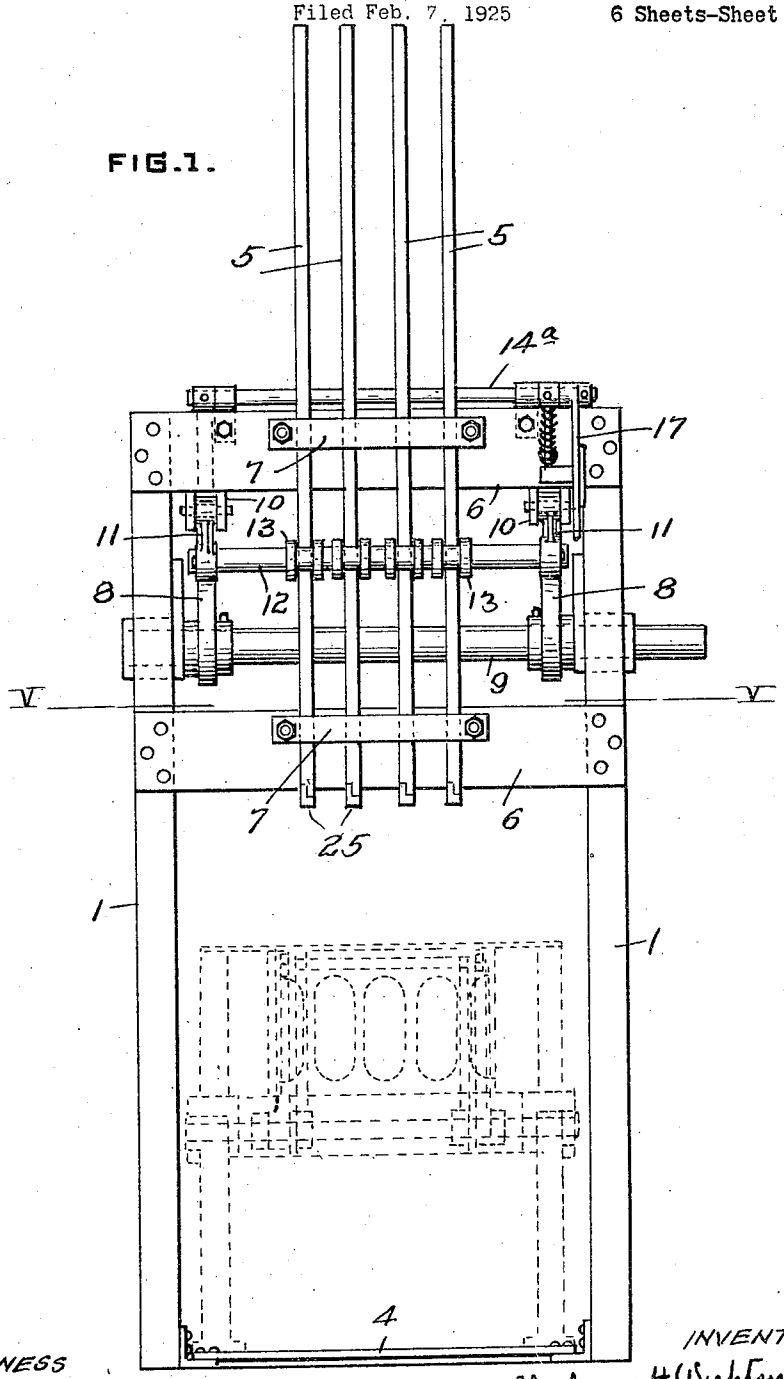
July 6, 1926. 1,591,904

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TAMPING MACHINE

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FIG. 1.



