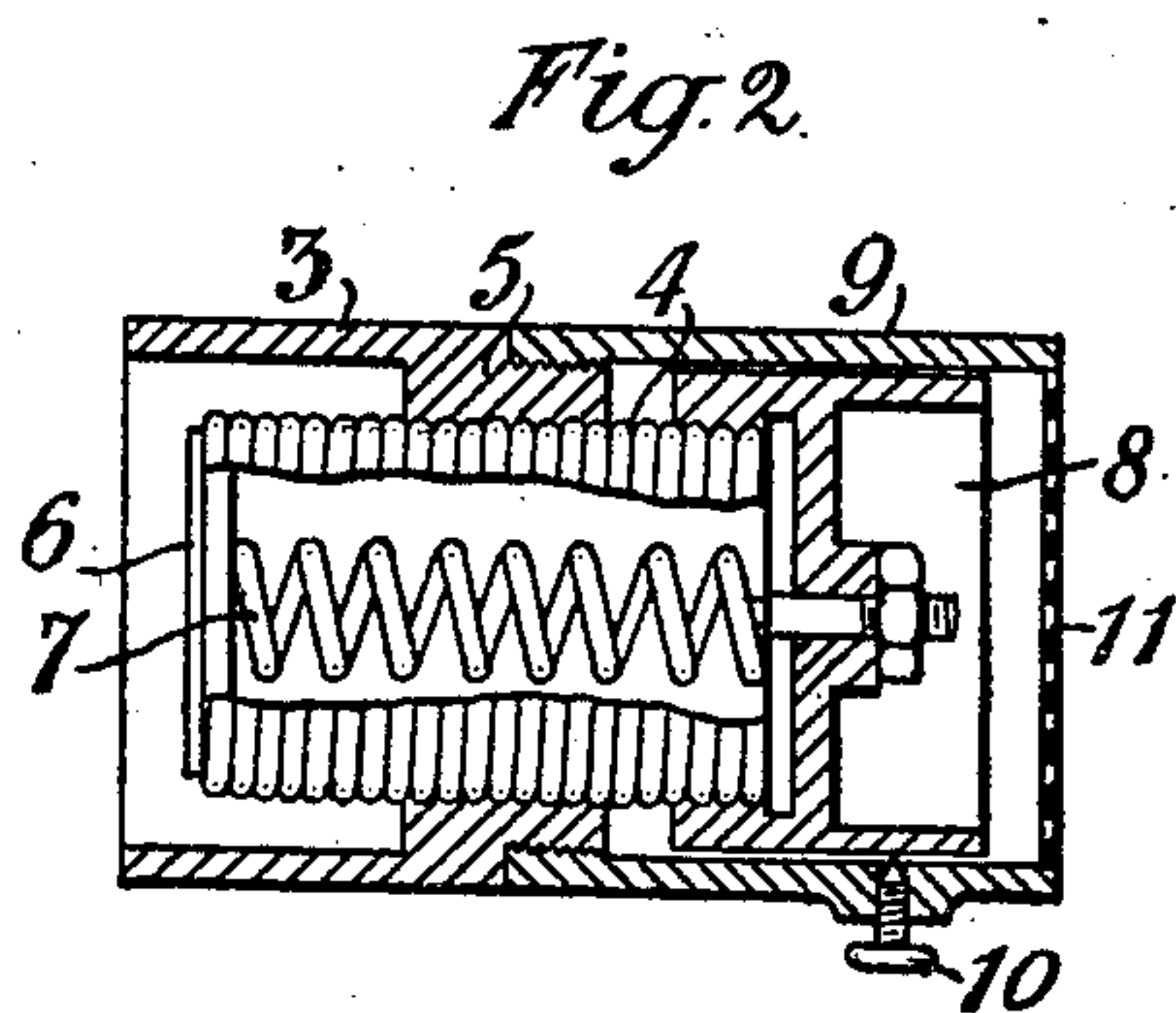
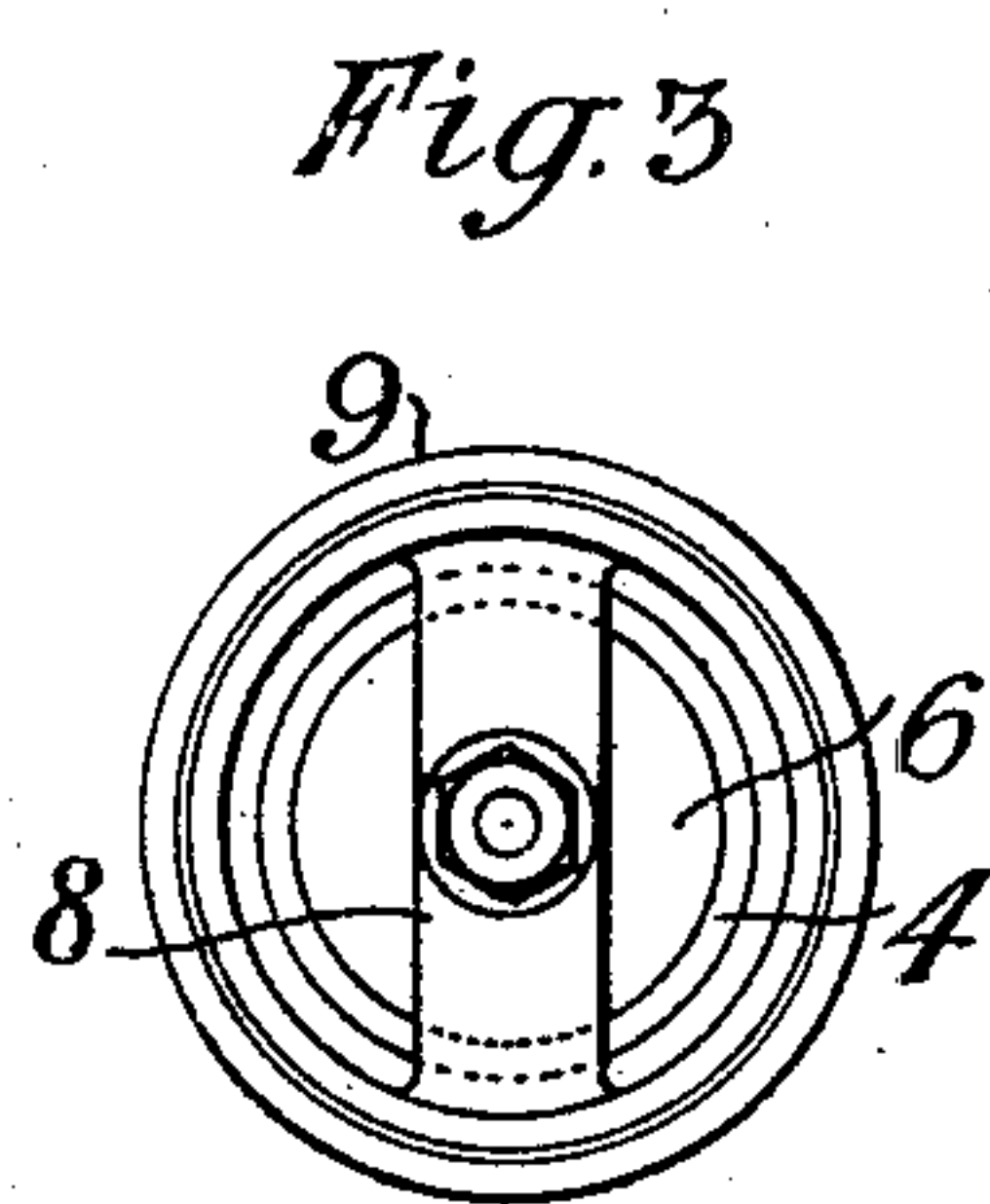
