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W. P. STANTON

MOLD STRIPPING AND TRANSFERRING MACHINE

Filed July 21, 1924

Fig. 1.

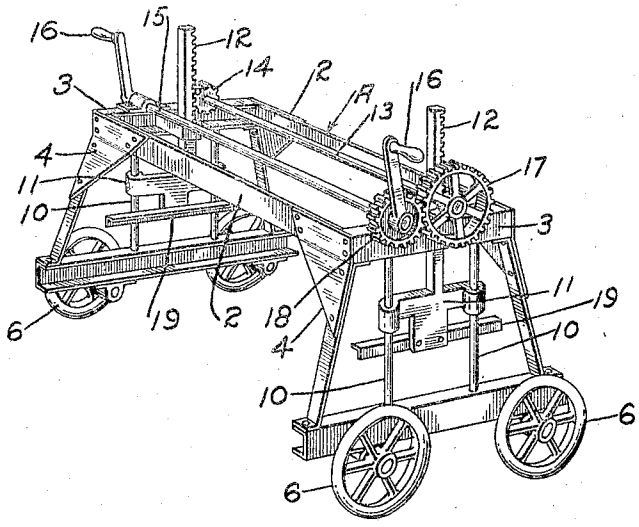
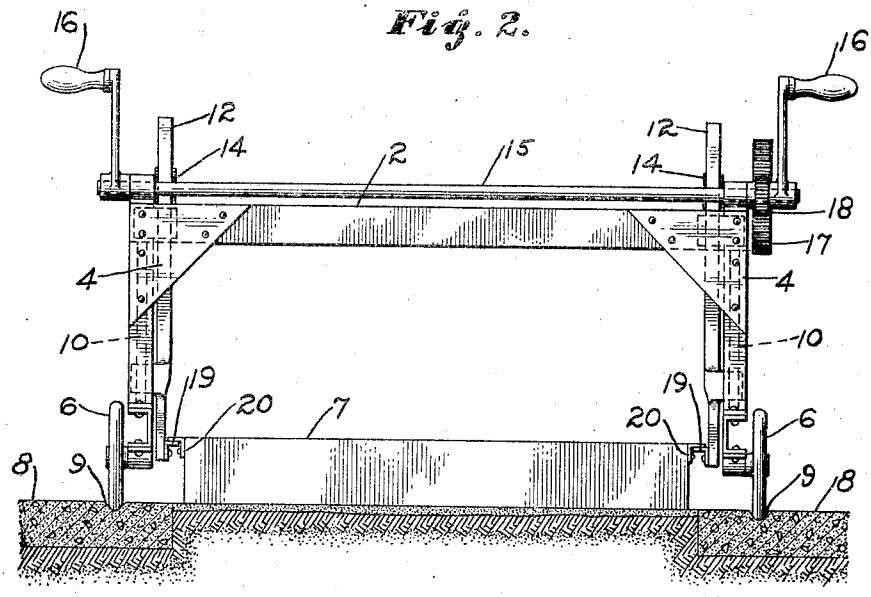


Fig. 2.



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MOLD STRIPPING AND TRANSFERRING MACHINE.

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To all whom it may concern:

Be it known that I, WOLCOTT P. STANTON, a citizen of the United States, residing at Berkeley, county of Alameda, and State of California, have invented new and useful Improvements in Mold Stripping and Transferring Machines, of which the following is a specification.

This invention relates to a mold stripping and transferring machine.

In the manufacture of certain types of concrete building blocks and like articles, a new method of molding wet concrete and stripping the molds with relation thereto has been developed. This method forms the subject-matter of my patent entitled "Method and apparatus for manufacturing hollow concrete building blocks" No. 1,547,530, July 28, 1925. Briefly the method consists in placing a series of molds end for end in line formation on a suitable support. The concrete, a wet mix, is poured into the first of these molds, then into the second, and so on. The concrete is not permitted to set in the molds but, conversely, the molds are stripped or raised with relation to the cast blocks before the concrete begins to set, and the molds are then transferred in a raised condition to an advanced position to be again re-filled. Inasmuch as the molds are stripped or raised before the concrete sets, it must be realized that the concrete is in a wet condition, which requires careful handling or raising of the molds, as any side movement or slight vibration will cause the wet walls of the block to slough or crumble. It will further be realized that as the molds are used over and over again that considerable time is lost in transferring them to the advanced positions. Most of this work has been hand labor and as such requires skill, experience and time.

