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PATENT SPECIFICATION



Application Date: June 30, 1922. No. 18,024/22.

202,126

Complete Left: April 30, 1923.

Complete Accepted: Aug. 16, 1923.

PROVISIONAL SPECIFICATION.

Improved Means for Fixing Butterfly Valves on Spindles.

I, GEORGE CONSTANTINESCO, of "Car-men Sylva," Beechwood Avenue, Oatlands Park, Weybridge, in the County of Surrey, a subject of the King of Great Britain and Ireland, do hereby declare the nature of this invention to be as follows:—

The present invention relates to means for fixing butterfly valves on their spindles especially applicable to butterfly throttle valves for carburettors.

In carburettors, it has been usual to fix the throttle valve to its spindle by means of ordinary set-screws or the like. This, however, has been found to be unsatisfactory on account of the danger of the screws working loose and being carried into the engine while the heads of the screws restrict and interfere with the free passage of air past the throttle when it is wide open so that the benefit of a stream line shape of throttle valve cannot be obtained. Also with throttle valves as hitherto constructed in which air passages are provided through the valve body for very slow running of the engine when the throttle is closed, it is difficult to obtain any regulation of the air passages.

The object of the present invention is to provide a simple method of fixing the throttle valve so that it is securely locked when assembled and is easily fitted and removed without special tools, the arrangement being such that the stream line form of the throttle body is not interfered with.

A further object of the invention is to provide simple means by which the air passages through the throttle can be regulated if desired.

The invention consists in a butterfly throttle valve having an axial aperture through which the spindle is fitted, a curved groove being provided in the valve in the direction of the air flow to accommodate a spring wire passing

centrally through the spindle to lock the valve thereon, the wire being straight before insertion and being forced to follow the curved bottom of the groove so that it becomes automatically locked in position.

The invention further consists in utilising the fixing wire or the like to regulate the apertures provided in the throttle valve for very slow running.

The invention further consists in the improved throttle valve of the butterfly type hereinafter described.

In carrying the invention into effect according to one example, the butterfly throttle valve is drilled axially and the throttle valve spindle is inserted through this aperture, the valve being a push fit on the spindle. A groove is cut on one face of the throttle valve in a direction at right angles to the axis and in the direction of the air flow and a round or flat slot is cut centrally through the spindle so that a wire or flat spring can be pushed through, the spindle being forced to follow the curved bottom of the groove cut in the throttle valve. The valve is thus firmly locked on the spindle and can be removed by merely pulling out the wire or spring by which it is fixed. There is thus obtained an extremely simple and efficient fixing requiring no special tools for assembly or removal of the valve. Further as only a push fit of the valve on the spindle is required, it becomes possible to make the throttle valve by die-casting which gives rise to considerable difficulty in cases in which a driving fit is required. The wire or flat spring may further be used for adjusting the air passages through the throttle which are required for very slow running of the engine when the throttle is closed. In order to avoid interference with the flow through the jet, these apertures should be placed very near to the edges

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of the throttle valve so that the cone of incoming air does not strike fully against the jet; for example, in a carburettor of the type described in my Patent Specification No. 11,824/1922, in order to adjust these apertures, it is only necessary to push the fixing wire or flat spring to the position in which it partially closes the aperture cut in the throttle valve in the neighbourhood of the jet. In order that the throttle

valve may be reversible, two apertures are provided, that which is remote from the jet having little effect on the running. Either or both these apertures may be controlled by the fixing wire or spring as desired. 15

Dated this 30th day of June, 1922.

W. GRYLLS ADAMS,
87, Victoria Street, London, S.W. 1, 20
Chartered Patent Agent.

COMPLETE SPECIFICATION.

Improved Means for Fixing Butterfly Valves on Spindles.

I, GEORGE CONSTANTINESCO, of "Car-men Sylva," Beechwood Avenue, Oatlands Park, Weybridge, in the County of Surrey, a subject of the King of Great Britain and Ireland, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

The present invention relates to means for fixing butterfly valves on their spindles especially applicable to butterfly throttle valves for carburettors.

In carburettors, it has been usual to fix the throttle valve to its spindle by means of ordinary set-screws or the like. This, however, has been found to be unsatisfactory on account of the danger of the screws working loose and being carried into the engine while the heads of the screws restrict and interfere with the free passage of air past the throttle when it is wide open so that the benefit of a stream line shape of throttle valve cannot be obtained. Also with throttle valves as hitherto constructed in which air passages are provided through the valve body for very slow running of the engine when the throttle is closed, it is difficult to obtain any regulation of the air passages.

