No. 826,290. PATENTED JULY 17, 1906.

T. F. TIMBY.

MECHANICAL MOVEMENT.

APPLICATION FILED FEB. 15, 1906.

2 SHEETS—SHEET 1.

Fig. 1.

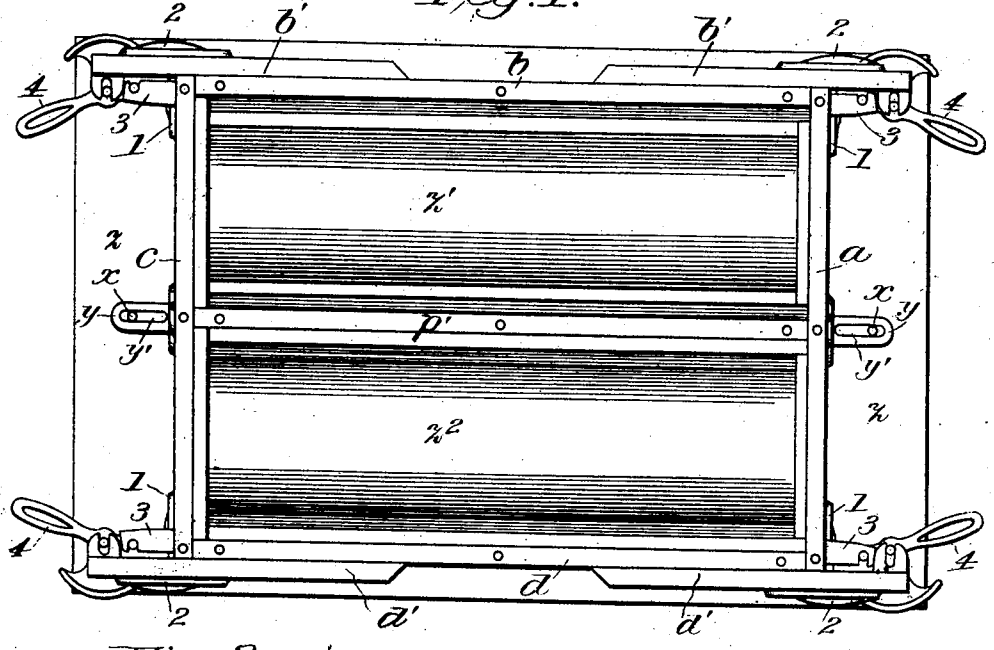


Fig. 2.

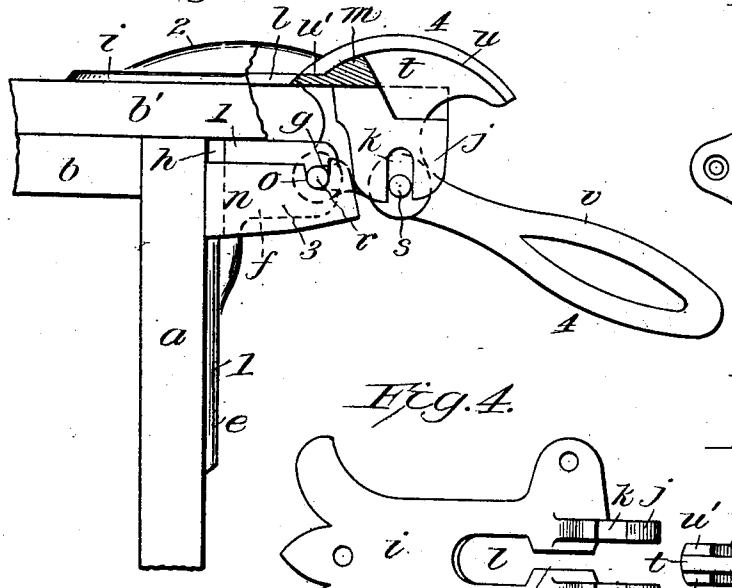


Fig. 3.

