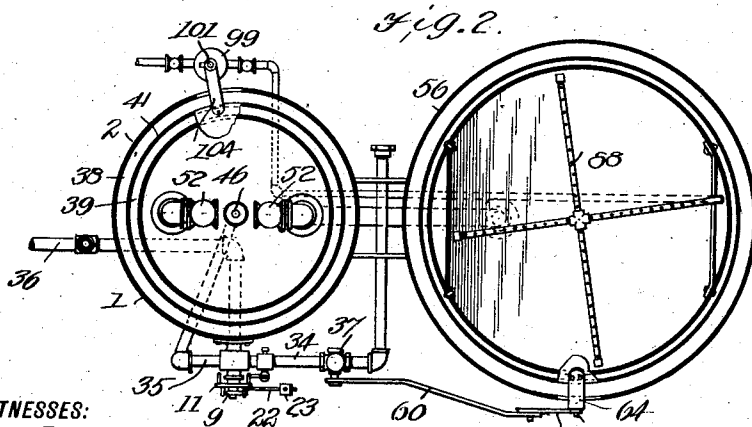
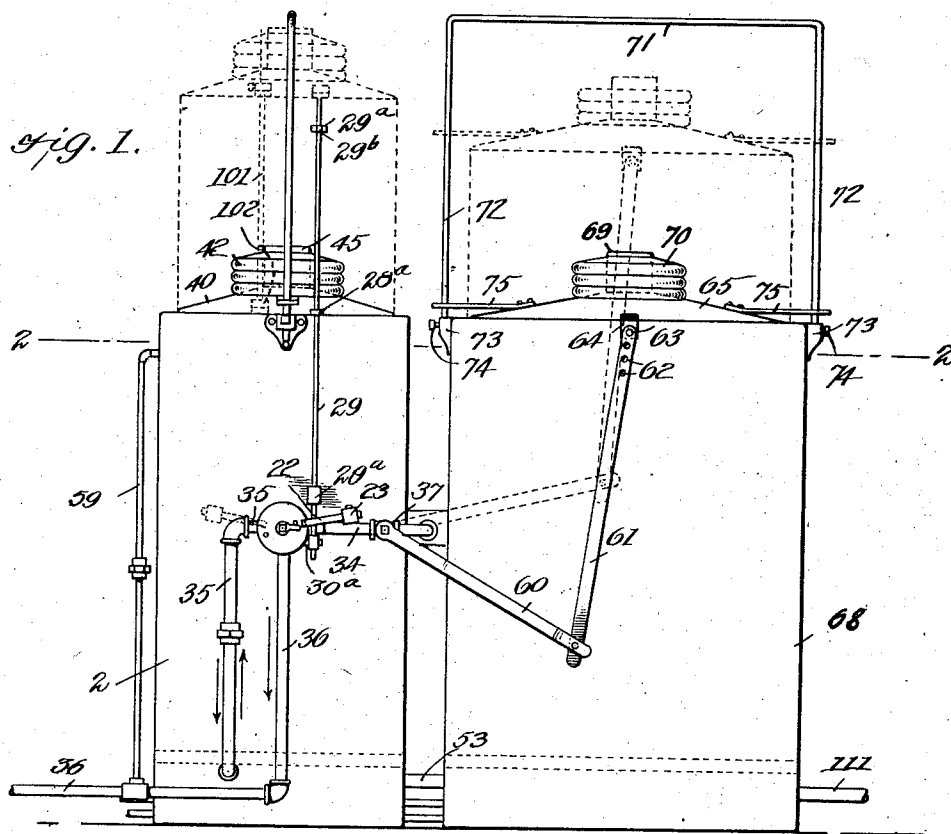


1,010,904.

W. A. HARRIS.
CARBURETER.
APPLICATION FILED FEB. 3, 1911.

Patented Dec. 5, 1911.

