

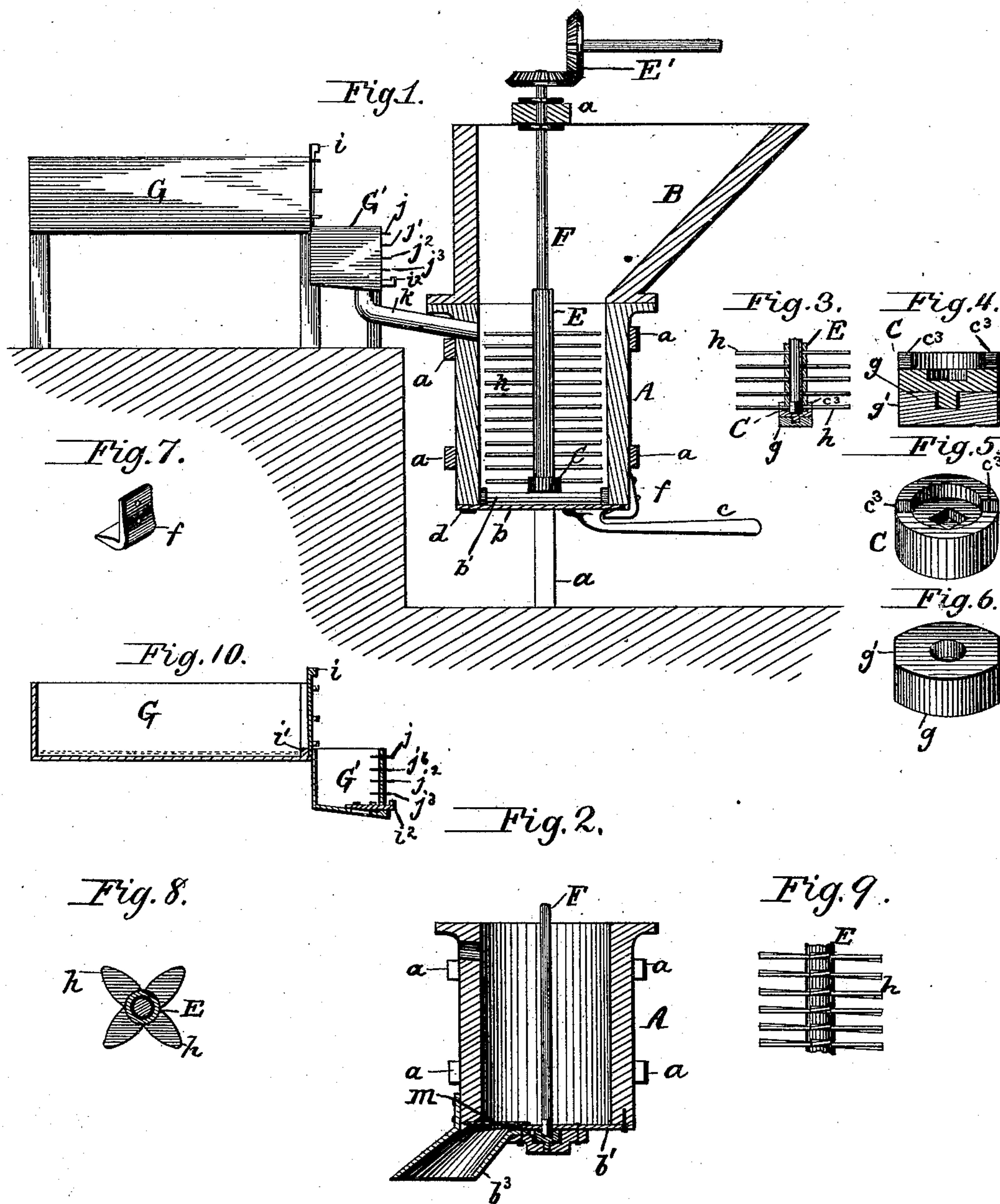
(No Model.)

E. LANDVOIGT & B. C. FENWICK.

# MACHINE FOR MIXING MORTAR.

No. 370,629.

Patented Sept. 27, 1887.



Witnesses:

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# UNITED STATES PATENT OFFICE.

EDWARD LANDVOIGT AND B. CARLYLE FENWICK, OF WASHINGTON, DISTRICT OF COLUMBIA; SAID FENWICK ASSIGNOR, BY MESNE ASSIGNMENTS, TO WILLIAM A. KIMMEL, OF SAME PLACE.

