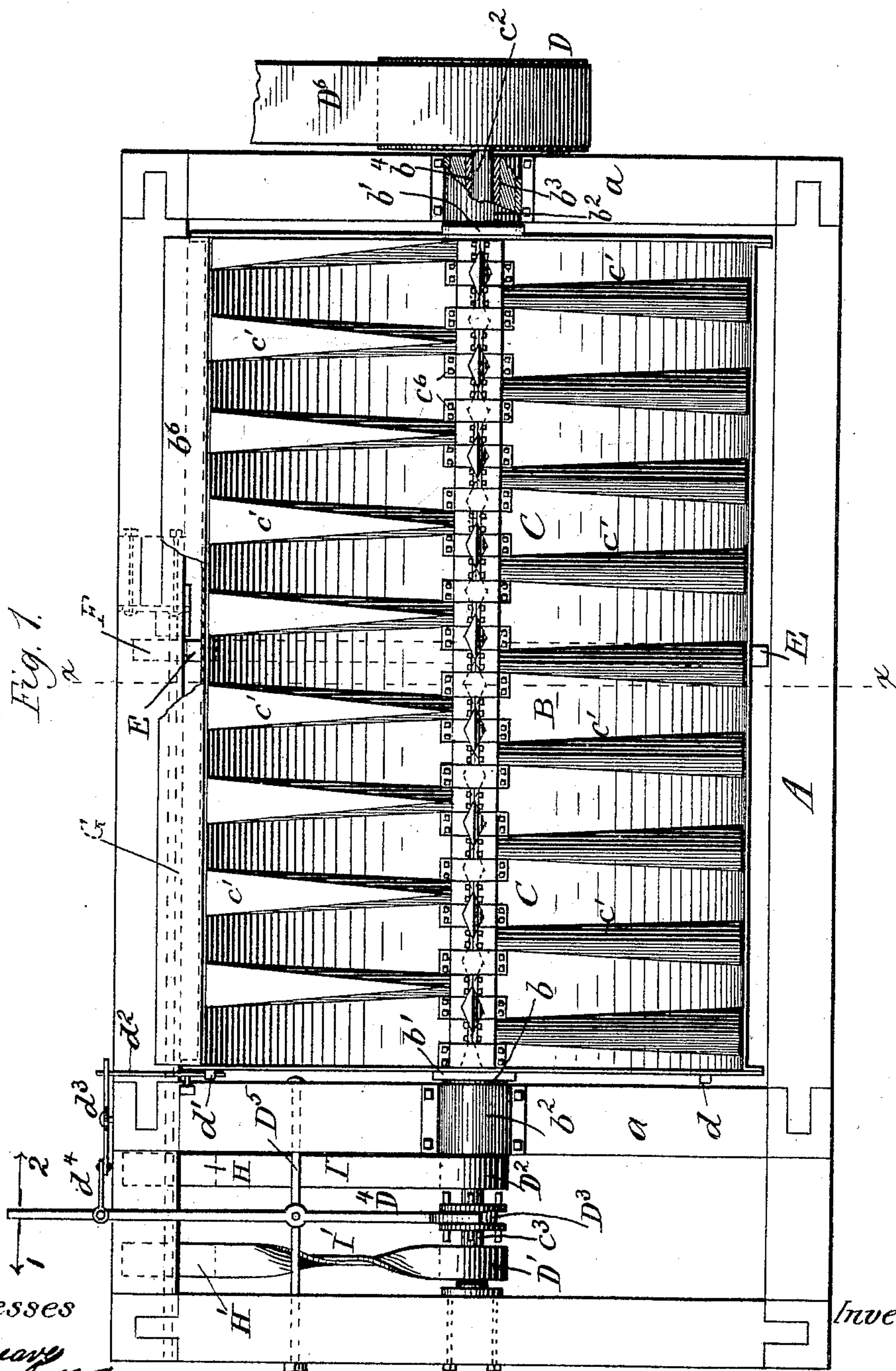


4 Sheets—Sheet 1..

No. 440,651.

Patented Nov. 18, 1890.



Witnesses

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(No Model.)

4 Sheets—Sheet 2.

J. H. PARKHURST.
MACHINE FOR MIXING MORTAR.

No. 440,651.

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Fig. 2.