3 SHEETS—SHEET 1.



WITNESSES:

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INVENTOR

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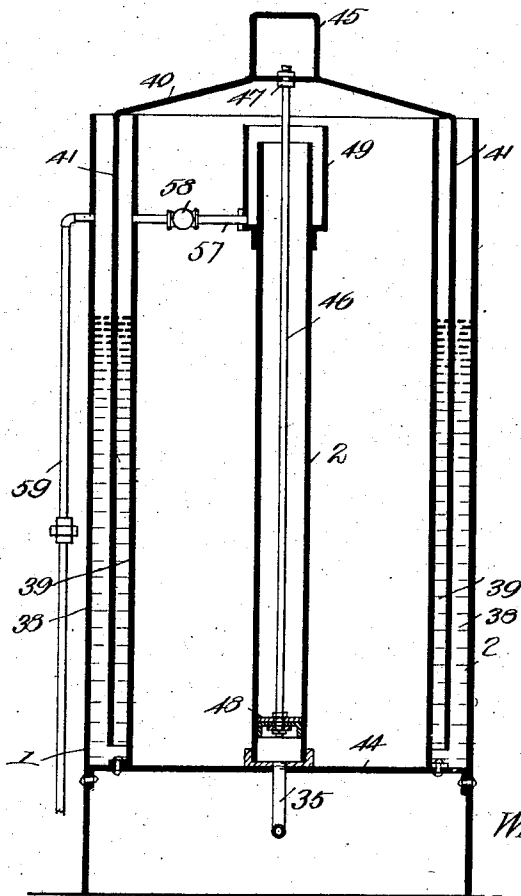
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3 SHEETS-SHEET 2.

Fig. 3.



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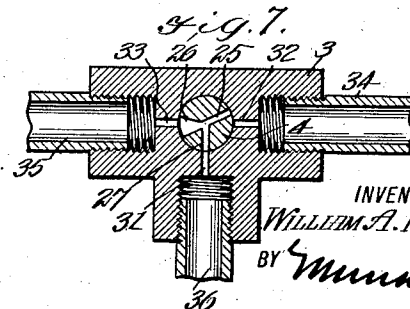
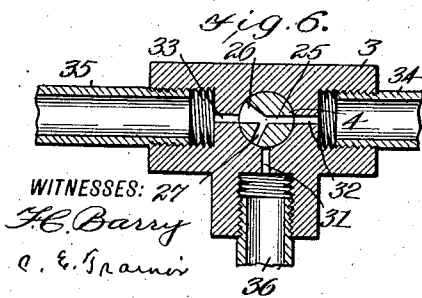
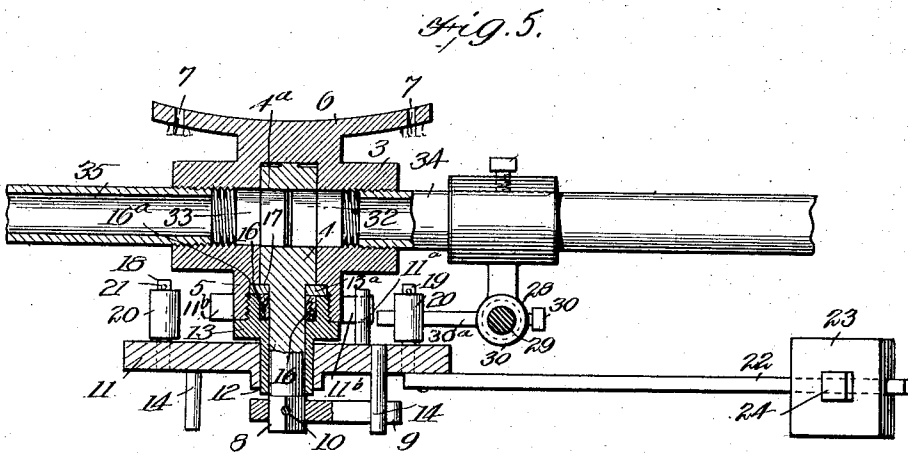
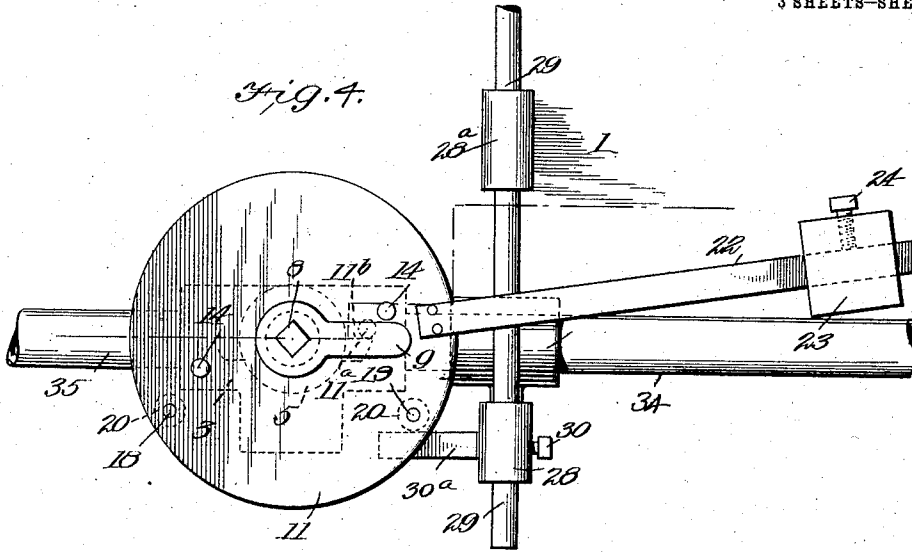
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

