

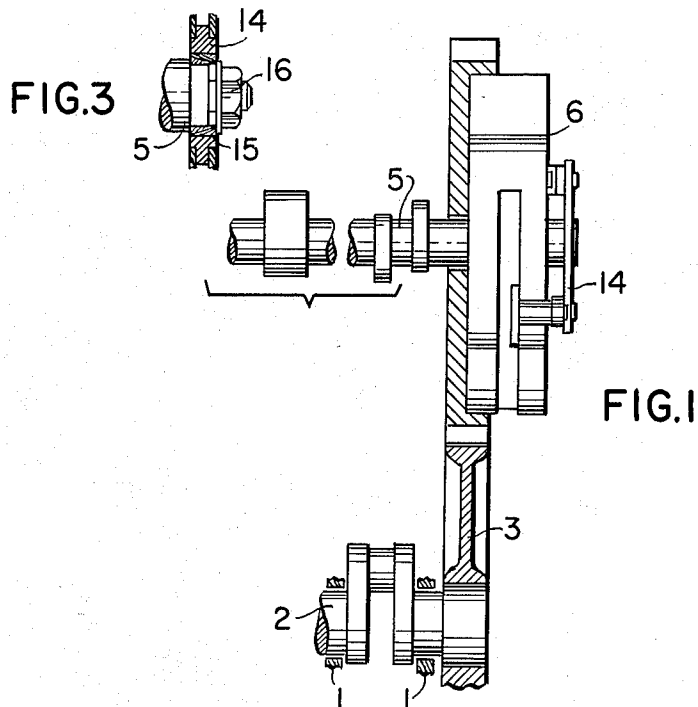
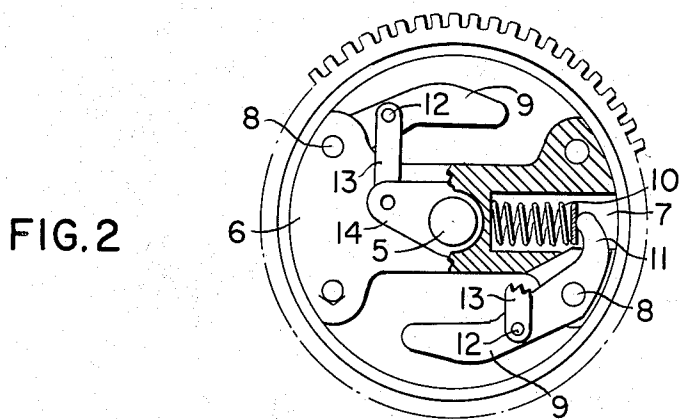
May 22, 1956

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2,746,441

TWO-STROKE CYCLE INTERNAL-COMBUSTION ENGINE

Filed July 31, 1953



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2,746,441

TWO-STROKE CYCLE INTERNAL-COMBUSTION ENGINE

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Application July 31, 1953, Serial No. 371,518

Claims priority, application Germany November 8, 1952

4 Claims. (Cl. 123—139)

This invention relates to a two-stroke cycle internal combustion engine which is characterized by the arrangement of an automatic governor depending upon the engine speed for the adjustment of the injection time.

It is one object of the present invention to provide an axial governor working with fly-weights of known design which is directly mounted on the camshaft, said axial governor being arranged between the cam shaft and its drive gear.

It is another object of the present invention to provide a two-stroke cycle internal combustion engine in which the alternating moments acting on the cam shaft and caused by the operation of the pump plungers do not affect the axial governor as, according to the present invention, the cam shaft is designed as a compensating element, or is provided with a centrifugal mass.

It is still another object of the present invention to provide a two-stroke cycle internal combustion engine in which the cam shaft drive gear rotates freely on the cam shaft and is fixedly connected with the governor body, while the control rods are fixedly mounted on the cam shaft, and if expansion ring elements of known design are used for mounting the control rods on the cam shaft, it is possible to adjust the governor easily and quickly when assembling the unit.

Numerous different embodiments in accordance with this invention are possible. Other designs of automatically working governors may be used to automatically adjust the injection time in dependence from the speed of two-stroke cycle internal combustion engines.

With these and other objects in view which will become apparent in the following detailed description, the present invention will be clearly understood in connection with the accompanying drawings, in which:

Figure 1 is an elevational view, partly in section, of that part of the cam shaft carrying the governor;

Fig. 2 is a top elevational view of the axial governor, partly in section; and

Fig. 3 is a sectional view of a component part of the axial governor.

Referring now to the drawing, the crankshaft 2 is arranged in the crank shaft journals 1 of the engine, a gear 3 being keyed on the front end of said crank shaft. Parallel to the crank shaft 2 the cam shaft 5 is arranged, on which the drive gear 4 rotates freely, said drive gear being in mesh with the gear 3.

The spur gear 4 is turned out and carries the governor body 6, which is fitted into the turned-out side of said

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spur gear 4. The governor body 6 is provided with pins 8, on which the fly-weights 9 can turn freely.

An arm 11 of the fly-weights 9 extends beyond the pin 8 into a recess 7 in the governor body 6, said recess 7 containing a compression spring 10 which tends to return the fly-weights 9 to their initial position.

An adjusting lever 14 is fixed on the cam shaft 5 by using known expansion ring elements (Fig. 3). By means of a nut 16 the lever 14 is secured in its position on the cam shaft 5. The ends of the lever 14 act, through the medium of connecting links 13, on the pin 12 on the fly-weights 9.

Corresponding to the engine speed said flyweights 9 expand more or less outwardly, thereby effecting, through the medium of the connecting links 12, 13, 14, a turn of the cam shaft 5 in relation to the drive gear 4, thus varying the injection time.

The application of the expansion ring elements is of particular advantage, as they enable a quick and easy adjustment of the cam shaft when mounting the axial governor.

I claim:

1. A two-stroke cycle internal combustion engine with fuel injection comprising a fuel injection pump having plungers, a cam shaft, compensating weights carried by said cam shaft, said cam shaft being adapted for operation of the plungers of said fuel injection pump and simultaneously to operate as a compensating shaft, a drive gear for said cam shaft operated by said engine, an automatic variable governor responsive to the speed of said engine for the timing of the start of the injection period, and said governor being disposed between said cam shaft and said drive gear.

2. The two-stroke cycle internal combustion engine with fuel injection, as set forth in claim 1, in which said governor is designed as an axial governor operated by fly-weights.

3. The two-stroke cycle internal combustion engine with fuel injection, as set forth in claim 2, in which said drive gear is freely rotatable on said cam shaft, and said governor includes a governor body rigidly connected with said drive gear, said fly-weights are disposed in said governor body, and a control lever fixedly mounted on said cam shaft and link means connecting said fly-weights with said control lever.

4. The two-stroke cycle internal combustion engine with fuel injection, as set forth in claim 3, which includes expansion ring elements for fixedly mounting said control lever on said cam shaft in order to permit easy and quick adjustment of said cam shaft relative to said governor body.

References Cited in the file of this patent

UNITED STATES PATENTS

1,579,287	Duten	Apr. 6, 1926
2,145,250	Dillstrom	Jan. 31, 1939
2,533,755	Bange	Dec. 12, 1950
2,657,556	Elliott	Nov. 3, 1953

FOREIGN PATENTS

505,074	Great Britain	May 5, 1939
534,324	Great Britain	Mar. 4, 1941