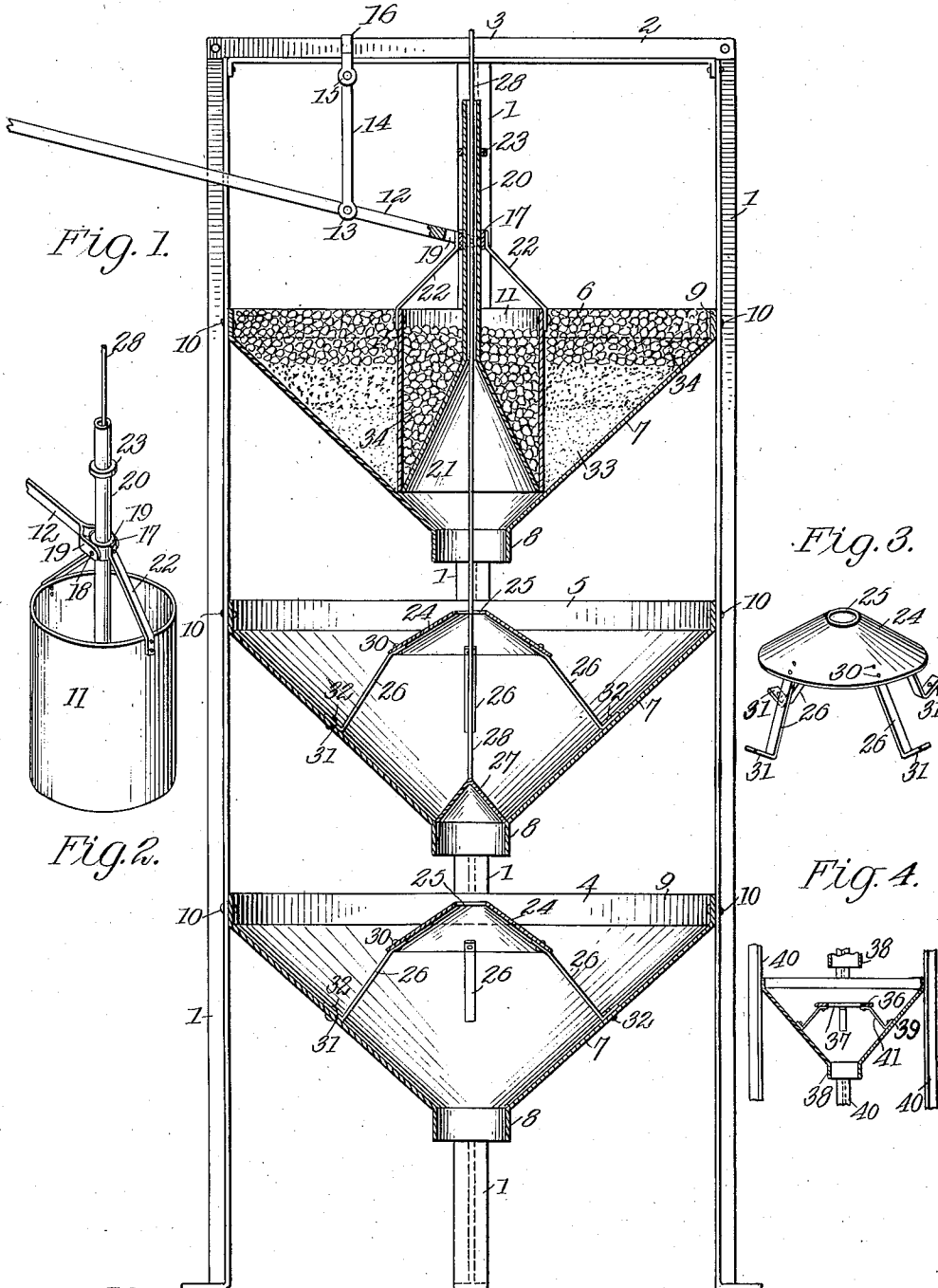


G. W. MILLS & J. E. SIMPSON.
 FEED REGULATOR FOR GRAVITY CONCRETE MIXERS.
 APPLICATION FILED MAR. 2, 1912.

1,047,680.

