No. 626,121. Patented May 30, 1899.

A. WINTON.

SPEED REGULATOR FOR EXPLOSIVE ENGINES.

(Application filed July 27, 1898.)

(No Model.)

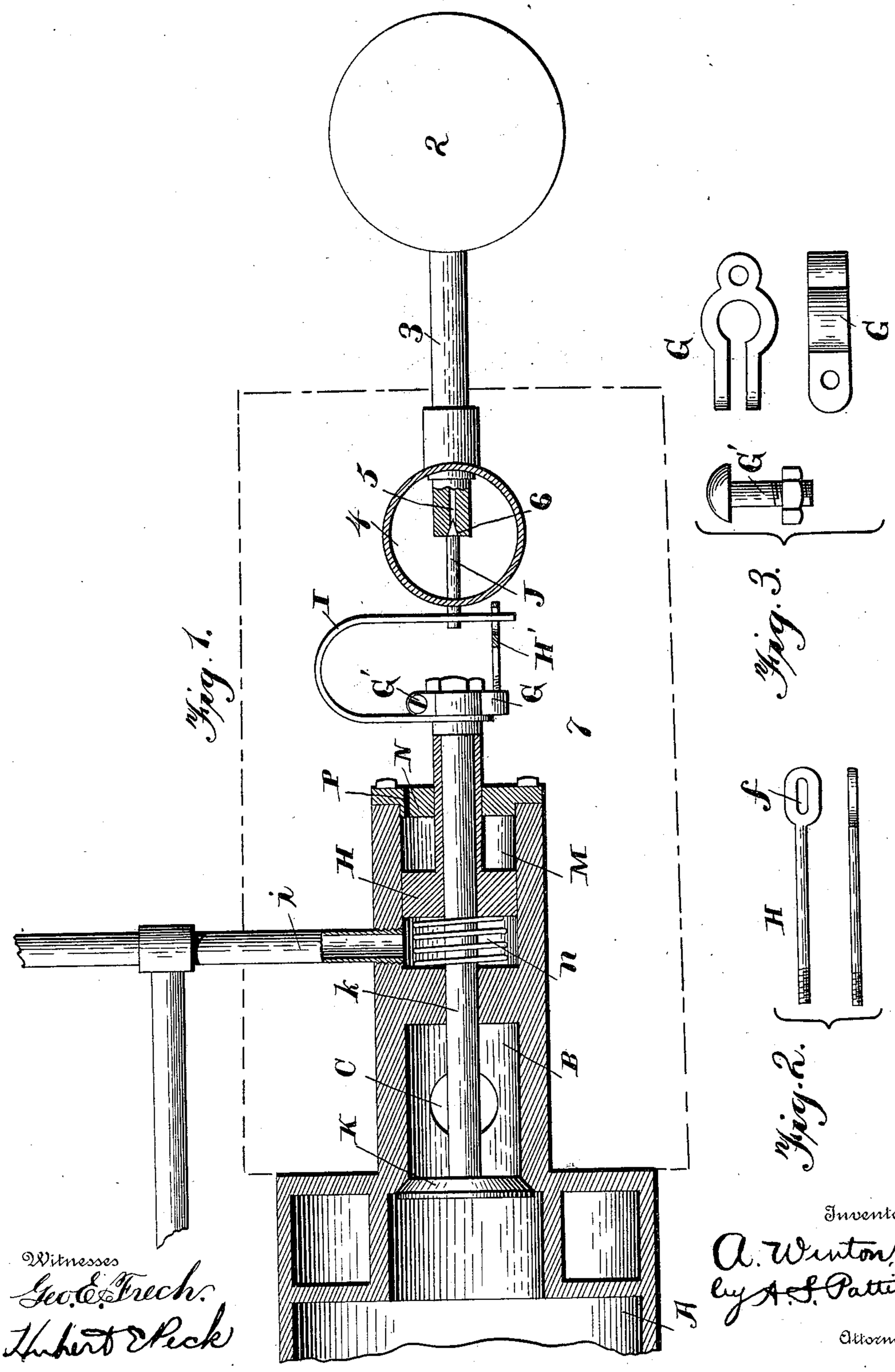

Fig. 1.

Fig. 3.

Fig. 2.

Witnesses
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SPEED-REGULATOR FOR EXPLOSIVE-ENGINES.

SPECIFICATION forming part of Letters Patent No. 626,121, dated May 30, 1899.