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CARBURETER.

1,010,904.

Specification of Letters Patent.

Patented Dec. 5, 1911.

Application filed February 3, 1911. Serial No. 606,299.

To all whom it may concern:

Be it known that I, WILLIAM A. HARRIS, a citizen of the United States, and a resident of Greenville, in the county of Greenville and State of South Carolina, have invented certain new and useful Improvements in Carbureters, of which the following is a specification.

My invention is an improvement in carbureters, and consists in certain novel constructions and combinations of parts hereinafter described and claimed.

The object of the invention is to provide a carbureter of the character specified, for vaporizing gasoline and mixing air therewith in the most favorable proportions for the most efficient combustion.

Referring to the drawings forming a part hereof, Figure 1 is a side view of the improvement. Fig. 2 is a section on the line 2—2 of Fig. 1. Fig. 3 is a vertical section, Fig. 4 is a side view of the reversing valve, Fig. 5 is a horizontal section of the same, Fig. 6 is a transverse vertical section with the plug in one position, and Fig. 7 is a similar view with the plug in another position.

In the present embodiment of the invention, a device is provided for maintaining a constant head of air in the receptacle for supplying air to the carbureting device. As shown in Fig. 3, a casing 1 is provided for compressing the air and supplying it to the carbureter. Water is admitted to a cylinder 2 within the casing by means of a special form of valve shown more particularly in Figs. 6 and 7. The said valve comprises a casing 3, in the form of a T, and the stem 4 of the valve 4^a extends through a nipple 5 on the T. A transversely curved plate 6 is provided integral with the opposite side of the T from the nipple 5, for securing the casing 3 to the side of the casing 1, by means of rivets 7 passing through the plate and casing wall. The outer end 8 of the stem is polygonal in cross section, and an arm 9 is provided with a polygonal opening engaging the said end, and is held on the stem by a pin 10. A disk 11 is journaled on the hub 12 of a packing nut 13 threaded into the end of the nipple, and the disk is provided with oppositely arranged lateral pins 14 for engaging the arm 9. A packing 16 encircles the stem inside the bore of the nut, and between the end of the nut and a washer 13^a of metal, seated on registering shoulders 16^a

