April 28, 1931. J. J. BOLAND 1,802,330

VALVE MECHANISM

Original Filed May 24, 1929

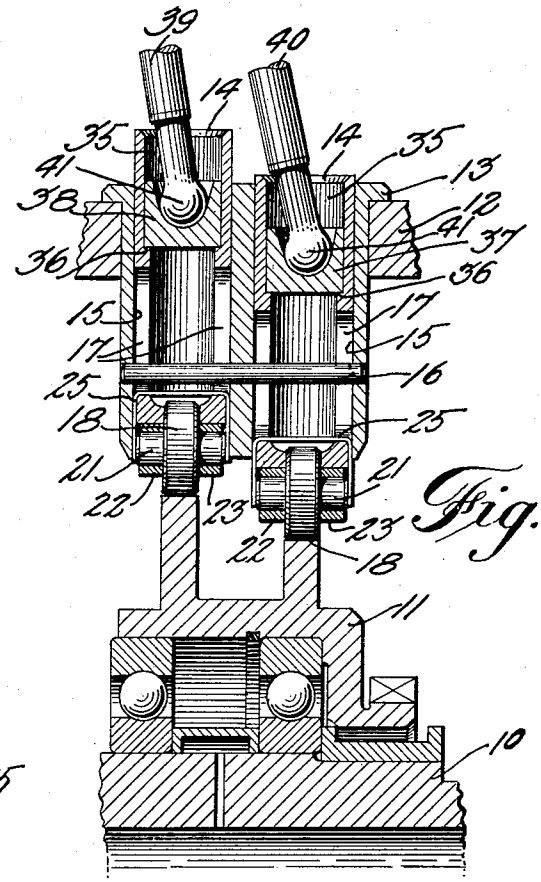


Fig. 1.

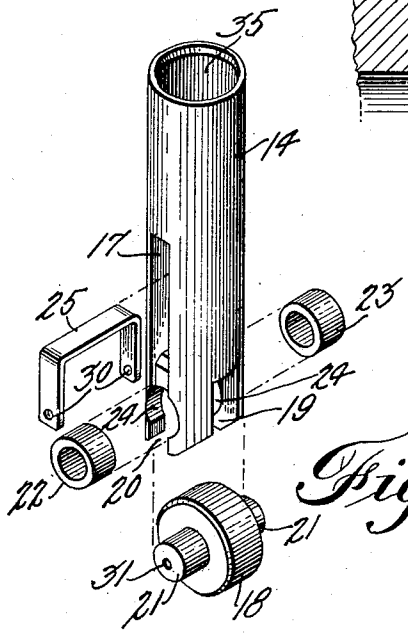


Fig. 2.

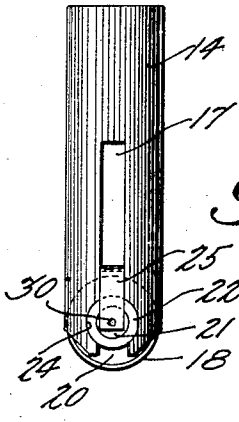


Fig. 3.

INVENTOR.
Joseph J. Boland.
BY
Vernon V. Ackerman
ATTORNEY.

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UNITED STATES PATENT OFFICE

JOSEPH J. BOLAND, OF KEYPORT, NEW JERSEY, ASSIGNOR, BY MESNE ASSIGNMENTS, TO AEROMARINE PLANE & MOTOR COMPANY, INC., OF KEYPORT, NEW JERSEY, A CORPORATION OF NEW YORK

VALVE MECHANISM

Application filed May 24, 1929, Serial No. 365,759. Renewed February 25, 1931.

This invention relates in general to valve mechanisms and more particularly to a type of valve actuating mechanism used in conjunction with an internal combustion engine.

An object of the invention is to provide a suitable and highly efficient valve actuating mechanism for such an engine that is simple and economical of manufacture and that can readily be assembled and disassembled without the use of special tools.

A further object of the invention is to provide a new and novel valve mechanism in which the operating parts are securely held in effective relation without the use of such frictionally engaged holding or locking means as are usually resorted for this purpose.

