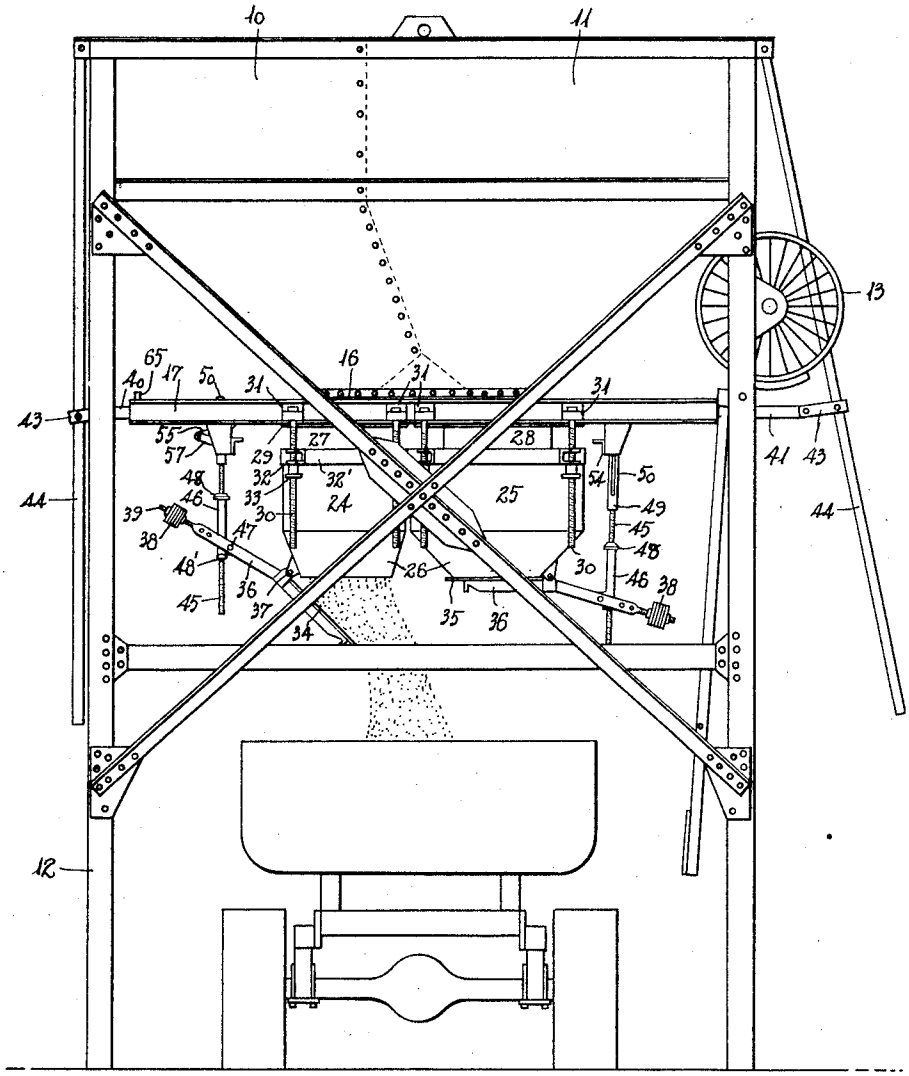
Aug. 6, 1929. J. GWYNNE ET AL 1,723,234

BATCHER

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FIG. 1.



