March 11, 1924. 1,486,381

L. JAENICHEN

PISTON FOR DASHPOTS

Filed Aug. 5, 1922

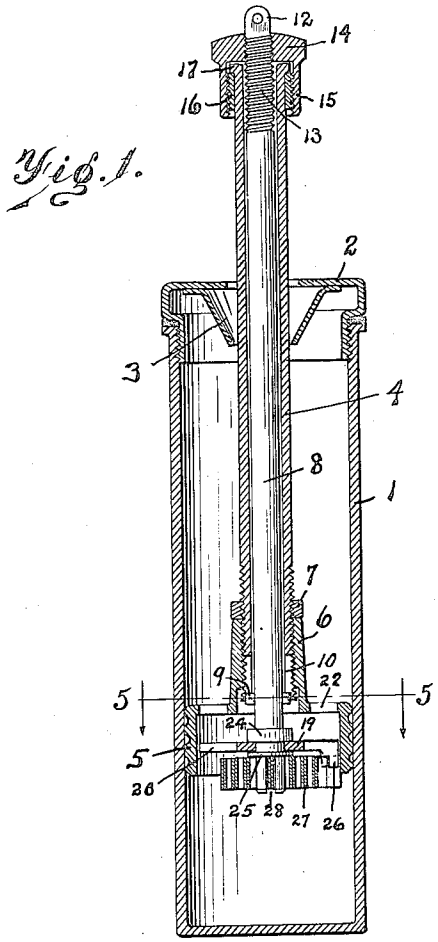


Fig. 1.

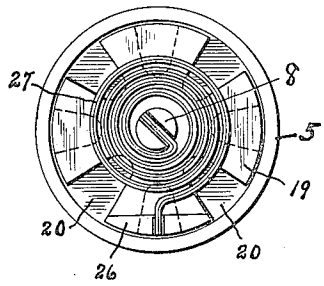


Fig. 3.

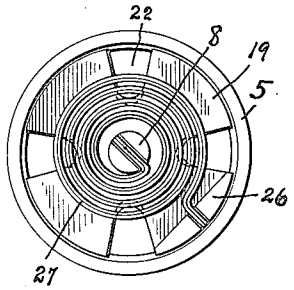


Fig. 4.

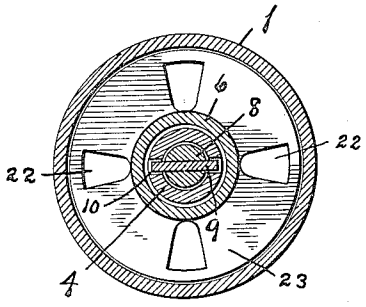


Fig. 5.

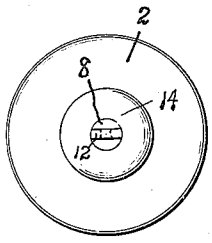


Fig. 2.

Inventor

Louis Jaenichen

By Edward N. Pagelsen,

Attorney

Patented Mar. 11, 1924. 1,486,381

UNITED STATES PATENT OFFICE.

LOUIS JAENICHEN, OF DETROIT, MICHIGAN, ASSIGNOR TO THE STANDARD COMPUTING SCALE COMPANY, OF DETROIT, MICHIGAN, A CORPORATION OF MICHIGAN.

PISTON FOR DASHPOTS.

Application filed August 5, 1922. Serial No. 579,865.

To all whom it may concern:

Be it known that I, LOUIS JAENICHEN, a citizen of the United States, and residing at Detroit, in the county of Wayne and State of Michigan, have invented a new and Improved Piston for Dashpots, of which the following is a specification.

This invention relates to the construction of the pistons of dash-pots which are employed to reduce the rate of movement of the parts of computing scales and other vibrating mechanisms, and its object is to provide a piston of this character which will automatically accommodate itself to the variations in viscosity of the liquids used in dash-pots due to temperature changes.

This invention consists in a dash-pot piston having a passage for liquids, a valve to vary the effective area of this passage, and automatic means to move the valve with the changes in temperature.

It further consists in manually operable means to change the effective area of said passage.

It also consists in the details of construction illustrated in the accompanying drawings and particularly pointed out in the claims.

In the drawings, Fig. 1 is a central longitudinal section of a dash-pot and a piston therein embodying the present invention. Fig. 2 is an end elevation thereof. Figs. 3 and 4 are end elevations of the piston with the valve thereof in two positions. Fig. 5 is a section on the line 5—5 of Fig. 1.

Similar reference characters refer to like parts throughout the several views.

Oils of various kinds are the usual liquids employed in dash-pots because such liquids evaporate very slowly. These liquids, however, are objectionable because their viscosities are greatly affected by changes in temperature so that the rate of movement of the same piston in the dash-pot under the same pressure is much higher during warm weather. The movements of the pistons through the liquids in the dash-pots are regulated by the passages in the pistons through which the liquids flow as the pistons move back and forth in the dash-pots, and means are here presented for automatically opening and closing such passages as the oils in the dash-pots become thinner or thicker with rising or falling temperatures. While dash-pots may have any desired cross section and may be in any desired position, they are usually cylindrical and vertical and the present construction will be described accordingly.

