PATENT SPECIFICATION

Application Date: Nov. 21, 1922. No. 31,773/22. **207,034**

Complete Left: Feb. 19, 1923.

Complete Accepted: Nov. 22, 1923.

PROVISIONAL SPECIFICATION.

Improvements in Fuel Supply Systems for Motor Vehicles, Aeroplanes and the like.

I, GEORGE CONSTANTINESCO, of "Carmen 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 fuel supply systems for motor vehicles, aeroplanes and the like and is especially applicable to vehicles in which carburettors are employed of the type described in my Patent Application No. 204,730, in which the fuel is supplied under a constant head substantially equal to that necessary to overcome surface tension and capillary effects and in which the jet may be so designed that the capillary and surface tension effects are large in comparison with the other forces tending to cause the flow of fuel.

The object of the present invention is to provide means whereby the flow of fuel through the jet of the carburettor can be immediately arrested or turned on by a suitably placed control which may be situated on the dashboard of the car.

The invention consists in providing a pipe of small bore leading from the float chamber to the induction pipe on the suction side of the throttle and a pipe of considerably larger bore leading from the top of the float chamber to a suitable valve whereby, when desired, the pressure above the fuel in the float chamber can be reduced or brought back to atmospheric pressure as desired.

The invention further consists in the provision of two or more such controlling valves so that two or more carburettors can be operated independently supplying different cylinders of the engine.

The invention further consists in the improved means for supplying fuel to internal combustion engines on motor vehicles, aeroplanes or the like hereinafter described.

In carrying the invention into effect according to one example as applied, for instance, to a motor lorry, two carburettors are fitted, both being of the type described in my Patent Specification No. 204,730, above mentioned. In each of the carburettors there is provided a small bore pipe leading from the float chamber above the fuel level to the induction pipe on the engine side of the throttle valve. Inserted through the cover of the carburettor, there is provided a fitting to which may be attached a tube leading to a fitting on the dashboard, this tube being of very much larger bore than the small bore pipe leading to the induction pipe. On the dashboard at the end of the tube of large diameter, there is provided a suitable valve adapted to admit or cut off the supply of air through the tube to the float chamber of the carburettor. In the case where two carburettors are employed, the tubes leading to the dashboard and controlling valves are duplicated, so that air can be admitted to cause atmospheric pressure in either or both of the carburettors, as may be desired. The throttle valves of the carburettors may be connected to the same set of controls, as it will be seen that when only one carburettor is in operation owing to the operation of the control valve on the dashboard, no petrol can flow through the jet of the other; or if it is desired, the controls of the throttle valve may be independent. The operation of the control valves constructed as above described, is as follows.

For normal running of the engine with both carburettors in operation, the control valves on the dashboard are both

placed in the position to admit air to the tube leading to the float chamber, and although there is a continuous suction exerted through the small pipe leading from the float chamber above the fuel level to the induction pipe to the engine, the amount of air withdrawn through this pipe is extremely small compared with the volume which can flow through the tube leading from the dashboard, so that the pressure above the fuel in the float chamber is substantially atmospheric. The result of this is that the fuel passing through the jet is subjected to the depression below the jet and a constant head equivalent to that due to capillary and surface tension effects. A constant mixture is therefore delivered through the carburettor to the engine. On the other hand when the valve control is closed, suction is exerted through the small bore pipe causing the pressure of the fuel in the float chamber to be less than atmospheric pressure, with the result that the high surface tension and capillary effects prevent any flow of petrol through the jet; consequently the carburettor, when the control valve is in this position, ceases to supply fuel.

Dated the 21st day of November, 1922.

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

COMPLETE SPECIFICATION.

Improvements in Fuel Supply Systems for Motor Vehicles, Aeroplanes and the like.

I, GEORGE CONSTANTINESCO, of "Carmen 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 fuel supply systems for motor vehicles, aeroplanes and the like in which carburettors are employed of the type described in my Patent Specification No. 204,730, in which the fuel is supplied under a constant head equal to that necessary to overcome surface tension and capillary effects and in which the jet is so designed that the capillary and surface tension effects are large in comparison with the other forces tending to cause the flow of fuel.