and 17 of the nipple and stem. The disk is provided with a pair of oppositely arranged inwardly extending lateral journal pins 18 and 19, on each of which is journaled a roller 20, held in place by a pin 21. An arm 22 extends radially from the disk, and a weight 23 is slidable on the arm, and is held in place by a set screw 24. A rod 29 is slidable in a fixed guide sleeve 28^a, and a finger 30^a is provided with a bearing 28 slidable on the rod, and held in adjusted position by a set screw 30. The valve plug 4^a of the valve is provided with a transverse passage 25, branching at one end into branches 26 and 27, and the branch 26 is enlarged or tapered outwardly. The casing is provided with passages 31 and 32 and 33 leading from the opening for the plug to the ends and to the lateral branch of the T. A supply pipe 34 leads to that end of the casing having the passage 32, and a pipe 35 leads from the other end having the passage 33 to the cylinder 2. The lateral branch having the passage 31 is provided with a pipe 36 which is the discharge pipe.

The operation of the mechanism just described is as follows: A valve 37 is interposed in the pipe 34 adjacent to the reversing valve, and the said valve 37 is operated under conditions and by mechanism to be presently described, to admit water to the pipe 34. The valve 4^a is normally in the position shown in Fig. 8 placing the pipe 34 in communication with the pipe 35, and admitting water to the cylinder 2. The casing 1 is provided with spaced concentric walls 38 and 39, and a top plate 40 is provided with a petticoat 41 fitting between the walls and forming a bell. The space between the walls 38 and 39 is partially filled with water, forming a water seal for the bell. The bell is weighted as shown at 42, and the tube or cylinder 2 is held on the bottom 44 of the casing 1, concentric with the said casing. The bell is provided with a closed compartment 45 at the center of its top, and a rod 46 is passed through an opening in the bottom of the compartment and is engaged by nuts 47 on each side of the bottom. A piston 48 is secured to the lower end of the rod, and moves in the cylinder. The upper end of the cylinder 44 is provided with a cup 49, open at its top, and extending above the top of the cylinder. The water entering the cylinder or tube 2, lifts the piston 48, and by means of the rod 46, the bell of the casing

1 is also lifted. A partial vacuum is created in the casing, and this is relieved by air entering through a pipe 50, having an elbow 51 at its top, provided with an inwardly opening check valve 52. The sleeve 28^a carrying the rod 29 before mentioned, is carried by the bell 40 of the casing, and moves upwardly therewith. The rod is slidable in the sleeve 28, and collars 29^a are arranged on the rod on each side of the sleeve, and are held in adjusted position by set screws 29^b. The uppermost collar is engaged and lifts the rod, when the bell 40 is near the end of its upward travel. The finger 30^a rotates the disk sufficiently to permit the weighted arm 22 to finish the movement, and the disk is limited in its movement by the engagement of a pin 11^a on the inner face of the disk with oppositely arranged stops 11^b on the valve casing. When the bell reaches the dotted line position of Fig. 1, the finger 30^a of the rod engages the adjacent roller 20 and partially rotates the disk 11, reversing the position of the valve 4^a, moving it into the position shown in Fig. 9. The water supply is now cut off, and the cylinder is placed in communication with the pipe 36. The water passes from the cylinder, through pipe 35, passage 33 of the T, passages 26 and 27 of the valve, passage 31 of the T, and pipe 36. The weights 42 now force the bell and piston downward as the water wastes through pipe 36, and the air that has been drawn in through the valve 52, is forced out through a pipe 53 having an elbow 54 provided with an outwardly opening check valve 56, into a casing to be described. As the bell nears its lowermost position, the sleeve 28^a engages the lowermost collar 29^b and presses the rod downwardly. The finger 30^a engages the roller 20 of the pin 18, and the valve is returned to the position shown in Fig. 8, again admitting the water to the cylinder. This operation continues as long as the valve 37 is open, but as soon as the said valve is closed, the operation ceases.