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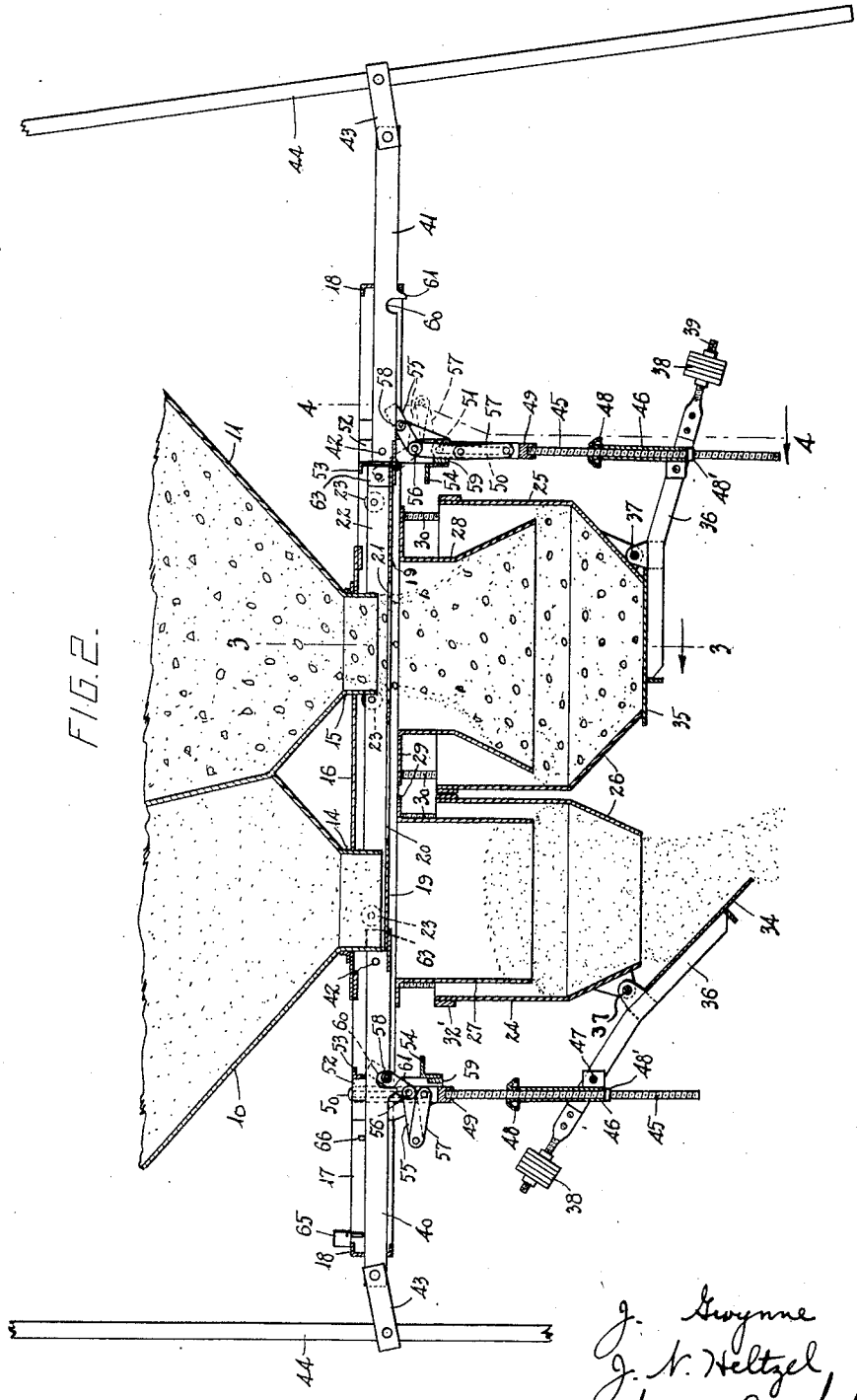


FIG. 2.

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FIG. 3.

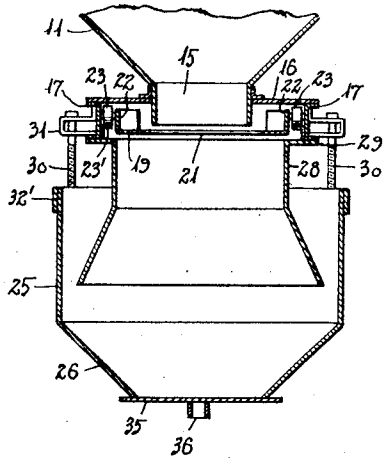


FIG. 4.

