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PUSH ROD DEVICE FOR OPENING AND CLOSING AN ELECTRIC CONTACT

Filed Feb. 13, 1967

Fig. 1

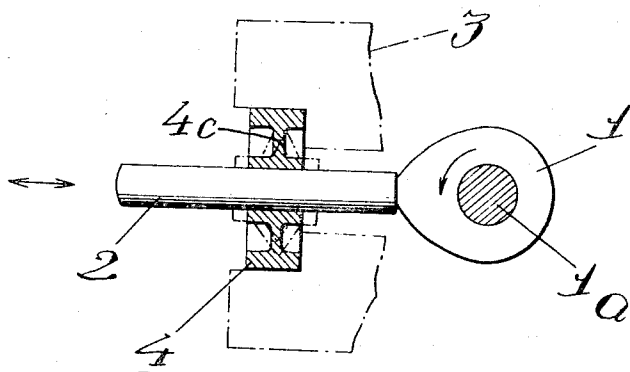


Fig. 3

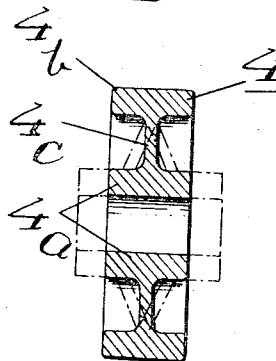


Fig. 2

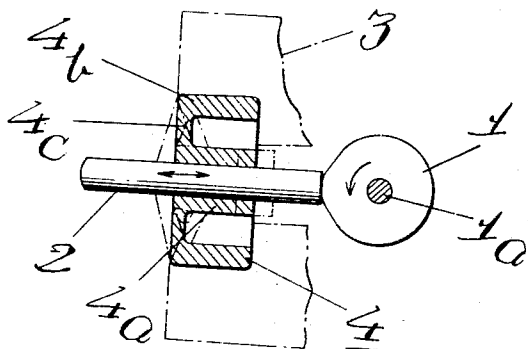


Fig. 4

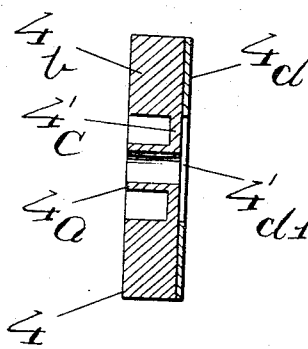
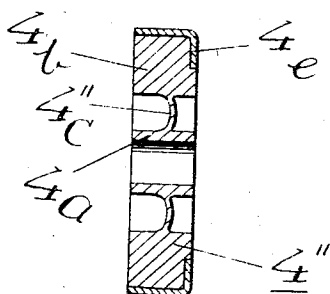


Fig. 5



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2 Claims. (Cl. 200—168)

ABSTRACT OF THE DISCLOSURE

The present invention relates to an actuating plunger for operating an electric contact, wherein the plunger is mounted with a water and air tight connection in a bushing made of elastic material and having an outer ring portion, an inner ring portion, and a thin web connecting the outer and inner ring portions, the ring portions and the web being integral. The web flexes upon reciprocation of the plunger. A reinforcing member is mounted over at least part of one end of the bushing to restrain movement of the body of the bushing. The bushing itself has a water and air-tight connection with the internal combustion engine or other apparatus on which the device of the invention is employed.

Background of the invention

Heretofore, a push rod of the kind, to which this invention relates, was supported slidably by means of an O-ring. In such device, gas-tightness could not be obtained and leakage of oil occurred due to wear and tear of the ring. As a consequence, the contact was stained with oil or impaired and ideal ignition could not be obtained. According to the present invention, the device may be made completely air-tight, so that entrance into the breaker point box, or the like, of oil or other foreign substances may be prevented, and smooth operation of the rod may be ensured. Moreover, the device according to the present invention is very durable and may be used almost semi-permanently. In addition, it is suited for mass production, and may be produced at a lower cost.

Summary of the invention

An object of the present invention is to provide a push rod device for opening and closing an electric contact wherein the push rod may be made air-tight and leakage of air or oil may be avoided effectively.

Another object of the present invention is to provide a push rod device for opening and closing electric contact wherein the push rod may be made air-tight without interruption of smooth operation of the push rod.

A further object of the present invention is to provide a push rod device for opening and closing electric contact wherein the push rod may be made very durable and may be used almost semi-permanently.

A further object of the present invention is to provide a push rod device for opening and closing electric contact suited for mass production and producible at a low cost.

Brief description of the drawing

With these objects in view and other objects herein-after set forth, the present invention will now be described in detail with reference to the accompanying drawing in which certain embodiments of the present invention are illustrated, and in which:

FIG. 1 is a side view in vertical section showing an embodiment of the push rod device;

FIG. 2 is a side view in vertical section showing another embodiment of the push rod device; and

FIGS. 3 to 5 are axial sectional views showing some preferred embodiments of the bearing bushing, FIG. 3 being an axial sectional view of the bushing shown in FIG. 1.

Description of the preferred embodiments

Referring to FIGS. 1 and 2, numeral 1 indicates a cam mounted fixedly on a rotary shaft 1a, numeral 2 indicates a push rod reciprocated upon rotation of cam 1 and operable to put the breaker points of the engine 3 into motion, and numeral 4 indicates a bushing.

Bushing 4 as shown in FIGS. 2, 3, 4 and 5 comprises an inner ring portion 4a, an outer ring portion 4b and a flexible connecting web 4c, while bushings 4' and 4'' shown in FIGS. 4 and 5 are provided with reinforcement members 4d, 4e. Bushings 4, 4', 4'' are usually made from heat- and oil-resistant rubber or soft and resilient plastics. However, these bushings need not be made from these materials exclusively; the flexible connecting web 4c, 4'c, 4''c may be made from the above-mentioned rubber or plastic material and other parts from metal or other plastic material.

In the embodiment shown in FIG. 4, reinforcement member 4d, which is made from metal or a hard plastic and provided with a hole to allow for free movement of the inner ring portion 4a, is adhered or welded to one lateral face of the bushing 4', while in the embodiment shown in FIG. 5 reinforcement member 4e made from similar material is adhered or welded to the outside periphery of the bushing 4'' and over one end face thereof to cover part of this face of bushing 4'.

The inner and outer ring portions of the bushings 4, 4', 4'' may be circular, or of polygonal shape, as for instance, quadrilateral, pentagonal or hexagonal shape.

The outer ring portion 4b in each case is fixedly mounted on the predetermined part of engine 3 and push rod 2 is insertedly and fixedly mounted inside the inner ring portion 4a.

I claim:

1. A push rod device for opening and closing an electric contact of an internal combustion engine comprising

a resilient body having an inner ring portion provided with an opening therethrough, an outer ring portion, and a comparatively thin web extending radially between said two ring portions and integrally connecting them, and

a reinforcement member of comparatively stiff material tightly secured on a surface of the outer ring portion at one side thereof, and a rod fitted into the opening in said inner ring portion and having air- and water-tight connection therewith, said outer ring portion being adapted to have air- and water-tight connection with the housing of the internal combustion engine, so that on longitudinal displacement of the rod said web will flex.

2. A push rod device as claimed in claim 1, wherein said reinforcement member extends over the outer peripheral surface of said outer ring portion.

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