April 10, 1928. 1,666,020

F. MENNE

PRESS

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Fig. 1.

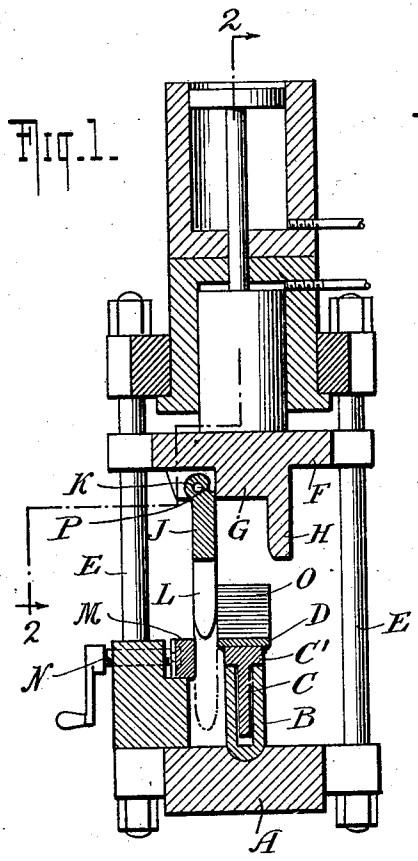


Fig. 2.

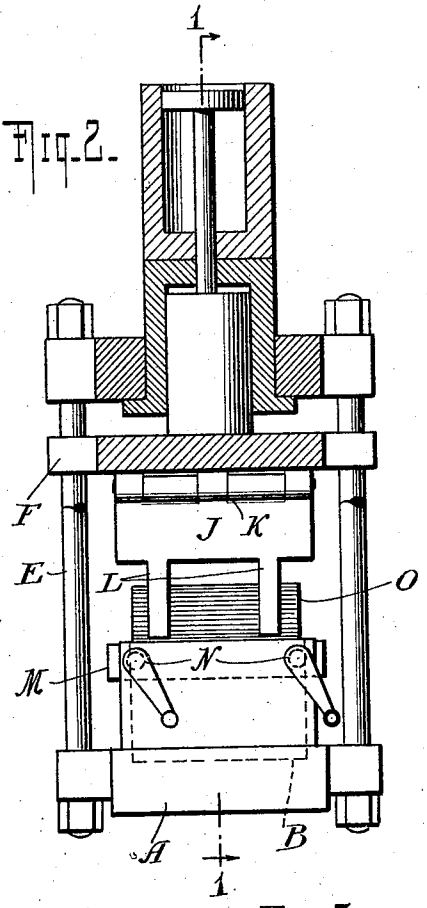


Fig. 3.

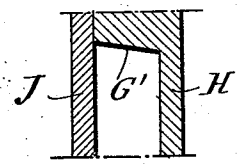


Fig. 4.

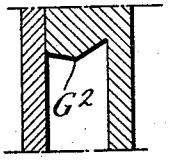
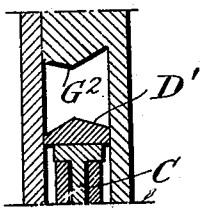


Fig. 5.



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Fig. 6.

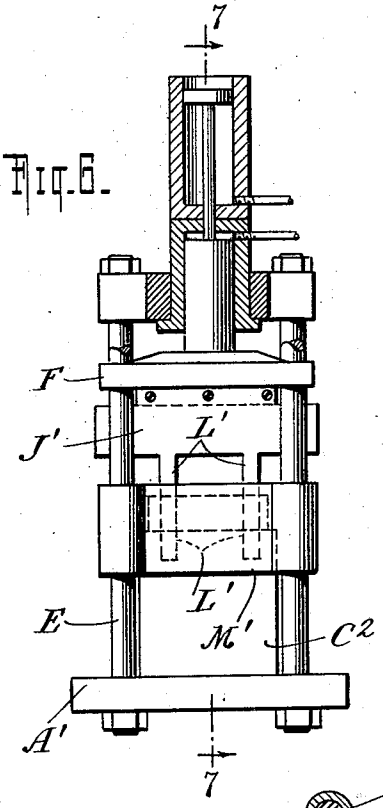


Fig. 7.