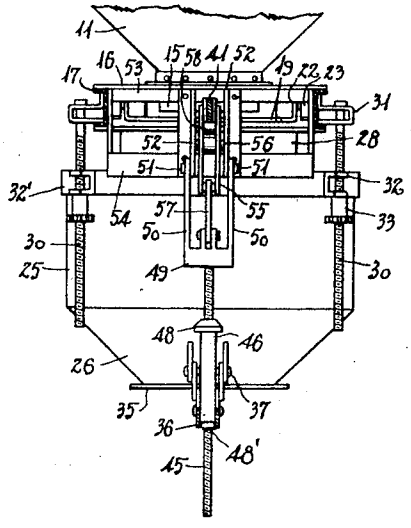
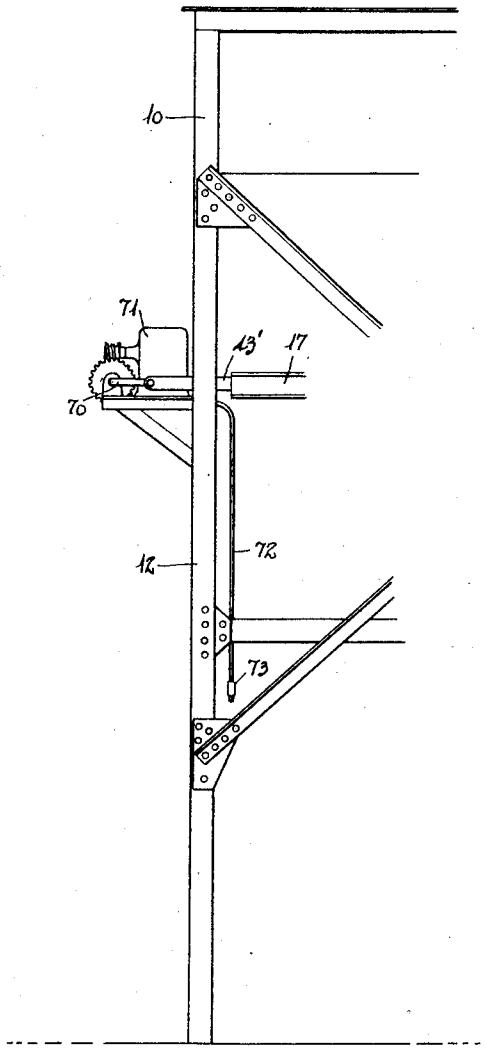


FIG. 5.



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UNITED STATES PATENT OFFICE.

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BATCHER.

Application filed February 4, 1926. Serial No. 85,989.

The present invention relates to measuring and dispensing devices, and aims to provide a novel and improved device of that kind for measuring and dispensing sand, crushed stone, or similar materials, the device being particularly intended for proportioning the aggregates for concrete construction, by dispensing the batches of sand and stone, although the device may be used for other purposes for which it is appropriate.

It is an object of the invention to provide novel adjustable means for measuring the materials so as to discharge predetermined batches thereof.

Another object of the invention is the provision of novel gates or valves for controlling the filling of the measuring chambers and the discharge of the materials therefrom.

A further object is the provision of novel and improved means for operating and controlling the gates or valves in a convenient and efficient manner, and, a still further object in this connection is the provision of such gates or valves and controlling mechanism therefor whereby the filling and emptying of the measuring chambers may be alternated to facilitate the operation.

A still further object is to provide means whereby the batcher and storage bins or hoppers may be vibrated or agitated so as to facilitate the flow of materials from the storage bins into the measuring chambers, thereby preventing the materials from arching or bridging and also compacting the materials in the measuring chambers, to compensate for bulking, to eliminate voids, and to provide uniformity of quantities measured.

With the foregoing and other objects in view, which will be apparent as the description proceeds, the invention resides in the construction and arrangement of parts, as hereinafter described and claimed, it being understood that changes can be made within the scope of what is claimed, without departing from the spirit of the invention.

The invention is illustrated in the accompanying drawings, wherein:—

Figure 1 is an elevation of the improved batcher.

Fig. 2 is an enlarged median vertical section through the measuring chambers and lower portions of the bins or hoppers, showing portions in elevation.

Figs. 3 and 4 are sections on the respective lines 3—3 and 4—4 of Fig. 2.

Fig. 5 is a fragmentary elevation of the batcher illustrating the use of an electric motor for operating the gates.

The bins or hoppers 10 and 11 for the sand and crushed stone, respectively, or other materials for which the batcher is intended, are mounted in a structural supporting frame 12, and said hoppers are built together with a partition between them. The structure is rendered portable by ground wheels 13 carried by the frame 12, as disclosed in the copending application Serial No. 65,357, filed October 28, 1925.