Many arrangements have heretofore been proposed for regulating the mixture supplied to internal combustion engines on motor vehicles and the like by providing means for controlling the vacuum in the float chamber such for example as are shewn in the Specifications No. 144,830 and No. 164,378.

In carburettors of the type to which the present invention relates, regulation of the mixture is automatic and it is essential that the pressure in the float chamber should be atmospheric pressure as the slightest depression in the float chamber will instantly stop the flow of fuel. The flow of fuel in these carburettors requires that the pressure in the float chamber and the pressure at the outlet of the jet should be the same.

The object of the present invention is to provide improved means whereby the flow of fuel through the jet of such a carburettor can be immediately arrested or turned on by a suitably placed control which may be situated on the dashboard of the car.

The invention consists in a fuel supply system for motor vehicles using a carburettor of the type described in my said specifications having one or more carburettors in which the mixture is self regulating and having means whereby the pressure on the fuel in the float chamber can be reduced below the pressure at the outlet of the jet by operating a control on the dashboard for the purpose of instantly cutting off the fuel supply to the induction pipe.

The invention also consists in providing in connection with a carburettor as described in my said specification a pipe of small bore leading from the float chamber to the induction pipe near the throttle valve on the air inlet side and a pipe of considerably larger bore leading from the top of the float chamber to a suitable valve whereby, when desired, the pressure above the fuel in the float chamber can be reduced or brought back to atmospheric pressure as desired.

The invention further consists in the provision of two or more such controlling valves so that two or more carburettors can be operated independently supplying different cylinders of the engine.

The invention further consists in the improved means for supplying fuel to internal combustion engines on motor vehicles, aeroplanes or the like hereinafter described.

Referring to the accompanying drawings:—

Figure 1 is a side elevation;

Figure 2 is an end elevation;

Figure 3 a plan of the general arrangement of two carburettors on a four cylinder engine on a motor lorry;

Figure 4 is a sectional elevation;

Figure 5 is a side elevation;

Figure 6 a plan of one of the carburettors;

Figures 7 and 8 show the control valve in side elevation and section respectively.

In the fuel supply system illustrated, two carburettors *a b* are fitted each supplying a pair of cylinders of the engine. Both carburettors are of the type described in my Patent Specification No. 204,730.

The fuel enters the carburettor by the pipe *c* and the fuel level is controlled by a float *d* operating the valve lever *e*. An inverted jet is employed through which the fuel drops into the space within the inverted conical baffle *f*. The petrol tank *g* is situated above the level of the carburettors and branch pipes *h k* lead to the fuel inlets of the two carburettors. The air passes to the carburettor through the exhaust heated muffle *l* and then through the pipe *m* to the inlet manifold *n*. The carburettors are bolted straight on to the cylinder heads *o p* and alternative controls are provided actuating both carburettors, one control *s* being operated by a foot pedal *r* and the other *q* from the steering wheel. In each carburettor there is provided a small bore pipe *u* leading from the space above the fuel in the float chamber to the induction pipe *b* in the neighbourhood of the throttle *w*, the opening being on the inlet side of the throttle valve. The end of the pipe *u* is cut diagonally to avoid blowing back of air through the pipe *u* from the induction pipe. At the top of the carburettor there is fitted a junction *y* which is connected by a pipe 1 of considerable bore with the control valve 2 on the dashboard. Two of these control valves are provided, each connected to one of the carburettors. The valve is in the form of a tubular member 3 sliding within the cylindrical member 4 fixed in the dashboard. Slots 5 are cut in the tubular member through which air passes into the pipe 1 and so to the carburettor. A pin 6 serves to limit the movement of the press button. The pipe 1 is of very much larger bore than the small bore pipe *u*.

