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HYDRAULIC OIL STORAGE AND DISTRIBUTION SYSTEM HAVING A REMOTE CONTROL

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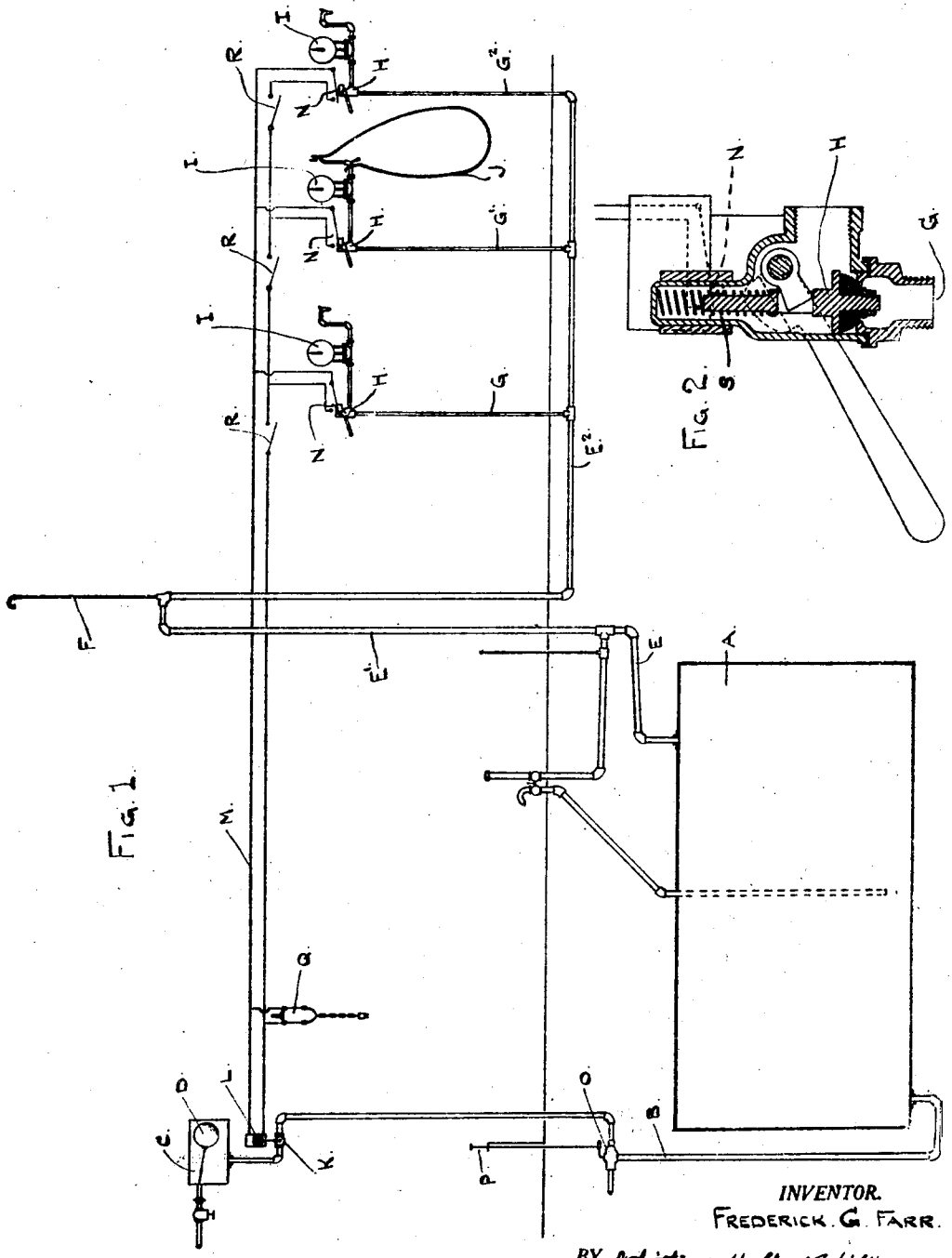


Fig. 1

Fig. 2

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HYDRAULIC OIL STORAGE AND DISTRIBUTION SYSTEM HAVING A REMOTE CONTROL.

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The invention relates to hydraulic oil storage and distribution systems and is particularly designed for use in buildings where the oil is distributed to various points more or less remote from the point of storage. It is the object of the invention to provide controlling means by which the system may be operated from any one of the various points of delivery and without interference with the simultaneous delivery to other points. To this end the invention consists in the construction as hereinafter set forth.

In the drawings:

Figure 1 is a diagrammatic view showing the system and the electric controlling means therefor;

Figure 2 is an elevation of the draw-off valve.

A is a storage tank suitably located and preferably buried in the ground. B is a conduit for the displacement liquid, which is supplied with water under the desired head from an elevated tank C having a float valve D for controlling the supply thereto. E is the oil delivery conduit provided with a riser portion E′ extending to above the level of the water head and then returning to a lower level, as, for instance, beneath the floor of the building and extending laterally to various points of consumption. A siphon breaker F is placed in the return-bend of the conduit E and thus the forcing of water beyond the riser E′ is effectually prevented. The lateral portion E^2 of the delivery conduit E is extended as far as desired and any number of draw-off connections may be attached thereto. As shown, G, G′, etc., are different draw-off connections rising from the conduit E^2 and each provided with a dispensing or oil draw-off valve H. They may be further provided with a meter I for measuring the quantity used and any suitable discharge connection such as the flexible hose J.