The hoppers 10 and 11 have the depending discharge spouts 14 and 15, and the measuring and dispensing chambers are suspended below said spouts. Thus, a horizontal plate 16, through which the spouts 14 and 15 extend, is secured to said spouts and the hoppers, and parallel beams 17 are secured to opposite edge portions of the plate 16 and are connected at their opposite ends by the cross members 18, thus providing a frame surrounding the spouts 14 and 15.

A double slide gate or valve 19 is slidable in the frame 17—18 immediately below the spouts 14 and 15, and has the openings 20 and 21 to register alternately with the respective spouts 14 and 15. Thus, referring to Fig. 2, when the gate 19 is moved to the right it closes the spout 14 and the opening 21 registers with the spout 15 for the flow of crushed stone through the spout 15 and opening 21. When the gate 19 is moved toward the left it closes the spout 15 and the opening 20 registers with the spout 14 for the discharge of sand from the hopper or bin 10. The gate 19 comprises a plate of sheet metal, and has upturned flanges 22 along its side edges carrying rollers or wheels 23 that are movable on rails 23′ secured to the beams 17, thus mounting the gate 19 for free reciprocatory movement in the frame below the spouts of the hoppers.

The sand and stone measuring chambers 24 and 25, respectively, are disposed below the spouts 14 and 15, respectively, and their lower portions are tapered, as at 26, to the lower discharge openings of said chambers, the chambers being open at the top. Throat members 27 and 28 depend within the chambers 24 and 25, respectively, and are sus-

pended from the frame, said members having flanges 29 at their upper edges secured to the beams 17 of the frame. As shown, the member 27 is cylindrical, while the member 28 is cylindrical at its upper end and its lower portion is flared because the chamber 25 is of larger diameter than the chamber 24.

The chambers 24 and 25 are adjustably supported from the frame in order that the batches of sand and stone may be regulated according to the proportions desired. Thus, hanger rods 30 are suspended from brackets 31 secured to the outer sides of the beams 17, and extend through brackets 32 carried by bands 32′ secured to the upper edge portions of the chambers. As shown, the rods 30 are screws engaging downwardly through the brackets 31 and having heads at their upper ends seating on said brackets 31. The brackets 32 are slidable on the rods 30 in order that the chambers may be raised and lowered, and nuts 33 are threaded on the rods to support the chambers in different vertical positions, the brackets 32 seating on said nuts. Thus, by adjusting the chambers upwardly and downwardly the batches measured and delivered thereby will be decreased and increased in volume, respectively.

The double slide gate 19 moves between the spouts 14 and 15 and the throat members 27 and 28, to control the flow of materials from the hoppers into the measuring chambers alternately.

The discharge of the materials from the measuring chambers is controlled by gates 34 and 35, respectively, which are secured on levers 36 fulcrumed, as at 37, to the chambers 24 and 25. The fulcrums 37 are located at opposite sides of the chambers so that the materials from both chambers are directed downwardly in substantially the same vertical line. The levers 36 have weights 38 at their outer arms opposite to the gates 34 and 35, respectively, which are shown as screw-threaded on the tail screws 39 of said levers, in order that the weights may be adjusted to regulate the pressure on the gates tending to close them. The weights 38 tend to swing the levers 36 so as to seat the gates 34 and 35 upwardly against the lower edges of the chambers 24 and 25, respectively, across the discharge openings of said chambers.

In order to operate the gates, bars 40 and 41 are pivotally connected, as at 42, to the opposite ends of the gate 19 and pass slidably through the cross members 18, and the outer ends of the bars 40 and 41 are connected by links 43 with depending levers 44 that are fulcrumed at their upper ends to the hoppers or frame 12, as seen in Fig. 1. As shown, there are two levers 44 located at opposite sides of the frame, in order that the gates may be operated from either side, although a single lever will suffice if desired. By swinging either lever 44, the gate 19 is readily reciprocated.