The operation of the above described apparatus is as follows:—

For normal running of the engine with both carburettors in operation the control valves on the dashboard are both placed in position to admit air to the pipes 1 leading to the float chambers and although there is continuous suction exerted through the small bore pipes *u* from the float chamber above the fuel level to the induction pipe of the engine, the amount of air withdrawn through these pipes is extremely small compared with the volume which can flow through the pipes 1, so that the pressure above the fuel in the float chamber is substantially atmospheric. The result of this is that the fuel passing through the jet is subjected to the depression below the jet and a constant head equivalent to that due to capillary and surface tension effects as described in my Patent Specification No. 204,730. A constant mixture is, therefore, delivered through the carburettor to the engine. On the other hand, when the valve control 2 is closed suction is exerted through the small bore pipe *u* causing pressure on the fuel in the float chamber to be less than atmospheric pressure with the result that the high surface tension and capillary effects prevent any flow of petrol through the jet and consequently the carburettor, when the control valve is in this position, ceases to supply fuel.

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 fuel supply system for motor vehicles aeroplanes and the like using a carburettor of the type described in my Patent Specification No. 204,730 in which one or more carburettors are employed of the type in which the mixture is self regulating; and having means whereby the pressure on the fuel in the float chamber can be reduced below the pressure at the outlet of the jet by operating a control on the dashboard for the purpose of instantly cutting off the fuel supply to the induction pipe.

2. In apparatus as claimed in Claim 1, a pipe of small bore leading from the float chamber to the induction pipe near the throttle valve on the air inlet side and a pipe of considerably larger bore leading from the top of the float chamber to a suitable valve whereby, when desired, the pressure above the fuel in the float chamber can be reduced or

brought back to atmospheric pressure as desired.

3. In apparatus as claimed in Claim 1 in which two or more carburettors are employed, the provision of two or more controlling valves so that the carburettors can be operated independently as desired.

4. The fuel supply system arranged as illustrated in the accompanying drawings.

Dated the 19th day of February, 1923.

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

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Fig.1.

