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PLASTIC COMPOSITION USED AS A POWER TRANSMITTING ELEMENT IN FLUID CLUTCHES.

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1,368,945.

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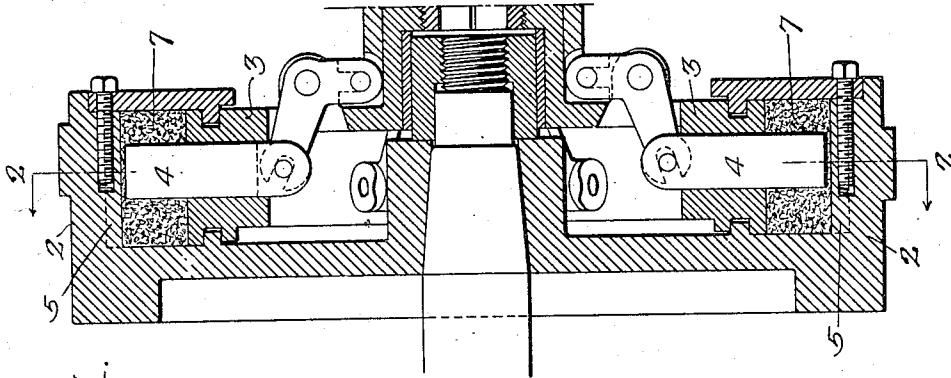


Fig. 1.

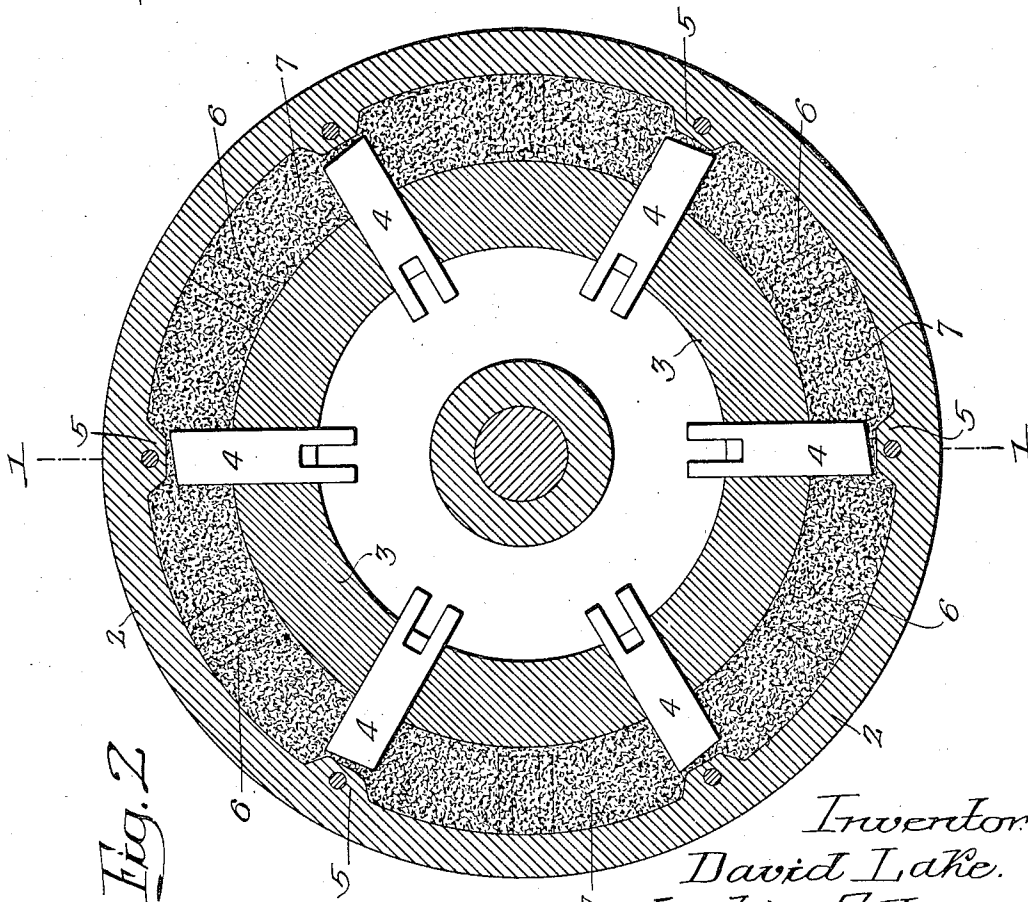


Fig. 2.