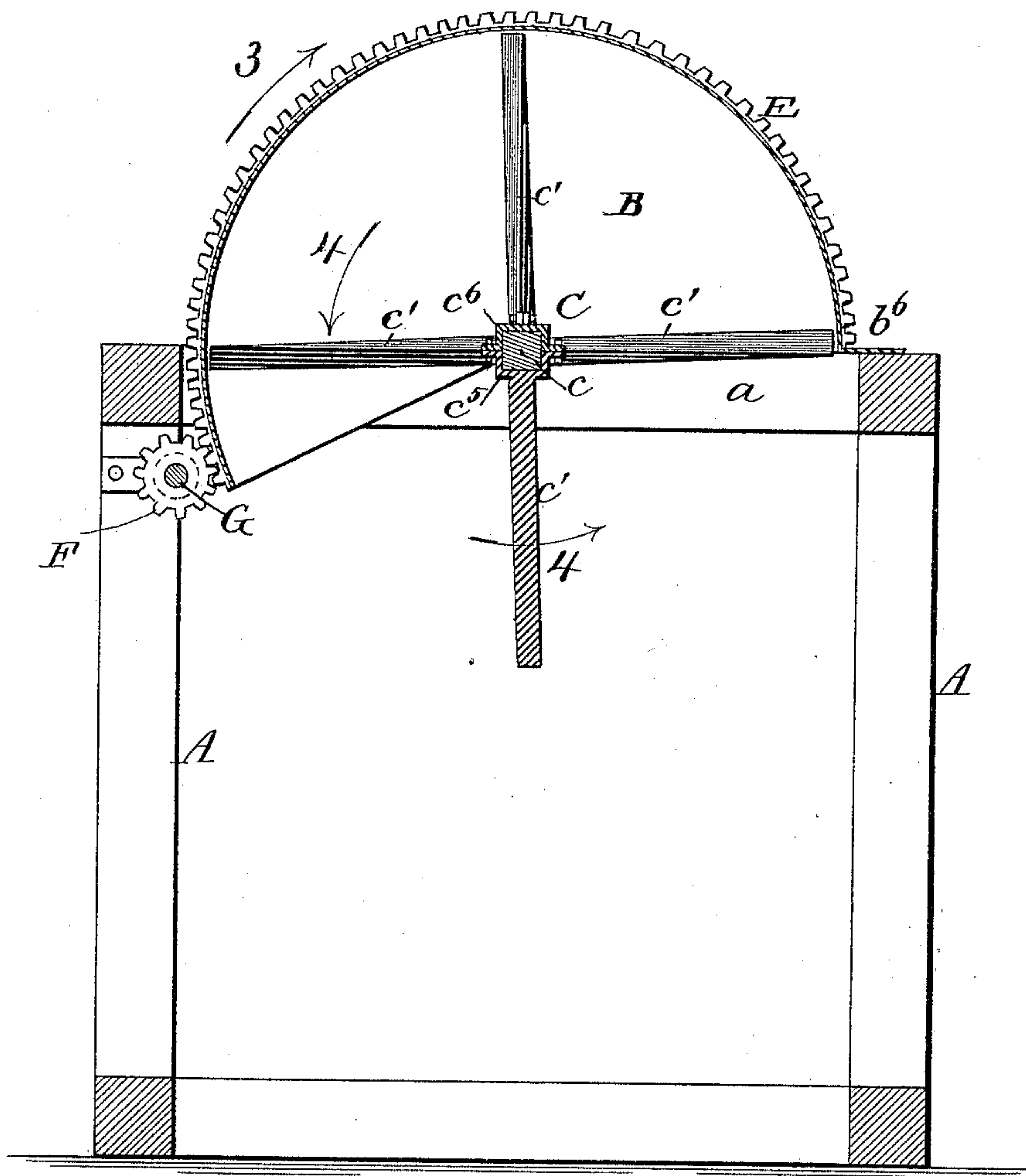
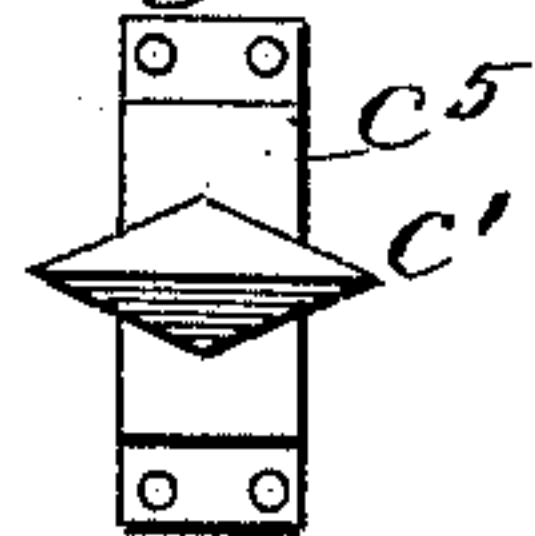


Fig. 3.



