

April 2, 1929.

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1,707,912

DEVICE FOR PREVENTING TRANSMISSION OF SHOCKS IN LIQUID CONDUITS

Filed Oct. 2, 1928

Fig. 1.

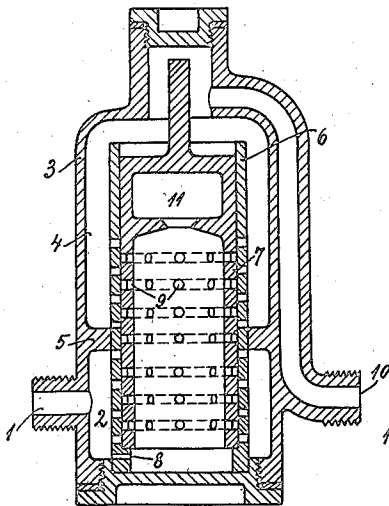


Fig. 2.

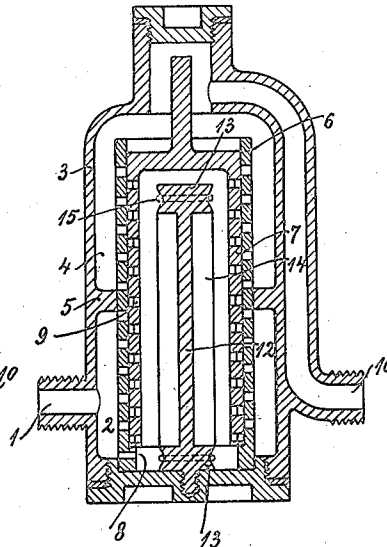


Fig. 3.

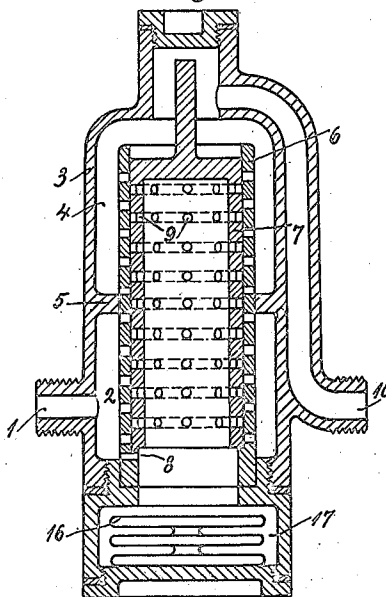
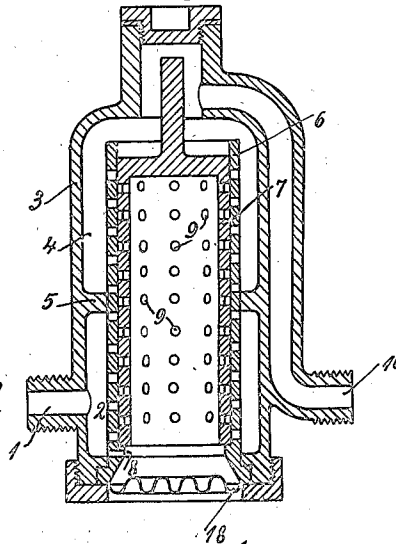


Fig. 4.



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DEVICE FOR PREVENTING TRANSMISSION OF SHOCKS IN LIQUID CONDUITS.

Application filed October 2, 1928, Serial No. 309,718, and in Germany April 28, 1926.

The invention relates to a device for preventing transmission of back shocks in liquid conduits for protection of liquid meters by automatically shutting off the passage of the liquid.

A device according to the invention comprises a perforated hollow slide which in operative position connects the supply side with the delivery side of the conduit but which on reflux flow is moved relatively to a correspondingly perforated guide to interrupt the flow, there being located in the interior of the slide or exposed to the liquid within the slide cushioning means adapted to yield on sudden increase of the fluid pressure.

In the accompanying drawing are illustrated several constructions according to the invention.

Fig. 1 is a longitudinal section of a device in which the cushioning means is constituted by an air-vessel.

Fig. 2 is a similar view illustrating a modification including an air-vessel walled by an air-hose.

Fig. 3 is a view showing a further modification in which the cushioning means is constituted by a manometer element.

Fig. 4 shows yet another modification including a yielding diaphragm.

By way of the supply connection 1 water enters the annular compartment 2 of the casing 3 which is subdivided into compartments 2 and 4 by the partition 5. 6 denotes a perforated cylindrical guide located within the casing 3. 7 denotes a hollow slide or piston fitted within the cylinder 6 and similarly perforated. Initially the slide 7 occupies, under the action of gravity, its lowermost position as shown. By way of a small opening 8 water under pressure enters the hollow slide 7 from below, and moves it upwardly. Consequently, the perforations 9 of the slide 7 are brought into register with the perforations of the cylinder 6, allowing water to pass from the compartment 2 into the interior of the hollow slide 7 and thence to the upper compartment 4 and thence to the discharge connection 10.

Back shock will be taken up mainly by the top of the hollow slide 7 which in a single stroke is moved to bring the perforations in

the slide and in the guide out of register whereby to cut off the flow.

In order to prevent transmission of the shock to the supply side of the conduit on commencement of the movement a yielding device or cushion is arranged within the hollow slide 7.

As shown in Fig. 1 this cushion consists of an air vessel 11 disposed in the upper part of the hollow slide, and communicating with the interior of the hollow slide by way of a comparatively small opening.

In the construction shown in Fig. 2 a rod 12 screwed into the bottom of the casing projects into the hollow slide and is provided preferably at its ends with flanges 13 to which a flexible hose 14 is attached by cords 15. When pressure is set up within the casing, the hose 14, filled with air, will be compressed and thus serve as a cushion.

In the construction shown in Fig. 3 the cushion is constituted by a manometer element 16 arranged within a compartment 17 communicating with the casing 3.

In the construction shown in Fig. 4 shocks are cushioned by a flexible diaphragm 18 forming part of the wall of the casing below the slide 7, and exposed on one side to the liquid and on the other side to the atmosphere.

I claim:—

1. A device for preventing transmission of back shocks in liquid conduits for the protection of liquid meters, by automatically shutting off the passage of liquid through said conduits, comprising a conduit, a hollow guide and a hollow piston reciprocable in said guide, said guide and piston having registrable perforations, said perforations in one part communicating with the inlet portion of said conduit and in another part with the outlet portion of said conduit so that said guide and piston constitute a valve for said conduit, said guide being provided with a permanently open bleed passage admitting fluid from the inlet portion of said conduit to the interior of said piston for normally sustaining said piston in a position in which its perforations register with the perforations in said guide, the outer face of said piston forming part of the wall of the outlet

portion of said conduit whereby said piston is operable by impact of the liquid in said outlet portion, to move said perforations out of registry, and means providing an air cushion positioned so as to be affected by fluid pressure within said piston.

5 cushioning means being constituted by an air vessel communicating with the interior of the hollow piston by way of a comparatively 10 small opening.

2. A device as claimed in claim 1, the

In testimony whereof I have signed my name to this specification.

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