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UNITED STATES PATENT OFFICE.

DAVID LAKE, OF NORRISTOWN, PENNSYLVANIA. ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE FULTON FOUNDRY & MACHINE COMPANY, OF CLEVELAND, OHIO, A CORPORATION OF OHIO.

PLASTIC COMPOSITION USED AS A POWER-TRANSMITTING ELEMENT IN FLUID-CLUTCHES.

1,368,945.

Specification of Letters Patent.

Patented Feb. 15, 1921.

Original application filed June 15, 1916, Serial No. 103,912. Divided and this application filed December 11, 1916, Serial No. 136,234. Renewed June 18, 1918. Serial No. 240,688.

To all whom it may concern:

Be it known that I, DAVID LAKE, a citizen of the United States, and a resident of Norristown, county of Montgomery, State of Pennsylvania, have invented certain Improvements in Plastic Compositions Used as a Power-Transmitting Element in Fluid-Clutches, (being a division of application filed June 15, 1916, Serial No. 103,912,) of which the following is a specification.

The object of my invention is to make a plastic composition which can be used as a power transmitting member in fluid clutches so that the motion of the driving element will be transmitted proportionately to the driven element according to the penetration of the driven element into the plastic material carried by the driving element.

In the accompanying drawing:—
Figure 1, is a sectional view on the line 1—1, Fig. 2, showing a fluid clutch in which my improved plastic fluid member is used; and

Fig. 2, is a sectional view on the line 2—2, Fig. 1.

My improved plastic fluid member is a comparatively thick, dense mass consisting of graphite, glycerin and asbestos fiber in about the proportion of two parts of graphite, two parts asbestos fiber and one part glycerin. This mass is of such a consistency that when compacted it will have sufficient solidity to resist movement of one element in respect to another, but when it is not compacted it will allow one element to move free of the other element and, consequently, by regulating the density of the material the transmission of power from one element to another can be accurately regulated. This compound is especially adapted for use in a fluid clutch such as that described in my pending application Serial No. 103,912, filed June 15th, 1916.

Referring to the drawing, 2 is the casing which, in the present instance, forms the driving element, and located within this casing is a driven element 3. In this driven element is a series of plungers 4 mounted in radiating grooves and means are provided for projecting the plungers into the space

between the driving and the driven elements. In the present instance, on the inside of the casing 2 is a series of abutments 5 and 6, and some of these abutments (5) are at the base of the annular recess in the driving element, while the abutments 6 are at the sides of the recess, as shown by dotted lines. The plastic fluid member is indicated at 7 and has a consistency as above set forth. The plungers are less in diameter than the width of the annular recess, but when they are projected to the full extent, as illustrated in the drawing, then the entire power is transmitted from the driving element, the casing 2, to the driven element 3, through the plastic material and the plungers, but, if the plungers are slightly retracted so as to allow the fluid element to pass the plungers more freely, then the driven element will be driven at a slower speed than the driving element, and the speed of the driven element will decrease as the plunger is retracted until finally, when the plunger is fully retracted, no motion will be imparted to the driven element.

It will be noticed that when the plungers are in their full projected position they do not touch the casing and, therefore, motion is transmitted entirely through this dense mass of plastic material. Tests have shown that there is no slip between the driving and the driven elements when the plungers are fully projected into the dense mass of plastic material under normal driving strains. This is due to the fact that the driving element is rotated at a speed sufficient to cause the plastic fluid mass to pack against the inner periphery of the casing and is caused to turn with the casing due to the projecting abutments, and when the plungers are forced into the dense portions of the mass the plungers and the driven element, must turn with the driving element. The proportions of the composition may be slightly modified without departing from the essential features of the invention, but the plastic fluid mass must be such that it will become so dense, due to centrifugal action, that a plunger, or its equivalent, projected into the mass will rotate therewith.

I claim:

1. A plastic composition used as a power transmitting member for a fluid clutch, said composition consisting of graphite as a base
5 with glycerin and a fibrous material added thereto to form a plastic fluid mass of such a consistency that when compacted it will have sufficient solidity to resist the movement of one member of a clutch in respect to

another and when not compacted will allow 10 one member to move free of the other.

2. A viscous transmission medium used for transmitting power from a driving to a driven element, said viscous medium being fibrous and having as elements graphite and 15 glycerin.

DAVID LAKE.