July 10, 1934. F. A. ARMSTRONG 1,965,758

APPARATUS FOR MOLDING PIERCED AND INDENTED DRY BRICK

Filed Nov. 13, 1931

FIG. 1

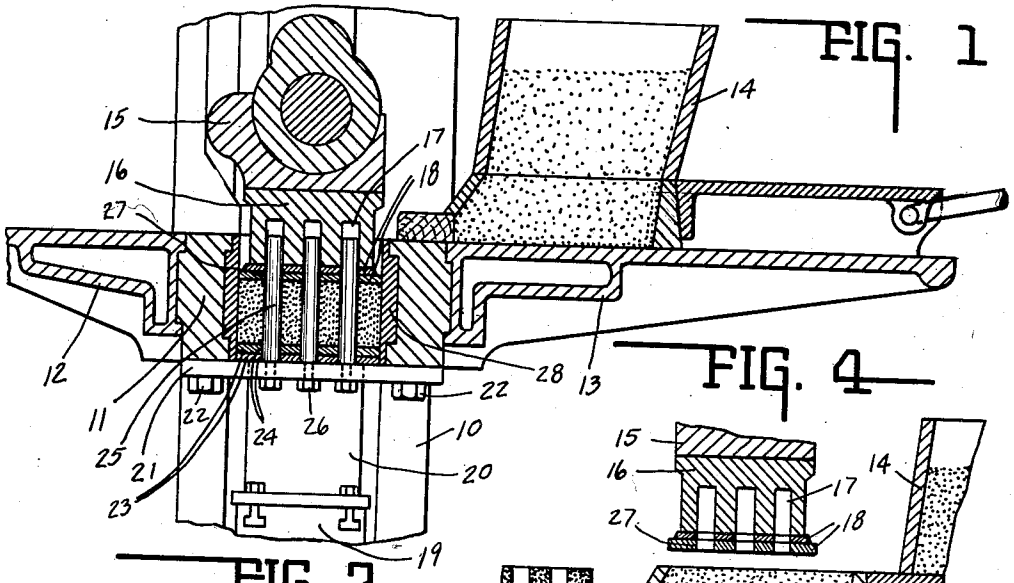


FIG. 2

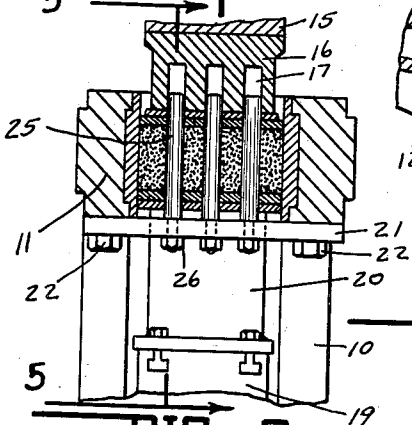


FIG. 3

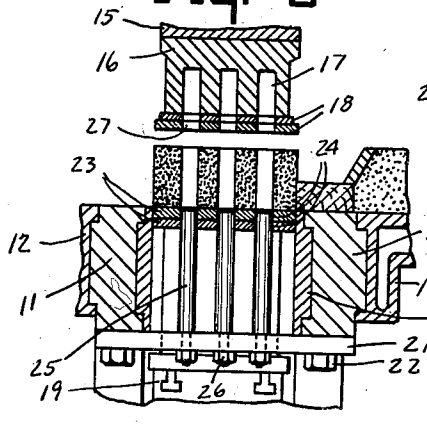


FIG. 4

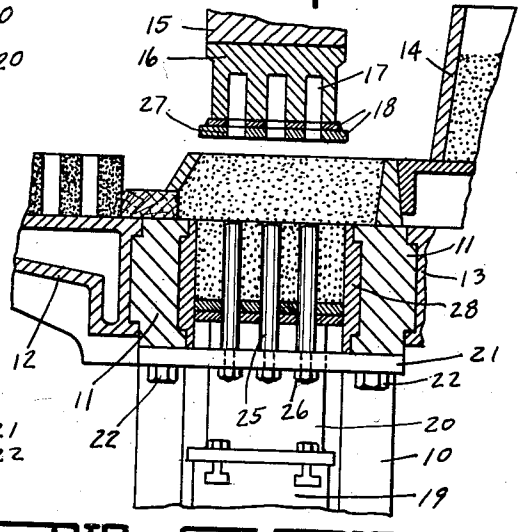


FIG. 5

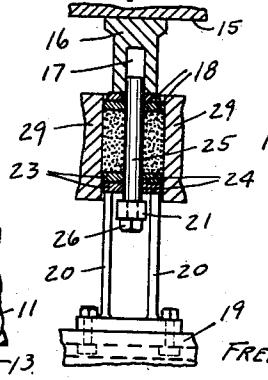
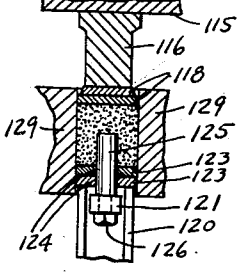


FIG. 6



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APPARATUS FOR MOLDING PIERCED AND INDENTED DRY BRICK

Fredrick A. Armstrong, Anderson, Ind.

