

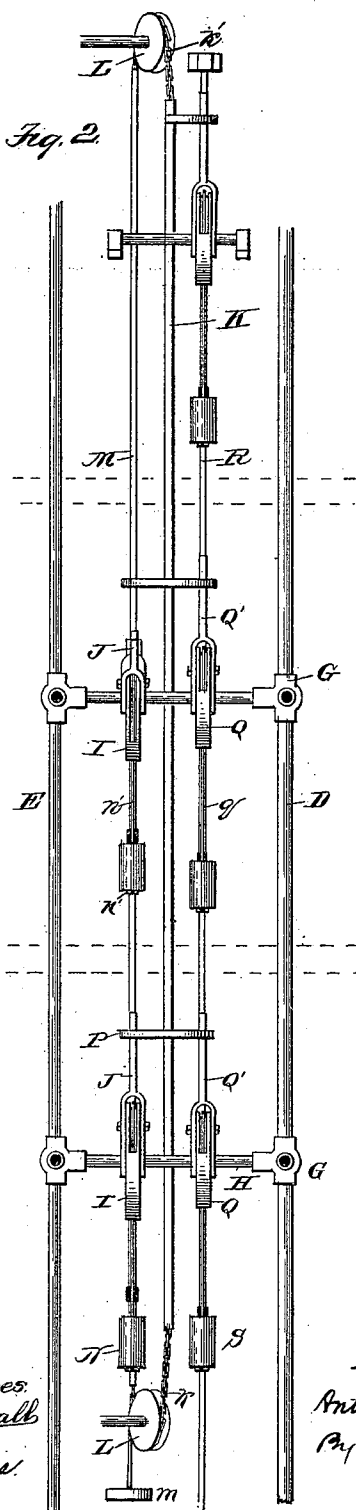
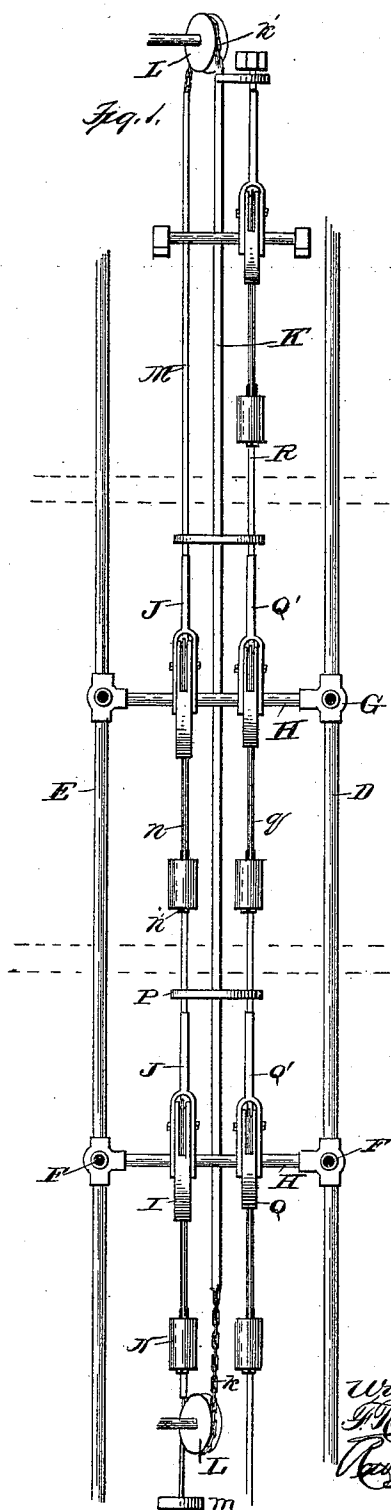
(No Model.)

3 Sheets—Sheet 1.

A. H. BRYAN.
WATER DISTRIBUTING APPARATUS.

No. 471,347.

Patented Mar. 22, 1892.



