

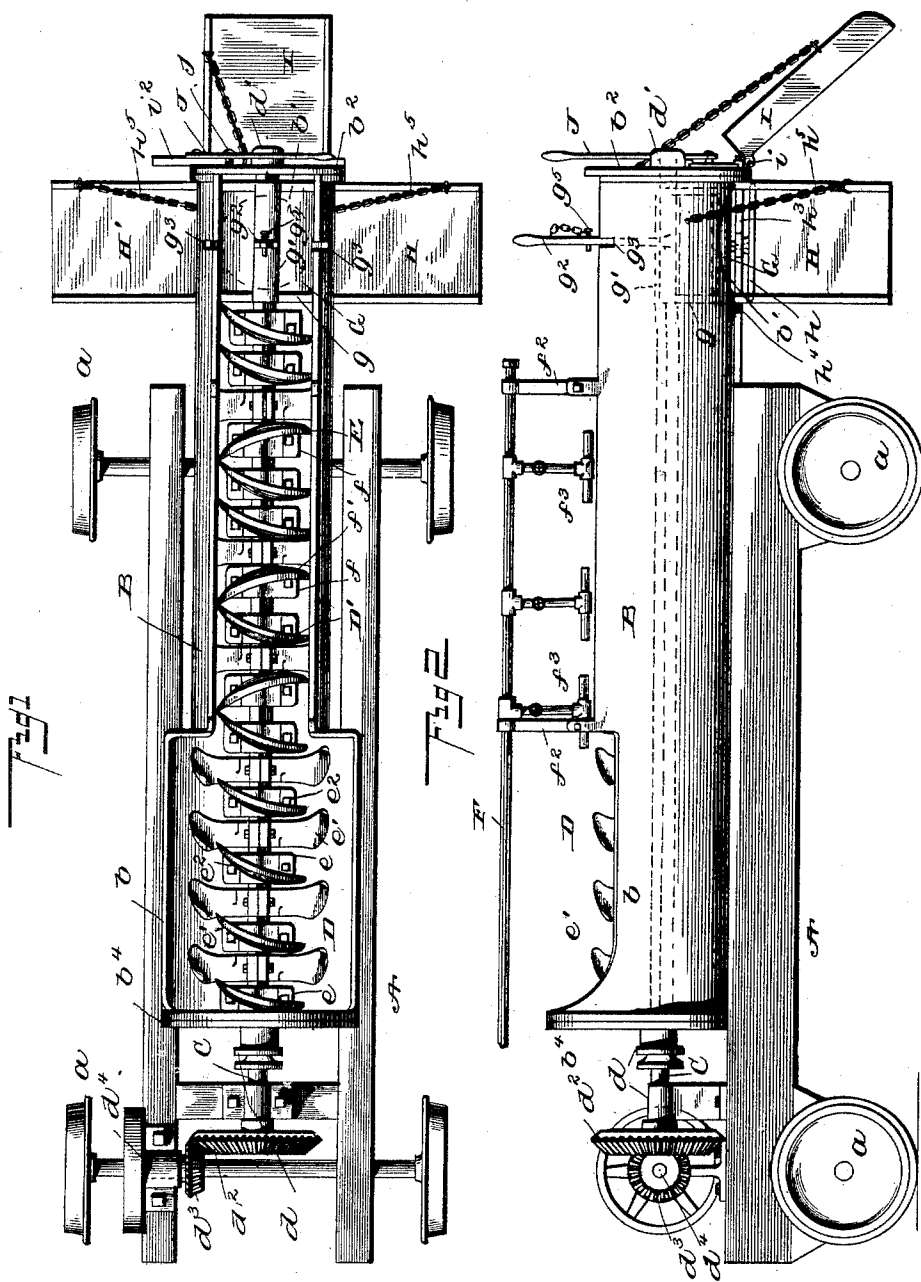
(No Model.)

3 Sheets—Sheet 1.

W. C. BARR.
CONCRETE MIXING MACHINE.

No. 468,290.

Patented Feb. 2, 1892.