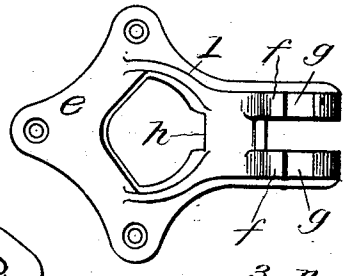


Fig. 5.

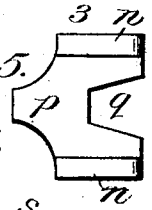
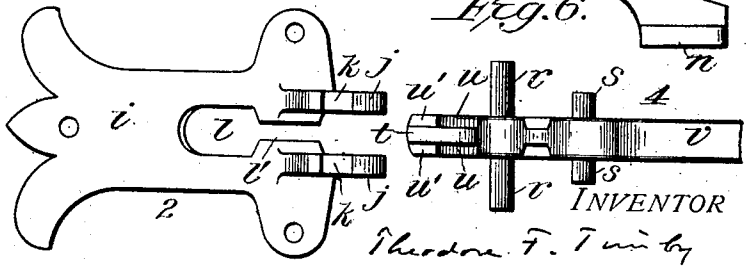


Fig. 4.

Fig. 6.



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2 SHEETS—SHEET 2.

Fig. 7.

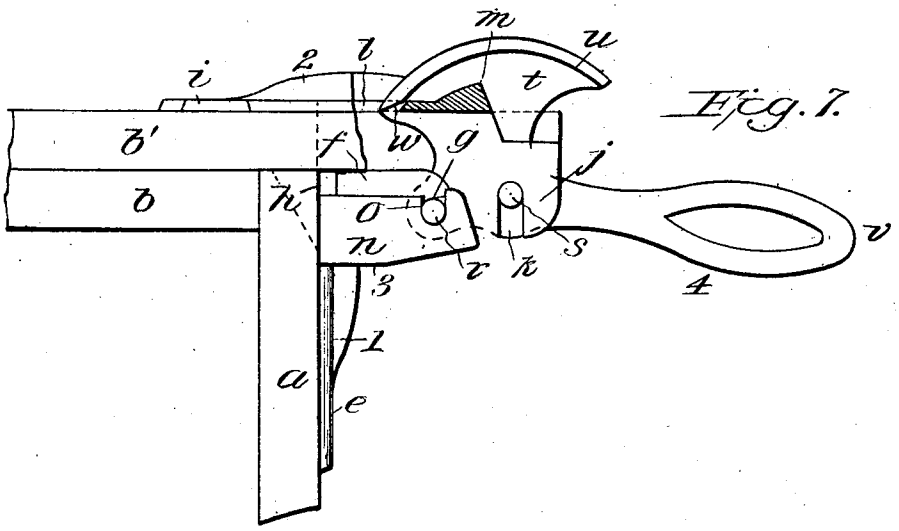


Fig. 8.

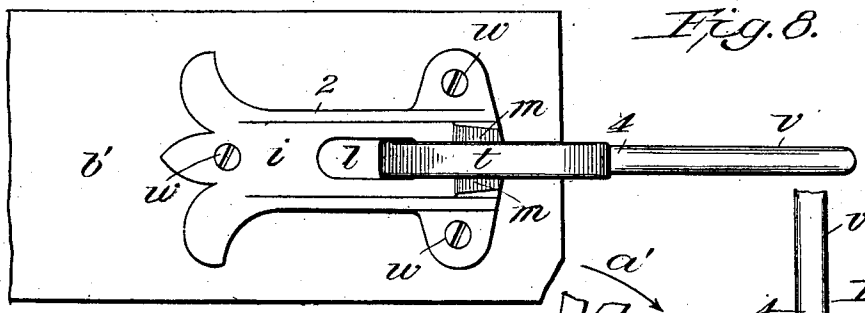


Fig. 9.

