June 7, 1932. F. J. STRAUB 1,862,323

MANUFACTURE OF CONCRETE BUILDING BLOCKS

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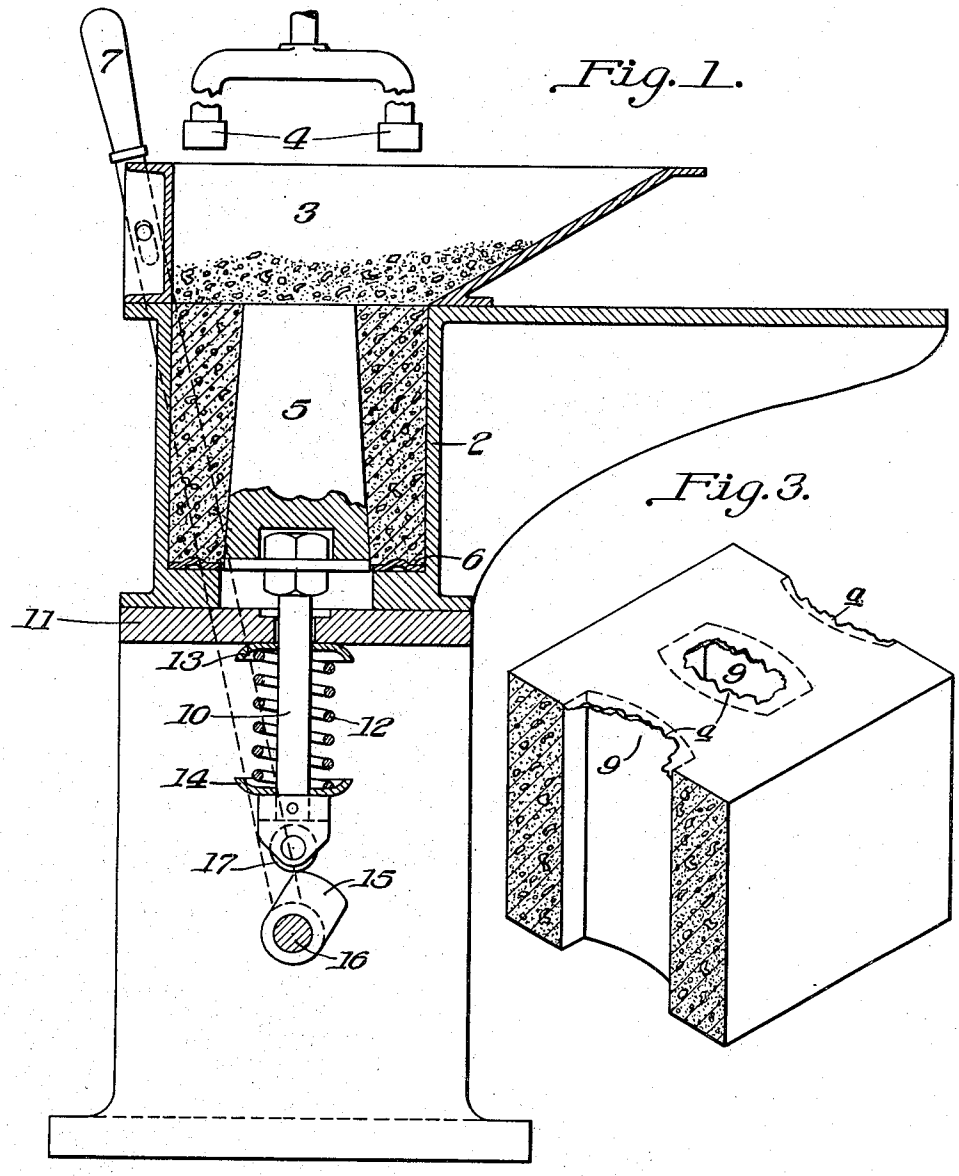


Fig. 1.

Fig. 3.

