

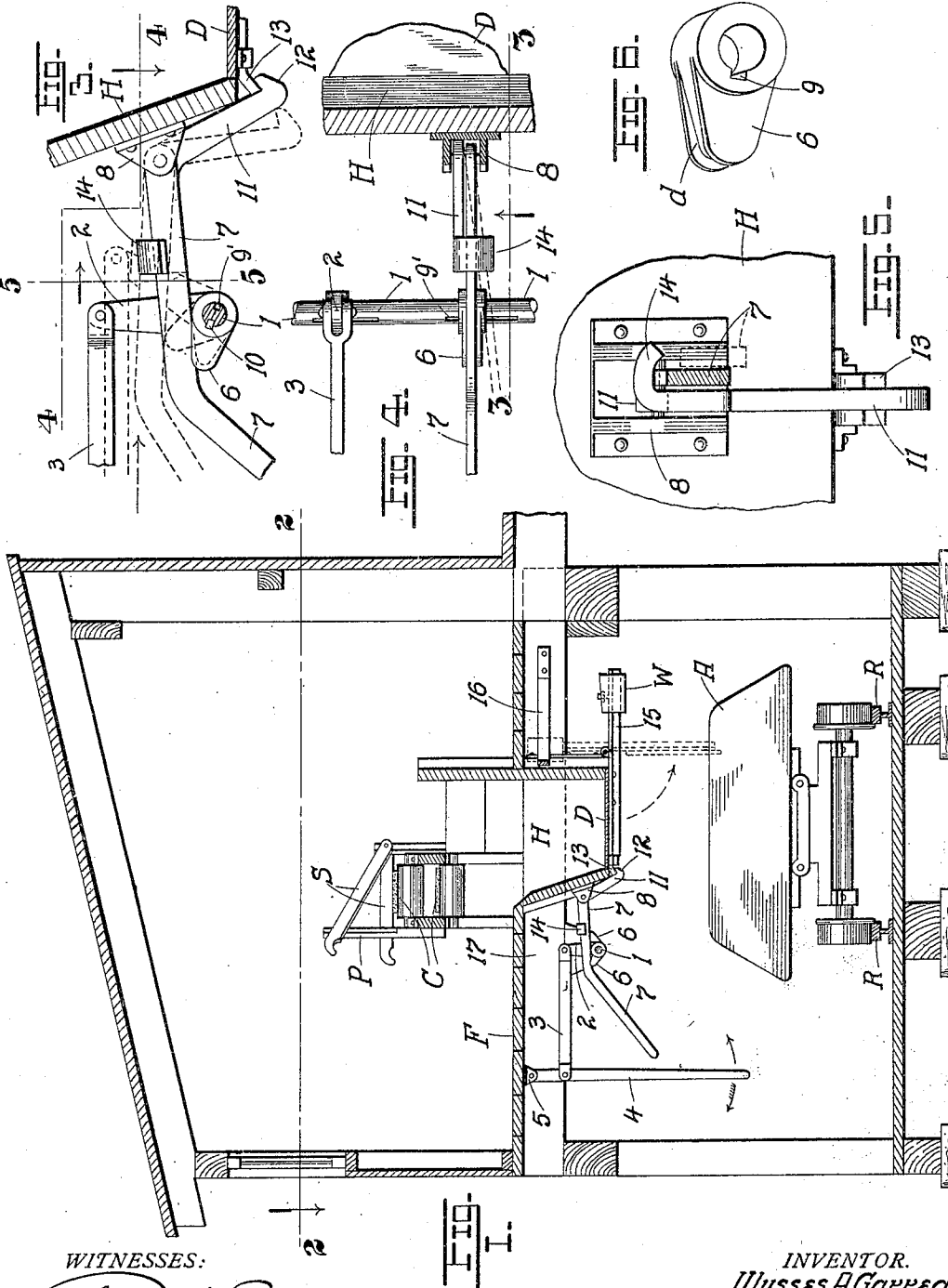
No. 836,679.

PATENTED NOV. 27, 1906.

U. A. GARRED.  
HOPPER OR BIN.

APPLICATION FILED APR. 12, 1906.

