No. 892,643. PATENTED JULY 7, 1908.

N. C. NEWERF.

APPARATUS FOR USE IN CONSTRUCTION OF CONCRETE BUILDINGS.

APPLICATION FILED NOV. 8, 1907. 2 SHEETS—SHEET 1.

Fig. 1.

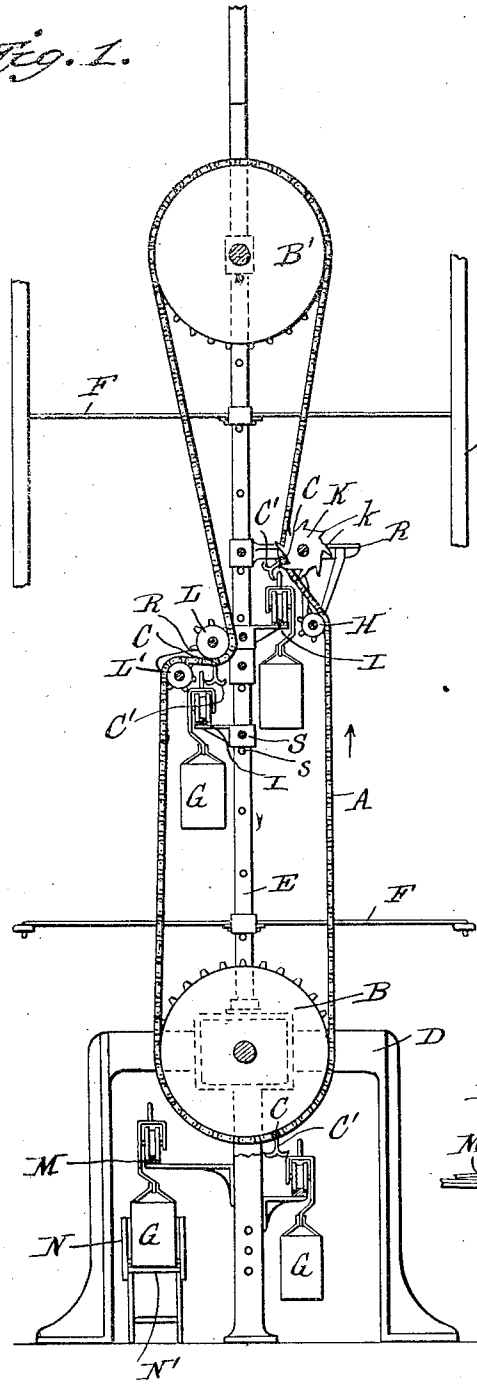
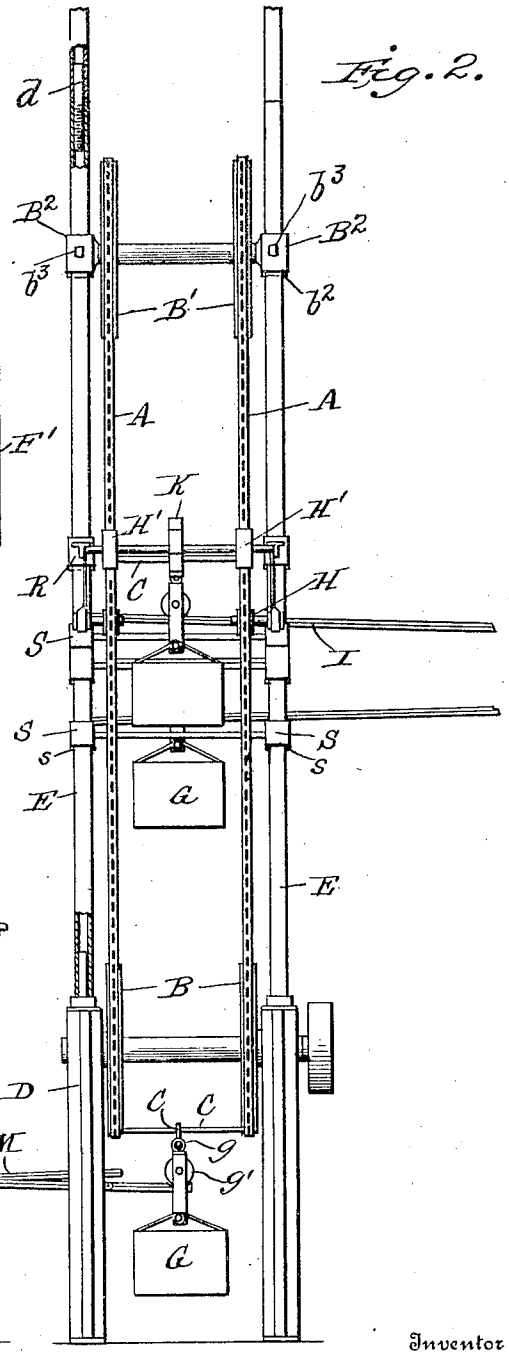


