S. CURRAN.

PUPPET VALVE FOR INTERNAL COMBUSTION ENGINES.

APPLICATION FILED JUNE 13, 1913.

1,129,555. Patented Feb. 23, 1915.

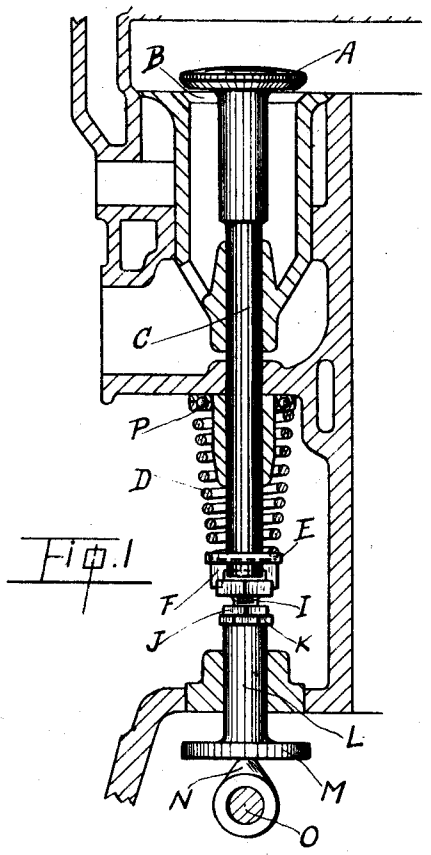


Fig. 1

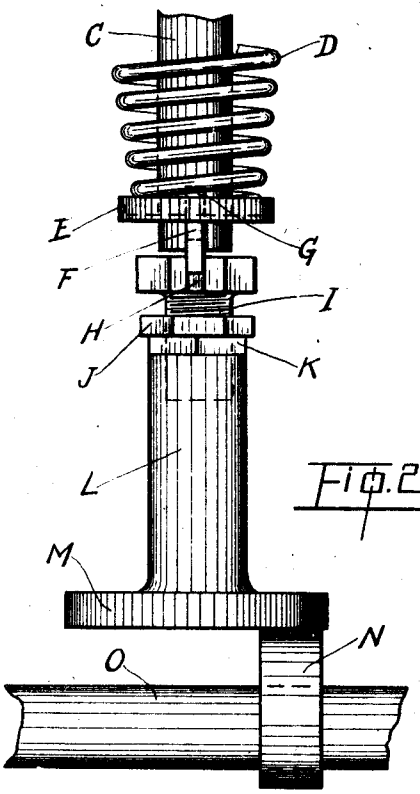


Fig. 2

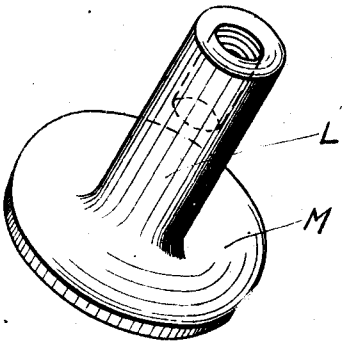


Fig. 3

WITNESSES.

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UNITED STATES PATENT OFFICE.

STANLEY CURRAN, OF VANCOUVER, BRITISH COLUMBIA, CANADA, ASSIGNOR OF ONE-HALF TO DANIEL THOMAS, OF VANCOUVER, BRITISH COLUMBIA, CANADA.

PUPPET-VALVE FOR INTERNAL-COMBUSTION ENGINES.

1,129,555. Specification of Letters Patent. Patented Feb. 23, 1915.

Application filed June 13, 1913. Serial No. 773,527.

To all whom it may concern:

Be it known that I, STANLEY CURRAN, a subject of the King of Great Britain, residing in the city of Vancouver, in the Province of British Columbia, Canada, have invented certain new and useful Improvements in Puppet-Valves for Internal-Combustion Engines, of which the following is a specification.

