

Oct. 15, 1940.

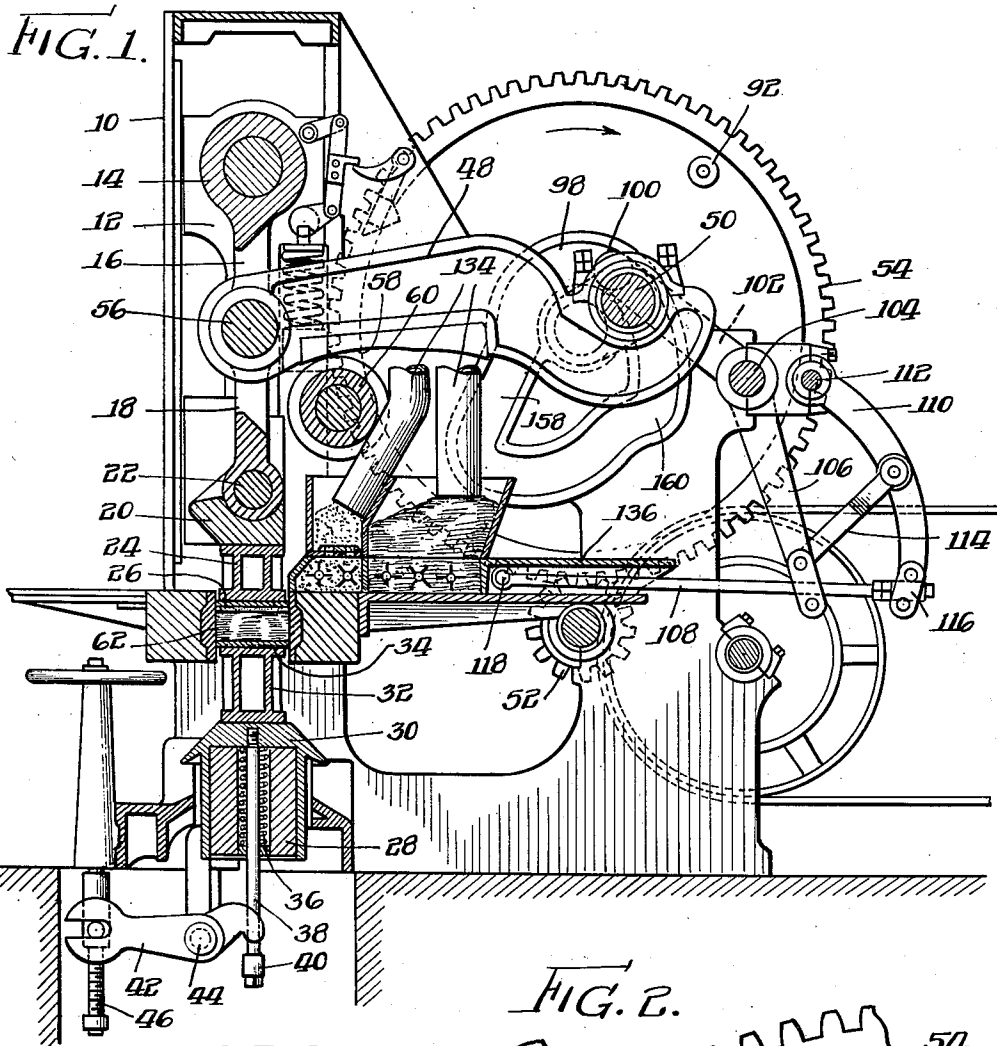
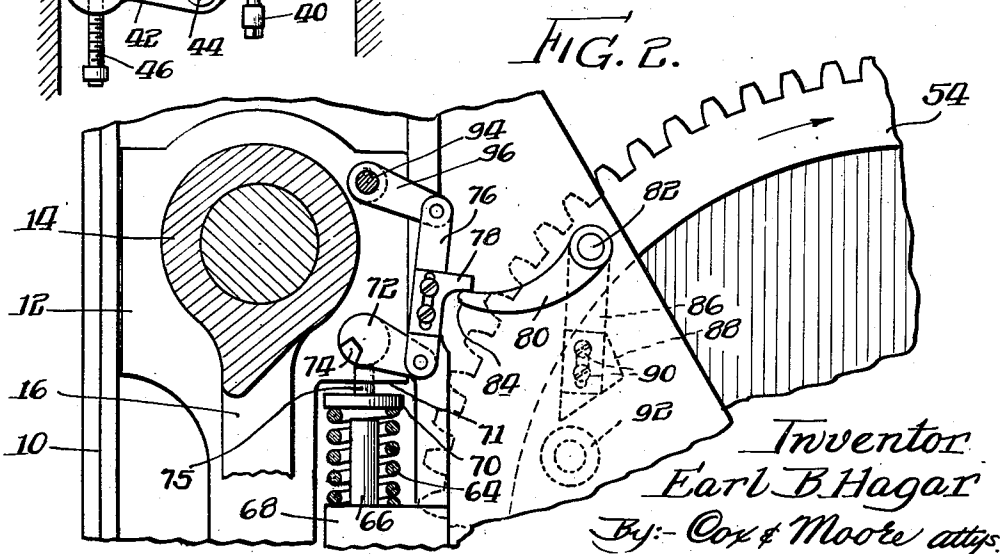
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2,218,196

BRICK PRESS

Filed June 21, 1937

4 Sheets-Sheet 1



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FIG. 3.

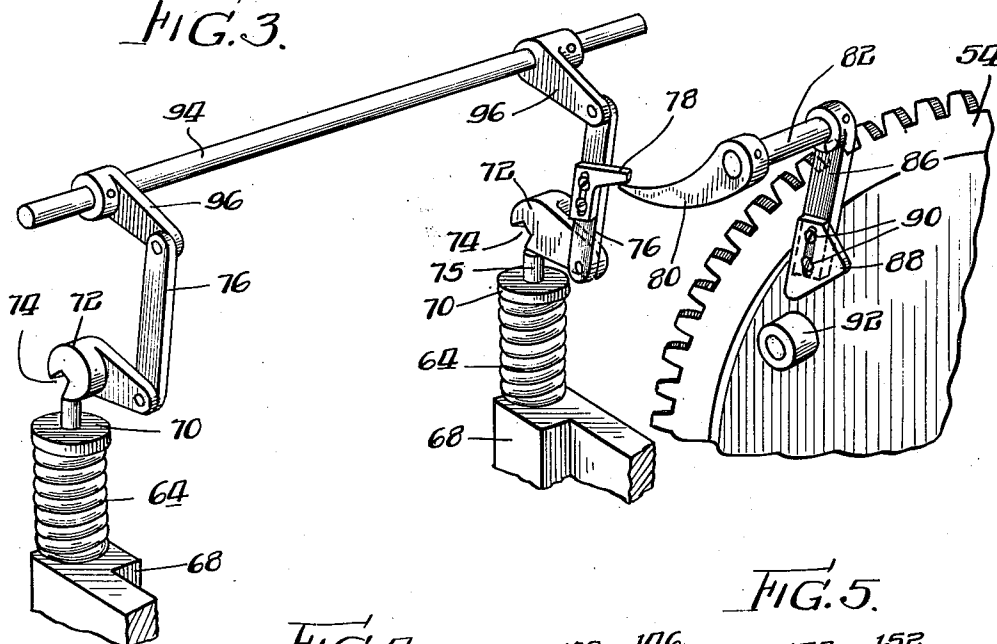


FIG. 4.