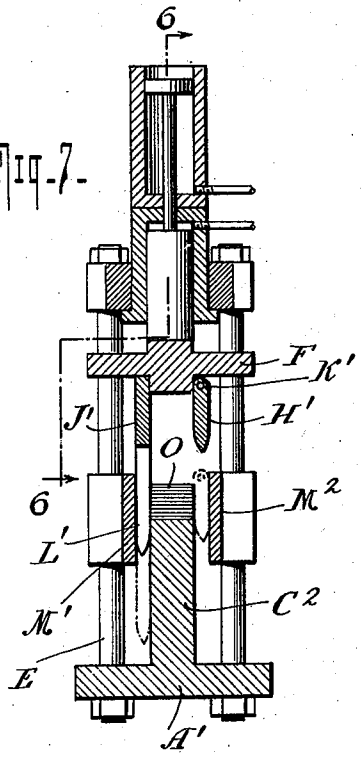


Fig. 8.

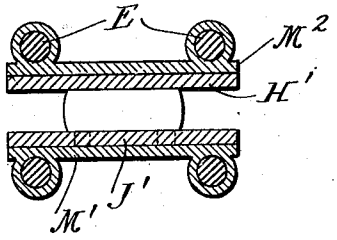


Fig. 9.

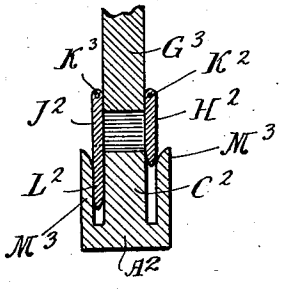
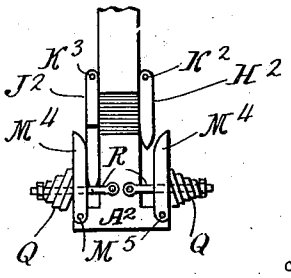


Fig. 10.



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UNITED STATES PATENT OFFICE.

FRITZ MENNE, OF WEIDENAU-ON-THE-SIEG, GERMANY, ASSIGNOR TO HERMAN F. HOEVEL, OF NEW YORK, N. Y.

PRESS.

Application filed May 20, 1927, Serial No. 192,816, and in Germany October 20, 1925.

My invention relates to presses for molding or compacting articles or materials, and has been devised primarily for compressing bundles of scrap iron or the like, previously heated in a suitable furnace. The compressing of the hot bundles will reduce their dimensions and thus facilitate their further handling, and will also, if the bundles are hot enough, cause the individual pieces of scrap iron to become welded to each other, thus producing bundles of great strength which will not fall apart when subjected subsequently to hammering, rolling, and like operations. The object of my invention is to produce a press of the above-indicated type which will be operated readily and which, in particular, will include movable parts to facilitate the release of the compressed bundles from the press and to prevent their sticking thereto.

Without desiring to restrict myself to the specific constructions illustrated, I will now proceed to describe in detail several satisfactory examples of my invention with reference to the accompanying drawings, in which Fig. 1 is an elevation showing one embodiment of my invention, with parts in section on the line 1—1 of Fig. 2; Fig. 2 is a vertical section on line 2—2 of Fig. 1; Figs. 3, 4 and 5 are partial vertical sections taken in a plane corresponding to that of Fig. 1 and illustrating different forms of pressure surfaces; Figs. 6 and 7 are views corresponding to Figs. 1 and 2 respectively and illustrating another embodiment of my invention; Fig. 8 is a horizontal section on line 8—8 of Figs. 6 and 7; and Figs. 9 and 10 are side elevations illustrating still other forms of my press.

