Feb. 2, 1960 P. BILLEN 2,923,407

HORIZONTAL METAL EXTRUSION PRESS

Filed April 16, 1956 2 Sheets-Sheet 1

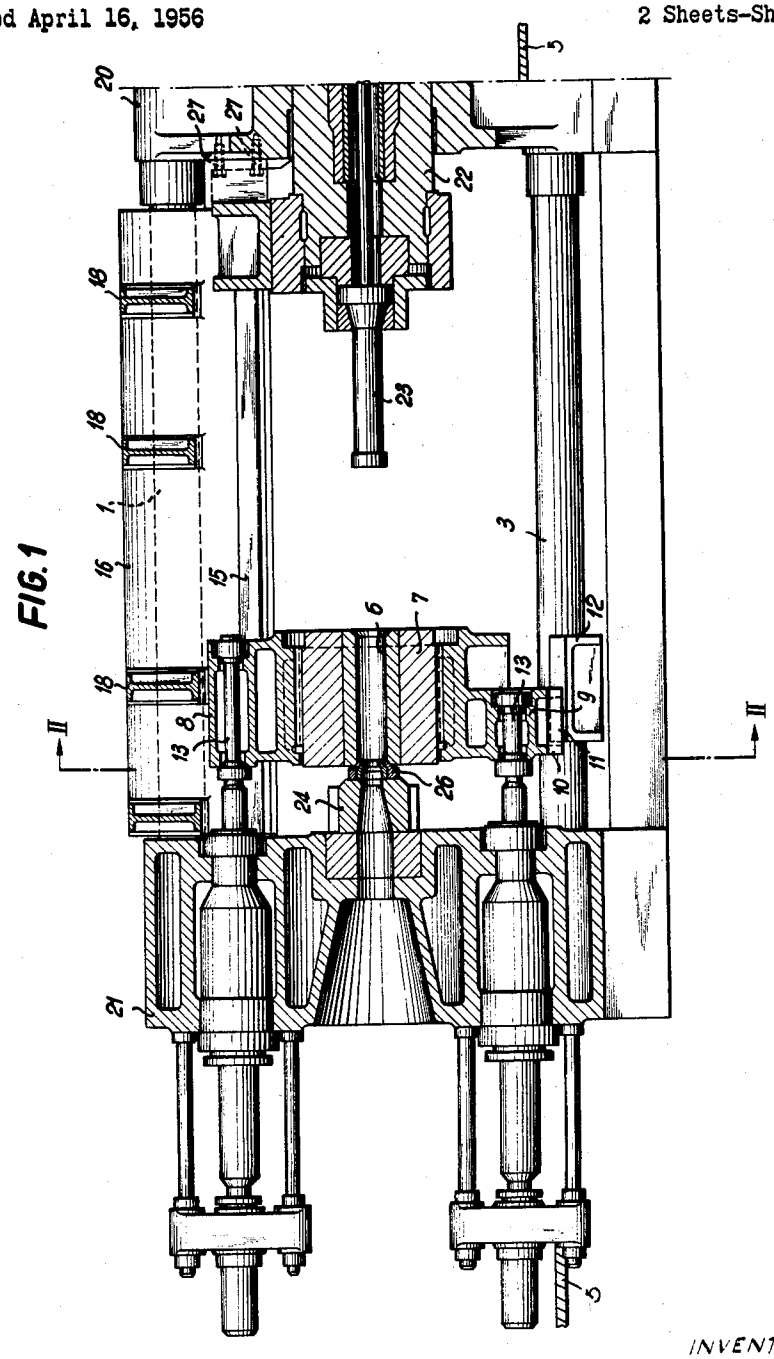


FIG. 1

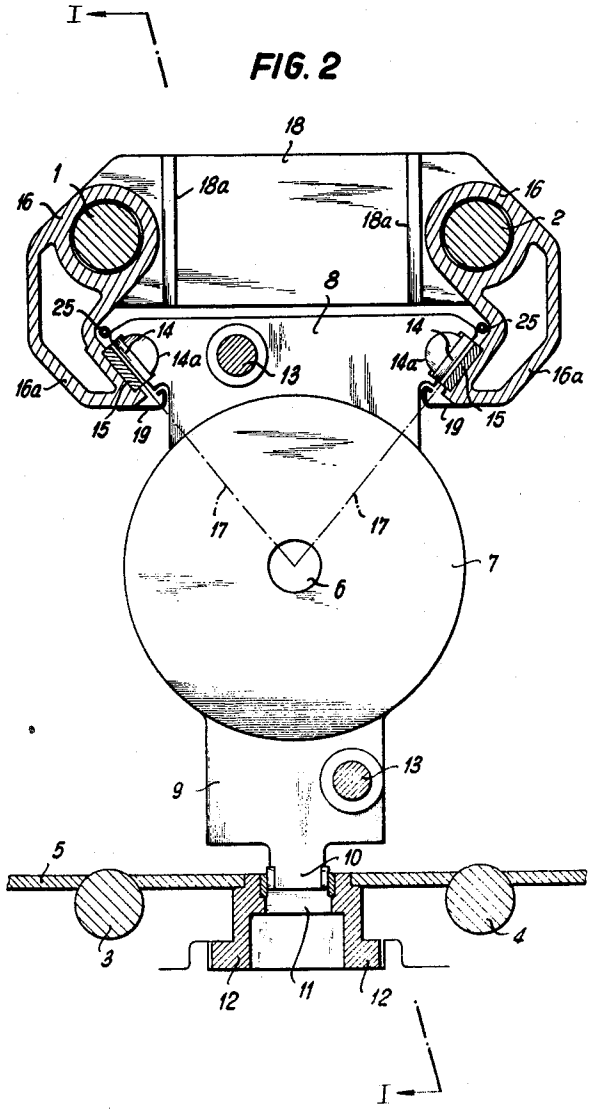
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Filed April 16, 1956 2 Sheets-Sheet 2

FIG. 2



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HORIZONTAL METAL EXTRUSION PRESS

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2 Claims. (Cl. 207—2)

In horizontal metal tube and rod extrusion presses in which the container or receiving cylinder supports rest on bearing plates the latter are located at the foot of the press, for instance, at about the same level as the lower tie rods or tension columns. Especially in steel tube presses it is a disadvantage that the low position of the bearing plates exposes them to fouling by scale and so forth. Moreover, when the receiving cylinder is open they impede accessibility. The provision of protecting caps would create additional obstructions without satisfactorily fulfilling their intended purpose of preventing the bearing plates from being fouled.

It is the object of the present invention to overcome the stated inconvenience. The invention consists in that the bearing plates are located above the main central axis of the press (that is to say, the common axis of the pressure cylinder, the receiving cylinder and the die), for instance at the level of the upper columns. The bearing surfaces may be disposed in planes passing through the said axis of the machine in a manner known in itself to enable the receiving cylinder to be aligned with the same accuracy as heretofore.

It is preferred to arrange the bearing plates on supporting beams with their ends supported on the one hand on the pressure cylinder and on the other on the bolster frame. The supporting beams may be hollow to permit the columns to be disposed within the beams. In such a form of construction the ends of the supporting beams may be supported directly on the tie rods or columns instead of being secured to the pressure cylinder and the bolster frame. In view of the length of the supporting beams and the great weight of the receiving cylinder the supporting beams might tend to twist because the actual bearing surfaces for the receiving cylinder are canted. To prevent the beams from twisting the two supporting beams are braced, preferably by means of one or more transverse interconnecting supporting members, preferably disposed between the centers of the beams.

An illustrative form of construction of the present invention, adapted to a horizontal press intended primarily for extruding steel, is shown in the accompanying drawings in which:

Figure 1 is a vertical section along I—I in Figure 2, and

Figure 2 is a section along II—II in Figure 1, shown on a larger scale.