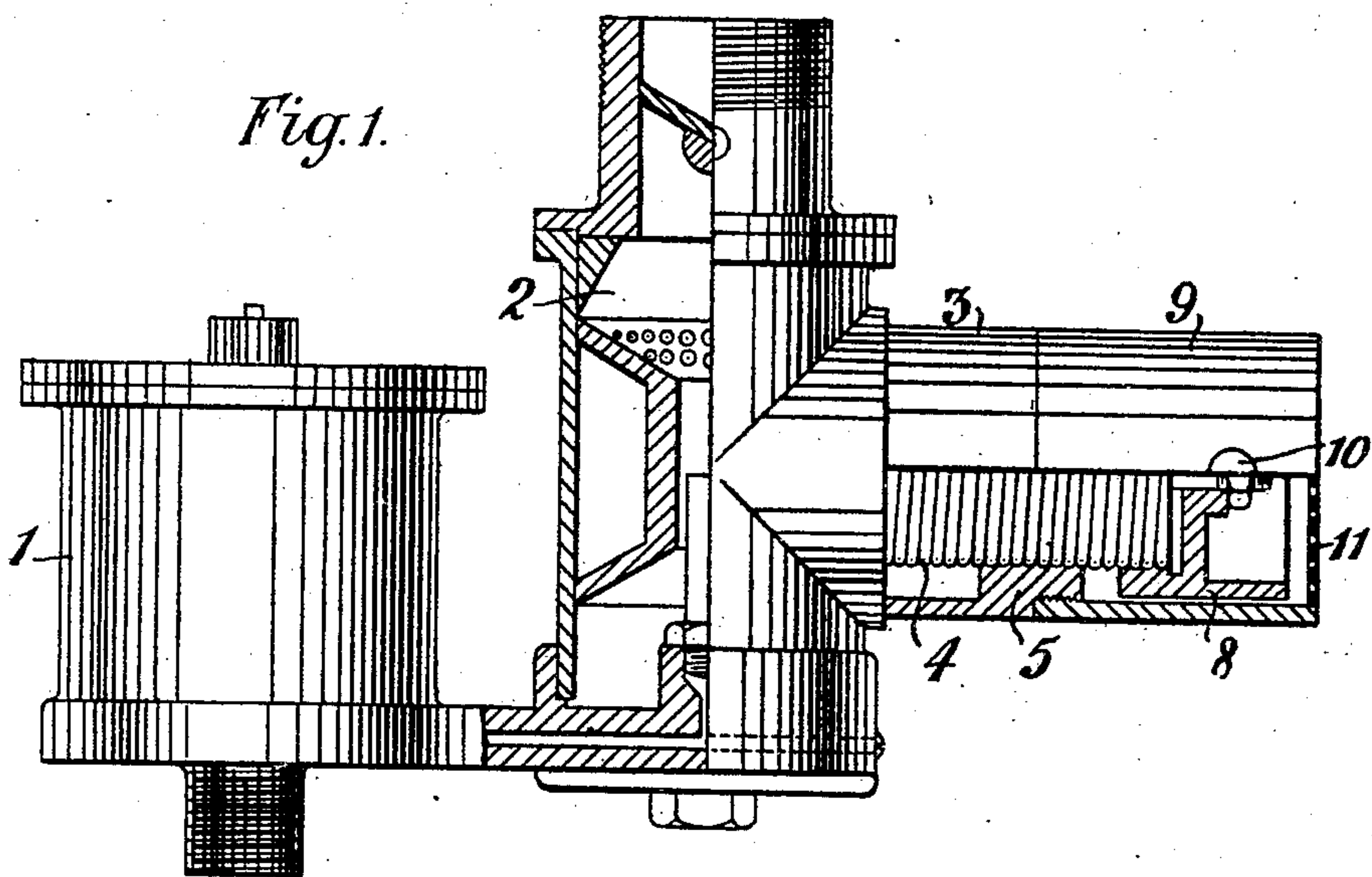