The object of the present invention is to decrease the cost of manufacture by reducing the amount of time and labor required, and to improve the quality of the product, this being accomplished by providing a machine which will strip or raise the molds without any danger of the walls of the blocks sloughing or crumbling, and which will also rapidly transfer the molds to an advanced position.

One form which my invention may assume is exemplified in the following description and illustrated in the accompanying drawings, in which—

Fig. 1 is a perspective view of the mold stripping and transferring machine.

Fig. 2 is an end view of the machine showing it in position with relation to a mold.

Referring to the drawings in detail, A indicates the main frame consisting of a horizontally disposed cross-frame 2 and a pair of end frames 3. The cross and end frames may be constructed in any suitable manner; for instance, of structural iron sections such as here illustrated, and the cross and end frames may be braced with relation to each other by corner angle plates as shown at 4.

The frame as a whole is supported by two pairs of wheels 6, one pair disposed at each end of the frame. These wheels form a support for the frame and permit it to be moved longitudinally of a series of molds generally indicated at 7. These molds are placed end for end in line formation between a pair of runways generally indicated at 8; these runways being provided with V-shaped grooves 9 which form tracks or guides for the wheels 6.

The machine serves two main functions: first, that of stripping or raising the molds with relation to the concrete blocks when cast and, secondly, that of transferring the molds to an advanced position. The mechanism employed for stripping or raising the molds with relation to the cast concrete blocks consists of two pairs of guide rods generally indicated at 10, one pair being carried by each end frame. A cross-head 11 is slidably mounted and guided by each pair of rods, and each cross-head is provided with a rack bar as indicated at 12. A shaft 13 is journalled crosswise of the frame 2 and a pair of pinions 14 is secured to said shaft. These pinions intermesh with the respective rack bars 12 and serve the function of transmitting vertical movement thereto. A second shaft 15 disposed in parallelism with relation to shaft 13 is also journalled in the frame 2. This shaft is provided with a pair of hand cranks 16 by which it may be manually rotated, and it is furthermore provided with a spur gear pinion 17 which meshes with a spur gear 18 secured on shaft 15. Each cross-head 11 has an angle bar 19 secured thereto and each

mold 7 has angle bars 20 secured thereto as shown in Fig. 2. The operation will be as follows:

The molds placed end for end in line formation between the runways 8 are filled one by one with a wet mix of concrete. The concrete is not permitted to set and it is therefore necessary to strip or remove the molds as soon as possible after the concrete has been poured. It is for this reason that the machine forming the subject matter of this application has been devised, as it provides means whereby the molds may be readily stripped and raised with relation to the cast concrete blocks, and it also forms a convenient carriage for transferring the molds to advanced positions. After two, three or more molds have been filled with concrete and the surplus has been removed, the stripping and transferring machine shown in Fig. 1 is moved down the runways until it aligns with the first mold, the cross-heads 11, together with the angle bars 19 carried thereby, having previously been lowered so that the angle bars will pass in under the angle bars 20 secured on the sides of the mold, the position assumed being shown in Fig. 2. When alignment has been made between the angle bars, it is only necessary for the men or operators to grasp the hand cranks 16 and to turn the same. This turning movement is transmitted through the pinions 17 and the gear 18 to rotate shaft 15, and this turning movement is in turn transmitted through the pinions 14 to the rack bars, causing these, together with the cross-heads and the angle bars 19, to move vertically on the guide rods 10. The mold is thus stripped with relation to the cast concrete blocks and raised to an elevated position, and as it is now empty and ready for re-use, it is only necessary to push the carriage down the runways 8 until a position is reached, where the mold may be lowered and positioned between the runways in alignment with the last mold. The carriage is again run back to the next mold, which is then stripped and raised, and this mold is similarly transferred to an advanced position where it will later be refilled and again advanced or possibly returned to the beginning of the runway.

