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E. C. HALL

CONTROLLING DEVICE FOR INTERNAL COMBUSTION ENGINES

Filed Feb. 7, 1928

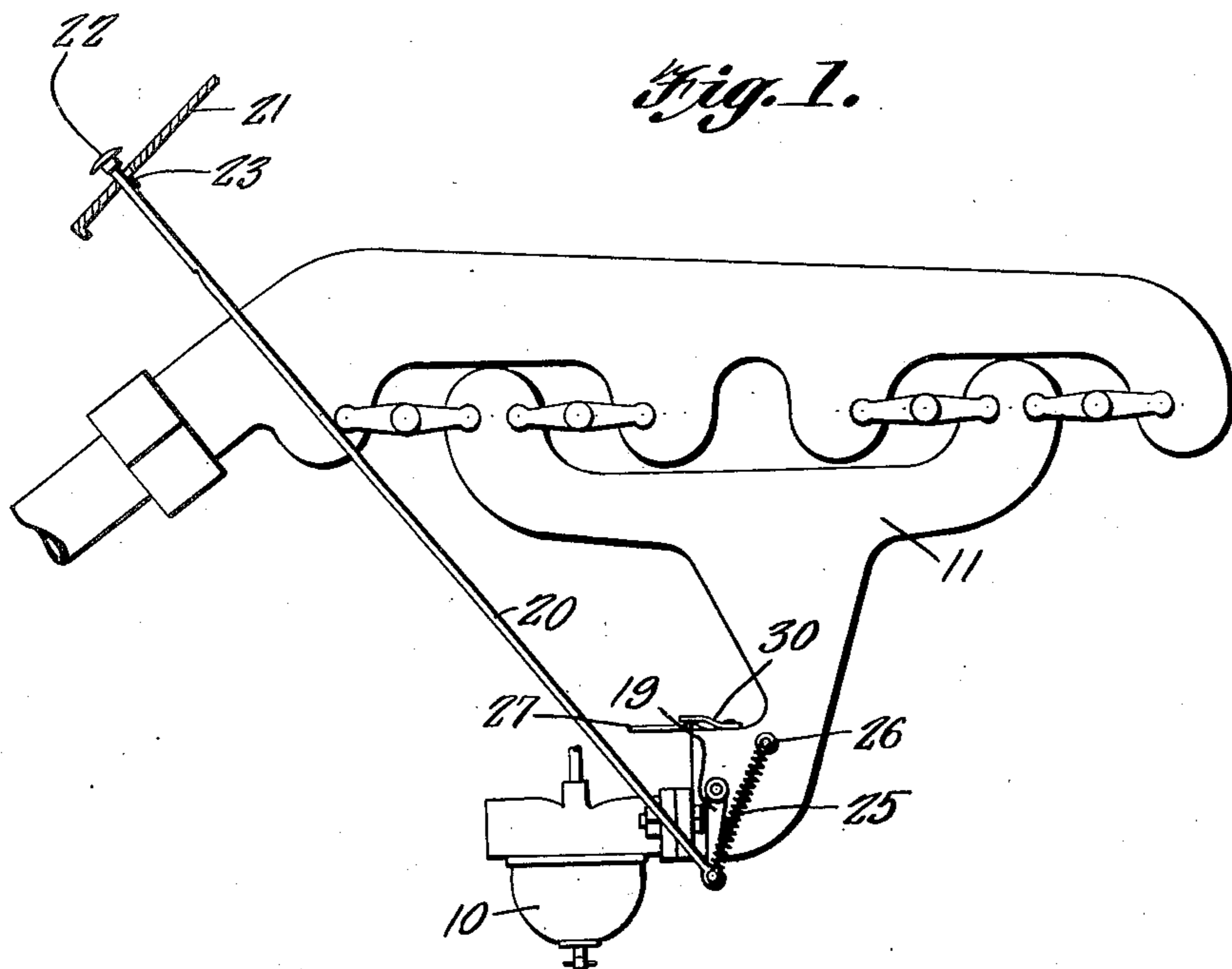


Fig. 1.