2 SHEETS—SHEET 1.



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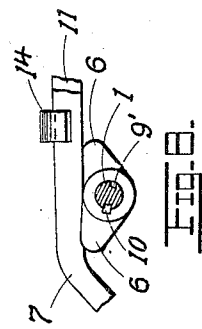
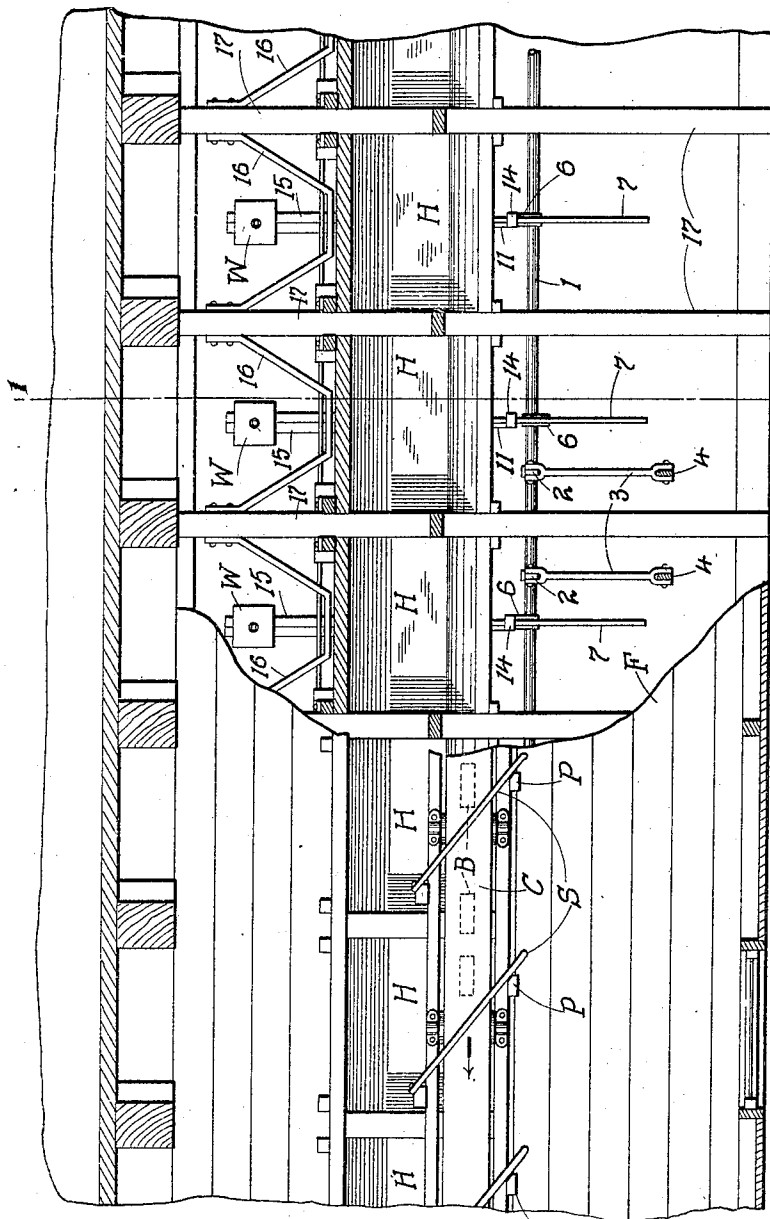


FIG. 2.

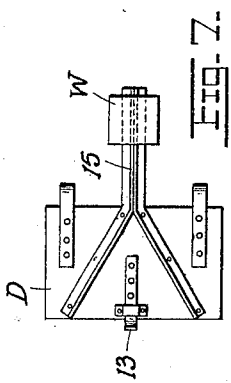


FIG. 7.

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# UNITED STATES PATENT OFFICE.

ULYSSES A. GARRED, OF ANACONDA, MONTANA.

## HOPPER OR BIN.

No. 836,679.

Specification of Letters Patent.

Patented Nov. 27, 1906.

Application filed April 12, 1906. Serial No. 311,341.

*To all whom it may concern:*

Be it known that I, ULYSSES A. GARRED, a citizen of the United States, residing at Anaconda, in the county of Deerlodge and State of Montana, have invented certain new and useful Improvements in Hoppers or Bins, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention has relation to improvements in dumping apparatus for briquets; and it consists in the novel construction and arrangement of parts more fully set forth in the specification and pointed out in the claims.