## MACHINE FOR MIXING MORTAR.

SPECIFICATION forming part of Letters Patent No. 370,629, dated September 27, 1887.

Application filed February 28, 1887. Serial No. 229,127. (No model.)

*To all whom it may concern:*

Be it known that we, EDWARD LANDVOIGT and B. CARLYLE FENWICK, citizens of the United States, and residents of Washington city, District of Columbia, have invented a certain new and useful Machine for Mixing Mortar for the Use of Bricklayers and Plasterers, of which the following is a specification.

Our invention consists, first, in a mortar-mixing machine comprising a lime-slaking box or vessel, a slaked-lime-receiving chamber adapted to be in communication with the slaking-chamber, and a vertical chamber in which slaked lime and sand, or sand and hair, are introduced, tempered, and mixed by horizontally-revolving stirring-arms, and from the bottom of which chamber a given quantity—say a cart-load—of mixed mortar may be discharged at the will of the operator, or from which an almost constant flow or discharge into carts or proper receptacles can be accomplished, accordingly as desired.

It consists, second, in certain constructions, combinations, and arrangements of parts, as will be hereinafter described and specifically claimed; and it consists, third, in the hereinafter-described process by which the mortar is mixed while its constituent parts are flowing horizontally and vertically.

In the accompanying drawings, Figure 1 is a view, partly in section and partly in elevation, illustrating our invention. Fig. 2 is a section of the sand and lime tempering and mixing cylinder with its bottom portion modified in some respects. Figs. 3, 4, 5, 6, 7, 8, 9, and 10 are detail views of parts of the machine.

A represents a metal mixing cylinder or chamber, surmounted by a flaring wooden hopper or chute, B, and supported by a suitable frame-work, as *a*. The bottom *b* of this cylinder is provided with a long hand-lever, *c*, and is pivoted at *d* and clamped in a closed position by a beveled plate, *f*, as illustrated in the drawings. Just above the bottom *b* an open step-spider, *b'*, is provided within the cylinder, and in a socket of this spider a fixed step-block, *g*, is set and kept from turning by its square ends *g'*.

Into the round socket of the stationary step-block *g* a revolving step-block, C, is fitted, and into the socket of this block a hollow shaft, E, provided with stirrers, as *h*, is fitted, and down through this hollow shaft, and resting in a reduced square socket of said revolving step-block, is extended a solid driving-shaft, F, as illustrated in the drawings. This solid shaft may be connected by set-screws to the hollow shaft, and it is properly supported at its upper end by suitable means, as shown, and is driven by appropriate gearing, as E', or other suitable means. In the drawings we have shown the lower arms of the stirrer connected by open half-sockets *e*<sup>3</sup> with the revolving step-block; but this mode of connection is not essential. We have made the hollow shaft E, in which the arms *h* are inserted, separate from the solid shaft F and shorter than the same, as shown, and by this means we save expense in repairs, as the necessity of removing anything more than the hollow shaft, with its arms, is avoided when one or more of the arms become broken, and by attaching each set of the arms to short thimble-sections of shaft, one resting upon another and secured by screws, a section having a broken arm or arms can be removed and another applied in its place and secured by a set-screw. On one side of this mixing-cylinder a lime-slaking box, G, is arranged. This box is provided, as usual, with a slide-gate, *i*, at its discharge end, and it is made with an arresting-ledge, *i'*, just above its bottom at the discharge, for preventing the escape of unslaked lime, and thus "plaster-pops" are avoided. To this slaking-lime box we attach an auxiliary slaked-lime-receiving and gage box, G'. It is provided with gage-pins *j j' j'' j'''*, which serve as indicators of given quantities of slaked lime discharged into the mixing-cylinder—that is to say, the fall of slaked lime in box G' from pin *j* to *j'* will indicate a quantity sufficient for a cart-load of sand, and from *j* to *j''* for two cart-loads of sand, and so on. This auxiliary box is connected from its under side with the mixing-cylinder A by means of a tube or spout, *k*, as illustrated in the drawings. In Fig. 10 the lime-box proper and the



auxiliary gage lime-box are shown in section, and the gate or valve  $i^2$ , by which the discharge is cut off or let on, is more clearly represented than in Fig. 1.