Witnesses

John Danie
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Inventor

William C. Barr,
By *W. C. Barr* Attorney

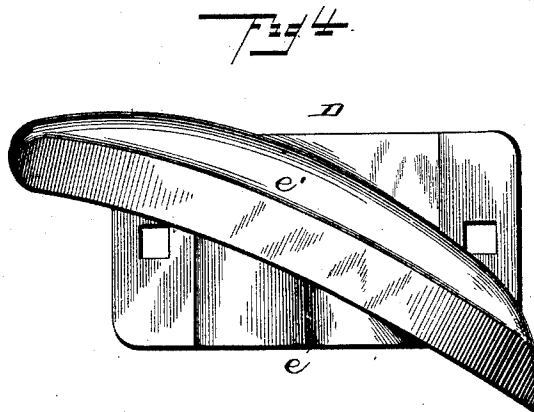
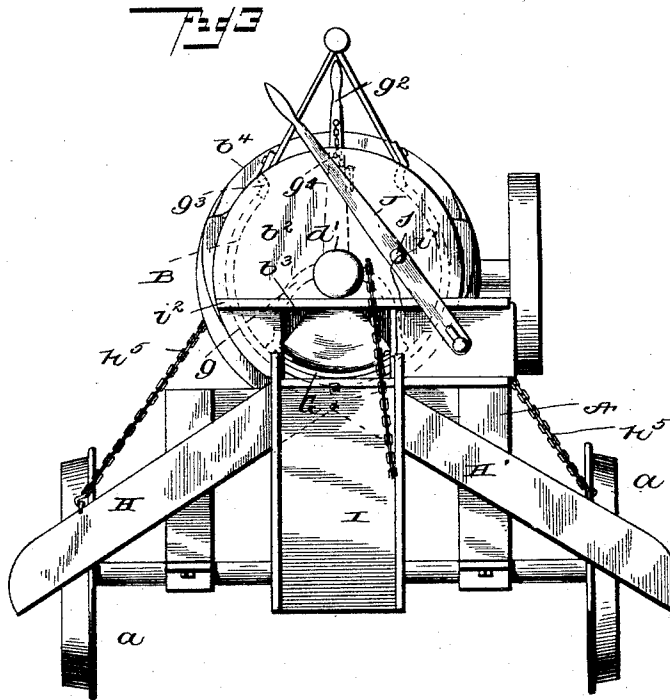
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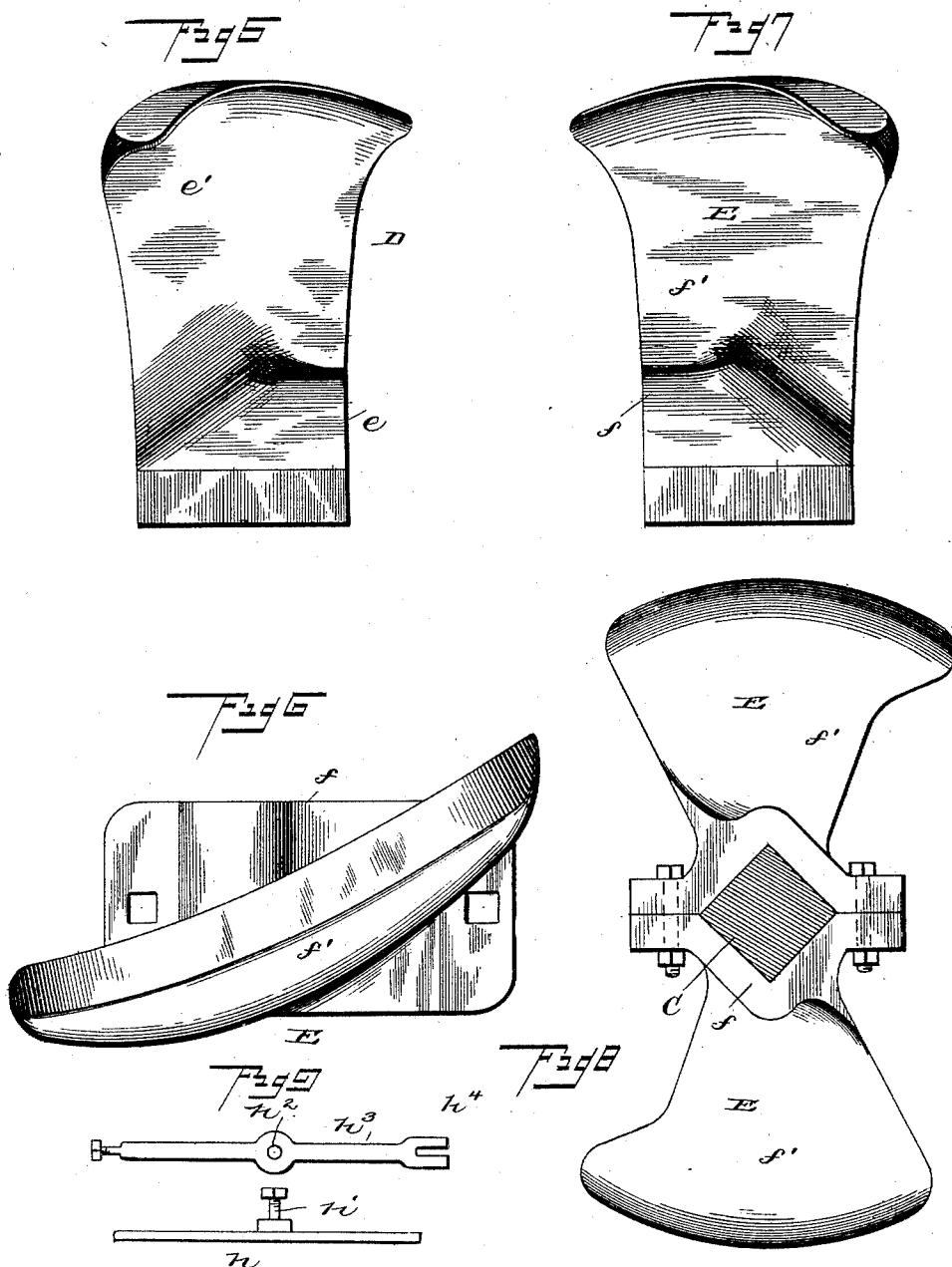
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UNITED STATES PATENT OFFICE.