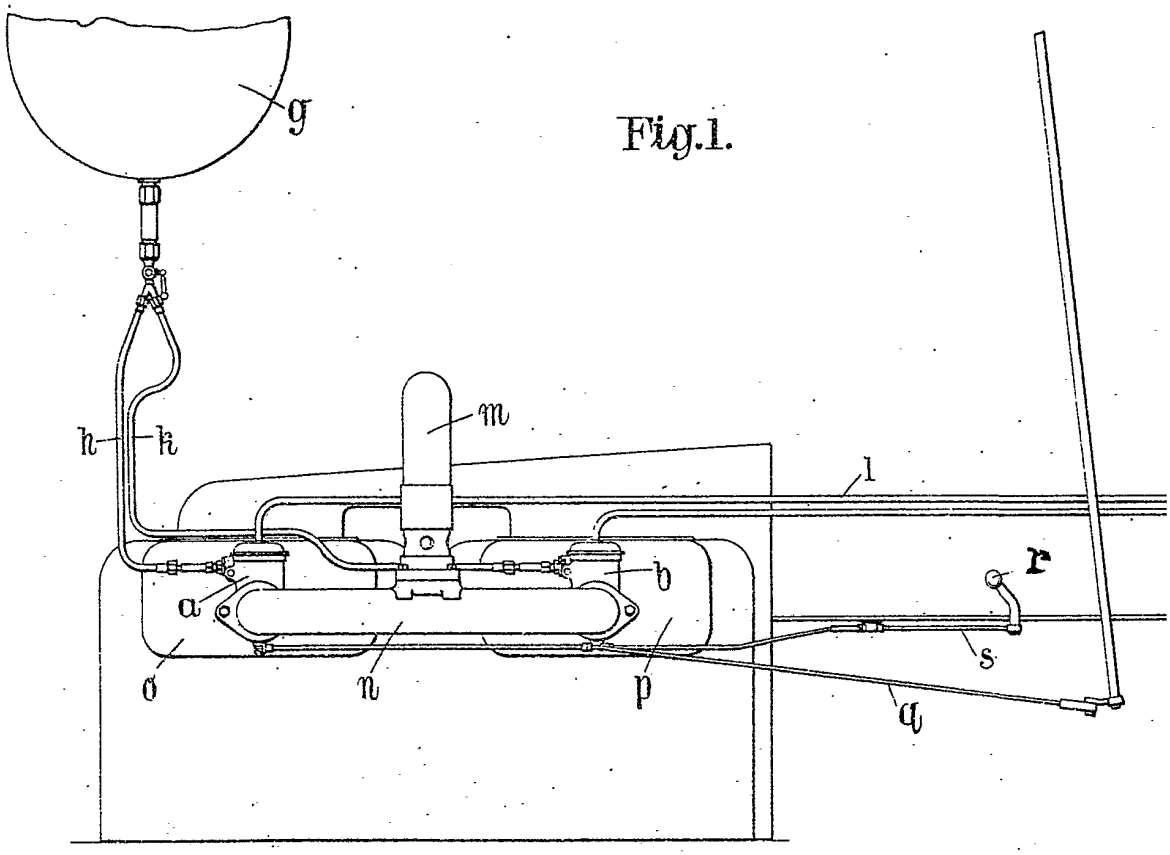
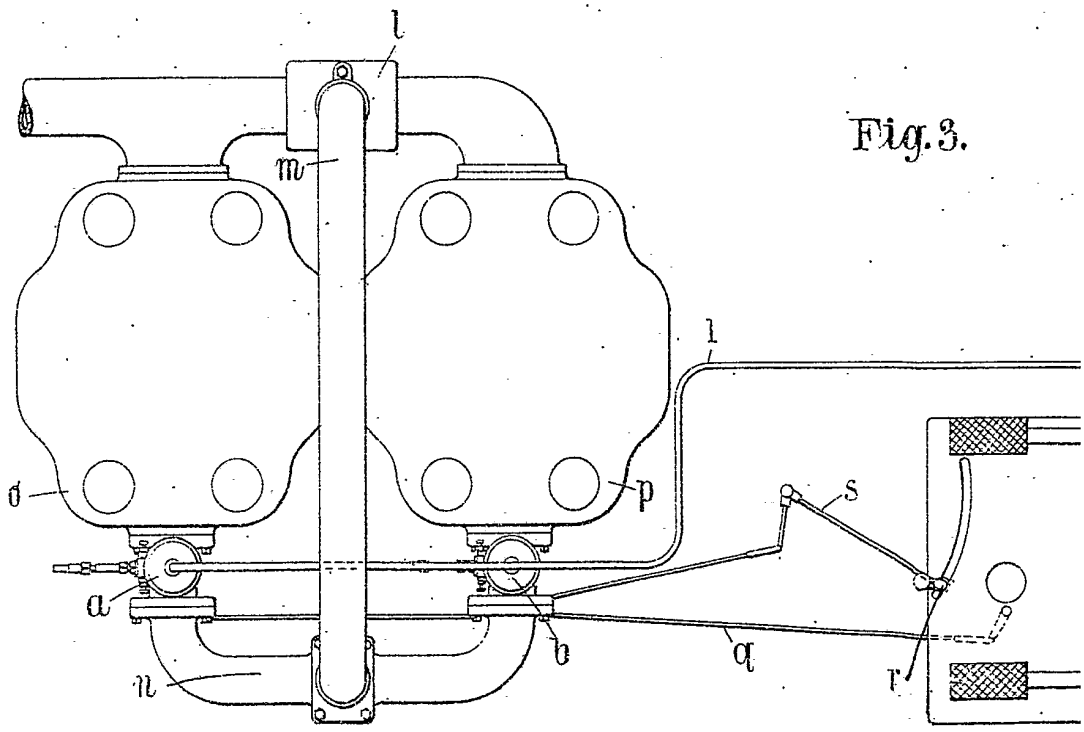


Fig.3.



