

C. M. HALL & G. P. HOLMES.

FEED REGULATOR.

APPLICATION FILED JULY 3, 1908.

931,196.

Patented Aug. 17, 1909.

2 SHEETS—SHEET 1.

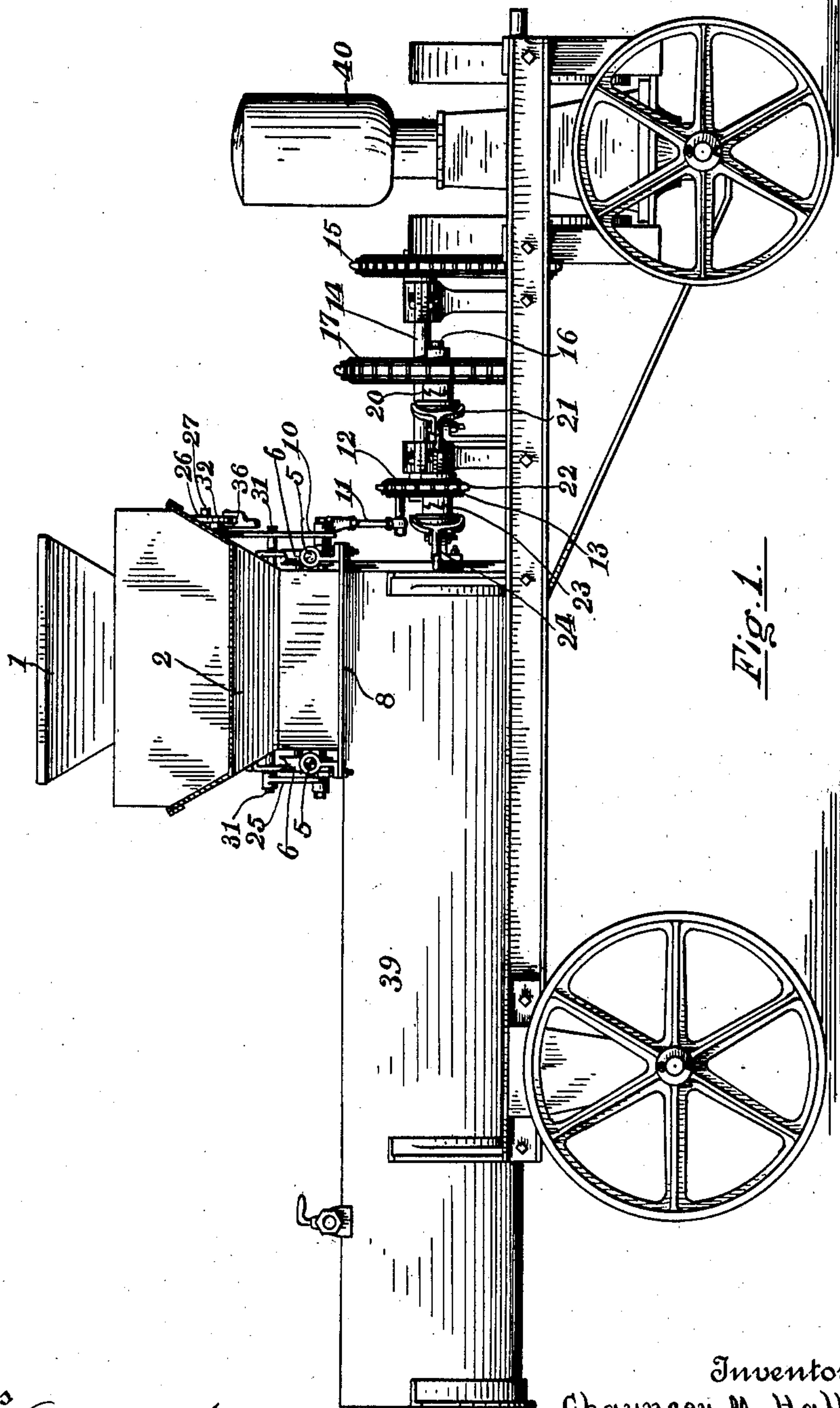


Fig. 1.