Application November 13, 1931, Serial No. 574,689

1 Claim. (Cl. 25—90)

This invention relates to the manufacture of indented or pierced dry pressed brick.

Heretofore pierced or indented dry pressed brick have not been known and the object of this invention is to manufacture dry pressed brick which are pierced or indented, as desired.

This invention contemplates the formation of indented or pierced dry brick which by reason of the piercing, or piercings, and/or indentation, or indentations, produces a dry pressed brick having all the desirable characteristics thereof and which requires less material to produce said brick and which by reason of its smaller amount of material and lighter weight, requires less fuel to burn the contemplated brick and less freight charges for shipment, respectively.

The apparatus disclosed herein is an exemplification of a structure capable of producing the brick when the process is practiced and capable of producing no other type of brick without radical modification and which in operation employs the method of this disclosure.

The terminology "dry brick" appearing herein and in the claim, is intended to include what is commonly known as a "dry pressed" brick or a dry pressed brick process, wherein the "green dry brick" prior to burning has a small amount of moisture and is held together not by moisture but by compaction.

The full nature of the invention will be understood from the accompanying drawing and the following description and claim:—

In the drawing, Fig. 1 is a central sectional view of a Berg dry brick press embodying the apparatus necessary to practice the process, the parts being shown in the material compressing position.

Fig. 2 is a similar view of some of the parts shown in Fig. 1, the parts being shown in material compressing and initial mold freeing position.

Fig. 3 is a similar view, the parts being shown in the final mold freeing position and the brick ejected from the mold.

Fig. 4 is a similar view, the parts being shown in the material supplying position and the brick laterally removed from the mold.

Fig. 5 is a sectional view taken on line 5—5 of Fig. 2 and in the direction of the arrows.

Fig. 6 is a view similar to Fig. 5 and of a modified form of apparatus for forming indented brick.

In the standard Berg dry brick press, the pockets that receive the material are usually four in number and each produce a brick of standard dimensions. With smaller brick, the same press can accommodate molds or forms for forming five brick simultaneously. With larger brick, the press can accommodate three or less brick. When the brick is of the following character—24" long, 13" wide, 2½" to 4" thick—the press and mold will be arranged to accommodate but a single brick.

The present disclosure is one wherein the press is shown forming a standard sized but perforated brick and the standard sized but indented brick and for the purpose of illustrating the invention, the same has been restricted to a single brick disclosure.

The apparatus applied to the standard Berg press whereby the same is modified to form indented or perforated dry brick may, as will be understood by those skilled in this art, be otherwise arranged for the practicing of the inventive process. By the aforesaid is meant that the support for the cores or coring may be otherwise positioned but must be positioned so that there is no interference with the movement of the mold bottom or platen and its supporting and moving mechanism.

The formation of pierced or indented brick is considered the equivalent formation, because substantially the same process is employed for the production of each except that in one instance, to wit, in the formation of the perforated brick, the coring is of sufficient length to extend completely through the mold cavity or substantially through the same, and the compressing head preferably is socketed to receive the free ends of the coring.

In the formation of the indented brick, the head is not socketed and the coring does not extend substantially through the mold cavity.

This invention contemplates the filling of a mold cavity with material suitable for forming a dry brick. The predetermined amount is obtained therein by adjusting the depth of the cavity, which adjustment is embodied in the standard Berg dry brick press. The amount of material supplied at each cycle is the same, because the excess is struck from the cavity by a striker. Thereafter, the completely filled mold cavity is reduced in depth by the compression head moving into the cavity and the supporting bottom or platen moving into the cavity.

The coring for forming the indentations or piercings is stationary relative to these two relatively movable mold forming structural elements, and the material is compressed within the sides of the mold and between the bottom and head. At the final pressing position of both pressing members, i. e. when they are the closest together,

the material has reached its maximum compression and in the case of the formation of indented brick, this position is the critical position, which determines the depth of the perforation or indentation formed by the coring, said coring being slidably associated with one of the movable compression elements.

In the case of the pierced brick, the coring may or may not be slidably associated with both compression elements, but better operation is obtained and cleaner or more perfect brick are obtained if the coring is slidably associated with both compression elements.

In the so-called "dry brick" art, pressures of 1800 to 2,000 lbs. per square inch are utilized. All attempts heretofore to utilize a core structure in a dry brick press have failed, because the surface friction between the compressed brick and the core is enormous and the additional friction between the compressed brick and the core was of such amount that the brick could not be freed from the mold and the core without breaking the brick, or if the brick were freed from the mold and coring without disintegration, the brick surface would be so filled with surface pressure cracks, known as "crazing" that the finished product would be practically worthless for in the burning of the brick all pressure surface cracks are accentuated, producing an unmerchantable quality of brick.