Witnesses:
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Inventor
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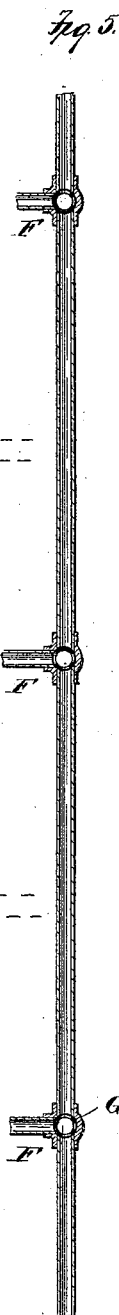
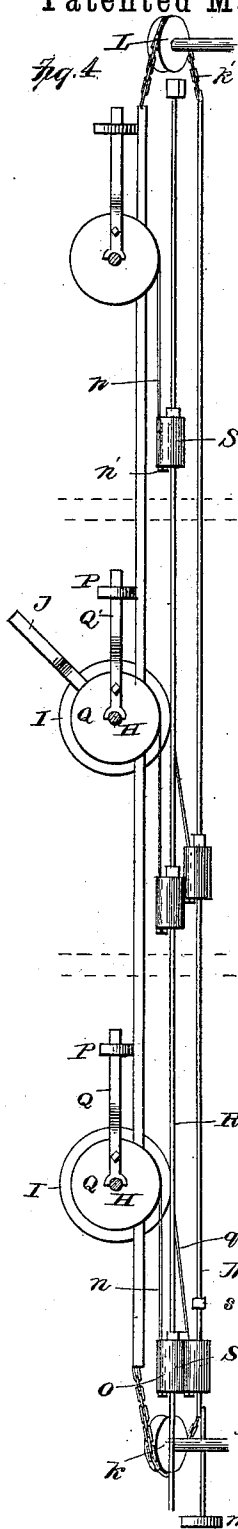
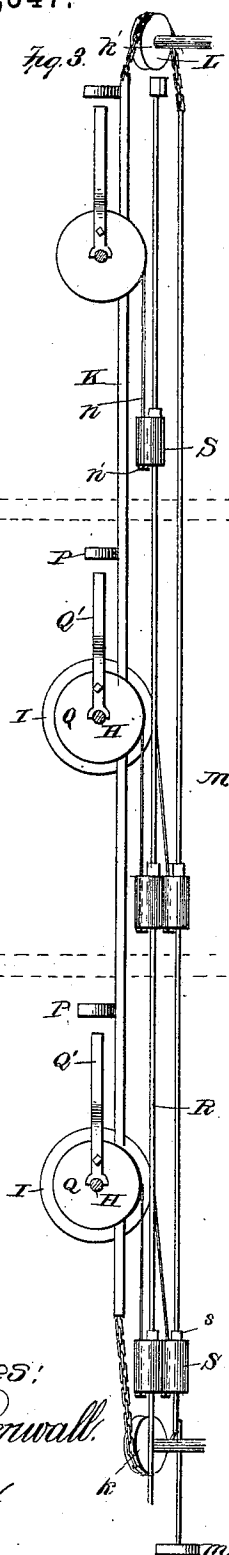
(No Model.)

3 Sheets—Sheet 2.

A. H. BRYAN.
WATER DISTRIBUTING APPARATUS.

No. 471,347.

Patented Mar. 22, 1892.