Patented Dec. 17, 1912.



WITNESSES
S. E. Wade
A. E. Trimmer

INVENTORS
 GEORGE W. MILLS
 JAMES E. SIMPSON
 BY *W. H. H. & Co.*

ATTORNEYS

UNITED STATES PATENT OFFICE.

GEORGE W. MILLS AND JAMES E. SIMPSON, OF GEORGETOWN, PENNSYLVANIA.

FEED-REGULATOR FOR GRAVITY CONCRETE-MIXERS.

1,047,680.

Specification of Letters Patent.

Patented Dec. 17, 1912.

Application filed March 2, 1912. Serial No. 681,044.

To all whom it may concern:

Be it known that we, GEORGE W. MILLS and JAMES E. SIMPSON, citizens of the United States, residing at Georgetown, in the county of Beaver and State of Pennsylvania, have invented a new and useful Improvement in Feed-Regulators for Gravity Concrete-Mixers, of which the following is a specification.

Our invention is an improvement in feed regulators for concrete mixers of the gravity type, and has for its object the provision of a simple, inexpensive device of the character specified, wherein the different materials forming the concrete are mixed in the proper quantities, during their passage by gravity through the device, and wherein means is provided for insuring the proper distribution of the materials before the mixing operation begins.

In the drawings, Figure 1 is a longitudinal vertical section of the improvement. Fig. 2 is a perspective view of the shield. Fig. 3 is a similar view of the baffle plate, and Fig. 4 is a reduced vertical section of a portion of another embodiment of the invention.

In the embodiment of the invention shown in Figs. 1 to 3, a suitable frame is provided for supporting the parts, consisting in the present instance of four uprights 1, arranged at angular distances of 90° around a common center, and connected at their tops by cross bars 2. The uprights and cross bars are T-shaped in cross section, and the cross bars 2 are connected at their crossing, as indicated at 3. A plurality of hoppers, three in the present instance are connected to the uprights one above the other. Each of the three hoppers 4-5 and 6 is composed of a frusto conical body 7, having at its lower end a cylindrical outlet 8, and an annular marginal flange 9 at its top, which is secured to the uprights by rivets 10 or the like. The outlets 8 are coaxial, and the outlet of each hopper delivers to the body of the succeeding hopper. The outlet of lowest hopper 4 delivers to a suitable receptacle, (not shown). A cylindrical shield 11 is supported within the uppermost hopper 6, by means of a lever 12 pivoted intermediate its ends at 13 to the lower end of a link 14. The upper end of the link is pivoted at 15 to a hook 16, slidable on the adjacent cross bar 2. A ring or collar 17 is pivoted by pins 18 to the arms

19 of a fork on the inner end of the lever, and the collar is slidable on the tubular stem 20 of a conical closure or gate 21, arranged within the holder or shield. The collar is secured to the shield 11 by means of links or arms 22, connected at one end to the collar and at the other to the upper edge of the shield, the links being oppositely arranged. When the outer end of the lever 12 is depressed, the shield is lifted, the collar 17 sliding on the stem 20. The lower end or base of a conical gate or closure 21 fits closely within the shield, and completely closes the outlet of the shield. Normally the lower edges of both shield and gate rest against the inner surface of the hopper 6, sealing the outlet thereof. The stem 20 is provided with a fixed annular rib 23, near its upper end, for engagement by the collar 17. When the free end of the lever 12 is depressed, to lift the shield, the collar will engage the rib after the shield has moved a certain distance, and the continued movement of the lever will lift the gate.