The operation of the discharge gates 34 and 35 is controlled by the movement of the gate 19. For this purpose, vertical screws 45 are located at opposite sides of the measuring chambers, and sleeves 46 are slidable loosely on said screws and are pivoted, as at 47, to the arms of the levers 36 having the weights 38. Upper and lower nuts 48 and 48′ are adjustable on the screws or rods 45 at the upper and lower ends of the sleeves 46, so that said sleeves are confined between said nuts, thereby causing the sleeves to move upwardly and downwardly with the screws or rods. The nuts 48 and 48′ may be adjusted upwardly and downwardly on the screws to adjust the sleeves on the screws, according to the vertical adjustments of the measuring chambers on the rods 30. The upper ends of the screws 45 are secured to cross heads 49 which have upwardly extending slotted arms 50 slidably engaging studs or pins 51 on the opposite sides of pairs of vertical flanges 52 or members carried by cross angle irons or members 53 and 54 connected to the beams 17, thereby guiding the heads 49 and upper terminals of the screws 45 for up and down movement, with the arms 50 located at the opposite sides of the flanges or members 52. Levers 55 are fulcrumed, as at 56, between the flanges 52 immediately below the bars 40 and 41, and their lower arms are connected by links 57 with the heads 49, thereby providing toggles. Rollers 58 are carried by the upper arms of the toggle levers 55 below the bars 40 and 41, and said upper arms of the levers are bifurcated so as to straddle the bars 40 and 41 from below. The cross members 54 have seats 59 against which the toggles seat when they are straightened out and moved slightly beyond straight line position, as seen at the right in Fig. 2. The toggles are controlled by the bars 40 and 41 which have notches 60 in their lower edges to receive the rollers 58, and said bars have abutments 61 at those edges of the notches farthest from the gate 19, to contact with the rollers 58.

In order to jar or vibrate the storage bins and batcher, weights 63 are carried by the ends of the gate 19 and are adapted to strike the angle irons or cross members 53 at the opposite limits of movement of the gate 19, to shake the structure.

The number of batches is recorded by means of a suitable recorder 65 mounted at any suitable point on the frame and operated by one of the moving parts. As shown the recorder 65 is operated by an abutment or lug 66 on the bar 40.

It will be noted that with the exception of the levers 44, the device is attached to and suspended from the hoppers or bins, and the device may be used on different hoppers or

bins. The frame 12 supports the hoppers and batcher so that a truck may be backed or run under the batcher to receive the materials, although the materials may be received from the measuring chambers in any suitable receptacle.

In operation, supposing that the gate 19 is slid toward the right, as seen in Fig. 2, so as to close the spout 14 and open the spout 15. This will cut off the chamber 24 from the hopper or bin 10, and the chamber 25 which was previously emptied will be filled by the flow of stone from the hopper 11 through the spout 15 and throat member 28 into the chamber 25. When the gate 19 reaches the end of its movement toward the right, the right hand weights 63 contact with the right hand angle iron 53, so as to jar the storage hoppers and prevent arching or bridging of the materials over the spouts. During the movement of the cut-off filling gate 19 toward the right, as aforesaid, the gates 34 and 35 are controlled automatically to release the gate 34 and close the gate 35. Thus, as the bar 41 moves toward the right, the right hand lever 55 will be swung from the dotted line position to the full line position, as seen in Fig. 2, thereby straightening out the toggle downwardly, and the lever 55 is swung to move the toggle slightly beyond straight line position, thereby locking the right side screw 45 and head 49 against upward movement. The right side nut 48 and sleeve 46 therefore move downwardly to close the gate 35 and lock it in closed position during the filling of the chamber 25. The bar 40 moving toward the right will result in the abutment 61 thereof contacting with the roller 58 of the left hand lever 55, and swinging said lever to the position shown in Fig. 2, thereby breaking the toggle by swinging or moving same away from the seat 59. The left side nut 48′ and screw 45 are therefore moved upwardly to swing the gate 34 open downwardly assisted by the weight of the sand or material bearing on the gate 34. As soon as the sand has been discharged from the chamber 24, and the chamber 25 has been filled, the gate 19 is reversed by moving it toward the left, as seen in Fig. 2, which will cut off the chamber 25 from the hopper 11 and bring the chamber 24 into communication with the hopper 10 through the opening 20 of the gate 19. When the gate 19 reaches the end of its movement toward the left, the weights at the left end of the gate 19 will contact with the left hand angle iron 53, to jar the storage hoppers and loosen the materials therein, to prevent the materials arching or bridging. When the gate 19 is moved toward the left the roller 58 of the left hand lever 55 being in the notch 60 of the bar 40, will result in said lever 55 being swung counter clockwise, as seen in Fig. 2, thereby straightening out the toggle and moving the left side screw 45 and sleeve 46 downwardly. The left hand toggle is therefore moved to and slightly beyond straight line position, so that the gate 34 is thereby locked in closed position so as to support the sand in the chamber 24 during the filling of said chamber. The notch 60 of the bar 40 moves to the left beyond the roller 58 of the left hand lever 55, just the same as the notch 60 of the bar 41 is moved to the right of the right hand lever 55, as seen in Fig. 2, thus preventing the gate 34 from being unlocked until the gate 19 is moved to its right hand position. During the movement of the gate 19 toward the left, the abutment 61 of the bar 41 contacts with the roller 58 of the right hand lever 55, thereby swinging said lever from the full line position to the dotted line position, as seen in Fig. 2, and breaking the toggle and moving the right side screw 45 and sleeve 46 upwardly, to swing the gate 35 open, assisted by the downward pressure of the stone in the chamber 25 on the gate 35, permitting the discharge of the stone from said chamber 25. As soon as the chamber 25 has been emptied and the chamber 24 filled, the gate 19 is moved toward the right to close the gate 35 and thereby repeat the operation as above described.