Various other objects and advantages of the invention will be in part obvious from an inspection of the accompanying drawings and a careful consideration of the following particular description and claims of one form of mechanism embodying my invention.

In the drawings:

Figure 1 is a fragmentary longitudinal section of a crankshaft showing the present invention in conjunction therewith.

Figure 2 is a diassembled perspective view showing some of the details of the invention.

Figure 3 is an assembled view of the parts shown in Fig. 2.

With reference to the drawings, 10 designates a crankshaft on which is mounted for rotation relatively thereto a valve actuating cam member 11.

In an opening in the engine casing 12 there is secured in any suitable manner a tappet guide member 13 adapted to accommodate either one or two tappets 14 as the case may be. In the present instance two tappets have been shown as that is the number usually employed in the operation of an engine.

The tappets 14 are slidably mounted in bores 15 of the guide 13 for reciprocating motion and are held against rotation by a pin 16 that passes through a slot 17 in the tappets. In the lower ends of the tappets there are mounted respectively, the rollers 18 which ride on the cam member 11 in the usual manner.

The manner of mounting these rollers 18 in the tappets 14 is considered as being an essential feature of this invention and is accomplished in the following manner.

With reference to Figs. 2 and 3 in particular each tappet is provided with a pair of open ended slots 19 and 20 disposed at right angles to one another, the slots being formed just wide enough to permit the entrance of a roller 18 together with its journals 21. The bushings 22 and 23 are then slipped over the journals 21 and into the bore 24 which will retain the roller in an operative position. Following this operation, the U shaped spring member 25 is inserted into the slot 17 and pressed down over the ends of the journals 21 and the bushings 22 and 23 until the projections or nibs 30 engage the depressions 31 in the journals 21, said spring member thus retaining all the parts in their assembled relation as shown in Figs. 1 and 3.

The upper portions of the tappets 14 are bored out at 35 to a substantial depth in a manner so as to provide a shoulder or an abutment at 36 and into these bores are inserted the bearings 37 and 38 which are recessed to receive the ball ends of the valve actuating push rods 39 and 40. As the tappets are subject to considerable side thrust it will be seen that with this construction ample bearing surface is provided between the tappets and the tappet guide 13 above the bearing centers 41 of the push rods 39 and 40 so as to distribute this side thrust over a large area and thus prevent undue wear on the bearing surface.

Variations may be resorted to with the scope of the invention and portions of the improvements may be used without the others, whilst not departing from the spirit of the invention.

Having thus described my invention, I claim:

1. In a valve mechanism, the combination of a tappet guide member, a tappet mounted for reciprocation therein and provided with slots, a roller having journals and adapted for insertion into said tappet by means of said slots, a pair of bushings insertable into said tappet over the roller journals in a man-

ner as to support said roller, and a spring means adapted to engage the ends of said bushings and journals to prevent separation of the parts.

2. In a valve mechanism, the combination of a tappet of tubular formation provided with transaxial slots and a transaxial bore adjacent one end thereof, a roller having journals adapted for insertion into said tappet by means of said slots, bushings insertable into said bore and over said journals in a manner as to provide a bearing for the roller, and a spring means insertable through one of said slots and over said bushings in a manner as to retain the parts in operative relation.

3. In a valve mechanism, the combination of a tappet guide member, a tappet of tubular formation in said guide member provided with transaxial slots and a transaxial bore adjacent one end thereof, a roller having journals adapted for insertion into said tappet by means of said slots, bushings insertable into said bore and over said journals in a manner as to provide a bearing for said roller, a spring means insertable through one of said slots and over said bushings in a manner as to retain the parts in operative relation, an abutment within said tappet disposed substantially midway between the ends thereof, a push-rod bearing engaging said abutment, and a pin secured in said guide member and extending through said tappet by means of one of said slots to restrain the tappet to reciprocating motion only.

Signed at Keyport, in the county of Monmouth, and State of New Jersey this 22nd day of May, A. D. 1929.

JOSEPH J. BOLAND.