

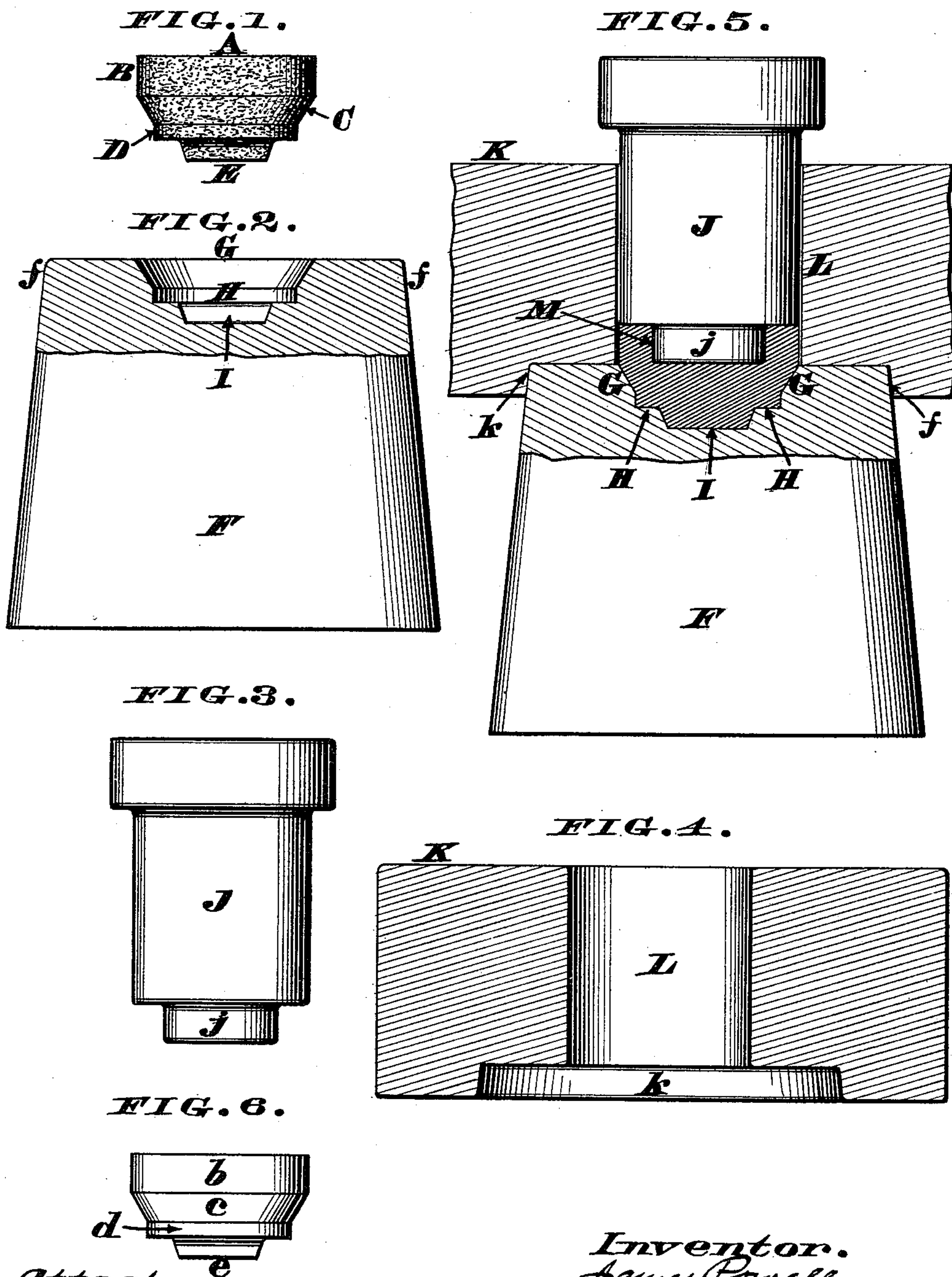
(No Model.)

J. POWELL.

DIE FOR COMPRESSING VALVE BLANKS.

No. 403,696.

Patented May 21 1889.



Attest.
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UNITED STATES PATENT OFFICE.

JAMES POWELL, OF CINCINNATI, OHIO.

DIE FOR COMPRESSING VALVE-BLANKS.

SPECIFICATION forming part of Letters Patent No. 403,696, dated May 21, 1889.

Application filed October 22, 1888. Serial No. 288,861. (No model.)