My invention relates to improvements in puppet valves for internal combustion engines, and the object of my invention is to devise a puppet valve which shall have a combined reciprocating and rotary motion, instead of the simple reciprocating motion in use at the present time, thereby causing the faces of the valve and valve seat to wear more evenly and thus keeping the valves tight much longer than is possible with valves having only a reciprocating motion. I attain this object by the construction illustrated in the accompanying drawings in which—

Figure 1 is a vertical cross section of the valve casing of a typical internal combustion engine, with my puppet valve in position. Fig. 2 is an enlarged detail view of the lower end of the valve stem and tappet. Fig. 3 is a perspective view of the tappet.

Similar letters of reference refer to similar parts throughout the several views.

A is the valve.

B is the valve seat.

C is the valve stem.

D is the valve spring.

E is a cupped washer engaging over the stem C to carry the lower end of the spring D.

F is a cotter passed through a slot G cut in the valve stem, having its lower points engaging in a slot H cut in the head of the screw I. The washer E and therefore the spring D are carried by the upper edge of the cotter F and rotate simultaneously with the valve stem.

I is an adjustable screw by which the lift of the valve may be regulated and which screws into the tappet, and has a slot H cut in its head to engage the lower portion of the cotter F, and thus transmit the rotary motion of the tappet to the valve stem.

J and K are lock nuts for locking I in place.

P is a movable ball race of any suitable type on which the upper end of the spring D bears and which allows the spring to turn with the ball race on the balls at the same time as the valve stem so as to eliminate the friction of the spring due to the rotary motion of the tappet.

L is a tappet, working through the crank case in the usual manner, and having on its upper end the screw I locked to it by the lock nuts J—K, and on its lower end the disk M. This disk M is normally engaged as to its lower face with the cam N, which is driven by the cam shaft O, the rotary motion of the cam shaft being converted into a reciprocating motion of the valve in the ordinary manner by the tappet L. Instead, however, of placing the cam N on the vertical center line of the valve, referring now more particularly to Fig. 2, as is done at the present time, and thereby obtaining a simple reciprocating motion, I place it on one side of the vertical center line and out toward the periphery of my disk, so that each time the cam raises the tappet, it will also turn it at the same time, from which it will be seen that, while still retaining the reciprocating motion necessary to give the lift to the valve, I at the same time get the rotary motion of the tappet, which is transmitted to the valve stem and valve by the connection of the valve stem to the tappet by means of the cotter F, provision for the easy turning of the stem being made by allowing the spring D to turn with the ball race at the same time as the stem, as hereinbefore mentioned.

It will be seen, therefore, that I have devised a puppet valve for internal combustion engines which shall have reciprocating, and at the same time, rotary motion, whereby the face of the valve and its seat shall be subjected to a more even wear than is possible with the ordinary reciprocating style of valve, thus lengthening the life of the valve and at the same time insuring that it will remain tight much longer than will the present form of reciprocating puppet valves.

What I claim as my invention is—

1. In a puppet valve of the class described, the combination with the valve casing and a valve stem having a slot cut in its lower end, a tappet member having a slot at its upper end opposite the slot of the valve stem, a cotter engaging the opposing slots, and a suitably driven cam designed to en-

gage the lower end of the tappet to impart simultaneously rotary and vertical movement thereto, as and for the purpose specified.

2. In a puppet valve of the class described, the combination with the valve casing, a valve and a valve stem having a slot cut in the lower end thereof, a tappet held in suitable bearings, a set screw threaded into the upper end of the tappet and having a cross slot opposing the slot of the valve stem, a cotter engaging the opposing slots and means for imparting a simultaneously vertical and rotary movement to the tappet, as and for the purpose specified.

3. In a puppet valve of the class described, the combination with a valve casing, a valve and a valve stem having a slot cut in the lower end thereof, a tappet held in suitable bearings, a set screw threaded into the upper end of the tappet and having a cross slot opposing the slot of the valve stem, a cotter engaging the opposite slots, and a suitably driven cam designed to engage the lower end of the tappet to impart a simultaneously rotary and vertical movement thereto, as and for the purposes specified.

Dated at Vancouver, B. C., this 26th day of May, 1913.

STANLEY CURRAN.

Witnesses:
JAMES TAYLOR,
BERTRAM FRANCIS BUXTON.