F. L. CROSS.

VALVE.

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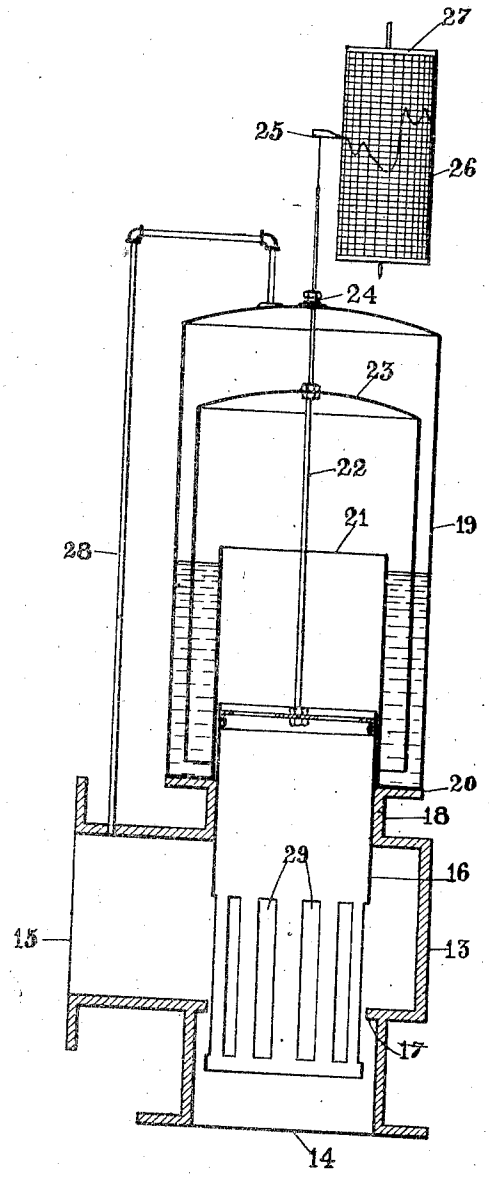
1,039,904.

Patented Oct. 1, 1912.



Witnesses
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UNITED STATES PATENT OFFICE.

FRANK L. CROSS, OF DETROIT, MICHIGAN.

VALVE.

1,039,904. Specification of Letters Patent. Patented Oct. 1, 1912.

Application filed August 21, 1909. Serial No. 513,975.

To all whom it may concern:

Be it known that I, FRANK L. CROSS, a citizen of the United States of America, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Valves, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to valves and more particularly to one adapted for registering the amount of flow therethrough and for producing a constant drop in velocity pressure at any given point in a conduit or main of a gas or fluid distributing system.

The invention consists in the matters hereinafter set forth, and more particularly pointed out in the appended claims.

The drawing is a view partially in section and partially in elevation of a valve embodying features of the invention.

The casing 13 has an inlet 14 and outlet 15. A cylindrical closure 16 is longitudinally reciprocable in the aperture of a diaphragm 17 adjacent the inlet 14 or equivalent means for preventing the passage of fluid by the interior of the closure, and through a throat 18 on the upper end of the casing. A float chamber 19 is seated on a flange 20 of the throat or otherwise suitably supported thereon with an interior well 21 acting as guide for the upper portion of the cylinder 16. A stem 22 extending from the head of the cylinder 16, is secured to a float bell 23 in the chamber 19 and is reciprocable through a stuffing box or guide bearing 24 in the crown thereof. A recording pen 25 on the upper end of the stem traverses a record sheet 26 on a rotatable cylinder 27, operated by suitable mechanism.

A small pipe or by-pass 28 opens from the casing between the outlet 15 and the closure 16 into the upper portion of the float chamber 19, and longitudinally disposed ports 29 are formed in the lower portion of the cylinder wall.

In operation a more or less restricted opening afforded by the closure due to the position of the ports in relation to the inlet diaphragm causes a corresponding change in pressure of any fluid that enters the inlet and passes through the closure and outlet, so that the pressure in the float chamber is varied. By proper adjustment of the parts the valve automatically provides for a constant drop in velocity pressure between inlet and outlet regardless of varying pressure at the inlet, or, correspondingly, varying back pressure beyond the outlet. The fluctuations of the valve are recorded and the resultant diagram gives the data necessary for computing the flow through the valve at any given time or during any period of time.

Obviously, details of construction may be made without departing from the spirit of my invention and I do not limit myself to any particular form or arrangement of parts.

What I claim as my invention is:—

1. In a fluid distributing system, a measuring valve comprising a casing provided with a vertical throat and with an inlet and an outlet, an inner diaphragm having a single guide aperture in line with the throat, a closed float tank on and above the casing provided with a guide aperture in its top and with a well alined with the throat and diaphragm aperture, a hollow, cylindrical vertical closure with its lower open end extending through the diaphragm and its upper end in the well, the lower portion of the closure having ports of uniform cross-section throughout their length, a stem extending from the closure through the guide aperture of the tank, a float bell on the stem in the tank, and indicating means on the stem.

2. In a fluid distributing system, a measuring valve comprising a casing provided with a vertical throat on its upper side and with an inlet and an outlet, an inner diaphragm having a single guide aperture in line with the throat, a closed float tank on and above the casing provided with a guide aperture in its top and with a well alined with the throat and diaphragm aperture, a hollow, cylindrical vertical closure with its lower open end extending through the diaphragm and its upper end in the well, the lower portion of the closure having ports

of uniform cross-section throughout their length, a stem extending from the closure through the guide aperture of the tank, a float bell on the stem in the tank, a by-pass connecting the casing interior beyond the closure with the float tank, and indicating means on the stem.

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

FRANK L. CROSS.

Witnesses:
C. R. STICKNEY,
A. M. SHANNON.