To all whom it may concern:

Be it known that I, JAMES POWELL, a citizen of the United States of America, residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Dies for Compressing Valve-Blanks, of which the following is a specification, reference being had therein to the accompanying drawings.

10 This invention includes certain appliances for hardening or condensing those cast-metal disk-valves which are subsequently attached to operating stems or spindles and used for controlling the flow of steam, gas, fluids, &c., through suitable globes, shells, or other housings. Said appliances consist, essentially, of a swage-block whose upper end has a pit that admits the valve-blank, which latter is driven into said pit by a suitable punch, plunger, or ram, as hereinafter more fully described; but with certain forms of valves it is preferred to surround the top of the swage-block with a detachable curb that receives a portion of the blank, said curb being furnished with a bore that serves as a guide for the punch, as hereinafter more fully described.

In the annexed drawings, Figure 1 is a side elevation of the rough casting to be converted into a valve. Fig. 2 is a sectionized elevation of the swage-block employed for finishing said casting. Fig. 3 is an elevation of the punch used for driving the casting into said block. Fig. 4 is a sectionized elevation of the curb that retains the casting within the swage-block. Fig. 5 is a vertical section showing the method of using the aforesaid appliances in condensing a valve. Fig. 6 is a side elevation of the condensed or hardened valve.

Referring to Fig. 1, A represents the valve, which is a rough casting made of any metal or composition of metals capable of being hardened or condensed by pressure or hammering. This casting may be of any size and shape best adapted for the purpose of a valve; but it is here shown as being composed of a short cylindrical body, B, conical bearing C, a cylindrical guide, D, and a flange or rib, E, which latter facilitates the future attachment of the finished valve to the operating stem or spindle.

F represents a swage-block the upper end of which, *f*, is cylindrical, while its face has

an inclined pit, G, made in it, which pit joins a short cylindrical counterbore, H, having at bottom a groove, I. 55

J is a cylindrical punch having at bottom a short cylindrical shank, *j*.

K is a curb consisting of a heavy ring, whose lower face is counterbored at *k* to fit snugly over the rounded end *f* of the swage-block F. 60 L is a bore passing completely through this ring and being concentric with the counterbore *k*.

The operation of finishing valves with these appliances is as follows: The rough casting is first placed within the die of the swage-block F, the conical bearing C being seated in the correspondingly-shaped pit G, while the guide D and flange E enter, respectively, the cylindrical counterbore H and groove I. Consequently, the body B of the casting projects above the upper surface of said block, as seen in Fig. 5. The curb K is now seated upon the swage-block, the cylindrical end *f* of the latter entering the cylindrical counterbore *k* of the former, thereby centralizing said curb and retaining it in a proper position. Furthermore, this application of the curb to the swage-block causes the cylindrical body B of the casting to enter the lower end of the bore L of said curb. 80 After these preliminary steps have been taken, the punch J is inserted in the bore L of the curb, the shank *j* of said punch entering a socket, M, in the upper end of the casting. Several blows are then given to the head of the punch, which blows may be imparted either with a hammer or the plunger of a drop-press, as the manner of carrying out this part of the process is immaterial, provided the casting is so forced into the die of the swage-block as to harden or condense the metal to the required degree. After the first or second or any subsequent blow or blows of the hammer or plunger, the casting can be taken out of the swage-block and then annealed and rehammered as often as may be necessary. The number of blows given to the casting and the extent to which it is annealed will vary with the metal or metals of which the valve is made or the particular use to which it is to be put. 100 Therefore specific instructions for carrying out this part of the process cannot be given; but the finished valve will have the appearance seen in Fig. 6, where *b*, *c*, *d*, and *e* repre-

sent the bright hardened or condensed surfaces of the valve.

I claim as my invention—

1. A valve-hardening appliance consisting
5 of the swage-block F, having a pit, G, of less diameter at bottom than at top, in combination with the punch J, as herein described.

2. A valve-hardening appliance consisting
10 of the swage-block F, having a pit, G, of less diameter at bottom than at top, in combination with the punch J and detachable curb K, the latter being provided with a bore, L, and counterbore k , as herein described.

3. A valve-hardening appliance consisting
of the swage-block F, having a pit, G, of less
15 diameter at bottom than at top, in combination with the punch J, which punch has at one end a shank, j , that enters a socket, as M, of the valve, as herein described.

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

JAMES POWELL.

Witnesses:

JAMES H. LAYMAN,
SAML. S. CARPENTER.