The cup 49 before mentioned is for the purpose of catching any overflow from the cylinder 2, and a pipe 57 leads from the bottom of the said cup to the space between the double wall of the casing. A valve 58 is interposed in the pipe for controlling the same. Should the leakage above mentioned be sufficient to oversupply the space between the double walls, the overplus will pass out and down the overflow pipe 59 and be discharged through the waste pipe 36.

The valve 37 is operated by an arm 60 secured to the stem of the valve at one end and pivoted at the other end to one end of a link 61. The other end of the link is provided with a longitudinal series of openings 62, through one of which is passed a pin 63, for connecting the link to a bracket 64 on

the cover of the bell 65 of the receiver for the mixture. The said receiver is of the usual construction, comprising a double walled casing 66, in which is movable the bell 65 and the casing is provided with an outlet 111, leading to the place where the mixture is to be utilized. The means for supplying gasoline consists of a cylinder 99, arranged alongside the cylinder 2 (Fig. 2), and the piston rod 101 of the cylinder is operated by means of a plate 104 secured to the bell top 40 of the casing. The bell is provided with a cylindrical extension 69 at its center, and a plurality of weights in the form of rings 70 encircle the extension in superposed relation. The air entering the casing through the pipe 53 lifts the bell, and when the said bell attains the dotted line position of Fig. 1, the arm 60 is swung as indicated by dotted lines to close the valve 37.

A substantially U-shaped frame 71 is connected to the casing. The arms 72 of the frame pass through oppositely arranged bearing brackets 73 on the outer wall of the casing, and are held in adjusted position by set screws 74. A pair of oppositely arranged guide lugs 75 is secured to the bell, and each lug is provided with an opening for receiving the adjacent arm.

I claim:

1. In a device of the character specified, a receiver, means for supplying air to the receiver, said means comprising a casing, a movable bell for the casing, a water seal between the bell and the casing, a cylinder arranged concentric within the casing, a piston in the cylinder, a rod connecting the piston with the bell, and means for alternately admitting water to the cylinder and discharging it therefrom to raise and lower the bell, said means comprising a valve casing having at one end a passage for connection with a water supply and having at the other end a connection with the cylinder, the valve casing having a discharge opening, a valve in the casing having means for connecting the first-named passage with the second-named passage, or with the discharge opening, a disk journaled on the valve, a roller extending laterally from the disk near each side thereof, a vertically movable rod having a finger for engaging the roller to oscillate the disk, a counter-balance connected with the disk for completing the movement thereof, a connection between the disk and the valve for moving the same, stops for limiting the movement of the disk, a sleeve on the bell of the casing through which the rod is slidable, a stop adjustable on the rod on each side of the sleeve, a pump for supplying gasoline to the receiver, means on the bell of the casing for operating the said pump, means for controlling the supply of water to the valve, and means controlled by

the volume of the contents of the receiver for actuating the said water controlling means.

2. In a device of the character specified, a receiver, means for supplying air to the receiver, said means comprising a casing, a movable bell for the casing, a water seal between the bell and the casing, a cylinder arranged concentric within the casing, a piston in the cylinder, a rod connecting the piston with the bell, and means for alternately admitting water to the cylinder and discharging it therefrom to raise and lower the bell, said means comprising a valve casing having at one end a passage for connection with a water supply and having at the other end a connection with the cylinder, the valve casing having a discharge opening, a valve in the casing having means for connecting the first-named passage with the second-named passage, or with the discharge opening, a disk journaled on the valve, a roller extending laterally from the disk near each side thereof, a vertically movable rod having a finger for engaging the roller to oscillate the disk, a connection between the disk and the valve for moving the same, stops for limiting the movement of the disk, a sleeve on the bell of the casing through which the rod is slidable, a stop adjustable on the rod on each side of the sleeve, a pump for supplying gasoline to the receiver, means on the bell of the casing for operating the said pump, means for controlling the supply of water to the valve, and means controlled by the volume of the contents of the receiver for actuating the said water controlling means.

