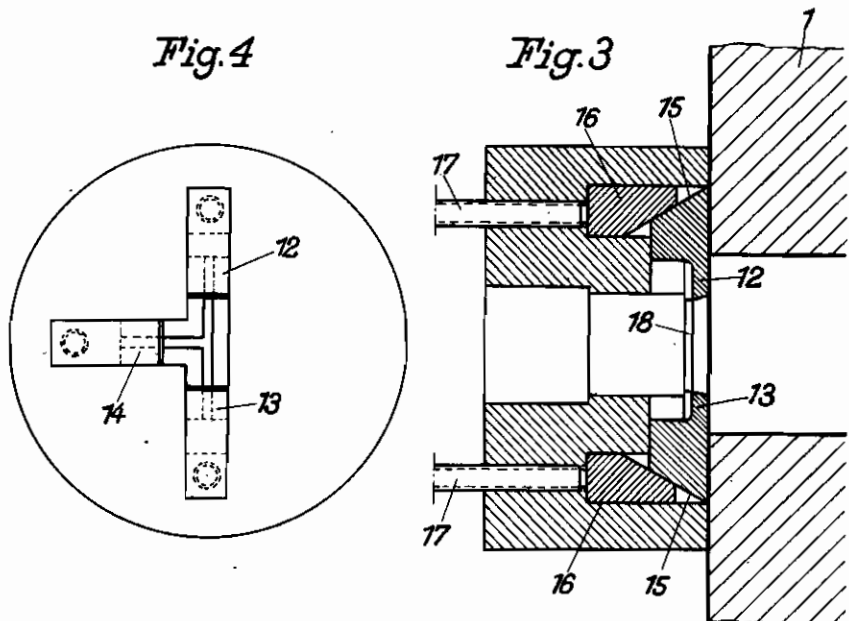
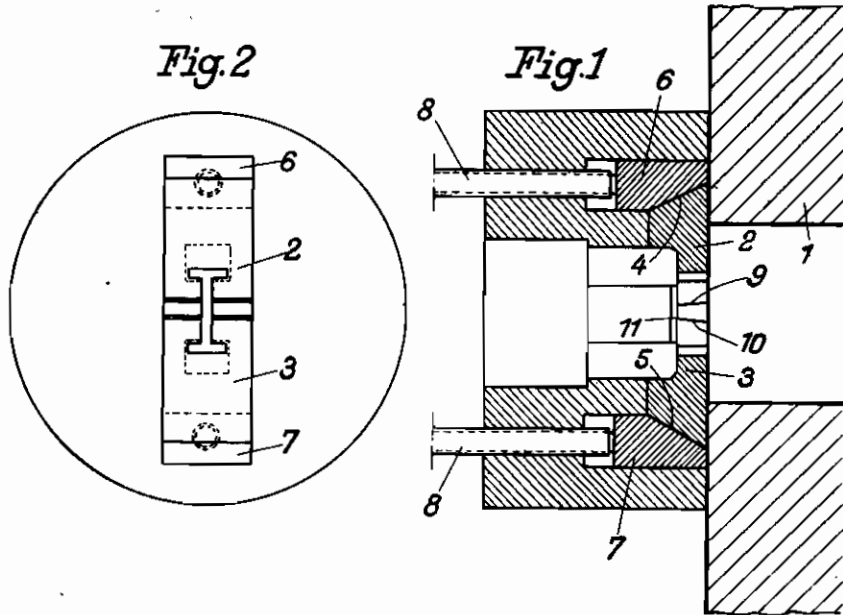


PUBLISHED
APRIL 27, 1943.
BY A. P. C.