H. A. & J. C. OWERS.
VALVE.
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935,541.

Patented Sept. 28, 1909.



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UNITED STATES PATENT OFFICE.

HARRY AUGUSTUS OWERS AND JOHN CHARLES OWERS, OF SOHAM, ENGLAND.

VALVE.

935,541.

Specification of Letters Patent. Patented Sept. 28, 1909.

Application filed May 15, 1908. Serial No. 433,147.

To all whom it may concern:

Be it known that we, HARRY AUGUSTUS OWERS and JOHN CHARLES OWERS, subjects of the King of the United Kingdom of Great Britain and Ireland, residing at The Holmes, Soham, Cambridgeshire, England, have invented a new and useful Improved Valve, of which the following is a specification.

This invention relates to improvements in means for controlling the flow of fluids and in particular to improvements in helical spring valves applicable for use as automatic air inlet valves for carbureters for motor cars and the like.

The chief feature of the invention is the adjustable arrangement of such valves, said arrangement being distinguished by the helical spring valves being able to be so adjusted that a greater or smaller number of convolutions can come into action.

In one embodiment of this invention the valve casing is provided with a helical internal thread corresponding with the helix of the spring in which thread said spring engages so that more or less of the spring can be protruded into the casing by screwing in the spring more or less. This embodiment is illustrated by way of example, in the accompanying drawings in which the valve is shown applied to an automatic carbureter.

In said drawings:—Figure 1 is a part sectional front elevation of the carbureter with the valve, Fig. 2 a longitudinal section of the valve in its casing, and Fig. 3 an end elevation of the outer end of the valve the wire gauze covering the same being removed.

1 is the float chamber of the carbureter, 2 the spraying chamber and 3 the air inlet valve casing. These parts may be of any suitable construction. In the case illustrated the ordinary fixed or initial air supply is as usual drawn in below through holes (not shown) in the bottom of the spraying chamber. This fixed or initial air supply is not under the control of the valve about to be described. The additional air supply necessary for higher speeds enters through and is controlled by the hereinafter described air inlet valve arranged in the casing 3.