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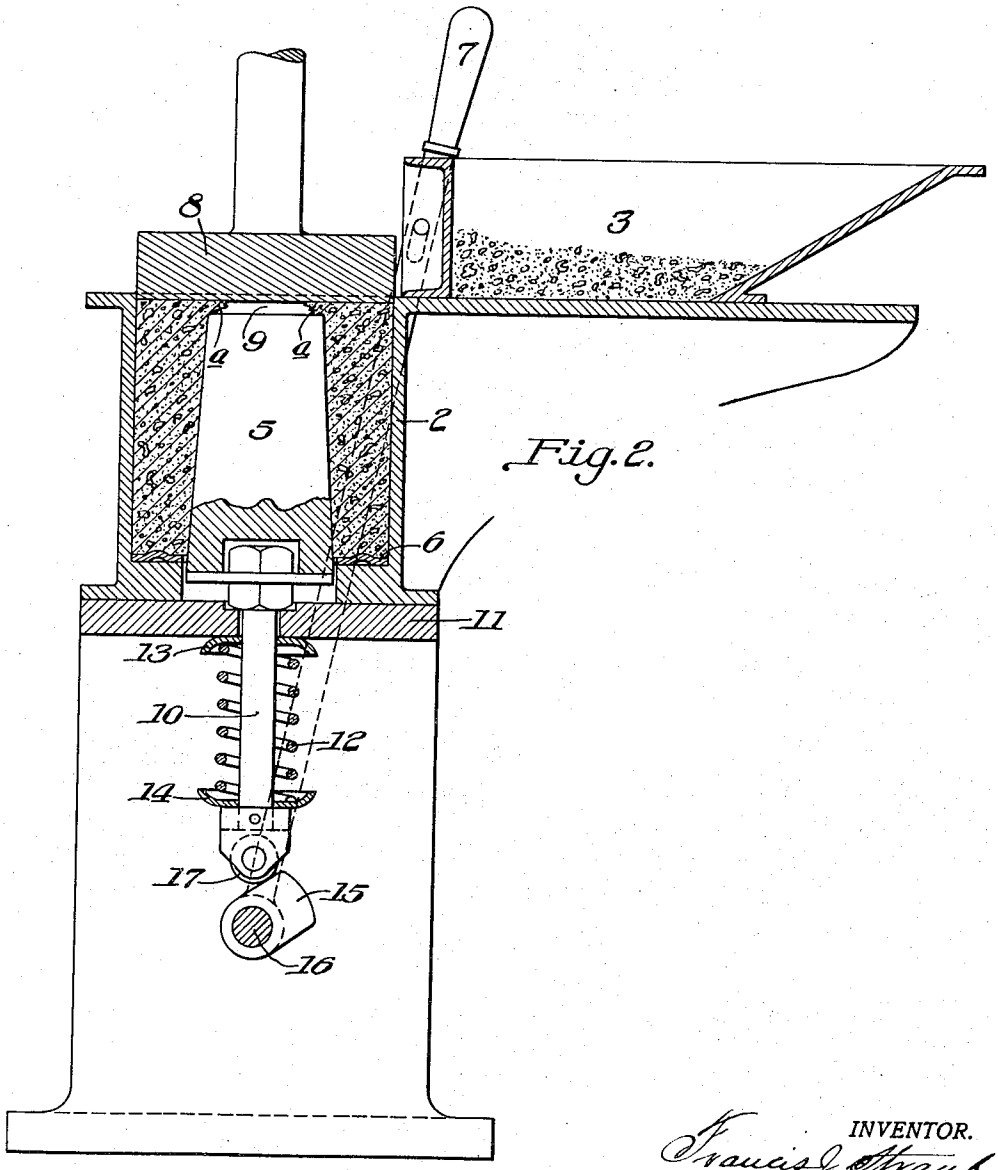


Fig. 2.

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UNITED STATES PATENT OFFICE

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MANUFACTURE OF CONCRETE BUILDING BLOCKS

Application filed August 15, 1931. Serial No. 557,258.

My invention consists of an improvement in the art of making concrete building blocks of tamped aggregate. The object in view is to provide a smooth compact surface by supplemental pressure against the already compacted top surface to further compress and finish the face of the block after removal of surplus aggregate by the usual laterally movable hopper.

In the manufacture of such blocks from coarse rough aggregate, such as cinders or cinders mixed with other material, water, and a binder, it is possible to secure such a finished surface with certain forms of pressing machines. In tamping machines, however, compressing the material through a laterally movable feeding hopper, surplus material is removed laterally by a planing off operation, after the tamps have finished their work, and are temporarily elevated.

Such lateral movement of the hopper and its contained surplus ordinarily abrades the exposed surface of the block, leaving it rough, ragged, and unfinished on the normal level, flush with the tops of the usual stationary cores. Such rough surfaces cannot ordinarily be removed by any practicable smoothing treatment, such as supplemental tamping or pressing, because the block is already compressed to its practical limits of reduction and because, due to the presence of the core terminals, there is no available space for disposition of or re-arrangement of the surface aggregate.

In my invention, I utilize adjustable cores capable of slight lowering movement, with subsequent compression, and with a resulting further densification and surface smoothing and exact leveling, such operation producing the densified smooth top surface desired.

In utilizing the invention, I employ a conventional form of tamping machine having a filling and surplus removing hopper, means for partly removing core resistance, and means for producing the final desired surface.

In the drawings, one such machine adapted to produce these results as illustrated, in which:

Fig. 1 is a vertical sectional view of the machine, showing the charging hopper and tampers in operative position;

Fig. 2 is a similar view, showing the hopper moved out of register and the pressing head in operative position; and

Fig. 3 is a sectional perspective view of a block embodying my improvement.