WILLIAM C. BARR, OF JERSEY CITY, NEW JERSEY, ASSIGNOR TO THE
COCKBURN BARROW AND MACHINE COMPANY, OF SAME PLACE.

CONCRETE-MIXING MACHINE.

SPECIFICATION forming part of Letters Patent No. 468,290, dated February 2, 1892.

Application filed September 10, 1891. Serial No. 405,311. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM C. BARR, a citizen of the United States of America, residing at Jersey City, in the county of Hudson and State of New Jersey, have invented certain new and useful Improvements in Concrete-Mixing Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

10 This invention relates to a new and improved mixer, and has for its object the production of a simple and highly-efficient machine for thoroughly and quickly mixing concrete, asphalt, mortar, and other plastic or semi-fluid materials or compounds.

15 A further object is to provide an improved machine into which the materials to be mixed are placed at one end and which will leave said machine at the other end in a thoroughly homogeneous mass or compound.

20 A further object is to provide a mixing-machine capable of discharging the compound under treatment on either side thereof and also at the forward end.

25 The invention consists, primarily, in a quasi-cylindrical receptacle having a rotary shaft extending longitudinally therethrough, provided, first, with a series of forwardly-forcing mixing arms or blades and a second series of mixing arms or blades, some of which are 30 faced in the same direction as the first series, while others of which are faced in a directly-opposite direction, tending to force the material rearward or toward the receiving end of the receptacle and forming, in conjunction with the adjacent arms or blades, complete scoops, whereby the compound under treatment is thoroughly mixed into a homogeneous state before it reaches the discharge ports 35 or outlets.

40 The invention further consists in a mixing-machine having a series of mixing arms or blades, each of which consists of a hub and an obliquely-arranged plate, concaved on one side and convexed on the other, one end of said plate being projected out beyond the hub a greater distance than the other end.

45 The invention further consists in providing a mixing-machine with a single port or outlet and two oppositely-disposed independent chutes having their inner ends beneath said

outlet-port and a movable door or cut-off for regulating the discharge of the compound through either one of said chutes or closing said outlet-port altogether.

55 The invention further consists in providing a mixing-machine with a forward end discharge and two lateral discharges, one door or cut-off serving for the latter, while an independent door or cut-off is designed to be operated in conjunction with the former.

60 The invention also comprises the detail construction, combination, and arrangement of parts, substantially as hereinafter fully set forth, and particularly pointed out in the 65 claims.