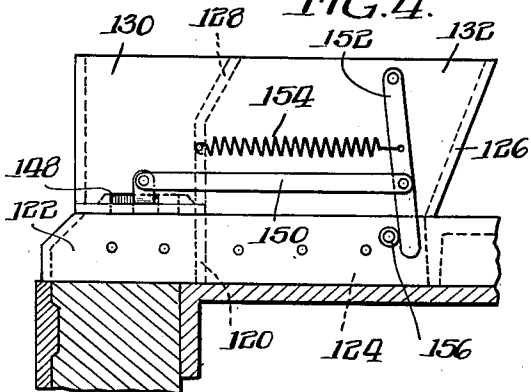


FIG. 5.

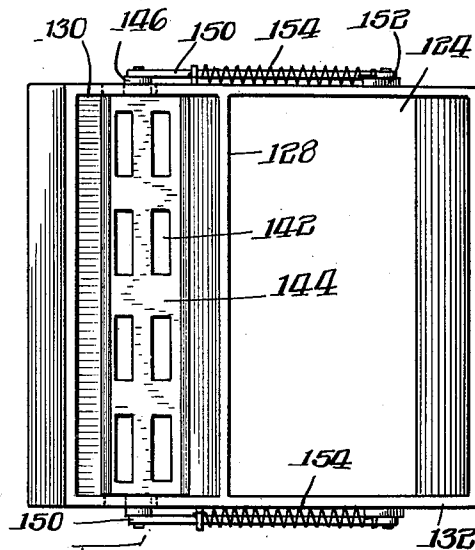


FIG. 6.

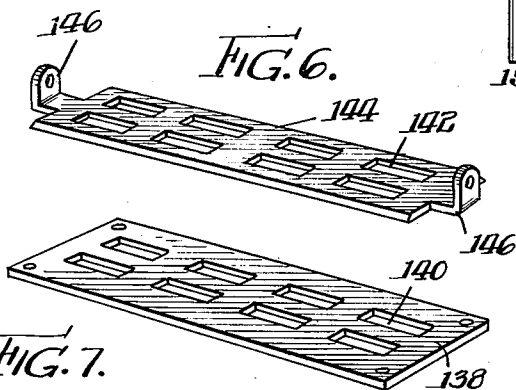
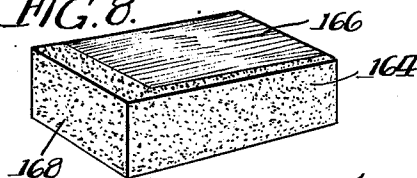


FIG. 7.

FIG. 8.



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FIG. 9.

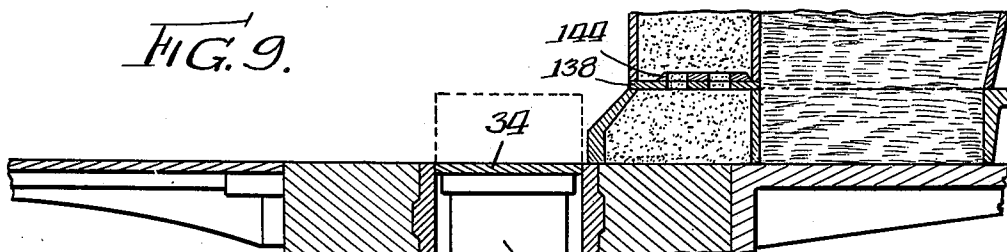


FIG. 10.

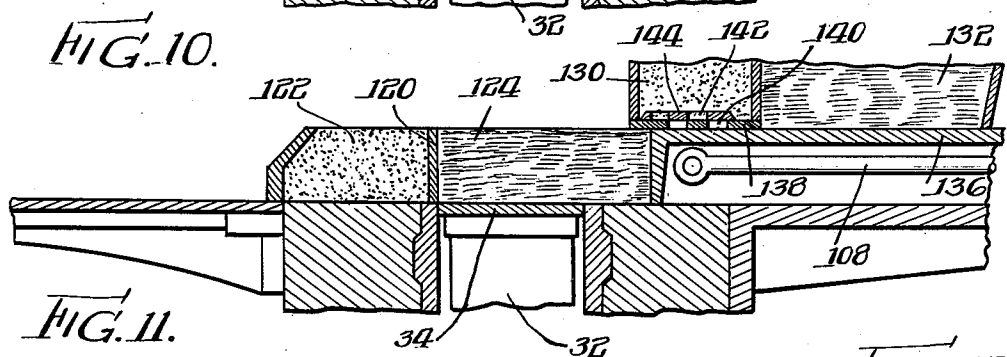


FIG. 11.

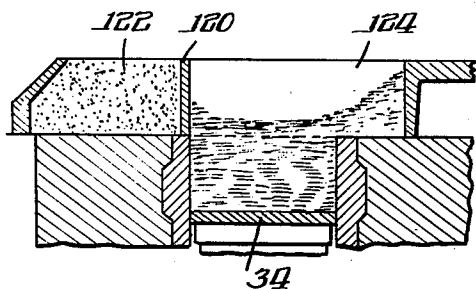


FIG. 12.

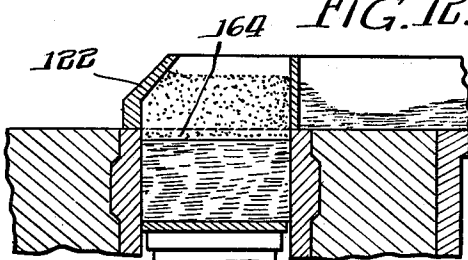


FIG. 13.

