W. H. GRIFFIN.

VALVE.

APPLICATION FILED JULY 22, 1913.

1,092,482. Patented Apr. 7, 1914.

FIG. 1.

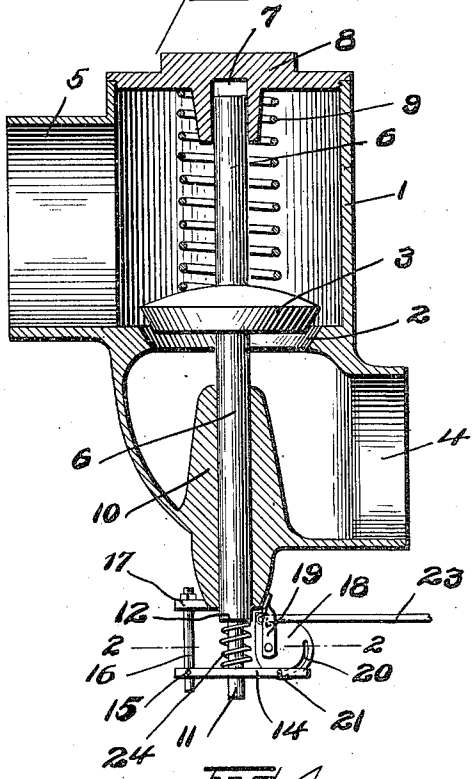


FIG. 2.

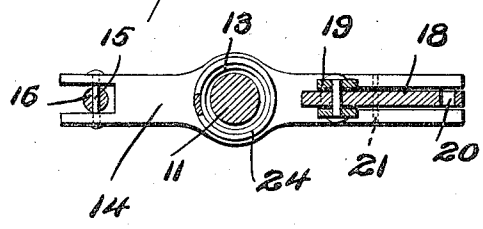


FIG. 3.

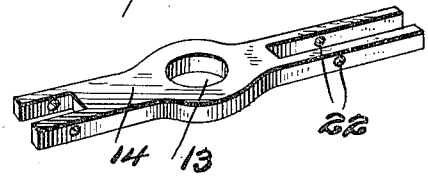


FIG. 4.

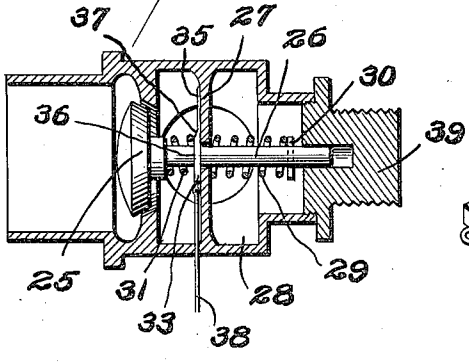
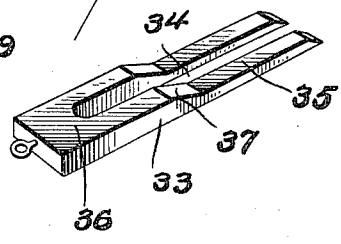


FIG. 5.



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VALVE.

1,092,482. Specification of Letters Patent. Patented Apr. 7, 1914.

Application filed July 22, 1913. Serial No. 780,425.

To all whom it may concern:

Be it known that I, WILLIAM H. GRIFFIN, a citizen of the United States, residing at Bishop, in the county of Worcester and State of Maryland, have invented certain new and useful Improvements in Valves, of which the following is a specification.

My invention relates to improvements in valves, and more particularly inlet valves for internal combustion engines which are especially adapted for use in connection with engines of the two cycle type which require quick opening and closing of the valve.

A further object is to provide a spring-pressed valve with elastic means tending to open the valve and to cushion the valve in closing, so that the time of closing is relatively short, and the time of opening relatively long with a quick response in opening after having been closed.

A further object is to provide improved means for relieving the tension of the cushioning means, so that the valve may close and remain closed in the ordinary way.

With these and other objects in view, the invention consists in certain novel features of construction and combinations and arrangements of parts as will be more fully hereinafter described and pointed out in the claims.

In the accompanying drawings: Figure 1 is a view in longitudinal section illustrating one form of my improvements. Fig. 2 is a view in section on an enlarged scale on the line 2—2 of Fig. 1. Fig. 3 is a perspective view of the pivoted arm 14. Fig. 4 is a view in longitudinal section illustrating a modification, and Fig. 5 is a perspective view of the wedge block 33.