Witnesses
H. O. Van Antwerp.
Minnie Johnson

Inventors:
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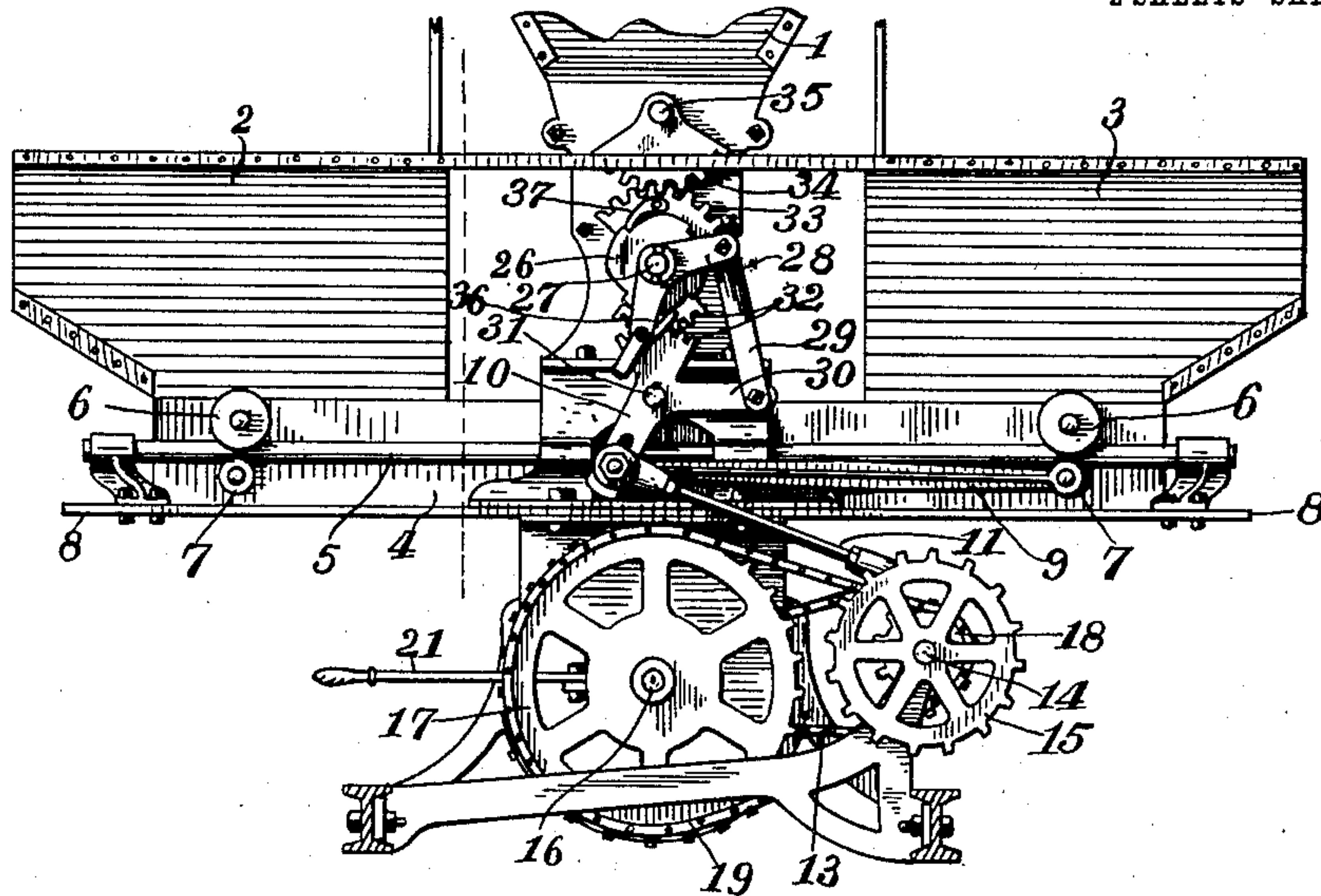


Fig. 2.