The machine as previously stated is employed in connection with the new method of manufacturing concrete building blocks, which is fully described in my copending application. The work, to begin with, depended upon more or less hand labor and considerable care had to be exercised, particularly when stripping the molds, as any slight movement, except in a vertical direction, would cause the wet walls of the concrete blocks to crumble or slough, thus either destroying the blocks or causing an inferior product to be produced. It might furthermore be stated that a considerable lifting force had to be exerted when first lifting or stripping the molds, as the suction between the wet concrete and the walls of the mold must be broken during the first portion of the lifting or stripping movement; thus, there was a tendency to jerk the mold when first starting it.

These objectionable features have been entirely overcome by the use of the machine here shown. First, due to the gear actuated lifting mechanism employed, it is possible to start the lifting movement slowly and gradually, thus gradually relieving the suction action between the concrete and the mold faces. Secondly, it is obvious that the lifting movement will be positively vertical during the whole lifting operation and as this is the case crumbling or sloughing of the walls, as far as the concrete blocks are concerned, is entirely obviated and a perfect product is obtained. Third, it will be noted that the molds are supported in the frame or carriage when elevated and as this is the case it is a simple matter to push the carriage to an advanced position and then to re-deposit the mold. The several operations are thus accomplished with machine-like precision and the work on the part of the men or operations is reduced and a larger output is obtained with the same crew of men.

While certain features of the present invention are more or less specifically illustrated, I wish it understood that various changes in form and proportion may be resorted to within the scope of the appended claims. I similarly wish it understood that the materials and finish of the several parts employed may be such as the experience and judgment of the manufacturer may dictate or various uses may demand.

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

1. A device of the character described comprising a cross frame and a pair of end frames, said cross and end frames adapted to straddle a series of molds placed in line formation, a cross-head on each end frame, guides for the cross-heads, means for imparting vertical movement to the cross-heads upon the guides in unison, lugs on the cross-heads engageable with the molds to raise and support the same and means supporting the cross and end frames and permitting movement thereof longitudinally of the molds.

2. A device of the character described comprising a cross frame and a pair of end frames, said cross and end frames adapted to straddle a series of molds placed in line formation, a pair of guides on each end frame, a cross-head on each end frame and movable upon the guides, means for impart-

ing vertical movement to the cross-heads in unison, means on the cross-heads engageable with the molds to raise and support the same, and wheels supporting the cross and end frames and permitting movement thereof longitudinally of the molds.

3. A device of the character described, comprising a cross-frame and a pair of end frames, said cross and end frames adapted to straddle a series of molds placed in line formation, a cross-head vertically movable in each end frame, means on the cross-heads engageable with the molds to raise and support the same, a rack bar connected with each cross-head, a cross-shaft, pinions thereon engageable with the respective rack bars, means for imparting turning movement to the cross-shaft to raise and lower the cross-heads in unison, and wheels supporting the cross and end frames and permitting movement thereof longitudinally of the molds.

4. A device of the character described, comprising a cross-frame and a pair of end frames, said cross and end frames adapted to straddle a series of molds placed in line formation, a cross-head vertically movable in each end frame, means on the cross-heads engageable with the molds to raise and support the same, a rack bar connected with each cross-head, a cross-shaft, pinions thereon engageable with the respective rack bars, a second cross-shaft, hand cranks thereon to transmit a turning movement thereto, a pinion on said second cross-shaft, a gear on the first named shaft intermeshing therewith, and wheels supporting the cross and end frames and permitting movement thereof longitudinally of the molds.

WOLCOTT P. STANTON.