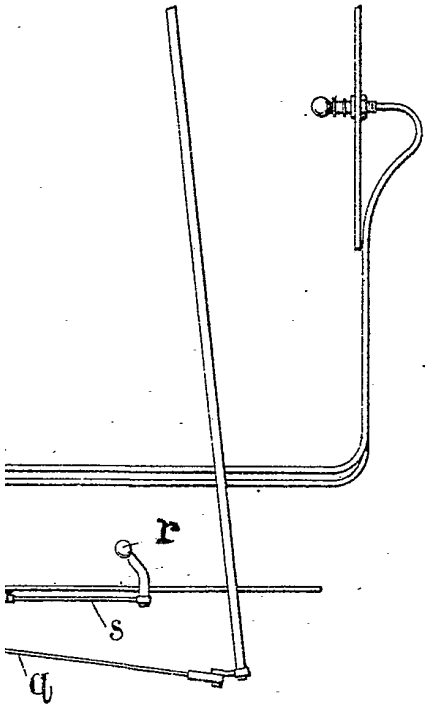


Fig. 2.

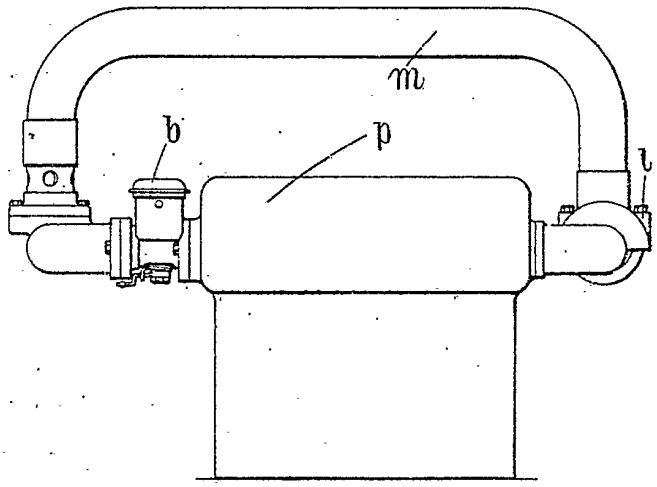
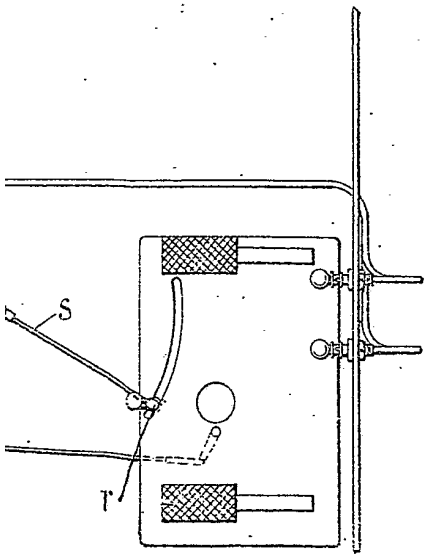


Fig. 3.



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

Fig. 1.