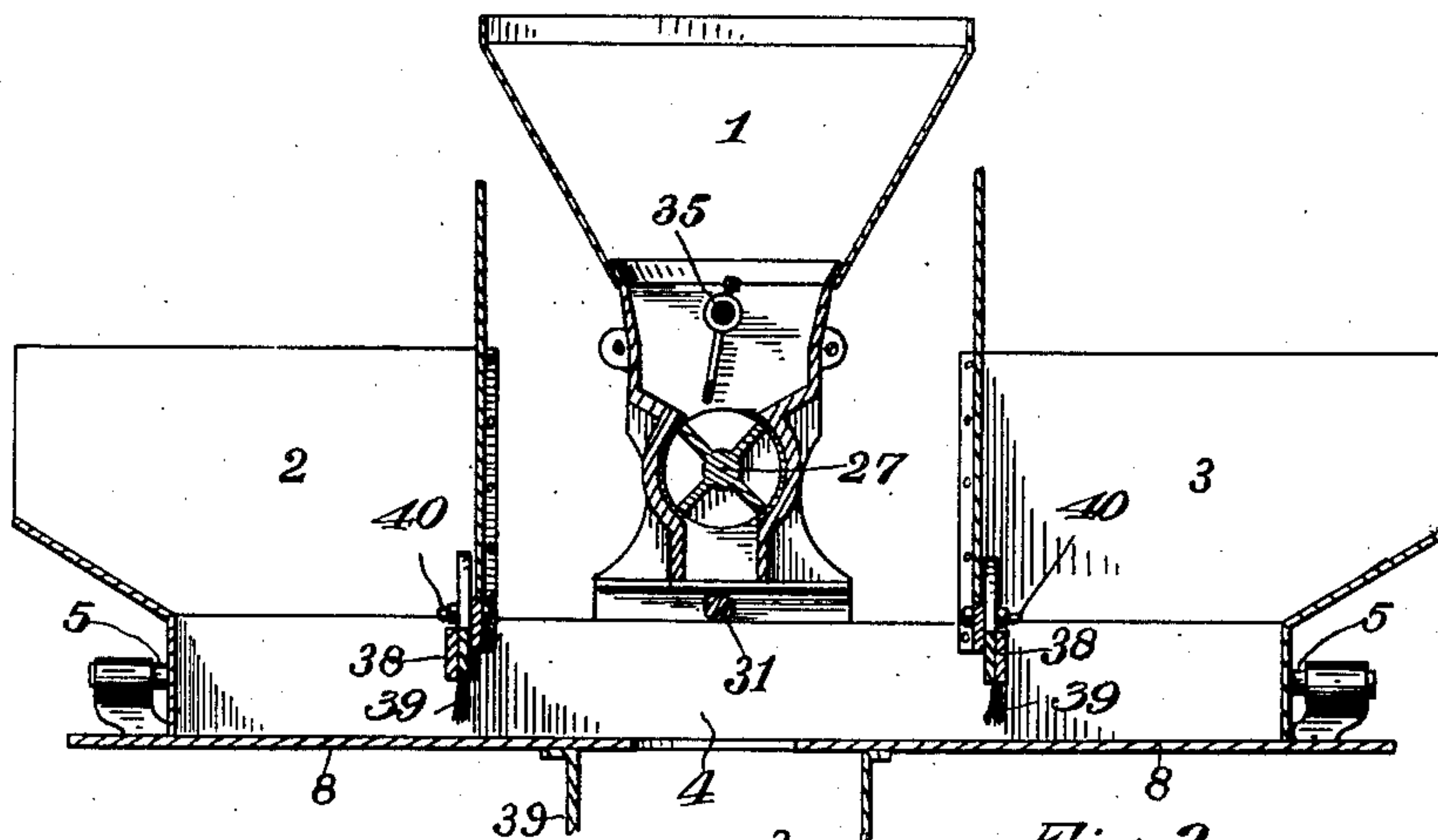


Fig. 3.

