C. H. HAPGOOD.

DASH POT.

APPLICATION FILED MAR. 28, 1912.

1,119,013. Patented Dec. 1, 1914.

Fig. 1.

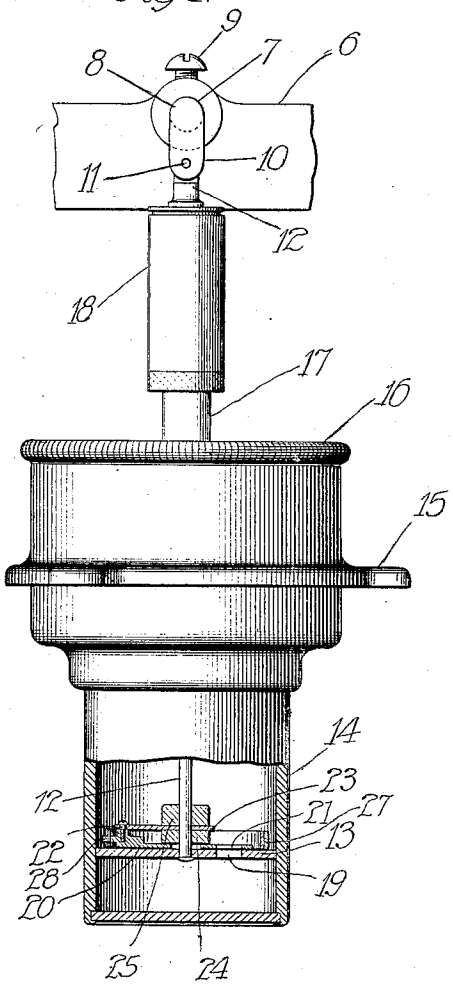


Fig. 2.

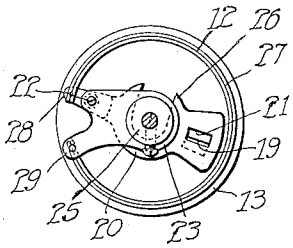


Fig. 3.

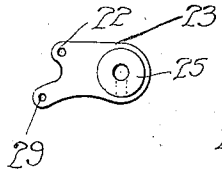


Fig. 4.

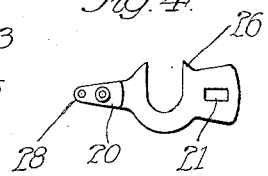
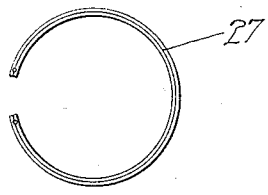


Fig. 5.



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UNITED STATES PATENT OFFICE.

CLARENCE H. HAPGOOD, OF TOLEDO, OHIO, ASSIGNOR TO TOLEDO SCALE COMPANY, OF TOLEDO, OHIO, A CORPORATION OF NEW JERSEY.

DASH-POT.

1,119,013. Specification of Letters Patent. Patented Dec. 1, 1914.

Application filed March 28, 1912. Serial No. 686,979.

To all whom it may concern:

Be it known that I, CLARENCE H. HAPGOOD, a citizen of the United States, residing at Toledo, in the county of Lucas and State of Ohio, have invented certain new and useful Improvements in Dash-Pots, of which the following is a specification.

My invention is particularly adapted to dashpots for use in scales to control the vibration and sudden movement thereof for the reason that it automatically adjusts itself to different temperatures, exerting the same effect upon the movement of the beam whether it be hot or cold. In dashpots for this purpose it is the usual practice to employ oil as the liquid because of its lubricating and non-volatilizing properties, but it has been found to have a serious defect in that its fluidity changes with variations in temperature, the oil becoming more viscous as the temperature lowers and thus exerting a greater retarding action upon the scale beam. It has been found necessary, therefore, to provide some means for regulating the flow of the oil and this has been done heretofore by a hand-controlled regulation of the openings through the piston for the flow of oil. It is, however, a matter of some difficulty to properly adjust the regulation and furthermore it requires frequent attention where the temperatures vary from time to time.

My invention consists in automatic means for controlling the opening through the piston and a preferred embodiment thereof is disclosed in the accompanying drawings and described in the following specification. But it is to be understood that the form specifically shown and described, while preferred by me, is but an exemplification of the invention and many changes and departures therefrom may be made within the scope of my invention as set forth in the following claims.