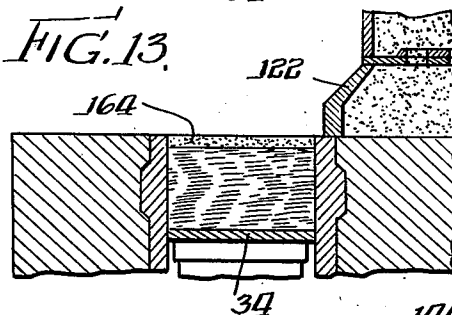


FIG. 14.

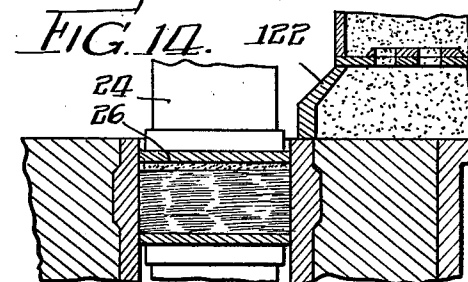


FIG. 15.

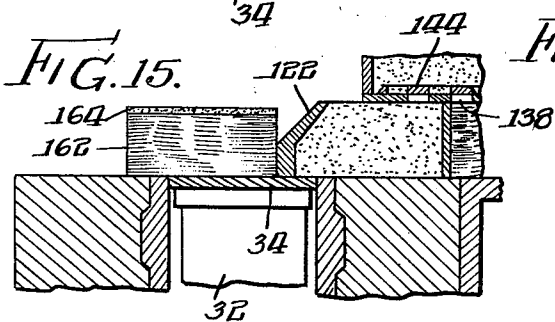
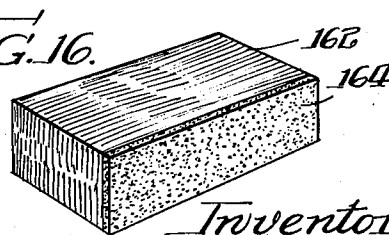


FIG. 16.



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FIG. 17.

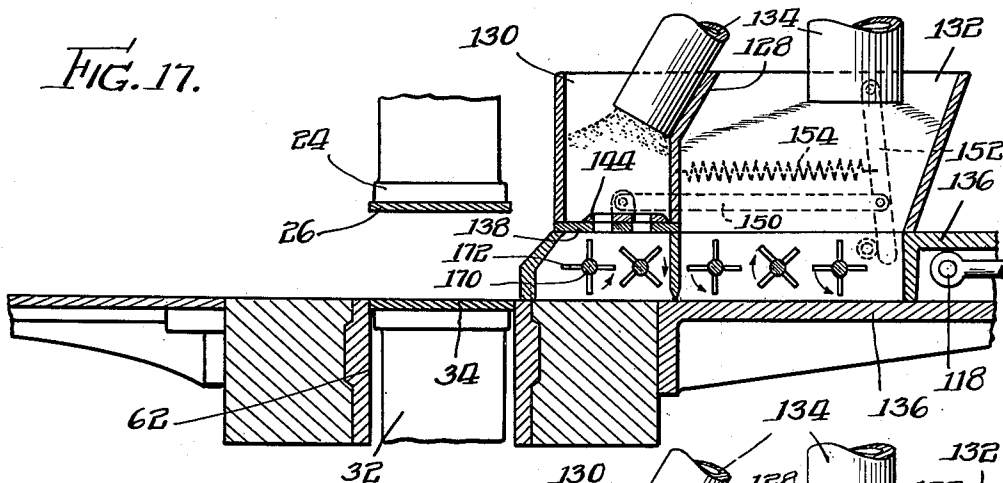


FIG. 18.

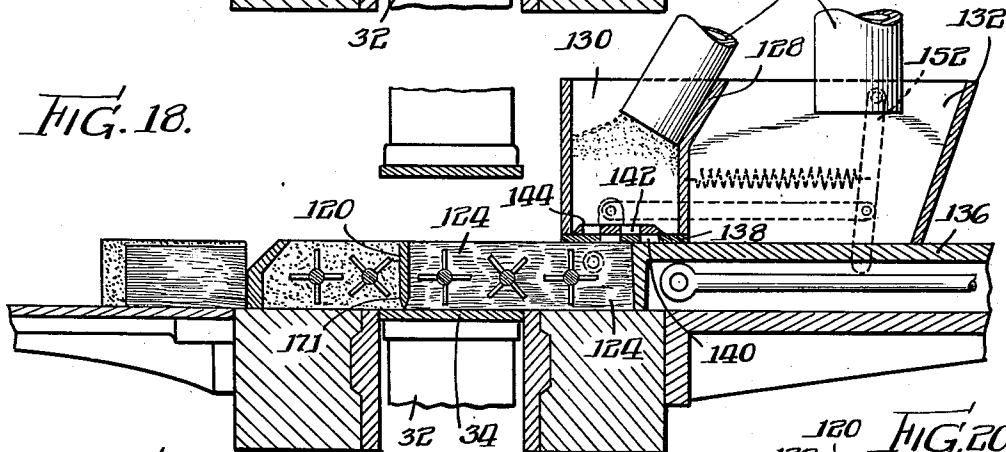


FIG. 19.

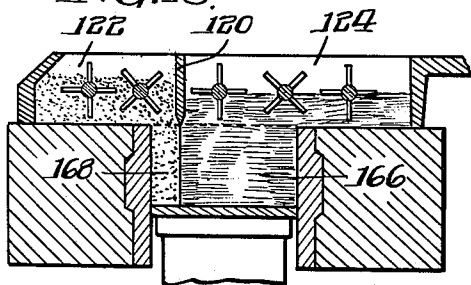


FIG. 21.

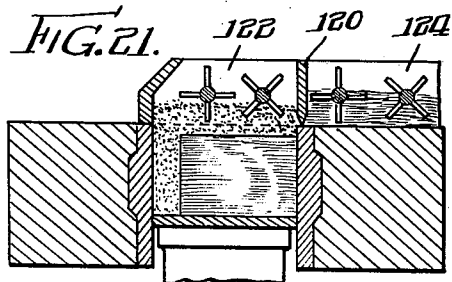
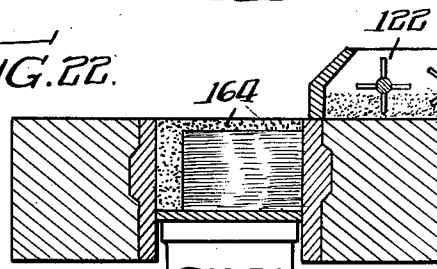


FIG. 22.



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UNITED STATES PATENT OFFICE

2,218,196

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Earl B. Hagar, Chicago, Ill., assignor, by mesne assignments, to Gordon W. Reed, Greenwich, Conn.

