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TESTING APPARATUS FOR PUMPS

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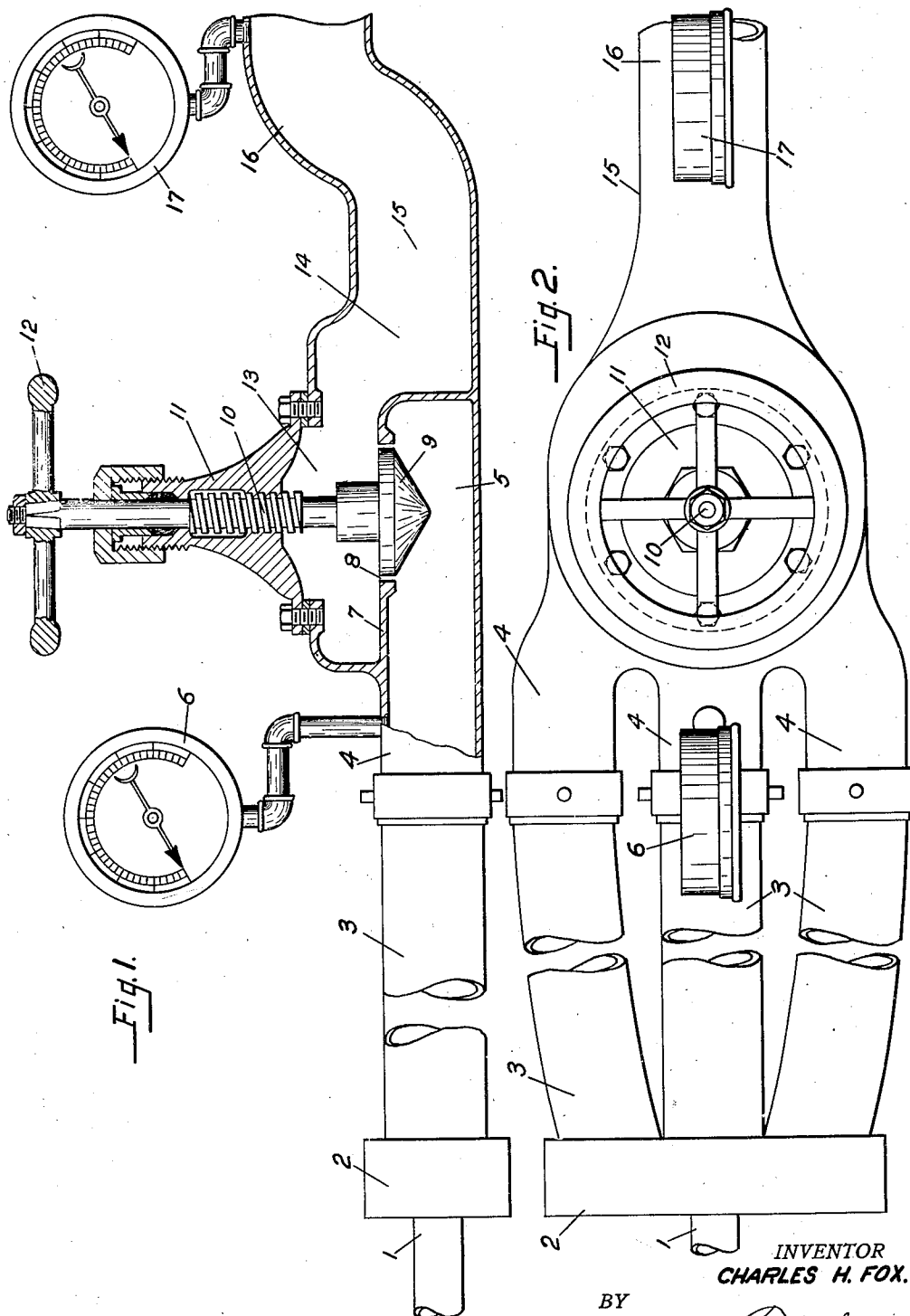


Fig. 2.

Fig. 1.

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TESTING APPARATUS FOR PUMPS

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3 Claims. (Cl. 73—167)

My invention relates to a testing apparatus for pumps, and, in particular, it is the object of my invention to provide mechanism which may be adjusted to control the resistance to hydraulic flow from a pump in order to simulate the conditions of actual use and, in particular, to simulate the resistance of long lengths of hose from a pump, which is not practical to apply for testing purposes.

