

J. DRAENERT.
MOLD FOR COMPRESSING SLIGHTLY PLASTIC MATERIALS.
APPLICATION FILED AUG. 4, 1908.

923,780.

Patented June 1, 1909.
2 SHEETS—SHEET 1.

Fig. 1

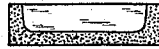


Fig. 2

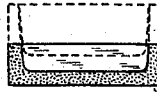


Fig. 3

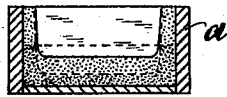


Fig. 4

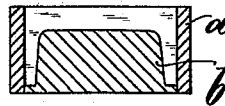


Fig. 5

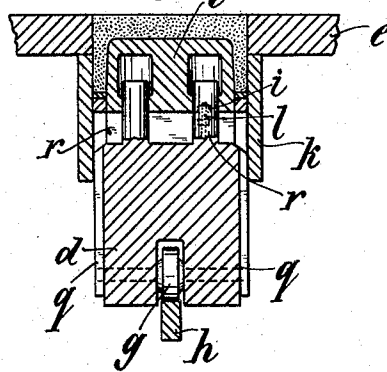
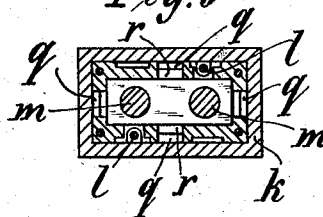


Fig. 6



WITNESSES:

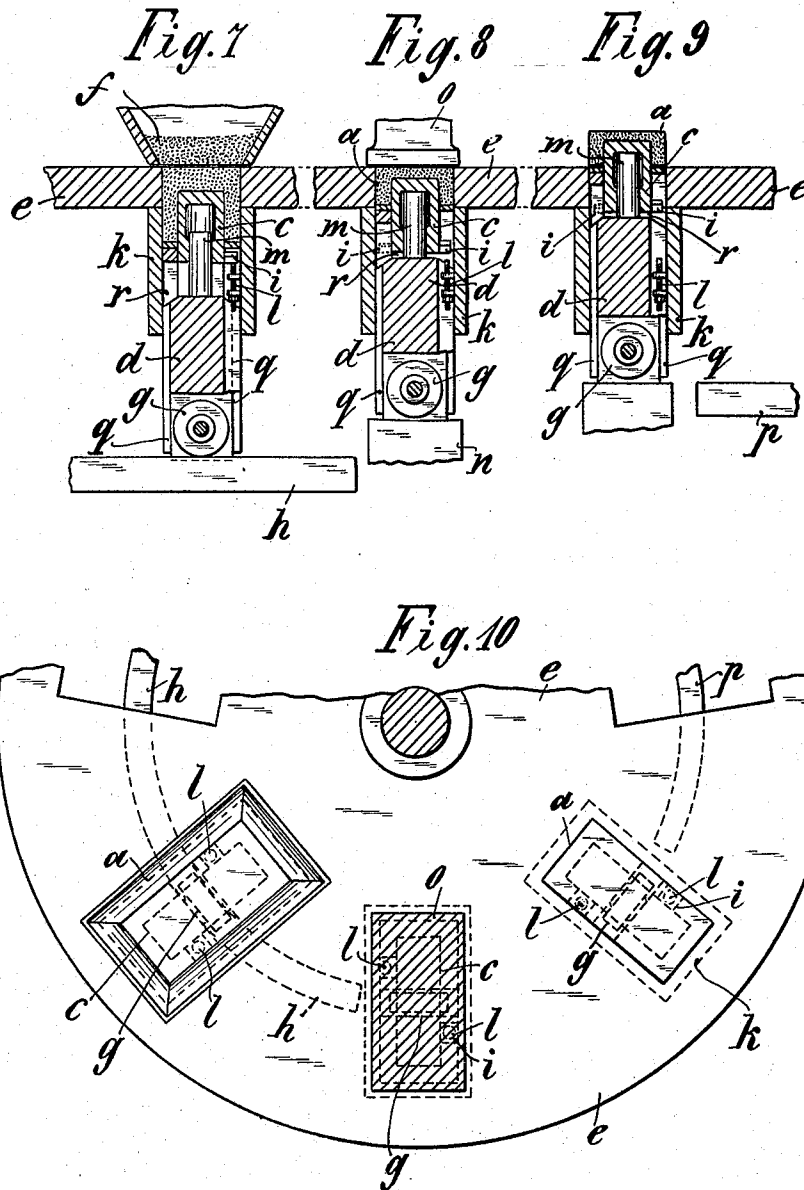
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UNITED STATES PATENT OFFICE.

