

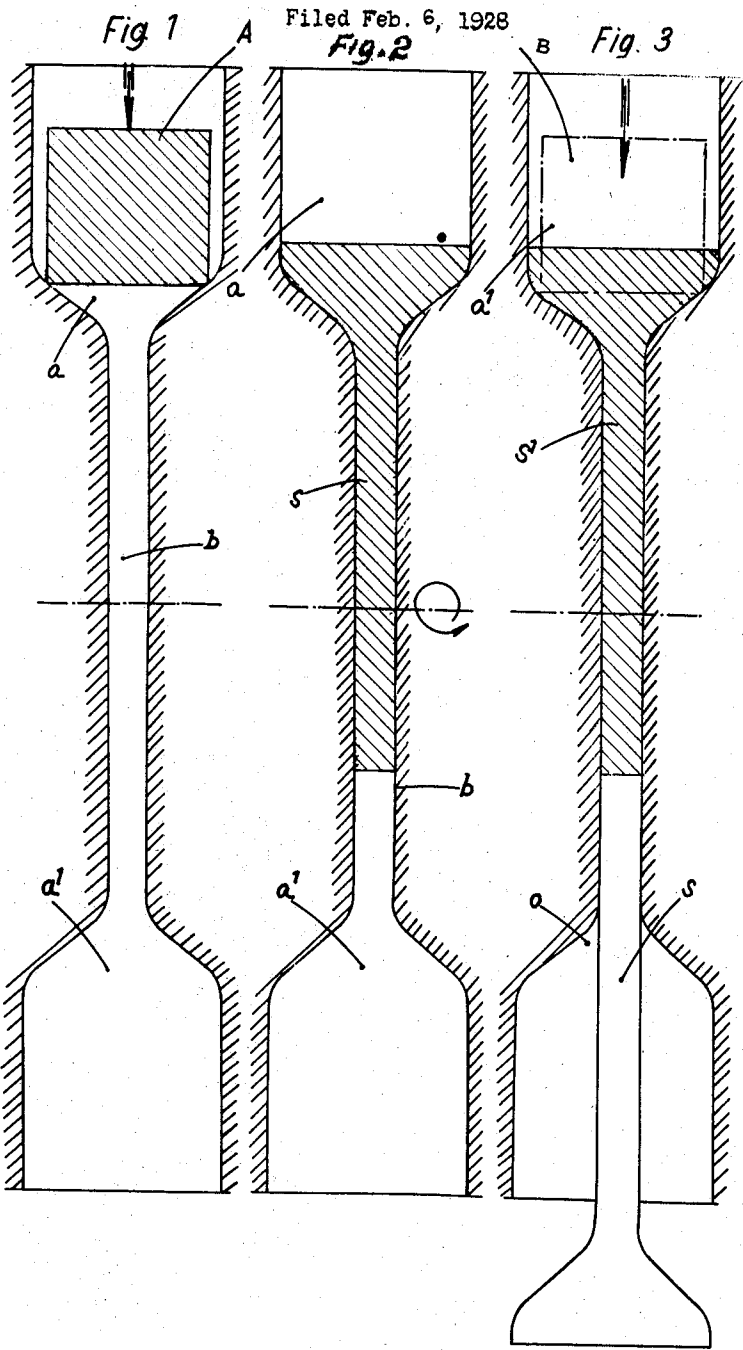
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MANUFACTURING OF VALVES AND LIKE DEVICES

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MANUFACTURING OF VALVES AND LIKE DEVICES.

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My present invention relates to the manufacture of valves and like devices and has chiefly for its object certain improvements in the forging process specified in the U. S. Patent No. 1,351,949 of September 7, 1920. The process for the forging of the disks of valves, as specified in the said patent, comprises a first operation of drawing the stem, starting from a piece of metal, the diameter of which is comprised between the diameter of the stem and that of the head, and in operating by the press so as to force the hot metal through the orifice of a die which leaves a part representing the head. The head is terminated in a second operation by pressing this head between a matrix and a suitable punch or die. The said process provides for the manufacture of valves of great strength, without requiring specially skilled labor. The improvements according to the present invention relate chiefly to the tool outfit required to carry out the process and are adapted to increase the output, while at the same time reducing the labor force occupied with the apparatus.

In the process described in my aforesaid patent, it was necessary, in the first operation corresponding to the formation of the stem, to remove the valve from the matrix by pressing upon the stem, and for this purpose, to wait for a certain time until the metal was cooled, whence a considerable time was lost.

I am enabled to obviate all such defects, in my present invention, by the use of a machine comprising two or more matrices, thus reducing the time between the operations of forming the valve stems.

In my preferred form of construction, the machine is provided with two matrices in directly opposite position, which are connected together by a conduit into which is forced the metal necessary to form the valve stem. After each operation of forcing the metal, the apparatus is turned through 180 degrees, without expelling the valve which has just formed. By this rotation, I am enabled to bring before the punch of the press the second matrix which contains the blank used for the manufacture of the second valve. When the stem of this valve is formed by forcing, the

said stem presses upon the stem of the first valve, and expels it from the machine.

It is obvious that this machine may be adapted for the manufacture of clack valves or poppet valves, and of all analogous devices.

In the appended drawings:

Fig. 1 is a diagrammatic view of an improved machine according to the invention, showing the blank in position in order to receive the pressure of the press punch. Fig. 2 shows the same machine, in which the blank has been pressed by the punch, and the valve is formed, this corresponding to the first rough shaping operation. Fig. 3 represents the machine after it has been rotated by 180 degrees, and during the formation of a new valve which expels the other valve.

It is observed that the apparatus comprises two matrices a and a^1 , directly opposite, which are connected together by a conduit b , in which are disposed the stems of the valves. The whole apparatus is rotatable on an axle (not shown) in such manner that the matrix a^1 can take the place of the matrix a by the 180-degree rotation of the apparatus. All suitable devices for construction and control may be used to obtain this result. The apparatus may further comprise suitable fastening means.

The operation of the apparatus is as follows:

A blank A is placed in the matrix a , and an effort is exerted in the direction of the arrow by the plunger of the press; the said blank changes its shape, and now occupies the position shown in Fig. 2; during this operation the said stem driven into the channel b : The apparatus is then turned upon its axis of rotation, so as to bring the matrix a^1 into the upper position, and another blank B is placed in position, which is driven by the punch of the press. During this driving operation, and during the formation of the new valve S^1 , the said stem of this valve S , acts upon the valve S which has been already formed, and expels it from the apparatus.

By the use of the said machine comprising two matrices connected together by an axial conduit, I am enabled to increase the efficiency

of the manufacture, and to reduce the number of workmen employed in operating the machine.

Claim:

- 5 A process of manufacturing valves and like devices in which the matrices receiving the blanks are disposed in pairs, and the matrices of each pair are in directly opposite position

and connected by an axial conduit, whereby the matrices of each pair are brought in succession under the press, and the blank pressed into one of the matrices expels the valve just formed in the opposite matrix. 10

In testimony whereof I affix my signature.

LEON SAIVES.