WITNESS
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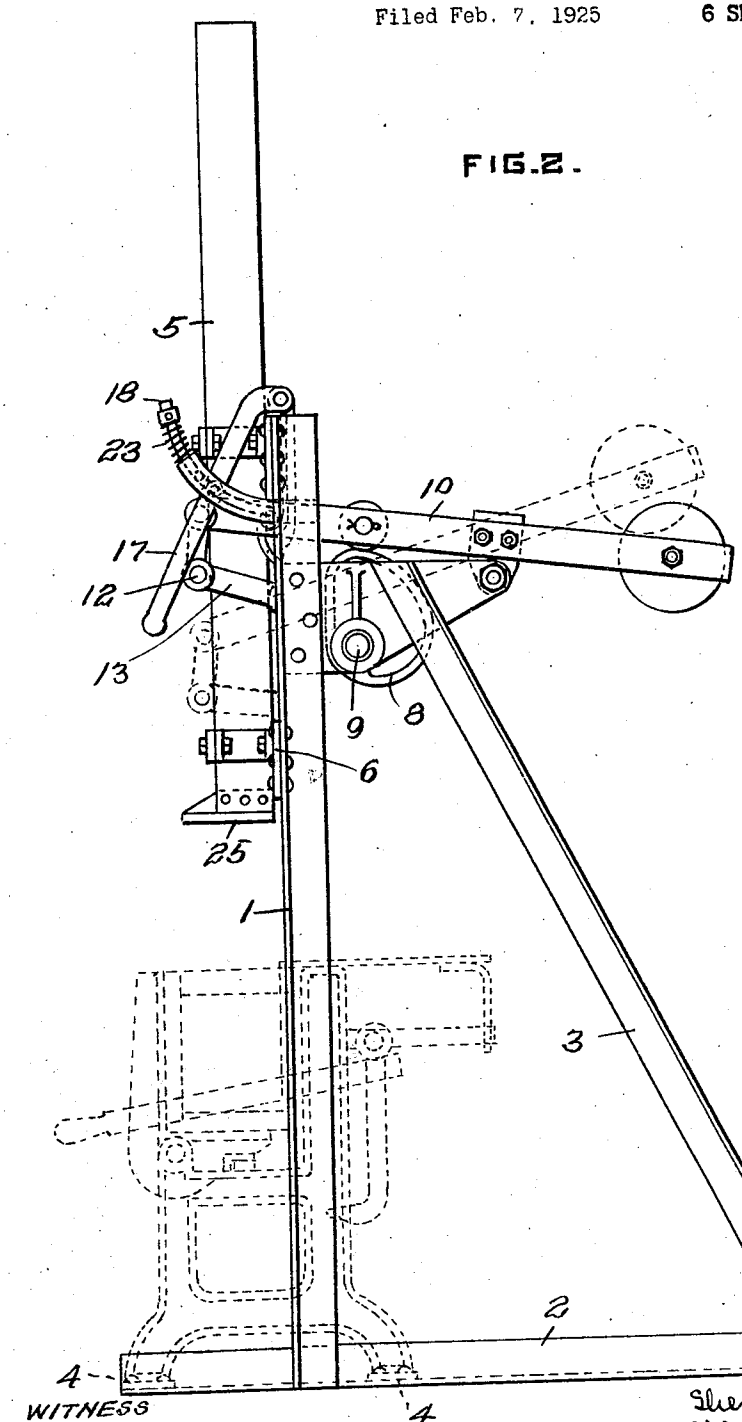
July 6, 1926. 1,591,904

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TAMPING MACHINE

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FIG. 2.