In the drawings, 2 is the mold of a block making machine provided with a laterally movable feeding hopper 3, operable on a plane level with the top of the mold. When the hopper is in register as in Fig. 1, the aggregate delivered by the hopper is tamped by the usual tampers 4 around the cores 5 throughout the mold cavity, the tamped block resting on the usual pallet 6 by which it is elevated for removal when finished.

The tamping operation being completed clear up to the top of the mold, or slightly above, the hopper 3 is moved over by lever 7 to the non-registering position, Fig. 2, shearing off any surplus aggregate level with the mold top, but at the same time disturbing and roughening the top of the block, leaving it with an unfinished surface.

I now use the pressure head or finishing plate 8, which is lowered onto the top surface of the block and slightly below the top of the mold, say one-quarter inch. The aggregate being already compressed to its limit of reduction, the cores 5 are slightly lowered, leaving an upper cavity 9 into which the compresed aggregate may flow inwardly around the core, more or less.

At the same time, the core or cores 5 being slightly tapered toward the top provide a slight surrounding space when lowered, giving further opportunity for re-arrangement or distribution of the aggregate, so that ample provision is thus made for a limited movement of the pressure head 8. Because of the lowering of the cores, the pressure head 8 may be continuously solid and flat so as to act on the entire top surface of the tamped block, without provision of any clearance openings for the core terminals.

The resulting block, as in Fig. 3, shows the upper surface continuously smooth and compact, due to the final pressure thereon, with

the core opening partly closed by inwardly moved extension *a*. In fact, the action of the pressure head 8 may in some cases so disturb the aggregate, depending somewhat on its moisture content, as to completely enclose the upper ends of the core opening inwardly beyond the normal core cavity, indicated by dotted lines in Fig. 3.

For the purpose of imparting the limited downward movement to the cores 5, preferably in connection with the shifting of the hopper 3, any suitable actuating mechanism may be utilized. In the drawings, I show the cores mounted by one or more rods or posts 10 extending upwardly through the base 11 of the machine, provided with one or more retracting springs 12, engaging washers 13—14, for withdrawing the cores to a limited extent on such movement.

For such purpose, a cam 15 may be utilized, mounted on a rock shaft 16, keyed to lever 7, the cam engaging the roller 17 at the lower end of post 10.

Thus, when the hopper 3 is in registering position, the cam holds the core or cores clear up to the top surface of the mold 2, and when the lever 7 and hopper 3 are thrown over out of register, for pressing action by head 8, as in Fig. 2, cam 15 allows spring 12 to effect receding downward movement of cores 5, to the extent of the depth of the cavity or cavities 9.

I thus provide for the lateral distribution of the compacted surface aggregate and its accompanying densification, resulting in the smooth finished surface desired.

For instance, one standard size building block in common use is nominally 8 x 8 x 16 inches in dimensions, but the actual depth is 7¾ inches, so that the compression of the top of say one-quarter inch within a mold eight inches in depth from its top to the upper surface of the pallet brings the block down to such standard depth dimensions.

After such operation, the block is elevated or ejected by the usual means operating under the pallet 6 for its removal and drying, leaving the machine ready for the next operation.

In the manufacture of building blocks known as cinder blocks, or of other material, the abrasive action of the under edges of the hopper, cutting through and shearing off the surplus aggregate under considerable condensation, due to the final tamping, is severely disruptive of the material, especially due to the presence of coarse cinder or other aggregate lumps of varying size. The operation above described of re-surfacing and recompacting the face of the block overcomes this serious disadvantage in a highly satisfactory and efficient manner.

It will be understood that the operative mechanism utilized may be varied in different incidents of detail construction by the skilled mechanic, and that the invention is in no way limited to the operation of the specific machine illustrated and above described.

I claim:

1. In the manufacture of concrete aggregate building blocks or the like, the method herein described consisting in tamping the aggregate within a mold around an elevated core, removing surplus aggregate and lowering the core, and then applying pressure to the top of the molded block.

2. In the manufacture of concrete aggregate building blocks or the like, the method herein described consisting in tamping the aggregate within a mold around an elevated core, removing surplus aggregate and lowering the core, and then applying pressure to the top of the molded block to further compress its surface and move a part of the surface aggregate laterally.

3. In the manufacture of concrete aggregate building blocks or the like, the method herein described consisting in tamping the aggregate within a mold around an elevated core, removing surplus aggreate and lowering the core, and then applying pressure to the top of the molded block to further compress its surface and move a part of the surface aggregate inwardly around the upper core opening.

4. In the manufacture of concrete aggregate building blocks or the like, the method herein described consisting in tamping the aggregate within a mold around an elevated core, removing surplus aggregate and lowering the core, and then applying pressure to the top of the molded block to further compress its surface and move a part of the surface aggregate inwardly around the upper core opening and to move lower portions against the sides of the core.

In testimony whereof I hereunto affix my signature.

FRANCIS J. STRAUB.