The present invention, therefore, produces perfect dry brick without crazing, it is believed, by reason of the fact that in the final compression of the brick, the brick is caused to move in the mold and along the coring and simultaneously with the final compression with the result that the total friction on the brick surface is less because the brick is in motion which is continued for ejection than the total friction would be if the brick were first compressed, and then following compression its initial ejection movement started.

As the bottom compression element moves upwardly in the mold cavity, compression preferably continues by having the upper or top compression member start its return travel at a slower rate than the bottom member. In other words, not only does compression continue during the upward travel of both top and bottom compression members, but compression also continues for a portion of that travel. During this period, the brick is advanced or moved toward the ejection position and after the compression period has elapsed, the upper compression member is retracted at a faster rate than the lower member advances through the mold, so that by the time the bottom mold member has attained a position at the top of the mold so that the brick previously formed in the mold is completely ejected from the mold, the upper member or head will be spaced an appreciable distance above the brick. Thereupon, a pusher moves the brick laterally from the ejected mold position and out of registration with the mold while the mold is simultaneously refilled. The surplus material is then struck off and compression is again initiated. Near the end of the lateral movement of the brick from mold registration, the lower mold member is retracted so that it is again positioned at the bottom of the mold, so that the mold may be filled at the same time that the brick is finally moved out of registration with the mold.

Merely as an exemplification of apparatus capable of practicing this process, there are disclosed herein certain portions of a Berg press equipped with mechanism for practicing the process, and when such a Berg press is equipped with this mechanism, it can only practice the process and produce the article contemplated by the employment of the method.

In the drawing, 10 indicates a side frame of a Berg dry brick press provided with spaced mold supports 11, a dry brick receiving table 12, a material receiving table 13, the material supplying hopper 14, and a compression head moving member 15, the same constituting a cross head that is vertically reciprocable by standard Berg press mechanism. Suitably secured thereto is the compression head 16 which, in the present instance—see Figs. 1 to 5 inclusive, is socketed as at 17 for core reception. The head 16 suitably supports the pressing plates 18. Vertically reciprocable in the frame 10 and by the standard Berg mechanism, is a cross head 19 suitably secured to which is a pair of supporting plates 20 arranged in spaced relation and at opposite sides of a cross bar or plate 21, rigidly secured as at 22 to the mold side supporting structure 11. The adjustment for determining the initial position of the mold bottom is obtained by adjusting the initial position of the cross head 19 through the mechanism which is standard to the Berg press. The supporting plates 20 support the mold bottom plates 23 which are apertured as at 24 and in which apertures are slidably mounted the cores 25, the same being rigidly secured to and supported by the plate 21 as at 26. Plates 18, as indicated, are apertured as at 27, said apertures registering with the sockets 17. The mold side supporting frame 11 supports the mold side plates 28 and the mold side plates or partition members 29, the latter, however, only being shown in Fig. 5.

It will be apparent from an examination of Figs. 1 and 5 that there is no interference by the stationary mounting of the coring with the vertical movement of the bottom compression element.

In Fig. 6 there is illustrated a modified form of apparatus, wherein similar parts bear numerals of the one hundred series and the upper cross head is indicated by the numeral 115, the upper compression member by 116 which, in the present instance, is not socketed and the same suitably supports the compression head plates 118. The vertical supports 120 for the mold bottom suitably support the bottom plates 123 which are apertured as at 124 to slidably engage the coring 125 which, in the present instance, does not extend completely through the mold cavity and, therefore, merely forms an indentation in the completed brick. The coring 125 is rigidly supported on the bar or plate 121 and is suitably secured thereto as at 126.

The invention claimed is:—

Apparatus for forming indented or pierced dry brick including a tubular mold, a movable perforated platen closing one end of the mold, stationary coring means having a peripheral outline corresponding to the platen perforating and projecting through the platen perforations and terminating short of projecting beyond the opposite end of the mold and extending through the first mentioned end of the mold, stationary means supporting said coring at the first mentioned end of the mold, means for moving said platen upwardly and entirely through the mold, a movable plunger positioned adjacent the mold at the end thereto toward which the platen is moved when passed through the mold and having an exterior outline conforming to the interior of the mold and recessing arranged to telescopically receive

the coring means, and means for moving said plunger into the mold simultaneously with the movement of the platen toward the same, said moving means for the platen and the plunger being arranged to move the platen and the plunger in the same direction for removal of the plunger from the mold and separation of the plunger from the coring means and separation of the brick supported by the platen from the coring means when projected from the mold and supported by the platen for lateral removal with respect to the movement in the mold.

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