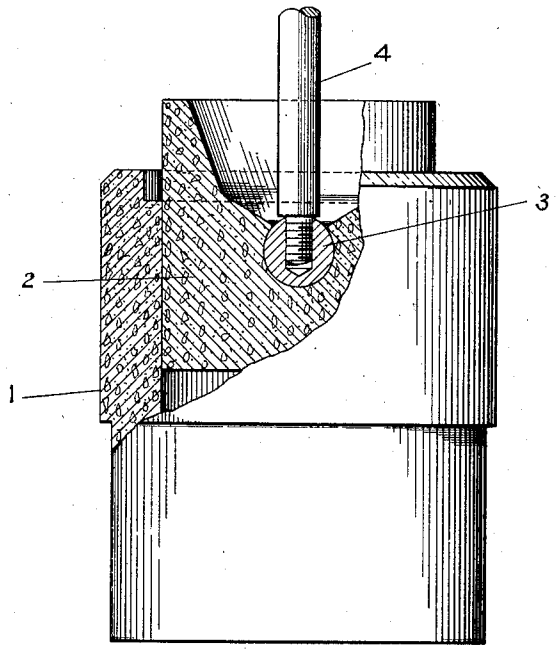
F. ENGEL.

DASHPOT.

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1,374,914. **Patented Apr. 19, 1921.**



Witnesses

David H. Finkler.

Ralph Munden.

Inventor

Frank Engel.

By Raymond H. Van Vleet.

Attorney

UNITED STATES PATENT OFFICE.

FRANK ENGEL, OF NIAGARA FALLS, NEW YORK, ASSIGNOR TO U. S. LIGHT & HEAT CORPORATION, OF NIAGARA FALLS, NEW YORK, A CORPORATION OF NEW YORK.

DASHPOT.

1,374,914. Specification of Letters Patent. Patented Apr. 19, 1921.

Application filed April 8, 1916. Serial No. 89,974.

To all whom it may concern:

Be it known that I, FRANK ENGEL, a citizen of the United States, residing at Niagara Falls, in the county of Niagara and State of New York, have invented new and useful Improvements in Dashpots, of which the following is a specification.

The present invention relates to dash pots.

More particularly the present invention relates to dash pots in which it is requisite that a close fit be maintained between the plunger and the cup portion, so that a minimum of air may escape therebetween. Dash pots have been used in which the plunger part is composed of self-lubricating material. Difficulties have been encountered, however, in the use of such dashpots, due to variations in temperature. Dash pots have also been provided in which both the plunger and the cup portion are made of metal. The difficulty of machining the last mentioned dash pots to provide a proper fit between the moving parts has been so great that such dash pots have been very expensive to manufacture and have been uncertain of action for work requiring a delicate action. Other difficulties encountered in dash pots as heretofore manufactured have been due to the improper action of the universal joint between the plunger and the connecting rod.

This invention relates to the kind of dashpot described and claimed in application Serial No. 22,051 for dash pots, filed by the same applicant, April 17, 1915, now Patent No. 1,182,258. This application constitutes a continuation as to common subject-matter of the application just referred to.

One of the objects of the present invention is to provide a dash pot of simple, strong construction in which the effect of wide variations in temperature will be practically negligible.

Another object of the invention is to provide a dash pot of a self-lubricating material whereby binding both between the plunger and the cup and in the universal joint between the plunger and the connecting rod will be avoided.

A further object will be a smooth-acting dash pot which will be inexpensive to manufacture.

Referring to the drawing, there is shown one embodiment of the invention. A cup 1 is shown in coöperative relation with a plunger 2. The cup and plunger are constructed of a composition of bakelite and graphite. The bakelite is a composition of phenol, formaldehyde and a filler, preferably asbestos, mixed together, preferably in powdered form. The bakelite and flaked graphite are thoroughly mixed by air or other suitable means. The product of these ingredients is then subjected to the application of heat and pressure and produces a body which has all the attributes of strength, durability, minimum contraction or expansion under variable temperatures, and self-lubrication.

It will be obvious from the drawing that the contacting surfaces of the cup and plunger respectively are extensively impregnated with the particles of graphite which lubricate these surfaces and maintain an easy sliding fit between the parts at all times and under all thermostatic conditions.

Partially embedded within the plunger 2 is a ball 3 which is adapted to roll freely in all directions. This ball may be of any suitable material which will take a smooth surface, as for instance, steel. A connecting rod 4 may be attached to the ball 3 in any suitable manner, preferably by screw-threading.

In mounting the ball 3 within the plunger 2, the ball is covered with a layer of graphite and oil and the plunger is then molded around the same. A lighter oil is then applied to the ball and the ball is rolled around in its socket until the heavier oil has been worked out. A universal joint is thus provided in which the ball may roll freely, being perfectly lubricated by the graphite which was applied to it before molding and by the graphite in the composition of the plunger. Furthermore, there will be room between the ball and its socket to allow for such differences of expansion as may occur between the ball and the plunger caused by the temperatures to which the dash pot will be subjected. At the same time, a sufficiently good fit will be provided between the ball and the plunger that no lost motion of any practical effect will be encountered.

Among the advantages which will be obtained by constructing the plunger and the cup of the composition specified are the advantages that differences in temperature and

differences in the condition of moisture in the atmosphere will have practically no effect on the same. Furthermore, there will be no tendency for the parts to warp from their proper shape.

The graphite in the material used will constitute a perpetual lubricant so that a perfectly smooth action will be obtained both between the plunger and the cup and in the universal joint.

It is not intended that the invention be limited to the use of any one of the above set forth ingredients in its highly technical interpretation, but rather that the terms phenol, formaldehyde and graphite shall include all reasonable derivatives, departures or variations which, by any reasonable construction might be interpreted as in the nature of any one of these ingredients.

Having described my invention, what I claim as new and desire to secure by Letters Patent of the United States, is:

In combination, a cup comprising bakelite and graphite set together in a hard body, a plunger comprising the same ingredients, movable within said cup and a smooth surfaced ball partially embedded in said plunger.

In witness whereof, I have hereunto subscribed my name.

FRANK ENGEL.