3. In a device of the character specified, a receiver, means for supplying air to the receiver, said means comprising a casing, a movable bell for the casing, a water seal between the bell and the casing, a cylinder arranged concentric within the casing, a piston in the cylinder, a rod connecting the piston with the bell, and means for alternately admitting water to the cylinder and discharging it therefrom to raise and lower the bell, said means comprising a valve casing having at one end a passage for connection with a water supply and having at the other end a connection with the cylinder, the valve casing having a discharge opening, a valve in the casing having means for connecting the first-named passage with the second-named passage, or with the discharge opening, a disk journaled on the valve, a roller extending laterally from the disk near each side thereof, a vertically movable rod having a finger for engaging the roller to oscillate the disk, a counter-balance connected with the disk for completing the movement thereof, a connection between the disk and the valve for moving the same, stops for limiting the movement of the disk, a sleeve on the bell of the casing through which the rod is slidable, a stop adjustable on the rod on

each side of the sleeve, means for controlling the supply of water to the valve, and means controlled by the volume of the contents of the receiver for actuating the said water controlling means.

4. In a device of the character specified, a receiver, means for supplying air to the receiver, said means comprising a casing a movable bell for the casing, a water seal between the bell and the casing, a cylinder arranged concentric within the casing, a piston in the cylinder, a rod connecting the piston with the bell, and means for alternately admitting water to the cylinder and discharging it therefrom to raise and lower the bell, said means comprising a valve casing having at one end a passage for connection with a water supply and having at the other end a connection with the cylinder, the valve casing having a discharge opening, a valve in the casing having means for connecting the first-named passage with the second-named passage, or with the discharge opening, a disk journaled on the valve, a roller extending laterally from the disk near each side thereof, a vertically movable rod having a finger for engaging the roller to oscillate the disk, a counterbalance connected with the disk for completing the movement thereof, means operated by the bell near the end of its travel in each direction for moving the rod to oscillate the disk, means for controlling the supply of water to the valve, and means controlled by the volume of the contents of the receiver for actuating the said water controlling means.

5. In a device of the character specified, a receiver, means for supplying air to the receiver, said means comprising a casing, a movable bell for the casing, a water seal between the bell and the casing, a cylinder arranged concentric within the casing, a piston in the cylinder, a rod connecting the piston with the bell, and means for alternately admitting water to the cylinder and discharging it therefrom to raise and lower the bell, said means comprising a valve casing having at one end a passage for connection with a water supply and having at the other end a connection with the cylinder, the valve casing having a discharge opening, a valve in the casing having means for connecting the first-named passage with the second-named passage, or with the discharge opening, a disk journaled on the valve, a roller extending laterally from the disk near each side thereof, means for engaging the rollers to swing the disk, means on the bell for actuating the said means near the end of the movement of the bell in each direction, means for controlling the supply of water to the valve, and means controlled by the volume of the contents of the receiver for actuating the said water controlling means.

6. In a device of the character specified, 130

a receiver, means for supplying air to the receiver, said means comprising a casing, a movable bell for the casing, a water seal between the bell and the casing, a cylinder arranged concentric within the casing, a piston in the cylinder, a rod connecting the piston with the bell, and means for alternately admitting water to the cylinder and discharging it therefrom to raise and lower the bell, said means comprising a valve casing having at one end a passage for connection with a water supply and having at the other end a connection with the cylinder, the valve casing having a discharge opening, a valve in the casing having means for connecting the first-named passage with the second-named passage, or with the discharge opening, a disk journaled on the valve, a roller extending laterally from the disk near each side thereof, a vertically movable rod having a finger for engaging the roller to oscillate the disk, a counterbalance connected with the disk for completing the movement thereof, a connection between the disk and the valve for moving the same, stops for limiting the movement of the disk, a sleeve on the bell of the casing through which the rod is slidable, a stop adjustable on the rod on each side of the sleeve, a pump for supplying gasoline to the receiver, and means on the bell of the casing for operating the said pump.

