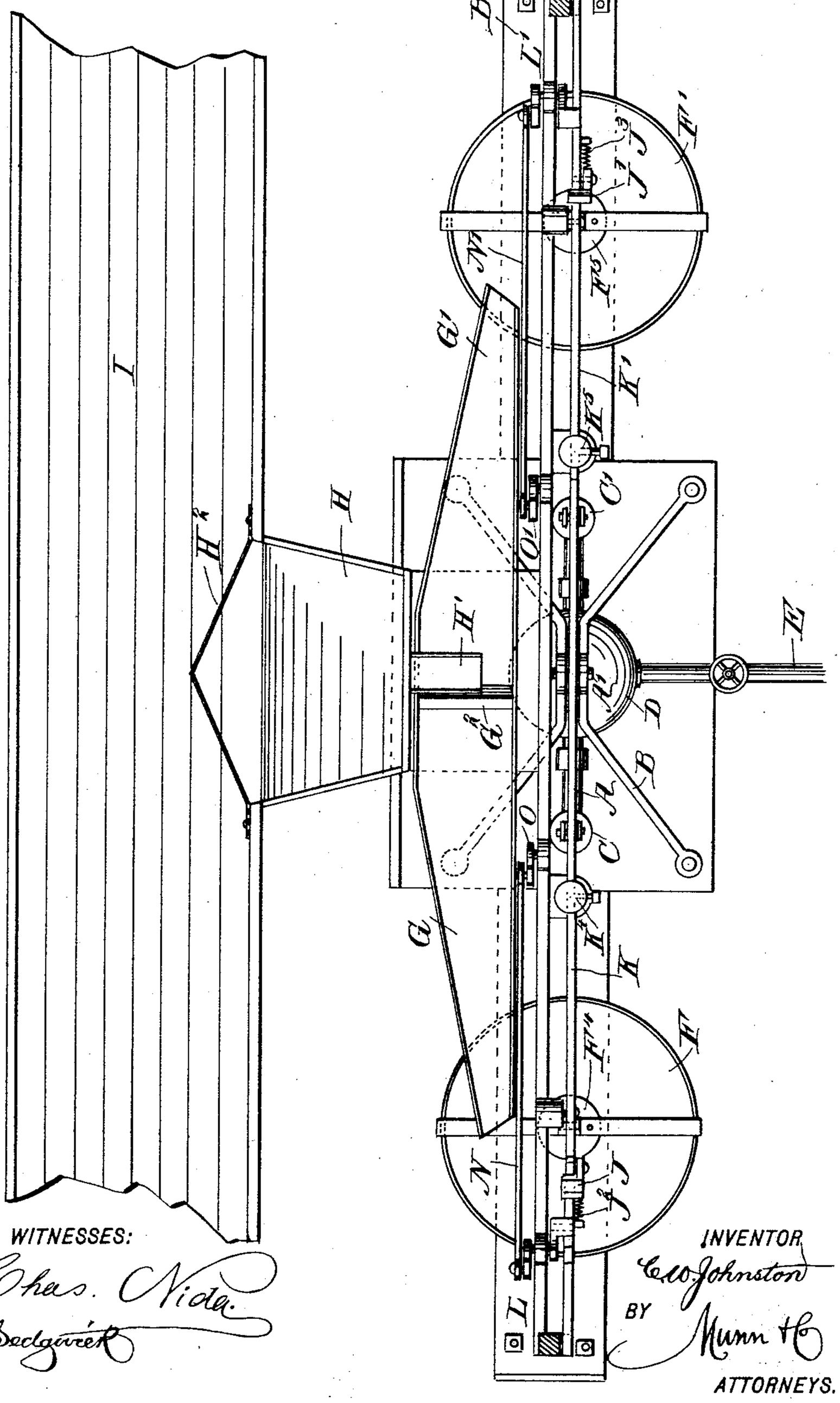
(No Model.) 2 Sheets—Sheet 1.

C. W. JOHNSTON.

MOTOR.

No. 520,316. Patented May 22, 1894.



THE NATIONAL LITHOGRAPHING COMPANY,
WASHINGTON, D. C.

