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2,547,440

FLUID CONDUCTING ELECTRICALLY INSULATED SYSTEM

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Fig. 1.

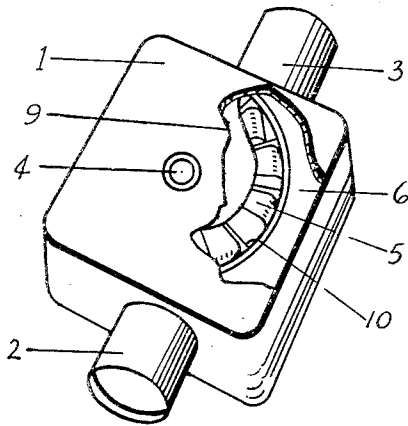


Fig. 2.

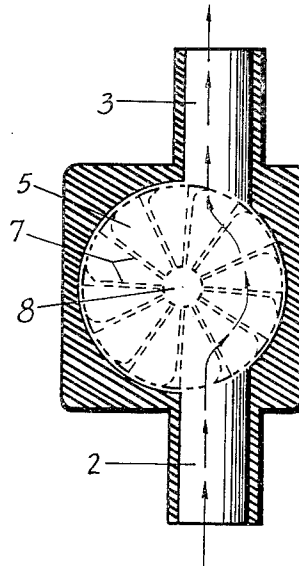


Fig. 3.

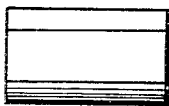
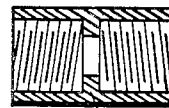


Fig. 4.



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FLUID CONDUCTING ELECTRICALLY
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2 Claims. (Cl. 174—1)

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The present invention has for its purpose the provision of a means for very greatly increasing the electrical resistance of fluid in a system, and that of the system, to ground, without impeding the flow of said fluid through the said system.

The said system may be a residential water supply, a water or steam heating system, or similar installation, as used not only domestically, but also in shop, factory, office, laboratory, or the like.

A primary accomplishment of this invention is the safeguarding of life and limb, by eliminating the danger of electrocution that results from accidental contact with the live side of a grounded system while bathing, shaving, working, etc.

Other advantages of electrically insulating a water operated system, or fluid conducting system, would be the possibility of applying to the system such separate electrical excitation as may be desired for various purposes such as thawing out frozen pipes, controlling electrolysis, providing an ungrounded radio aerial connection and so forth.

A simple embodiment of the device with which we accomplish the electrical insulation of a fluid conducting system is shown in the accompanying drawing.

Figure 1 shows a partially cut-away view of an enclosed water separating and insulating device.

Figure 2 is a longitudinal cross-sectional view of Figure 1.

Figure 3 is a plan view of a non-conducting pipe union.

Figure 4 is a longitudinal cross-section of Figure 3.

The structure of figure one is composed entirely of non-conducting material; rubber, plastic, glass, ceramic or the like except for a central shaft and two bearings. At 1 in Figure 1 is shown a suitable case with inlet pipe 2 and outlet pipe 3 and having a bearing located at 4 and a turbine like rotor 5 revolving within the case in a properly proportioned chamber 6. Rotor end plates 9 and wide blade ends are shown at 10.

In Figure 2 the rotor 5 with vanes 7 and shaft 8 is shown with one side plate removed and arrows indicating the direction of fluid flow that causes the rotor to revolve as it passes.

In Figure 4 the threaded pipe union of non-conducting material is shown to have a mechanical pipe stop at 11 in the form of a central spacing flange. The device in Figures 3 and 4 is to be used in conjunction with that in Figures 1 and 2.

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The device shown in Figures 1 and 2 would be inserted in series with all grounded fluid conducting pipes, carrying electrically conducting fluids, at the nearest convenient points to ground. Conducting fluid passing from any grounded position through the system must then pass through the device of Figures 1 and 2 and in passing revolve the rotor. In so doing the fluid would be divided into segments, mutually connected by very thin films only, resulting in very high electrical resistance as between inlet and outlet. Connected in any system at points near ground this device would greatly increase the electrical resistance of the said supply system in respect to ground.

Having described our invention, we claim:

1. A system for handling conductive fluids in insulated relation to a ground potential, comprising fluid conducting enclosures, a non-conducting encased rotary dispensing pump with input and output connections connected there-to, a high speed segmented impeller in said pump, minute clearances between said impeller and said casing, end and periphery baffles on said impeller to further reduce fluid and electrical leakage between the input and output of said pump, said impeller being operable upon the introduction of fluid flow in said system and to dispense segmented fluid portions at high speed.

2. A system according to claim 1 wherein an associated non-electrically conductive fluid dispensing system is non-conductively coupled thereto and means to provide said non-conductive coupling comprising connecting members of insulating material.

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