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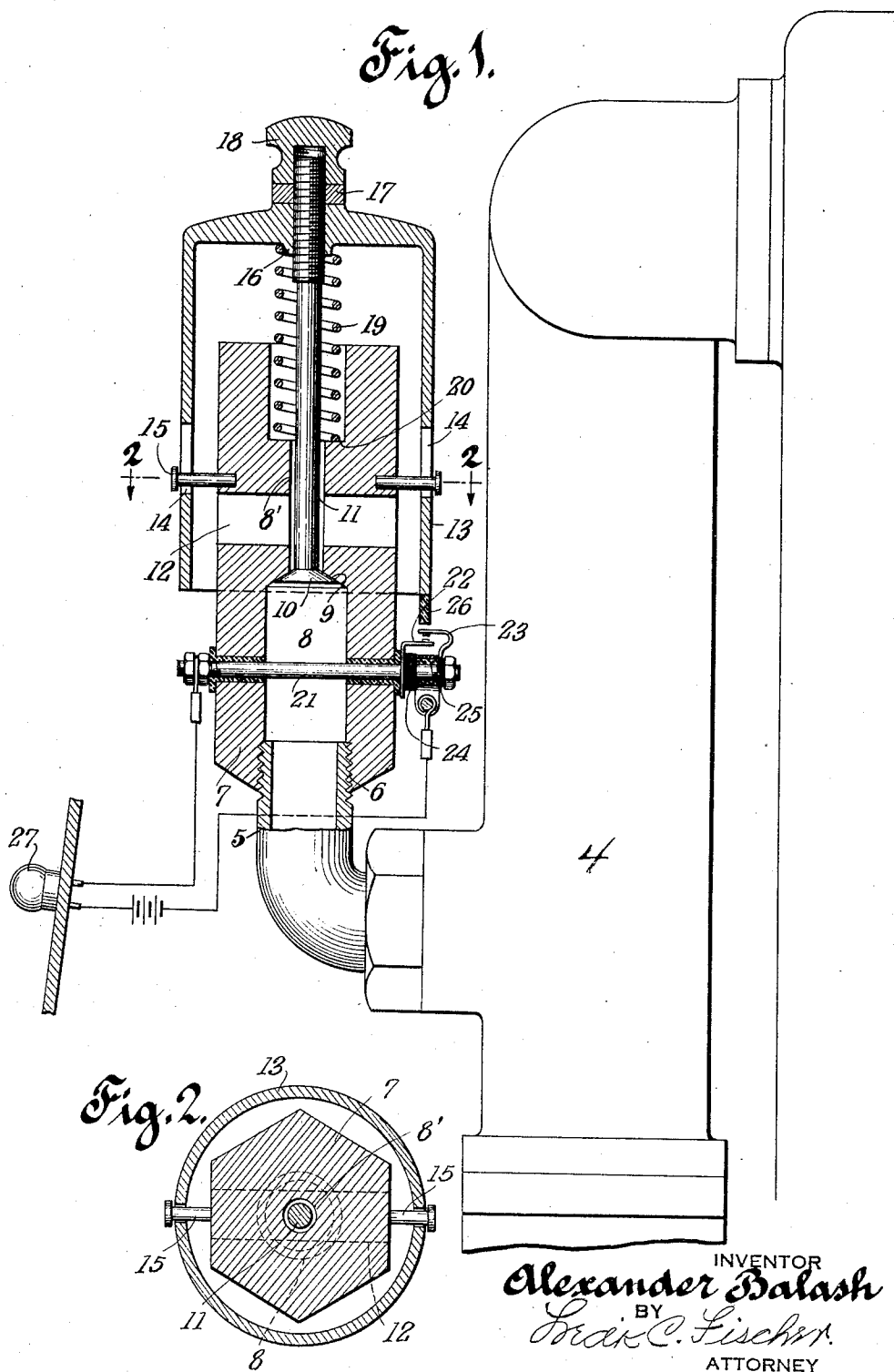
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AIR REGULATING DEVICE FOR INTERNAL COMBUSTION ENGINES

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Fig. 1.



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AIR-REGULATING DEVICE FOR INTERNAL-COMBUSTION ENGINES

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This invention relates to internal combustion engines, and more particularly to devices for automatically regulating the supply of air to such engines.

It is customary to adjust the carburetors of internal combustion engines so that normally the proper amount of gasoline or other fuel will be supplied to accommodate what may be considered heavy loads. For example, the carburetor of an automobile engine will be adjusted so that the proper amount of gasoline will be supplied to the engine when the automobile is being driven up a hill. When the automobile is again on the level and the load on the engine is light, a very rich mixture of gasoline and air will be supplied to the engine. That is, more gasoline will be supplied than is necessary, and consequently, there is a waste of the gasoline and the automobile is inefficiently operated.

