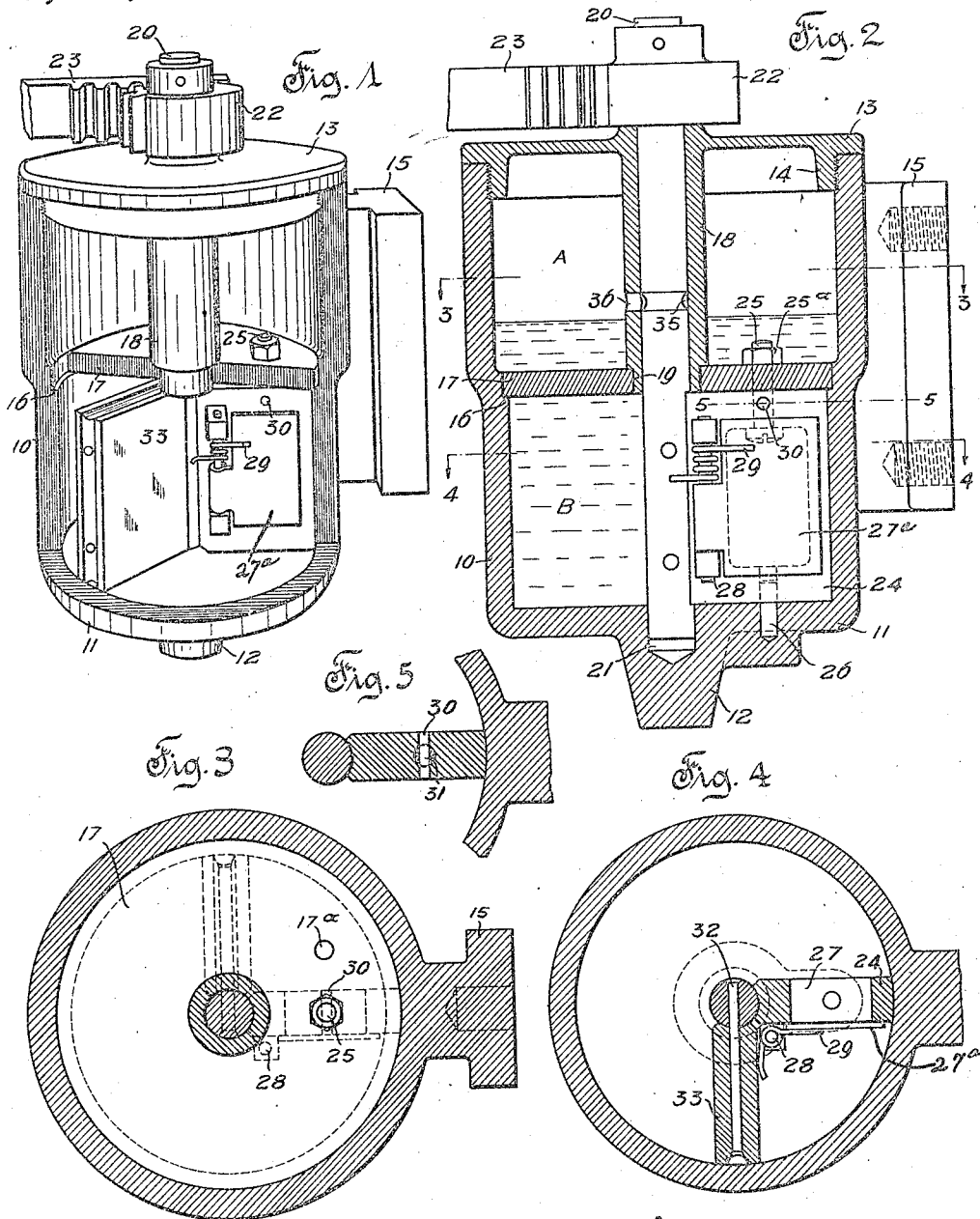


H. W. CHENEY.
DASH POT.
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Patented Mar. 2, 1915.

1,130,375.



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DASH-POT.

1,130,375.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, HERBERT W. CHENEY, a citizen of the United States, residing at Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Dash-Pots, of which the following is a full, clear, and exact specification.