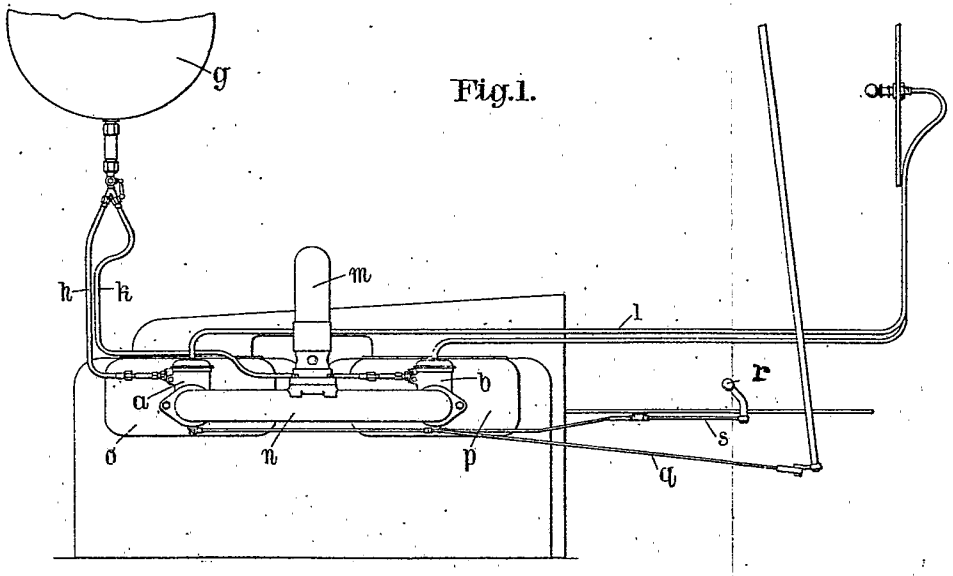
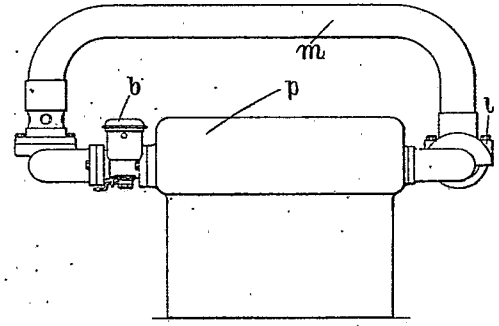


Fig. 2.



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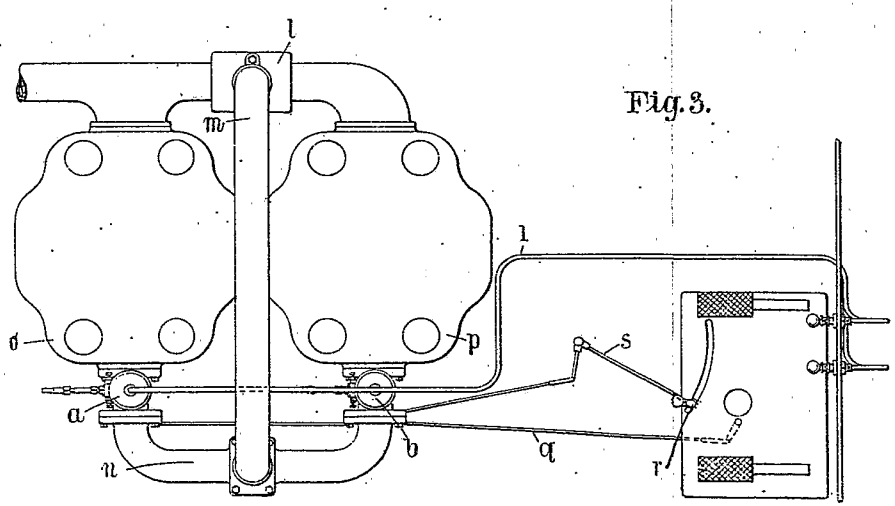

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Fig.4.