Application June 21, 1937, Serial No. 149,352

15 Claims. (Cl. 25—97)

The present invention relates to a machine and process for making brick and more specifically to a structure and method for the pressing of brick and the provision of veneered surface portions.

Brick making materials, as is known, vary considerably in cost and in quality. Brick manufactured from less costly material may possess valuable structural properties, at the same time being undesirable as to exterior appearance, whereas a face brick of the desired color and texture normally requires raw materials of relative rarity and disproportionate increase in final cost. This is particularly the case in the manufacture of pressed brick containing expensive coloring pigment. There are many colors, notably black and gray, which are highly desirable in face brick, but unobtainable except at excessive costs.

It is, therefore, a purpose of the present invention to provide a method and apparatus for manufacturing pressed brick wherein the surfaces, which will be visible in the final structure, comprise a layer of a relatively costly material, the main body of the brick being integral therewith and pressed from a less costly brick making material.

A further object of this invention is to provide a process and apparatus for molding and/or pressing brick wherein the major portion of the finished article comprises a relatively common brick making material, a small proportion thereof comprising a highly desirable material on the exterior thereof.

An additional object of this invention is to provide a process and apparatus for manufacturing pressed brick having an integral surface layer on more than one side thereof and specifically upon sides or surfaces which are adjacent for the purpose of providing bricks suitable for use at corners or in other positions where more than one surface is visible.

Yet a further object of this invention is to provide a device for making pressed brick having means to increase selectively the effective depth of the mold in order to permit the application of a surface layer of a contrasting material.

Another object of this invention is to provide a brick pressing machine having means for measuring and apportioning the main charge and thereafter, during charging, increasing the depth of the mold to permit the apportioning of a measured layer of a different surface material.

Still another object of this invention is to provide a charging supply device for automatically charging the molds in a brick making machine

having means for handling a plurality of types of brick making material and for automatically depositing the material in the molds or the like in proper order to produce an integral brick with a veneered surface.

It is moreover an object of this invention to provide a machine for making pressed brick wherein the charging means is so co-ordinated with the mold controlling mechanism as to deposit therein contrasting layers of brick making material over portions corresponding to a plurality of the surfaces in the final brick.

Numerous other objects and advantages will more fully appear during the course and progress of the following specification.

Figure 1 is a transverse sectional elevation of a machine constructed in accordance with the present invention.

Figure 2 is an enlarged partial detail view of the frame taken on the same plane as Figure 1 and showing the frame dropping mechanism.

Figure 3 is a perspective detail view of the frame dropping mechanism.

Figure 4 is an elevational view of the feeding hopper and charging box constructed in accordance with the present invention.

Figure 5 is a plan view of the parts shown in Figure 4.

Figure 6 is a detail perspective view of the gate control used in the charging hopper.

Figure 7 is a perspective view of the bottom element which is applied to close the forward compartment of the feeding hopper.

Figure 8 is a perspective view of one form of pressed brick made in accordance with the present invention.

Figure 9 is a sectional elevation through the charging and molding means, showing more or less diagrammatically the position of the parts at the commencement of the brick making cycle.

Figure 10 is a view the same as Figure 9, indicating the position of the parts at the time when the main body of brick making material is introduced into the mold.

Figure 11 is a diagrammatic sectional view taken the same as above, showing the parts during the return stroke of the charging means.

Figure 12 is a view the same as above, showing the position of the parts at the moment the mold is dropped to accommodate a surface layer of veneering material.

Figure 13 is a view the same as above, indicating the position of the parts at the time the materials in the mold are leveled off and pressing commences.

Figure 14 is a view the same as above, indicating the final pressing operation.

Figure 15 is a view the same as above, showing the position of the parts as the pressed article is ejected from the machine.

Figure 16 is a perspective view of a brick made in accordance with the present invention and having a single, integral, contrasting, veneered surface layer.

Figure 17 is a sectional elevation of an alternative type of brick pressing machine, showing the parts at the start of the brick pressing cycle.

Figure 18 is a view the same as above, showing the parts at the beginning of the mold filling step.

Figure 19 is a detail view the same as above, showing the parts after the bottom plunger has been lowered.

Figure 20 is a view the same as above, showing the position of the charger just before lowering of the bottom plunger to accommodate the upper layer of veneer material.

Figure 21 is a view the same as above, showing the parts at the time the bottom plunger has been lowered for the upper surfacing layer.

Figure 22 is a view the same as above, showing the commencement of the pressing step.

The present machine, selected for purposes of illustration, comprises a brick press, many features of which have been known to the art for some time. Generally, however, the machine comprises a pair of side frames 10 suitably connected and supported. The side frames in turn support a movable frame comprising side bars 12 arranged therein for vertical sliding movement. The bars 12 at their upper ends carry a shaft 14 fixed transversely therebetween and having depending therefrom a pair of toggles 16 and 18. The bottom end of the lower toggle 18 is secured pivotally to the upper cross-head 20 through the agency of the shaft 22. The upper cross-head comprises a plunger or series of plungers 24 having upper die-plates 26 mounted thereon.

At the lower ends the side bars carry the lower cross-head 28 preferably rigidly mounted transversely therebetween. The lower cross-head is surmounted by a saddle 30 to which is secured the lower plunger or plungers 32 having on the top thereof the lower die-plate 34. The saddle is maintained in position by a compression spring 36 co-acting with means for limiting the upward movement thereof with respect to the lower cross-head, said limiting means comprising bars 38 rigidly secured to the saddle and having at the lower ends a cross-head 40 cooperating with a lever 42 fulcrumed about a shaft 44 rigid with the lower cross-head and controlled by the screw adjusting mechanism 46. Pressing is accomplished through the agency of the connecting rod 48 secured at one end to the crank 50 driven by the pinion 52 and the large gear 54, and at the other end pivoted to the center of the toggles by the shaft 56.

The underside of the connecting rod 48 is provided with a cam surface 58 co-acting with the fixed roller 60 to lift the entire frame and toggle mechanism during a portion of the cycle of operation. As is known, in machines of this type the flexing and straightening of the toggles, due to the action of the connecting rod, causes the upper and lower plungers to move apart and together to compress the brick making substance therebetween. The parts are so proportioned and arranged that at the end of the pressing

operation the side bars and associated parts are lifted upwardly by the fulcruming of the connecting rod 48 upon the roller 60 until the lowermost die-plate 34 is level with the top of the brick mold 62, thus ejecting the pressed brick therefrom.

