

Dec. 18, 1934.

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1,985,115

METHOD OF MAKING CONCRETE BLOCKS

Filed Oct. 20, 1931

2 Sheets-Sheet 1

Fig. 1.

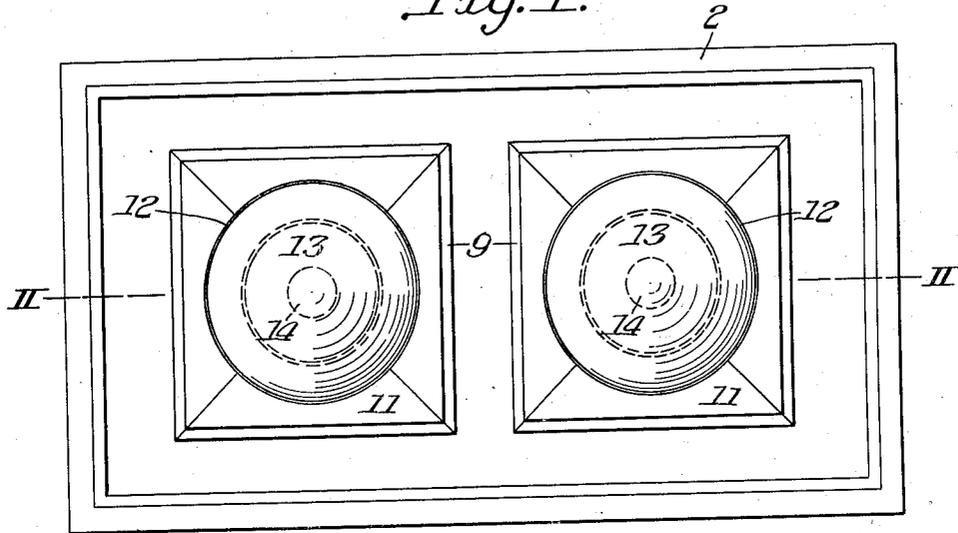
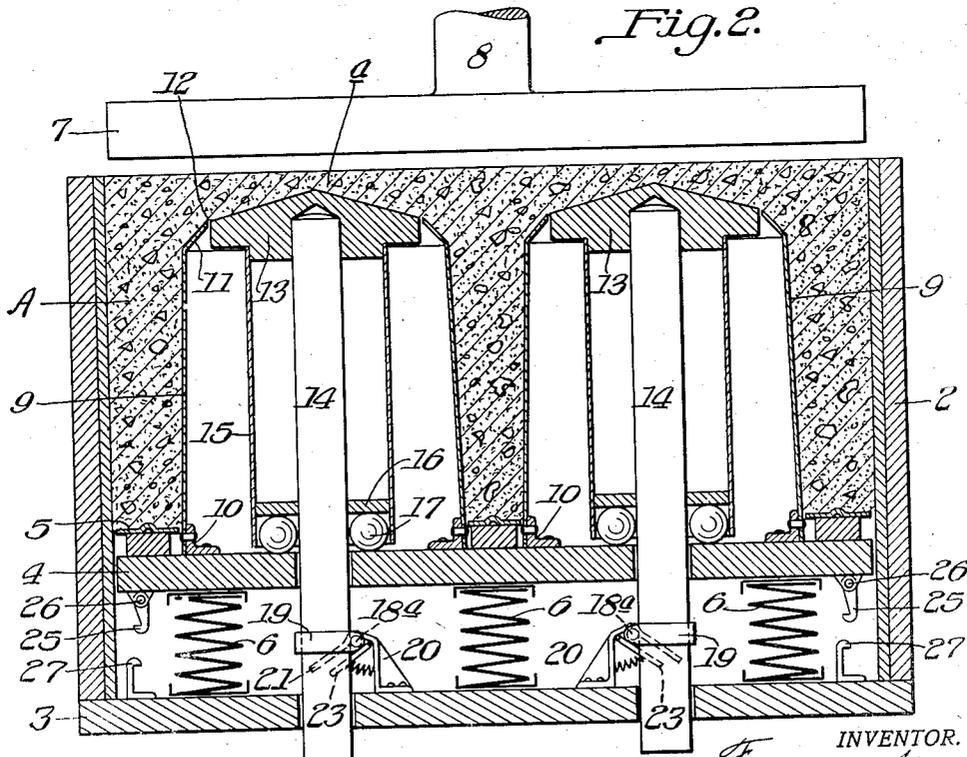


Fig. 2.