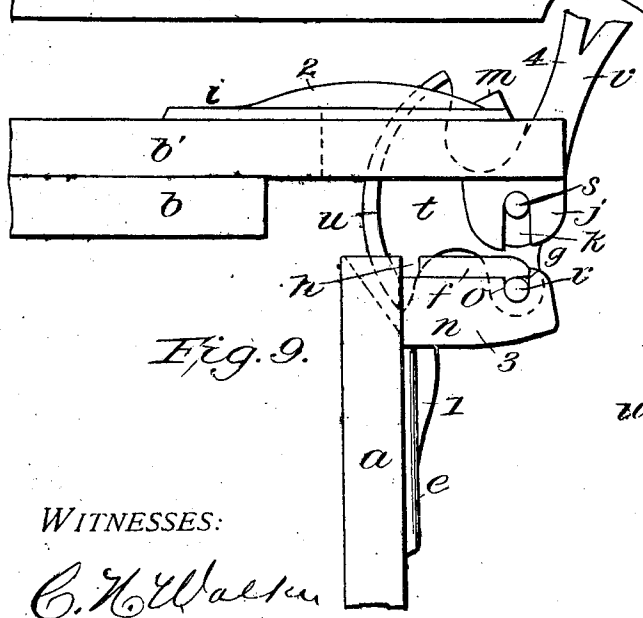
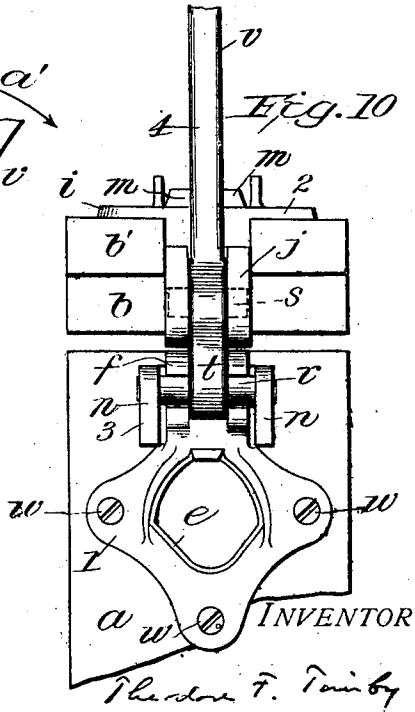


Fig. 10.



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MECHANICAL MOVEMENT.

No. 826,290. Specification of Letters Patent. Patented July 17, 1906.

Application filed February 15, 1906. Serial No. 301,241.

To all whom it may concern:

Be it known that I, THEODORE F. TIMBY, a citizen of the United States of America, and a resident of Alma, in the State of Michigan, have invented a new and useful Improvement in Mechanical Movements, of which the following is a specification.

This invention relates, primarily, to corner-clamps or corner-locks for molds for making cement tiles, building-blocks, and the like, and for molders' flasks, but is applicable to the construction of clamps and locking devices for various purposes, to means for moving beveled gearing or friction-wheels into and out of mesh or contact, and to mechanical devices for other like purposes.

The leading object of the invention is to provide for quickly opening such molds and flasks or for separating such gearing or friction-wheels or the like with the aid of any required leverage and by a single swinging movement and for rendering the closed corners or the like tight, true, and securely locked by a single reverse movement.

Other objects of the invention are to prevent the accidental separation of the parts, to provide for moving the connected parts simultaneously, to avoid rubbing friction to the utmost possible extent by pivotal action, and thus and otherwise to adapt the several pieces of which the clamp or the like is composed to be assembled and used as they are taken from the sand molds without milling or otherwise machining them.

The invention consists in certain novel combinations of parts hereinafter set forth and claimed.

Two sheets of drawings accompany this specification as part thereof.

Figure 1 is a face view of a cement-tile mold provided with corner-locks embodying the mechanical movement. Fig. 2 is a like view of one of the corners, on a larger scale and partly in section. Figs. 3, 4, 5, and 6 are views of the several pieces of the corner-lock on the same scale as Fig. 2. Fig. 7 is a view similar to Fig. 2, illustrating the shifting of the outer pivot at the beginning of the unlocking movement. Fig. 8 is a side view projected from Fig. 7. Fig. 9 is another face view of the same corner as Fig. 2, showing the unlocked corner-forming parts fully separated; and Fig. 10 is a view at right angles to Fig. 9 and projected therefrom.