1, **2**, **3** and **4** are the tension columns or tie rods of the press which connect the pressure cylinder **20** and the bolster **21**. The cylinder **20** contains a pressure piston **22** with a ram **23** attached thereto and is movable in the conventional manner hydraulically or by means of steam. For extruding a steel ingot the ram can be forced into the orifice **6** of a container or receiving cylinder **7** and can squeeze the material through a die **26** carried by a die holder **24** held by the bolster **21**. The columns **3** and **4** are below the working platform **5**. The level of this platform is indicated in Figure 1 at the extreme right-hand and left-hand sides, the intermediate part being

omitted for the sake of clearness. The receiving cylinder **7** is suspended in a holder **8** with a pedestal **9** the lower extremity **10** of which runs in a slideway **11** formed by two guide rails **12**. **13** are the two draw bars for moving the receiving cylinder longitudinally. The upper extension of the holder **8** for the receiving cylinder rests on bearings **14**, the outer semi-cylindrical surfaces **14***a* of which permit a rotary movement in the holder **8** in a manner known per se. The bearings **14** are supported on bearing plates **15** resting on supporting beams **16** which are mounted with one end against the pressure cylinder **20** and with the other end against the bolster **21**. The supporting beams **16** are longitudinally bored, each beam enclosing one of the columns **1** and **2**, and their lower portions **16***a* embrace the shoulders (Figure 2) of the holder **8** of the receiving cylinder. The portions **16***a* are secured to the pressure cylinder by means of screws **27**. They are affixed to the bolster **21** in a similar manner but this is not shown in the drawing. The sliding surfaces of the bearings **14** and of the bearing plates **15** lie in axial planes of the machine, as indicated by the dotted lines **17**. The bearing plates **15** or the bearings **14** may be adjustable in a manner known per se but not specially shown in the drawings to permit the holder of the receiving cylinder to be centered in the press. The two beams **16** are connected together by transverse members **18** inserted from above between the beams **16**, so as to bear against the beams along the surfaces **18***a*. The insertion of these transverse interconnecting supporting members **18** prevents the beams from being twisted under the load of the receiving cylinder. Dust protectors **19** are likewise provided and these may also serve to carry away cooling water sprayed onto the bearing plates **15** for instance from perforated pipes **25** (Figure 2).

The form of construction that has been described removes all obstructions from the working platform **5**, as all the supporting members **16** and **18** for the receiving cylinder are at a height that permits a man to stand upright underneath them. Accessibility of the press and more particularly of the tools has therefore been considerably improved by comparison with the known conventional types of press. Moreover, the bearing plates **15** are better protected from dirt and injury because they are arranged at a considerable height from the floor.

In a modified form of construction of the example above described the ends of the supporting beams may rest only on the columns **1** and **2**, without being fixed at **27**. Alternatively a clearance might be left between the columns **1**, **2** and the supporting beams **16** so that the latter would be supported only by the pressure cylinder and the bolster. Moreover, the beams might be omitted and the bearing plates **15** directly mounted on the columns, but adjustment would then be rather difficult.

What is claimed is:

1. A horizontal press for the extrusion of metal, comprising: a pressure cylinder, a pressure piston reciprocable in the pressure cylinder, a ram secured to the pressure piston, a bolster, a die-holder held by the bolster, a die carried by the die-holder, the die being co-axial with the ram, tie rods connecting the pressure cylinder with the bolster above and below the axis of the die and the ram and including two tie rods above said axis, two bearing plates carried by the two upper tie rods, a billet container co-axial with the die and the ram, said billet container having supporting faces overlying the bearing plates, said faces bearing upon and supported by said bearing plates, said bearing plates and said supporting faces providing the sole means for supporting the weight of said billet container, the supporting faces and bearing plates being disposed in inclined planes passing through the axis of the die.

2. A horizontal press for the extrusion of metal, com-

prising: a pressure cylinder, a pressure piston reciprocable in the pressure cylinder, a ram secured to the pressure piston, a bolster, tie-rods connecting the bolster with the pressure cylinder, two of the tie-rods being located above the axis of the ram, a die-holder held by the bolster, a die carried by the die-holder, the die being co-axial with the ram, hollow supporting beams enclosing the two upper tie-rods located above the axis of the ram and of the die and bearing at one end against the pressure cylinder and at the other end against the bolster, two plane bearing plates each carried by one of the supporting beams at a level above the axis of the ram and of the die, a billet container co-axial with the die and with the ram, said billet container having two plane supporting faces overlying the bearing plates, said faces bearing upon and

supported by said bearing plates, said bearing plates and said supporting faces providing the sole means for supporting the weight of said container.

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