In Figs. 1 and 2, I have shown a base A supporting the die or anvil, which as illustrated may consist of a housing or holder B rockingly supported in a suitable recess of said base, and a die proper C fitted to slide up and down in the holder B, and normally resting thereon, as by means of an enlargement or head C'. This head is preferably made with an overhanging extension or top D, for a purpose to be stated hereinafter. From the base A rise standards E along which is guided the cross head F of a pressure member G, operated in any suitable manner, for instance by means of hydraulic plunger mechanism of a well-known type, as indicated at the upper portion of Figs. 1 and 2. On one side, said member G is provided with a rigid vertical flange H, and on the other side with a depending flat side member J, hinged at K to swing about a horizontal axis extending lengthwise of the opposing parts H, J. When the side member J is in its normal vertical position, the distance between the opposing inner surfaces of the parts H, J is approximately equal to the width of the top D, so that with the member J in its lower position, as indicated by dotted lines in Fig. 1, the parts H, J will straddle said top D. The lower edge of the flange H is shown at the same level with the lower edge of the body portion of the side member J, but the latter is provided with spaced downward extensions or prongs L. The outer surfaces of these extensions and of said body portion are adapted to slide along an abutment M mounted on the base A or some other suitable stationary part, and preferably adjustable toward and from the die or anvil, for instance by means of screw spindles N. The lower edges of the parts H, J and of the extensions L are preferably beveled or rounded to guide them more readily as they come into and out of engagement with the top D.

The operation is as follows: When the press is used for compressing bundles of scrap iron heated in a furnace, the press will be disposed near such furnace, with the flange H adjacent to the outlet of the furnace. The parts of the press being in the raised position, an opening will be presented between the prongs or extensions L, as shown in Fig. 2, through which the operator may not only see the bundle near the outlet of the furnace, but grasp such bundle (of rectangular prismatic form) by means of tongs or some other suitable tool passed through such opening. He can then pull the bundle out of the furnace by means of such tool and deposit such bundle on the top D of the die or anvil, as indicated at O, the bundle passing under the flange H, and coming against the side member J, which acts as a stop to position said bundle properly. The latter is then released from the tongs, and the press is ready to operate. As the pressure member G moves down, the parts H, J will straddle first the bundle O and then the die top D, the extensions L being guided between the said top D and the abut-

ment M so that the side member J will be held against lateral movement and practically rigid with the pressure member G. The die C, C′, D has sufficient lateral play in the holder B to enable such die to adjust itself to the position of the opposing members H, J. Finally the lower surface of the member G will come in contact with the upper surface of the bundle O, which will then be compressed during the further downward movement of the pressure member G. During such compression, the bundle O will be confined on four sides, viz at the top by the pressure member G, at the bottom by the top D of the die, and at the two longitudinal sides by the parts H, J respectively. At the ends, however, the bundle O is unconfined, so that it can expand or lengthen out freely while its cross section is being reduced by compression. The operation having been completed, the pressure member G moves upward to release the bundle, the lowermost position of the prongs L being indicated by dotted lines in Fig. 1.

During compression, the material of the bundle O is forced into the cracks or joints between the die top D and the side members H, J, and also to a smaller extent, into the joint at the hinge K. The material entering these joints will tend to interfere with the free movement of said parts and with the release of the bundle from said parts. To overcome these difficulties, I have provided the following features: First, the top D projects beyond the head C′ and is of small thickness, so that there is only a narrow zone along which the die and the parts H, J may stick to each other owing to material that has found its way between them. The die will thus be released much more readily than if the head C′ were flush with the top D. Second, the hinging of the side member J enables it to swing laterally, away from the member H, so as to release the compressed bundle O. This release may be obtained, even in the lowermost position of the pressure member, by moving the abutment M away from the die. Generally, however, it will be preferred not to disturb the adjustment of the abutment M. The third feature facilitating the release of the compressed bundle is the sliding connection between the die and the die holder B. Thus, as the pressure member G rises, it will not have to overcome the frictional resistance between the members H, J and the edges of the die top D, because if any material makes it stick to said parts H, J, the entire die will rise with the pressure member G, and when the side member J at the end of such rise clears the abutment M, the slight expansion of the compressed bundle O will swing the side member J on its hinge and thus allow the die to drop back, at the same time releasing the bundle O. In order to prevent the hinge K from being obstructed by material forced by pressure into the hinge joint, I may provide an enlarged recess such as shown at P in Fig. 1.

