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F. J. STRAUB

2,256,361

BLOCK MAKING APPARATUS AND METHOD OF MANUFACTURE

Filed April 9, 1938

Fig. 1.

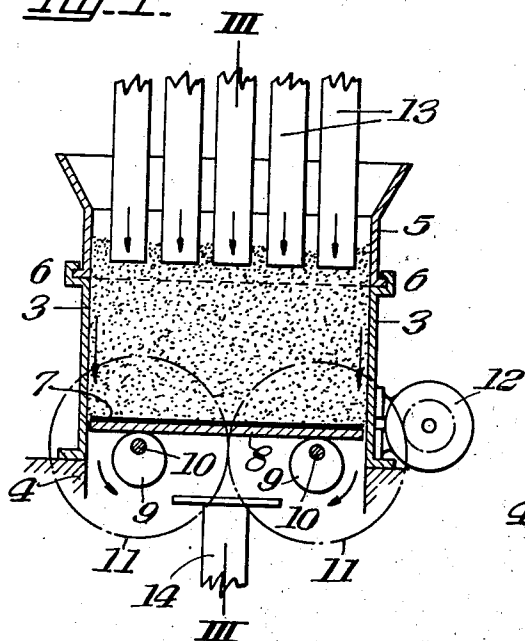


Fig. 2.

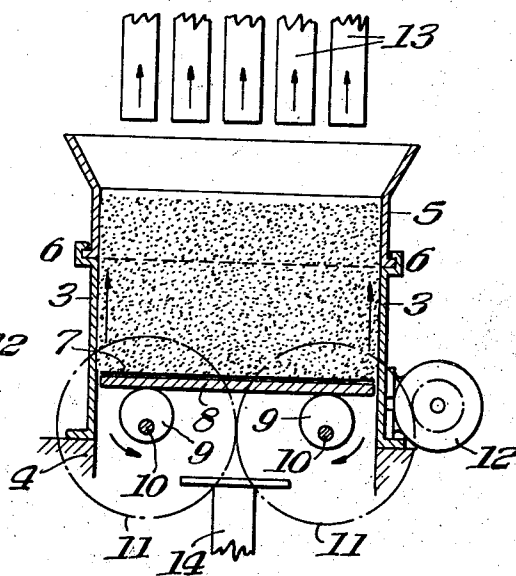


Fig. 3.

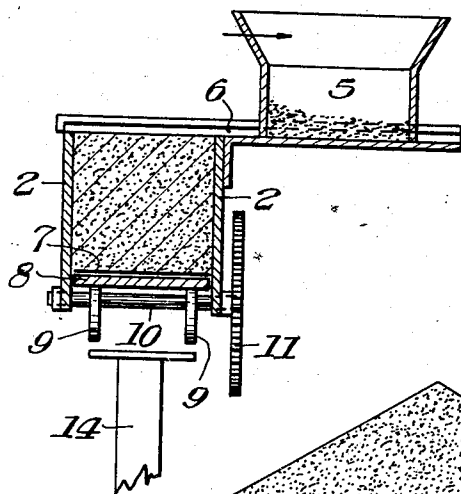


Fig. 4.

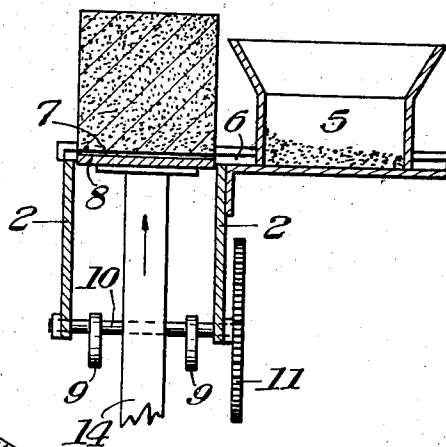
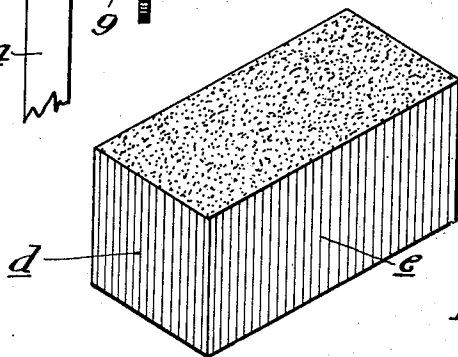


Fig. 5.