Application filed July 27, 1898. Serial No. 687,021. (No model.)

To all whom it may concern:

Be it known that I, ALEXANDER WINTON, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented new and useful Improvements in Oil Valves or Feeders for Gasolene-Engines, of which the following is a specification.

My invention relates to improvements in oil valves or feeders for gasolene-engines, and pertains to that class of engines in which a quantity of gasolene and air are drawn together within the explosive-chamber and exploded.

The object of my present invention is to provide a specially-constructed spring connection for operating the gasolene-valve, whereby it has a yielding seating action to insure its tight fit, while at the same time it is given a positive opening and closing movement, the parts also being constructed to permit of adjustment for taking up the wear of the valve and its seat and to prevent noise.

In the accompanying drawings, Figure 1 is a sectional view of the explosive end of a gasolene-engine cylinder, showing my invention applied thereto. Fig. 2 is a detail view of the adjusting-bolt. Fig. 3 are views of the clamping-nut.

Reference being had to the drawings, A is the explosive end of a cylinder, and projecting rearward from this end of the cylinder is a chamber B, the said chamber having an open inner end in communication with the cylinder and provided with an opening C for the explosive mixture.

The explosive-inlet valve K is provided with a valve-stem *k*, passing longitudinally through the chamber or cylinder B, the outer end of the stem being provided with a piston H within said cylinder, and communicating with this cylinder to cause a pressure upon the said piston H is a pressure-supply pipe *i*. Pressure is supplied to this pipe through the medium of a pressure-supplying pump, which is actuated by the engine in any desired manner.

In operation the pump supplies pressure to the cylinder, which causes an outward pressure against the piston, which holds the explosive-inlet valve K to its seat with more or less force, according to the pressure upon the piston, which is varied according to the speed of the engine, and consequently the speed of the pump, as will be readily understood. A spring *n* is provided for normally holding the explosive-inlet valve to its seat and the parts in their normal operative position.

My present improvement relates particularly to a valve for admitting a predetermined amount of hydrocarbon fluid, such as gasolene, at every other stroke of the engine-piston, which is the usual operation of explosive-engines.

The gasolene-tank 2 is supported at any desired point, and a supply-pipe 3 extends therefrom into a mixing-pipe 4. This mixing-pipe 4 is provided with an opening 5, which communicates with the explosive end of the cylinder at a point outside of the inlet-valve. When the piston moves outward, the valve K is opened by suction and the hydrocarbon-valve J, which is preferably of the well-known needle or pointed construction, is moved from its seat 6, thus admitting a small quantity of fluid within the pipe 3, which is drawn into the explosive end of the cylinder, together with air that is mixed therewith, and preferably through a carbureter 7. (Shown in dotted lines in Fig. 1.) This carbureter may be of any desired form without affecting in any manner my present invention. The hydrocarbon-valve J is connected with the end of the stem of the valve K through the medium of a nut G, which clamps it into position, the said nut in turn being clamped by means of a bolt G′. A spring I (preferably of U shape in form, as shown in Fig. 2) has one end clamped to the stem of the valve K, while its opposite end is connected with the hydrocarbon-valve J, and the spring, being of the expanding form, normally forces the valve J against its seat. The movement of the spring, however, is regulated through the medium of a regulating-bolt H′, which has one end screwed into a lug upon the nut G and its opposite end provided with an elongated opening *f*, through which one end of the spring I passes, as also clearly illustrated in Fig. 2. This opening in the rod H′ allows just enough backward motion of the spring to accomplish a tight seating of the valve J, while at the same time the rod H′ forms a positive pull upon the valve for removing it from its seat

through the medium of the stem of the inlet-valve K. This construction enables me to use a strong spring I, thereby making the tight closing of the valve more sure, and yet enables me to secure a positive movement of the valve, both of which are very desirable. By means of the adjustable feature the valve may be adjusted for the purpose of taking up the wear of either the valve or of its seat. It will be thus seen that a positive connection is provided for withdrawing the valve from its seat, and practically a positive, and yet a yielding, connection is provided for seating the valve. This construction in use upon a motor-vehicle has been found to produce a most satisfactory arrangement, one which is very sensitive, durable, and not liable to get out of order, in that it automatically provides for the tight seating of the valve and a small wear thereof.