Like reference characters refer to like parts in all the figures.

The pieces which together constitute the improved mechanical movement include fulcrum-pieces 1 and 2, shown detached by Figs. 3 and 4, respectively, attachable to two corner-forming parts *a* and *b*, *c* and *b*, *c* and *d*, or *a* and *d*, respectively, or parts having like limited movements at right angles to each other; a supplemental piece 3, shown detached by Fig. 5, which is combined with the first fulcrum-piece 1 when the parts are assembled, and a lever-piece 4, shown detached by Fig. 6. Said fulcrum-piece 1, in addition to its attaching portion *e*, is constructed with a pair of lugs *f* at right angles to said attaching portion, with open notches *g* in their outer ends and with a recess *h* in its back immediately behind said lugs. Said fulcrum-piece 2 has, in addition to its attaching portion *i*, a pair of lugs *j* at right angles to said attaching portion *i* and is, further, constructed with open notches *k* in the outer ends of said lugs *j*, a slot *l*, corresponding with the space between said lugs *j*, and a stop projection *m*, Fig. 2, located on the outer face of said attaching portion *i* and on both sides of a contracted portion *l'* of said slot *l*. Said supplemental piece 3 is constructed with a pair of lugs *n* wide enough apart to admit the lugs *f* of the first fulcrum-piece 1 between them and constructed with open notches *o* at right angles to the notches *g* and with a back portion *p*, adapted to be moved into said back recess *h* in assembling the parts, said back portion *p* having a central notch *q*, Fig. 5, coinciding with the space between said lugs *f* of the first fulcrum-piece, which space is thus rendered open through both pieces.

The lever-piece 4 has a pair of trunnion-forming pivots *r* and *s*, parallel with each other, which are arranged to interact with the notched lugs *f* and *j* of the fulcrum-pieces 1 and 2, respectively, the notches *g* and *k* of these lugs forming pivot-bearings. The lever-piece is further constructed with a segmental portion *t*, having laterally-projecting flanges *u* at its perimeter, the inner surfaces of which are concentric with said pivot *s*, hereinafter termed the "outer" pivot of the lever-piece, said flanges *u* having bevels *u'* at the heel end of said segmental portion *t* to adapt the flanges to interact with

said projection m on the outer face of the fulcrum-piece 2, as in Fig. 2. A handle portion v of any required length and of suitable shape completes the lever-piece.

Apart from the pivots r and s all the pieces are adapted to be made wholly of cast-iron and to be assembled and used as taken from the sand without milling or other machine-work. The pivots are preferably and conveniently formed by suitable lengths of steel rod, upon which the remainder of the lever-piece 4 is cast.

The fulcrum-pieces 1 and 2 as applied to wooden mold parts or the like are adapted to be attached by wood-screws w, Figs. 8 and 10, and are so shown in the drawings. The fulcrum-pieces may be obviously attached to the respective corner-forming parts or the like in various ways, and other like modifications will suggest themselves to those skilled in the art.

When the pieces are assembled, the inner pivot r of the lever-piece 4 occupies the notches g of the fulcrum-piece 1 and is held in place in these notches against accidental displacement by the supplemental piece 3, the notches o of the latter being first interlocked with the outer ends of the pivot r and the piece then turned on the pivot r, so as to bring its back portion p into the back recess h of said fulcrum-piece 1, so as to be held in place by the attached fulcrum-piece. (Compare Figs. 3 and 5 with Fig. 2 or Fig. 9 and Fig. 10.) The supplemental piece 3 is of course so interlocked with the outer ends of the pivot r and turned into place with reference to the fulcrum-piece 1 before attaching these pieces to the corner-forming part a. The supplemental piece 3 in its effective position, Figs. 1, 2, 7, 9, and 10, not only prevents the separation of the pieces, but forms effective elongated bearings for the pivot r and insures a steady pivotal movement. The outer pivot s occupies the notches k of the second fulcrum-piece 2, and its flanged segmental portion t occupies the slot l of this fulcrum-piece and prevents the separation of these pieces as long as the fulcrum-piece is tightly attached to its corner-forming part b or d.