Referring to the drawings accompanying and forming part of the specification, Figure 1 is a side elevation, partly in section, of the preferred form of dashpot; Fig. 2 is a plan view of the piston of the dashpot, the piston rod, however, being shown in section; Figs. 3, 4 and 5 are details which will be fully described later.

In Fig. 1 the scale beam is shown fragmentarily at 6 and may be of any well known or approved form, and as shown is perforated at 7 to receive a rod 8, secured therein by a screw 9, the outer end of the rod being downwardly turned as at 10, and perforated to receive a pin 11, to which the upper end of the piston rod 12 is pivoted. The piston 13 is vertically movable in the dashpot 14, and the latter in the particular structure shown is provided with an attaching flange 15 and a cover 16, the latter of which may be secured to the dashpot by a screw thread or other suitable connection. From the center of the dashpot cover rises a perforated boss or sleeve 17, through the perforation of which extends the piston rod 12, and the latter carries at its upper end an inverted thimble or barrel 18 surrounding the sleeve 17 the two telescoping members coöperating to prevent the splashing of oil.

The various parts so far described form no part of the present invention which is concerned more particularly with the piston head and parts carried thereby. The piston head consists of a perforated disk 13 to which the piston rod 12 is attached in any suitable manner as by swaging, and is perforated at 19 for the passage of oil or other fluid and closely fits the interior of the dashpot cylinder. A shutter or controlling member 20 is pivoted to swing over the opening 19 in the piston and has an opening 21 which under certain conditions may be brought into exact register with the opening in the piston. Near its end remote from the opening 21 the shutter is pivoted as at 22 to a plate 23 which latter is held parallel to the piston head by a pair of collars 24 and 25 between which it is clamped. The lower collar 24 is spaced from the piston head 13 a sufficient distance to provide for the passage of the shutter 20 thereunder and the latter is notched or recessed at the side as at 26 to permit it to swing without interference from the piston rod. A thermostat 27 composed as is common in instrumentalities of this nature of two strips of metal of unequal indices of expansion, is connected at one end to the short end 28 of the shutter, that is to say, the end beyond its pivot, and at its other end the thermostat is anchored to an ear 29 upon the plate 23. Intermediate its ends the thermostat takes the form of a divided ring lying just within

the periphery of the piston and upon the upper face of the latter.

It will now be readily understood that if the outer member of the thermostat have a greater index expansion than the inner member, an increase in temperature will tend to contract the ring and shift the shutter. Thus if the construction is such that at the lowest temperature to which the device will be subjected in practice, the openings in the piston and shutter respectively are in substantial register, an increase in the temperature will cause the thermostat to shift the shutter to partially close the opening, the amount of shift depending of course upon the rise in temperature. Thus as the oil becomes more sluggish, due to a change in temperature, the opening through the piston is substantially enlarged, and with increased fluidity due to a rise in temperature the opening of the piston is contracted. The control is entirely automatic and the device needs no manipulation after it has once been installed. I have found in practice that brass and steel may be advantageously employed as the metals for forming my thermostat though other metals may be employed, and in actual use the former as that having the larger indices of expansion has constituted the outer member. It will be obvious, however, that by suitable rearrangement and adjustment of the parts the more expansible member may be arranged on the inside in which event the thermostat will move the shutter by expansion to contract the opening. While the dashpot has been described in connection with a scale mechanism it is obvious that its use is not limited thereto but that it is applicable to any other situation in which it is desired that the action of the device shall not change with changes of temperature.

I claim:

1. A dashpot comprising a cylinder and piston, the latter formed with an opening for the passage of oil, a pivoted shutter the long arm of which controls the opening and a thermostat connected to the short arm of the shutter.

2. A dashpot comprising a cylinder and piston the latter formed with an opening for the passage of oil, a shutter for the opening pivoted at a point remote from the latter and a thermostat one end of which is fixed with relation to the piston and the other end attached to the shutter of the body of the thermostat intermediate its ends being formed into the arc of a circle and lying upon the face of the piston.

3. A dashpot comprising a cylinder and a piston, a shutter pivoted to the piston, an opening controlled by said shutter upon the opposite side of the center of the piston from the pivotal point and a partially circular thermostatic element arranged concentric to the piston and anchored thereto at one end and attached to the shutter at the other to operate the latter.

4. In a dashpot, a cylinder, a piston therein having an opening therethrough, a plate 23 attached to the rod of the piston, a shutter 20 pivoted to said plate and arranged to cover and uncover the opening through the piston and a partially circular thermostatic element anchored to said plate at one end and connected to the shutter at the other.

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