Fig. 2.



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2 SHEETS—SHEET 2.

Fig. 3.

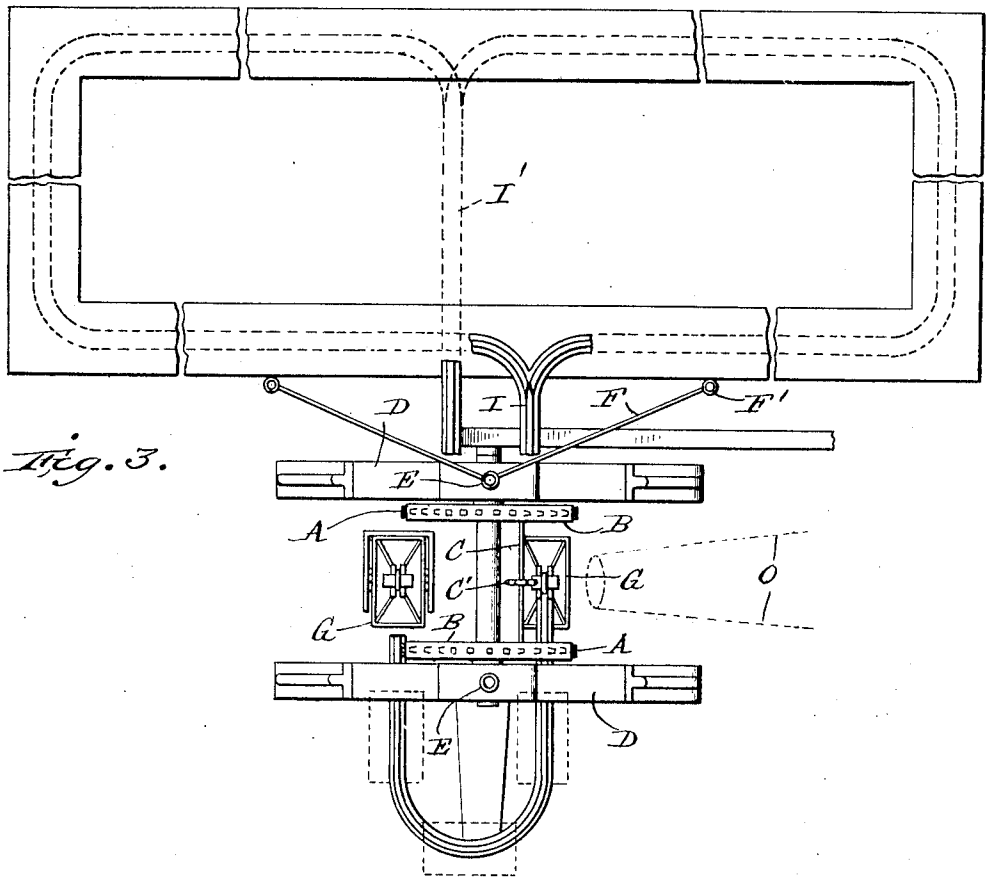
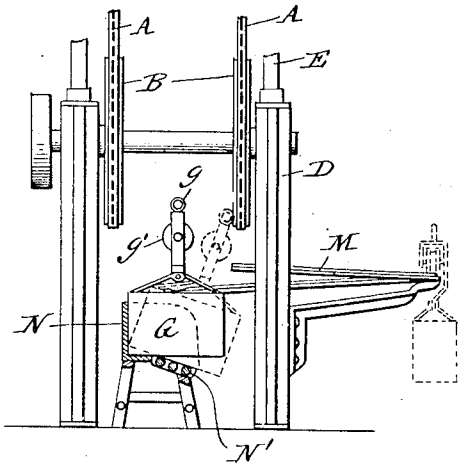