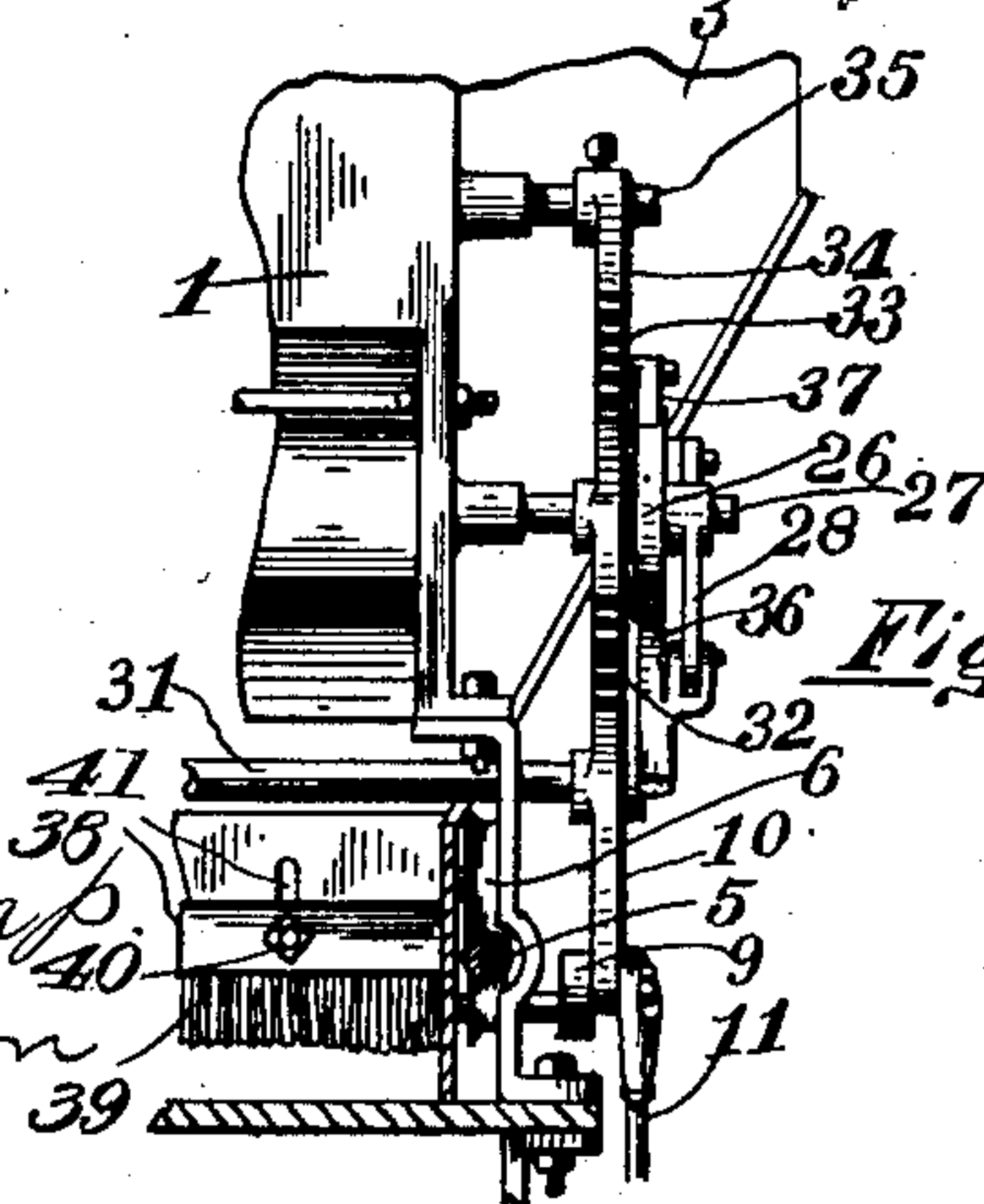


Fig. 4.

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UNITED STATES PATENT OFFICE.

CHAUNCEY M. HALL AND GRANT P. HOLMES, OF JACKSON, MICHIGAN.

FEED-REGULATOR.

No. 931,196.

Specification of Letters Patent.

Patented Aug. 17, 1909.

Application filed July 3, 1908. Serial No. 441,795.

To all whom it may concern:

Be it known that we, CHAUNCEY M. HALL and GRANT P. HOLMES, citizens of the United States of America, residing at Jackson, in the county of Jackson and State of Michigan, have invented certain new and useful Improvements in Feed-Regulators; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

Our invention relates to improvements in feed regulators for concrete mixers, and more particularly to the mechanism for feeding the ingredients, which latter usually consists of cement, sand and gravel, or broken stone, and its object is to provide a device that is simple; reliable in action; that will not clog or break; that will accurately proportion the ingredients; and to provide the device with various new and useful features hereinafter more fully described and particularly pointed out in the claims, reference being had to the accompanying drawings, in which:

Figure 1. is a side elevation of a complete concrete mixing machine embodying our invention; Fig. 2. is an elevation of the feeding mechanism viewed from the end of the machine at the right of Fig. 1.; Fig. 3. a longitudinal vertical section of the feeding mechanism; and, Fig. 4. an enlarged detail of a portion of the operating mechanism. Like numbers refer to like parts in all of the figures.

1 represents a stationary hopper to receive the cement; 2 and 3, movable hoppers to receive the sand and gravel, or broken stone. These movable hoppers are connected by plates 4 at their lower sides which plates move freely together with the hoppers close to a horizontally disposed bed plate 8 having a central opening directly beneath the hoppers 2 and 3. The hoppers 2 and 3 are preferably, to avoid friction, mounted on ways 5 consisting of a rod at each side of the hoppers, outside of the same and supported from the bed plate by brackets at their respective ends.