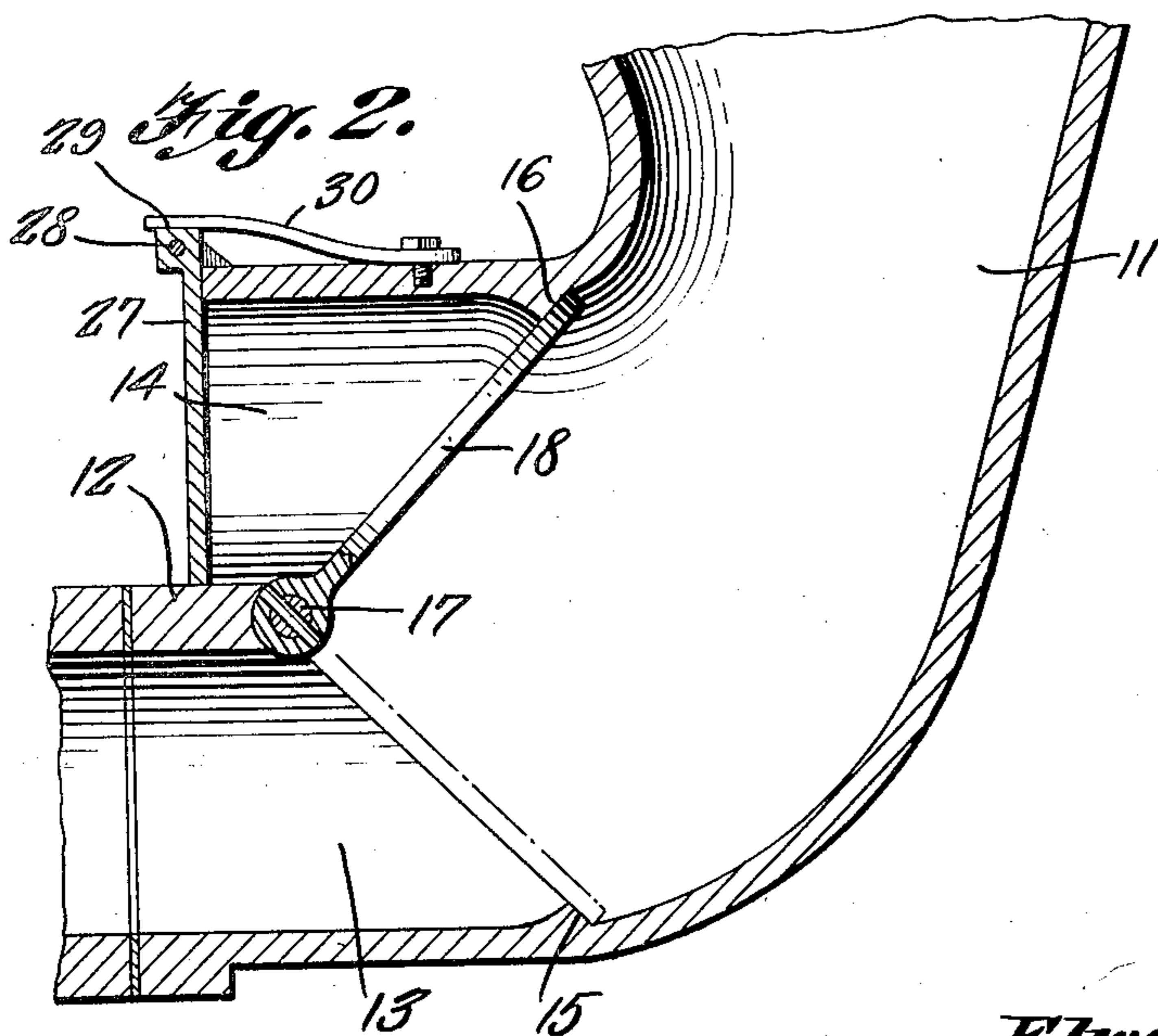


Fig. 2.