A distributing or spreader plate 24 of frusto conical form is supported near the top of each of the hoppers 4 and 5, and each plate has a central opening 25 at its upper or small end. The plates are arranged at the center of the hopper, with the opening 25 in register with the outlet, and each plate is supported by arms 26, connected at one end to the plate, and at the other to the hopper. The outlets of hoppers 5 and 6 are directly above the spreaders of hoppers 4 and 5, so that the materials are delivered directly onto the spreaders, and the said materials are thoroughly scattered and mixed, a portion passing through the openings 25, and the remainder being deflected and thrown to all sides of the hopper. A conical gate or closure 27 is arranged in hopper 5, at the outlet and normally closes the same. The base of the gate fits the upper edge of the outlet 8, and a rod 28 is connected at its lower end to the apex of the gate. The rod extends upwardly through the opening 25 of the spreader in hopper 5, and through the outlet of hopper 6, through the gate 21 and the stem 20 thereof, and out at the upper end of the said stem. Each of the spreaders 24 is supported by four arms 26, each arm having an angular portion 29 at its upper end which is riveted to the spreader at 30, and an angular portion 31 at its lower end, which is riveted to the hopper at 32. The

closure of gate 27 may be lifted by means of rod 28, and the conical form of the said gate and gate 21, offers the least possible resistance to the opening movement when the hoppers contain material.

In operation, the uppermost hopper 6, and the shield 11 act as measuring devices for the material. The cement and sand 33 are first placed in the hopper 6, after which the gravel 34 is placed on the cement and sand and also in the shield, the shield 11 and gate 21 being in the position shown in Fig. 1. The shield is then lifted by the lever, until the collar 17 engages rib 23. The gravel in the shield is then permitted to mix with the sand and cement in the lower part of the hopper. The amount of water necessary to the proper composition of the concrete is now thrown over the mixture, after which the lever is again operated to lift the shield higher and to raise the closure or gate 21 a certain predetermined distance. The mixed materials now pass from hopper 6 through its outlet 8, and fall upon the spreader in hopper 5. The spreader thoroughly mixes the materials, which are retained in the hopper by gate 27. A part of the materials passes through the opening 25 of the spreader, while the remainder is thrown outwardly against the hopper wall, and then slides to the bottom. When the gate 21 is lifted the gravel above the same is forced outward thus mixing it with the sand and cement, and the gate 27 acts in the same manner. The spreaders 24, the gates 21 and 27, and the hoppers thoroughly mix the material, causing them to repeatedly move outwardly and inwardly, and also repeatedly separating the materials and again moving them together.

In Fig. 4, a modified form of spreader is shown, the construction being otherwise the same. The said spreader is in the form of a plate 36, having a central opening 37, in alinement with the outlet 38 of the hopper 39, supported by the uprights 40. The plate is supported by arms 41, connected at one end to the plate, and at the other to the hopper wall. With this form of spreader, a

part of the materials is thrown outward, while a part passes through the opening. The construction is simpler, but acts in practically the same manner. With this form of plate, the central opening 37 is relatively larger than the opening 25. The provision of the opening in the spreader in either form subjects the material to a different movement than were the opening omitted. With no opening, all of the material is thrown outwardly and the only mixing is that which takes place as the materials roll down the sides of the hopper. With the opening, a portion of the material falls directly to the bottom. The opening in fact continually separates a portion of the material from the remainder and as continually adds the separated portion in a different place.

We claim,

1. A device of the character specified, comprising a hopper having a central outlet, a cylindrical shield having open ends arranged in the hopper and of greater diameter than the outlet, a conical gate for the outlet, the base of the gate fitting within the shield, said gate having a tubular stem, a collar encircling the stem, arms connecting the collar to the shield, a lever pivoted intermediate its ends to the frame, a pivotal connection between the inner end of the lever and the collar, and a stop on the stem spaced above the collar for engagement by the collar to lift the gate after the shield has been lifted.

2. A device of the character specified, comprising a hopper having a central outlet, a cylindrical shield having open ends arranged in the hopper and of greater diameter than the outlet, a conical gate for the outlet, the base of the gate fitting within the shield, means connected with the shield for lifting the same, and a sliding connection between said means and the gate for lifting the gate after the shield is lifted.

GEORGE W. MILLS.
JAMES E. SIMPSON.

Witnesses:

W. C. RICE,
H. P. NAPIER.