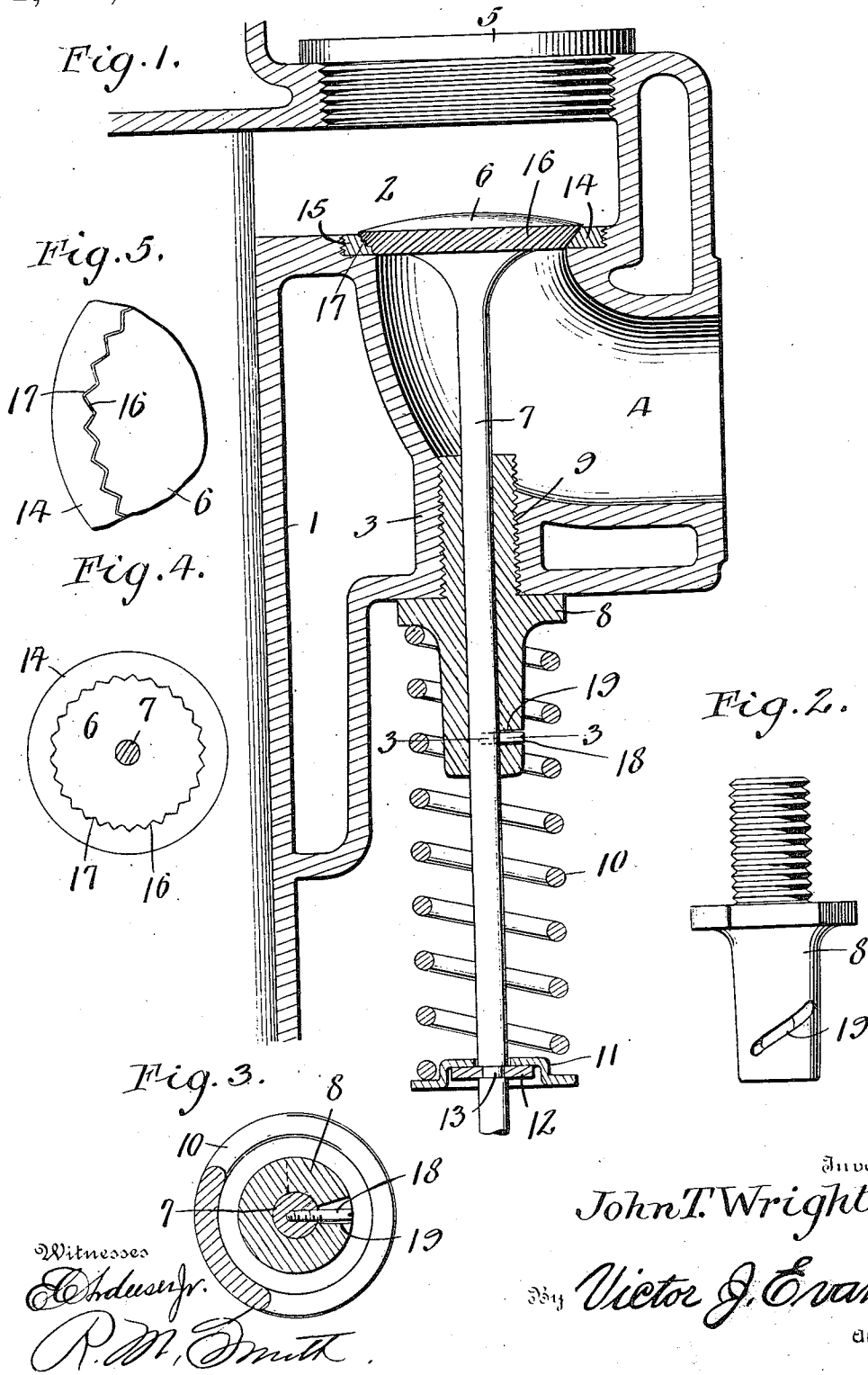


J. T. WRIGHT.
VALVE FOR INTERNAL COMBUSTION ENGINES.
APPLICATION FILED MAR. 6, 1915.

Patented Nov. 9, 1915.

1,160,028.



Witnesses

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VALVE FOR INTERNAL-COMBUSTION ENGINES.

1,160,028.

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To all whom it may concern:

Be it known that I, JOHN T. WRIGHT, a citizen of the United States, residing at Washington, in the District of Columbia, have invented new and useful Improvements in Valves for Internal-Combustion Engines, of which the following is a specification.

This invention relates to valves for internal combustion engines, the object of the invention being to produce what I term a non-carbonizing valve or, in other words, a valve which, in coöperation with the valve seat, will automatically loosen, clear away and remove any particles of carbon adhering either to the working face of the valve or valve seat, said removed particles being immediately carried outward to the atmosphere through the exhaust.

With the above and other objects in view, the invention consists in the novel construction, combination and arrangement of parts, as herein described, illustrated and claimed.