It is also desirable in motors for vehicles to make them as noiseless as possible, and to avoid the clicking noise caused by the seating of the oil-valve and also the explosive-inlet valve K, I provide a dash-pot or air-cushion situated between the two. This is provided by having the cylinder or chamber B extend beyond the piston H to form a space M. The extremity of this cylinder is closed by a cap N, and this cap is provided with a passage or passages P. Through the medium of this arrangement an air-cushion is provided at the outer side of the piston, as will be readily understood, whereby when the valves are being seated they are prevented from a sudden contact with their seats, which avoids the clicking noise common to mechanisms of this character, and yet it permits a firm and tight seating of both of the valves. It will be noted that this air-cushion, situated, as here shown, between the explosive-inlet valve and the oil-valve, serves a double function in that it regulates the seating of both valves, thus preventing wear upon the valve-seat and also, as before stated, preventing the undesirable constant clicking which would otherwise occur.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. An explosive-engine comprising an explosive-inlet valve, an oil-exit, a valve therefor, a spring having one end connected with the explosive-inlet valve and its opposite end connected with the oil-exit valve, and a connection between the explosive-inlet valve and the end of the said spring which is connected to the oil-exit valve, substantially as described.

2. An explosive-engine comprising an explosive-inlet valve, an oil-exit, a valve therefor, a spring having one end connected with the explosive-inlet valve, and its opposite end connected with the oil-exit valve, and a connection having one end connected with the explosive-inlet valve and its opposite end holding but allowing the spring a slight backward movement, substantially as described.

3. An explosive-engine comprising an explosive-inlet valve, an oil-exit, a valve therefor, a spring having one end connected with the explosive-inlet valve and its opposite end connected with the oil-controlling valve, and a member having one end connected with the explosive-inlet valve and its opposite end provided with an elongated opening to receive the spring and permit it to have a slight backward movement, substantially as described.

4. An explosive-engine comprising an explosive-inlet port, a valve therefor, an oil-exit, a valve for said oil-exit, a spring having one end connected with the explosive-inlet valve and its opposite end connected with the oil-controlling valve, a rod adjustably connected with the explosive-inlet valve and its opposite end provided with an elongated slot or way, which holds the tension of the spring but permits it to have a backward movement, the parts operating as described.

5. An explosive-engine comprising an explosive-inlet valve, an oil-exit, a valve therefor, a U-shaped expanding-spring having one end connected with the stem of the explosive-inlet valve, and its opposite end connected with the oil-controlling valve, a rod having one end connected with the explosive-inlet valve and its opposite end provided with a slot or way receiving and controlling the movement of the spring and the oil-exit valve, substantially as described.

6. An explosive-engine comprising an explosive-valve, a stem therefor, the outer end of the stem being screw-threaded, a U-shaped spring having one end receiving the screw-threaded end of the valve, a clamping-nut therefor, an oil-exit, a valve therefor connected to the opposite end of the U-shaped spring, a rod connected with the said clamping-nut at one end and its opposite end connected with the free end of the U-shaped spring, substantially as described.

7. An explosive-engine comprising an explosive-inlet port, a cylinder or chamber projecting from the engine-cylinder, a valve for the said inlet, the valve-stem passing through the said cylinder and carrying an oil-controlling valve, an oil-exit controlled by the said valve, a piston carried by the stem within the cylinder, and a cover for said cylinder, the cylinder beyond the piston having an escape whereby the valves are prevented from suddenly seating themselves, substantially as described.

8. An explosive-engine comprising a cylinder having an explosive-inlet port, a valve-stem cylinder or chamber projecting therefrom, a valve for the said explosive-inlet port, having a stem passing through the said valve-stem cylinder and carrying an oil-controlling valve, an oil-exit controlled thereby, the stem having a piston within the cylinder, a cover for the end of the cylinder, and an opening in the cylinder beyond the said piston, substantially as described.

9. An explosive-engine comprising an ex-

plosive-inlet port, a valve therefor having a stem, an oil-exit, an oil-controlling valve for said exit connected with the explosive-inlet-valve stem, a dash-pot situated between the said valves, substantially as described.

10. An explosive-engine having an explosive-inlet port, a valve therefor having a stem, an oil-exit, a valve controlling said exit and connected with the explosive-inlet-valve stem, and a dash-pot common to and controlling both valves, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

ALEXANDER WINTON.

Witnesses:

THOS. HENDERSON,

GEO. H. BROWN.