May 22, 1928. 1,670,336

A. BORN

EXTRUSION PRESS

Filed May 10, 1927

Fig. 1

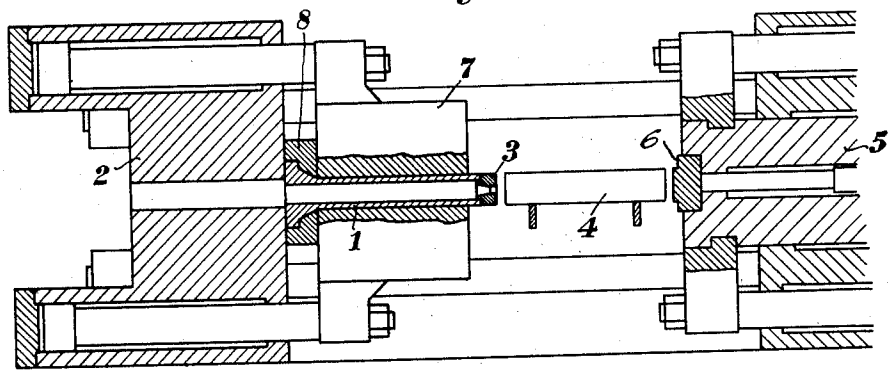


Fig. 3

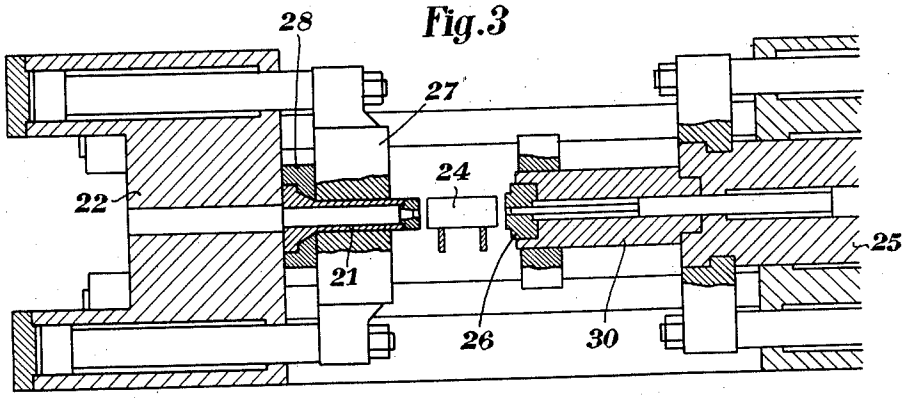
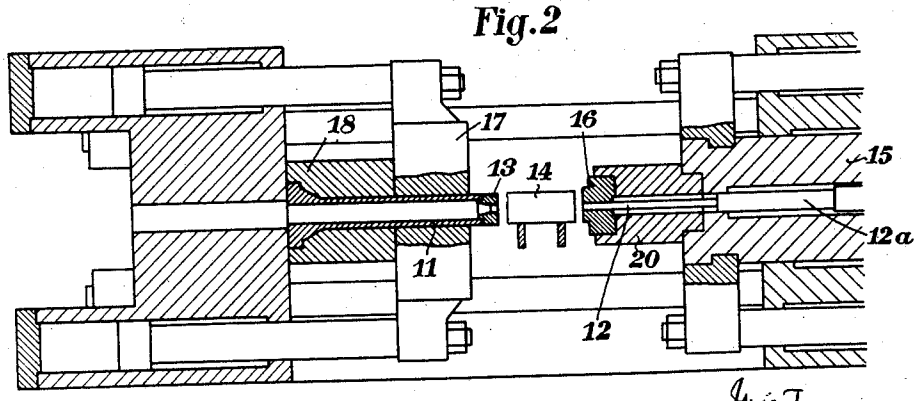


Fig. 2



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UNITED STATES PATENT OFFICE.

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EXTRUSION PRESS.

Application filed May 10, 1927, Serial No. 190,364, and in Germany May 10, 1926.

My invention relates to plastic metal working presses known as "extruding" or "squirting" presses, in which the metal, preferably being in a heated state, is forced through a die and by which solid or hollow bars, rods and the like are produced.

The invention has reference to the design of special types of extruding presses having a stationary hollow die holder, a movable hollow container the latter being designed so as to surround the die holder and to perform a reciprocating motion relatively to the stationary die holder, and a plunger adapted to cooperate with the container so as to squeeze the plastic metal through the die into the hollow die holder.