6 are grooved wheels journaled in the plates 4 and traversing these ways and carrying the hoppers 2 and 3 and plates 4.

7 are grooved rollers engaging the rods 5 to prevent the hoppers 2 and 3 from rising.

Said hoppers have outwardly inclined outer end walls, and their inner walls are vertical and spaced apart sufficient to permit the hoppers to move longitudinally of the bed plate 8 without striking the fixed hopper 1. The hoppers 2 and 3 are reciprocated by means of a connecting rod 9 at each side attached thereto at one end and at the other end attached to levers 10 and 25 at opposite sides of the hoppers and mounted on a rock shaft 31 above the plates 4 and journaled in the lower part of the hopper 1. This rock shaft is reciprocated by a pitman rod 11 connected to the lever 10 at one end and to a crank wheel 12 at the other end, which wheel is loose on a counter shaft 14, driven by a sprocket wheel 15 by means of a chain or other means of transmitting motion from the engine 40. The wheel 12 is driven from the mixer shaft 16 by means of a chain 13 engaging a sprocket wheel 22 loose on the mixer shaft 16 and connected thereto at pleasure by a clutch 23, operated by a lever 24. The mixer shaft 16 is provided with a wheel 17 loose thereon and driven by a chain 19 engaging the wheel 18 fixed on the counter shaft 14, the wheel 17 being engaged and disengaged with the shaft 16 by a clutch 20 operated by a lever 21. Thus by engaging the clutch 20, the mixer can be run and if the clutch 23 is disengaged, the feeder will not run, and by engaging both clutches the feeder and mixer will both operate. It is thus impossible to operate the feeder without running the mixer, but the mixer can be run without operating the feeder.

The vertical walls of the hoppers 2 and 3 oscillate to and fro over the bed plate 8 at a distance from the opening therein and are spaced apart from the bed plate. These walls are each provided with a gate 38, having a brush 39 at the lower side and are vertically adjusted and held adjusted by bolts 40 in vertically elongated openings 41 to limit and regulate the feed of the sand and gravel, which latter are carried toward the opening in the bed plate at each oscillation of the hoppers and escape beneath the gates 38 and brushes 39 as the hoppers recede, the quantity being determined by the vertical adjustment of these gates and brushes.

Near the lower part of the hopper 1 is a pocketed cylinder having journals 27, extending through the ends of the hopper. This pocketed cylinder has, preferably, four pockets to successively receive and measure

the cement discharging the same downward as the cylinder rotates. This cylinder is operated step by step so that each pocket is successively presented upward to receive the cement and then turned downward between the concaves at each side to discharge its contents into the mixer. On one journal 27 is mounted a ratchet wheel 26 preferably having one notch or tooth to each pocket of the cylinder, and the cylinder is turned by the space of one pocket at each movement of the hoppers 2 and 3 by means of a bell crank lever 28 loose on the journal 27 and having a pawl 36 on one arm engaging the wheel 26, the other arm of the lever 28 being connected to an arm 30 on the lever 10 by means of a rod 29, whereby the bell crank lever 28 is oscillated simultaneously with the lever 10. On the lever 10 is also a segment gear 32 meshing with a similar gear loose on the journal 27 integral with which is an oppositely projecting gear 33 on which latter is a second pawl 37, which also engages the wheel 26. These pawls alternately operate to turn the cylinder step by step one pocket at each movement of the hoppers 2 and 3. Engaging the gear 33 is a similar gear 34 fixed on a rock shaft 35 journaled in the hopper on which shaft is an agitator to prevent the cement from clogging in the hopper.

In operation, at each movement of the hoppers 2 and 3, in one direction, sand is discharged through the opening in the bed plate, and at each opposite movement a quantity of gravel is discharged in like manner. At each of these movements one pocket of the cement cylinder is discharged, thus alternating the sand, cement and gravel and insuring uniform mixing of the same. The mixer 39 is of the usual construction and is therefore not particularly described.

What we claim is:

1. A feed regulator, comprising a fixed hopper, a feed regulator in the fixed hopper, means for operating the feed regulator, a bed plate having an opening beneath said fixed hopper and spaced apart therefrom, a movable hopper at each side of the fixed hopper and closed at the bottom by the bed plate, each movable hopper having its wall adjacent to the fixed hopper spaced apart from the bed plate, and means for reciprocating the movable hoppers.