Suitable stops (not shown) are adapted to contact a portion of the saddle 30 and cause accurate registration of the lower die-plate and the top edge of the mold in this position. These general features of the machine were shown generally as early as the time of the following United States Patents No. 418,099, granted to White and Boyd, April 10, 1888, and No. 488,622, granted to White, March 11, 1897, and therefore should require no further description.

According to the present invention, means is provided for charging the mold in two steps. The side bar frame and its associated parts are normally supported by a pair of cushioning springs 64 and a pair of pins 66 supported by a pair of suitable projecting lugs 68 on the side bars of the machine. According to the present invention, a plunger-shaped support 70 is guided in a horizontal shoulder 71 formed in each side bar and is positioned vertically by contact with the cams 72 having generally cylindrical outer surfaces broken by the cam depressions 74. These cams are pivoted in the side bars, the one in the figures being controlled by a link 76 connected to a projection thereof, having an adjustable lug 78 thereon. A bell crank 80 pivoted rigidly to the frame of the machine by the shaft 82 has a forwardly extending arm terminating in the curved end 84 which co-acts with the underside of the lug 78.

The depending arm 86 of the bell crank is provided with an adjustable contact member 88 secured to the arm by means of a set screw and slot connection 90. The bell crank is actuated to control the cams 72 by means of a roller 92 affixed to the surface of the gear wheel 54 and positioned to impinge the contact member 88, displacing it to the left, as viewed in Figures 2 and 3, and causing the bell crank to lift the lug 78 and the associated mechanism to rotate the cams 72 counterclockwise through a short arc sufficient to bring the depressed portion of the cam 74 in registration with the spindle portion 75 of the plunger-like member 70, as shown in Figure 3, whereupon the pressing mechanism will be caused by its weight to drop a distance corresponding to the depth of the cam depression 74 or until the plunger-like member contacts the lower surface of the shoulder 71 on the side bars.

Only a single bell crank has been found necessary, the opposite cam being controlled by a counter-shaft 94 having rigidly keyed thereto a pair of levers 96 pivoted at their ends to the upper end of the link 76. A similar link and lever on the opposite end of the counter-shaft, as shown in Figure 3, controls the other cam member 72 whereupon it will be seen that both cams will be actuated simultaneously and in synchronism to permit the pressing mechanism to be dropped uniformly.

The distance through which the pressing mechanism is permitted to descend may be accurately controlled in various ways. It has been discovered, however, that this may be readily and preferably accomplished by means of washers inserted in the space between the flange of the plunger-like member 70 and the offset portion of the corresponding shoulder portion 71 of the side bar thereabove, the distance being accurately de-

terminated in accordance with the thickness of the washers employed. Thus, in accordance with the above device, the machine will operate so as normally to fill the mold in a known manner but thereafter the pressing mechanism will be caused to drop an additional distance to permit the introduction of a further layer of another brick making material upon the surface thereof.

Means is provided for automatically charging the molds and comprises a cam slot 98 rigid with the gear wheel 54 and rotated therewith by the pinion 52 as aforesaid. Cam roller 100 rides in the cam slot 98 and is fixed rotatably upon the end of the bell crank lever 102 pivoted to a shaft 104 supported rotatably in a transverse portion of the frame. A depending arm 106 of the bell crank is provided at its lowermost end with means for attachment to the charger control arm 108. Additional means, however, is provided to selectively permit variation of the effective stroke of the arm 108 and consequently the movement of the charger and comprises a further arm 110 rotatably supported upon a shaft 112 secured to the frame of the machine and connected with the arm 106 by the link 114.

It will be evident that, as the roller 100 is caused to be displaced by the cam slot 98 toward or away from the axis thereof, the lowermost end of the arm 106 will be moved through a corresponding arc. Accordingly the link 114 will cause the arm 110 to be pivoted through an arc such that its lowermost end travels through a path of increased magnitude.

Means 116 is provided at the lowermost end of the arm 110, as shown in Figure 1, for attachment by nuts or the like to the end of the rod 108. The rod 108 being attached at its forward end to the charger through the agency of the pivot 118, the operator may, in his discretion, select either of two or more paths of travel of the charger.

The charger comprises particularly a frame having upstanding sides and divided by a partition 120 into a forward compartment 122 and a rearward compartment 124. The charger rests by its own weight upon the mold table of the press which normally serves to close the otherwise open bottom surface thereof.

A feed hopper 126 is divided by a partition 128 into forward and rearward compartments 130 and 132. The hopper is rigidly fixed to the frame of the machine and at such a height from the mold table as to just permit passage of the charger, the forward and rearward compartments of both the charger and the hopper being in registration when the parts are respectively in feeding position, as shown in Figures 1 and 4. In the aforesaid feeding position, the material from the rearward compartment of the hopper falls freely into the corresponding compartment of the charger. When the charger, however, is reciprocated forwardly of the hopper, a rearwardly extending flat table 136 on the charger covers the bottom of this hopper compartment and prevents egress of material therefrom.

In order to permit the independent supply of the materials from the two supply hoppers to the corresponding compartments in the charger without substantial admixture or contamination, there is provided a control means for the feed hopper 130. The control means comprises a plate 138 secured to the bottom of the compartment 130 by machine screws and the like passing through suitable apertures into the walls of the hopper. The bottom plate 138 is provided with

a plurality of rows of spaced, elongated apertures 140 which, when the hopper control is in normal position, are aligned with an identical series of openings 142 in the movable gate member 144. The gate 144 slides upon the surface of the bottom plate 138, being guided and positioned by extensions 146 on either end passing through slots 148 in the side walls of the hopper. The sides of the gate 144 are preferably beveled to permit reciprocation of the plate in the body of clay or brick making material.

The extensions 146 are turned upwardly in a vertical direction and have pivoted thereto one or more links 150, pivoted at their other end intermediate the ends of the levers 152. This latter member is pivoted to the side wall of the hopper, as shown clearly in Figure 4, and is normally maintained in its most forward position, as controlled by the slots 148, by the spring 154 extending between the lever and any suitable fastening means on the hopper. Actuation of the lever in the opposite direction is effected by pins 156 rigidly secured to the charger and horizontally projecting therefrom.

Normally, when the pin and lever are out of contact, the extensions 146 contacting the forward end of the slot 148 will determine the positioning of the gate 144. In this position the apertures 140 and 142 are completely out of registration, thus effectively sealing the bottom of the forward hopper against egress of material when the rearward compartment 124 of the charger is passing beneath. When the charger reaches its rearmost position, however, the pins 156 will contact the end of the levers 152, through the agency of the link 154 and the extensions 146, drawing the gate 144 to its rearmost position with the apertures 140 and 142 in registration. At this time the charger will be situated at the position indicated in Figures 1 and 4, as a result of which the material released from the hopper 130 will fall directly into the forward compartment 122 of the charger.