It is a further object of my invention to provide a device which will admit air through the intake manifold of an internal combustion engine into the cylinders thereof to relieve excessive vacuum created therein as when the automobile motor is "turning over" rapidly when running downhill with a light load, preventing the drawing up of oil into the cylinders and the fouling of the spark plugs.

It is an object of this invention to provide a device for automatically regulating the supply of air to a gasoline engine so that there will be a proper mixture of gasoline and air for all loads.

It is a further object of the invention to provide an automatic air regulating device which may be readily attached to standard automobile engines without material alterations.

A further object is the provision of means for visually indicating when the automatic air regulating device is in operation.

These and other objects are attained by the

novel construction, combination and arrangement of parts hereinafter described and shown in the accompanying drawing, constituting a material part of this disclosure, and in which:

Figure 1 represents a longitudinal sectional view of the air regulating device.

Figure 2 represents a cross-sectional view taken on line 2—2 of Figure 1.

Referring to the drawings, the air regulating attachment is shown to include a short pipe 5 which is threaded into an aperture in the intake manifold 4 of an internal combustion engine. The device itself may be mounted on the cowl of an automobile and connected by means of a hose or other suitable means not shown to the manifold. The outer end of the pipe is threaded at 6 to accommodate threads on a hexagonal block 7, the latter having an internal chamber 8 having a frusto-conical upper end to provide the seat 9 for the frusto-conical valve 10.

The valve 10 is fixed to a rod 11 which passes through a passage 8' entering the chamber 8, the rod being spaced from the wall of the passage. A transverse passage 12 in the block opens into the central passage 8'.

The block 7 is surrounded by a casing 13 which is spaced from the walls of the block, the casing being provided with slots 14, in which are positioned pins 15 fixed to the block, so that the casing may have a limited telescoping movement relative to the block 7. The interior surface of the upper end of the casing 13 is provided with a boss 16 having an aperture threaded to accommodate a threaded portion of the rod 11, the latter extending beyond the casing and threadedly engaging a lock nut 17 and a knob 18. The casing 13 is normally maintained in a raised position by a compression spring 19 which surrounds the boss 16 and bears against a seat 20 in the upper end of the block 7.

A rod 21 passes through the block 7 and

supports a contact member 22, which is adapted to be engaged by a resilient contact member 23, the latter being supported on the rod 21 by discs 24 and 25, of insulating material.

5 The casing 13 is provided with a projection 26 of insulating material which is positioned directly above the contact member 23, the latter being in circuit with an incandescent lamp 27 and a source of electrical current. The
10 lamp 27 may be mounted on the dashboard of an automobile or at any other readily visible place.

In operation, air passes through the space between the casing 13 and the block 7 and enters the passage 12, and thence to passage 8',
15 from which it is led to the chamber 8, the latter being connected with the intake manifold of the internal combustion engine. The valve opening may be adjusted by screwing the threaded end of rod 11 in or out of the boss
20 16, the adjustment being held by the lock nut 17. When the automobile engine is operating under a light load, the throttle is almost completely closed and consequently the suction is
25 very great, with the result that valve 10 is drawn down into chamber 8 against the action of compression spring 19 to allow a larger quantity of air to enter the intake manifold and provide the proper mixture of
30 gasoline and air. Obviously, when the valve is drawn down, the casing will be drawn also, since the valve rod 11 is threadedly engaged with the casing. When the casing moves down, the projection 26 of insulating material engages the resilient contact member 23
35 and presses the latter into engagement with contact member 22 to close the electrical circuit through the lamp 27 and cause the latter to light to indicate to the operator that the air regulating device is in operation.
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From the above description it will be seen that I have provided a simple device for regulating the supply of air to the intake manifold of a gasoline engine so that the latter may be economically and efficiently operated.
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The foregoing disclosure is to be regarded as descriptive and illustrative only, and not as restrictive or limitative of the invention, of
50 which obviously an embodiment may be constructed including many modifications without departing from the general scope herein indicated and denoted in the appended claim.

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

An automatic air regulating device comprising a block having communicating longitudinal and transverse passages, said block
60 having a chamber opening into the longitudinal passage, a valve for closing the opening between the longitudinal passage and the chamber, a rod fixed to the valve and extending through the longitudinal passage, a casing surrounding the block and spaced apart
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therefrom, said block having slots in its sides, a boss on said casing in threaded engagement with an end of the rod, a spring between the boss and the block to normally maintain the casing in a predetermined position relative to the block, and pins projecting from the block and slidable in the slots in the casing to limit the movement of the latter. 70

This specification signed this 8th day of March, 1929. 75

ALEXANDER BALASH. 75

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