Fig. 4.



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APPARATUS FOR USE IN CONSTRUCTION OF CONCRETE BUILDINGS.

No. 892,543. Specification of Letters Patent. Patented July 7, 1908.

Application filed November 8, 1907. Serial No. 401,355.

To all whom it may concern:

Be it known that I, NICHOLAS C. NEWERF, a citizen of the United States, residing at Buffalo, in the county of Erie, State of New York, have invented certain new and useful Improvements in Apparatus for Use in Construction of Concrete Buildings; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, and to the figures and letters of reference marked thereon.

The objects of the present invention are to provide an apparatus which will facilitate the handling of the plastic composition or concrete mixture from the mechanical mixer to the position where the wall is in progress of formation.

For economical concrete construction, it is important that hand labor shall be dispensed with as far as practicable and that the several operations shall be carried on with mechanical precision in order that there may be no setting or deterioration of the mixture between the mixing operation and the placing of the mixture in the walls while it is most economical to locate the mixing apparatus on the ground accessible to the ingredients the increasing height of the walls constantly increases the distance between the mixing apparatus and the point where the material is to be utilized and the practical results are that mechanical mixers are seldom used, but on the contrary, mixing boards are located in proximity to the points where the material is to be utilized and the separate ingredients are carried to the boards and mixed by hand.

In accordance with the present invention, the mixing apparatus is located on the ground in proximity to the building site and an elevating mechanism is provided which will automatically lift the receptacles containing the mixture, place said receptacles in position on a trolley on which they may be transferred to any desired position and again brought back to the elevator, the elevator itself operating to automatically lower the receptacles and again transfer them into position for refilling.

The invention consists in certain novel details of construction and combinations and arrangements of parts all as will now be described and pointed out in the appended claims.

In the accompanying drawings. Figure 1 is a sectional elevation of a hoisting and conveying apparatus embodying the present invention. Fig. 2 is an elevation of the apparatus shown in Fig. 1. Fig. 3 is a top plan view partially diagrammatic, of the apparatus shown in Fig. 1. Fig. 4 is a detail elevation of the hoisting portion of the apparatus showing the preferred means for transferring buckets from one side to the other of the hoist and into position to be filled.

Like letters of reference in the several figures indicate the same parts.

The hoisting apparatus of the present invention preferably consists of a vertically arranged endless chain or chain carrier composed of two side chains A adapted to run over narrow drums or pulleys B and B′ at bottom and top respectively, said chains being connected by cross pieces C from which double hooks C′ are suspended for coöperation with the buckets. The pulleys or drums B B′ are preferably supported on cross shafts mounted in a vertically arranged knock down frame and which may conveniently consist of a base frame D and upwardly extending sectional tubular verticals E. The verticals E are made sectional and the sections connected by dowels or pins, *d* in order that the height of the frame may be increased or diminished in accordance with the height of the particular wall to be built. Obviously the verticals E may be suitably braced and held in upright position by connecting, laterally extending braces such as F in Fig. 1 adapted to be connected with the finished portion of the wall or with framing F′ suitably located with reference to the building line. Where the frame of the elevator is to be held upright entirely by its connection with the wall itself, it is, of course, desirable that it should not project to any great height above the lateral braces, and hence as the height of the wall increases additional sections of the frame may be added, together with additional lateral braces, and the upper drums B′ around which the endless chains pass, are raised to occupy new and higher positions on the frame. In this connection it will be noted that the length of the endless chains is increased by the addition of suitable reserve

sections and in the preferred construction, the drums B′ are supported on a shaft having tubular sleeves B^2 which embrace the verticals E and may be held in position by transverse pins b^2 or set screws b^3.