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UNITED STATES PATENT OFFICE

2,256,361

BLOCK MAKING APPARATUS AND METHOD
OF MANUFACTURE

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Application April 9, 1938, Serial No. 201,122

6 Claims. (Cl. 25—41)

My invention relates to the art of making concrete building blocks, and particularly to the method and means for imparting surface treatment thereto while the aggregate is still plastic.

In the manufacture of such blocks, made of a suitable aggregate such as sand and gravel, cinders, etc., mixed with cement and water and subjected to tamping operations, it is desirable in some cases to secure a smooth or approximately smooth outer surface. In my prior Patents Nos. 1,651,420, 1,682,359, 1,692,355, 1,987,721, 2,099,946 and 2,111,701 are disclosed means and the method of so treating one or more sides of a block.

Such treatment to that extent has proven generally satisfactory insofar as horizontal or vertical reciprocally applied, or curvingly applied. Trowelling or smoothing is involved, with a degree of accompanying densification and local surface segregation of the finer particles of the mix.

In each of such prior disclosures the several various effects are the result of oscillating action by one or more mold forming walls against the static surfaces of the block.

While as stated, satisfactory results as to surface smoothing and densification are secured, the various constructions and means utilized involve more or less additional mechanism and expense in addition to the standard mold box and its parts per se.

The present invention has in view static maintenance of the mold box or any of its walls or inner faces, with reciprocation of the contained block-in-process, for trowelling action thereagainst.

The invention consists of the following described means for effecting such treatment and the novel method of manufacturing blocks thereby, as embodied in the hereinafter described machine illustrated in the accompanying drawing, in which:

Fig. 1 is a vertical section of the machine showing the stationary mold and its parts completely filled with aggregate in compressed lowered position;

Fig. 2 is a similar view showing the aggregate at the limit of its upward movement, with the tampers elevated.

Fig. 3 is a similar view on the line III—III of Fig. 1 showing the hopper removed after completion of the operation;

Fig. 4 is a view like Fig. 3 illustrating ejection of the finished block;

Fig. 5 is a perspective view of a block as made.

For the formation of a block of any desired

shape and dimensions, I utilize a more or less conventional open bottom housing or mold box having side walls 2 and end walls 3 mounted in any convenient manner, as on a foundation 4.

A hopper 5, of conventional form, is mounted as at 6, for sliding movement over to and away from registering position with the open top of the mold box, and operable in the usual manner.

The improvement herein contemplated involves the operation of imparting up and down movement to the mass contents of the aggregate-information of the mold box, in all stages of its progress towards and/or upon completion.

Ordinarily such movement, at reasonable rapidity, will impart a jolting or vibrating action, tending to cause gravitating return after each upward impulse. In the case of the usual pressure application, as by pressure plate or tamping operations, such upward impulses are alternately opposed to downward impulses. In either case the sides and ends of the block-in-information are caused to be subjected to trowelling or smoothing action against corresponding faces of the mold box.

In the construction shown I support the usual pallet 7 on a reciprocable supporting base plate 8 for vertical reciprocation within the walls 2 and 3 of the mold box. For such action suitable means are provided, as cams 9 on shafts 10, actuated through gears 11 from any suitable power source, as a motor 12.

Such actuating mechanism is controlled by suitable switch or controlling means adapted to arrest operation of the cams at their lowermost position, as in Fig. 1. The aggregate is supplied as required by bringing the sliding hopper 5 into open register with the mold box, and for usual functioning of the tampers 13, at variable depths.