In the accompanying drawings, Figure 1 is a plan view of my improved mixing-machine. Fig. 2 is a side elevation thereof. Fig. 3 is an end view. Fig. 4 is a plan view of one of 70 the forwardly-forcing or right-hand arms or blades. Fig. 5 is an end view thereof. Fig. 6 is a plan view of one of the rearwardly-forcing or left-hand arms or blades. Fig. 7 is an end view of the latter. Fig. 8 is a side elevation showing two left-hand arms or blades 75 connected together with their shaft in cross-section.

Referring to the drawings, A designates a truck or platform, which is mounted on suitable axles having carrying-wheels *a*, designed to fit upon the rails of a cable-road when the mixer is employed for mixing concrete in the construction of such roads, the truck being moved forward by a suitable engine (not 80 shown) connected thereto and from which power is derived for working the mixer.

B designates a receptacle which is nearly cylindrical in cross-section, but which is open at the top throughout its entire length, the receiving end *b* thereof having its sides slightly flared, so as to widen the receptacle at this point. The discharge end of the receptacle is extended beyond its supporting-truck A, and in its bottom is a circular port 85 or outlet *b'*, while in the circular end head *b²* is a port or outlet *b³*.

C is a shaft extended longitudinally through receptacle B, the same being supported near one end by a box *d*, attached to the end head 90 *b⁴*, and at its other end said shaft rests in a hollow boss or enlargement *d'* of the circular 95 100

head b^2 . Upon the projecting end of this shaft is keyed or otherwise secured a beveled gear-wheel d^2 , with which intermeshes a beveled pinion d^3 on the main operating-shaft d^4 , to which power is applied from the engine hereinbefore mentioned, but not shown. This shaft C is square in cross-section, save where it is projected beyond the receiving end of the receptacle and over the discharge end thereof, said shaft at these points being circular.

Upon shaft C are secured a series of mixing arms or blades D, which work within the receiving end of the receptacle, all of said arms or blades being what I term "forwardly-forcing" or "right-hand" arms or blades, the same forcing the material placed in the receptacle toward the discharge end thereof and at the same time thoroughly mixing the same. These arms or blades D are arranged in pairs, and consist each of a hub e and an obliquely-arranged plate e' . These latter plates are curved or concave on their forward faces, while the upper portion of their rearward faces are convexed. The forward projecting end of this plate extends out beyond the hub a greater distance than the other end, and the concavity of the forward face is greater toward that part of the plate which is so extended than at the other shorter end. This curvature gives to the plates a scoop-like formation which enables them to lift up the material and effect the thorough mixing thereof and at the same time force the same forward toward the discharge end of the machine. The hubs of each set of arms or blades have flanged portions, through which nutted bolts e^2 are passed for binding the arms or blades in pairs upon the shaft C.

D' is a second series of arms or blades secured upon shaft C and extending from the series of arms or blades D down to the discharge end of the receptacle. This series D' consists of right and left hand arms or blades, or those which force the material forward and those which force it backward. The latter arms or blades E are provided, also, each with a hub f and an obliquely-arranged plate f' , which is given the same concavity and convexity as the plates of the forwardly-moving arms or blades; but said plates of the rearwardly-moving arms or blades are extended nearly at right angles to the direction of the plates of the forwardly-moving arms or blades. These arms or blades E, being opposed to the arms or blades D, work in connection with the latter and form a complete scoop, which results in the lifting of the material under treatment and the throwing of the same completely over the shaft C. As shown in Fig. 1, there are three sets of these rearwardly-moving blades within the series D'. Thus the material is lifted up and forced completely over the shaft at three different points before it reaches the discharge ports or outlets. There being a greater number of the forwardly-moving arms or blades than there are of the rear-

wardly-forcing arms or blades, the material under treatment is not impeded in its travel toward the discharge ports or outlets, the series of arms or blades D serving constantly to force the material forward toward the discharge end of the receptacle. In the arrangement of the rearwardly-forcing arms or blades the mate thereof, or rather the arm or blade connected thereto, is of the same pattern, and this is also the case with the pair of arms or blades acting in conjunction therewith. The result is that one complete set or pair of arms or blades will in one revolution convey the material in two or opposite directions.