The batcher thus enables the materials to be readily measured and discharged. Thus, a driver of a truck may run or back the truck under the batcher, and by moving either lever 44 one chamber is emptied into the truck, and either lever 44 may then be operated so that the other chamber is emptied into the truck. This may be repeated when more than one batch may be carried by the truck. The driver of the truck may therefore operate the batcher without requiring a special attendant for the batcher, and the loading of the trucks is facilitated to save time and expense.

Fig. 5 illustrates how an electric motor may be used for operating the batcher. Thus, the gate 19 is connected by a link 43′ with the crank 70 of a shaft geared to an electric motor 71 supported by the frame 12, whereby the motor may be operated for reversing the gate 19, the same as accomplished by the levers 44. A flexible cord 72 may be suspended at any suitable point within the frame 12 with a push button switch 73 that may be conveniently operated by the driver of a truck for starting and stopping the motor at will. This enables the truck driver to conveniently operate the batcher without manual effort, the power being supplied by the electric motor so as to operate the batcher quickly. The part 71 may also be taken to represent an engine, and the part 72 the control of a clutch for connecting the engine with the gate 19, it being apparent that the batcher may be

operated by an engine using a suitable operative connection between them including a clutch for making and breaking the connection.

Having thus described the invention, what is claimed as new is:—

1. A batcher comprising the combination with a hopper having a discharge portion, of a measuring chamber connected to and suspended and spaced from said discharge portion, a cut off filling gate movable in the space between said discharge portion and chamber and having upturned flanges at opposite sides of the discharge portion, and a lower discharge gate for said chamber operatively connected to the filling gate to operate simultaneously therewith.

2. A batcher comprising the combination with a hopper having a discharge portion and a frame secured to and supported by said discharge portion, of a measuring chamber suspended from said frame, a cut off filling gate movable in said frame between the hopper and chamber and having upturned flanges at opposite sides of said discharge portion, and a lower discharge gate for said chamber operably connected with the filling gate.

3. A batcher comprising a measuring chamber, an upper cut off filling gate for said chamber, a lower downwardly opening discharging gate for said chamber, and an operative connection between said gates including a toggle arranged to be straightened out when the filling gate is opened so as to lock the discharge gate in closed position and to be broken when the filling gate is closed so as to unlock the discharge gate.

4. A batcher comprising a measuring chamber, an upper cut off filling gate for said chamber, a lower discharge gate for said chamber, and an operative connection between said gates including a toggle arranged to be straightened out and broken when the filling gate is opened and closed, respectively, to lock the discharge gate in closed position and unlock it.

5. A batcher comprising a measuring chamber, an upper cut off filling slide gate for said chamber, a lower swinging discharge gate for said chamber adapted to swing open downwardly, and an operative connection between said gates including a toggle arranged to be straightened out and broken for locking the discharge gate in closed position and unlocking it, respectively, when the filling gate is opened and closed.