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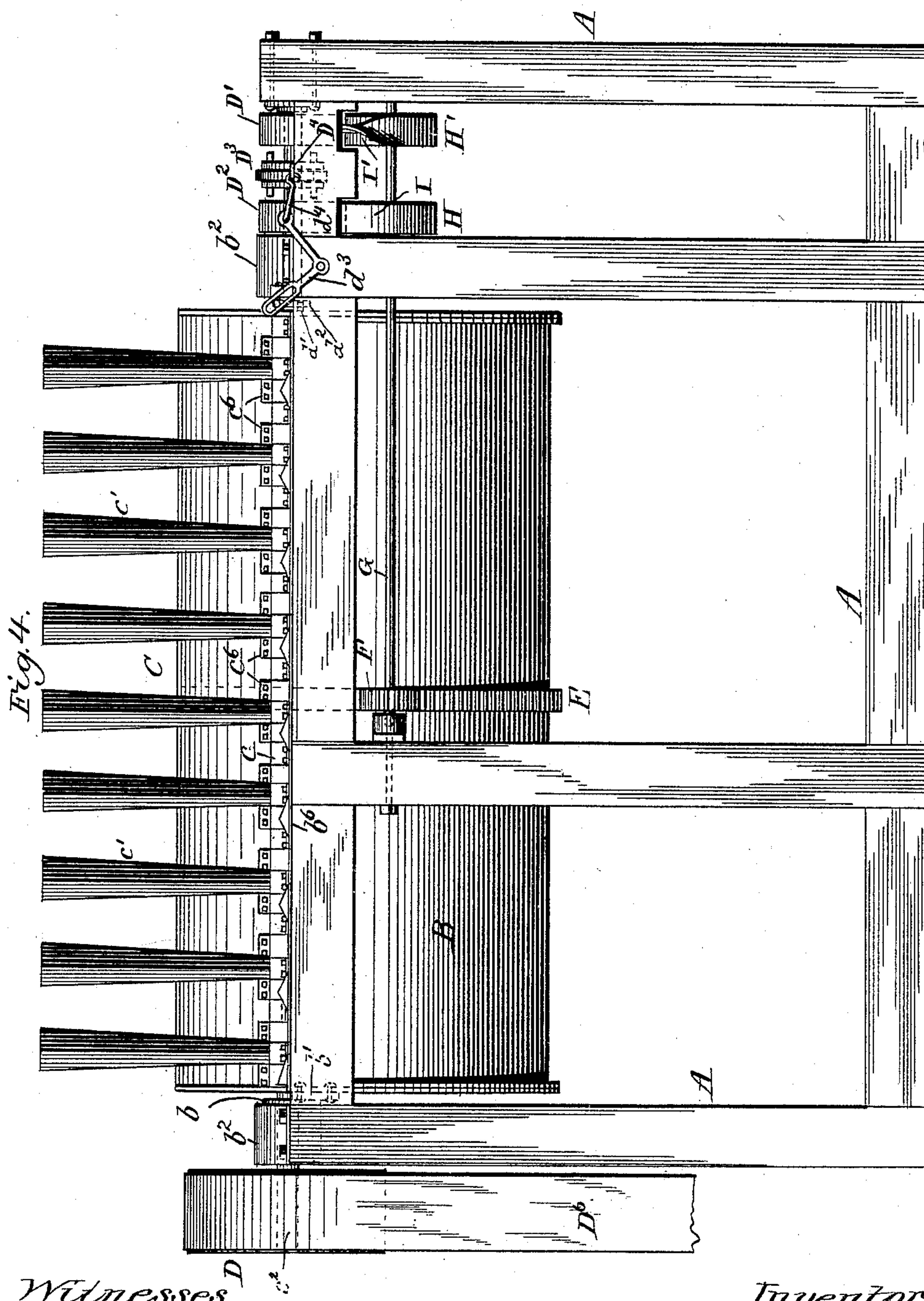
(No Model.)

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J. H. PARKHURST.
MACHINE FOR MIXING MORTAR.

No. 440,651.

Patented Nov. 18, 1890.