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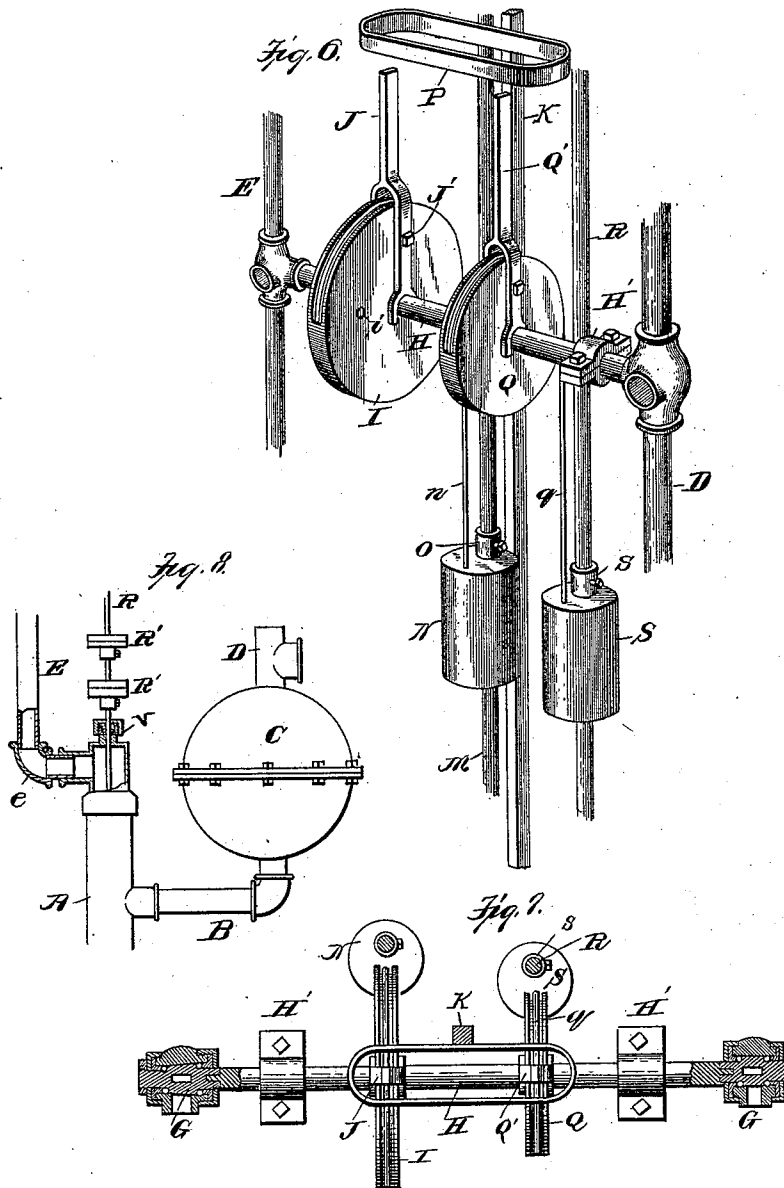
(No Model.)

3 Sheets—Sheet 3.

A. H. BRYAN.
WATER DISTRIBUTING APPARATUS.

No. 471,347.

Patented Mar. 22, 1892.



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UNITED STATES PATENT OFFICE.

ANTHONY H. BRYAN, OF EVANSVILLE, INDIANA.

WATER-DISTRIBUTING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 471,347, dated March 22, 1892.

Application filed November 19, 1891. Serial No. 412,391. (No model.)

To all whom it may concern:

Be it known that I, ANTHONY H. BRYAN, a citizen of the United States, residing at Evansville, in the county of Vanderburgh and State of Indiana, have invented certain new and useful Improvements in Water-Distributing Apparatus; and I 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.

My invention relates to an improvement in water-distributing apparatus; and it consists in the construction and arrangement of parts adapted to the controlling of the passage of water to an apparatus involving the principle described and shown in Letters Patent No. 462,651, granted to myself on the 3d day of November, 1891.

In the apparatus disclosed in the above-mentioned patent I utilize the waste water for raising the column of fresh water to fill the fresh-water tank. I have shown it therein as applied to a single story. In my present invention I have so arranged the parts that the apparatus will be applicable for use in a two, three, or more story building, and the aim of my present invention is to furnish means for actuating the apparatus from any story of the building and in such a manner that the same cannot be interfered with at any other point during the operation.

In the accompanying drawings, wherein like letters of reference indicate corresponding parts in the several views, Figure 1 is a front elevation of the valve-actuating means and the pump-piston valve-rod. Fig. 2 is a similar view showing one of the valve-actuating levers moved down. Fig. 3 is a side elevation of the construction shown in Fig. 1. Fig. 4 is a side elevation of the construction shown in Fig. 2. Fig. 5 is a vertical section of one of the pipes. Fig. 6 is a detail perspective view of one of the valve-actuating means and the means for actuating the piston-rod with the adjacent connections. Fig. 7 is a plan view of Fig. 6, showing the valves in section; and Fig. 8 is a diagrammatic view of an elevation of the pump-cylinder, the waste-water pipe, and the diaphragm vessel, parts being shown in section.

