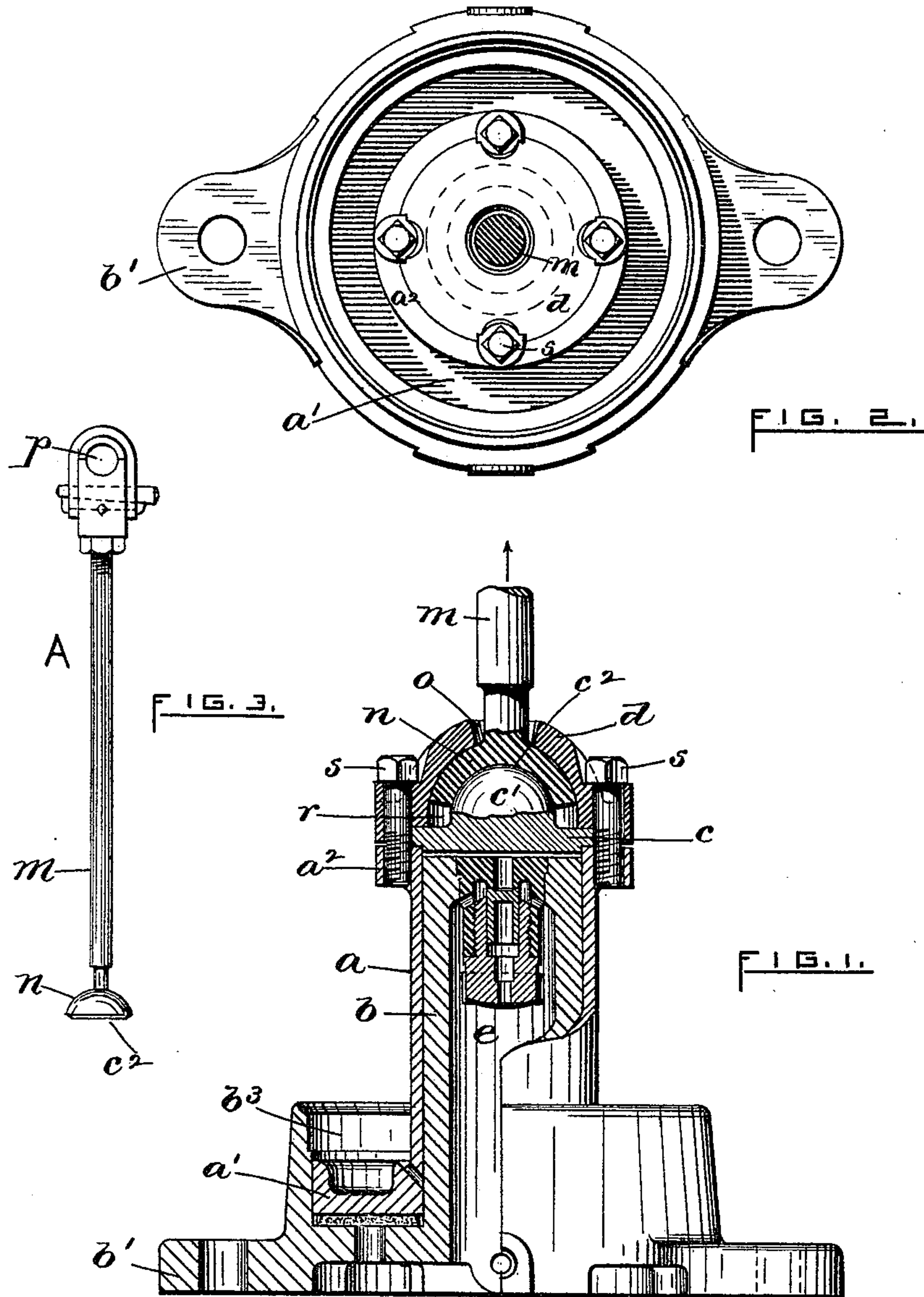


(No Model.)

W. F. BROWN.
DASH POT.

No. 403,643.

Patented May 21, 1889.



WITNESSES.

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INVENTOR.

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UNITED STATES PATENT OFFICE.

WALTER F. BROWN, OF PROVIDENCE, RHODE ISLAND.

DASH-POT.

SPECIFICATION forming part of Letters Patent No. 403,643, dated May 21, 1889.

Application filed January 8, 1889. Serial No. 295,795. (No model.)