In this manner the charger is fed at its forward section only by material coming from the forward hopper, while at the same time the rearward compartment of the charger receives its supply only from the rearward portion of the hopper. It is, therefore, possible by the proper control of the supply pipes 134 to feed the rear most compartments with, for instance, a relatively inexpensive grade of brick making material for forming the central and rear parts in the finished brick, while the forward compartment may continually be supplied with a higher grade, relatively expensive brick making material for providing surfaces in the finished brick.

The various members are so proportioned and arranged as to control the relative functions of the different parts to produce a co-ordinated result. Thus the cam 98 is so proportioned as to maintain the charger in its rearmost or feeding position during the actual time that the brick is being pressed and again after pressing while the frame and the brick are being lifted upwardly in order to bring the bottom die-plate 34 level with the top of the mold and to free the pressed unit therefrom.

This portion of the cycle begins when the elements are in the position indicated in Figure 1, the gear wheel, cam and crank being rotated together in a clockwise direction, as indicated by the arrow. The portion of the cam then coming in contact with the roller 100 is constructed on a substantially uniform radius in order to permit

the follower and its associated mechanism to remain at rest. By the time the follower has contacted the radially extending portion 158 of the cam, the pressing mechanism is in uppermost position, being supported by the connecting rod 48 fulcrumed upon the roller 60 with the lower die-plate 34 substantially flush with the top edge of the mold. The action of the cam at this point causes the charger to be moved rapidly forward, the toggles at this time being flexed sufficiently to permit its ready passage between the opposed plungers. The charger is, during its travel, carried forward by the action of the cam sufficiently so that the rearmost compartment containing the relatively inexpensive clay is above and completely covering the top of the mold.

During this time the rotation of the crank has not only completely flexed the toggles, but has lifted the rearward end of the connecting rod upwardly again so that the pressing mechanism is lowered about the fulcrum provided by the cam surfaces 58 upon the roller 60. This lowering of the pressing mechanism obviously causes at the same time lowering of the bottom cross-head and the lower plunger and die-plate.

In their lowermost position the side bars are supported by the plunger-like members 70 and their associated supports resting upon the springs 64. As the lower die-plate is dropped, the material in the rear compartment 124 of the charger drops freely into the space formed in the mold. As the reversely extending part of the radial extension 158 in the cam slot passes the follower 100, the charger commences its return trip, the die-plate maintaining its lower position as determined by the adjustment of the screw 46, the partition 120, as it passes rearwardly, leveling off the material deposited, flush with the top surface of the mold. Just at the time the charger has reached the position shown in Figure 12, the follower meets the jog 160 formed in the cam path such that movement of the charger momentarily ceases or is slowed to a considerable extent.

At this instant, the roller 92 strikes the contact member 88, moving the bell crank 80 through a clockwise arc and thus rotating the cams 72 so that the cam depression 74 is over the end of the plunger-like member 70. Thus the frame immediately drops until the shoulder 71 contacts the upper surface of the head of the plunger-like member 70 or from the position shown in Figure 2 to the position shown in Figure 1.

The elements will in this way be lowered a distance depending upon the thickness of the layer of surfacing material to be deposited. This will naturally depend upon the type of materials employed and the selection of the operator and can be controlled by placing suitable washers between the member 70 and the shoulder 71 in the manner hereinbefore described. Assuming, however, for the purposes of illustration, that the frame is dropped half an inch, the parts will then reside in the position illustrated more or less diagrammatically in Figure 12. Further rotation of the cam past the jogged portion 160 draws the follower 100 to its centermost position and completes the retraction of the charger, the lower forward edge thereof during this movement sliding across the top surface of the material deposited from the foremost compartment of the charger and leveling it off flush with the top of the mold.

The previously defined action of the toggle mechanism then brings the two opposed die-plates together, as indicated in Figures 13 and

14, compressing the composite material into a brick of the proper size and characteristics. As rotation of the parts continues, the cycle repeats itself as described above, the lower die-plate being elevated to the position shown in Figure 15 to eject the pressed unit from the mold. When the charger is again moved forwardly its front edge contacts the brick, as shown in Figure 15, and shoves it forwardly from the vicinity of the mold and onto a suitable receiving table. It will be apparent from the above disclosure that the lifting of the frame 12 about the roller 60 as a fulcrum, will reset the cams 72.

The finished brick, as illustrated in Figure 16, will comprise a main body portion 162 formed of the main mass of material and having at one side a layer or veneer 164 of the more costly and attractive facing material. Since the composite mass has been unified in a single pressing operation the result is an integral brick which may be burned or otherwise treated in any conventional manner to produce the final product.

According to an alternative preferred form of the present invention means is provided for manufacturing a pressed brick having, not only a contrasting layer of material formed on one side thereof, but also on an end or other adjacent face. One form of the machine selected to illustrate this aspect of the invention comprises substantially the same elements as described in detail in connection with the machine hereinbefore mentioned, the differences in result obtained being enabled mainly through a difference in proportioning and arrangement of the parts as well as the timing of the relative actions.

The action of this machine is indicated more or less diagrammatically in Figures 17 to 22 of the drawings. As in the case of the aforementioned machine, at the time when the lowermost die-plate is positioned flush with the top of the mold and the toggles are being flexed to separate the plungers, the charger is in its rearmost position and in alignment with the respective portions of the feeding hopper, as indicated clearly in Figure 17. As operation of the machine continues, the cam follower, in the manner described above, is actuated to force the charger forwardly. However, the cam and associated parts are so proportioned that the charger has a limit of forward motion about at the position shown in Figure 18. At this position it will be noted that the partition 120 resides just above the lower die-plate 34 and somewhat toward the forward edge of the mold. It is while the charger is in this position that the frame is lowered by the action of the connecting rod 48 to cause the lower plunger and die-plate to be moved downwardly a depth sufficient to accommodate the material for the main body of the brick.

It will be apparent that as the die-plate drops, the material from the rearward compartment 124 of the charger will drop under its own weight to fill the void made thereby. At the same time, since the material in the forward compartment 122 is likewise supported in part by the die-plate 34, it also will drop as the latter member is lowered. Accordingly, when the plunger has reached its initial bottom position, the material in the mold will be generally divided into two zones or strata, namely, the stratum 166 comprising the relatively less costly body material, and the stratum 168 forming a layer adjacent the end of the mold and consisting of the relatively costly facing material.