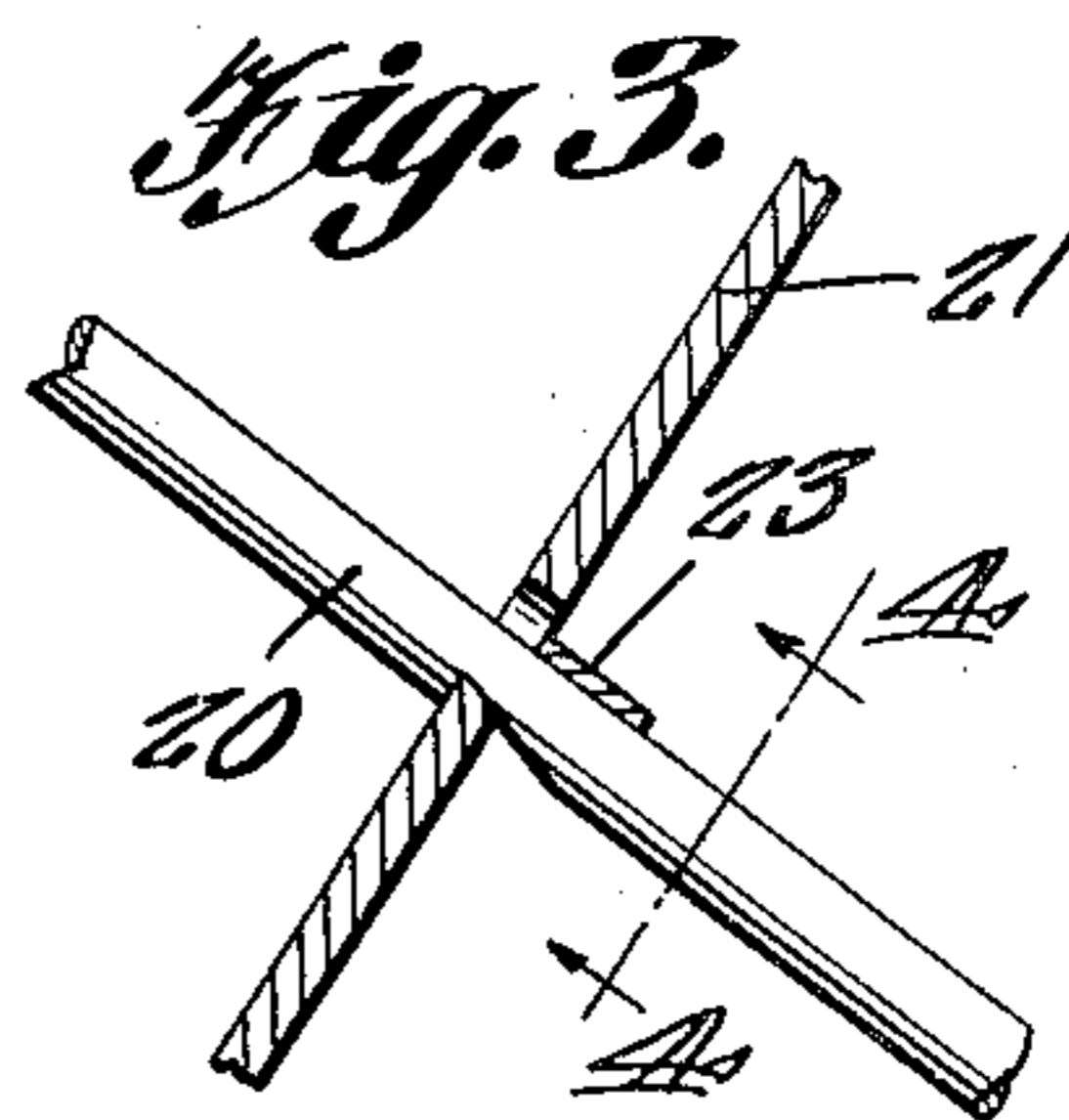


Fig. 3.