This invention relates to improvements in rotary dash-pots, and has for its main object to improve the construction and efficiency of such devices.

More specifically the invention aims to provide an improved form of rotary dash-pot which permits a retarded or slow movement in one direction, and a very quick return or rapid movement in the opposite direction.

A still further object is to do away with the necessity for the stuffing box, and at the same time to provide a construction wherein leakage of the cushioning fluid, which is preferably a mixture of glycerin and alcohol, from the casing or cylinder is prevented, and wherein the compartment or chamber in which the cushioning takes place will at all times be completely filled with the cushioning fluid.

A still further object is to provide a construction which permits the parts to be readily assembled or taken apart, and has means for easily and accurately adjusting the retarding action.

The invention may be briefly summarized as consisting in certain novel details of construction and combinations and arrangements of parts which will be described in the specification and set forth in the appended claims.

Reference is had to the accompanying sheet of drawings, in which—

Figure 1 is a perspective view of a dash-pot constructed in accordance with my invention, parts being broken away for the sake of clearness; Fig. 2 is a vertical sectional view of the same; Fig. 3 is a transverse sectional view taken substantially along the line 3—3 of Fig. 2 looking in the direction indicated by the arrows, the movable vane being approximately at one of its extreme positions; Fig. 4 is a similar view substantially along the line 4—4 of Fig. 2, looking in the direction indicated by the arrow, the movable vane being substantially in its other extreme position, which,

in this case is 180° from the position shown in Fig. 3; and Fig. 5 is a fragmentary sectional view taken through part of a stationary partition employed in the dash-pot, substantially along the line 5—5 of Fig. 2.

Referring now to the figures of the drawing, 10 represents a case metal cylinder or casing which is provided with an integral bottom 11 having a downwardly projecting centrally located boss 12, and with a removable cover 13 having a threaded flange 14 which is designed to be screwed into the top of the cylinder. The cylinder is adapted to be supported in a vertical position, and for this purpose is provided along the side with an integral lug 15 adapted to be secured by suitable screws or the equivalent, to any desired support. The cylinder is also provided on the interior about midway between the bottom 11 and cover 13, with a shoulder 16 on which is supported a transverse partition in the form of a disk 17 which divides the interior of the cylinder into two compartments, an upper compartment A and a lower compartment B. The cover 13 is provided with a downwardly projecting central tubular flange 18 which extends entirely through the compartment A and is provided at its lower end with a reduced portion 19 which engages with a close fit in a centrally located circular opening in the center of the disk 17.

At 20 is shown the vertical operating shaft of the dash-pot, said shaft extending through and having a bearing in the tubular flange 18, and at its lower end engaging within a centering opening or socket 21 which extends from the bottom of the chamber B into a boss 12 extending downward from the bottom 11. The upper end of the shaft projects a short distance beyond the cover 13 and may be connected in any suitable manner to any desired mechanism having either a rotary or reciprocating movement, but in the present case the end of the shaft has secured thereto a pinion 22 which is engaged by a rack 23.

As will be apparent, the compartment B serves as the cushioning or retarding chamber, and the chamber A serves principally as an overflow chamber or as a receptacle for the head or excess cushioning fluid which will partially fill compartment A and will completely fill compartment B. The partition is provided with an opening 17^a through