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PRESSES FOR MAKING WORK-PIECES CONICALLY
TAPERING IN LONGITUDINAL DIRECTION
Filed June 25, 1940

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342,400
2 Sheets-Sheet 1



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Fig. 5

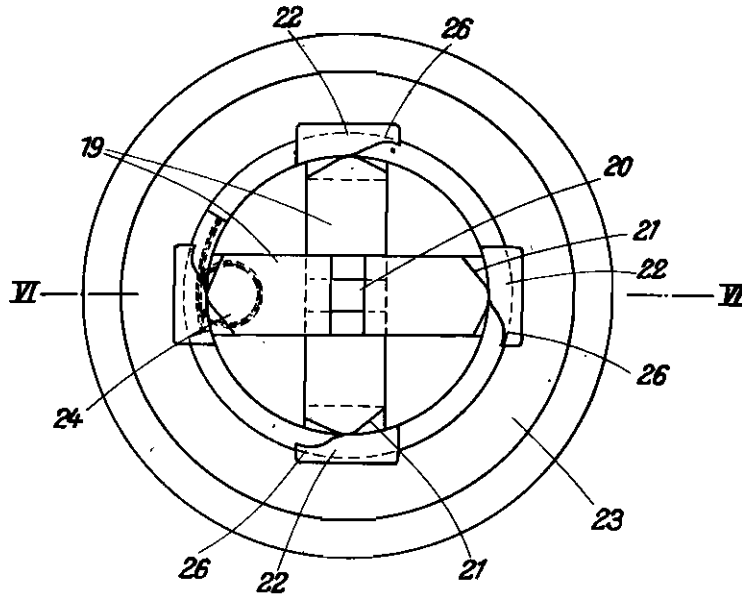
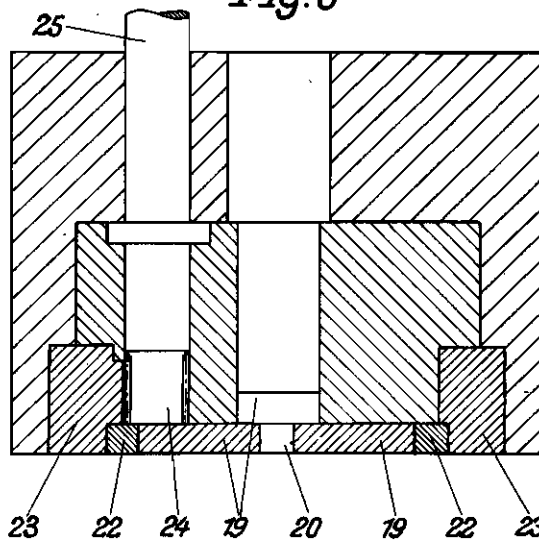


Fig. 5



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PRESSES FOR MAKING WORK-PIECES CONI- CALLY TAPERING IN LONGITUDINAL DIRECTION

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This invention relates to presses and more particularly to so-called extrusion presses serving for the production of work-pieces having a profile conically tapering in longitudinal direction.

It is known to produce work-pieces having a profile conically tapering in longitudinal direction by means of presses of the aforementioned kind including conical mandrills connected with the press-plunger, said mandrills moving during the operation of pressing through a fixed die of uniform cross-section. Although with known processes of this kind there may be produced work-pieces having angular profiles with the parts thereof varying both in thickness as well as in length, it is not possible to make work-pieces of a T, I, U or similar profile of varying length in addition to varying thickness of the web and of the flanges of the profile.

Our present invention has for its general object to devise a press permitting to produce work-pieces having profiles varying to a far greater extent than had been possible to produce with presses of known construction.

According to our invention we propose to use for this purpose a die composed of a plurality of parts which are caused to move apart during operation of the press. Preferably this motion of the parts of the die is effected by action of the operating pressure. Moreover, the interior surfaces of the movable parts of the die may conically enlarge in direction towards the press-plunger, thus facilitating the motion of said parts away from each other by action of the operating pressure. However, said movable parts of the die may also be actuated by means of suitable operating organs.

The movable parts of the die are provided on the outer side thereof with wedge-shaped surfaces which on their part co-operate with wedge-members of suitable conformation. These wedge-members are adapted to move in dependence from the velocity of the pressing motion, that is the speed of the press, for instance by means of spindles.

The actuating organs for said wedge-members may be driven and properly controlled in suitable manner either by the profile of the work-piece during being discharged from the press or also by the press-plunger.

In some cases it will be necessary to further provide in the rear of the movable parts of the aforesaid die an additional fixed die in order to cover up the gap between said movable parts when moving apart during operation of the press,

this covering up taking place to an extent as these parts do not serve for the production of the final profile to be imparted to the work-piece.