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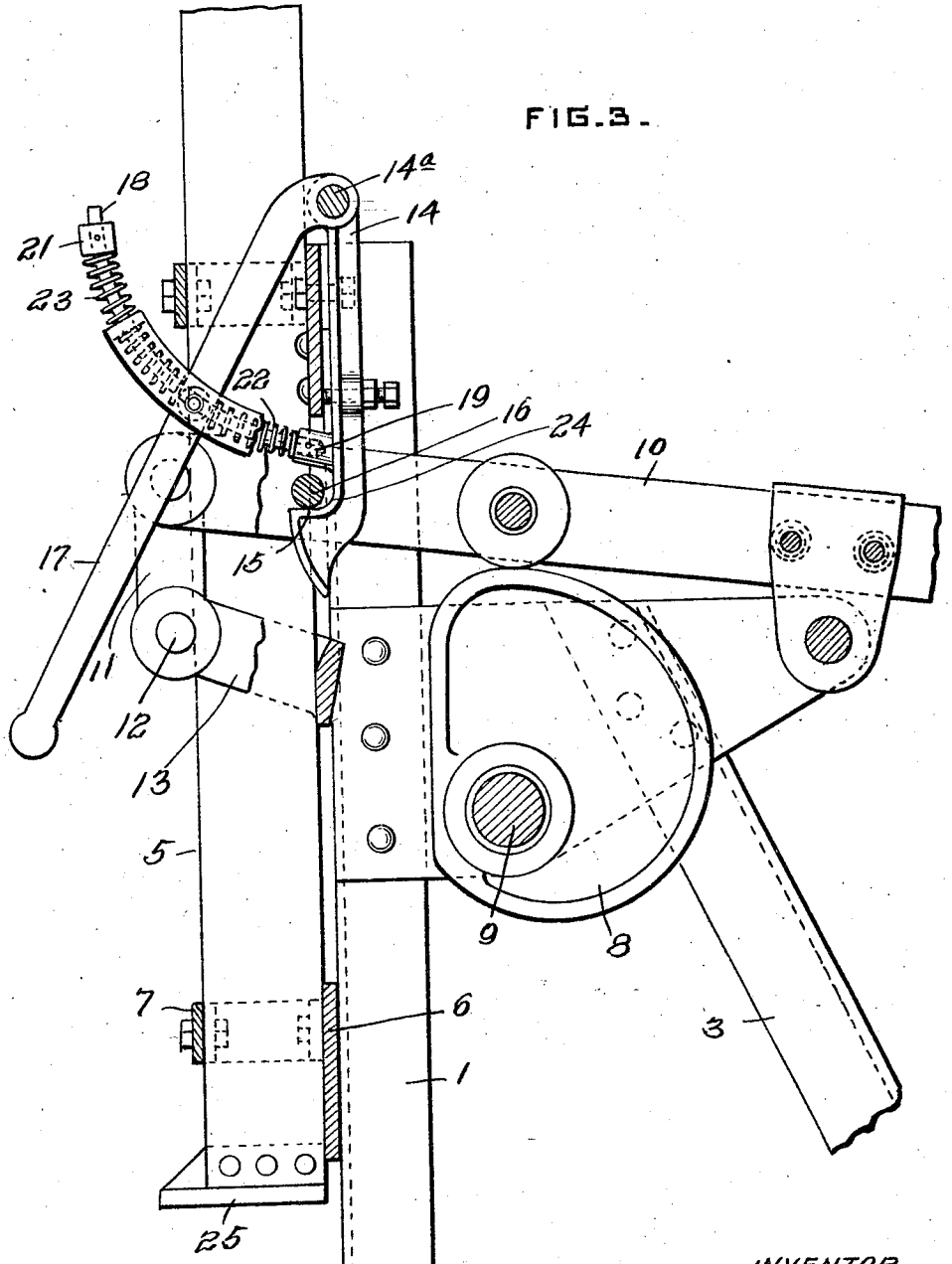
July 6, 1926. 1,591,904

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TAMPING MACHINE

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FIG. 3.



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TAMPING MACHINE

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FIG.4.

