

N° 25,398



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(Under International Convention.)

Date claimed for Patent under Patents and Designs Act, 1907, being date of first Foreign Application (in Switzerland), } 7th Nov., 1912

Date of Application (in the United Kingdom), 6th Nov., 1913

At the expiration of twelve months from the date of the first Foreign Application, the provision of Section 91 (3) (a) of the Patents and Designs Act, 1907, as to inspection of Specification, became operative

Accepted, 4th June, 1914

COMPLETE SPECIFICATION.

Improvements in or relating to Valve Gear for Internal Combustion Engines.

I, LÉON DUFOUR, of rue de Lyon 109, Geneva, in the Republic of Switzerland, Engineer, 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:—

5 This invention relates to valve gear for internal combustion engines wherein a slide valve arranged in known manner within each cylinder thereof is adapted to be simultaneously displaced in an axial direction and oscillated about its axis by means of a transverse member or cross beam adapted to be moved parallel to itself under the action of two similar cranks.

10 The object of the present invention is to provide an improved valve gear in which the parts are so arranged as to avoid any wedging and twisting during the operation of the gear.

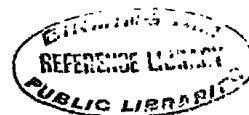
In the valve gear according to the present invention, one end of the transverse member or cross beam is recessed in order to receive the bearing of one of the 15 crank pins of two crank shafts running at the same speed, and thus enables the crank pin to have a sliding movement in the direction of the length of the beam. Moreover, the cross beam is adapted to engage at least one projecting part of the valve which is in the form of a sleeve, thereby imparting to it a reciprocating movement in the direction of its axis, means being also provided upon the beam 20 for imparting to the sleeve an oscillating movement about its axis.

The accompanying drawings illustrate, by way of example, two forms of valve gear constructed according to the present invention and in which:

25 Figure 1 is a sectional elevation and Figure 2 a sectional plan of the one form of the gear, whilst Figure 3 is a sectional elevation of a further form of valve gear.

In carrying the invention into effect as illustrated a^1 and a^2 represent respectively the crank pins of two similar cranks, which are adapted to impart a swinging movement to the cross beam b ; said cranks, which are not illustrated in Figure 1 of the drawings being rigidly mounted upon shafts c^1 , c^2 respectively

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and both driven at the same speed from a motor by means of toothed chain or any other of the usual forms of power transmitting gearing. One end of the beam *b* is shaped similar to the crosshead for a crank pin *a*¹, whilst the other end is bifurcated and serves as a guide in which is adapted to slide in the direction of the length of the beam, a slide block *d* forming a bearing for the crank pin *a*², the bolt *e* connecting the ends of the two members of the bifurcated portion of the beam *b*. At the upper part of the beam *b* and at about the central point between the two crank pins referred to above a pin *b*¹ is arranged and may be cast upon the beam and is engaged by a fork-like member *f*¹, *f*² provided upon a sleeve *f*. By this means the movements of the beam are transmitted to the sleeve *f* the lower part only of which is illustrated in the drawings. 5

These fork-like projections extend between plates *g* and *g*¹, the plate *g* being prevented from turning on a pin *b*¹ by a stud *h*, and the plate *g*¹ being constructed integral with a sleeve *g*² which is disposed upon the pin *b*¹ and retained in position thereon by a nut *i*. A sleeve *k* is arranged upon the sleeve *g*² and is kept engaged between the two fork-like projections *f*¹, *f*². 10 15

During the upward movements of the sleeve the weight thereof has to be overcome as well as the frictional resistance. These movements are obtained by the cross-beam *b* acting on the fork-like projections *f*¹, *f*² through the intermediate plate *g*, while the downward movements of the sleeve are transmitted to it by the plate *g*¹ acting against the upper face of the fork-like projections. 20

The oscillating movements of the sleeve are caused by the swinging of the pin *b*¹ which acts on the fork-like projections *f*¹, *f*² through the intermediate sleeve *k*.

The movements of the sleeve are thus obtained without causing any wedging of the parts thereof and without any twisting by unfit connections, which will largely contribute to a reliable and exact operation of the same. 25

Instead of imparting the downward movement to sleeve *f* by means of a plate, such as the plate *g*¹, and also instead of having only one fork-like member, the downward movement may be transmitted directly through the cross-beam *b* itself by providing two fork-like members upon the sleeve, one *f*¹ *f*² above, and the other *f*³ *f*⁴ underneath, said beam, both fork-like members engaging the same pin *l* which extends transversely to the beam *b* and is provided at both ends with plates and nuts as shown in Figure 3. 30

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:— 35

1. A valve gear for internal combustion engines comprising a sleeve adapted to slide within a cylinder so as to receive a reciprocating movement in the direction of its axis and an oscillating movement around its axis from a cross beam moved parallel to itself by means of two crank shafts driven at the same speed from the engine and having one crank pin pivoted directly to the beam and the other pin pivoted in a block free to slide in fork-like guides in the direction of the length of the beam, and means upon the beam and suitably shaped projecting parts on the sleeve for transmitting motion from the beam to the sleeve. 40 45