The concrete or composition is adapted to be handled in buckets indicated by the letter G, in the accompanying drawings, each of said buckets having a bail or upwardly extending support terminating in an eye *g* and carrying a trolley wheel *g′*. The hooks C′ on the elevator are adapted to coöperate with the eyes *g* to raise or lower the buckets when the motion is imparted to the elevator from any suitable source of power. As the buckets are elevated and reach the desired height they are adapted to be moved transversely into position for their trolley wheels to cooperate with a trolley or track on which the buckets may travel to the points of discharge, and in the preferred arrangement both for discharging and picking up the buckets, the elevator chains are deflected over suitable guide or idler pulleys thus moving the buckets transversely from or away from the track.

As shown in the accompanying drawings, the lifting side of the chains travel over idlers H and H′ by which the chains are deflected transversely towards the verticals E a sufficient distance to bring the trolley wheels of the buckets directly over an inclined track I. At the instant this position is reached, the hooks C′are engaged by a trip or knock off wheel K having projecting arms or teeth *k* adapted to engage the hooks above the eyes of the buckets and swing said hooks inwardly a sufficient distance to release the buckets therefrom, as shown clearly on the right hand side of the elevator in Fig. 1. When discharged from the elevator on to the track the bucket will travel by gravity down the track I and around the wall as shown diagrammatically in Fig. 3, to the point or points where the workmen are located. The workmen will discharge the buckets into the molds between which the wall is being formed and permit the empty buckets to continue along the inclined track, which latter is so arranged in a loop or loops as shown by the dotted line I′ in Fig. 3, back to the elevator at a somewhat lower level than the point at which the loaded bucket was dropped onto the track.

At the point where the buckets are brought back to the elevator, the track runs beneath the transversely extending reach of the elevator chain as shown at the left hand side in Fig. 1, this transversely extending reach being produced by idler pulleys L and L′. It is preferred that instead of extending in a true horizontal direction, the chain or elevator should double and extend in a slightly upward direction, in order that the hooks C′ may engage with the bucket supports and lift the buckets up off of the track I. Having once transferred the bucket from the track to the elevator and moved the trolley wheel outwardly away from the track the continued downward movement of the elevator carries the bucket to the lower level.

The idler pulleys are supported on brackets R and the tracks I on brackets S both adjustable on the verticals E and preferably supported by transverse pins *s*, thus as the height of the wall increases all of these parts may be raised to a higher level or any one of the brackets may be raised or lowered to give the proper difference in level between the point of releasing the bucket from the elevator and the point where the empty bucket is picked up for lowering.

While it is obvious that the buckets could be successively filled as they passed around the lowermost drums of the elevator, or the movement might be momentarily arrested to permit of the filling operation, still, it is preferred that provision should be made for accumulating a number of buckets at the bottom of the elevator or for taking care of a number of such buckets and holding them in position for filling during the mixing of a charge. With this object in view an inclined transfer track M is provided at the base of the elevator, the higher end of said track being in position to receive the buckets from chains and the lower end of said track being in position for the hook C′ to engage the eyes of the buckets on the upwardly moving side of the elevator chains. Transverse movement of the hooks around the lower peripheries of the drums will cause said hooks to disengage themselves from the buckets on the opposite side, lift the same from the track and move them transversely a sufficient distance to carry them free from the track in their upward movements.