It will be obvious from the above that it is

desirable to cause the movement of the charger to cease during the dropping of the frame, wherefore the radially extending portion of the cam path 153, as shown in Figure 1, is preferably provided with a short, relatively flat circumferential portion. Moreover, it may be found preferable to slightly bevel the lower edge of the partition 120, as indicated by the reference numeral 171, in order to facilitate introduction of the raw materials into the mold.

This operation having taken place, further rotation of the cam causes commencement of retraction of the charger from the position shown in Figure 19 to the position shown in Figure 20, the lower edge of the partition 120 causing the materials charged into the molds to be leveled off flush with the top thereof.

When the parts reach the position shown in Figure 20, the follower 100 is contacted by the jogged portion 160 of the cam track, causing the charger to hesitate. At this moment, as described above, the roller 92 on the gear wheel 54 impinges the contact member 88 actuating through the associated mechanism the two cams 72 to cause the frame and consequently the lower die-plate to drop a predetermined distance. Accordingly, the surfacing material in the forward compartment 122 of the charger drops by its own weight into the upper portion of the mold, as indicated in Figure 21. Subsequently the charger is fully retracted, the lowermost edge of the forward wall leveling off the charge in the mold flush with the top edge thereof. The charger having returned to the position indicated in Figure 2, the upper plunger is brought downwardly and the charge pressed to a standard size brick in the manner before defined.

In operating the present device, and particularly the second preferred embodiment, it has been found desirable to provide the charger with means to cause the charger to feed the material into the molds uniformly. This may be accomplished by mounting in the charger a series of transverse shafts 170. Suitable bearings are provided in the side walls of the charger so that these shafts may be readily rotated and rows of spaced fingers or projections 172 are situated longitudinally along the surface thereof.

According to the preferred embodiment, as shown in the figures, the fingers or projections 172 are set in four longitudinal rows which may be spirally arranged if desired and are spaced a sufficient distance, not only to properly disintegrate, break up or loosen any lumpy particles, but also tend to direct and feed the material in the direction of rotation.

The shafts are rotated by an electric motor secured to the charger, and suitable gearing (not shown) although it will be obvious that they may be driven from any desired portion of the machine in any preferred manner. Moreover, it is preferred that the shafts, and particularly those in the feed compartment of the charger, be rotated in the direction indicated by the arrows for the purpose of directing the surrounding brick making clay or the like into the void formed by the dropping of the lower die-plate.

Thus in operating with certain types of raw material prone to form lumps or clog a narrow aperture all difficulty is obviated. Though disintegrators have been known in the art for some time for the purpose of breaking up lumps, nevertheless when constructed, arranged and rotated in the manner according to the present invention, the fine material will be actually directed and fed

to the mold. Accordingly, when the parts have reached the position indicated in Figure 18 and the bottom plunger has started its downward movement, the two foremost shafts 170 and their associated fingers will, not only tend to break up the clay, but will tend to force it directly downwardly adjacent the partition 120 and onto the lower die-plate 34. Any tendency for the material to clog between the lower edge 171 of the partition 120 and the forward edge of the mold is effectually resisted so that the separate bodies of raw material maintain their identity in the finished article.

In the case of certain raw materials having too great a tendency to intermix, a movable partition may be associated with the partition 120 in such a manner as to be vertically adjustable through a relatively short path. In a device of this kind suitable means actuated by the machine, in timed relationship to the action of the charger, drops the adjustable partition a short distance below the edge 171 of the partition 120 and subsequently lifts this partition member above the said lower edge 171 when filling of the mold is completed and just before the return motion of the charger commences. Though the movable partition may project downwardly a relatively short distance, it has been found to have the effect of directing the raw material from the respective compartments downwardly and preserving a more or less clear line of demarcation therebetween.

The final pressed article, as will be apparent upon reference to Figure 8, comprises a main body portion 166 formed of the less costly brick making material. While the end portion of the brick 168 is formed integrally of a layer of the relatively expensive brick forming material, the side 164 is similarly formed of a second layer of the less plentiful material. Bricks of the instant type are quite useful where a side and/or end are exteriorly visible in the finished structure. For instance, in constructing a wall where the sides 164 of the bricks alone are visible, a wall constructed of elements manufactured in accordance with the present invention would have identically the same appearance and value as if it were manufactured from bricks constructed by the relatively more costly procedure of forming the entire brick from the relatively expensive material. For example, if the forward hopper is supplied with a normally prohibitive brick or gray brick forming clay, the finished bricks may be assembled into fully as effective a structure as in the case of bricks made completely from the gray or black pigmented clay. This modification results in absolutely no detriment to the structural properties of the finished construction element since the bricks are integral and uniform throughout and may be made from sound and approved raw materials.

When only one side of the bricks is visible in a finished structure, the type of brick shown in Figure 16 is amply suitable. On the other hand, in wall structures where the corners are visible it will be preferable to employ a brick, such as disclosed in Figure 8, in assembly of the wall, situating the brick so that the faces 164 and 168 only will reside in the plane of the finished walls. Various other arrangements may be readily made according to the particular type of structure involved.

It will be apparent from the above that the relative laminations or bodies of the respective raw materials need not be arranged identically in the manner disclosed in the preferred embodi-

ments but may comprise any particular sections, surfaces or portions of the finished brick. Moreover, while applicant has disclosed a process and apparatus wherein the veneer of relatively fine material is placed upon the top side of the brick, this layer may be readily formed on the lower or side faces thereof. So, too, various combinations of side or end portions may be veneered or treated as desired in accordance with the present invention.

The term "brick" as used in the instant specification and claims, is not employed in a limited sense but is meant to cover ceramic units such as floor brick, paving brick and fire brick, as well as materials generally known as tiles and other elements formed of clays, aggregates and the like and bound together in a unitary mass.

It is thought that the invention and numerous of its attendant advantages will be understood from the foregoing description and it is obvious that numerous changes may be made in the form, construction and arrangement of the several parts without departing from the spirit or scope of the invention, or sacrificing any of its attendant advantages, the form herein described being a preferred embodiment for the purpose of illustrating the invention.

The invention is hereby claimed as follows:

1. In a brick making machine, a mold, a platen cooperable with said mold, cam supporting means for said platen, and trip means actuatable in the path of said cam means whereby to actuate the latter means at a predetermined time to lower the platen with respect to the mold.

2. In a brick pressing machine, a mold, a pressing mechanism comprising a movable frame, oppositely disposed platens arranged on said frame for actuation to press a brick therebetween, means to support the frame with one of said platens in the mold to accommodate a predetermined quantity of brick making material, trip means associated with the machine to release the supporting means to drop the platen with respect to the mold whereby to cause the mold subsequently to accommodate a further quantity of brick making material, and means to actuate the platens to press the composite material in the mold.