2. A device as specified in Claim 1, wherein the beam is adapted to slide between projecting parts of the sleeve and is provided with a pin arranged parallel to the axis of the sleeve, and upon which these projecting parts may rotate or turn. 50

3. In combination with the device specified in Claims 1 and 2, a plate rigidly secured to the beam by a stud, a further plate arranged upon the pin which is provided upon the beam, and secured by a nut, a friction sleeve, and fork-like projecting parts cast on the sleeve and engaging between the plates and around the pin. 55

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4. A device as specified in Claim 1, wherein the beam is engaged between two fork-like projections cast upon the sleeve and is provided with a pin engaging between the two members of the fork.

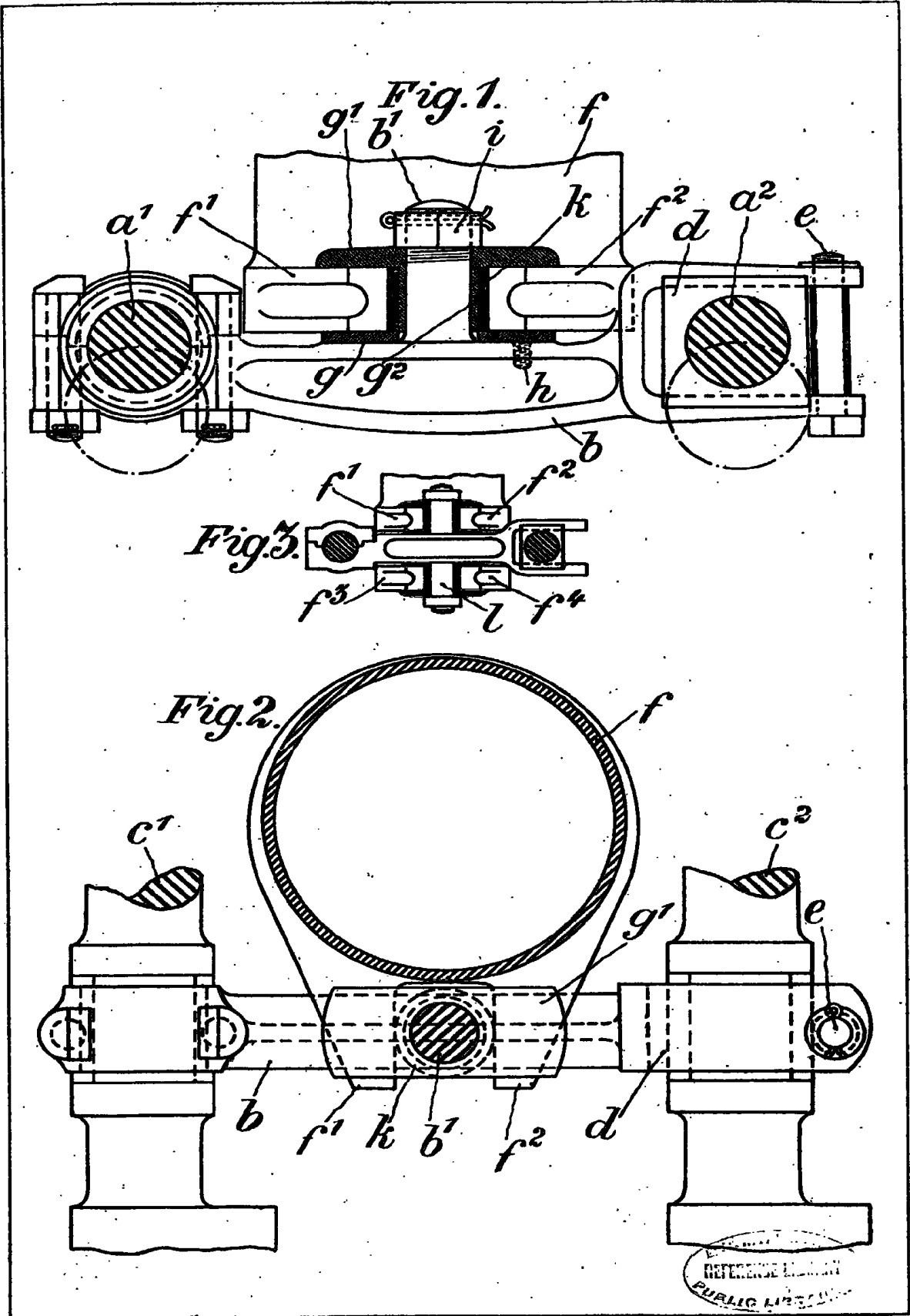
5. The improved valve gear for internal combustion engines, substantially as described and as illustrated by the accompanying drawings.

Dated this 6th day of November, 1913.

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Agents for the Applicant.

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



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