The object of the present invention is to provide a simple method of fixing the throttle valve so that it is securely locked when assembled and is easily fitted and removed without special tools, the arrangement being such that the stream line form of the throttle body is not interfered with.

A further object of the invention is to provide simple means by which the air passages through the throttle can be regulated if desired.

The invention consists in a butterfly throttle valve having an axial aperture through which the spindle is fitted,

a curved groove being provided in the valve in the direction of the air flow to accommodate a spring wire passing centrally through the spindle to lock the valve thereon, the wire being straight before insertion and being bent by the curved bottom of the groove so that it becomes automatically locked in position. 70

The invention further consists in utilising the fixing wire or the like to regulate the apertures provided in the throttle valve for very slow running. 80

The invention further consists in the improved throttle valve of the butterfly type hereinafter described.

Referring to the accompanying drawings:— 85

Figure 1 is a transverse section;

Figure 2 a sectional elevation of one form of the invention;

Figure 3 is a transverse section;

Figure 4 a sectional elevation of another form of the invention; 90

Figures 5 and 6 are similar views of a modified form, while

Figures 7 and 8 show modifications in which two fastening wires are employed. 95

In carrying the invention into effect as shown in Figures 1 and 2, the butterfly throttle valve *a* is drilled diametrically and the throttle valve spindle *b* is inserted through this aperture, the valve being a push fit on the spindle. A groove *c* is cut on one face of the throttle valve in a direction at right angles to the axis and in the direction of the air flow and a round or flat slot *d* is cut centrally through the spindle so that a wire or flat spring *e* can be pushed through, the wire being forced to follow the curved bottom of the groove cut in the throttle valve. The valve is thus firmly locked on the spindle and can be removed by merely pulling out the wire or spring by which it is fixed. 100 105 110 115

There is thus obtained an extremely simple and efficient fixing requiring no special tools for assembly or removal of the valve. Further as only a push fit of the valve on the spindle is required, it becomes possible to make the throttle valve by die-casting which gives rise to considerable difficulty in cases in which a driving fit is required.

As shown in Figures 2 and 3 the wire or flat spring may further be used for closing completely or adjusting the air passages through the throttle which are provided for very slow running of the engine when the throttle is closed. In order to avoid interference with the flow through the jet, these apertures should be placed very near to the edges of the throttle valve so that the cone of incoming air does not strike fully against the jet; and in order to adjust these apertures, it is only necessary to push the fixing wire or flat spring to the position in which it partially closes the aperture cut in the throttle valve in the neighbourhood of the jet. In order that the throttle valve may be reversible, two apertures are provided, that which is remote from the jet having little effect on the running. Either or both these apertures may be controlled by the fixing wire or spring as desired.

In the form of the invention shown in Figure 5, a flat spring *f* is provided instead of the wire, lying in a recess at the bottom of the slot *c* in the valve *a*.

In a modification shown in Figures 7 and 8, the edges of the wire may be left sharp, and as the spring wire is of harder material than the throttle valve, these edges will cut into the metal of the valve ensuring locking of the wire. In order to remove the wire in this case, apertures may be provided leading from one side of the throttle valve to the back of the wire so that the end can be pushed upwards to disengage from the recess which it

cuts in the valve. Two or more wires may be employed, two being illustrated in the example shown in Figure 7.

It will be seen that with the device such as shown in Figure 8, where the wire does not lie closely at the bottom of the groove, a certain relative freedom between the spindle and the throttle valve is allowed. This elastic angular motion is useful in that it saves the shaft from breakage and diminishes the tendency to wear at the edges of the throttle valve.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. A butterfly throttle valve having an axial aperture through which the spindle is fitted, a curved groove being provided in the valve in the direction of the air flow to accommodate a spring wire passing centrally through the spindle to lock the valve thereon, the wire being straight before insertion and being bent by the curved bottom of the groove so that it becomes automatically locked in position.