With the corner-forming parts a and b (shown in Figs. 2 to 10, inclusive) open or separated, as in Figs. 9 and 10, separation of the pieces is prevented by the interaction of the fulcrum-piece 2 with the flanged segmental portion u of the lever-piece 4 and the interaction of the fulcrum-piece 1 and supplemental piece 3 with the inner pivot r of said lever-piece, and the outer pivot s occupies the inner ends of said notches k of the fulcrum-piece 2, which are elongated in lines substantially concentric with the inner pivot r in the locked position of the parts, Figs. 1 and 2. By grasping the handle v of the lever-piece 4 and turning it on the pivot r in the direction of the arrow a' in Fig. 9 the pivots r and s interact with said first and second fulcrum-pieces 1 and 2, respectively, causing the corner-forming parts a and b to be drawn together by pivotal or lever action until the parts reach the position in which they are shown in Figs. 7 and 8, with the outer pivot s in the inner ends of the notches k of the fulcrum-piece 2 and the heel end of the segmental portion u approaching the projection m on the outer face of the fulcrum-piece. (See Fig. 7.) A short additional movement of the lever-piece 4 by its handle v turns it on its inner pivot r and throws the outer pivot s into the outer ends of the notches k, as in Figs. 1 and 2, and the flanges u of the segmental portion t into contact with the stop projection m at the heel end of said flanges, as in Fig. 2. Separation-preventing contacts are thus formed out of line with the inner pivot r in both directions of movement, and the corner is securely locked. A correspondingly short reverse movement unlocks the corner.

In assembling and attaching the parts the inner pivot r of the lever-piece 4 is inserted in the notches g of the fulcrum-piece 1. The notches o of the supplemental piece 3 are then interlocked with this pivot, and the piece is swung into place with reference to said fulcrum-piece 1, which is then attached to the corner-forming part a or its equivalent. The notches k of the fulcrum-piece 2 may be then interlocked with the outer pivot s of the lever-piece 4, with said notches k substantially in line with the handle v of said lever-piece and extending away therefrom. Said fulcrum-piece 2 is then turned on said pivot s into its effective position, with its attaching portion i at right angles to the attaching portion e of the fulcrum-piece 1, and is then attached to the adjoining corner-forming part b or its equivalent.

The pieces may be assembled and attached as above under any conditions. In applying them to the four corners of a mold or the like, as in Fig. 1, the fulcrum-piece 1, with the supplemental piece 3 and the lever-piece 4, attached thereto, may be fixedly attached at all four points where it belongs, and the fulcrum-pieces 2 may then be interlocked with the lever-pieces 4 at these three corners one after another. At the fourth corner the fulcrum-piece 2 is interlocked with the lever-piece detached and is then swung into position and attached to the corner-forming part b or its equivalent, to which it belongs, to complete the equipment.

To disengage the pieces 1 and 4 from each other, it is only necessary to turn either the lever-piece 4 or the fulcrum-piece 2 to a suffi-

cient extent to bring the notches *k* of the fulcrum-piece and the handle *v* of the lever-piece into line with each other, so that the segmental portion *t* of the lever-piece can be withdrawn from the slot *l*. The pieces cannot be so turned while both fulcrum-pieces are attached to corner-forming parts at right angles to each other.