As known to those familiar with the working of metal presses of the type set forth, whenever hollow articles as tubes are to be produced shorter ingots are used than in the case of solid articles, as rods, for the reason that for tubes relatively less material is required. As a rule for the production of tubes the container of the press must be exchanged for another of shorter length, while the die holder may also be exchanged for a shorter one or the same die holder may be used as in the case of producing rods.

In both cases—as can be seen in Fig. 1 of the drawing—the stroke of the movable main elements of the press viz of the plunger 5 and of the container 7 must be shortened correspondingly so as to avoid losses of hydraulic power and of time consumed in the dead stroke.

As a matter of fact the timely controlling of the hydraulic valves by the operator of the press so as to adjust the stroke of the movable press members to the shorter length of the ingot has proved unsatisfactory; dead strokes of the movable press members being unavoidable in practice.

The object of my invention is to provide means for automatically controlling the stroke of the movable press members in such wise that whenever shorter ingots are to be used e. g. for the production of tubes, the stroke of the movable press members will exactly correspond to the length of said ingots.

Another object of the invention intimately connected with that referred to above consists in increasing the output of the press, and to render its working more economical than was the case heretofore.

Other objects of the invention will incidentally appear hereinafter.

The nature and scope of my invention is briefly outlined in the appended claims and will be more fully understood from the following specification taken together with the accompanying drawing.

In Figs. 2 and 3 of the drawing two modifications of metal presses for the production of tubes are illustrated by way of examples, while in

Fig. 1 a similar press is shown for the production of metal bars.

As seen in Fig. 1 the die holder 1 is attached to the front of the frame 2 of the press by means of a clamping ring 8, and is provided at its head portion with a die 3. After the ingot 4 has been placed between the die 3 and the plunger 5, the container 7 surrounding the die holder 1 is moved forward so as to embrace the ingot 4, whereafter both the container and the ingot are pushed home simultaneously by the plunger 5, the head plate 6 of the latter bearing against the rear portion of the ingot 4 and the container 7 respectively.

Thereupon the metal of the ingot is forced through the die 3, and a bar is formed in the usual way.

According to my invention, whenever the press under consideration must be adapted to the production of tubes from ingots 14 of shorter length, the container is replaced by another container 17 which is conformably shorter in length as seen in Fig. 2, while a longer clamping ring 18 is used for holding the die holder 11 in its place, the increased length of said clamping ring inversely corresponds to the shortened stroke of the container 17. A distance member 20 is inserted between the head plate 16 and the plunger proper 15 of the press, the length of said distance member 20 substantially corresponding to the shortened stroke of the plunger 15.

For the production of tubes the plunger 15 is provided with a mandrel 12 carried on the holder 12^a, and extending through the hollow distance member 20 and the head plate 16. Said mandrel serves in the usual way for perforating the ingot 14, the front part of said mandrel extending into the opening of the die while the metal is extruded.

In the press shown in Fig. 3 structurally modified means are applied for obtaining the desired result. A shorter die holder 21 is

mounted at the front of the frame 22 and held in its place by a clamping ring 28, the reduced length of said die holder corresponding to the shortened stroke of the ingot 24. Also a shorter container 27 is used substantially corresponding in length to the container 17 referred to above.

Inversely in this modification a much longer distance member 30 is inserted between the head plate 26 and the plunger proper 25 of the press, so as to compensate for the reduced stroke of the plunger 25 and for the changed initial location of the metal ingot 24, when compared with that shown in Fig. 2.

Various changes and modifications may be made in the design, assemblage, and cooperation of the principal component parts of plastic metal working presses of the type specified above, without substantially departing from the scope of the appended claims and deviating from the spirit of my invention.

What I claim is:

1. In a plastic metal working press, a die holder, a die thereon, a plunger, a container, means for reciprocating said plunger and said container, and means for reducing the stroke of said plunger and said container for operating upon metal ingots of reduced length with a container of reduced length.

2. In a plastic metal working press, a die holder, a die thereon, a plunger, a container, means for reciprocating said plunger and said container, and means for reducing the stroke of said plunger and said container for operating upon metal ingots of reduced length with a container of reduced length, comprising an extension member adapted to be mounted upon said plunger between the plunger and the die.

3. In a plastic metal working press, a frame, a die holder mounted thereon, a die on said die holder, a plunger, a container, means for reciprocating said plunger and said container, and means for reducing the stroke of said plunger and said container for operating upon metal ingots of reduced length with a container of reduced length, comprising a filling block adapted to be inserted between said frame and said container, and an extension member adapted to be mounted upon said plunger between the plunger and the die.

The foregoing specification signed at Berlin, this 21st day of April, 1927.

ALFRED BORN.