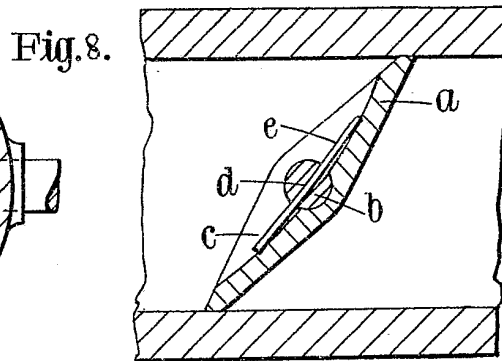
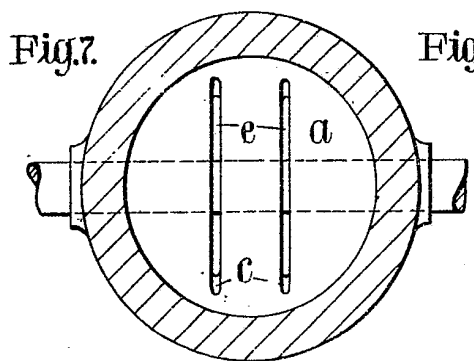
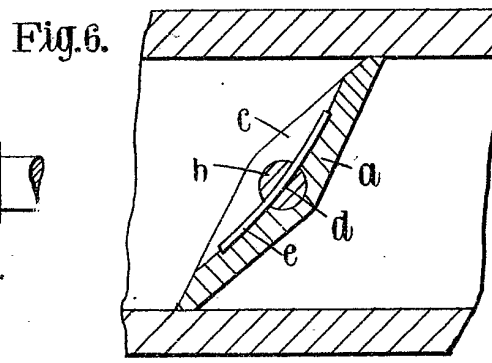
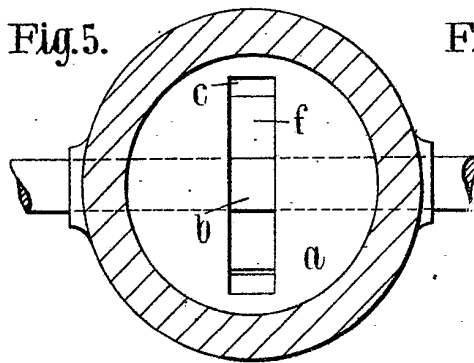
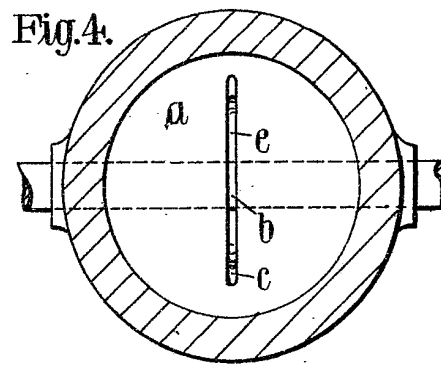
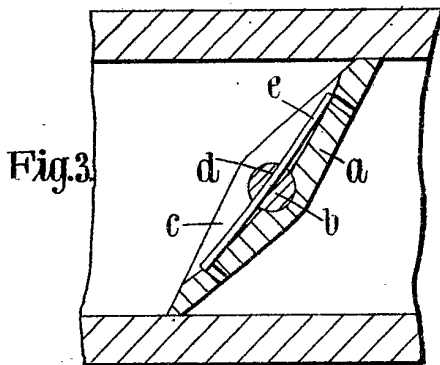
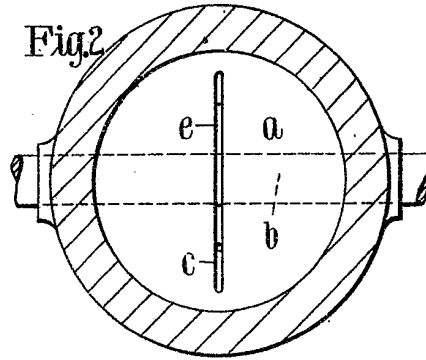
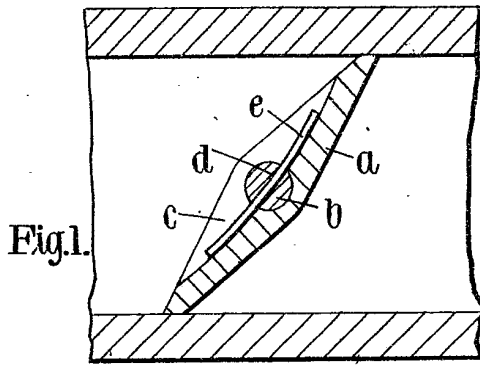
2. A valve as claimed in Claim 1 having the fixing wire or the like so arranged as to regulate apertures provided in the throttle valve.

3. In a valve as claimed in Claim 1 a spring wire fastening arranged so it is slightly out of contact with the bottom of the groove in the valve so that an elastic angular motion is possible between the spindle and valve.

4. The improved means for fixing valves on their spindles hereinbefore described and illustrated in the accompanying drawings.

Dated the 30th day of April, 1923.

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87, Victoria Street, London, S.W. 1,
Chartered Patent Agent.



[This Drawing is a reproduction of the Original on a reduced scale.]