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W. LANGDON-DAVIES & A. SOAMES.

INTERNAL COMBUSTION ENGINE.

APPLICATION FILED JUNE 27, 1902.

NO MODEL.

Fig. 1.

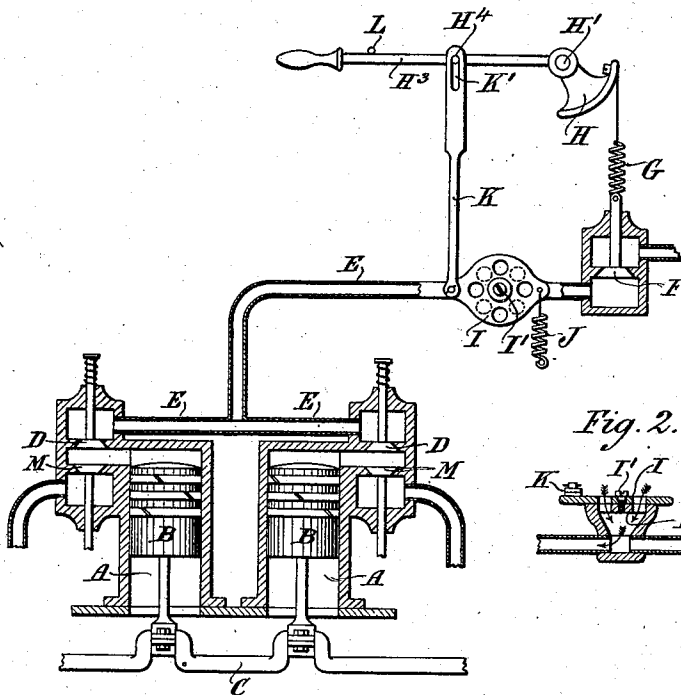
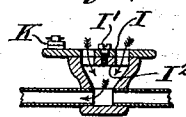


Fig. 2.



Witnesses.

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WALTER LANGDON-DAVIES AND ALFRED SOAMES, OF COUNTY OF SURREY,
ENGLAND.

INTERNAL-COMBUSTION ENGINE.

SPECIFICATION forming part of Letters Patent No. 718,481, dated January 13, 1903.

Application filed June 27, 1902. Serial No. 113,475. (No model.)

To all whom it may concern:

Be it known that we, WALTER LANGDON-DAVIES and ALFRED SOAMES, electricians, subjects of the King of Great Britain, residing at 101 Southwark street, in the county of Surrey, England, have invented a certain new and useful Improvement in Internal-Combustion Engines, of which the following is a specification.

10 This invention has for its object to provide improved means for varying the quantity of explosive mixture admitted to the cylinder or cylinders of internal-combustion engines according to the power required to be exerted.

15 To effect this, we, in addition to providing a separate inlet-valve for each cylinder for admitting its combustible charges, also provide another additional valve for controlling the supply of combustible mixture to these

20 inlet-valves. This additional controllable valve may be placed in any desired position wherever it is convenient to place it and in no way interferes with the inlet-valves, being readily got at for cleaning or adjustment.

25 The additional valve we arrange to be opened by suction as the cylinders draw in their charges and to be closed by the action of a spring and provide means for readily strengthening or weakening the action of this spring

30 upon the valve, so that more or less suction from the cylinder or cylinders is required to open it and the combustible mixture is drawn into the cylinder or cylinders at various pressures, thereby varying the quantity of com-

35 bustible mixture in each charge. In some cases we also in addition provide means for admitting air to the passage between the additional valve and the inlet-valves at times when the additional valve is held so firmly to

40 its seat as not to allow any combustible charge to the cylinders, so that the cylinders may then draw in air only to more or less cool them and retard the movement of the engine.

45 In the drawings annexed, Figure 1 is a sectional diagrammatic view of parts of an internal-combustion engine provided with control-gear as above described. Fig. 2 is a horizontal section through the valve used for admitting air only to the cylinders.

A represents the cylinders of the engine. 50 Two cylinders are shown; but the number of cylinders used may be varied, as required.

B represents the pistons, coupled to cranks on the crank-shaft C.

D represents the inlet-valves, which may 55 be operated in any ordinary manner.

E is a pipe or passage by which combustible mixture is supplied to each valve.

F is the additional valve controlling the supply of combustible mixture to the pas- 60 sage E.

G is a coiled spring coupled at one end to the valve-stem and at the other to a lever-arm H, which turns on a fulcrum at H'. Another arm H² of this lever serves as a hand- 65 lever arm, by which the lever can be turned.

I is a valve for admitting air to the passage E when the valve F is held to its seat and unable to open. This valve is, as shown, formed as a perforated disk capable of being 70 turned around a central pin I', projecting from the center of a similar fixed perforated disk I². A lug projecting from one side of the circumference of the disk I is coupled to a spring J, which normally holds the disk 75 in the position shown in Fig. 1, so that the perforations in it do not coincide with the perforations in the disk I². A lug projecting from the opposite side of the circumference of the disk I has jointed to it one end of a 80 link K, and a pin H⁴, projecting from the hand-lever arm H³, passes through a slot K' in the opposite end of the link.

L is a stop against which the hand-lever H³ is normally held. When the lever is in 85 this position, as shown in Fig. 1, there is but little tension on the spring G, and the valve F can open freely to admit combustible mixture to the passage E. When the handle at the end of the lever-arm H³ is depressed, the 90 tension on the spring is increased and more suction is required to cause the valve F to open. When the handle is depressed to such an extent as to cause the pin H⁴ to come against the lower end of the slot K' and force down- 95 ward the link K, the tension on the spring G will have been so increased as to prevent the valve F from opening, while the link K,

as it is forced downward, turns the air-valve disk I into a position to bring the perforations in it to coincide with the disk I², as shown in Fig. 2, and then admit air only to the passage E. In place of this air-admission valve being formed in the way shown any other form of valve might be used instead of it and be adapted to act in the same way. M represents exhaust-valves opened and closed in any ordinary manner.

What we claim is—

1. In internal-combustion engines the combination of a cylinder, an inlet-valve therefor, an additional suction-valve admitting combustible mixture to a passage leading to the inlet-valve, a spring acting to close this additional valve and means for readily increas-

ing or decreasing the action of the spring upon the valve.

2. In internal-combustion engines the combination of a cylinder, an inlet-valve therefor, an additional valve opening by suction to admit combustible mixture to a passage leading to the inlet-valves, a spring acting to close the additional valve, means for readily increasing or decreasing the action of the spring upon the valve and means for admitting air to the passage at times when the additional controllable valve is prevented from opening.

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