In the drawings, Figure 1 is a vertical transverse section on line 1 1 of Fig. 2, showing the disposition of the hoppers and dumping apparatus therefor. Fig. 2 is a horizontal section on line 2 2 of Fig. 1. Fig. 3 is an enlarged vertical sectional detail on line 3 3 of Fig. 4, showing the operation of the lifting-cams for raising the tripping-levers. Fig. 4 is a horizontal section on line 4 4 of Fig. 3. Fig. 5 is a vertical cross-section on line 5 5 of Fig. 3. Fig. 6 is a perspective of one of the lifting-cams. Fig. 7 is a detail bottom plan view of the swinging door or gate for the hopper, and Fig. 8 is a sectional detail showing the cams on the rock-shaft disposed in opposite directions from its axis of rotation.

The present invention has its application in the loading-section of a briquet plant, (though, as presently to be seen, it may be used for the dumping and loading of any material whatsoever,) and has for its object to provide a ready and easy means of loading into cars the briquets delivered to the hoppers from the belt conveyers operating in connection with the machines by which the briquets are manufactured. The hoppers are arranged in series directly over the track on which the cars are run; and the object of the invention is to provide suitable mechanism which will permit the dumping of any predetermined number of hoppers at one time or all the hoppers at the same time or each alternate hopper while the others may be filling, so that a continuous stream of briquets is constantly being delivered to at least one portion of the hoppers as fast as the remaining portion is being emptied.

A further object is to accomplish the several results contemplated by the present invention by the simplest possible mechanism, one containing a few number of parts, one

which shall be positive in its action, reliable, one least likely to get out of order, and one possessing further and other advantages better apparent from a detailed description of the invention, which is as follows:

Referring to the drawings, H represents a series of hoppers having a front inclined wall and a rear vertical wall, the discharge-mouth of each being closed by a swinging gate or door D, hinged to the rear wall. Traveling over the series of hoppers is a conveyer-belt C, which conducts the finished bricks B from the briquet-machines, (not shown,) the bricks being discharged from the edge of the belt into any hopper by any mechanism suitable for the purpose, but preferably by a series of scrapers S, hinged beyond the inner edge of the belt and adapted to swing diagonally across the belt. When swung down upon the belt, the diagonal disposition of the scraper will deflect the briquets and cause them to fall over the edge of the belt into the hopper. When the hopper is full, the scraper is lifted, its free end being supported on the post P along the opposite edge of the belt. To fill the successive hoppers, the scrapers are dropped from the end adjacent to the driving-motor, (not shown,) which in Fig. 2 would be at a point in continuation of the left-hand end of the drawing. The mechanism just described, however, does not constitute any portion of the immediate subject-matter of the present invention and may be dismissed with the general reference herein made thereto.

The invention constituting the dumping apparatus proper may be described as follows: Disposed in front of the series of hoppers H is a longitudinal rock-shaft 1, from the medial portion of which (on each side of the center thereof) project the arms 2 2, to whose ends are coupled the adjacent ends of the links 3 3, the opposite ends of said links being connected with the main operating-levers 4 4, depending from the brackets 5, secured to the floor F. Keyed to the rock-shaft 1 in front of each hopper H is a cam or rocker-arm 6, whose specific construction is best illustrated in Fig. 6, each cam having a central depression *d*, which receives the rear portion of the bent tripping-lever 7, pivoted at one end to a bracket 8, carried by the sloping wall of the hopper. The hub of the cam or rocker-arm 6 is provided with a groove 9, which may be swung to register with a corresponding groove 9' on the rock-shaft to receive a suit-