The valve comprises the helical spring 4 which engages in the correspondingly helical internal thread on the internal flange 5 sur-

rounding an inlet opening in the casing 3. A plate 6 is soldered or otherwise fixed in any suitable manner to the inner end of the spring 4 and to the center of said plate is detachably fixed one end of an auxiliary spring 7 adjustably secured at the other end by means of a screw and nut to the spider or cap 8 which is fixed to the cylindrical cover 9 by means of the set-screw 10 and through which air can pass. The outer end of the spring 4 is soldered or otherwise fixed in the spider 8. The outer end of the cover 9 is provided with wire gauze 11. The spring 4 is in compression with its coils normally abutting against one another in a fluid-tight manner and the auxiliary spring 7 may be in either compression or tension according as to whether it is desired to reduce or increase the compression of the spring 4. In the device shown in the drawing, the spring 7 is in compression.

The mode in which the valve operates is as follows:—When the motor is running at low speeds the ordinary fixed air supply which is separate from the air supply controlled by the spring 4 furnishes sufficient air but as the speed increases and the partial vacuum during the induction stroke rises and more air is required, the plate 6 moves toward the spraying chamber under the influence of the difference of pressure at its two sides and distends that portion of the helical spring 4 which is between the inner end of the annular flange 5 and the plate 6 so that air passes through the wire gauze 11, the spider 8 and through the interior of the spring 4 and between the coils forming said portion of the spring between the inner end of the flange 5 and the plate 6 and so into the spraying chamber. The greater the partial vacuum the more is said portion of the spring 4 distended and the greater is the opening between the various coils which form said portion.

The adjustable arrangement of the valve, which arrangement in general constitutes the invention, is such that more or less of the spring can come into action, *i. e.* that more or less coils can be exposed inwardly from the flange 5. The farther the spring 4 is inserted into the casing 3 the greater is the number of coils between the flange 5 and the plate 6 for a given pressure during the induction stroke. The spring is consequently preferably so adjusted in the casing that when the speed is a maximum the proper

amount of additional air is supplied through the spring.

The mode of adjustment is as follows:—

The set-screw 10 is slackened and the cover 5 9 removed from the casing 3, and the spider 8 is then turned one way or the other so as to screw the valve 4 inward or outward as desired. The spring 4 may be made so that it will begin to admit air when the partial 10 vacuum is such that the supply of additional air should begin. But it is preferable to make the spring stronger or weaker than this and then to provide an auxiliary spring 7 which is either in compression or tension, 15 and which can be adjusted so that the main spring 4 will open when the partial vacuum is such that additional air is required. The spring 7 may however be adjusted so that the main spring 4 is normally closed but 20 will open as soon as a partial vacuum is formed in the spraying chamber. The spring 7 may also be so adjusted that the spring 4 is normally open to an extent which may be varied and opens still farther on the 25 formation of a partial vacuum in the spraying chamber.

Valves according to the present invention may also be applied to pumps with advantage.

30 What we claim as our invention and desire to secure by Letters Patent is:—

1. Means for controlling the flow of fluids comprising a member having an internal helical thread surrounding an inlet opening 35 and a valve comprising a helical spring projecting through said opening and adjustably engaging in said thread so that by turning the spring the number of the turns projecting through said opening can be varied.

40 2. Means for controlling the flow of fluids

comprising a member having an internal helical thread surrounding an inlet opening and a valve comprising a helical spring projecting through said opening and adjustably engaging in said thread so that by turning 45 the spring the number of turns projecting through said opening can be varied, and means for varying the state of stress of said helical spring.

3. Means for controlling the flow of fluids 50 comprising a member having an internal helical thread surrounding an inlet opening and a valve comprising a helical spring projecting through said opening and adjustably engaging in said thread so that by turning 55 the spring the number of the turns projecting through said opening can be varied, and an adjustable spring for varying the state of stress of said helical spring.

4. Means for controlling the flow of fluids 60 consisting of the combination of the valve casing 3 having the internal screw-threaded flange 5, the spider 8, the helical spring 4 fixed at one end to said spider and having the plate 6 at its other end and adjustably 65 engaging in said screw-threaded flange, the adjustable detachable spring 7 fastened at one end to said plate 6 and adjustably connected at the other end to said spider, and means for adjustably attaching the spider 8 70 to the casing 3.

In testimony whereof we have signed our names to this specification in the presence of the two subscribing witnesses.

HARRY AUGUSTUS OWERS.
JOHN CHARLES OWERS.

Witnesses:

EBENEZER HORSLEY,
A. C. HORSLEY.