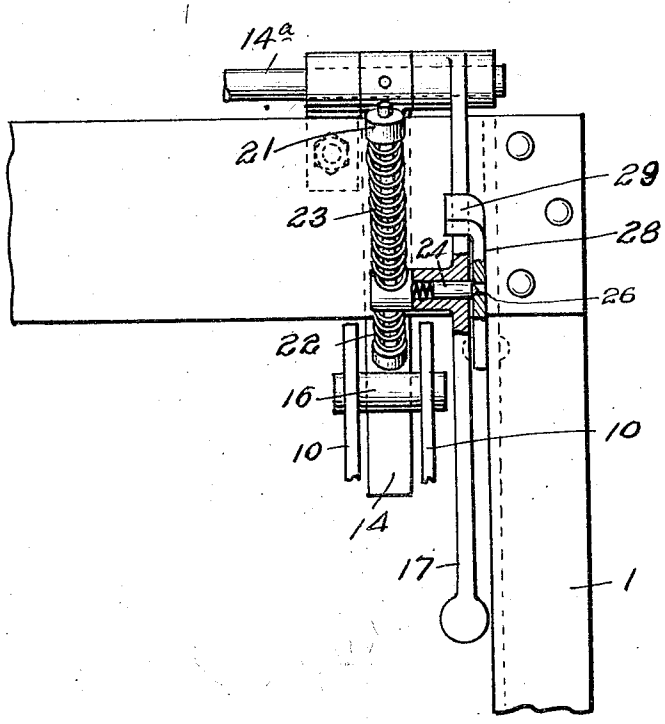
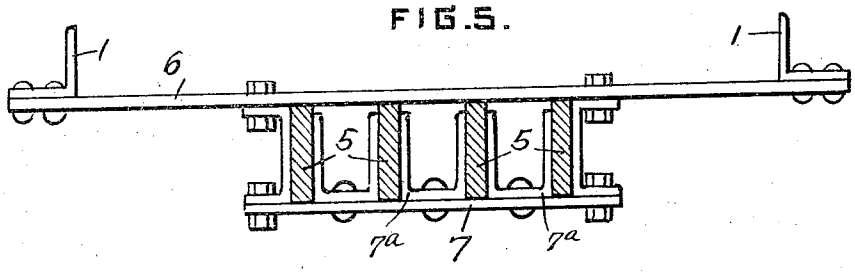


FIG.5.



WITNESS

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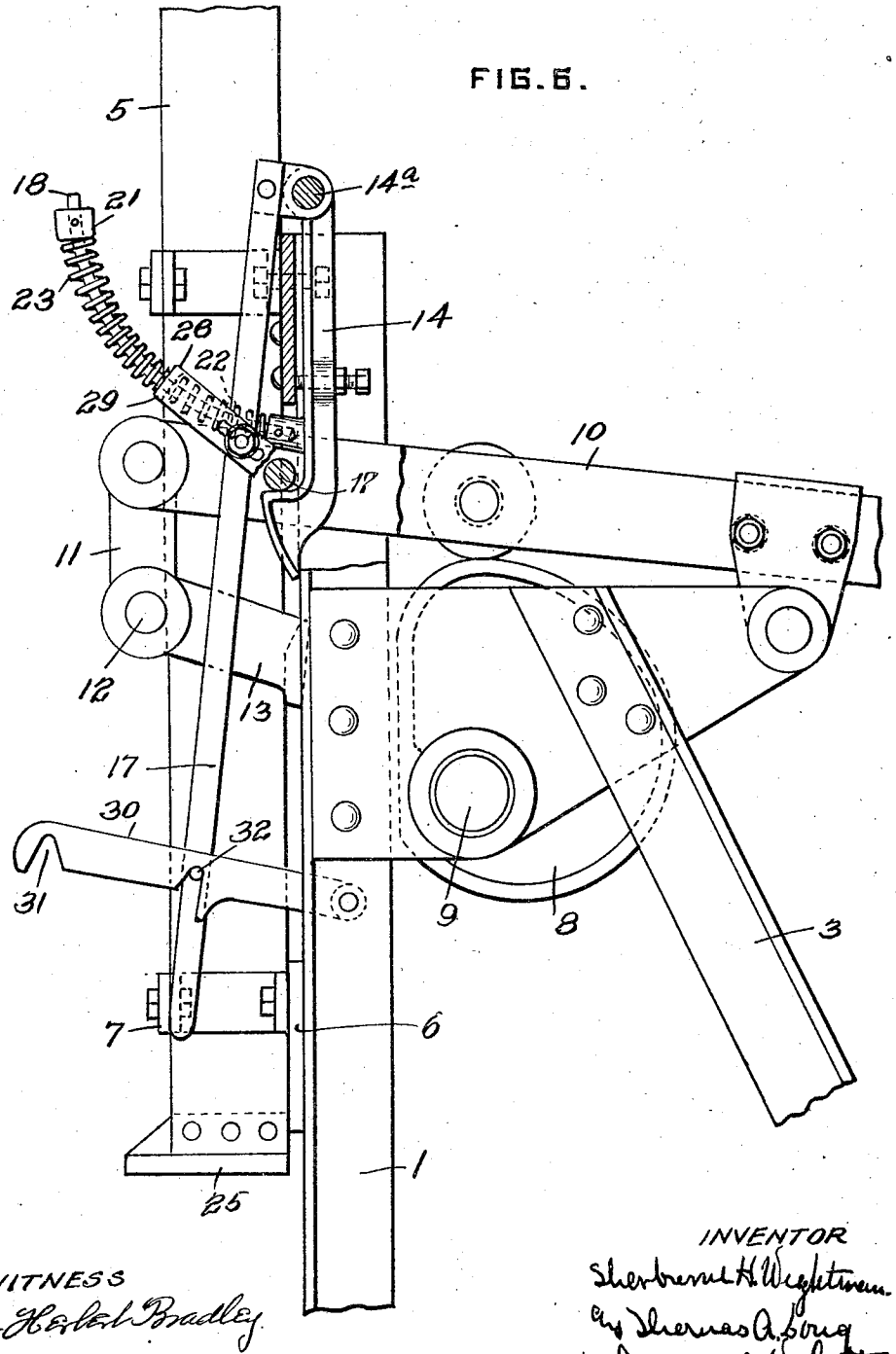
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FIG. 6.