To all whom it may concern:

Be it known that I, WALTER F. BROWN, a citizen of the United States, residing at Providence, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Connection-Joints for Vacuum Dash-Pots; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

My invention relates to vacuum dash-pots, but more especially to the construction of the joint by which the drop-rod is attached to the plunger; and it consists, essentially, of a top plate or flange having a well-rounded or globular-shaped center portion, and an apertured cap recessed on its under side and concentric with the rounded center of the top plate, said cap and plate being so constructed and arranged that when they are secured to the plunger an annular space is formed between them. Into this space is fitted the lower end of the drop-rod, thereby forming a self-adjusting or cup-shaped universal joint.

The object I have in view is to provide the drop-rods or connections for vacuum-pots with means whereby the wear at the joint is reduced to a minimum, yet at the same time permitting the rod to vibrate freely in conformity with the angular movement of the valve-arm of the valve-gear.

My improvement is more particularly applicable to automatic cut-off engines of the four-valve or "Corliss" type, such as are provided with releasing or detachable valve-gear.

In the annexed drawings, Figure 1 is a vertical central sectional view, in partial elevation, showing a vacuum dash-pot provided with my improved joint. Fig. 2 is a plan view, and Fig. 3 is a view, of the drop-rod adapted at its lower end to engage the upper end of the plunger of the vacuum dash-pot.

The following describes more in detail the construction and manner of operation of my improved joint.

A designates the drop-rod as a whole, adapted, by means of the box *p* at the upper

end, to be jointed to a pin mounted on and vibrating with the valve-arm of an engine, as usual. The lower end of the rod is enlarged, thereby forming the cup-shaped head *n*, the cavity being indicated by *c*². The form of the lower head, *n*, is that of a portion (being less than half) of a hollow sphere, the shell being uniform in thickness throughout. The two end portions are connected by the rod *m*, all as clearly shown in Figs. 1 and 3.

b indicates the hollow cylinder or stationary portion of the vacuum-valve casing, of ordinary construction, the same having an enlarged base, *b'*, adapted to receive holding-down bolts. The casing is also enlarged to form the open annular recess *b*³.

a designates the plunger or weight as a whole, the same as drawn having a tubular form and turned out to fit the cylinder *b*. The lower portion of the plunger is extended radially to form the circular head *a'*, which is fitted to move up and down in the annular recess *b*³, all as common, and to which I make no claim. The upper end of the plunger is provided with a flange, *a*², into which the cap-bolts *s* are screwed. Immediately surmounting and counterbored into the cylinder *b* is located a flange-plate, *c*, the same having a spherical-shaped central projection, *c'*, formed on its upper face, the describing radius of the said spherical projection being the same as that of the concavity *c*² of the head *n* of the drop-rod, before described.

Upon the top of the flange-plate *c* is located a dome-shaped cap, *d*, the under side of which is provided with a central spherical-shaped recess, the curvature of which is of the same radius as that of the exterior or upper surface of the drop-rod head *n*. The parts *c* and *d* when in position produce an annular spherical-shaped recess, *r*, between them, as shown in Fig. 1. The cap is further provided with an enlarged flange, the same being drilled to receive the cap-bolts *s*. A central opening, *o*, is cut through the top of the dome, through which the rod *m* is freely passed.

By means of my improved joint it will be seen that when the drop-rod is attached to the head of the plunger, (see Fig. 1,) the cup-shaped head *n* is susceptible of being vibrated or gyrated within its limits, and at the same

time being lifted without producing sufficient lateral pressure or friction upon the parts *a* and *b* to prevent a free vertical movement of the plunger. The construction of the joint is
5 such that it can be produced by a comparatively small amount of work, the form affording a large bearing-surface which may be readily lubricated. The joint can be quickly made, or the parts be as quickly and easily
10 disconnected when desired.

As before stated, I make no claim to the form, construction, and arrangement of the dash-pot as a whole, except as to the means for connecting the drop-rod to the plunger.

15 I claim as my invention—

The combination, with a drop-rod having a cup-shaped enlargement, *n*, at its lower end,

of an annular plunger, *a*, a flange-plate, *c*, having a hemispherical projection formed on its upper side adapted to the cavity of the
20 drop-rod, and a centrally-apertured hemispherical cap, *d*, having its under side connecting with the said projection of the flange-plate *c*, and adapted to the convex surface of the end *n* of the drop-rod, said flange-plate and
25 cap being secured to the top end of the plunger, all arranged and adapted for operation substantially as shown and described.

In testimony whereof I have affixed my signature in presence of two witnesses.

WALTER F. BROWN.

Witnesses:

CHARLES HANNIGAN,
GEO. H. REMINGTON.