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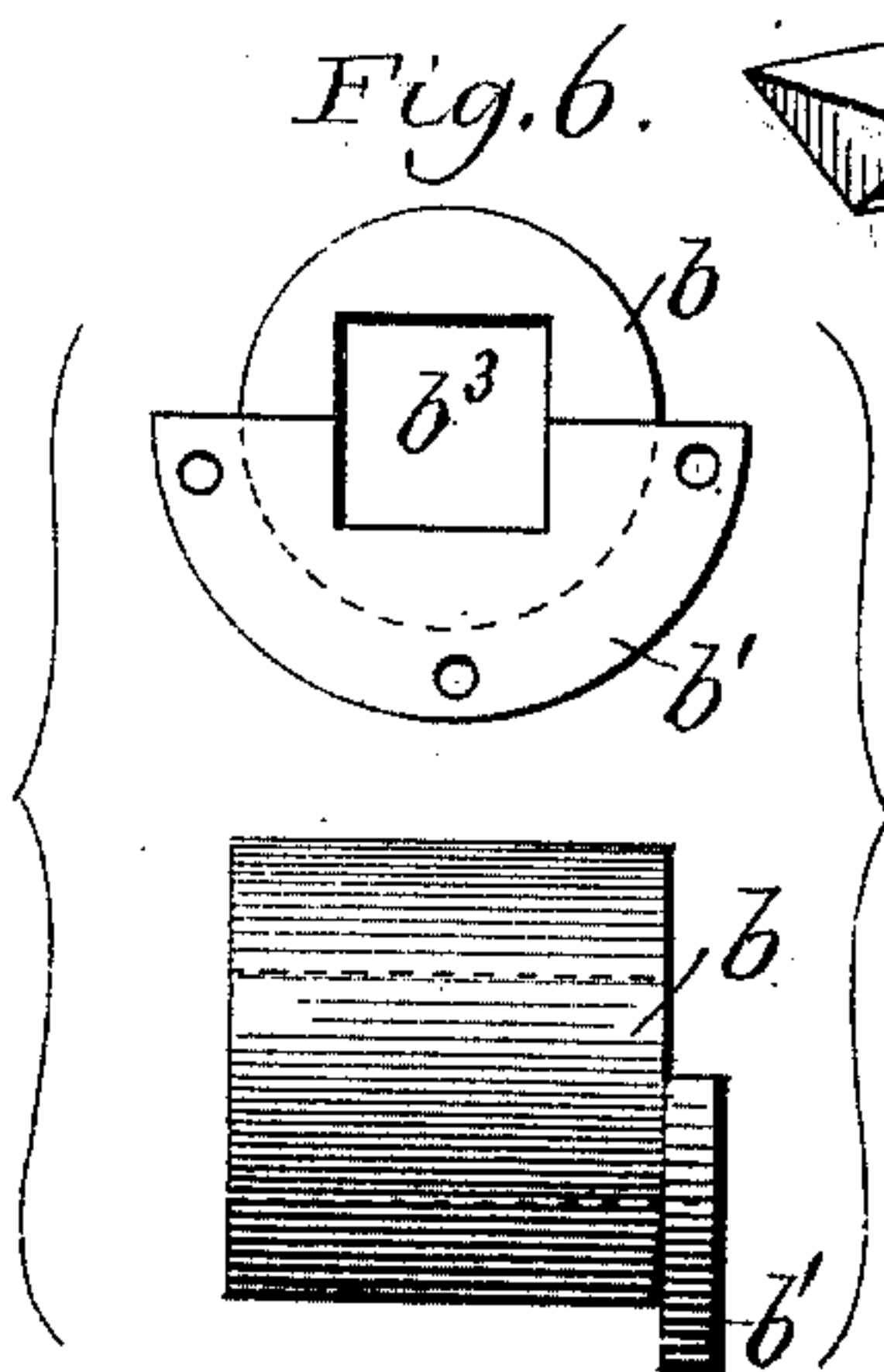