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FIG. 7.

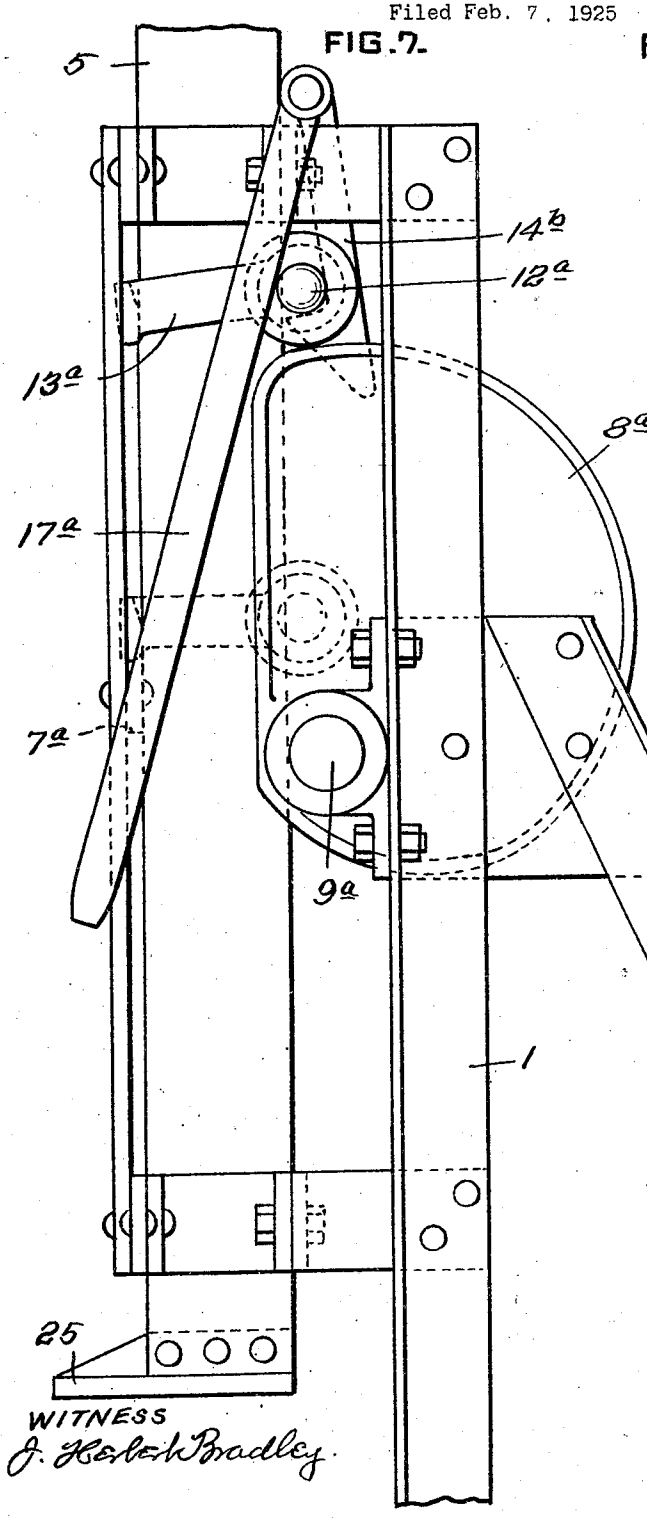
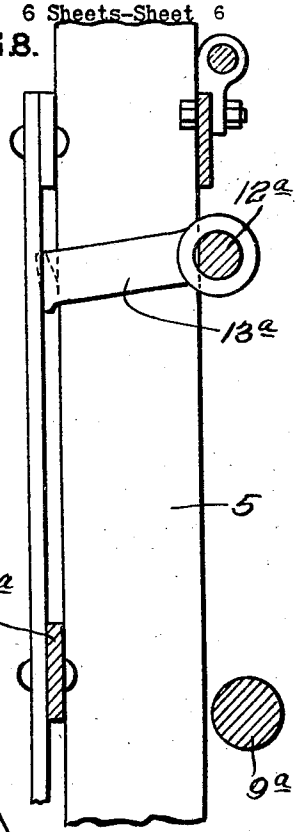