In case portions of the profile produced by means of said additional fixed die shall likewise be of a conformation conically tapering in longitudinal direction, it will be necessary to provide a two-part construction also for this fixed die and to mount the two parts of the latter movably with respect to each other.

Preferably the organs serving to impart motion to the movable die parts are constructed in such a manner that one or several pairs of movable die-parts co-operate at their outer ends, that is at the ends away from the hole in the die, with fitting members provided with curve-shaped recesses. These fitting members are mounted within a wheel-rim having an internal gear and may be rotated with said wheel-rim by means of a spindle, the rotation being effected to such an extent that the movable die-parts will slide in said recesses, whereby the hole in the die will be enlarged in conformity with the shape of the curve of said recesses during the operation of the press, with the result that a conically tapering profile is imparted to the work-piece in longitudinal direction thereof.

In the accompanying drawings which form part of this specification we have represented some examples of construction of our new press. In the drawings, Fig. 1 is a section through the dies of a construction producing a work-piece with an I-profile in longitudinal direction, Fig. 2 a view of the die with movable parts, as seen in the direction of pressing, Fig. 3 a section through the dies constructed to produce a work-piece with a T-profile in longitudinal direction, Fig. 4 a view of the movable die, as seen in the direction of pressing, Fig. 5 a plan-view of a further construction of the die, as seen in the direction of pressing, and Fig. 6 a section along line VI—VI— of Fig. 4.

Referring more particularly to the drawings, in Figs. 1 and 2 the receptacle for the material to be worked in the press is designated by the reference numeral 1, while the parts of the die which are movable transversely to the direction of pressing are designated by the numerals 2 and 3. The parts 2 and 3 of the die are of wedge-shaped conformation on their outer surface, as indicated in Fig. 1 at 4 and 5, in order to co-operate with wedges 6 and 7 of a conformation corresponding to that of said outer surfaces of said die-parts. The wedges 6 and 7 may be actuated by means of suitable operating organs, such as for instance

spindles 8, as shown in Fig. 1. Motion of the die-parts 2 and 3 in direction away from each other is facilitated by the fact that their interior surfaces 9 and 10 are of a conformation conically enlarging in direction towards the press-plunger. The spindles 8 actuating the wedges 6 and 7 are preferably driven and controlled by the profile of the work-piece during being discharged from the press or also by the motion of the press-plunger.

The pressure exerted onto the spindles 8 by way of the wedges 6 and 7 may be varied by properly altering the inclination of the wedge-shaped outer surfaces of the die-parts 2 and 3. In order to insure proper working of the press, care should be taken that no excessive pressures are exerted onto the spindles 8. In the rear of the die-parts 2 and 3 there is further provided the aforementioned additional fixed die which covers up the gap between the die-parts for the above stated purpose.

The press shown in Fig. 3 and 4 serving for the production of a work-piece with a T-profile is constructed similarly to the press shown in Figs. 1 and 2. In Figs. 3 and 4 the receptacle for the material to be worked by the press is designated by the reference numeral 1, while 12, 13 and 14 are die-parts mounted movably in transverse direction to the direction of pressing.

The outer surfaces 15 of the parts 12, 13 and

14 are likewise wedge-shaped in order to cooperate with the wedges 16 actuated by the spindles 17. In the rear of the die-parts 12, 13 and 14, there is again used a fixed die 18 covering up the gap between the movable die-parts for the above stated purpose.

In the construction of the press shown in Figs. 5 and 6 the movable die-parts 19 form at their inner ends 20 the hole in the die. By action of the work-piece during being discharged from the press the die-parts 19 will be pressed at their outer ends against fitting members 22 mounted within a wheel-rim 23 with an internal gear. A pinion 24 on a spindle 25 is in mesh with the teeth of said internal gear. The wheel-rim 23 may be rotated by means of the spindle 25 through such an angle that the ends 21 of the die-parts 19 will slide in the curved recesses of the fitting members 22, for which purpose the ends 21 are of a conformation similar to that of the recesses 26. By this the parts 19 will move apart during the operation of the press and the work-piece will be given a profile conical in longitudinal direction. Preferably motion of the die-parts is effected and controlled by the motion of the press or in some other suitable way.

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