able key 10, and thus secure the cam to the shaft. The grooves 9' on the shaft are diametrically opposite one another, so that the cams may be keyed to the shaft to extend in one direction or a direction diametrically opposite thereto, the particular direction availed of depending, as presently to be seen, on the order in which the several hoppers are to be dumped. Pivoted likewise within the bracket 8, adjacent the lever 7, is a bell-crank latch-lever 11, the free end of whose depending arm terminates in a catch 12, adapted to engage with the bent lip 13 at the free edge of the swinging door or gate D, the end of the horizontal arm of said latch-lever terminating in a hook 14, which overhangs and encompasses the upper edge of the tripping-lever 7, Figs. 3-5. Should the hopper be full and the door D thereof be released from its catch 12, the weight of the contents of the hopper will swing the door open and drop into the car A, resting on the rails R immediately beneath the hopper. Once the hopper is emptied the adjustable balance-weight W, carried by the centrally-disposed and rearwardly-extending arm 15 of the door, will swing the door to its closed position, the lip 13 automatically locking with the catch 12 of the latch-lever 11, which when released is so weighted as to swing its catch-arm toward the hopper. In the dumping of the hopper contents (in which case the door opens to a substantially vertical position) the weight W is cushioned by striking the metal buffers 16, which are in the shape of V-shaped straps with ends secured to the joists 17, the medial portions or bases of the buffers being slightly spaced from the rear wooden walls of the hoppers, so that the weights in striking the buffers may not thump against said walls.

The operation of the apparatus may be described as follows: In order to release any given gate D, the operator simply lifts the lever 7 sufficiently to engage the hook 14 of the latch 11, this action serving to swing the catch 12 out of engagement with the lip 13 and release the gate. On the other hand, suppose it is desirable to release all the gates simultaneously or collectively. In that event all the cams 6 are set in the same direction—that is, pointing one way from the axis of the rock-shaft 1, Fig. 3. The operator then seizes the levers 4, throwing or oscillating them in the proper direction to rock the shaft 1 in a direction to raise or oscillate upwardly the cams 6, the raising of the cams lifting the series of levers 7, and thus releasing the entire series of gates, Fig. 3. Fig. 3 shows the cams directed from the hoppers H; but the same result would follow were the cams directed toward the hoppers, except that with Fig. 3 the levers 4 are oscillated in the direction of the plain arrow shown in Fig. 1, and were the cams directed

toward the hoppers the oscillation of the levers 4 would have to be in the opposite direction or that shown by the feathered arrow in Fig. 1. Again, suppose it is desirable to dump an alternate series of hoppers without disturbing for the time being the intermediate series. In that event every other cam would be directed on the rock-shaft outwardly or away from the hoppers, the intermediate cams being directed toward the hoppers, Fig. 2, so that by rocking the shaft 1 in one direction one alternate series of hoppers would be dumped by the release of their doors or gates while the remaining series were filling, and by rocking the shaft in the opposite direction the other alternate series could be dumped while the first series was filling, the cars A being positioned under the hoppers that are dumping. Finally, should it be desirable to leave any hopper unaffected or undisturbed by the rotation of the rock-shaft the operator may lift the tripping-lever 7 out of the depression *d* of the cam and by a slight lateral movement allow the lever to rest on the shaft, when the rocking of the shaft will in no wise disturb the tripping-lever. This is illustrated in Figs. 4 and 5. The upper edge of the lever 7 is spaced from the hook 14 sufficiently to permit the raising of the lever out of its depression *d* on the cam 6; this raising not affecting nor tripping the latch 11, of which the hook forms a part. Then by a slight lateral movement (the lever being loose on its pivotal pin) the lever may be dropped on the shaft, where the rocking or rotation of the latter cannot disturb the lever.

Having described my invention, what I claim is—

1. In a dumping apparatus, a series of hoppers for receiving the material to be dumped, a discharging-door for each hopper, means for retaining said doors in a closed position, a rock-shaft disposed in proximity to the hoppers, and suitable independently-controllable pivoted levers extending across the shaft for actuating the retaining means and releasing the doors, upon, or independently of any movement of the rock-shaft, substantially as set forth.

2. In a dumping apparatus, a series of hoppers for receiving the material to be dumped, a discharging-door for each hopper, means for retaining the doors in a closed position, a rock-shaft disposed in proximity to the hoppers, and suitable independently-controllable pivoted levers extending across the shaft for actuating the retaining means and releasing any door of the series upon, or independently of any movement of the rock-shaft, substantially as set forth.