FIG. 8.



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UNITED STATES PATENT OFFICE.

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TAMPING MACHINE.

Application filed February 7, 1925. Serial No. 7,597.

The invention described herein relates to improved mechanism for tamping material as in the manufacture of cement blocks, etc., and has for its object a construction permitting the ready addition or removal of tamping bars in accordance with the area of the surface on which the tampers operate.

It is a further object of the invention to provide for the automatic shifting of the field in which the vertical movements of the tamping bars occur during the formation of one block without varying the stroke or length of movement of the mechanism operating the tamping members and the tamping bars themselves and the automatic return to the original field of movement at the beginning of the formation of a second block. The invention is hereinafter more fully described and claimed.

In the accompanying drawings forming a part of this specification, Fig. 1 is a front elevation of the mechanism described and claimed herein; Fig. 2 is a side elevation of the same; Fig. 3 is a side elevation on an enlarged scale of the tamper lifting mechanism; Fig. 4 is a detail view on an enlarged scale of the means employed for locking the tamper bars and their operating levers in raised or inoperative position; Fig. 5 is a sectional detail view, the plane of section being indicated by the line V—V, Fig. 1; Figs. 6 and 7 are elevations illustrating modified constructions; and Fig. 8 is a detail view illustrating relative positions of certain parts.

In the embodiment of the improvement shown herein the frame of the machine consists of vertically arranged angle bars 1, their lower ends secured to base beams 2 and the braces 3, said frame elements also being formed of angle bars. The base beams are suitably connected or tied together by suitably spaced plates 4, two of which are suitably located to support a hand operated mold mechanism preferably a mechanism such as described and claimed in an application filed under date of February 7, 1925, Serial Number 7,598 as indicated in dotted lines in Figs. 1 and 2.

The tamping bars 5 are laterally supported and guided by transverse plates 6 secured at their ends to the uprights 1, and bars 7 detachably secured to said plates, the bars 7 being spaced from the plates 6 distances dependent on the widths of the tamping members 5 as shown in Figs. 1, 2, and 5, and the tampers in the desired spaced relation by angularly shaped blocks 7^a secured to the bars 7, as shown in Fig. 5.

It is characteristic of the improvement shown herein that the means employed for raising the tamping bar has a constant stroke or range of movement, but provision is made whereby the lifting means can be connected to the tamper at different points along the latter and such connection released as the lifting means approaches the lower limit of its movement thus permitting the tampers to drop freely during the latter portion of their movement. A desirable construction of mechanism for the above purpose consists of a pair of cams 8 secured on a driven shaft 9 and levers 10 adapted to be raised by the cams and to drop freely. Links 11 have their upper ends loosely connected to the free ends of the levers and their lower ends have eyes for the reception of a shaft 12 extending across the line of tampers. Loops 13 which enclose the tamper bars and are loosely mounted on the shaft 12, are made of such lengths relative to the widths of the tamper bars that when the loops are in a horizontal or approximately horizontal position, the tamper bars will slide freely through them, but when the loops are moved to angular position relative to the tamper bars, as by raising the shaft 12, the bars will be gripped and be caused to move up with the levers 10. When the latter are allowed to move down, the tamping bars will move with them until the free ends of the loops are stopped by an abutment formed by the plate 6 secured at its ends to the uprights 1. This abutment is so located relative to the lower limit of movement of the levers that the shaft 12 will move down sufficiently far after the movement of the free ends of the loops are arrested to bring the latter to an approximately horizontal position or to such position that the tamper bars can continue their downward movement.