In the drawings, A represents the pump-cylinder, B the branch pipe, C the diaphragm-chamber, all of which are plainly shown in Letters Patent aforesaid.

D is the riser-pipe for the fresh-water supply, which leads out from the diaphragm-chamber C, and E is the discharge pipe or conductor for the waste water, its lower end leading into the top of the pump-cylinder A through a suitable elbow *e*. The pipes D and E are carried up parallel with each other into the first, second, and third stories of the building in which the apparatus is to be located, or from the lowermost to the uppermost story thereof. In each story branch pipes are connected with the pipes D and E, as shown at F in Fig. 5. These branches are carried, respectively, to the storage-tank for the clean water and the sink for the waste water, the tanks not being shown.

At the union of the branch pipes with the pipes D and E suitable three-way valves G are placed, having their stems connected by a cross bar or shaft H, which shaft is mounted in suitable bearings H'. In the drawings I have shown the apparatus as applied to a three-story house and in which there are two three-way valves in each pipe, one being represented in the first and the other in the second story; but it is obvious that any number of valves may be employed, according to the number of stories to the building. By connecting the opposite valves with the shaft H they are both operated simultaneously by the operation of the shaft. To rotate the shaft, I rigidly secure thereon a wheel or disk I, which has secured thereto a forked lever J, the lever being secured by a suitable bolt *j*, passing through the arms thereof and the wheel. I also provide an aperture *i*, so that the lever may be adjusted one-quarter of a circle on the wheel, if desired, for purposes hereinafter described. It is to be understood that these disks or wheels are to be placed together with the levers on each connecting-shaft in the respective compartments on the different floors, so that the valves may be actuated by them on any one floor, and to prevent a simultaneous movement of the valves on the different floors I place adjacent to the wheels I a vertically-disposed locking-bar K, working in suit-

able bearings formed in the floors of the building. This bar K has connected to its upper and lower ends chains k and k' , which pass over grooved pulleys L, the opposite ends of the chains being connected with the upper and lower ends of a vertical rod M, working parallel with the locking-bar through suitable bearings. (Not shown.) The lower end of the rod M has a weight m thereon, located below the pulley k , so that the normal position of the rod M is as shown in Figs. 1 and 3.

Slidingly secured on the rod M are a series of weights N, there being one weight for each valve-actuating wheel and lever. These weights have a flexible connection by bands n , secured thereto and extending up and secured to the periphery of the wheels I at a point at or about the central horizontal plane of the wheel. The wheels are grooved, as shown in Fig. 6, and the connection n rests in the groove to prevent the same from slipping from the periphery of the wheel. The weights N are secured on the rod M so that the valves will normally close the branch pipes and the levers J be forced into a vertical position, as more plainly shown in Fig. 6. On the rod M above the weights N are suitable collars O, adjustably secured in place by set-screws. These collars are arranged to occupy a position immediately above and in contact with the upper end of the weight when the rod M is in its normal lowered position. The connections n pass through apertures in the weights and project beyond the lower ends thereof, at which point they are provided with adjusting-nuts n' , so that the length of the connection between the top of the weight and wheel and the position of the weight on the rod may be varied.

Directly above the outer end of the levers J are arranged shackles P, secured to the locking-bar and extending out at right angles. These shackles are normally held above the levers, as shown in Figs. 1 and 3, by the weighted rod M. To lower the shackles, one of the levers J is forced down, as shown in Figs. 2 and 4, raising the weight N and forcing the rod M up, which draws the locking-bar with the shackles down onto the levers, thereby locking all of those not in use. As soon as the lever which has been forced down is released the weighted rod M carries the lever into its normal vertical position, closing the valve. The weights N prevent the flexible connections between the wheels and rod M from being crimped or folded; but owing to the weights being slidingly secured on the rod they are prevented from moving up with the rod when the levers are not actuated.