The buckets in being lowered to the transfer track may drop directly on the track itself and be freed from the hook by a continued transverse movement of the hook, but in the preferred arrangement the buckets are deposited upon a stand shown at N in Figs. 1 and 4, said stand having one portion of its receiving surface in the form of an inclined series of rollers N′, the arrangement being such that when a bucket is deposited on the stand in the position shown in full lines it will cant over by gravity to the position shown in dotted lines and start to slide down the inclined series of rollers, this movement being sufficient to carry the trolley wheel of the bucket over and onto the receiving end of the transfer track M, as will be readily understood by an inspection of said Fig. 4.

It will be noted that by the use of double hooks with the hook points turned in opposite directions the buckets will be engaged on either side of the elevator with equal facility and by this simple expedient much compli-

cation in the bucket engaging and disengaging mechanism is avoided.

In operation, it is designed that the buckets shall be filled with the concrete mixture while on the transfer track and I have shown by dotted lines in Fig. 3 at O a spout which may be the discharge spout of a mixing machine. The discharge end of said spout is in position to fill the buckets as they are successively brought into place before being elevated.

While personal supervision at the engaging and disengaging points of the elevator with the buckets is, of course, desirable, it is the intention of the present apparatus to make the operation of hoisting and lowering the buckets as nearly automatic as such operation could be made and to eliminate as far as possible hand labor or the employment of a large number of laborers in building construction.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is:—

1. In an apparatus such as described, the combination with the vertically arranged endless chains and drums over which they pass at top and bottom, of independent idler pulleys engaging the ascending and descending portions of said chains to deflect the same and form short transverse reaches, means whereby buckets will be automatically disengaged from the chains in the transverse reach on the ascending side and automatically engaged with the chains in the transverse reach on the descending side and tracks for supporting the buckets when disengaged from the chains.

2. In an apparatus such as described, the combination with the vertically arranged endless chains and drums over which they pass at top and bottom, of independent idler pulleys engaging the ascending and descending portions of said chains to deflect the same and form short transverse reaches in which the buckets will be disengaged from and engaged with the chains and a track for the buckets extending from the transverse reach on the ascending side to the transverse reach on the descending side, whereby the buckets may be transferred from the elevated to the lowering position.

3. In an apparatus such as described, the combination with the vertically arranged endless chains and drums over which they pass at top and bottom, of independent idler pulleys engaging the ascending and descending portions of said chains to deflect the same and form short transverse reaches in which the buckets will be disengaged from and engaged with the chains, the reach on the ascending side being at a higher level than the other and an inclined track for the buckets extending from one reach to the other and past the bucket discharging point whereby the buckets will gravitate from one position to the other.

4. In an apparatus such as described, the combination with the vertically arranged endless chains, upwardly extending sectional verticals and a drum for the upper end of the chains adjustably mounted on the verticals, of idler pulleys coöperating with the chains to form transverse reaches also adjustably mounted on the verticals, whereby both the height of the elevator and height of the points of disengagement and engagement of the buckets with the chains may be independently varied.

5. In an apparatus such as described, the combination with the tubular verticals made in sections, drums adjustably mounted on said verticals and endless chains carried by said drums, of brackets adjustably mounted on the verticals, idler pulleys on said brackets for deflecting the chains to form short transverse reaches, and other adjustable brackets on said verticals and tracks for the buckets supported on said last mentioned brackets.

6. In an apparatus such as described, the combination with the vertically arranged endless elevator chains and idlers for deflecting the chains to form a short transverse reach, of suspension hooks carried between the chains and a rotary trip coöperating with said hooks to release the buckets; substantially as described.

7. In an apparatus such as described, the combination with the vertically arranged endless elevator chains and idlers for deflecting the chains to form a short transverse reach, of suspension hooks carried between the chains, of a rotary trip having spaced projections coöperating with the hooks to turn the same and release the buckets; substantially as described.

8. In an apparatus such as described, the combination with the vertically arranged endless elevator chains, of means for deflecting the chains transversely and double hooks with the hook ends turned in opposite directions carried by said chains, whereby lateral deflection of the chains in either direction will cause said hooks to engage with the buckets; substantially as described.

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Witnesses:

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