My invention is especially adaptable to the testing of fire pumps to determine capacities and ability to carry loads.

The nature of my invention is that of a hydraulic rheostat in that it is adaptable for use as a varying resistance unit to hydraulic flow and is arranged for indicating the relative pressures on the inlet and outlet side, which means, when properly calibrated, will enable the performance of the pump to be read.

It is a further object to provide a construction which will utilize a plurality of lines from a pump to a common hydraulic rheostat with a common control and a common set of gauges.

Referring to the drawing:

Figure 1 is a side elevation partially in section of my apparatus;

Figure 2 is a top plan view thereof.

Referring to the drawing in detail, 1 is an inlet line to a pump 2, which has any number of outlet lines 3 that discharge through inlet passageways 4 into a common receiving chamber 5. Three outlet lines are used as a matter of convenience and because they give a uniform distribution of a large amount of water. The pressure of the incoming fluid is indicated upon the gauge 6. The chamber 5 is provided with an upper cover or partition 7 having a port 8 through which passes a tapered resistance plug 9 that just clears the walls of the aperture 8. The clearance between the valve member and the partition around the port 8 is a matter of convenience. It insures a continuity of flow even when the valve is closed so there is always a relief for the pump so it can discharge some of the water so the pump will not operate against the closed head.

This plug is mounted upon a screw-threaded stem 10 which works in a bonnet 11 and is operated by a hand wheel 12.

The fluid in the chamber 5 can escape into the discharge chamber 13 whence it turns at right angles into the discharge line 14, the side walls 15 of which taper together to form a pipe line that is offset at 16. At this point there is a second gauge 17 to indicate pressures on the out-

the pump is measured by the difference in the readings of the two pressure gauges, but the extent of the valve opening is not taken into consideration.

In operation, by adjusting the position of the resistance cone 9, I am enabled to control the outward flow of water and to set up a simulation of resistance both in the pipe lines and to the elevating of water as in the discharge of it against a building in case of a fire and to thereby have a comparative method of testing pumps, particularly fire pumps.

By varying the position of the resistance cone 9, I am enabled, as will be indicated upon the pair of gauges on the inlet and outlet side, to simulate the conditions of actual use and to adequately test pumps of this character.

I am further enabled to realign the water after it has met this resistance by passing it through the discharge chamber forming a portion of the discharge tube and drawing it into the discharge line by the tapering walls 15.

It will be understood that I desire to comprehend within my invention such modifications as may be necessary to adapt it to varying conditions and uses.

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

1. In pump testing apparatus, means for simulating the condition offered to fluid flow by a predetermined length of hose comprising a receiving chamber on one level, a superimposed discharge chamber on another level, a partition separating said chambers and having an aperture therethrough, a resistance member of less diameter than the aperture located within said aperture, and means for adjusting the resistance member relative to the aperture, said receiving chamber having means for directing fluid into it at right angles to the path of discharge through said aperture in the partition over the resistance member and said discharge chamber having means for discharging fluid therefrom at right angles to the flow of fluid into the discharge chamber.

2. In pump testing apparatus, means for simulating the condition offered to fluid flow by a predetermined length of hose comprising a receiving chamber on one level, a superimposed discharge chamber on another level, a partition separating said chambers and having an aperture therethrough, a resistance member of less diameter than the aperture located within said aperture, means for adjusting the resistance member

relative to the aperture, said receiving chamber having means for directing fluid into it at right angles to the path of discharge through said aperture in the partition over the resistance member and said discharge chamber having means for discharging fluid therefrom at right angles to the flow of fluid into the discharge chamber, and means of reducing the flow into a condensed, orderly stream from the discharge chamber.

3. In pump testing apparatus, means for simulating the condition offered to fluid flow by a predetermined length of hose comprising a receiving chamber on one level, a superimposed discharge chamber on another level, a partition separating said chambers and having an aperture therethrough, a resistance member located within

said aperture and adapted to pass through the aperture, means for adjusting the resistance member relative to the aperture, said receiving chamber having means for directing fluid into it at right angles to the path of discharge through said aperture in the partition over the resistance member and said discharge chamber having means for discharging fluid therefrom at right angles to the flow of fluid into the discharge chamber, means for reducing the flow into a condensed, orderly stream from the discharge chamber, and pressure means attached to the receiving and discharge sides of the mechanism for indicating relative pressures of the fluid therein.

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