(No Model.) 2 Sheets—Sheet 2.

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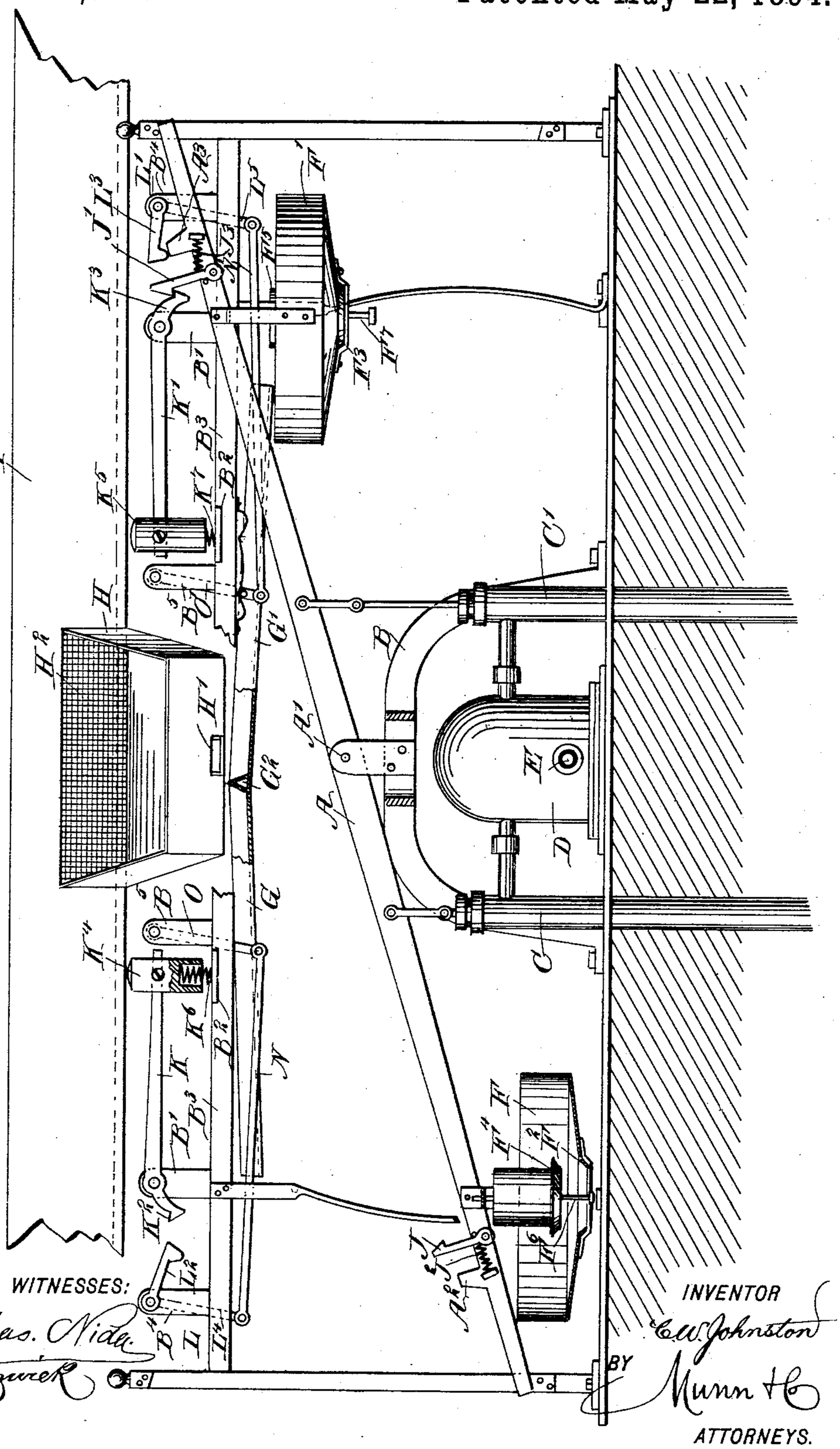

Fig. 2.

WITNESSES:
Chas. Nide.
E. Sedgwick

INVENTOR
C. W. Johnston
BY Munn & Co
ATTORNEYS.

