

MACDOUGALD DEXTER.

APPARATUS FOR TRANSMITTING AND INDICATING FLUCTUATING PRESSURES OF WATER, GAS,
AND STEAM.

1,100,867.

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Fig. 1.

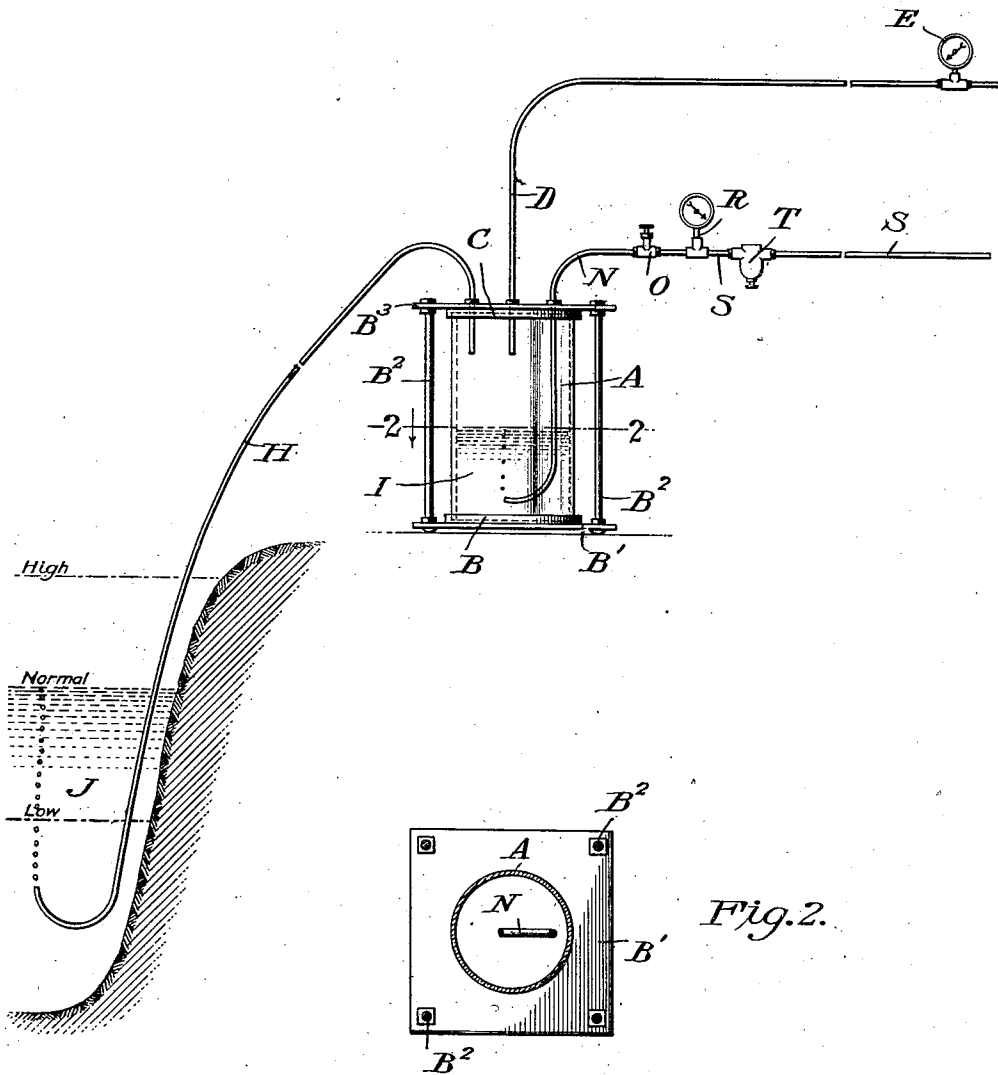
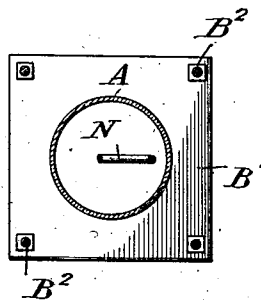


Fig. 2.



Witnesses

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MACDOUGALD DEXTER, OF COLUMBUS, GEORGIA.

APPARATUS FOR TRANSMITTING AND INDICATING FLUCTUATING PRESSURES OF WATER, GAS, AND STEAM.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, MACDOUGALD DEXTER, a citizen of the United States, residing at Columbus, in the county of Muscogee and State of Georgia, have invented certain new and useful Improvements in Apparatus for Transmitting and Indicating Fluctuating Pressures of Water, Gas, and Steam; 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, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

This invention relates to new and useful improvements in apparatus as, means of transmission of pressure due to the height of liquids or gas pressure from a given point to suitable indicating or recording gages and the object in view is to afford means whereby the fluctuating heights of water or other liquid, or the pressure of gases which are compressible, may be transmitted considerable distance and recorded or indicated upon gages and dispensing with the employment of yielding floats, diaphragms, etc.

My invention comprises a simple and efficient device of this nature having various details of construction which will be hereinafter fully described, shown in the accompanying drawings and then specifically defined in the appended claims.

I illustrate my invention in the accompanying drawings, in which:—

Figure 1 is a side elevation of the apparatus in which application is made to determine the fluctuation of water in a stream or river, and Fig. 2 is a sectional view on line 2—2 of Fig. 1.