In operation, compression of aggregate as supplied proceeds upwardly above the pallet 7 until completion of the block, in the usual manner. Alternating movement of the mass of aggregate in process of densification is effected by the raising of the supporting pallet and its base against the opposing lowering forces of gravitation or vibration and tamping or compression, as the pallet recedes, until the block is completed, of full depth.

Cam action then being arrested with the cams lowered, accompanied by elevated inaction of the upper compressing members, any surplus is then removed by the hopper. Thereafter the completed block is ejected by the usual lifting posts or bars 14 as in Fig. 4, the finished block and its pallet are removed for storage and drying, and the operation is repeated.

It will thus be seen that, due to the alternating reciprocation of the block-in-information throughout all stages, with more or less supplemental vertical action and compression after complete filling, the finished block will be consistently and uniformly trowelled, condensed, and smoothed over the side and end faces. More or less definite minute parallel lines or grooves *d* and *e* are usually formed on these faces, in the same general manner as is disclosed in my prior Patent No. 2,099,946.

The construction of the machine and its manner of operation will be readily understood from the foregoing description by those skilled in the art. The resulting block, either solid or cored, will be uniformly condensed, and its side and end faces will be provided with the desirably smooth uniformly finished condition as to improved appearance and accompanying advantages.

It will be understood that the invention may be utilized in or by the construction shown, or as modified in various details as to operative elements, dimensions, or otherwise to adapt it to different conditions of use, within the scope of the following claims.

I claim:

1. Block making apparatus consisting of an open top stationary mold box, means providing an alternating upwardly actuated and downwardly non-resistant movable bottom therefor, and means for compressing aggregate against the movable bottom during its positively actuated elevation and non-resisted lowering.

2. Block making apparatus consisting of an open top stationary mold box, a movable bottom, means effecting uniformly continuous positive gradual limited upward movement and providing for alternating equal uniformly continuous unopposed gradual downward movement of the bottom, and means providing for compression of aggregate in opposition to the bottom and said means at all positions of such continuous limited movements.

3. Block making apparatus consisting of an open top stationary mold box, a movable bottom, elevating and lowering means effecting positive limited upward and gravitating lowering movement of the bottom and contained aggregate, means for successively supplementing already compressed aggregate with additions thereto, and means providing for compression and limited movement of the aggregate in successive zones by action in opposition to its upward

movement and during its equally limited downward movement whereby to effect continuous compression and reverse smoothing against the inner faces of the stationary mold box.

4. In a block making apparatus, the combination of an open top stationary mold box having a vertically reciprocable pallet-supporting plate, means for intermittently elevating said plate for a fraction only of its entire discharge travel and for permitting lowering of the plate and contents under pressure, and aggregate compressing means in the form of individual tampers opposing said means at varying planes upwardly during formation of the block whereby to impart to the contained aggregate alternating smoothing movement against the inner faces of the mold box during its progressive formation, and independent means for upwardly discharging the plate and finished block thereon with final trowelling of its sides and ends against the inner mold faces.

5. In a block making apparatus, the combination of an open top stationary mold box having a vertically reciprocable pallet-supporting plate, cam mechanism controlling movement of said plate and a pallet thereon at a uniform rate upwardly and downwardly for a fraction only of its entire discharge travel against tamping compression, and aggregate compressing means opposing said means at successively varying planes upwardly during formation of the block whereby to impart to the aggregate alternating limited smoothing movement against the inner faces of the mold box during its progressive formation, and independent means for discharging the plate and finished block thereon with final trowelling of its sides and ends against the inner mold faces.

6. The method of making a concrete building block consisting in charging portions of plastic aggregate within a stationary mold box and with upward accumulation therein above a bottom support, subjecting the accumulating mass to continuous intermittent impact pressure from above at successively ascending zones, and simultaneously to opposing limited upward and alternating lowering movement whereby the entire mass during condensation is caused to be moved upwardly and downwardly within the stationary mold box with final upward ejection therefrom and resulting smoothing action against its confining wall faces.

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