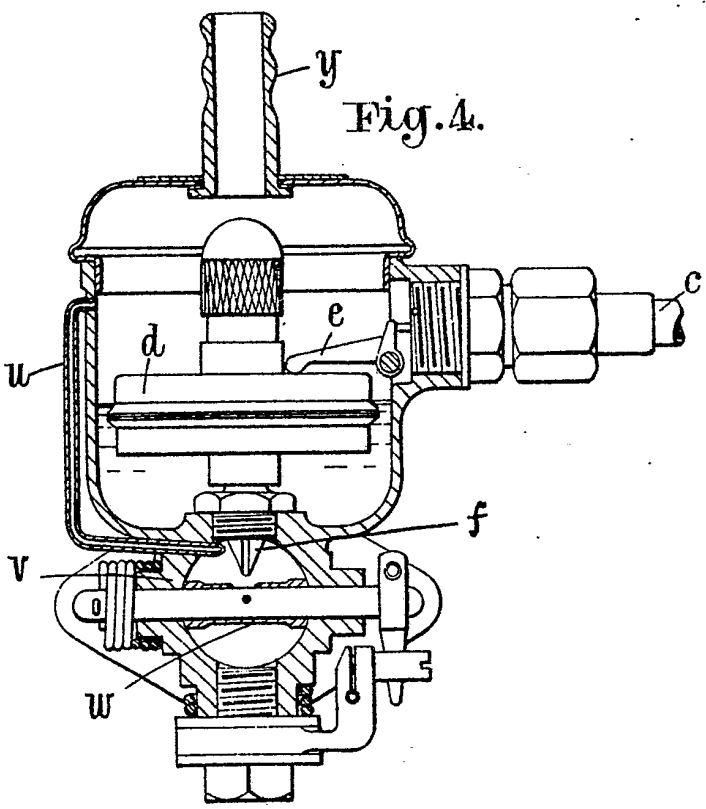
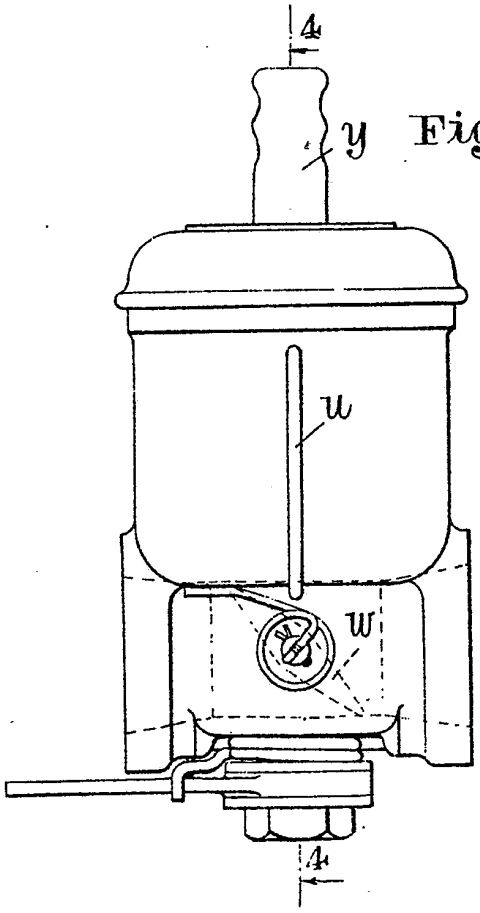


Fig.5.



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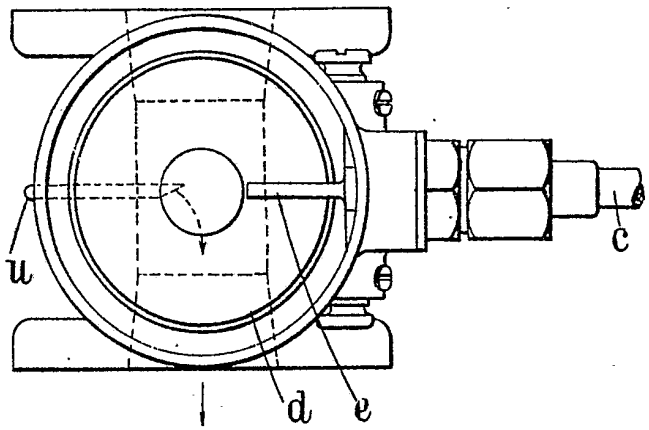

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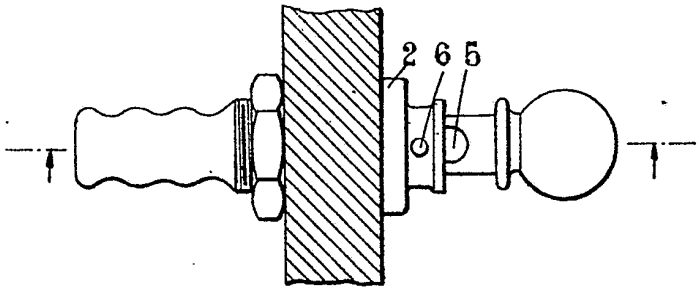

Fig.8.