THE NATIONAL LITHOGRAPHING COMPANY,
WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

CHARLES W. JOHNSTON, OF PHILADELPHIA, PENNSYLVANIA.

MOTOR.

SPECIFICATION forming part of Letters Patent No. 520,316, dated May 22, 1894.

Application filed October 24, 1893. Serial No. 488,999. (No model.)

To all whom it may concern:

Be it known that I, CHARLES WASHINGTON JOHNSTON, of Germantown, Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a new and Improved Motor, of which the following is a full, clear, and exact description.

The invention is an improvement in the class of automatic motors whose distinguishing feature is a pivoted oscillating lever having self-discharging buckets attached to its ends, and receiving and discharging water, alternately, as the lever shifts vertically from one position to the other.

The novel features of the invention are as hereinafter specified.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in both figures.

Figure 1 is a plan view of the improvement; and Fig. 2 is a side elevation of the same with parts in section and parts broken out.

The improved motor, as illustrated in the drawings, is applied on a double-acting pump, and the said motor is provided with a beam A pivoted at A′ on a suitably constructed frame B. The beam A, on opposite sides of its fulcrum A′, is connected with pumps C and C′ of any approved construction and adapted to discharge into an air cylinder D provided with a discharge pipe E connected with a building or other place.

On the outer ends of the beam A are hung the buckets F and F′, each provided in its middle with a valve seat F^2 or F^3, on which is adapted to be seated a valve F^4 or F^5 respectively, formed with downwardly extending valve stems F^6 or F^7 respectively, projecting through the seat below the corresponding bucket, so that when the end of the beam goes down, the projecting valve stem of the respective bucket strikes the base of the frame B, so that the valve is unseated and water contained in the bucket runs out and the bucket is emptied. When the bucket is in its uppermost position its valve is seated on the corresponding seat, so that the bucket is closed at the bottom and water can flow into the bucket through a corresponding chute or trough G or G′, respectively, preferably made in one piece and divided by a transverse ridge G^2, as is plainly illustrated in the drawings. The troughs G and G′ are adapted to be alternately connected near the ridge G^2 with the outlet H′ of a water chute H set in the side of a channel I through which flows water, so that water from the channel can pass into the chute H and through the outlet H′ into the corresponding trough G or G′. Thus, as shown in Fig. 2, the water flows into the trough G′ as the ridge G^2 is now to the left of the outlet H′, but when the chutes are shifted to the right until the ridge G^2 passes to the right of the outlet H′, then the water is cut off from the trough G′ and water flows through the outlet H′ into the trough G.

In order to prevent the impurities from passing from the channel I into the chute H, I cover the entrance opening of the chute with a wire screen H^2, as is plainly shown in the drawings.

In order to hold the beam A in an inclined position for filling the uppermost bucket F or F′, the following device is provided. Near the ends of the beam A, directly above the buckets F, F′ are pivoted the hooks J, J′, pressed on by springs J^2, J^3 respectively, the said hooks being adapted to engage hooks K^2, K^3 respectively, formed on levers K, K′ respectively, fulcrumed on suitable bearings arranged on brackets B′, secured on the main frame B. The free ends of the levers K, K′ are provided with weights K^4, K^5 respectively, adapted to rest on springs K^6, K^7 respectively, supported on brackets B^2 of a rail B^3 forming part of the main frame B. Now, it will be seen that when a bucket F is filled and descends, the other bucket swings upward at that end of the beam A, and the corresponding hook J or J′ engages the corresponding hook K^2 or K^3 of the respective lever K or K′. By this means the raised end of the beam A is locked in place until the water entering the raised bucket overbalances the weighted lever K or K′.

