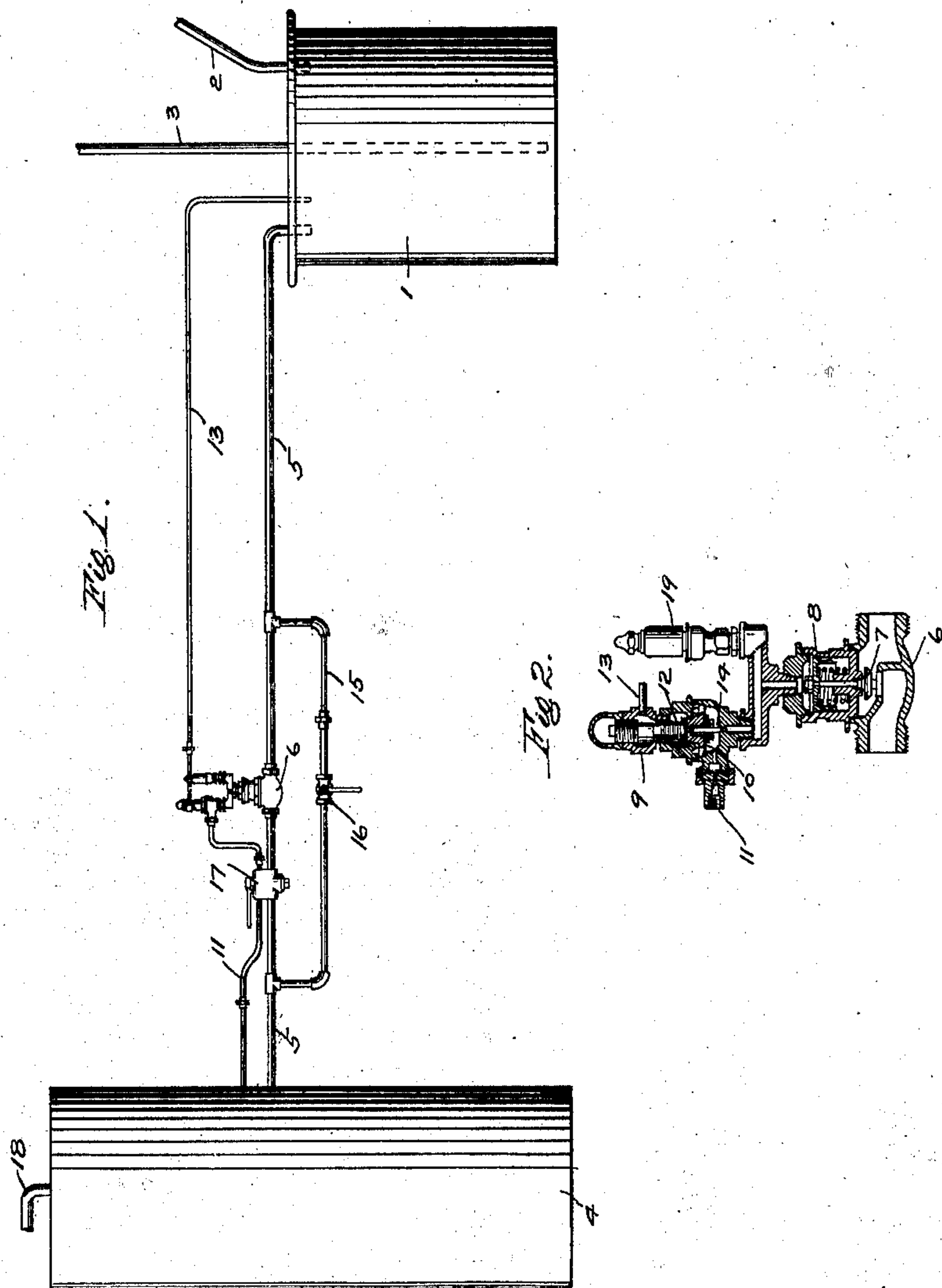


F. H. PARKE.
 DEVICE FOR PUMPING LIQUIDS.
 APPLICATION FILED SEPT. 14, 1908.

963,641.

Patented July 5, 1910.



WITNESSES
Wm. M. Cady
J. Custer

INVENTOR
Fredric H. Parke
 by *E. Knight* Att'y.

UNITED STATES PATENT OFFICE.

FREDERIC H. PARKE, OF EDGEWOOD, PENNSYLVANIA, ASSIGNOR TO THE WESTINGHOUSE AIR BRAKE COMPANY, OF PITTSBURG, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

DEVICE FOR PUMPING LIQUIDS.

963,641.

Specification of Letters Patent.

Patented July 5, 1910.

Application filed September 14, 1908. Serial No. 452,993.

To all whom it may concern:

Be it known that I, FREDERIC H. PARKE, a citizen of the United States, residing at Edgewood, in the county of Allegheny and State of Pennsylvania, have invented new and useful Improvements in Devices for Pumping Liquids, of which the following is a specification.

This invention relates more particularly to apparatus for pumping liquids by means of fluid under pressure, the liquid to be pumped being contained in a closed vessel or receptacle provided with a discharge pipe, through which the liquid is forced by the application of fluid pressure to the liquid contents of the receptacle. The operation of apparatus of this character is necessarily intermittent and when all of the liquid is forced out of the receptacle it is evident that the fluid under pressure will follow the liquid through the discharge pipe unless shut off, and thus cause waste of fluid and racing of the air pump which is employed to compress the fluid.