In order to prevent the operation of the tampers during the removal of a completed block and the readjustment of the molds for forming another block, suitable stop mechanism controlled by hand is employed. A suit-

able construction of lock consists of rods 14 secured at their upper ends to a shaft 14ª mounted in suitable bearings on the vertical uprights 1. At their lower ends these rods are provided with shoulders 15 adapted to pass under pins 16 on the levers 10 when the latter are adjacent to the upward limit of their movements. A handle 17 secured to the shaft 14ª is employed for shifting the swinging locking rod 14. A curved rod 18 has one end secured in a socket 19 on the swinging lock 14 and passes loosely through a lateral projection 20 on the handle 17 and between this boss or projection 20 and abutments 21 on the ends of the curved bar 18 are interposed springs 22—23. In the boss or projection 20 is arranged a spring actuated pin 24 adapted to engage holes or recesses 25 on a curved plate 26 secured to the frame of the machine. By shifting the handle 17 to the left in Fig. 3, the spring 23 will be compressed tending to force the curved rod 18 in a direction to force the shoulder 15 under the pin 16 and thereby prevent any downward movement of the lever. When it is desired to start the operation of the tampers, the handle 17 will be moved to the right compressing the spring 22 tending to force the swinging arm or rod to the right from under the pin 16. As it will be practically impossible for an operator to shift the handle 17 to release the tampers at the exact moment when the point of greatest eccentricity of the cam 8 is in contact with the lever 10 or its roller and unless release of the levers is effected at such time, the levers would drop and if the cam were not in the position stated, the levers would impart a blow to the surface of the cam which is undesirable. In order to ensure the release of the tampers when the point of greatest eccentricity of the cams is in contact with the levers, depressions or pockets 24 are formed in the shoulders 15 for the reception of the pins 16 so as to prevent the swinging locking rod 14 from being moved out by the spring 22 until the levers have been slightly raised to move the pins out of these depressions. This lifting of the levers to permit of the movement of the locking rods 14 can only be effected by the cams operating upon the levers. The extensions of the swinging locking rods below the shoulders 15 are curved so that if the handle 17 is moved to the left before the lever has reached the upward limit of its movement the locking rods can be pushed to one side on the upward movement of the pins until they are above the shoulders, when the spring 23 will snap the swinging locking rod to the left and under the pins 16.

In the operation of the machine the material is fed into the mold in fractional amounts and after the first fraction or part of the entire charge has been fed into the mold, the handle 17 will be moved to the right releasing the levers and when the cam has reached the proper position the levers and tampers will drop. During the first part of such downward movement the levers and tampers will move together until the free ends of the loops 13 strike against the abutment 6, thereafter the tampers will move independent of the levers. As the levers move up the clutches or loops 13 will engage the tampers and raise the same and during this movement an additional quantity will be fed into the mold. The levers and tampers will again drop, the clutch being released, but the tampers will not move down as far as during the first stroke, on account of the material having been charged into the mold, so that when the levers again move up, the clutches will engage the tamping bars at a point nearer the shoes than during the prior upward movement. Hence, it will be seen that although the material is being added between each stroke of the tampers, the latter are always raised the same distance, that is, the range of stroke of the tampers will always be the same but the vertical position of such range of movement will be changed and the tampers will be raised higher at each upward movement of the levers exactly proportional to the amount of material fed into the mold between strokes.

