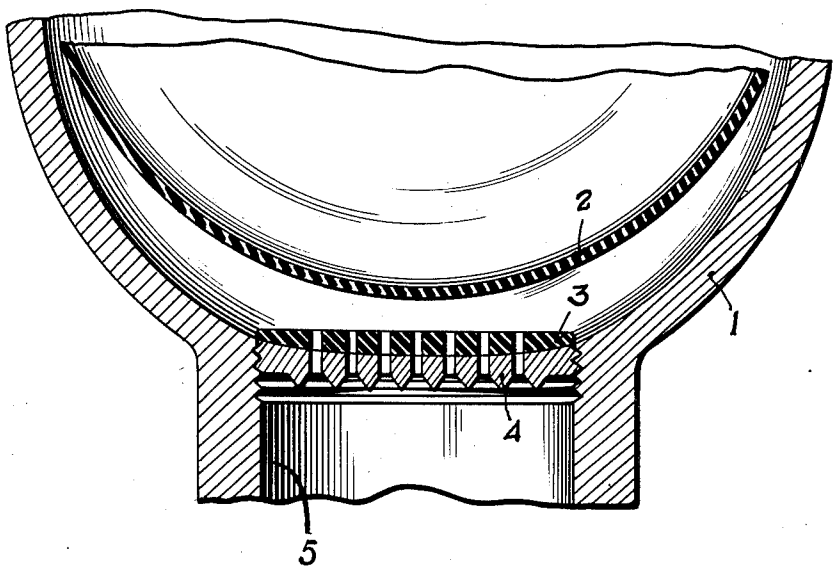
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STRAINER INSERT FOR HYDRAULIC ACCUMULATORS

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STRAINER INSERT FOR HYDRAULIC ACCUMULATORS

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4 Claims. (Cl. 138—30)

This invention pertains to a hydraulic accumulator and more particularly to an insert in the fluid passage which permits the flow of fluid in or out of the accumulator, but prevents the passage of the rubber bag out of the accumulator.

It is customary in hydraulic accumulators of this type to have a shell with a fluid port and a rubber bag inserted in the shell with an air port at the opposite extremity of the accumulator. When the bag is inflated with air to a high pressure it will bear against the walls of the shell or container and due to the outlet port being fairly large, the bag tends to bulge or deform in this passage. To prevent this deformation of the bag an insert is affixed in the fluid passage which will permit the fluid to flow in or out of the shell by means of a plurality of small perforations, but because of the extremely small area of such perforations the bag cannot be deformed when bearing against the strainer.

In my copending application, Serial No. 435,111 filed March 17, 1942, I have disclosed a similar member having a special form of construction. In that particular form the range of temperature for safe operation is rather limited, whereas in the present case the insert is covered with a material having a relative flexibility to that of the material used in the bag and is, therefore, a safer insert for the accumulator when expected to operate over any extremes of temperature.

It is an object of the present invention to provide a strainer insert for an accumulator which prevents a deformation of the bag through any fluid outlet.

Another object of the present invention is to provide a strainer insert for an accumulator having a relatively flexible contacting face for the bag throughout the temperature range of operation, yet retaining sufficient flow characteristics.

A further object of the present invention is to provide a strainer insert for an accumulator having an extremely flexible contacting face for the bag throughout the extremely high temperatures, yet retaining sufficient flow characteristics.

According to the features of the present invention, there is provided an accumulator shell 1 in which there is a flexible bag or diaphragm 2, which is also provided with a fluid port 5 in which a strainer insert 4 is threadably secured. The strainer 4 is made of metal or other hard material to give structural support and the portion of the insert strainer adjacent to the flexible bag is comprised of a perforated disc 3 of rubber or the like, said rubber having a degree of flexibility and elasticity somewhat less than that of the adjacent portion of the rubber bag or diaphragm wall.

The rubber disc is supported on a perforated metal disc which may have the structure disclosed in my aforesaid application.

An embodiment of the present invention is illustrated in the accompanying drawing which is a schematic section of a passage member.

In operation, at low temperature bag 2 will be rigid enough to avoid extrusion into the perforation of disc 3, which at low temperature will be practically rigid, while at high temperature disc 3 will be so flexible that bag 2, if applied thereon, will compress the same so as to close the perforations thereof. On the other hand, due to the reduced flexibility of disc 3 with respect to bag 2 the former will not be extruded into the perforations of the metallic support even at temperatures at which the latter could not escape injury if directly applied against the same. Disc 3 may be secured, together with disc 4, to the metallic armature of the passage member, or disc 4 may be mounted on said armature while disc 3 is secured to disc 4 as, for instance, by bonding, and especially by vulcanizing the rubber disc on the metallic support.

The foregoing description is not intended to limit the present invention which extends to all changes, modifications and equivalents within the scope of the appended claims.

What is claimed is:

1. A strainer insert for hydraulic accumulators which comprises a perforated disc made of a rubber-like material adjacent the bag or diaphragm in said accumulator, and a perforated metallic disc, said first-mentioned disc having its perforations in communication with the perforations in said second-mentioned disc and being fixedly supported by the said second-mentioned disc, said metallic disc being secured to and supported by the walls of said accumulator.

2. A strainer insert for hydraulic accumulators or the like which comprises a perforated disc made of a rubber-like deformable material adjacent the bag or diaphragm in said accumulator or the like, and a perforated metallic disc supporting said first-mentioned disc, both said discs having perforations that are in communication and said discs being secured to each other, said deformable disc being slightly less deformable than the material used in the bag or diaphragm but deformable to close said perforations under a pressure of the bag or diaphragm.

3. A device which comprises a deformable diaphragm subjected to pressure, a seat for said

diaphragm including a rigid supporting member and a lining member adjacent said diaphragm, both said members being perforated with their perforations in communication to normally allow ingress and egress of a fluid therethrough, and said lining member being made of deformable material adapted when said diaphragm is applied against the same to be deformed so as to restrict said perforations to restrict egress of the fluid.

4. In a hydraulic accumulator, a metallic container shell having two ports, a deformable bag inserted through one port and being filled with air or gas from that port, a perforated rigid disc secured in the other port, a perforated disc of rubber-like deformable material fixed with respect to said metallic disc on the side toward the deformable bag, the perforations in said deformable disc being in communication with the perforations in said rigid disc, said rubber-like disc restricting flow through such perforations when the deformable bag exerts a pressure thereon to deform its normal shape.

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