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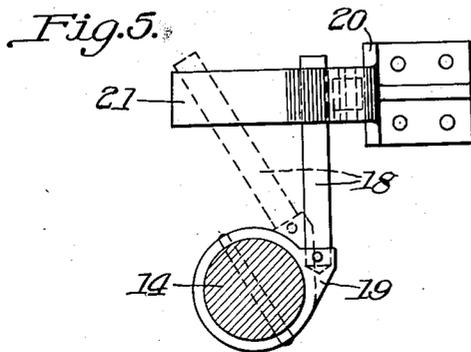
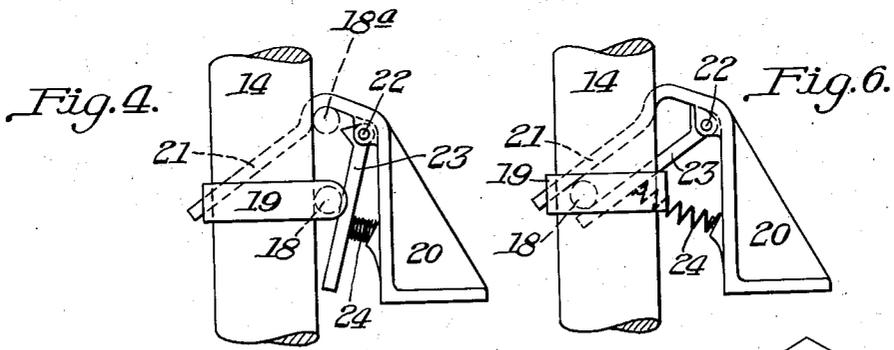
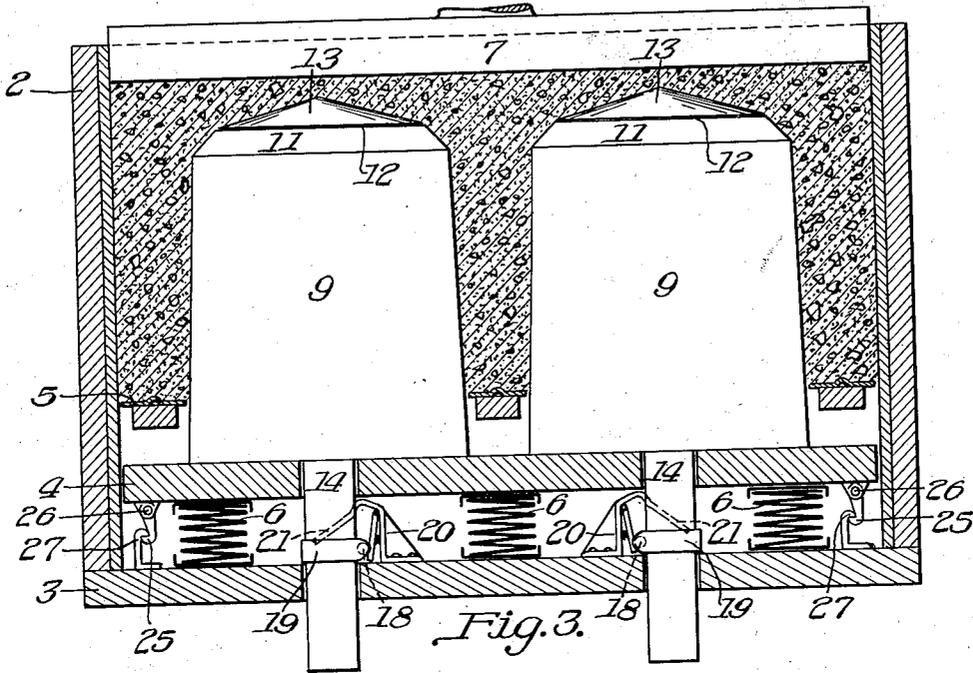
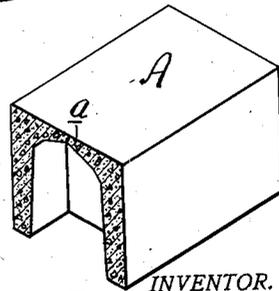


Fig. 7.