3. In a brick pressing machine, a mold, a pressing mechanism comprising oppositely disposed platens actuatable in the mold to press a brick, means to support one of the platens in the mold to accommodate a predetermined quantity of brick making material, trip means associated with the machine to adjust the platen whereby to cause the mold subsequently to accommodate a further quantity of brick making material, and means to actuate the platens to press the composite material in the mold.

4. In a brick pressing machine, a mold, a charger operable forwardly and rearwardly with respect to the mold for charging the mold with brick making material, said charger having forward and rearward compartments, means to feed each compartment with a contrasting brick making material, means to move the charger with respect to the mold to fill the mold from one said compartment, means to drop the bottom of the mold to provide additional capacity for said mold at a predetermined section thereof, and means to actuate said capacity increasing means when the second said compartment is adjacent the mold whereby to charge the mold with material from the respective compartments at predetermined zones.

5. In a brick making machine, a hopper having a forward and a rearward compartment, a charger having a forward and a rearward compartment and registering with the aforesaid compartments in at least one position, and means to selectively close the bottom of one of said compartments only whereby to permit supplying of said charger when in said one position.

6. In a brick making machine, a hopper having a forward and a rearward compartment, a charger having a forward and a rearward compartment and being movable forwardly and rearwardly to charging position, means to supply the hopper with contrasting types of brick making material, the compartments of the charger registering with the compartments of the hopper in its rearward position, means to selectively close the bottom of the forward hopper compartment, and means to open the bottom of the forward compartment when the charger is in said rearward position whereby to permit supplying of said charger with brick making material.

7. In a brick making machine, a hopper having a forward and a rearward compartment, a charger having a forward and a rearward compartment and being movable forwardly and rearwardly to charging position, means to supply the hopper with contrasting types of brick making material, the compartments of the charger registering with the compartments of the hopper in its rearward position, a table portion on the rear side of the charger to seal off the bottom of the hopper when the charger is in its forward position, a gate on the forward compartment of the hopper, said gate being normally closed when the rearward compartment of the charger is therebeneath, and means automatically to open said gate when the charger is in rearward position whereby to permit supplying of both compartments of the charger.

8. In a brick making machine, a charger having a plurality of compartments separated by a vertical partition, a mold, means to fill each compartment of the charger with a contrasting brick making material, a movable bottom platen in the mold, means to situate the bottom platen substantially flush with the top edge of the mold, means to position the charger with portions of each compartment above the mold, and means to lower the bottom platen whereby to permit the brick making materials in said compartments to fall freely into respective portions of the mold.

9. In a brick making machine, a charger having a plurality of compartments separated by a vertical partition, a mold, means to fill each compartment of the charger with a contrasting brick making material, a movable bottom platen in the mold, means to situate the bottom platen substantially flush with the top edge of the mold, means to position the charger with portions of each compartment above the mold, means to lower the bottom platen whereby to permit the brick making materials in said compartments to fall freely into respective portions of the mold, and agitating means in at least one of the compartments to direct the brick making material therein freely into the mold.

10. In a brick making machine, a charger having a plurality of compartments separated by a vertical partition, a mold, means to fill each compartment of the charger with a contrasting brick making material, a movable bottom platen in the mold, means to situate the bottom platen substantially flush with the top edge of the mold, means to position the charger with portions of

each compartment above the mold, means to lower the bottom platen whereby to permit the brick making materials in said compartments to fall freely into respective portions of the mold, means to adjust the charger so that only one of said compartments is above the mold, means to drop the platen a predetermined distance to accommodate on the top surface adjacent the top edge of the mold a lamination of material from said compartment, and means to press the material in the mold.

11. In a brick making machine, a movable frame, brick pressing platens on the frame, a mold, said platens being operable with respect to the mold to press a brick therebetween, connecting rod means for actuating the platens, supporting members on the machine to support the movable frame with respect to the mold while the mold is being filled, cams co-acting with the supporting members, and trip means actuated at a predetermined time while the mold is being filled to permit the frame to drop a predetermined distance whereby to lower the said platens and provide additional space in the mold adjacent the top thereof.

12. The process of making brick comprising disposing a plurality of separate contrasting bodies of brick-making material in predetermined feeding relationship to respective predetermined portions of a mold whose capacity may be varied, at least one of said bodies containing more material than that necessary to fill its predetermined portion of the mold, filling said mold with said material, relatively shifting said bodies of material with respect to the mold so that one body only is in feeding relationship with a relatively different predetermined portion of the mold, and increasing the capacity of the mold to supply said last named body of brick-making material in a contrasting layer adjacent the first named charge.

13. In a brick-pressing machine, a mold, a charger movable across the mold for charging the mold with brick-making material, said charger having two compartments, means to feed each compartment with a contrasting brick-making material, means to move the charger with respect to the mold to fill the mold from one of said compartments, means to drop the bottom of the mold to provide additional capacity for said mold at a predetermined section

thereof, and means to actuate said capacity increasing means when the second said compartment is adjacent the mold whereby to charge the mold with material from the respective compartments at predetermined zones.

14. In a brick-pressing machine comprising a mold table having a mold recess extending into the table from the top surface thereof, a movable bottom in said mold recess, means to locate said bottom at a predetermined elevated position in the mold, a charger on said table movable across the mold recess for charging the mold with brick-making material, said charger having two compartments, means to feed each compartment with contrasting brick-making material, said compartments being open adjacent the bottom for feeding the material into the mold recess when said bottom portions are located above the mold recess, said bottom openings being normally closed by said top surfaces of the mold table, means to move the charger with respect to the mold to fill the mold from one of said compartments, means to drop the bottom of the mold to provide additional capacity for said mold at a predetermined section thereof, and means to actuate said capacity increasing means when the second said compartment is adjacent the mold whereby to charge the mold with material from the respective compartments at predetermined zones.

15. In a brick-making machine, a charger having a plurality of compartments separated by a vertical partition, a mold, means to fill each compartment of the charger with a contrasting brick-making material, a movable bottom platen in the mold, means to situate the bottom platen substantially flush with the top edge of the mold, means to position the charger with portions of each compartment above the mold, means to lower the bottom platen whereby to permit the brick-making materials in said compartments to fall freely into respective portions of the mold, means to move the charger with respect to the mold to position one compartment only above the mold to fill the mold from one of said compartments only, means to drop the bottom platen to provide additional capacity for said mold at a predetermined section thereof, and means to actuate said last named means when said one compartment only is above the mold.

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