7. In a device of the character specified, a receiver, means for supplying air to the receiver, said means comprising a casing, a movable bell for the casing, a water seal between the bell and the casing, a cylinder arranged concentric within the casing, a piston in the cylinder, a rod connecting the piston with the bell, and means for alternately admitting water to the cylinder and discharging it therefrom to raise and lower the bell, said means comprising a valve casing having at one end a passage for connection with a water supply and having at the other end a connection with the cylinder, the valve casing having a discharge opening, a valve in the casing having means for connecting the first-named passage with the second-named passage, or with the discharge opening, a disk journaled on the valve, a roller extending laterally from the disk near each side thereof, a vertically movable rod having a finger for engaging the roller to oscillate the disk, a counterbalance connected with the disk for completing the movement thereof, a connection between the disk and the valve for moving the same, stops for limiting the movement of the disk, a sleeve on the bell of the casing through which the rod is slidable, and a stop adjustable on the rod on each side of the sleeve.

8. In a device of the character specified, a receiver, means for supplying air to the re-

ceiver, said means comprising a casing, a movable bell for the casing, a water seal between the bell and the casing, a cylinder arranged concentric within the casing, a piston in the cylinder, a rod connecting the piston with the bell, and means for alternately admitting water to the cylinder and discharging it therefrom to raise and lower the bell, said means comprising a valve casing having at one end a passage for connection with a water supply and having at the other end a connection with the cylinder, the valve casing having a discharge opening, a valve in the casing having means for connecting the first-named passage with the second named passage, or with the discharge opening, a disk journaled on the valve, a roller extending laterally from the disk near each side thereof, a vertically movable rod having a finger for engaging the roller to oscillate the disk, and a sliding connection between the bell and the said rod, and a stop adjustable on the rod on each side of the said connection.

9. In a device of the character specified, a receiver, means for supplying air to the receiver, said means comprising a casing, a movable bell for the casing, a water seal between the bell and the casing, a cylinder arranged concentric within the casing, a piston in the cylinder, a rod connecting the piston with the bell, and means for alternately admitting water to the cylinder and discharging it therefrom to raise and lower the bell, said means comprising a valve casing having at one end a passage for connection with a water supply and having at the other end a connection with the cylinder, the valve casing having a discharge opening, a valve in the casing having means for connecting the first-named passage with the second-named passage, or with the discharge opening, a disk journaled on the valve, a roller extending laterally from the disk near each side thereof, a vertically movable rod having a finger for engaging the roller to oscillate the disk, and a sliding connection between the bell and the rod for operating the rod near the end of the movement of the bell in each direction.

10. In a device of the character specified, a receiver, means for supplying air to the receiver, said means comprising a casing, a movable bell for the casing, a water seal between the bell and the casing, a cylinder arranged concentric within the casing, a piston in the cylinder, a rod connecting the piston with the bell, and means for alternately admitting water to the cylinder and discharging it therefrom to raise and lower the bell, said means comprising a valve casing having at one end a passage for connection with a water supply and having at the other end a connection with the cylinder, the valve casing having a discharge

opening, a valve in the casing having means for connecting the first-named passage with the second-named passage, or with the discharge opening, a disk journaled on the valve, a roller extending laterally from the disk near each side thereof, and means on the bell for engaging a roller near the end of the movement of the bell in each direction to swing the disk.

- 10 11. In a device of the character specified, a receiver and means for supplying air to the receiver, said means comprising a casing, a movable bell for the casing, a water seal between the bell and the casing, a cylinder within the casing, a piston in the cyl-

inder, a connection between the piston and the bell, and means for alternately admitting fluid under pressure to the cylinder and discharging it therefrom to raise and lower the bell, a cup encircling the upper end of the cylinder, and extending above the said upper end for receiving over-flow from the cylinder, a pipe leading from the said cup and opening into the water seal, and a discharge pipe leading from the said water seal at the level of the first-named pipe.

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."