March 22, 1927. J. W. MOTHERWELL ET AL 1,621,738

RETARD DEVICE

Filed Aug. 18, 1925

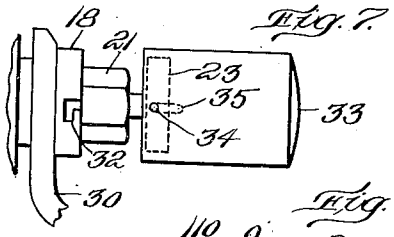


Fig. 7.

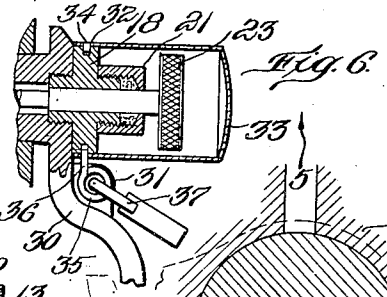


Fig. 6.

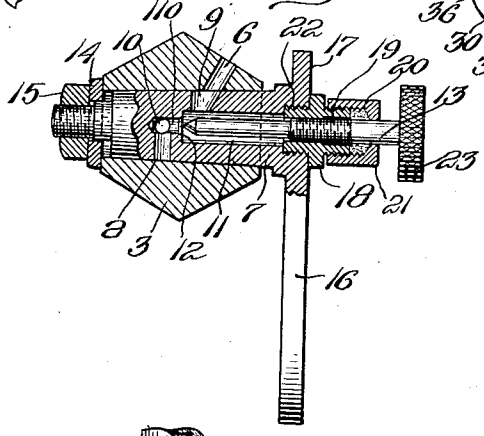


Fig. 3.

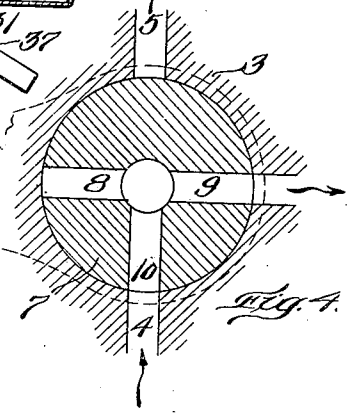


Fig. 4.

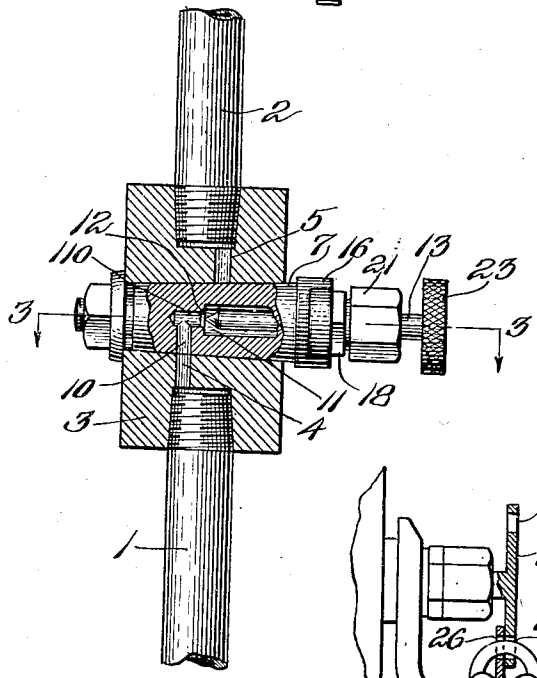


Fig. 2.

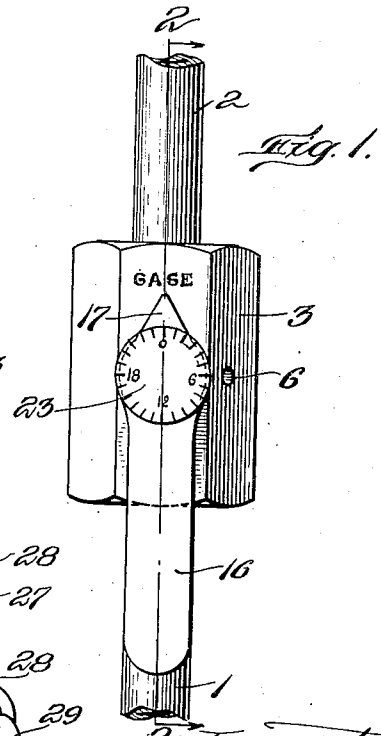


Fig. 1.

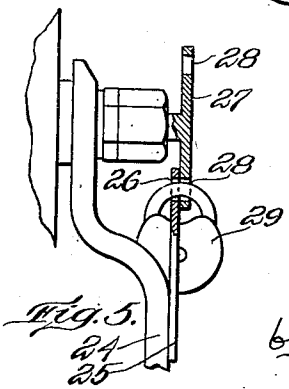


Fig. 5.

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UNITED STATES PATENT OFFICE.

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RETARD DEVICE.

Application filed August 18, 1925. Serial No. 51,075.