To deliver oil at any one of the draw-off points, it is necessary to control the supply of displacement fluid which enters the storage tank A through the conduit B. For this purpose a valve K is placed in the fluid displacement pipe or conduit B for opening or cutting off connection with the float box C and this valve K is electrically operated as by means of a solenoid L. The electric circuit M controlling the solenoid extends to each of the delivery points and a normally open electric switch N is connected in multiple into this circuit. A normally open switch N is associated with or mounted on each normally closed draw-off valve H and suitable connection is preferably made, so that the opening of the normally closed draw-off valve H will simultaneously effect the closing of the switch. Thus whenever one of the oil dispensing valves H is manually opened, that operation closes the electric circuit which energizes the solenoid L, which, by opening the displacement fluid valve K, will permit the water head of the float box G to become effective upon the tank A. This will displace the oil from said tank and propel it to the delivery point, the flow continuing until the valve H is closed, whereupon the switch N is automatically opened by releasing the handle of the valve H and the solenoid L is de-energized permitting the closing of the valve K. Should it occur that several of the valves H are opened at the same time, oil will be delivered to each of the delivery points and the closing of one valve will not effect the delivery of oil to another one. Thus the flow will continue until the last valve H is closed, after which the valve K will be closed and the pressure of the water head removed from the tank A.

When the valve K is closed, the water remains in the conduit B up to the valve but does not exert a hydrostatic pressure. If for any reason it is desired to drain off this water, a drain valve O may be opened by a pull connection P. If desired, the electrical operating connections may all be controlled by a master switch Q, which, when open, will cut off current from the system.

Also, automatic cut-out switches, as indicated at R, operated thermostatically or by any other means may be placed in suitable locations. Thus in case of fire, the opening of the thermostatic switch would cut off oil delivery from the entire building. In this way each oil dispensation station or valve H is segregated from every other one so that fire hazards are reduced.

As noted in Figure 2, the oil dispensing valve H is automatically closed by a spring S when the operator releases the valve handle so that the valve H remains normally closed. The spring S also constitutes automatic opening means for the switch N since the switch N is caused to quickly open and break the circuit M when the operator releases the handle of the valve H so that the

switch N is normally open and the valve H is normally closed.

What I claim as my invention is:

1. Oil dispensing system comprising in combination, an oil storage tank, a pipe connecting therewith through which a displacement fluid flows into the tank to propel oil from the tank, a valve included in the pipe, electrically operating means to open and close the valve to stop and start the flow of displacement fluid to said tank, an oil delivery line connecting with the tank, an oil dispensing draw-off valve included in the delivery line, a switch operatively connected with the oil dispensing draw-off valve, and an electrical circuit connection established between the switch and aforesaid electrically operating means.

2. Oil dispensing system comprising in combination, an oil storage tank, a pipe connecting therewith through which a displacement fluid flows into the tank to propel oil from the tank, a valve included in the pipe, electrically operating means to open and close the valve to stop and start the flow of displacement fluid to said tank, a plurality of oil delivery lines connected with the tank, an oil draw-off valve included in each oil delivery line, an electric switch operatively connected with each oil draw-off valve, and a circuit wire connection established between the electrically operating means and the several switches.

3. An oil dispensing system as defined in claim 1 but characterized by a safety cut-out switch included in the electric circuit connection.

4. An oil dispensing system as defined in claim 2 but characterized by a safety cut-out switch included in the circuit between the electrically operating means and each of the several switches.

5. An oil dispensing system comprising in combination, an oil storage tank, a fluid pipe which conveys a displacement fluid to the oil storage tank, a normally closed fluid valve included in the fluid pipe, a solenoid cooperating with the fluid valve to open and close it, an oil delivery line leading from the oil storage tank, a normally closed draw-off valve in the oil delivery line through which oil is dispensed, a handle on the draw-off valve by which it is manually opened from its normally closed position, valve closing means cooperating with the draw-off valve which automatically closes it when the handle is released, a normally open switch operatively connected with the normally closed draw-off valve, a switch operating means actuated by the draw-off valve to close the switch when the draw-off valve is opened, means by which said switch operating means is actuated by the aforesaid valve closing means to automatically open the switch when the valve handle is released, and a circuit wire connected between the solenoid and the switch by which the normally closed fluid valve is automatically opened when the draw-off valve is manually opened and by which said fluid valve is automatically closed when the draw-off valve is closed.

6. An oil delivery system as defined in claim 5 but distinguished by an automatic safety cut-out switch included in the circuit wire between the solenoid and normally open switch.

7. An oil delivery system as defined in claim 5 but distinguished by a plurality of normally closed draw-off valves connected in the oil delivery line, a normally open switch mounted on each draw-off valve, a circuit connection established in parallel between the circuit wire and each switch, and a safety cut-out switch included in the wiring connection between each normally open switch and the solenoid.

8. A liquid dispensing system comprising, a storage tank, means to feed a propelling fluid into the tank including a valve to control the flow of said propelling fluid, electromagnetic means to open and close the valve, a liquid delivery line connected with the tank including a dispensing valve, a switch connected with the electromagnetic means; and a connection between the switch and dispensing valve, said connection being so arranged that the switch is closed when the dispensing valve is opened whereby the electromagnetic means in energized to open the first named valve.

9. A liquid dispensing system comprising, a storage tank, means to feed a propelling fluid into the tank including a valve to control the flow of said propelling fluid, electromagnetic means to open and close the valve, a liquid delivery line connected with the tank including a dispensing valve, an operating handle included on the dispensing valve, a switch mounted on the dispensing valve and connected with the electromagnetic means; and means operated by the handle to actuate the dispensing valve, said means being so arranged that the switch is closed when the dispensing valve is opened whereby the electromagnetic means is energized to open the first named valve.

In testimony whereof I affix my signature.

FREDERICK G. FARR.