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1,565,086

J. F. GALLAGHER

DIAPHRAGM

Filed May 18, 1923

Fig. 1.

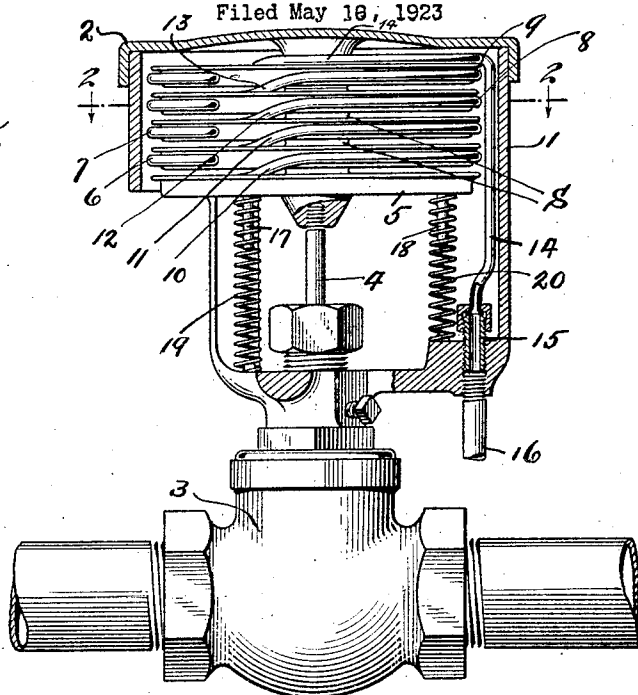


Fig. 2.

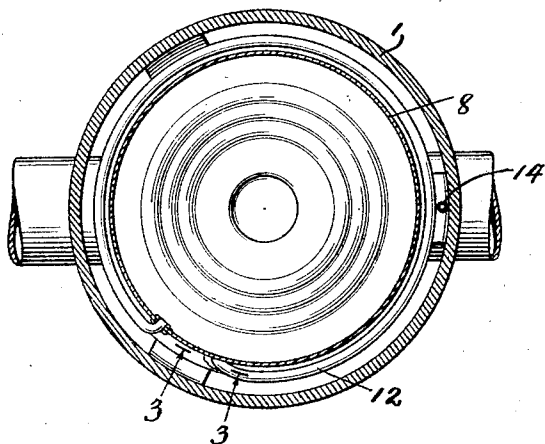
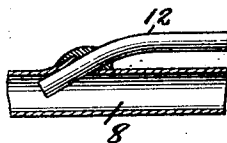


Fig. 3.



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DIAPHRAGM.

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To all whom it may concern:

Be it known that I, JAMES F. GALLAGHER, a citizen of the United States, residing in the borough of Brooklyn, of the city of New York, county of Kings, and State of New York, have invented certain new and useful Improvements in Diaphragms, of which the following is a specification.

My invention relates to an improvement in pressure operated diaphragms and an object thereof is to provide a simplified construction which facilitates manufacture as well as repair and by which the tendency of the diaphragm to crystallize and break is reduced to a minimum.

In the drawings,—

Fig. 1 shows my improved device in part sectional elevation;

Fig. 2 is a section on the line 2—2 of Fig. 1; and

Fig. 3 is a section taken substantially on the line 3—3 of Fig. 2.

Referring to the drawings in detail,—1 designates a housing or casing adapted to contain my improved diaphragm the housing being provided with a cap or cover 2. The lower part of the housing is connected in any suitable manner to a union 3 which contains a valve to be controlled (not shown) the valve stem 4 extending upwardly out of the union and into the housing as I have indicated. The upper end of the valve stem is threaded or otherwise attached to the lower section 5 of my improved diaphragm.

The diaphragm comprises a series of hollow thin walled diaphragm members 5, 6, 7, 8 and 9, as many of these members being provided as may be desired and each member being provided with spacing lugs S. These diaphragm members are attached to and in communication with each other through the medium of flexible connections, tubes 10, 11, 12 and 13 in the embodiment illustrated, these tubes extending from a point adjacent the periphery of one member to a point at the periphery of the adjacent member, the upper member 9 in addition being provided with pipe 14 passing from the top side thereof down through the housing 1 and into a coupling or union 15 which communicates with a pipe 16 by which pressure for operating the diaphragm is supplied.

The lower diaphragm member 5 is provided on its under side with pins 17 and 18 receiving springs 19 and 20 employed for the purpose of forcing the diaphragm members upwardly against the action of the pressure entering the diaphragm members through the pipe 16.

It will be seen from the foregoing that the diaphragm members 5, 6, 7, 8 and 9 are connected to each other in a new and novel manner which while permitting relative movement between the diaphragm members reduces the liability of crystallization of the diaphragm members to a minimum but should the connection of any one of the connecting pipes 10, 11, 12, etc. to its corresponding diaphragm members fracture it is a simple matter to repair it.

I am aware that diaphragms have heretofore been constructed of a plurality of hollow members in communication with each other such diaphragm members however being screw connected to each other at their centers but inasmuch as the greatest expansion of each diaphragm member takes place at the center of the member these screw connections are subjected to severe bending stresses and soon crystallize and break, whereas in my structure the expansion and contraction of the diaphragm members is distributed over a wide area thereby reducing the danger of crystallization and breaking of the diaphragm to a minimum.

What I claim is:

In combination, a housing, a cap therefor, a series of superimposed hollow diaphragm members therein, flexible tubes attached to the peripheries of said members and communicating with the interior thereof, a pressure pipe communicating with one of said diaphragm members, whereby there is provided a plurality of diaphragm members connected in series to a pressure pipe, springs attached to the periphery of the lower diaphragm member of the series for forcing the diaphragm structure toward said cap, and lugs for spacing said diaphragm members.

This specification signed this 17th day of May 1923.

JAMES F. GALLAGHER.