The principal objects of our invention are to provide a device for retarding the pulsations of a gas or fluid and to so construct the device that it may be easily and thoroughly cleaned and easily adjusted.

A feature of our invention is the use of a needle valve to retard the pulsations of a fluid or gas in the passage of the fluid or gas from a source of pressure to a gauge and preferably said valve is mounted on a control member such as a stop cock.

Another feature is the provision of means to prevent tampering with the needle valve after it is once set.

In the drawing—

Figure 1 is an elevation of a device embodying our invention;

Figure 2 is a section on line 2—2 of Figure 1, but with the plug cock turned 90°;

Figure 3 is a section on line 3—3 of Figure 2;

Figure 4 is a diagrammatic view described below; and

Figures 5 and 6 illustrate attachments described below.

Figure 7 is a detail hereinafter described.

Pipe 1 leads from any suitable source of pressure to our device and pipe 2 leads therefrom to any suitable gauge, these pipes being threaded to the body 3 which has an opening extending transversely through it to receive the plug referred to below and which has also port 4 leading from said opening to pipe 1, port 5 leading from said opening to pipe 2 and port 6 leading from said opening to the atmosphere.

Plug cock 7 fits within the opening in body 3 and is provided with ports 8, 9 and 10 and with chamber 11 having a wall 12 thereof formed to provide a seat for needle valve 13. Port 9 opens into chamber 11 and ports 8 and 10 open into passage 110 which leads to chamber 11. The plug cock is held in position by washer 14 and nut 15 and has integral with it handle 16 and pointer 17.

The needle valve 13 is fitted to an adapter 18 and is adjustable therein by threading 19 and is made gas and fluid tight by means of packing 20 and nut 21. The adapter 18 is made pressure tight by the threading 22. The relation of the point of the needle valve to its seat is adjusted by means of the threading 19, a knurled head 23 being provided to turn the needle valve and said head 23 having on its flat face a graduated dial to indicate the angular position of the head with reference to a mark on the plug cock, such, for example, as the point of part 17.

When the handle is in the position of Figure 1 port 8 is in line with port 4 and port 9 is in line with port 5 so that if the point of the needle valve is well away from its seat a free passage of the material, such as gas or fluid, is provided through said ports and said passage 110 and chamber 11 from pipe 1 to pipe 2 giving full pulsation to the gauge tube. To retard this pulsation the needle valve is screwed inward until it comes in contact with its seat thus shutting off all connection between the source of pressure and the gauge. The needle valve is then screwed outward slightly away from its seat so that a small aperture is provided which wire-draws the steam, for example, and retards or damps the waves of pressure, giving a uniform pressure at the connection of pipe 2 and body 3 of approximately the mean of the pressure wave. The needle valve is adjustable within a very considerable range.

To clean our device the handle is swung clockwise in Figure 1 until it points to port 6 and in this position port 10 is in line with port 4 and port 9 is in line with port 6 (shown diagrammatically in Figure 4) and if the needle valve is now screwed outwardly there will be a free passage to the atmosphere for the pulsating pressure through ports 4 and 10, passage 110, chamber 11 and ports 9 and 6.

If the plug cock is to be used as a stop cock the handle 16 is turned 90° in a counter clockwise direction from the position of Figure 1 and then port 4 is shut off so that no fluid or gas can enter the cock.

In the diagram of Figure 4 it will be clear that the fluid or gas will pass to the atmosphere and if the plug 7 is turned 90° in a counter clockwise direction port 9 will register with port 5 and port 8 with port 4 permitting passage to the gauge. In this latter position port 10 will point generally toward port 6 but does not register with it because port 10 is offset with relation to port 6 axially of the plug.

A feature of advantage of our invention is the fine control of the needle valve combined with the functions of the plug cock.

In Figure 5 we show a bent handle 24 hav-

ing suitably fixed thereto a bracket 25 having perforation 26, the head 27 of the needle valve having perforations 28 so that padlock 29 may be used to hold the head 27 in the desired position with relation to bracket 25 to prevent undesired movement of the needle valve after it has been properly set.

In Figure 6 the bent handle 30 is provided with a perforated lug 31 and the adapter 18 is provided with peripheral notches such as 32. We provide a cap 33 to enclose the adapter and the head of the needle valve and to prevent undesired access to the latter, the cap having small pins, such as 34 to register with the notches 32. An eye 35 has integral pin 36, the latter attached to cap 33. A padlock 37 locks the eye 35 to the perforation of lug 31, and therefore acts with the cap to prevent access to the needle valve and consequently prevents undesired movement of the needle valve after it has been properly set.

In Figure 7 one of the pins 34 and one of the notches 32 which are of bayonet joint shape are shown.

What we claim is:

1. A device of the character described comprising a conduit leading from a source of pressure to a gauge; a port leading from said conduit to the atmosphere; a needle valve to control the passage of the material through said conduit to retard pulsation and to control said port, said valve, when seated, preventing passage through said conduit and to said port; and a plug cock controlling said conduit and said port and movable so as to permit passage of the material to said gauge or to the atmosphere as desired.