which the fluid may pass from one compartment to another. Located in the compartment B and extending between the inner periphery of the cylinder and the shaft is a stationary partition or barrier 24, the vertical edges of which engage with a close fit the shaft and the inner wall of the cylinder, and the upper and lower edges of which engage respectively the lower face of the disk 17 and the inner or upper face of the bottom 11 so that a leakage of fluid around the edges of this partition cannot take place. The partition is preferably held in position by a screw 25 passing through the disk 17 and the upper part of the partition, and by a dowel pin 26 extending through the lower part of the partition and into the bottom 11. This partition is provided with a rectangular valve opening 27 of considerable area, and with a movable valve member 27^a of the swinging or hinged type, designed to be swung against the face of the partition when the shaft is rotated in one direction so as to prevent the passage of the cushioning fluid through the valve opening and to swing away from the partition when the shaft is rotated in the opposite direction to permit the free passage of the fluid through the valve opening. In the present case this valve member is supported by a vertical pin 28 passing through lugs on the side of the partition 24 near the shaft and is normally held against the face of the partition so as to close the valve opening by a coil spring 29. The partition is also provided with a small transverse opening 30 through which the cushioning fluid is allowed to pass slowly from one side of the partition to the other to obtain the slow or retarded movement of the shaft in one direction. This transverse opening 30 intersects the vertical opening or socket which is occupied by the screw 25, and the latter is provided also with a transverse opening 31, which, when the screw is properly located is in alinement with the opening 30. It will be seen that by turning the screw 25 slightly, the effective area of this opening 30 through the radial partition, and consequently the rate at which the cushioning fluid passes through the opening can be varied. The screw 25 is preferably provided with an integral head at its lower end, and at its upper end, which is slotted for an adjusting tool, is provided with a lock-nut 25^a, which, when the screw is turned to any position may be tightened to securely lock the screw in that position. Secured to the shaft by pins or screws 32 is a vane 33 which is of substantially the same size as the partition 24, and engages with a close fit the inner cylindrical surface and bottom of the cylinder and the disk 17 so that leakage of the cushioning fluid about the edges of the vane cannot take place to any considerable extent. The fluid, in this case a liquid, which as

before stated, is preferably a mixture of glycerin and alcohol, will fill completely the compartment B and will extend to a certain height in compartment A. It is to be noted that no stuffing box is provided for the shaft, and to avoid leakage of the liquid through the cover 13 about the shaft, the latter is provided with an annular groove 35 which will be above the surface of the liquid in compartment A, and the tubular flange 18 is provided with a transverse opening 36 which communicates with the annular groove 35. Thus if any of the liquid passes from chamber B upwardly along the shaft between the latter and the tubular flange, it will enter the annular groove 35 and pass through the opening 36 into compartment A. Any liquid which passes upwardly in this manner from compartment B will be replaced by liquid which passes downwardly through the opening 17^a in the disk.

With this construction, when the shaft is rotated in a clockwise direction, the cushioning fluid will pass readily through the valve opening 27 in the stationary partition and part may pass upwardly through the opening 17^a so that a quick movement can be had in this direction. When the shaft is turned, however, in the opposite direction or in a counter-clockwise direction, the fluid can pass only through the small opening 30 in the partition so that the movement in this direction will be retarded or will be comparatively slow. The particular form of valve which I employ permits an exceedingly quick movement in a clockwise direction, or what is commonly called a quick return, such as is desired in some types of machines.

It is to be noted that the shaft, disk 17, partition 24, and movable vane 33 can be assembled and placed into or removed from the cylinder as a unit, and therefore the parts can be very easily assembled or taken apart. To adjust the retarded movement the cover will be removed and the screw turned the desired amount to adjust the effective area of the opening 30 and then locked in the manner described.

I do not desire to be confined to the exact details shown and described, but aim in my claims to cover all modifications which do not involve a departure from the spirit and scope of my invention.

What I claim as new and desire to secure by Letters Patent is:

1. In combination, a casing, a partition dividing said casing into two compartments, said partition being provided with an aperture, a shaft extending through one compartment and into the second compartment, a sleeve in the first compartment through which said shaft extends, a cushioning fluid and a fluid displacing member in said second compartment, and means associated with

said shaft and said sleeve for intercepting fluid that may leak from said fluid containing compartment and returning said leakage to the first compartment whereby it may pass back to the fluid containing compartment through said apertured partition.

2. In a dash-pot, a cylinder having a compartment adapted to be filled with a cushioning fluid, a second compartment, a shaft extending centrally through said second compartment and into said first compartment, an apertured partition between said two compartments, a stationary partition extending between the shaft and the wall of the first compartment, said stationary partition having a hinged or swinging valve and a comparatively small opening through which the cushioning fluid may pass when the valve is closed, and a vane secured to said shaft and extending between the latter and the inner wall of the cylinder.