To cause the fresh water to rise in the pipe D, the dirty water must enter the diaphragm-chamber C above the piston of the pump. When the piston-valve is up, the dirty water is allowed to flow out and be discharged from the apparatus. This is all fully disclosed in Letters Patent aforesaid. In my present invention it is necessary to employ means for

actuating the piston-valve to allow the dirty water to escape at points in the different stories in the building. I therefore extend the piston-valve rod R up through the top of the pump-cylinder through a suitable stuffing-box r and carry it up parallel with and adjacent to the rod M. The piston-valve rod has secured to its lower end above the stuffing-box suitable weights R' , resting on collars fixed on the rod, which normally tend to force the same down. To raise the piston-valve rod, I loosely secure on the respective shafts H wheels Q, of a construction substantially similar to that of wheels I, the levers Q' being arranged in a manner similar to levers J, they having a flexible connection q with a sliding weight S on the piston-valve rod R, the weights engaging adjustable collars s on the rod R, so that when the lever Q' is turned down the weight S is raised, which also raises the piston-valve rod R. This construction is applied in all of the stories of the building, so that the piston-valve rod may be operated in the different stories.

To prevent the operation of the piston-valve rod when one of the valves is being operated, which would prevent the waste water from flowing down through that valve, I construct the shackles P of a length sufficient to encompass the ends of both levers J and Q', so that when one valve-lever is forced down the shackles lock the other valve-levers and all of the levers for actuating the piston-valve.

In applying my apparatus it is not necessary to provide the upper story of the building with the valves; but the levers Q' and means for actuating the piston-rod are applied to all of the stories alike, so that the occupant of the upper story cannot interfere with the occupant of the lower story from operating the device after he has turned the valve.

The operation of the above-described apparatus is as follows: It is to be understood that the principle of the apparatus is the formation of a balancing-column of water, which is described in my patent above referred to. The waste water in the pipe E passing down through the pump-cylinder pipe B and into the diaphragm-chamber C, which has previously been filled with water above the diaphragm, the waste water thereby displaces the fresh water in the chamber C and forces it up into pipe B to a point equal to the surface of the water in the pipe E. As the sink into which the waste water is placed is elevated above the tank into which the fresh water is discharged, the fresh water will run from pipe D into the tank until the water in the sink or pipe E is level with the discharge end of the pipe D. By placing three-way valves in the pipes E and D at the union of the branch pipes the pipes D and E are normally open throughout their entire length, while the branch pipes are closed. The accumulation of the water in the pipes D and E fills the same to the height of the upper

tank and sink, while the communication between the lower tank and sink is cut off. When any one of the three-way valves are operated, the water above is cut off and the accumulated water in the sink allowed to pass down and force the diaphragm (in the diaphragm-chamber) up, thereby causing the water in the pipe D to raise and discharge into the tank adjacent to the sink, the piston-valve rod having previously been operated. Upon the movement of the valve all of the other valves, either above or below, are locked, thereby preventing the interference on the part of any of the occupants in the upper and lower stories and preventing the overflowing of the tank or the surplus accumulation in the sink. By locking the levers on the piston-rod the piston cannot be actuated while the valves are being moved, which would prevent the complete working of the apparatus. When it is desired to remove the water from one of the upper compartments on the occasion of freezing of the pipes below or clogging up thereof, the levers J are adjusted to the aperture i, so that the valve may be reversed, carrying the blank side down and allowing the water to discharge into the sink below.

I am aware that many minor changes in the construction and arrangement of the parts of my device can be made and substituted for those herein shown and described, without in the least departing from the nature and principle of my invention.

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

1. In a water-distributing apparatus, the combination, with a supply and waste pipe and a pump for controlling the discharge from the waste-pipe, of one or more valves in the waste-pipe, having stems thereon, levers for turning the valves, wheels on the valve-stems, flexible bands on the wheel, a locking-bar, means on the bars for locking the valves, and a connection between the wheel and bar arranged to move the locking-bar upon the movement of a valve, substantially as described.