2. A device of the character described comprising a conduit leading from a source of pressure to a gauge; a port leading from said conduit to the atmosphere; a plug cock controlling said conduit and said port and movable so as to permit passage of the material to said gauge or to the atmosphere as desired; and a needle valve mounted on said cock to control the passage of the material through said conduit to retard pulsation and to control passage to said port, said valve, when seated, preventing passage through said conduit and to said port.

3. A device of the character described comprising a body adapted to connect a pipe leading from a source of pressure to a pipe leading to a gauge, said body having a transverse opening therein and having three ports leading from said opening, one to the pipe leading from the source, one to the pipe leading to the gauge and one to the atmosphere; a plug cock fitted to turn in said transverse opening and having a chamber with a wall, a passage leading to said chamber, two ports extending from said passage to the exterior of the plug and a third port leading from said chamber to the exterior of the plug; and a needle valve mounted in said plug and being adjustable to locate its point at the desired position with relation to the wall of said chamber, the several ports being arranged relatively to each other so that passage of the material may be had to the gauge or to the atmosphere as desired and so that said valve retards pulsation and controls passage to the port leading to the atmosphere, said valve, when seated, preventing passage of the material to the port leading to the gauge and preventing passage of the material to the port leading to the atmosphere.

4. A device of the character described comprising a conduit leading from a source of pressure to a gauge; a port leading from said conduit to the atmosphere; a plug cock controlling said conduit and said port and movable so as to permit passage of the material to said gauge or to the atmosphere as desired; an adapter adjustably mounted on said cock; and a needle valve adjustably mounted on said adapter to control the passage of the material through said conduit to retard pulsation and to control passage to said port, said valve, when seated, preventing passage through said conduit and to said port.

5. A device of the character described comprising a conduit leading from a source of pressure to a gauge; a port leading from said conduit to the atmosphere; a plug cock controlling said conduit and said port and movable so as to permit passage of the material to said gauge or to the atmosphere as desired, said cock having a mark; and a needle valve having a dial to cooperate with said mark, said valve being adjustably mounted on said cock to control the passage of the material through said conduit to retard pulsation and to control passage to said port, said valve, when seated, preventing passage through said conduit and to said port.

6. A device of the character described comprising a conduit leading from a source of pressure to a gauge; a port leading from said conduit to the atmosphere; a plug cock controlling said conduit and said port and movable so as to permit passage of the material to said gauge or to atmosphere as desired; a needle valve which, when seated, prevents passage through said conduit and to said port, said valve being adjustably mounted on said cock to control the passage of the material through said conduit to retard pulsation and to control passage to said port; and means to prevent undesired movement of said needle valve in either direction.

7. A device of the character described comprising a conduit leading from a source of pressure to a gauge; a port leading from said conduit to the atmosphere; a plug cock controlling said conduit and said port and

movable so as to permit passage of the material to said gauge or to the atmosphere as desired; a needle valve which, when seated, prevents passage through said conduit and to said port, said valve being adjustably mounted on said cock to control the passage of the material through said conduit to retard pulsation and to control passage to said port; and means to lock said needle valve against undesired movement in either direction.

8. A device of the character described comprising a conduit leading from a source of pressure to a gauge; a port leading from said conduit to the atmosphere; a plug cock controlling said conduit and said port and movable so as to permit passage of the material to said gauge or to the atmosphere as desired; a needle valve which, when seated, prevents passage through said conduit and to said port, said valve being adjustably mounted on said cock to control the passage of the material through said conduit to retard pulsations and to control passage to said port, the head of the valve being at the exterior of said plug; a cover for said head; and means to lock the cover in place to prevent undesired access to said head.

9. A device of the character described comprising a conduit leading from a source of pressure to a gauge; a port leading from said conduit to the atmosphere; a plug cock controlling said conduit and said port and movable so as to permit passage of the material to said gauge or to the atmosphere as desired; a needle valve adjustably mounted on said cock to control the passage of the material through said conduit to retard pulsations and to control passage to said port, said valve, when seated, preventing passage through said conduit and to said port, the head of the valve being at the exterior of said plug and the bearing portion for the needle valve being provided with bayonet joint notches; a cap for said head having pins to engage said notches; and means to lock said pins and notches together to prevent undesired access to said head.

10. A device of the character described comprising a conduit leading from a source of pressure to a gauge; a port leading from said conduit to the atmosphere; and a needle valve to control the passage of the material through said conduit to retard pulsation and to control said port, said valve, when seated, preventing passage of the material through said conduit and preventing passage to said port, said valve, when off its seat, permitting cleansing of said seat by permitting passage of the material past said seat and to said port.

11. A device of the character described comprising a port leading from the source of pressure; another port leading to the gauge; a third port leading from said other port to the atmosphere; and a needle valve to control the passage of the material through said ports, said valve, when seated, preventing passage of the material through said third port, and said valve being located between the first-mentioned port and said third port, said valve, when off its seat, permitting cleansing of said seat by permitting passage of the material past said seat and to said third port.

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