The dash-pot shown in the drawing has a body 1 and a head 2 provided with a funnel 3 of any desired character to conduct splashed-up liquid back into the body 1. The cup-shaped piston 5 has a hub 6 to which the piston rod is attached, preferably by screwing the rod into the hub and securing it in position by a jamb nut 7.

Slidable within the tube 4 is a valve stem 8 provided with a transverse pin 9 slidable in the slots 10 in the tube 4 so that this stem may slide in the tube without turning. The stem has an eye 12 at its outer end so that it may be connected to the mechanism whose movements are to be affected by the dash-pot. The stem is threaded at 13 to receive the nut 14 whose skirting 15 is internally threaded to receive the bushing 16. The piston rod 4 has a collar 17 at its outer end which is between the bushing and nut, and the relative positions of the eye 12 and the piston 5 may therefore be carried by turning the nut 14.

Rotatable on the inner end of the stem 8 is a disk valve 19 having notches 20 which are adapted to aline with the openings 22 in the head 23 of the piston 5. This valve may be held in position by a collar 24 and a washer 25. The valve has a flange 26 which is slotted to receive the outer end of the two-metal spiral thermostat 27 whose inner end is secured in a slot 28 across the inner end of the stem 8. This inner end of the thermostat is preferably so rigidly attached to the stem that it supports the washer 25 and the valve. The operation of this device is as follows.

The adjuster preferably works in a room of moderate temperature and adjusts the valve 19 relative to the pins 9 in the stem 8 by means of the thermostat 27 and after placing the cylinder head 2 on the piston rod 4 adjusts the slots 10 in the piston rod relative to the holes 22 in the piston. The stem 8 is then inserted and adjusted within the tube 4 by means of the nut 14 and the piston inserted in the cylinder 1 which has previously been filled with proper liquid. The head 2 having been attached and the dash-pot secured in a proper testing device, the nut 14 is turned to vary the distance

between the valve and the piston head 23 until the desired retardation is secured. Space is left between the valve and the head 23 so that the liquid may flow between them from the notches 20 to the openings 23 when the valve is at the limit of its closing movement, as shown in Fig. 3, which is when the highest expected temperature is reached. When the temperature is at the lowest point for which this dash pot is designed, the notches 20 and holes 22 are in alinement, as shown in Fig. 4.

The details of construction, the number of the passages, and the proportions of the parts may all be changed by those skilled in the art without departing from the spirit of my invention as set forth in the following claims.

I claim:—

1. In a dash-pot, a cylinder, a piston therein having an opening to permit the passage of liquids, a valve to control the effective area of said opening, manually operable means to vary the position of the valve relative to said opening, and automatic means to vary the position of the valve relative to said opening independent of said manually operable means.

2. In a dash-pot, a cylinder, a piston therein having an opening to permit the passage of liquids, a valve to control the effective area of said opening, manually operable means to vary the position of the valve relative to said opening, and a thermostat to position the valve relative to said opening independent of said manually operable means.

3. In a dash-pot, a cylinder, a piston therein having openings to permit the passage of liquids, a notched valve to control the effective areas of said openings, manually operable means to vary the distance from the valve to the openings in the piston, and a thermostat to rotate the valve.

4. In a dash-pot, a cylinder, a piston therein having openings to permit the passage of liquids, a valve having notches adapted to register with the openings in the piston, and a thermostat adapted to rotate the valve to control the effective areas of the passages for the liquids.

5. In a dash-pot, the combination of a piston slidable therein and having openings, a piston rod attached to the piston, a stem slidably mounted in the piston rod, a valve rotatably mounted on the inner end of the stem adjacent the openings in the piston and having notches adapted to register with the openings in the piston, means to vary the distance between the valve and piston, and means to rotate the valve relative to the piston.

6. In a dash-pot, the combination of a cylinder, a cup-shaped piston slidable therein and having openings in its head, a piston rod attached to the piston, a stem slidably mounted in the piston rod, a valve rotatable on the inner end of the stem adjacent the piston head and having notches adapted to register with the openings in the piston head, automatic means to rotate the valve relative to the piston, and means at the outer end of the piston rod engaging the outer end of the stem to slide it longitudinally of the rod to control the distance between the valve and piston head.

7. In a dash-pot, the combination of a cup-shaped piston slidable therein and having openings in its head, a piston rod attached to the piston, a stem slidably mounted in the piston rod, a valve rotatably mounted on the inner end of the stem adjacent the piston head and having notches adapted to register with the openings in the piston head, means to vary the distance between the valve and piston head, and means to rotate the valve relative to the piston head comprising a spiral thermostat attached to the end of the stem and to said valve.

8. In a dash-pot, a cylinder, a piston therein, and automatic means and manually operable means adapted to act independent of each other to vary the speed of liquids passing from one end of the cylinder to the other.

LOUIS JAENICHEN