The principal object of my invention is to provide an apparatus of the above character having means for automatically cutting off the flow of fluid upon completion of the pumping operation and also warn the attendant of the fact.

For this purpose my invention consists broadly of a cut off valve mechanism adapted upon a predetermined fall in pressure in the liquid receptacle to cut off the flow of fluid thereto, a whistle device being provided which is adapted to blow upon closing the cut off valve.

In the accompanying drawings, Figure 1 is a diagrammatic view of an apparatus for pumping liquids embodying my improvements; and Fig. 2 a central section of a preferred construction of the automatic cut off and alarm valve mechanism.

The apparatus as illustrated in Fig. 1 of the drawing comprises a closed receptacle 1 for holding the liquid which is to be pumped and provided with a liquid inlet pipe 2 and a discharge pipe 3. Fluid under pressure is supplied from a storage reservoir 4 through a pipe 5 leading into the upper portion of the receptacle 1, and reservoir supply pipe 18 is connected to a suitable air pump for maintaining the fluid pressure in the reservoir. Communication through pipe 5 is controlled by a cut off valve 7 of an automatic

cut off and alarm valve mechanism 6 and the valve 7 is adapted to be operated by a movable abutment 8, subject on one side to the pressure of a spring and having a governor device 9 for controlling the fluid pressure on the opposite side.

The governor device 9 comprises a valve 14 and a diaphragm 10 for operating the valve, the diaphragm being subject on one side to fluid pressure from the storage reservoir, to which it is open through pipe 11, and on the opposite side to the pressure of a spring 12 and the pressure existing in the receptacle 1, a pipe 13 providing communication between the receptacle 1 and the spring chamber of the governor device.

A cut out cock 17 is provided for controlling communication through pipes 5 and 11 and a by-pass pipe 15 having a cut out cock 16 is interposed in the pipe 5 around the cock 17 and the valve mechanism 6.

The receptacle 1 being charged with liquid the pumping operation is started by closing the cock 17 and opening the by-pass cock 16. Fluid under pressure then flows through pipes 5 and 15 to the receptacle and upon reaching a sufficient head forces the liquid to flow out through the discharge pipe 3. The cock 17 is then opened and the cut out cock 16 is closed, so that the fluid passes through the valve mechanism 6. During this operation the fluid pressures acting on opposite sides of the diaphragm 10 are substantially the same and the spring 12 thus holds the valve 14 closed, but upon all the liquid being forced out of the receptacle, the fluid following the liquid out of the discharge pipe causes a considerable reduction of pressure in the receptacle 1 and consequently on the upper side of diaphragm 10. The fluid pressure on the opposite face of the diaphragm is then sufficient to lift the diaphragm and open the valve 14, so as to admit fluid to the upper side of the abutment 8. The abutment is thereupon shifted and closes the valve 7, cutting off the fluid flow through pipe 5. An alarm whistle device 19 may be connected to the fluid passage leading to the abutment 7, so that an alarm is sounded when the valve 7 is operated to cut off the supply of fluid under pressure to the receptacle 1, and it will be noted that the whistle 19 will continue to blow until the attendant closes the cock 17. Upon the receptacle again becoming charged

with liquid ready for pumping the attendant may start the pumping action as before by first closing the cut out cock 17 and then opening the by-pass cock 16 and finally as the pumping starts the cock 17 is opened and the cut out cock 16 is closed. The attendant may thus attend to other duties while the conveying operation is proceeding and when the receptacle is empty the flow of fluid under pressure is cut off and the attendant is notified of the fact by the blowing of the whistle.

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

1. The combination with a closed receptacle adapted to contain a liquid to be pumped and provided with a discharge pipe, of a valve mechanism for controlling the admission of fluid pressure to said receptacle for forcing the liquid through the discharge pipe, and valve means operated by a reduction in pressure in the receptacle for admitting fluid pressure to said valve mechanism to cut off the flow of fluid under pressure to the receptacle.

2. The combination with a closed receptacle adapted to contain a liquid to be pumped and provided with a discharge pipe, of a valve mechanism for controlling the admission of fluid under pressure to said receptacle for forcing the liquid through the discharge pipe, said valve mechanism comprising

ing a cut-off valve, an operating abutment therefor, and a valve device operating upon a predetermined reduction in pressure in the receptacle for admitting fluid to said abutment to close said cut-off valve and cut off the flow of fluid to the receptacle.

3. The combination with a liquid receptacle provided with a liquid discharge pipe, of means for supplying fluid under pressure to said receptacle to force the liquid out of the discharge pipe and a valve device operating upon a predetermined reduction in the pressure in said receptacle for supplying fluid to said means to actuate same and cut off the flow of fluid to said receptacle and for also supplying fluid to operate an alarm device.

4. The combination with a receptacle provided with a liquid discharge pipe, of means for supplying fluid under pressure to said receptacle to force the liquid out of the discharge pipe, a fluid pressure actuated cut off valve means and whistle device, and a valve device operating upon a predetermined reduction in pressure in the receptacle for supplying fluid to said cut off valve means and to the whistle device to cut off the flow of fluid to the receptacle and sound the whistle.

In testimony whereof I have hereunto set my hand.

FREDERIC H. PARKE.

Witnesses:

WM. M. CADY,
A. M. CLEMENTS.