The manner of guiding and laterally supporting the tampers, as shown herein, will permit of the changing of the number of tampers as required by the size of the mold. By removing the holding bar 7, tampers can be added or removed, other holding bars 7 having suitably spaced blocks being substituted. As the shoes 25 of the tampers 28 are detachably connected to the lower end of the tamping bars, other shoes can be easily substituted therefor.

In order to prevent the accidental shifting of the handle 17 and the locking rods 14, a spring actuated pin 24 is so mounted in the boss or projection 20 on the handle 17 as to engage pockets in the quadrant bar 26 secured at one end to the frame of the machine, as shown in Fig. 4. As shown in Fig. 6, an arm 28 may be adjustably attached to the handle 17 and the curved bar passed through a toe 29 formed by turning over the outer end of the arm. In order to prevent the accidental shifting of the handle 17 and locking rod 14, an arm 30 provided with notches 31 is so pivotally mounted on the frame that a pin 32 on the handle will engage the notches in the arm in the different positions of the handle and locking rods.

In Figs. 7 and 8 is illustrated a modification of the construction shown in Figs. 1 to 6 inclusive. In lieu of transmitting movement from a cam to the tamping bars 5

through levers, provision is made whereby the lifting cams may operate directly on ring clutches 13ª which are similar in construction to those shown in Figs. 1 to 6, but are arranged in reverse positions, so that the shaft 12ª carrying the loop portions of the clutches extends along the inner edges of the tamping bars and between the tamping bars and the uprights 1. The shaft 9ª carrying the lifting cams 8ª is so arranged that the extended end portions of the clutch shaft 12ª will bear on the peripheries of the cams. The abutment whereby the downward movements of the loop portions of the clutches are arrested to release the tamping bars is formed by the bar 7ª, one of the elements employed for guiding the tamping bars. The swinging locking arm 14ᵇ is so arranged with reference to the path of movement of clutch shaft 12ª that it may be shifted into and out of engagement with said shaft by a handle 17ª.

We claim herein as our invention:

1. In a tamping machine the combination of a plurality of tamping bars operative by gravity to effect tamping of the material, means for lifting said bars and detachable means for connecting the bars to the lifting means.

2. In a tamping machine the combination of a plurality of tamping bars operative by gravity to effect tamping of the material, means for lifting said bars, a clutch for connecting the bars to the lifting means, and means for releasing the clutches to permit of the free downward movement of the tamping bars.

3. In a tamping machine the combination of a plurality of tamping bars operative by gravity to effect tamping of the material, clutches adapted to detachably engage the tamping bars, means for reciprocating the clutches and means for releasing the clutches from the bars during the downward movements of the bars.

4. In a tamping machine the combination of a plurality of tamping bars, clutches adapted to detachably engage the tamping bars, means having a constant range of movement for operating the clutches and means for releasing the clutches from the bars during the downward movement of the clutches.

5. In a tamping machine the combination of a plurality of tamping bars, means for lifting the said bars, means for locking said bars in their raised position, said means being operative only on a movement of the bars from locked position.

6. In a tamping machine the combination of a plurality of tamping bars, means for lifting the tamping bars, means for locking the bars in raised position, means including springs for shifting the lock to and from operative positions, and yieldingly holding the lock in such positions, and means for preventing the shifting of the lock from engagement with the bar prior to an upward movement of the tamping bars.

7. In a tamping machine the combination of a plurality of tamping bars, a lever, means for raising said lever and permitting the free downward movement thereof, clutches connecting the bars to the levers and means for shifting the clutches from engagement with the bars.

8. In a tamping machine the combination of a plurality of tamping bars, clutches adapted to detachably engage the bars, a cam for raising the clutch, swinging arms adapted to engage pins and support the bars in raised position, a lever for operating said arm, a spring adapted to shift the lever in a direction to disengage the arm from the pin, and means whereby the arm is held from movement by the spring prior to an upward movement of the pin.

9. In a tamping machine the combination of tamping bars, a plate extending transversely of the frame of the machine, and adapted to laterally support the tamping bars and an interchangeable bar, adapted to be detachably secured to said plate and form a complementary support and guide for the tamping bar, whereby the number of tamping bars may be increased or diminished.

In testimony whereof, we have hereunto set our hands.

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THOMAS A. LONG.