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# UNITED STATES PATENT OFFICE

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## METHOD OF MAKING CONCRETE BLOCKS

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Application October 20, 1931, Serial No. 569,908

3 Claims. (Cl. 25—155)

My invention consists of an improvement in the process and manufacture of building blocks or the like made of pressed aggregate.

In such blocks the article is formed from a suitable aggregate as sand, gravel, cinders, or other suitable material, mixed with cement and water and pressed into form within a shaping mold.

Ordinarily such blocks, of well known standard construction, are provided with core openings clear through their body portion from top to bottom. While such core openings are ordinarily of considerable advantage and utility, there are certain conditions of use and application in which they are objectionable because of extending entirely through the block. For instance, in the building of a wall with complete core openings extending vertically from bottom to top, the openings provide cavities into which more or less mortar or other cementing material is apt to be deposited, resulting in loss. Also, when a wall is laid up with the core openings continuously registering, there are a series of flue-like openings from bottom to top of each block, continuously through the wall.

It has been recognized as a desirable feature that in some cases the core openings should be segregated in each block, forming dead air spaces, and with a continuous covering top at the upper side of the block. Heretofore, the formation of such a closing wall has not been accomplished successfully, due to the frequent collapsing or rupture of the wall in separating the block from the terminal end of the core. While it is desirable that the core opening should extend through the body of the block and terminate as closely as possible to the opposite outer surface, the formation of such a covering top, especially with an aggregate of usual plasticity and fragility, has been difficult and impossible in continuous operation with the resulting disturbance or collapsing of the core top wall.

In the practice of my invention I provide means for forming the core opening in connection with a core terminal capable of rotation whereby to effect disconnection or severance of the core top from the under side of the desired outer wall. By so doing, there is no sufficiently strong adherence or suction, thus enabling separation of the formed block from the core. The invention is particularly applicable to the making of such blocks in a press mold, as distinguished from a tamp mold, and will be readily understood from the following description of the process followed with one preferred form of machine.

In the drawings:

Fig. 1 is a plan view of a press mold showing the core forming elements in position;

Fig. 2 is a vertical sectional view on the line II—II of Fig. 1 showing the aggregate in position within the mold around the cores, prior to the final pressing operation;

Fig. 3 is a similar view showing the pressing head or platen of the cores in depressed position;

Fig. 4 is a detail view of the rotating mechanism for the core terminal, just prior to release of pressure;

Fig. 5 is a plan view of Fig. 4;

Fig. 6 is a view similar to Fig. 4 after release of pressure and rotation of the core terminal;

Fig. 7 is a sectional perspective view of a block resulting from the practice of my invention.

In the drawings, 2 is the surrounding forming mold of conventional form and dimensions for the making of, for instance, an 8" x 8" x 16" block. Mold 2, which may be provided with a suitable interior lining as shown, is mounted on the bottom plate or base 3 and is provided with a resiliently mounted bottom board or base 4 between the base 3 and the usual pallet 5.

Base 4 is mounted upon a series of supporting springs 6 of any suitable construction whereby it may be depressed to the desired extent under pressure of the aggregate from the pressing head or platen 7. The latter is provided with a central stem or rod 8 or other suitable construction, and is actuated by well understood mechanism not herein necessarily further shown.

For the purpose of providing the closed top core opening or openings I utilize one or more sheet metal cores 9 secured to base 4, as at 10, and provided at their upper ends with inwardly inclined terminal tops 11. The main cores as thus made are preferably rectangular in form, or of modified generally rectangular shape as desired, and the inner edges of the terminals 11 are curved to provide a circular opening 12. Within such opening, and closely interfitting therein, is the circular slightly coniform terminal disk 13, for partial rotation within the annulus 12. Disk 13 is secured to the upper end of a stem 14 which extends downwardly through the depressible base 4 and stationary base 3.