5 In Fig. 2 the mixing-cylinder is shown constructed with an immovable bottom,  $b'$ , and on this bottom a discharge chute,  $b^3$ , and a sliding gate or valve,  $m$ , are provided, and in opening the valve the mixed lime and sand, or mixed lime, sand, and hair, are discharged  
10 freely. In Fig. 9 the stirring-arms of the hollow revolving shaft are formed with a slight spiral twist or bevel, and by this construction the lime and sand, or lime, sand, and hair, are stirred and lifted up and down in a more  
15 thorough manner than with round straight or square straight arms. The outline or shape of the stirrers may be that shown in Fig. 8, or any other proper construction.

20 It will be observed that the stationary step-block of the stirrer-shaft is outside of the mixing-cylinder shown in Fig. 2, that the hollow shaft may be dispensed with, and the arms inserted directly into the solid shaft F. We shall, however, use the hollow shaft, with its  
25 arms, in connection with this modified form, if desired. With this construction the step end of the stirrer-shaft is rendered more accessible in case of repairs being necessary.

30 The operation is as follows: The lime and water are mixed in the box G, and at proper times a quantity is run off into the auxiliary box G' beneath the gate—say sufficient to fill the space between the bottom of the box and  
35 top gage-pin. Then the gate  $i$  is closed and the gate  $i^2$  opened, and a quantity of this slaked lime, as required, is allowed to run into the cylinder A. Now a quantity of sand sufficient to properly mix and make mortar is  
40 thrown into chute B and allowed to flow into cylinder A and mix with the lime-water. As soon as the sand has begun to flow down the chute the stirrer is set in motion, and thus a thorough mixing of the sand with the lime is  
45 accomplished. This done, the mixed mortar is withdrawn from the cylinder by opening the bottom, which is accomplished by the lever being pulled sidewise and the bottom turned horizontally on its pivot.

50 With the modified plan shown in Fig. 2 the material is mixed as in Fig. 1, and the gate  $m$  is moved outward to allow the material to run through the chute. It is probable that the operator may carry the mixing and  
55 discharging on continuously after the first load has been mixed, this being done by flowing on the lime-water and sand simultaneously and keeping the necessary gates open.

What we claim is—

60 1. The lime-slaking box provided with a

gate and discharge-passage, the base of said discharge-passage being located above the bottom of said box in order to trap and stop the discharge of unslaked lumps, in combination with a slaked-lime-receiving chamber  
65 located below said slaking-box and provided with a discharge-passage and gate, and with a vertical mortar-mixing chamber having a movable bottom and furnished with a vertical shaft having horizontal stirrer-arms, all con-  
70 structed and arranged substantially as and for the purpose described.

2. The within-described mortar-mixing machine, comprising a lime-slaking box, a slaked-lime-receiving chamber having com-  
75 munication with the slaked-lime box, and a vertical mortar-mixing chamber having communication with the lime box and chamber and provided with a sand-conducting chute at its top, a discharge at its bottom, and with  
80 a vertical shaft having horizontal stirring-arms, all constructed and combined substantially as and for the purpose described.

3. The combination of the stationary lime-slaking box, the slaked-lime-receiving and  
85 gage box having indication-pins or equivalents, and a vertical mortar-mixing chamber provided with a revolving shaft having horizontal stirring and mixing arms, substantially as and for the purpose described.  
90

4. The vertical mortar-mixer consisting of a vertical chamber and shaft having horizontal arms and a sand-chute, in combination with the lime slaking box and slaked-lime receiver by which the slaked lime is prepared  
95 and introduced into the mixing-chamber, substantially as and for the purpose described.

5. The combination of the solid driving-shaft F, hollow-armed shaft E, mortar-mixing chamber A, step-block  $g$   $g'$ , fitted within a  
100 socket of an open spider,  $b$ , of the mixing-chamber, and revolving step-block C, substantially as and for the purpose described.

6. The within-described process of mixing mortar, consisting in slaking a body of lime  
105 in a chamber with water, separating the impurities from the slaked lime, flowing the slaked lime and a body of sand, or both sand and hair together, downward in a vertical direction, and subjecting the mixture until it is  
110 finished and discharged to a horizontal rotary and vertical movement, as set forth.

In testimony whereof we affix our signatures in presence of two witnesses.

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Witnesses:

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