In the accompanying drawings:—Figure 1 is a vertical sectional view of a sufficient portion of the cylinder of an internal combustion engine to illustrate the application of the present invention thereto. Fig. 2 is a detail side elevation of the valve stem guide. Fig. 3 is a cross section on the line 3—3 of Fig. 1. Fig. 4 is a bottom plan view of the valve and valve seat. Fig. 5 is a fragmentary top plan view of the same.

1 designates the cylinder of an internal combustion engine, 2 the valve chamber thereof and 3 the water jacket. 4 represents either the intake or exhaust passage leading to or from the valve chamber 2 and 5 designates the usual threaded plug for closing the opening in the top of the valve chamber through which the valve shown at 6 is removable.

The valve 6 is provided with a stem 7 which extends through a guide 8 threaded in an opening 9 in line with the valve opening, the stem 7 passing through the guide 8 and the valve 6 being yieldingly pressed toward and against its seat by means of a helical expansion spring 10 which is interposed between a flange on the guide 8 and a removable cup 11 detachably secured to the stem 7 by means of a key 12 engaging an annular groove 13 in said stem.

The main feature of this invention resides in the valve and valve seat together with the means for imparting a slight turn- ing movement back and forth to the valve

body as it moves toward and away from the valve seat. In the preferred embodiment of this invention, the valve seat indicated at 14 may be separate from the engine casting as shown in Fig. 1 and is preferably threaded therein as at 15 so that when worn it may be removed and replaced by a new valve seat. Any desired means may be employed for fastening the valve seat 14 in place.

The working face of the valve 6 is generally frusto-conical similar to the valves now in common use in internal combustion engines, differing therefrom, however, in that said working face is provided with an annular series of obliquely inclined teeth 16 which closely intermesh with corresponding teeth 17 on the working face of the valve seat 14. The teeth 16 and 17 which are pitched obliquely with respect to the teeth of the working face of the valve 6 and the working face of the valve seat, are preferably wider at the top as shown in Fig. 5 than at the bottom as shown in Fig. 4. The intermeshing teeth are therefore tapering or of greatly reduced size from the outer or wider part of the working face of the valve or, in other words, that part which is of greatest diameter toward the part of the working face which is of the smallest diameter. The teeth therefore have a wedging action relatively to each other so as to effectually dislodge any particles of carbon adhering to the working faces of the valve and valve seat.

In order to insure the accurate meshing of the teeth 16 and 17, the stem 7 of the valve is provided with an outwardly projecting pin 18 which works in an oblique or spiral slot 19 in the valve guide 8, said slot being best illustrated in Fig. 2 and the relation of the pin 18 to said slot being clearly indicated in Figs. 1 and 3. The angle or pitch of the slot 19 is the same as the angle or pitch of the teeth 16 and 17. This insures the return of the teeth 16 into proper relation to the teeth 17 each time that the valve is lifted from its seat by the usual cam shaft (not shown).

From the foregoing description, taken in connection with the accompanying drawings, it will now be understood that as the cam shaft acts on the stem 7 to unseat the valve 6, the stem and valve are given a slight rotative movement by reason of the coöperation of the teeth 16 with the teeth 17 and also by

reason of the coöperation of the pin 18 with the slot 19. As soon as the unseating pressure is relieved on the valve stem 7, the spring 10 returns the valve to its seat and the stem and valve are given a partial rotational movement in the opposite direction by the coöperation of the pin 18 and slot 19. Any particles of carbon which may have lodged between the teeth 16 or 17 are thus removed or dislodged as the teeth 16 and 17 come into close mesh with each other each time the valve is returned to its seat.

What I claim is:—

1. In an internal combustion engine, a valve the working face of which is provided with teeth, and a valve seat the working face of which is provided with corresponding teeth with which the aforesaid teeth mesh.

2. In an internal combustion engine, a valve the working face of which is provided with inclined teeth, and a valve seat the working face of which is provided with corresponding inclined teeth with which the aforesaid teeth mesh.

3. In an internal combustion engine, a valve the working face of which is provided with obliquely disposed teeth, and a valve seat the working face of which is provided with corresponding obliquely disposed teeth with which the aforesaid teeth mesh.

4. In an internal combustion engine, a valve the working face of which is provided

with tapering teeth, and a valve seat the working face of which is provided with corresponding tapering teeth with which the aforesaid teeth mesh.

5. In an internal combustion engine, a valve the working face of which is provided with obliquely disposed and tapering teeth, and a valve seat the working face of which is provided with corresponding obliquely disposed and tapering teeth with which the aforesaid teeth mesh.

6. In an internal combustion engine, a valve the working face of which is provided with obliquely disposed teeth, a valve seat the working face of which is provided with corresponding obliquely disposed teeth with which the aforesaid teeth mesh, and means for oscillating said valve in moving toward and away from its seat.

7. In an internal combustion engine, a valve the working face of which is provided with teeth, and a detachable valve seat of softer metal than the valve, the working face of which is provided with corresponding teeth with which the aforesaid teeth mesh.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN T. WRIGHT.

Witnesses:

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