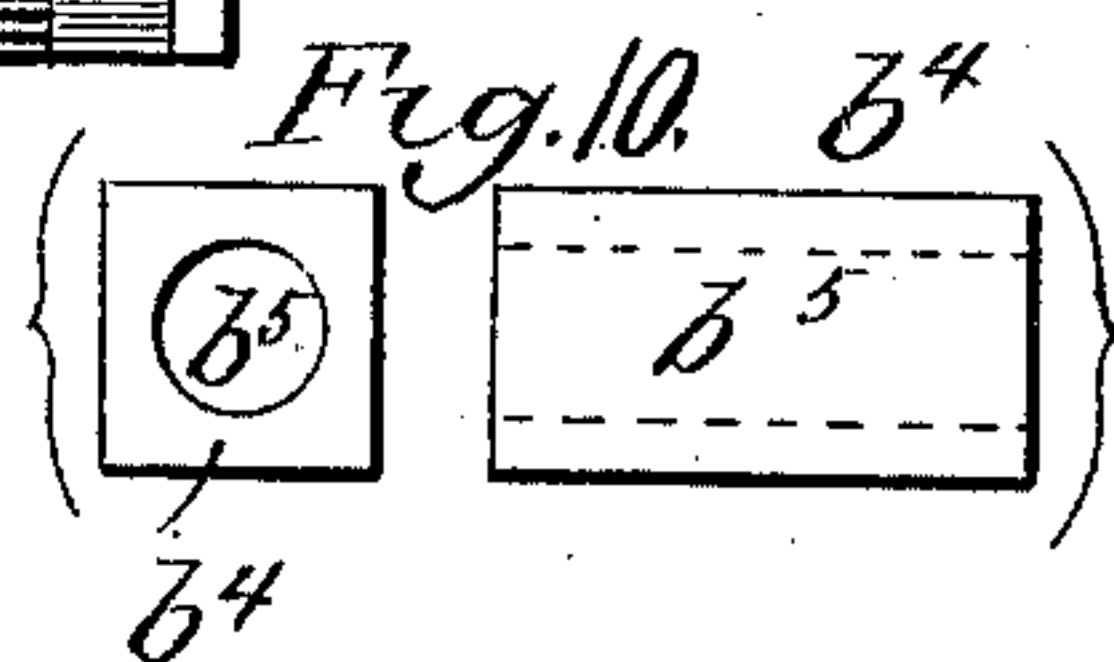
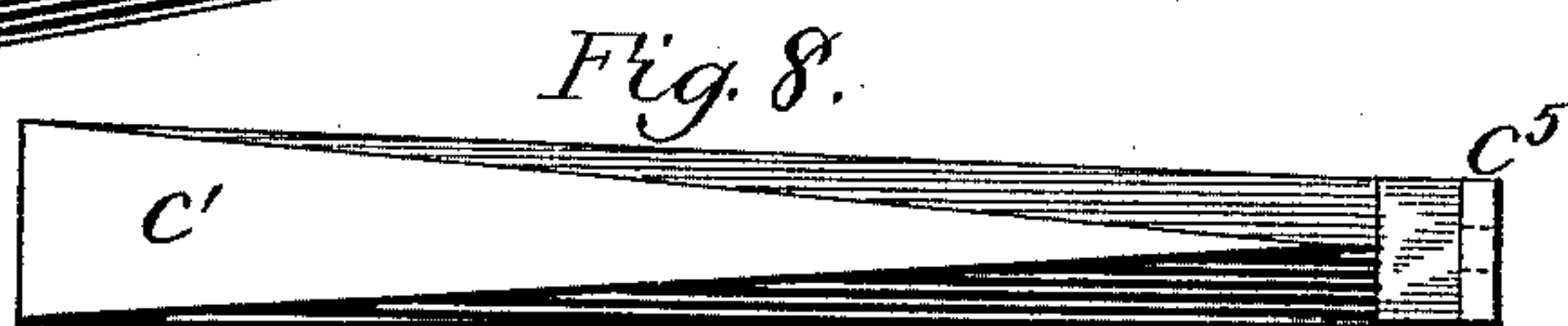