JOHANNES DRAENERT, OF EILENBURG, GERMANY.

MOLD FOR COMPRESSING SLIGHTLY-PLASTIC MATERIALS.

No. 923,780.

Specification of Letters Patent.

Patented June 1, 1909.

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To all whom it may concern:

Be it known that I, JOHANNES DRAENERT, a subject of the King of Prussia, German Emperor, residing at Eilenburg, in the Kingdom of Saxony, Germany, have invented a certain new and useful Improved Mold for Compressing Slightly-Plastic Materials, of which the following is a full, clear, and exact description.

10 The present invention relates to means for producing partially hollow bricks or the like, *i. e.* bricks through which the recesses or hollows do not extend entirely through the material from one side to the other,—of
15 materials which do not yield much under pressure. In pressing materials of this kind, when the brick has different thicknesses at different points, it is necessary to fill the mold to corresponding depths because the material, being of a slightly plastic
20 nature, unlike clay or loam, will not yield in different directions when subjected to pressure in one direction and unless the mold is properly filled at the different
25 points, the compressed article will be too hard at some parts and too soft at others, rendering it useless for the object in view, thus for instance in making lime and sand or cement sand bricks, in which case the
30 materials are compressed in a comparatively dry state, and if it is desired to compress the material in the proportion of 2:1, the materials must be filled into the mold at double the required height for each part of
35 the brick.

According to the present invention the bricks are formed by the aid of a double acting pressure die as herein after set forth.

40 In order to render the present specification easily intelligible reference is had to the accompanying drawings in which similar letters of reference denote similar parts throughout the several views:—

45 Figure 1 indicates a finished brick, Fig. 2 shows the amount of filling in dotted lines, in making the brick, Fig. 3 shows the mold with the filling, Fig. 4 shows a mold with movable bottom, Fig. 5 is a vertical part section through a mold and die according to the present invention, Fig. 6 is a cross section through the mold and die of Fig. 5 in a horizontal plane, Figs. 7, 8 and 9 are vertical sections showing the operation of the mold and die and Fig. 10 is a part sectional
50 plan of the table of the machine showing the molds.

Thus for a brick as illustrated in Fig. 1, the filling would have to be that shown in dotted lines in Fig. 2 or in the mold in Fig. 3. In order to attain this proper filling, 60 hitherto shaped filling devices have been employed which were placed in the mold from the top. The desired filling could also be attained without the shaped filling devices, when a bottom plate *b* was employed, for the mold *a* as illustrated in Fig. 4, the free space remaining having the form of the filling, turned bottom up. Thus in order to attain the filling shown in Fig. 3 it was only necessary to fill up the mold of 70 Fig. 4 and level it off smoothly at the top. Thus the desired filling for a compression of 2:1 is attained, *i. e.* there is exactly double the thickness of material at each part of the mold, as the finished brick will have. 75