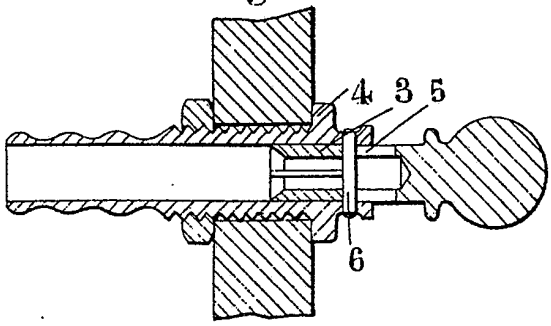

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Fig.4.

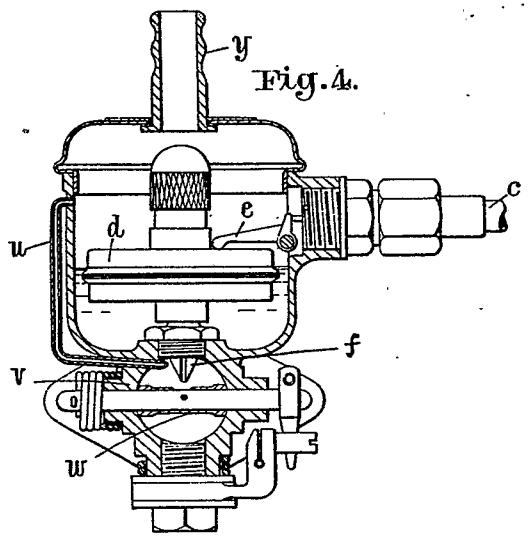


Fig.5.

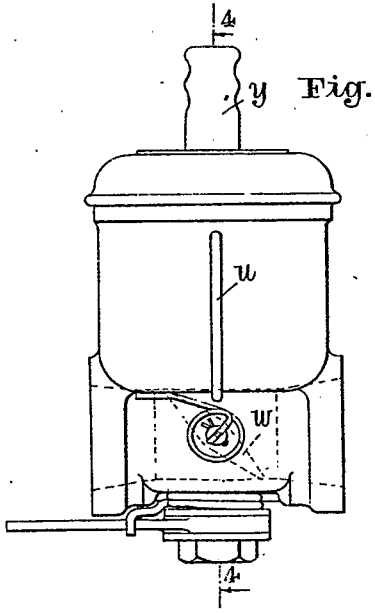


Fig.6.

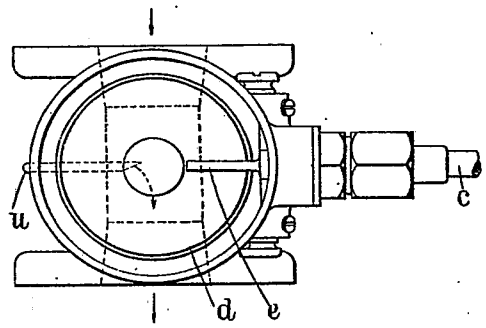
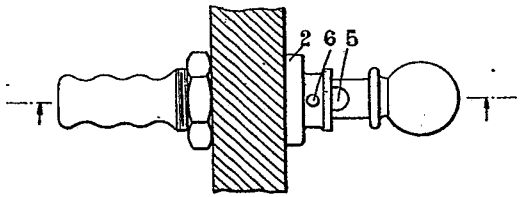


Fig.7.



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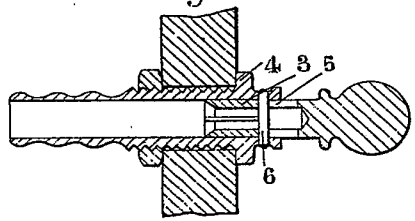

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