F is a water-pipe supported by brackets f^2 , secured to apertured eyes or ears of the receptacle A. From this pipe extend branch jet-pipes f^3 , which are located directly over the three sets of double or oppositely-arranged arms or blades, so as to sprinkle or moisten the material as the same is elevated by said arms or blades. Suitable valves are provided for regulating the flow of water. It will be understood, of course, that the water is supplied from the boiler employed in connection with the engine (not shown) or from any other suitable source.

G is a door or cut-off curved so as to conform to the inner surface of receptacle A and designed to fit over and completely cover the discharge port or outlet b . This door or cut-off is secured to arms g , which extend from a sleeve g' , encircling the rounded end of shaft C. To this sleeve is secured an operating arm or lever g^2 , by means of which the door or cut-off is operated. Opposite slots g^3 are formed in the flared portions of receptacle A to permit of the movement of the lever and door or cut-off to the full extent desired. A hole g^4 is provided in arm or lever g^2 , through which a pin g^5 may be inserted after the arm or lever reaches the inner end of either one of the slots g^3 , whereby the door or cut-off is held open, the retraction of the arm or lever being prevented by said pin engaging the flared portions of the receptacle. H H' are two chutes, which are pivotally mounted at their inner ends upon a rod h , extended longitudinally beneath port or outlet b' . This rod h has a central right-angular threaded portion h' , which, after being extended through an eye h^2 of a cross-bar h^3 , has a nut secured thereon to hold the same in place. The cross-bar h^3 is forked at one end, through which and a flange of the receptacle A is passed a nutted bolt h^4 , while the other end of said rod is extended through the end head b^2 and nutted. These chutes are free to move on their pivotal rod h and can be held at any desired point by any suitable means, according to the height at which it is desired to discharge the mixture after the same has been thoroughly treated. I have shown chains h^5 connected to the sides of the receptacle A and designed to engage hooks on the chutes as one of the preferred ways of adjusting and holding the chutes. By moving arm or lever

g^2 to the left the door or cut-off will open, so as to permit of the discharge into the chute H, and at the same time close the outlet to the chute H', and, vice versa, by moving said door in the opposite direction the outlet to the chute H will be closed and that to the chute H' opened. Thus I am enabled to discharge on either side of the machine. I designate a third chute, which is pivotally hung at its inner end on a rod i , held to the end head b^2 of receptacle B, immediately beneath port or outlet b^3 . A door or cut-off i' , movable in flanged plates i^2 , attached to end head b^2 , serves to open or close port or outlet b^3 . To this door or cut-off i' is loosely secured one end of a lever J, fulcrumed at j on end head b^2 , whereby by moving said lever the door or cut-off i' can be made to open or close port or outlet b^3 . Hence it will be seen that when it is desired to discharge the material at the forward end of the machine the port or outlet b' is closed by door or cut-off G, being made to fit thereover, and door or cut-off i' is moved to one side, so as to open port or outlet b^3 and permit the mixed material to pass out through chute I.

The operation of my invention is apparent from the foregoing. The material is first supplied to the receptacle at the receiving end thereof and is subjected to the action of the series of arms or blades D while in a dry state. As the material is being thoroughly mixed and is forced forward, it is moistened by the water ejected through the jet-pipes, and by the time the same reaches the discharge end of the receptacle it is in a thorough plastic or moist state ready for immediate use.

When my improved mixer is employed for mixing mortar, the arms or blades are preferably given a greater pitch or curvature and the mortar is mixed in lots—that is, the doors or cut-offs being closed, the mortar is mixed until it reaches the discharge end of the receptacle, when the direction of movement of the shaft and its arms or blades is reversed and the mortar is forced back to the receiving end of the receptacle, after which the shaft and arms or blades resume their former direction of movement, and the mortar being by this time thoroughly mixed is discharged through the ports or outlets.

The advantages of my invention are apparent to those skilled in the art to which it appertains, and it will be especially observed that the same is extremely simple in construction, is composed of but a minimum number of parts, and is strong and durable. It will also be noted that the mixing is entirely completed in a single passage of the material from the receiving to the discharge end of the machine, and also that I am enabled to discharge the compound on either side of the mixer as well as at the forward end of the latter. By providing the forward and backward forcing arms or blades of the formation stated I procure complete "scoops," so to speak, which lift the material up and

convey the same over the operating-shaft, resulting in the thorough mixing of the material and exposing a large quantity thereof to the jets of water.