To provide for moving the parts of a mold or the like simultaneously and equally, a stud *x* is rigidly supported adjacent to each of two opposite sides or ends or each of the sides and ends and is embraced by a slot *y'*, perpendicular to the adjacent corner-forming part in a guide-piece or controller *y*, attached centrally to said part, as in Fig. 1. The effect of this attachment and said stud-pin interacting therewith is to limit the motion of the corner-forming part to which the controller is attached to the general direction of the slot in the controller, which slot is at right angles to the only direction in which the other corner-forming part can be moved, and the result is that in swinging the lever-pieces 4 back and forth both corner-forming parts at each corner are moved at right angles to each other in opening or closing the joint between them in a simultaneous and highly-effective manner. The mold represented by Fig. 1 includes a bottom part *z*, provided with said studs *x*, which project rigidly from its upper face, and further provided with a pair of cores or inside molds z' z^2 for the respective halves of a longitudinally-bisected drain-tile having interlocked longitudinal joints and interlocking end joints. The other parts of the mold are the four corner-forming parts, *a*, *b*, *c*, and *d*, above referred to, and a removable partition *p'*, parallel with the sides *b* and *d*. Said sides *b* and *d* are provided with externally-attached and removable end pieces *b'* and *d'*, so as to form reëntrant corner-angles and to provide for attaching the fulcrum-pieces 1 and 2 in the manner above described and in the relation to each other represented in Figs. 1 and 2 and Figs. 7 to 10, inclusive.

It will be understood that self-locking corner-clamps and controllers of the same description may be applied to single molds or to molds or flasks of other descriptions in like manner, and their use as aforesaid for moving other adjoining parts toward and away from each other and for locking them in their closed position will be readily understood by those skilled in the art without further description.

Having thus described said improvement, I claim as my invention and desire to patent under this specification—

1. In combination with two corner-forming parts or the like movable toward and away from each other, means for moving the same, for limiting their separation and for securing them in their closed positions, such means including fulcrum-pieces attachable to the respective parts, and a lever-piece having two pivots parallel with each other interacting with said fulcrum-pieces respectively and constructed with a flanged segmental portion concentric with the outer pivot, one of said fulcrum-pieces having a slotted portion to interlock with said flanged portion and a stop projection to interact with the heel end of said flanged portion.

2. In combination with two corner-forming parts or the like movable toward and away from each other, self-locking means for moving the same, for limiting their separation and for securing them in their closed positions, such means including fulcrum-pieces attachable to the respective parts, and a lever-piece having two pivots parallel with each other interacting with said fulcrum-pieces respectively and constructed with a flanged segmental portion concentric with the outer pivot, one of said fulcrum-pieces having its pivot-bearings in the form of open notches elongated so as to permit the interacting pivot to shift its position in said notches and also constructed with a slotted portion to interlock with said flanged portion and with a projection to interact with the heel end of said flanged portion when the lever-piece is turned on its inner pivot to shift the outer pivot.

3. In combination with two corner-forming parts movable at right angles to each other and one of them constructed with a reentrant corner-forming angle, self-locking means for moving the same and for securing them in their closed positions, such means including fulcrum-pieces attachable to the respective parts, and a lever-piece having two pivots parallel with each other interacting with said fulcrum-pieces respectively and constructed with a flanged segmental portion concentric with the outer pivot, one of said fulcrum-pieces having its pivot-bearing notches elongated so as to permit the interacting pivot to shift its position in said notches and also constructed with a slotted portion to interlock with said flanged portion and with a projection to interact with the heel end of said flanged portion when the lever-piece is turned on its inner pivot to shift the outer pivot, and means for limiting the parts to movement at right angles to the other.

4. The combination with a lever-piece and a pivot on which the same is moved of a fulcrum-piece having lugs parallel with each other and constructed with open pivot-bearing notches in the outer ends of said lugs and with a recessed back and an attaching portion, and a supplemental piece having lugs wide enough apart to admit the pair of lugs first named between them and constructed with open notches at right angles to those first named and a back portion adapted to be

moved into said recess to interlock the notches of the supplemental piece with the outer ends of the pivot, whereby said fulcrum-piece and said supplemental piece are adapted to be cast with pivot-bearings that are in effect closed, and at the same time to form said bearings by open notches and to form elongated bearings for the pivot affording a steady and true support for the lever-piece, substantially as hereinbefore specified.

THEODORE F. TIMBY.

Witnesses:
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A. M. SPOFFORD.