Reference now being had to the details of the drawings by letter, A designates a receptacle, comprising a sight receptacle, made preferably of transparent glass and adapted to contain oil or other liquid, the former being used preferably to avoid freezing. Said receptacle has closures B and C at its ends, the latter being provided with apertures through one of which a pipe D passes, which may extend a considerable distance to any convenient location and through which pressure may be transmitted to an indicating gage E. A frame, having a base

portion B' and standards B², is provided with a crosspiece B³ at its upper end which has apertures in registration with the apertures in the top C. A pipe H also passes through an aperture in the top of the receptacle A, terminating as would also the end of the pipe D above the surface of the liquid, which is designated by letter I, and said pipe H, which may be of any suitable length, extends down underneath the surface of the water of a river, designated by letter J, and its lower end is open and has a fixed position underneath the surface of the water of the river, the height of which is to be measured, or, in the event of the pipe being used to transmit the pressure of gas, the same would be correspondingly positioned within the gas in the tank, or pipe.

A pipe, designated by letter N, passes through an aperture in the top of the receptacle A and extends down underneath the surface of the liquid within the receptacle with which it communicates. A needle regulating valve O is positioned within the pipe N and which pipe communicates with a gage R and leading from the latter is a pipe S which communicates with a reducing governor T which may be of any well known construction and with which governor the pipe S communicates and through which compressed air or gas from any source may be introduced, the pressure from which may be determined by the gage R.

In operation, the apparatus being adjusted as shown, compressed air or gas is fed from the pipe S and passes through the reducing governor where the pressure is reduced if it fluctuates and affording means for maintaining a constant pressure at the inlet of the needle regulating valve O. The pressure gage R, located intermediate the valve and the governor T, affords means of being assured that the pressure of the air or gas before reaching the needle valve is greater than the pressure of the fluid or gas to be measured. From the needle valve air or gas passes through into and makes exit from the lower end of the pipe N into the liquid, so that assurance may be had that the air or gas is being fed into the receptacle.

In the successful operation of my apparatus, two things are essential, first that the pressure supply of gas or air is sufficient, as shown by the gage R, and that the valve O

is open as is evidenced by the air or gas bubbling up through the liquid and, if this condition obtains, the pressure of the air or gas is necessarily greater than the pressure of either the gas or liquid to be transmitted and measured.

By the provision of an apparatus of this nature, it will be understood that, when compressed air or gas is introduced through the pipes to a sufficient degree to equalize the hydrostatic pressure upon the liquid, the depth of the river may be indicated and the variations in the fluctuations of the pressure may be transmitted and read upon the gage at considerable distance, or, in the event of the apparatus being used in connection with either gas plants or steam apparatus where it is desired to indicate either high or low pressure, the latter may be transmitted and recorded at distant point of the system. It will be understood, therefore, that my apparatus will be equally effective for use whether the tube or pipe lead to a point under water or other liquid or to any place containing the gas or steam having fluctuating pressures.

What I claim to be new is:—

1. An apparatus for transmitting and indicating pressures upon liquids, gases, etc., comprising a receptacle adapted to contain a liquid, a pipe adapted to communicate between the receptacle and the liquid or gas, the pressure of which is to be determined, a compressed air pipe communicating with the receptacle underneath the surface of the liquid therein, and a pipe leading from the receptacle above the liquid therein and provided with an indicating gage, as set forth.

2. An apparatus for transmitting and indicating pressures upon liquids, gases, etc., comprising a receptacle adapted to contain a liquid, a pipe adapted to communicate between the receptacle above the surface of the liquid or gas therein, its other end positioned at a stationary point underneath the surface of the water, the pressure of which is to be transmitted and determined, a pipe leading to and communicating with the receptacle underneath the surface of the liquid therein and through which compressed air is adapted to be introduced, and a pipe leading from the receptacle above the surface of its liquid and provided with an indicating gage, as set forth.

3. An apparatus for transmitting and indicating pressures upon liquids, gases, etc., comprising a receptacle adapted to contain a liquid, a pipe designed to communicate between the receptacle above the surface of the liquid or gas therein and its other end

positioned at a stationary point underneath the surface of the water, the pressure of which is to be transmitted and determined, a pipe leading through the top of the receptacle and opening below the surface of the liquid therein and through which compressed air or gas is adapted to be introduced, a needle valve for regulating the flow of the compressed air, and a gage for indicating the air pressure, a pipe leading from the receptacle above the surface of the liquid and provided with an indicating gage, as set forth.

4. An apparatus for transmitting and indicating pressures upon liquids, gases, etc., comprising a receptacle adapted to contain a liquid, a pipe designed to communicate between the receptacle above the surface of the liquid or gas therein and its other end positioned at a stationary point underneath the surface of the water, the pressure of which is to be transmitted and determined, a pipe leading through the top of the receptacle and opening below the surface of the liquid therein and through which compressed air or gas is adapted to be introduced, a needle valve for regulating the flow of the compressed air, a gage for designating the air pressure, and a reducing governor communicating with the compressed air tube, a pipe leading from the receptacle above the surface of the liquid and provided with an indicating gage, as set forth.

5. In combination with a transparent receptacle having closed ends, the upper of which is apertured, a frame upon which said receptacle rests, crosspieces engaging the top of the receptacle and having apertures therein, a pipe leading through registering apertures in said crosspiece and top of the receptacle and communicating with the interior thereof and its other end extending to a fixed point and opening underneath the surface of the water, the pressure of which is to be transmitted and indicated, a compressed air pipe leading through registering apertures in said crosspiece and top and adapted to communicate with the interior of the receptacle underneath the surface of the liquid therein, and a pipe leading through the top of the receptacle and having an indicating gage therein, as set forth.

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

MACDOUGALD DEXTER.

Witnesses:

J. J. PEASE,
GEORGE W. COX.