2. In a water-distributing apparatus, the combination, with a waste-water pipe, of a series of branch pipes leading therefrom, three-way valves at the union of the branch and waste-water pipes having valve-stems thereon, levers on the valve-stems, a weighted rod, a locking-bar for the levers, means on the bar for locking the valves, connections between the bar and rod, and connections between the levers and rod, substantially as described.

3. In a water-distributing apparatus, the combination, with a water-supply pipe and a waste-water pipe, of branch pipes leading therefrom, cocks for the pipes, having actuating-stems, levers on the stems of the cocks, a locking-bar, means on the bar for locking the cocks, a weighted connection for the bar, and connections between the bar and levers, substantially as described.

4. In a water-distributing apparatus, the combination, with the supply and waste-water pipes and a pump, of branch pipes leading from the said other pipes, valves for closing the pipes, means for simultaneously operating the valve of the supply and waste-water pipes, locking means actuated by the valve-actuating means for locking certain valves, and means for normally closing the valve, substantially as described.

5. In a water-distributing apparatus, the combination of the pump, the water-supply and drain pipes, the latter leading into the pump, a piston-valve in the pump, a piston-rod, a series of levers for actuating the rod, and locks for the levers and means for actuating the locks, substantially as described.

6. In a water-distributing apparatus, the combination, with the fresh-water supply and waste-water pipes, of branch pipes leading therefrom, three-way valves for the branch pipes, connections between the adjacent valves of the fresh-water and waste-water pipes, disks on the connections, levers on the disks, a locking-bar, means on the bar for locking the valves, a weighted rod, connections between the same and bar, sliding weights on the rod, straps on the disks connected with the sliding weights, and stops on the rod above the sliding weights, substantially as described.

7. In a water-distributing apparatus, the combination, with the supply and waste-water pipes, of branch pipes leading therefrom at different elevations, three-way valves at the junction of the branch pipes and said other pipes, connections between opposite valves of the respective pipes, levers for simultaneously operating the connected valves, a pump having its piston-valve rod extending up to and in proximity to the valves, and a series of levers on the piston-valve rod, substantially as described.

8. In a water-distributing apparatus, the combination, with the fresh and waste water pipes, of two or more branches for the pipes, valves for the same and means for actuating the valves of each pipe separately and the opposite valves of the pipes simultaneously, a pump having a weighted piston-valve rod extending up adjacent to the valves, levers for moving the piston-valve rod, arranged at or near the valve-actuating means, and a locking-bar for locking the valve-actuating means and for locking the levers of the piston-valve rod upon the actuation of any one of the valves, substantially as described.

9. In a water-distributing apparatus, the combination, with the fresh and waste water pipes, of a series of branch pipes leading from the same, arranged one above the other in the respective pipes, three-way valves for the branches, levers for actuating the valves, a vertically-moving bar having shackles thereon arranged above the levers, a weighted rod, connections between the same and bar-pulleys over which the connections pass, sliding

weights on the rods, connections between the levers and the weights, and stops on the rods above the weights, substantially as described.

10 In a water-distributing apparatus, the
5 combination of two parallel pipes, valves in the pipes, levers for simultaneously moving the valves, a disk to which the lever is attached, a locking-bar, a rod for actuating the
10 bar, a connection between the rod and disk, a pump-piston valve, a disk loosely journaled on the valve-rod, a lever on the disk, a connection between the disk and piston-valve, and a shackle on the locking-bar, substantially as described.

15 11. In a water-distributing apparatus, the combination of two pipes, valves in the pipes,

a connection between the valves, a disk on the connection, a lever for actuating the disk, a companion disk on the connection, a lever for actuating the same, a piston-valve rod, a 20 vertical rod, connection between the rod and disks, a locking-bar secured to the vertical rod and arranged to move in a direction opposite to that of the rod, and means on the bar for locking the levers, substantially as 25 described.

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

ANTHONY H. BRYAN.

Witnesses:

L. S. BACON,
REEVE LEWIS.