The disk 13 is also preferably provided with a downwardly extending guiding shell 15 and a transverse bearing washer 16 resting upon a series of rolling balls 17, for rotation on the upper surface of base 4. Stem 14 extends downwardly through bases 4 and 3 for guiding engagement thereby, so that when head 7 is lowered on the

upper surface of the filled-in aggregate, it will compress the main body of the block against supporting resistance of the relatively stationary pallet 5 and will depress terminal 13 with the outer core member 9—11 as base 4 is lowered against the re-acting pressure of springs 6.

It is desirable upon release of pressure of head 7, and prior to removal of the finished block by elevation of base 4 by the usual well known mechanism, that terminal 13 be rotated a sufficient amount to effect complete separation and avoidance of suction adherence between the terminal and the inner under face of the pressed aggregate forming the core covering wall *a* of the block A.

For such purpose I have provided a laterally acting turning arm 18 extending from post 14, or from a bracket 19 thereon, by which, when arm 18 is thrust around in the manner of a lever, it will rotate the post and terminal 13 a sufficient distance to effect the desired separation. Such operation is facilitated upon release of pressure of head 7 and reduction of frictional resistance by the pressed aggregate against the core top.

Extending upwardly from base 3 is a bracket 20 having an overreaching inclined guiding or cam arm 21. Pivotaly mounted at the upper inner side of bracket 20, as at 22, is a shifting arm 23, between which and the bracket is a spring 24 of sufficient strength to thrust arm 23 outwardly against lever arm 18 upon termination of the frictional resistance against top 13.

The spring action thus applied will rotate the post 14 and its cap immediately upon release of the pressure of head 7 and simultaneously with the re-acting pressure of springs 6. Such springs thus effect the initial upward movement of the formed block and the main core 9, the terminal 13 and post 14 moving upwardly at the same time and rate to a limited extent, as in Fig. 2.

At the termination of such upward movement of the post, arm 18, which has been thrust outwardly to the position shown in dotted lines in Fig. 5, will have been thrust into contact with the lower inner inclined face of fender 21. Then, upon the upward movement of post 14 continuing by action of springs 6, the inclined fender 21 acting as a cam, it will effect reverse rotation of the post and its cap, bringing the arm 18 backwardly to its original position, at a correspondingly higher level, as indicated at 18*a*, Fig. 4.

Prior to upward movement of bottom board 4 it is temporarily held against lifting spring pressure by any suitable means, as latches 25 pivotally mounted on pins or rods 26 and adapted to engage arresting shoulders 27 of base 3. Latches 25 may be manually released and re-engaged by rotating rods 26, or by any suitable automatic mechanism as preferred.

In raised position cap 13 will therefore have been positively thrust in one rotating direction and then in the other by the corresponding rotations of the post. The block being then removed upwardly from the mold by usual elevation of pallet 5, readily separates from the core because of the negative vacuum conditions and reduced friction and adhesion. The formed block may thus be readily pushed upwardly from the mold, which is then charged with fresh aggregate and the operation just described is repeated.

The construction of the machine and the advantage of its method of operation, and especially of the resulting product, will be readily understood and appreciated from the foregoing description. It is comparatively simple, economical, capable of normally rapid production and output, and results in a cored block having a comparatively thin surface wall at the top of undisturbed normally strong condition, capable of hardening by either natural or artificial evaporation.

It will be understood that the method may be utilized in making a single or plural core opening block, and that the machine may be variously modified in construction and detail design by the skilled mechanic to adapt it to various shapes, dimensions or designs of blocks, slabs, etc., and that all such changes are to be understood as contributing to the invention within the following claims.

What I claim is:

1. In the manufacture of concrete building blocks of plastic aggregate the method of forming a closed top core consisting in pressing the aggregate against a fixed resistance and around a receding inner forming surface, releasing pressure on the aggregate, and then imparting rotary wiping treatment to the inner surface of the core top.

2. In the manufacture of concrete building blocks of plastic aggregate the method of forming a closed top core consisting in pressing the aggregate against a fixed resistance and around and against a receding inner forming surface, releasing pressure on the aggregate, and then imparting rotary wiping treatment to the inner surface of the core top.

3. In the manufacture of concrete building blocks of plastic aggregate the method of forming a closed top core consisting in pressing the aggregate against a fixed resistance and around and against an inner receding wall-forming surface, releasing pressure on the aggregate, maintaining the inner wall-forming surface stationary, and then imparting rotary wiping treatment to the inner surface of the core top.

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