In order to compress the material to the form of brick shown in Fig. 1, a different die will have to be substituted for the bottom plate *b*, the shape of which will have to correspond exactly with the shape of the finished brick. Since however the plate *b* could not be removed without the material falling together, it was necessary to turn the whole mold over and to take out the shaped bottom plate *b* from the top and 85 then to place the proper die in position. In order to simplify this complicated method of working according to the present invention a die is provided consisting of two independently movable members *c* and *d*, the 90 inner member *c* of which, as will be seen from Figs. 5 and 7 extends beyond the outer member *d* as illustrated in Fig. 4, thus forming the required outline for the filling. With the two members of the die in this position, 95 the mold is operated by the rotating table *e* to pass beneath the filling hopper *f* (Fig. 7) where it is filled in the necessary manner and the top smoothed over evenly. During this operation, the member *d* of the die 100 stands on a guide path *h* of the machine by means of its roll *g*, while the inner member *c* rests loosely, by means of lateral projections *i i* on adjustable screws *l l* of the inner surface of the lower mold walls. Thus the 105 inner member *c* is freely suspended above the vertical plunger *m*, so as to leave a free intermediate space of a certain height above the upper surface of the plunger *m* in the interior of the member *c*. 110

After the mold has been filled the table *e* turns a further step and brings the contents

of the mold above the plunger *n* and below the fixed pressure plate *o* (Fig. 8). As the plunger *n* rises to effect the compression, the outer member *d* of the die is first carried upwardly, first compressing the higher parts of the material in the mold. After these parts have been compressed to a certain extent, the plungers *m*, after having passed through the above mentioned free space, will come into contact with the lower surface of the member *c* and take this upwardly also. Thus the thinner contents of the mold will now be compressed (Fig. 8). The position of the members *c* and *d* toward each other and also as regards the shape of the article being formed is such that when both members *c* and *d* have reached their highest positions, the contents of the mold will have been compressed to half their original height at all points. As the table *e* continues to turn, the mold, with the die consisting of the two members *c* and *d*, will be brought above the ejecting device, by means of which the bottom plate with the compressed article is pushed up extending the brick out of the mold from which it may now be removed, (Fig. 9). The further rotation of the table will cause the roll *g* to run on to the reduced part *p* of the guide rail and thence on to an incline, along which the bottom plate of the mold may either fall by gravity or suitable means may be employed to depress it ready for the next operation. The downward movement of the two members *c* and *d* is limited by the roll *g* of the outer member finally again reaching the guide rail *h* while the inner member *c* will be caught by the adjusting screws *l l* and both members will be returned to their initial positions. Thus by means of the present invention, the filling of the mold to the proper height at the various points of the brick and also the compression of the material which is of a slightly plastic nature will be evenly carried out at all parts of the brick, the two members automatically changing the form of the die during the pressing operation, the result being attained in a simple and exact manner.

A similar result might be attained by pressing the material from the top downwardly, in this case the member *d* would be

kept stationary, while the support for the member *c* could be rendered yielding, so that in pressing the member *c* would be depressed to such an extent that in its lowest position, the correct thickness for the bottom plate would be attained.

The construction of the member *d* is of particular importance. As will be seen from Fig. 6, at the parts which contact with the guide walls, it is provided with correspondingly broad grooves extending from the top to the bottom as indicated at *q* and which open into inclined ports *r* extending from the interior hollow. The object of this arrangement is to conduct off any material falling between the parts *c* and *d*, since the material being of a nature but slightly plastic would otherwise grind and damage the contacting surfaces of the two movable members.

I claim as my invention:—

1. In a mold for compressing materials having but slightly plastic properties, the combination of a bottom formed of two movable members, adapted, while the mold is being filled to enlarge the same relatively and correspondingly to the various thicknesses of the article to be attained and means for operating the said members to compress the material to the said thicknesses in consecutive movements.

2. In a mold for compressing materials having but slightly plastic properties, the combination of a bottom formed of two movable members, adapted, while the mold is being filled to enlarge the same relatively and correspondingly to the various thicknesses of the article to be attained, means for operating the said members to compress the material to the said thicknesses in consecutive movements and substantially vertically disposed grooves located between the adjacent walls of the said members and having ports at the upper end communicating with the interior of the mold as specified.

In testimony whereof I affix my signature in the presence of two witnesses.

JOHANNES DRAENERT.

Witnesses:

MORITZ SPREER,
RUDOLPH FRICKE.