I claim as my invention—

1. A concrete and mortar mixing machine having a series of forwardly-forcing mixing arms or blades and a second series of mixing arms or blades arranged in pairs, adjoining pairs of some of which conjunctively form scoops which carry the material under treatment over their axes and force the same in opposite directions or forward and backward in one complete revolution, as set forth.

2. The herein-described improved mixing-machine, comprising a receptacle having receiving and discharge ends, a series of forwardly-forcing mixing arms or blades arranged in pairs, each pair being at right angles to the adjoining pair and located in said receiving end, and a second series of mixing arms or blades extending from said first series to said discharge end and likewise arranged in pairs, some of said latter series of arms or blades being rearwardly-forcing, (the others being forwardly-forcing,) and forming, in conjunction with the adjacent pairs of forwardly-forcing arms or blades, complete scoops, substantially as set forth.

3. The herein-described improved mixing-machine, comprising a receptacle having receiving and discharge ends, a rotating shaft extended longitudinally through said receptacle and having a series of mixing arms or blades arranged in pairs and consisting each of a hub and an obliquely-arranged plate curved or concaved on one face and convexed on the other, one end of said plate being projected out beyond said hub a greater distance than the other end, substantially as set forth.

4. The herein-described improved mixing-machine, comprising a receptacle, a rotating shaft having a series of forwardly-forcing mixing arms or blades, a series of forwardly and rearwardly forcing arms or blades forming complete scoops, and a water-supply pipe having branch jet-pipes located over said scoops, substantially as set forth.

5. The herein-described improved concrete and mortar mixing machine, comprising a receptacle having a port or outlet in its discharge end, two laterally-projecting independent chutes leading from said port or outlet to either side of said receptacle, and a door or cut-off for regulating the discharge through said port or outlet into either of said lateral chutes, as set forth.

6. The herein-described improved concrete and mortar mixing machine, comprising a receptacle having independent discharge ports or outlets leading to either side and also to its forward end, as set forth.

7. The herein-described improved concrete and mortar mixing machine, comprising a receptacle having a port or outlet at its discharge end, laterally-projecting chutes leading from said port or outlet, a door or cut-off

for regulating the discharge through said port or outlet, the loosely-secured sleeve having arms attached to said door or cut-off, and the operating arm or lever extending from said sleeve, substantially as set forth.

8. The herein-described improved concrete and mortar mixing machine, comprising the receptacle having an open top and flared sides wherein are formed opposite slots, two laterally-extending chutes leading from a port or outlet in the discharge end of said receptacle, a door or cut-off for regulating the discharge into said chutes, and the operating arm or lever for said door or cut-off, having an eye therein, and a pin for insertion through said eye for holding said arm or lever in either one of said slots, substantially as set forth.

9. The combination, with the receptacle having a port or outlet in the bottom of its discharge end, of the laterally-projecting chutes leading from said port or outlet, the operating-shaft extending longitudinally through said receptacle and having mixing arms or blades secured thereon, the door or cut-off movable over said port or outlet, the sleeve loosely secured on said shaft and having arms attached to said door or cut-off, and the arm or lever extending from said sleeve, substantially as set forth.

10. The combination, with the receptacle having a discharge port or outlet, the cross-bar extending beneath said port or outlet, the

rod rigidly secured to said cross-bar at its center, the two laterally-projecting chutes having their inner ends pivotally secured on said rod, and means for adjusting and holding said chutes at the desired altitude, substantially as set forth.

11. The herein-described improved mixing-machine, comprising the truck, the quasi-cylindrical receptacle mounted thereon and having receiving and discharging ends, a port or outlet in the end head of said receptacle, the operating-shaft extended longitudinally through said receptacle and having, first, a series of forwardly-forcing mixing arms or blades located in said receiving end, and a second series of mixing arms or blades, some being faced rearwardly and others forwardly, forming complete scoops, the water-supply pipe located above said receptacle and having branch pipes above said scoops, the laterally and forwardly extending chutes secured to the discharge end of said receptacle, and the doors or cut-offs, together with their operating arms or levers for regulating the discharge through said ports or outlets, substantially as set forth.

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

WILLIAM C. BARR.

Witnesses:

DOUGALD B. S. COCKBURN,
WM. H. SEEBECK.