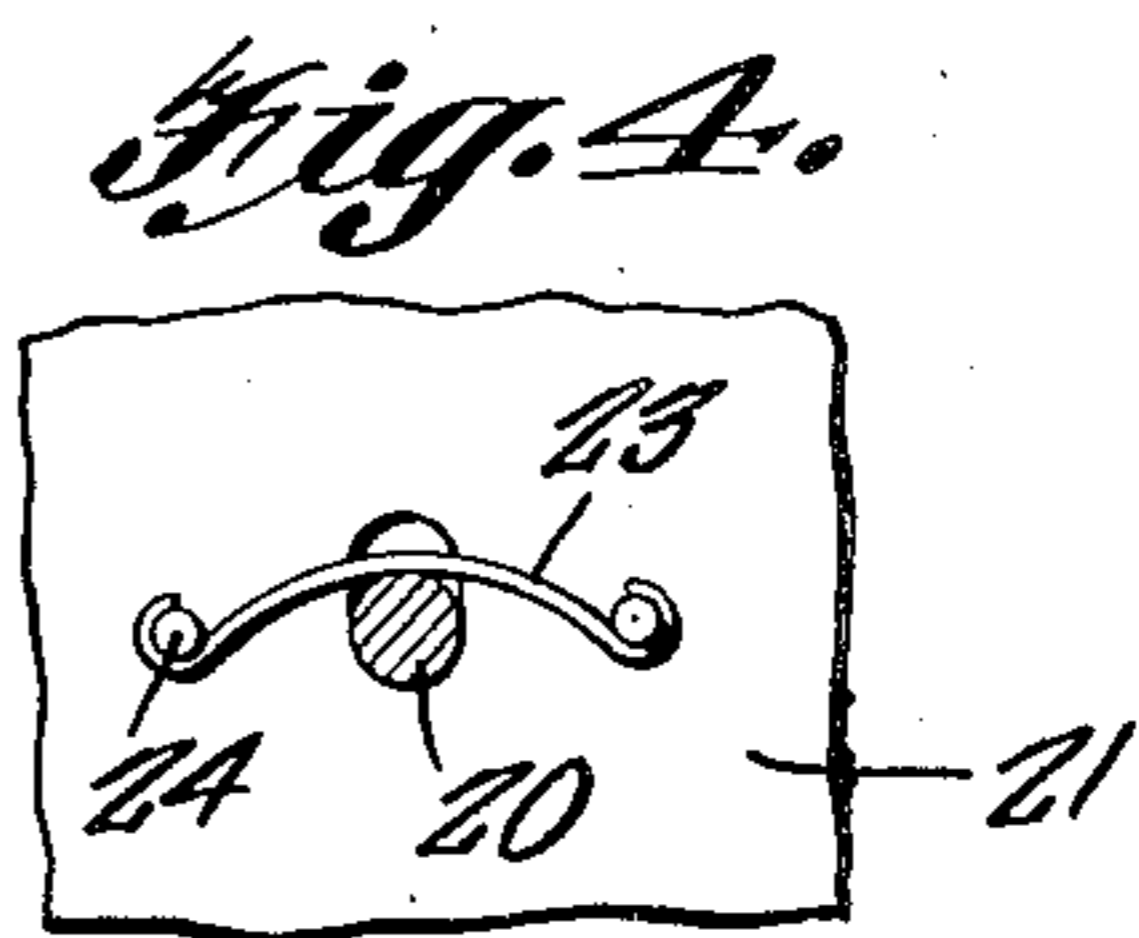


Fig. 4.

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WITNESS:

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CONTROLLING DEVICE FOR INTERNAL-COMBUSTION ENGINES.

Application filed February 7, 1928. Serial No. 252,581.

This invention relates to improvements in fuel controlling means for internal combustion engines, an object being to provide means for cutting off the supply of fuel mixture from the carbureter to the fuel intake manifold, and for admitting a supply of air, so that the latter may be utilized to provide a braking effect within the engine cylinders, with a resultant saving of fuel and increase in braking action of the engine, the present application being a companion case to an application filed by me of even date and bearing Serial No. 252,580.

Another object of the invention is to provide means as above stated in which a single valve is employed for cutting off the passage of fuel to the engine and for admitting air to the cylinders, so as to provide a minimum number of working parts and insure positive and effective operation.