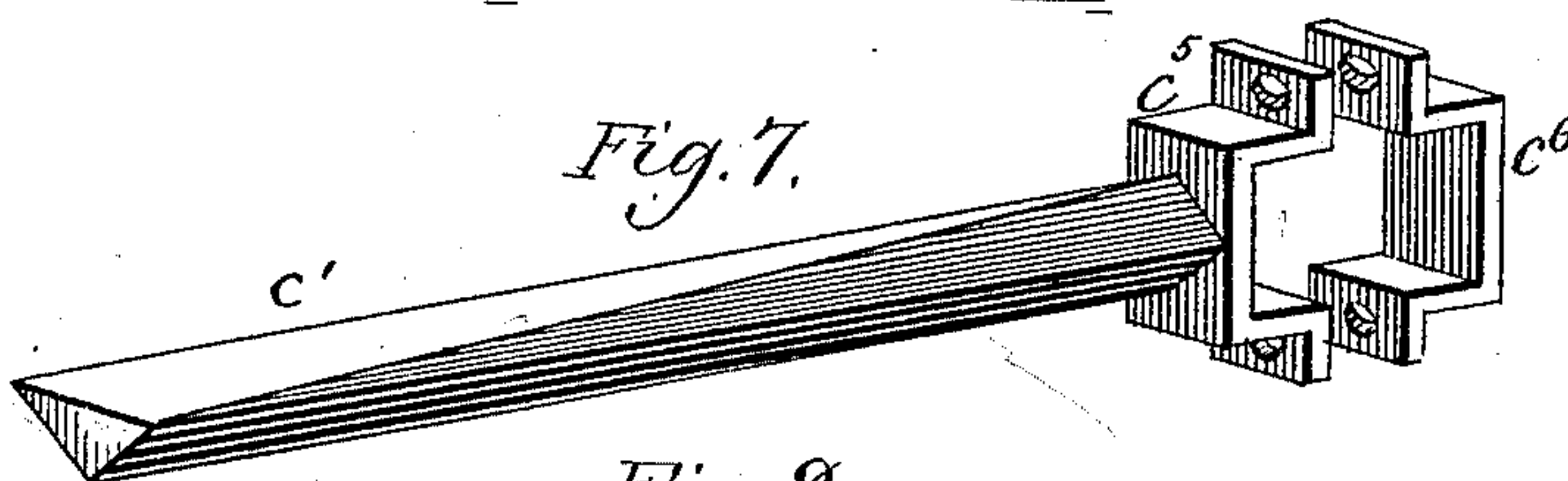
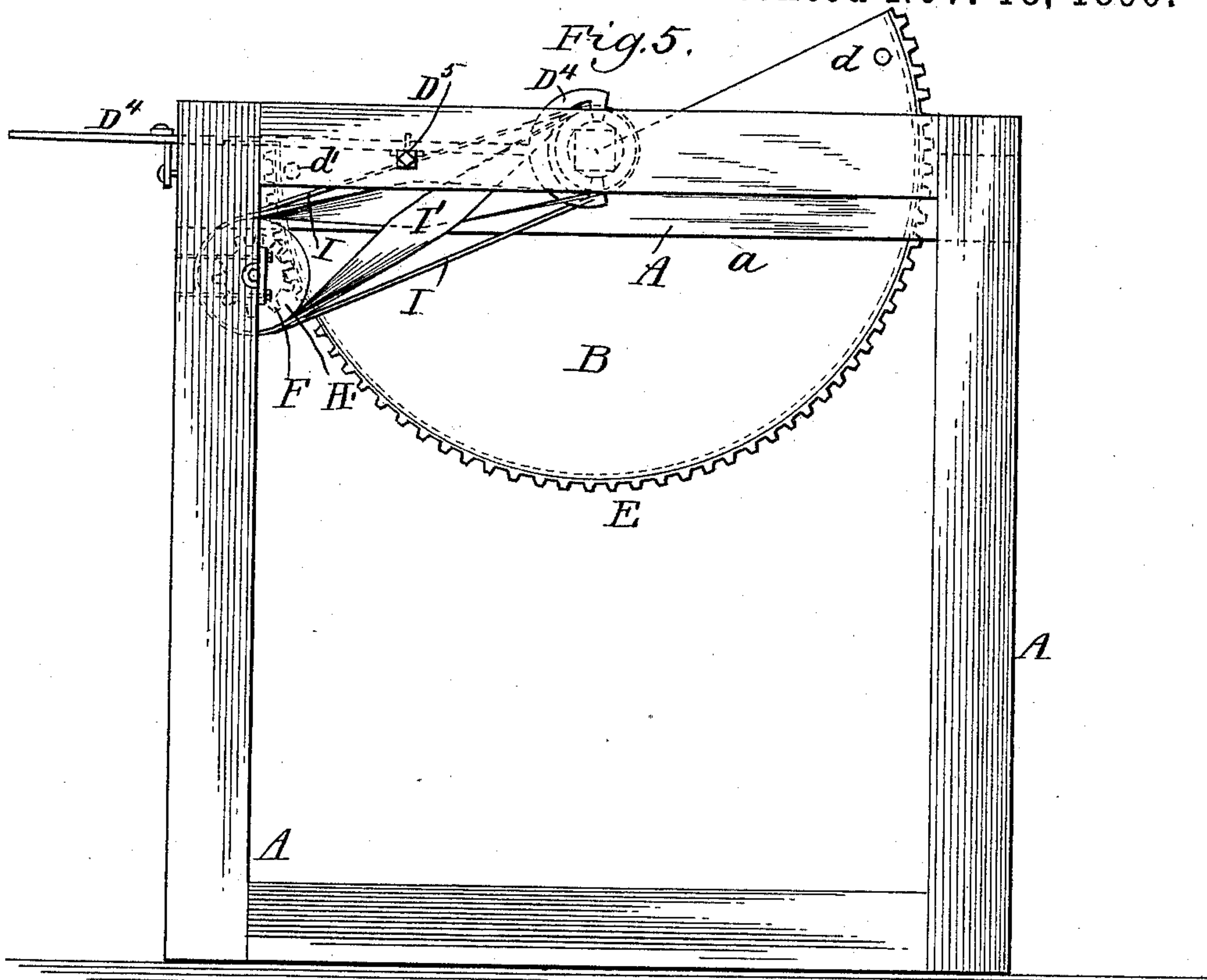
(No Model.)