In order to shift the troughs G, G′ from the beam the following device is provided: Near the ends of the beam A, next to the hooks J, J′, are arranged lugs A^2, A^3 respectively, adapted to engage the arms L^2 and L^3 respectively of bell crank levers L, L′ respectively, fulcrumed on brackets B^4 attached to the rail B^3. The other arms L^4, L^5 of the bell crank

levers L, L′, respectively, are pivotally connected by links N, N′ respectively, with the troughs G, G′ respectively, the said links being also connected with arms O, O′ respectively, fulcrumed on the brackets B^5 supported on the rail B^3. Now, when one end of the beam swings upward the corresponding lug on this end imparts a swinging motion to the corresponding bell crank lever, so as to shift the troughs G, G′, to the opposite side to connect the corresponding trough of the upwardly-moving bucket with the outlet H′. Now, when the several parts are in the position illustrated in the drawings, the outlet H′ is connected with the trough G′, so that water flows from the channel I, through the chute H into the trough G′ and finally into the bucket F′, in which the water accumulates until the bucket has sufficient weight to overbalance the weighted lever K′. When this takes place the weighted bucket F′ will swing downward, thus causing the beam A to swing downward at the right end, and its other, left end, with the bucket moves upward. In moving downward the bucket F′ finally causes the stem F^7 to engage the base of the frame B, so that the valve F^5 is raised and water can flow out of the said bucket F′, to empty the latter. When the beam A moves downward at its right end the hook J′ causes an upward swinging of the weighted lever K′ until the hook J′ disengages the hook K^3 of the said lever; the latter then swings downward to its normal position, bumping of the lever being prevented by the spring K^7. When the left end of the beam A moves upward with the empty bucket F, its hook J finally engages the hook K^2 of the lever K, so as to lock the beam in place for the time being. At the same time the left end of the beam, in moving upward, strikes with its lug A^2 on the arm L^2 of the bell crank lever L, so that the arm L^4 of the bell crank lever swings inward and causes, by means of the link N, a swinging of the troughs G and G′ to the right, until the ridge G^2 has passed to the right of the outlet H′. Water now flows through the outlet H′ into the trough G and into the bucket F, to fill the same until the weight of the bucket overbalances the lever K. When this takes place the left hand end of the beam A will sink downward and the right hand end will rise with the empty bucket F′, and the water in the bucket F will be discharged when the beam moves into a lowermost position and the stem F^6, by striking the base of the frame B causes an unseating of the valve F^4 from its seat F^2 in the bucket F. The right hand end of the beam A, in rising, causes its hook J′ to engage the hook K^3 of the lever K′, to lock this end of the beam temporarily in place, and the lug A^3 on the beam, in moving upward, actuates the bell crank lever L′, so that the link N′ shifts the troughs G and G′ to the left until the spout H′ again discharges into the trough G′. The above described operation is then repeated. It will be seen that by this arrangement a swinging of the beam A is obtained, whereby the pumps C and C′ are set in motion to alternately draw in and discharge water into the air cylinders D, from which the water passes by the discharge pipe E to the place where it is wanted.

It is understood that the motion of the beam A can be readily transmitted to other machinery to drive the same.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In a motor of the class indicated, the combination, with a water supply, a horizontal water-trough or conductor suspended beneath it, and having a central, transverse division, swinging hangers supporting said trough, a centrally-pivoted oscillating lever, and buckets mounted on the latter and having self-operating discharge valves, of elbow-levers pivoted in the frame of the motor and arranged above the highest point of oscillation of the bucket lever, and also adapted to come in contact with the latter, and links which connect the trough with said elbow-levers, as shown and described, to operate as specified.

2. A motor, comprising a beam mounted to swing and provided with projections or lugs, valved buckets supported on the ends of the said beam, hooks held near the ends of the said beam, weighted levers adapted to be engaged by the said hooks, bell crank levers adapted to be engaged by the lugs on the said beam, and a trough connected by links with the said bell crank levers, substantially as shown and described.

3. A motor, comprising a beam mounted to swing and provided with projections or lugs, valved buckets supported on the ends of the said beam, hooks held near the ends of the said beam, weighted levers adapted to be engaged by the said hooks, bell crank levers adapted to be engaged by the lugs on the said beam, a trough connected by links with the said bell crank levers, so as to be shifted alternately from one side to the other, and a water supply having an outlet adapted to be connected alternately with the ends of the said trough, substantially as shown and described.

CHARLES W. JOHNSTON.

Witnesses:
HENRY W. OTELDER,
WM. H. EMHARDT.