3. In a dash-pot, a cylinder, a transverse partition dividing the same into two compartments, one above the other, the lower compartment being adapted to be filled with a cushioning or retarding fluid, said transverse partition having an opening to permit a flow of said fluid from one compartment to the other compartment, a shaft extending vertically into said cylinder and through the upper compartment thereof, a substantially radial partition extending between the shaft and the inner wall of the lower compartment and being provided with a valve and with a comparatively small opening through which the cushioning fluid may pass slowly from one side of the partition to the other when the valve is closed, and a vane secured to the shaft and adapted to be swung back and forth in said lower compartment, said transverse and radial partitions, shaft, and vane being removable as a unit from said cylinder.

4. In a dash-pot, a cylinder having a cover provided with a centrally located tubular flange, a disk partition in said cylinder and dividing the same into two compartments, one above the other, said disk having an opening which receives the lower end of the tubular flange, said disk having another opening to permit the flow of cushioning fluid from one compartment to another, a shaft extending downwardly through said flange and disk, a substantially radial partition in the lower compartment between the shaft and the wall of the cylinder, said partition having a valve and valve opening, and having a restricted opening through which the cushioning fluid may pass slowly when the valve is closed, and a movable vane secured to said shaft and engaging the bottom and cylindrical wall of the lower compartment and the lower face of the disk, said cover, partitions, shaft, and vane being removable as a unit from the cylinder.

5. In a dash-pot, a cylinder provided with a cover having a centrally located depending tubular flange, a shaft supported in said flange, a disk in said cylinder dividing the latter into two compartments, said disk having a central opening which receives the lower end of the tubular flange and having a small opening, placing the two compartments in communication with each other, said lower compartment and part of the upper compartment being adapted to contain a cushioning fluid, the small opening in said disk permitting the flow of cushioning fluid from one compartment to another, a stationary partition in the lower compartment provided with a valve opening and valve and with a transverse opening through which the fluid may pass slowly, and a vane in the lower compartment secured to the shaft and adapted to be rotated therewith.

6. In a dash-pot, a cylinder provided with a cover having a centrally located depending tubular flange, a shaft supported in said flange, a disk in said cylinder dividing the latter into two compartments, and having a central opening which receives the lower end of the tubular flange and having a small opening which places the two compartments in communication with each other, said lower compartment and part of the upper compartment being adapted to contain a cushioning fluid, a stationary partition in the lower compartment, said partition having a valve opening and valve and a transverse opening through which the fluid may pass slowly when the valve is closed, and a vane in the lower compartment, said vane being secured to the shaft and adapted to be rotated therewith, said shaft having an annular groove and said tubular flange having an opening which communicates with said groove and permits the cushioning fluid, which passes from the lower compartment upwardly along the shaft, to flow into the upper compartment.

7. In combination in a dash-pot, a casing adapted to contain a cushioning fluid, a disk within said casing and acting to confine said fluid, a shaft extending into the casing and through said disk, a vane secured to the shaft and adapted to be rotated therewith, a stationary partition in said casing, said partition having an opening through which the cushioning fluid may pass when the shaft is rotated in one direction, and an adjustable screw passing through said disk and into said partition, said screw having a transverse opening adapted to be aligned with the opening in said partition.

8. In a dash-pot, a cylinder provided with a transverse partition dividing the same into two compartments, one above the other, said lower compartment being adapted to be filled with a cushioning fluid, said transverse partition having an opening which

places the two compartments in communication with each other to permit a flow of said cushioning fluid from one compartment to another, a vertical shaft extending into the cylinder, said shaft having a vane adapted to be swung back and forth in the lower compartment, a substantially radial partition in the lower compartment, a screw securing said radial partition to the transverse partition, said radial partition having a valve and a small opening through which the fluid is adapted to flow when the shaft is turned in one direction, said screw having an opening which coincides with said small opening in the radial partition.

9. In a dash-pot, a casing, a partition

dividing said casing into two compartments one above another, said partition being provided with an aperture, an abutment or partition and a rotatable fluid displacing member in the lower one of said compartments, said aperture permitting unrestricted passage of fluid therethrough from either of said compartments to the other one.

Milwaukee, Wis., May 6, 1909.

In testimony whereof I affix my signature, in the presence of two witnesses.

HERBERT W. CHENEY.

Witnesses:

CHAS. L. BYRON,
ROB. E. STOLL.