

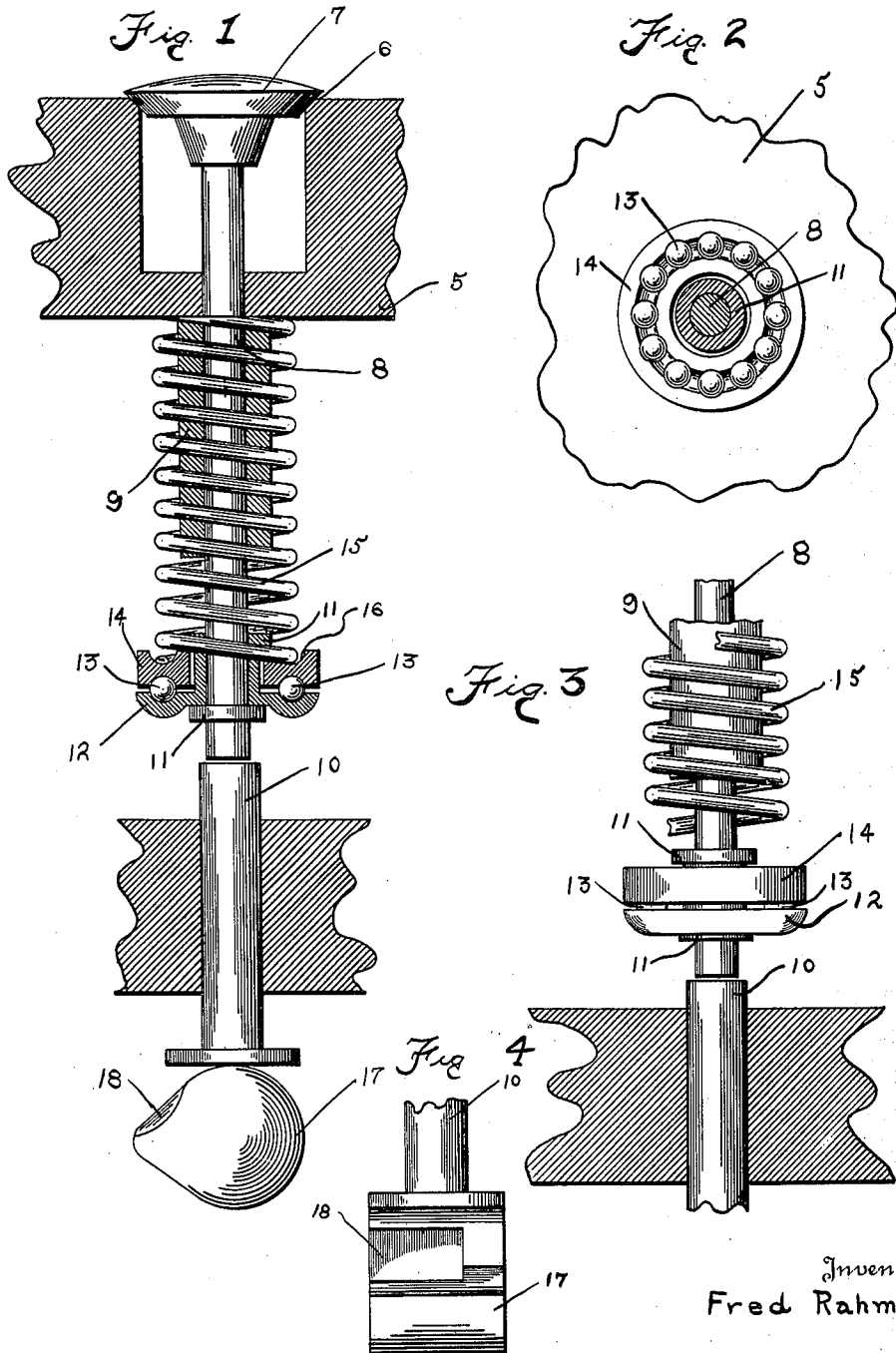
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VALVE

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UNITED STATES PATENT OFFICE.

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VALVE.

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To all whom it may concern:

Be it known that I, FRED RAHM, a citizen of the United States, and resident of Louisville, in the county of Jefferson and State of Kentucky, have invented new and useful Improvements in Valves, of which the following is a specification.

My invention relates to valves and has particular reference to that type of reciprocatory valve commonly used in internal combustion engines.

The principal object of the present invention is to provide a reciprocatory valve which is capable of axial movement, thereby causing the valve seat to wear evenly and the valve to seat tightly.

A further object of the invention is to provide a cam actuated reciprocating valve which will possess a rotary movement which is due to the novel construction of the cam.

With the preceding and other objects and advantages in mind, the invention consists in the novel combination of elements, construction and arrangement of parts and operations to be more fully described in the following disclosure, claimed and illustrated in the accompanying drawings, wherein:

Figure 1 is a view partly in section and partly in elevation of my improved valve associated with an internal combustion engine.

Fig. 2 is a horizontal view through the valve stem and surrounding parts.

Fig. 3 is an enlarged fragmentary view partly in elevation and partly in section, and

Fig. 4 is a detail elevation of the cam and tappet embodied in the invention.

Referring in detail to the drawings, wherein like characters of reference designate like parts throughout the several views, the numeral 5 designates part of an internal combustion engine having a valve seat 6 upon which the valve 7 is adapted to seat. The valve 7 includes the stem 8 which is reciprocal in a guide 9 formed integral with the engine part 5. The lower end of the stem 8 extends in proximity to the upper end of a tappet 10.

Disposed between annular shoulders 11 on the lower end of the valve stem 8 is a bearing ball retaining cup 12 in which bearing balls 13 are seated. A bearing ball retaining washer 14 is received on the valve

stem 8 and is held in frictional engagement with the bearing balls 13 by an expansible coil spring 15 encircling the valve stem 8 and having its upper end bearing against the engine part 5 and its lower end disposed in an annular groove 16 in the upper face of the bearing ball retaining washer 14.

The tappet is operated by a cam 17 which is cut away at one side adjacent its apex as indicated at 18 so that one edge of the apex of the cam will engage the head of the tappet at a point slightly off its vertical center and cause the tappet to move axially during its reciprocation. As the tappet moves upwardly the lower end of the valve stem is held into frictional engagement with the upper end of the tappet through the medium of the expansible spring 15 whereby the valve is caused to move axially with the tappet.

It is to be understood that the form of my invention herein shown and described are to be taken as a preferred example of the same, and that various changes in the shape, size and arrangement of parts may be resorted to without departing from the spirit of the invention or the scope of the subjoined claim.

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

The combination with a reciprocating valve, and an actuating tappet therefor having a circular head, of means holding the valve in frictional engagement with the tappet, and a cam equal in width to the diameter of said head registering therewith and provided with converging forward and rear faces forming an apex to act against the head for lifting the valve, the forward face of said apex being cut away longitudinally from one side of the cam for reducing the effective width of said apex at the crest thereof to engage said head at one side of its axis for rotating the tappet and valve when the valve is lifted, the forward face of said apex being cut away for a portion of its length only thereby the full width of said face will engage the head to accomplish the initial lifting movement of the valve.

FRED RAHM.