3. In a dumping apparatus, a series of hoppers for receiving the material to be dumped, a discharging-door for each hopper, means for retaining said doors in a closed position, a

rock-shaft disposed in proximity to the hoppers, and suitable independently-controllable pivoted levers extending across the shaft for actuating the retaining means and releasing the doors upon the rocking of the shaft in one direction, each of said doors being capable of release upon the oscillation of a lever independently of any movement of the rock-shaft, substantially as set forth.

4. In a dumping apparatus, a series of hoppers for receiving the material to be dumped, a discharging-door for each hopper, means for retaining said doors in a closed position, a rock-shaft disposed in proximity to the hoppers, devices coöperatively interposed between the rock-shaft and said retaining means for actuating a portion of the latter and releasing a corresponding number of doors upon the rocking of the rock-shaft in one direction, and a second set of devices for actuating another portion of the retaining means and releasing a corresponding number of doors upon a rocking of the rock-shaft in the opposite direction, substantially as set forth.

5. In a dumping apparatus, a series of hoppers for receiving the material to be dumped, a discharging-door for each hopper, a latch for each door, a rock-shaft disposed in proximity to the hoppers, suitable tripping devices for disengaging the latches from the doors and means on the rock-shaft adapted to be coöperatively coupled to the tripping devices for actuating the latter, substantially as set forth.

6. In a dumping apparatus, a series of hoppers for receiving the material to be dumped, a discharging-door for each hopper, a latch for each door, a rock-shaft disposed in proximity to the hoppers, and suitable tripping devices for disengaging the latches from the doors upon the rocking of the shaft in one direction, substantially as set forth.

7. In a dumping apparatus, a series of hoppers for receiving the material to be dumped, a discharging-door for each hopper, a latch for each door, a rock-shaft disposed in proximity to the hoppers, suitable tripping devices for disengaging a portion of the latches from their respective doors upon the rocking of the shaft in one direction, and a second set of tripping devices for disengaging another portion upon the rocking of the shaft in the opposite direction, substantially as set forth.

8. In a dumping apparatus, a series of hoppers for receiving the material to be dumped, a discharging-door for each hopper, a latch for each door, a rock-shaft disposed in proximity to the hoppers, a series of tripping-levers coöperatively positioned relatively to the

latches, and suitable rocker-arms or cams on the shaft for operating the tripping-levers and disengaging the latches for a rocking of the shaft in proper direction, substantially as set forth.

9. In a dumping apparatus, a series of hoppers for receiving the material to be dumped, a discharging-door for each hopper, a latch for each door, a rock-shaft disposed in proximity to the hoppers, a series of tripping-levers coöperatively positioned relatively to the latches, and suitable rocker-arms or cams capable of disposition on the shaft in opposite directions from the axis thereof whereby upon the rocking of the shaft in either direction a portion of the levers are tripped by the cams directed to effect engagement therewith, and their corresponding latches disengaged from their doors, substantially as set forth.

10. In a dumping apparatus, a suitable hopper, a discharging-door for the same, a latch for the door, a pivoted tripping-lever for disengaging the latch from the door upon a sufficient oscillation of the lever, a rocker-arm or cam having a depression for receiving and supporting the tripping-lever, the latter having a limited movement sufficient to permit its disengagement from the depression of the cam without actuating the latch, substantially as set forth.

11. In a dumping apparatus, a suitable hopper, a hinged door at the bottom thereof, a vertically-oscillating bell-crank latch-lever pivoted to the hopper-wall and having a terminal latch at the end of the depending arm thereof for engaging the free edge of the door, a tripping-lever oscillating in a vertical plane and pivoted at one end adjacent to the axis of oscillation of the latch-lever, a hook terminating the upper arm of the latch-lever and overhanging the upper edge of the tripping-lever, a rock-shaft, a rocker-arm or cam having a suitable depression for receiving and supporting the tripping-lever at a suitable distance from the pivotal connection of the latter, whereby upon rotation of the rock-shaft in proper direction the cam is oscillated sufficiently to elevate the tripping-lever to engage the hook of the latch-lever and disengage the catch of the latter from the door, the latch-lever being capable of operation by an independent lifting of the tripping-lever without rotation of the rock-shaft, substantially as set forth.

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

ULYSSES A. GARRED.

Witnesses:

MARTIN MARTIN,  
WM. WRAITH.