In Figs. 1 and 2, the opposing surfaces of the pressure member G and of the die top D are shown parallel and horizontal. In order to secure a gradual application of pressure, I may give the member G a non-horizontal lower surface, for instance a plane inclined pressure surface, as at G′ in Fig. 3, or a wedge shaped pressure surface, as at G^2 in Figs. 4 and 5, and similarly the die top D may have a non-horizontal upper surface, for instance the wedge-shaped or roof-shaped surface D′ shown in Fig. 5.

The construction illustrated by Figs. 6, 7 and 8 differs from that shown in Figs. 1 and 2 chiefly in the following particulars: The die C^2 is made rigid or integral with the base A′. The side member J′ having the extensions L′ is rigid with the cross head F and slides between the die C^2 and a stationary abutment M′ on one pair of standards E. The other side member H′ is hinged or pivoted at K′ and is adapted to slide between the die C^2 and stationary abutment M^2 on the other pair of standards E. The operation of this form of my invention is substantially the same as described above with reference to Figs. 1 and 2, the outward swinging of the pivoted member H′, when raised clear of the abutment M^2, releasing the compressed bundle O.

Figs. 9 and 10 show two forms of my invention in which both side members H^2, J^2 (the latter having extensions L^2 of the same character as set forth above) are hinged to the pressure member G^3, about parallel longitudinal axes K^2, K^3 respectively. These members H^2, J^2 straddle the die C^2. In Fig. 9, the outer faces of said members H^2, J^2 are adapted for sliding engagement with the abutments M^3 projected upwardly from the base A^2 and rigid or integral therewith, while in Fig. 10 I employ yielding abutments M^4, for instance hinged to the base at M^5 to swing about axes parallel to the hinge axes K^2, K^3, and pressed inwardly by springs Q co-operating with pivoted links R. The operation of the constructions shown in Figs. 9 and 10 will be readily understood without any further explanation.

Various modifications may be made without departing from the nature of my invention as set forth in the appended claims.

I claim:

1. A press of the character described, provided with a die and a pressure member cooperating with said die, said pressure member having side members of unequal length adapted to engage the die on opposite sides, the longer side member being adapted to form a stop for positioning the material to be compressed.

2. A press of the character described, provided with a die and a pressure member cooperating therewith, said member being adapted to straddle the die and having two side members of unequal length, the longer side member being adapted for engagement with one side of the die while there is still a free space between the other side of the die and the shorter side member for the introduction of the material into the press.

3. A press of the character described, provided with a die and a pressure member cooperating therewith, said member being adapted to straddle the die and having two side members of unequal length, the longer side member being adapted for engagement with one side of the die while there is still a free space between the other side of the die and the shorter side member for the introduction of the material into the press, and an abutment adapted to engage one of said side members on the side opposite to that engaged by the die, said abutment being movable toward and from the die.

4. A press of the character described, provided with a die and a pressure member cooperating therewith, said pressure member having side members of unequal length adapted to engage the die on opposite sides, the longer side member being provided with an opening for the introduction of a tool to handle the material under treatment.

5. A press of the character described, provided with a die and a pressure member cooperating therewith, said pressure member having side members arranged to engage the die on opposite sides thereof, at least one of said side members being connected loosely with the body of the pressure member so as to be movable toward and from the other side member and an abutment adapted to slidably engage said movable side member on the side opposite to the die to thrust the movable member toward the die during the pressure movement.

6. A press of the character described, provided with a die and a pressure member cooperating therewith, said pressure member having side members arranged to engage the die on opposite sides thereof, at least one of said side members being connected loosely with the body of the pressure member so as to be movable toward and from the other side member and an abutment adapted to engage said movable side member on the side opposite to the die to thrust the movable member toward the die, said abutment being movable toward and from the die.

7. A press of the character described, provided with a die holder, a die movable in said holder and provided with a free operative end projecting beyond the adjacent portion of the die, a pressure member movable in the same direction as the die and provided with side members adapted to engage the die on opposite sides thereof, at least one of said side members being movable toward and from the other side member, and an abutment adapted to slidably engage such movable side member on the side opposite to that which engages the die to hold the movable member against the die.

In testimony whereof I have hereunto set my hand.

FRITZ MENNE.