4 Sheets—Sheet 4.

J. H. PARKHURST.
MACHINE FOR MIXING MORTAR.

No. 440,651.

Patented Nov. 18, 1890.



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UNITED STATES PATENT OFFICE.

JOHN H. PARKHURST, OF WASHINGTON, DISTRICT OF COLUMBIA.

MACHINE FOR MIXING MORTAR.

SPECIFICATION forming part of Letters Patent No. 440,651, dated November 18, 1890.

Application filed July 16, 1890. Serial No. 358,941. (No model.)

To all whom it may concern:

Be it known that I, JOHN H. PARKHURST, a citizen of the United States, residing at Washington, in the District of Columbia, have invented certain new and useful Improvements in Machines for Triturating and Mixing Materials for Making Mortar and other Products; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention consists in certain novel combinations of mechanism whereby a machine comprising a backwardly semi-rotating concave and a forwardly-revolving armed triturator and mixer, specially adapted for triturating or mixing substances used in making mortar, plaster, or brick and other analogous product and automatically discharging the finished product, is produced, the combination being such that the concave remains stationary until the trituration and mixing are fully accomplished, and then can be gradually revolved in a reverse direction to that in which the armed triturator and mixer is caused to continue its revolutions, and thus the substances by their gravity and the action of the triturator and mixer are forcibly discharged upon the ground or into a proper receptacle, the combination also being such that the power for imparting the semi-rotating movement to the concave can be derived from the same shaft that revolves the armed triturator and mixer. The machine is also so constructed and organized that the pulleys of the belts which move the concave forwardly and backwardly can be automatically unclutched at the proper time. The head of the triturator, after its arms are taken off and the linings of the journal-boxes removed, can be slid out of said boxes, and the extent of triturating and mixing surface presented by the arms is greatly increased and the liability of the substances adhering to the arms as they rise out of the mass is avoided, all as will be hereinafter described.

In the accompanying drawings, Figure 1 is a plan view of my improved machine, a slight portion of the flange of the concave and of one of the journal-boxes being broken away. Fig. 2 is a cross-section in the line xx of Fig.

1. Fig. 3 is an end view of one of the triturator and mixing arms. Fig. 4 is a side view of the machine. Fig. 5 is an end view of the same. Figs. 6, 7, 8, 9, and 10 are details of the machine.

A in the drawings represents suitable framework.

B is the concave in which the substances to be treated are placed. This concave is hung upon the horizontal cross-beams $a a$ of the frame by means of flanges b' of journals b , and has a semi-rotating movement with said journals. These journals are confined in position by screw-caps b^2 and have, respectively, a square or many-sided hole b^3 through them for the reception of square or many-sided journal-bearing linings b^4 , said linings being cylindrically bored, as indicated at b^5 .

C is a triturator or mixer comprising a head c and arms c' , the said head being extended at each end so as to form shafts $c^2 c^3$ for the reception of pulleys $D D' D^2$ and a double-acting sliding clutch D^3 . The said extension-shafts are fitted snugly in the bearing-linings b^4 of the journal-boxes b . On the outside periphery of the concave at any suitable place a segmental rack E is applied, and into this rack a pinion F on a longitudinal horizontal shaft G gears.

$H H'$ are pulleys on the shaft F at points in lines with the pulleys $D' D^2$. To these pulleys $H H'$ run belts $I I'$ from the pulleys $D' D^2$, one of said belts I' being crossed, as shown. The lever D^4 of the clutch D^3 is pivoted by a horizontal longitudinal rod D^5 to the frame A , and by moving this lever in the direction of the arrow 1 the clutch-pins will be caused to engage with the pulley D^2 , and by moving it in the direction of the arrow 2 it will be caused to engage with the pulley D' . When the clutch is engaged with the pulley D^2 , the pinion will cause the concave to move in the direction of the arrow 3, Fig. 2, and thereby cause the concave to assume the position shown in said figure, the triturator and mixer continuing to revolve in the direction indicated by the arrows 4, the arms of the triturator thus acting, in conjunction with the dumping movement of the concave and the gravity of the material therein, to facilitate and forcibly discharge the material.

For the purpose of insuring a very thor-

ough trituration and mixing of the material the arms c' are formed with a suitable flare from their points of attachment to the head c to their outer extremities, and to lessen the liability of the material hanging upon the arms as they emerge from the material in the concave the arms are made of triangular form from near the head c to their outer ends, thus presenting a sharp central edge and two beveled sides, and for decreasing their weight they are flattened on their upper surfaces. It will be seen from the drawings that the width of the arms at their outer ends is great enough to insure the overlapping by an intermediate arm of a preceding and succeeding arm, and thus about double the amount of friction-surface for the triturating and mixing action is secured along the concave over that which would be obtained if the arms were made with parallel sides and did not extend laterally beyond one another. In the illustration given the arms are formed with angular flanged plates c^5 , and by means of these plates c^5 and caps c^6 and screws or bolts the arms can be fastened to the head, and when necessary separately detached; but other modes of applying these arms may be adopted. The arms might be cast on a hollow head and short shafts inserted into the ends of the head and firmly secured, instead of the shaft ends being formed with the head, or the arms might be constructed with square hubs and slipped upon the shaft.