1 represents a valve casing having a valve seat 2 therein and a valve 3 adapted to close against the seat and control the passage through the casing from the inlet 4 to the outlet 5. The valve 3 is provided with a stem 6 which projects from both sides of the valve, and at one end is guided in a socket 7 in a cap 8 screwed into the end of the casing.

A coiled spring 9 is positioned around the stem 6 between the cap 8 and the valve, and tends to move the valve to closed position. The stem 6 at the other side of the valve projects through a guide sleeve 10, and at its free end is reduced in diameter as shown at 11 forming an annular shoulder 12. The reduced end 11 of stem 6 extends through an opening 13 in an arm 14. This arm 14 is bifurcated at both ends as shown clearly in Fig. 3, and one bifurcated end is pivotally connected by a pin 15 to a hanger 16, the latter being secured to an arm 17 fixed to sleeve 10. The other bifurcated end of the arm 14 receives a cam 18, the latter having rotary mounting in a bifurcated bracket 19 fixed to sleeve 10. The cam 18 has a slot 20 which receives a pin 21 extended through openings 22 in the bifurcated end of arm 14, so that when the cam 18 is turned, it will cause this arm 14 to pivot.

A rod 23 is provided to turn the cam and may be manipulated from a distance. A coiled spring 24 is positioned around the reduced end 11 of stem 6 and bears at one end against the arm 14, and at its other end against the shoulder 12. The spring 24 is of a strength sufficient to quickly move the valve 3 to open position after the latter is closed, and furthermore acts as a cushion against the closing movement of the valve. While the spring 24 is slightly stronger than the spring 9, the difference is very slight, and the valve is rendered extremely sensitive to the suction and compression strokes of the engine piston, but the valve is not permitted to remain closed any appreciable time.

The opening of the valve is instantaneous with the suction stroke of the engine piston, and there is no lag in the opening and instantaneously a large volume is permitted to pass through the casing. When it is desired to relieve the tension of spring 24 so as to permit the valve to close and remain closed, rod 23 is operated to turn cam 18 and pivot the arm 14 in a direction away from the valve casing, so that the spring 24 loses its power to open the valve.

In Fig. 4 I illustrate a modification in which the valve 25 has a stem 26 on one side only which projects through a transverse bar 27 in the valve casing 28 and into a recessed plug 39 in the end of the valve casing. A coiled spring 29 around the stem bears at one end against the bar 27 and at its other end against a pin 30 in the stem, tending to move the valve to closed position, a second coiled spring 31 corresponding in its function to the spring 24 of the preferred form is positioned around the stem 26 between bar 27 and valve 25, and tends to move the valve to open position, overcoming spring 29. Between the end of spring 31, and the bar 27, I provide a longitudinally movable wedge

block 33 which is slotted as shown at 34 to receive the stem 26. This block 33 has two flat faces 35 and 36 connected by a beveled portion 37. In other words, the wedge is thicker at one end than at the other end, but both portions are substantially flat so as to allow the spring a flat seat in either position of the wedge block.

When the parts are as shown in Fig. 4, the tension of spring 31 is sufficient to open the valve. When the block 33 is moved longitudinally so that the surface 35 is engaged by the end of the spring 31, the tension of said spring is weakened so that the valve may remain closed. A rod 38 projects into the casing and is connected to the block 33 so that this block may be manipulated from a distance.

While I have illustrated two forms of my invention, I would have it understood that I do not limit myself to the particular construction set forth, but consider myself at liberty to make such changes and alterations as fairly fall within the spirit and scope of the appended claims.

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

1. The combination with a valve casing, a valve in the casing, and a spring pressing the valve toward closed position of a stem secured to the valve and projecting through the casing, said stem having a reduced end, a pivoted arm having an opening through which the reduced end of the stem projects, and a coiled spring around the reduced end of the stem bearing at one end against a shoulder on the stem, and at its other end against said pivoted arm, and means for pivoting the said arm, substantially as described.

2. The combination with a valve casing, a valve in the casing, and a spring pressing the valve toward closed position, of a stem secured to the valve and projecting through the casing, said stem having a reduced end, a pivoted arm having an opening through which the reduced end of the stem projects, and a coiled spring around the reduced end of the stem bearing at one end against a shoulder on the stem, and at its other end against said pivoted arm, a fixed bracket, and a cam mounted to turn in the bracket and engaging the free end of said arm, whereby the movement of the cam causes the arm to pivot and controls the tension of the last-mentioned spring, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM H. GRIFFIN.

Witnesses:
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D. J. CROPPER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."