2. A feed regulator, comprising a stationary hopper, a rotative pocketed cylinder in the hopper, a bed plate having an opening beneath the hopper, a movable hopper at each side of the stationary hopper and closed at the bottom by the bed plate, each movable hopper having its inner wall spaced apart from the bed plate and provided with an adjustable gate, means for reciprocating the movable hoppers, and means for rotating the pocketed cylinder.

3. A feed regulator, comprising a fixed

hopper, a rotary pocketed cylinder closing the bottom of said hopper, a bed plate spaced apart from said hopper and having a central opening beneath the same, a movable hopper at each side of the fixed hopper and closed at the bottom of said bed plate, a vertical inner wall to each movable hopper, a vertically adjustable gate to each of said walls and projecting below the same, means for reciprocating the movable hoppers toward and from the opening in the bed plate, and means for rotating said pocketed cylinder.

4. A feed regulator, comprising a fixed central hopper, means for feeding the contents thereof in regulated quantity through a bottom opening therein, a bed plate having a central opening below said hopper and spaced apart therefrom, a hopper at each side of the fixed hopper and closed at the bottom by said bed plate, plates connecting said movable hoppers, a rod at each side of the hoppers, grooved rollers on the hoppers traversing the rods and supporting the hoppers, a rock shaft journaled in the fixed hopper, levers fixed on the rock shaft, rods connecting the levers and the plates, a crank wheel and pitman connected to the rock shaft to operate the same, and means for rotating the crank wheel.

5. A feed regulator, comprising a fixed hopper and a movable hopper, a pocketed cylinder journaled in the hopper, a ratchet wheel fixed on a journal of the cylinder, a gear and a bell crank lever journaled on the journal of the cylinder, pawls on the bell crank lever and gear respectively and alternately engaging the ratchet wheel, a lever having a gear engaging the first named gear, means for oscillating the last named lever, and means for connecting said lever with the movable hopper.

6. A feed regulator, comprising a bed plate having a central opening, a fixed hopper above the said central opening and spaced apart therefrom, a movable hopper at each side of the fixed hopper and spaced apart therefrom and also closed at the bottom by the bed plate, an inner wall to each movable hopper spaced apart from the bed plate, an adjustable gate on each inner wall, plates connecting the lower part of the movable hoppers, a rod at each side of the hoppers and supporting the same, opposing pairs of grooved rollers engaging and traversing the rods, and supporting the movable hoppers, a rock shaft journaled in the fixed hopper, levers on the respective ends of the rock shafts, rods connecting said levers with the plates, means for oscillating the rock shaft, a pocketed cylinder in the fixed hopper, a ratchet wheel having notches equal in number to the pockets of the cylinder and attached to the same, pawls alternately operating the ratchet wheel and means for con-

necting the pawls with the rock shaft to operate the same.

7. A feed regulator, comprising a fixed hopper and two movable hoppers, a bed plate closing the bottom of the movable hoppers, and having an opening beneath the fixed hopper, an upper and a lower rock shaft, and a pocketed cylinder, all journaled in the fixed hopper, levers fixed on the lower rock shaft, rods connecting said levers with the movable hoppers, a ratchet wheel fixed on the journal of the cylinder, oppositely projecting segment gears and a bell crank lever journaled on the journal of said cylinder, a segment gear on said journal, pawls on the lever and upper segment gear alternately engaging the ratchet wheel, a segment gear on the upper rock shaft engaging the upper segment gear on the journal, and means for oscillating one of the rock shafts.

8. A feed regulator, comprising a fixed hopper, a movable hopper at each side of the fixed hopper, side plates connecting the movable hoppers, a pocketed cylinder jour-

naled in the fixed hopper, a rock shaft above the cylinder and a rock shaft below the cylinder, each shaft also journaled in the hopper, a lever fixed on each end of the lower shaft, a rod connecting each lever with a side plate, means for oscillating one of said levers, a train of segment gears connecting the rock shafts, the middle gear being loose on the journal of the cylinder, a ratchet wheel fixed on the journal of the cylinder, a lever journaled on the journal of the cylinder, an arm on one of the levers, a rod connecting said arm and the bell crank lever, a pawl on the bell crank lever engaging the ratchet wheel, and a pawl on one of the gears also engaging the ratchet wheel.

In testimony whereof we affix our signatures in presence of two witnesses.

CHAUNCEY M. HALL.
GRANT P. HOLMES.

Witnesses:

HENLEY D. McELROY,
ALBERT C. MANGUS.