For the purpose of automatically operating the clutch-lever D^4 and clutch at the moment the concave has completed its discharging movement, tripping-pins d d' are provided on one of the heads of the concave, and upon the frame A is provided a shifting mechanism consisting of a pivoted lever d^2 , a slotted bell-crank lever d^3 , and a link d^4 , the latter loosely connected to the handle end of the clutch-lever, as shown. With this arrangement of clutch-lever and clutch-shifting mechanism it will be seen that when one of the pins d comes in contact with the lever d^2 it causes said lever to move the bell-crank lever d^3 and said lever through the link d^4 to draw the pins of the clutch D^3 out of engagement with the pulley D^2 , and thereby cause the concave to cease its backward movement. When the concave has completed its backward movement, the flange b^6 thereof rests flatwise upon one of the top longitudinal timbers of the frame A , as shown in Fig. 2, and when it has again assumed its normal position, as in Fig. 5, said flange rests flatwise upon a top frame-timber on the opposite side of the machine, as shown in said Fig. 5. The concave is caused to return to its normal position by means of the crossed belt I' and its pulleys D' H' , and these parts are brought into action by the operator moving the clutch in the direction of arrow 2 by its handle into engagement with the pulley D' . When the concave arrives at its normal position, the pin d' trips the shifting

mechanism in a reverse manner to that of the pin d , and thereby disengages the clutch D^3 from the pulley D' .

Operation.—The operation of the machine is as follows: The concave is adjusted as in Fig. 5 and the substances to be triturated and mixed placed therein. Motion is given to the triturator and mixer by means of the pulley D and driving-belt D^6 thereof. After the substances are completely mixed the clutch-lever is shifted by hand, so as to throw the pins of the clutch into engagement with the pulley D^2 , and thereby through the straight belt I set the concave in motion in a reverse direction to that in which the triturator and mixer is kept revolving. The gradual rotation of the concave causes it to become inverted, and while it is making its movement the substances discharge by their gravity, being aided by the arms of the triturator, said arms by their rotary movement in a reverse direction to that of the concave acting to forcibly discharge the mixed substances upon the ground or into a receiver. As soon as the concave has reached the position shown in Fig. 2 the clutch-lever is unclutched by the pin d striking the unclutching mechanism and the concave is allowed to rest in its inverted position as long as desired. For readjusting the concave the clutch-lever D^4 is moved in the direction of the arrow 2, Fig. 1, thus throwing the clutch in gear with the pulley D , and thereby causing the crossed belt I' to move the concave back to its normal position. As soon as the concave has reached its normal position, as shown in Fig. 5, the clutch-pulley is unclutched by the pin d' striking the unclutching mechanism, and as soon as this takes place the concave rests in its proper position for again receiving a mass of substance to be treated. I would state that it is practicable, although not preferable, to extend the shaft which carries the pinion to a driving-pulley on the engine and to provide in connection therewith loose pulleys and a clutch and lever for producing the semi-rotation of the concave. I would also state that as it is, as I believe, a novelty in machines of the type herein described to mix the mortar or other substances within a concave which has an intermittent semi-rotating movement in a backward direction and with an armed triturator which has a continuously-revolving movement in a forward direction and which acts in conjunction with the backward movement of the concave and the gravity of the mixed substances for forcibly discharging the finished product, I do not limit myself to the precise construction and arrangement of the gearing shown and described for producing the said reversed movements, but contemplate adopting any suitable equivalent construction of gearing for such purpose.

What I claim as my invention is—

1. In a triturating and mixing machine, in combination, the revolving triturator and mixer, consisting of a shaft extending from

end to end of the concave and having short journal-shafts projecting beyond the ends of the concave and carrying - pulleys and a double-acting clutch, said shaft being provided with transversely-arranged projecting triturating-arms, a concave having at the will of the operator a partially-revolving movement in a reverse direction to the triturator, and means, as described, for operating the shaft and concave, substantially as set forth.

2. The combination of the loose pulleys D' D^2 , shaft ends of the armed triturator and mixer, pulley D , belts II' , one crossed, double-acting clutch D^3 , shaft G , pulleys $H H'$, pinion F , and concave B , having rack E on its outer periphery, substantially as described.

3. The combination of the clutch-lever D^4 ,

shifting mechanism consisting of link d^4 , bell-crank lever d^3 , lever d^2 , and the concave provided with tripping-pins $d d'$ on one of its ends, substantially as described.

4. In combination with the partially-revolving concave, the triturator provided with arms gradually flared toward their outer ends, having a triangular form in cross-section and arranged so that every intermediate arm overlaps a portion of a preceding arm, substantially as and for the purpose described.

In testimony whereof I affix my signature in presence of two witnesses.

JNO. H. PARKHURST.

Witnesses:

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ZACH T. PETTIT.