With the above and other objects in view, the invention further includes the following novel features and details of construction, to be hereinafter more fully described, illustrated in the accompanying drawing and pointed out in the appended claim.

In the drawing:—

Figure 1 is a fragmentary elevation illustrating the invention.

Figure 2 is an enlarged fragmentary sectional view showing the valve for controlling the air and fuel passages.

Figure 3 is an enlarged fragmentary section showing the manner of holding the valve in adjusted position.

Figure 4 is a section on the line 4—4 of Figure 3.

Referring to the drawing in detail wherein like characters of reference denote corresponding parts, the reference character 10 indicates the carbureter of an internal combustion engine, the intake manifold of which is indicated at 11. The inlet end of the manifold 11 is connected to the outlet of the carbureter so that the fuel mixture from the carbureter will enter and pass through the manifold into the engine cylinders in the ordinary manner.

The inlet end of the manifold 11 is of novel construction, being provided with a partition 12 which divides the inlet end into a fuel passage 13 and an air inlet passage 14. A valve

seat 15 is provided at the inner end of the passage 13 and a valve seat 16 is provided at the inner end of the passage 14.

Pivotally mounted upon a stem 17 at the inner end of the partition 12 is a valve 18 and this valve is arranged to be seated either upon the seat 15 as shown by dotted lines in Figure 2, or upon the seat 16 as shown in full lines in said figure. The stem 17 extends beyond the manifold and has rigidly secured thereto an arm 19, while secured to this arm is one end of an operating rod 20. The opposite end of this arm extends through the instrument board or dash board of an automobile as indicated at 21 and may be provided with a knob or handle 22. The rod 20 is held in adjusted position by means of a spring 23 whose opposite ends are secured to the board 21 as shown at 24. The spring 23 thus bears upon the rod 20 and provides frictional engagement to hold the rod against accidental movement.

The valve 18 is normally in position to close the passage 14 and open the passage 13 and to assist in holding the valve in one position there is provided a spring 25. One end of this spring is secured to the arm 19 while the opposite end is secured to a pin 26 extending from the intake manifold.

Normally, the valve 18 is arranged as shown in the full line position of Figure 2 so that fuel from the carbureter may pass through the passage 13 and through the intake manifold 11 to the cylinders of the engine in the usual manner, the amount of fuel being controlled by the ordinary throttle valve. When descending a grade, the rod 20 may be operated to move the valve to the position shown by the dotted lines in Figure 2, so that the supply of fuel to the engine will be cut off and a supply of air will be drawn into the engine cylinders. This air will be compressed within the cylinders, so that in addition to saving fuel, the braking effect of the engine will be materially increased by the compression within the cylinders.

In order to relieve the chilling effect when the valve 18 is used in very cold weather to cut off the fuel supply, an additional valve 27 is provided. This valve is pivotally mounted as shown at 20 at the outer end of the cold air passage 14 and is provided with a squared

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edge 29 which is engaged by a flat spring 30. The valve may thus be held either in open or closed position. In extremely cold weather this valve 27 may be closed so that the cold
5 air passage 14 will be closed when the valve 18 is used to cut off the fuel supply. A vacuum effect is thus produced in the engine cylinders which has approximately the same
10 braking effect on the engine as does compression within the cylinders. By opening the valve 27, the engine may be cooled when necessary, while tendency of the pistons to suck oil will also be relieved.

The invention is susceptible of various
15 changes in its form, proportions and minor details of construction and the right is herein

reserved to make such changes as properly fall within the scope of the appended claim.

Having described the invention what is claimed is:— 20

In combination with the carbureter and intake manifold of an internal combustion engine, said manifold having an air inlet port adjacent its fuel inlet end, a single valve positioned to control both the fuel inlet and the
25 air inlet port, means to position the valve to normally close the air inlet port and open the fuel inlet, means to operate the valve, and an auxiliary valve to control the air inlet independent of the first mentioned valve. 30

In testimony whereof I affix my signature.
ELWOOD C. HALL.