6. A batcher comprising a measuring chamber, an upper cut off filling slide gate for said chamber, a lower swinging discharge gate for said chamber, a toggle operatively connected with the discharge gate to be straightened out and broken for locking the discharge gate in closed position and unlocking it, respectively, and cooperable means between said toggle and filling gate for straightening out and breaking the toggle when the filling gate is opened and closed, respectively.

7. A batcher comprising a measuring chamber, an upper cut off filling gate for said chamber, a lower discharge gate for said chamber, a toggle operatively connected with the discharge gate and including a lever, and means operable with the filling gate for swinging said lever to straighten out and break said toggle so as to lock the discharge gate in closed position and unlock it, respectively.

8. A batcher comprising a measuring chamber, an upper cut off filling gate for said chamber, a lower discharge gate for said chamber, a toggle, an operative connection between said toggle and discharge gate, and cooperating means between the toggle and filling gate for straightening out and breaking the toggle when the filling gate is opened and closed, respectively.

9. A batcher comprising a measuring chamber, an upper cut off filling gate for said chamber, a lower swinging discharge gate for said chamber, a sleeve pivotally connected with the discharge gate, a toggle, a member slidable in the sleeve and connected with the toggle and having portions thereon to contact with said sleeve, and means for straightening out and breaking the toggle when the filling gate is opened and closed, respectively, said toggle being arranged when straightened out to lock the discharge gate in closed position.

10. A batcher comprising a measuring chamber, an upper cut off filling gate for said chamber, a lower discharge gate for said chamber, a lever carrying the discharge gate, a sleeve pivotally connected with said lever, a toggle, a rod connected to the toggle and extending through said sleeve and guided for sliding movement adjacent to said toggle, members on said rod to contact with said sleeve, said toggle including a lever, and means movable with the filling gate and cooperable with said lever for swinging the lever to straighten out and break the toggle when the filling gate is opened and closed, respectively, said toggle being arranged when straightened out to lock the discharge gate in closed position.

11. A batcher comprising a hopper, a vertically adjustable measuring chamber below said hopper, a cut off filling gate between said hopper and chamber, a lower downwardly opening discharge gate for said chamber and adjustable vertically therewith, a vertical rod, a sleeve slidable on the rod and operably connected to the discharge gate, adjustable members on the rod to contact with said sleeve, and an operative connection between said rod and filling gate

for moving the rod downwardly and upwardly to hold the discharge gate closed when the filling gate is opened and to open the discharge gate when the filling gate is closed.

12. A batcher comprising a hopper, a vertically adjustable measuring chamber below said hopper, a cut off filling gate between said hopper and chamber, a lever carried by said chamber, a lower discharge gate for said chamber carried by said lever, a toggle, a rod connected with said toggle and extending vertically, a sleeve pivotally connected with said lever and slidable on the rod, nuts threaded on said rod at the ends of said sleeve, and an operative connection between said toggle and filling gate for straightening out and breaking the toggle when the filling gate is opened and closed, respectively, said toggle being arranged when straightened out to lock the discharge gate in closed position.

13. A measuring device of the character described comprising a storage hopper, a measuring chamber communicating therewith, an upper cut-off filling gate for said chamber, a lever pivotally supported by said chamber, a lower downwardly opening discharge gate for said chamber carried by said lever, and a vertically movable member operably connected at its lower end to said lever and operably connected at its upper end with the filling gate.

14. A batcher comprising a hopper having a discharge portion, a supporting structure for said hopper, a measuring chamber below said discharge portion, a cut off filling gate slidable between said discharge portion and chamber, a lower downwardly opening discharge gate for said chamber operatively connected to the filling gate to operate simultaneously therewith, and a weight carried by the filling gate adapted to strike said structure at the limits of movement of the filling gate for shaking said structure.

15. A batcher comprising two storage hoppers, a supporting structure therefor, a measuring chamber below each hopper, a double upper cut-off filling gate slidable between said hoppers and chambers for alternately filling said chambers, a lower downwardly opening discharge gate for each chamber, operating means for each discharge gate operably connected with the filling gate to close and open the discharge gate when the filling gate is moved to fill the corresponding chamber and cut off the filling thereof, respectively, and weights carried by the filling gate adapted to strike said structure at the opposite limits of movement of said filling gate for shaking the structure.

In testimony whereof we hereunto affix our signatures.

JOSEPH GWYNNE.
JOHN N. HELTZEL.