, the chuck or holder may be provided at one end of the slot *c* with a set-screw *c'*, by means of which the block or bar B or the letter or figure dies may be held securely in position.

When the block or bar B in a relatively soft condition has been secured in the chuck or holder and the letter placed in a suitable press, the block or bar is rolled upon the hard plate A under great pressure to transfer to the face of such block or bar in relief the letters or figures engraved or cut in the plate A. Then the block or bar is removed and cut, as indicated in Fig. 5, to form separate dies D, each of which may bear upon its convex face *d* a single letter or figure, and is of such thickness as will permit its letter or figure to be placed in proper juxtaposition with the next letter or figure in forming the desired word or number. In view of the relatively small depth and width of the block or bar as compared with a roll or cylinder of the same working radius the cutting of the block or bar to form separate dies and such grinding of the separate dies as may be necessary will be performed with very little labor and at very slight expense as compared with the cutting of such roll or cylinder to form separate disks and the subsequent grinding of such disks. Furthermore, the hardening of the separate dies, which is the next step, is effected much more easily than the necessary hardening of the disks above referred to and by reason of the shape and size of each separate block or die such hardening is very much less likely to distort the dies. If any slight distortion does occur, (although it is unlikely,) it can be readily corrected by grinding subsequently, such grinding of the single die being much more easily effected than the grinding of a disk of the same working radius.

When the necessary dies have been properly prepared, as described above, such dies as are required to form the desired word or number are selected and placed again in the chuck or holder C or in a similar chuck or holder and are securely fastened therein. There will be no trouble in securing the proper alinement of the dies if the chuck or holder is properly prepared, as such dies will rest directly upon the bottom of the space prepared for them and against the wall of such space, a filling-strip being added, if necessary. The chuck or holder with its dies in position is then placed, as before, in a suitable press and is rolled upon the surface of a relatively soft plate to transfer to such plate in intaglio the desired word or number. The plate or block thus prepared may then be used in printing in the same manner as an engraved plate or block.

I claim as my invention—

The method of producing interchangeable letter or figure dies consisting in providing a relatively hard plate having letters or figures formed thereon, providing a block or bar of relatively soft metal of suitable dimensions to receive the letters or figures and having a convex face, mounting such block or bar in a chuck or holder with the axis of the convex face coinciding with the working axis of the chuck or holder, transferring the letters or figures to the face of said block or bar in relief, cutting said block or bar into separate letter or figure dies, and hardening such separate letter or figure dies so that the same may thereafter be associated for the name and number desired, substantially as described.

This specification signed and witnessed this 12th day of April, A. D. 1901.

HANNIBAL INGALLS KIMBALL.

In presence of—

ANTHONY N. JESBERA,
LUCIUS E. VARNEY.