

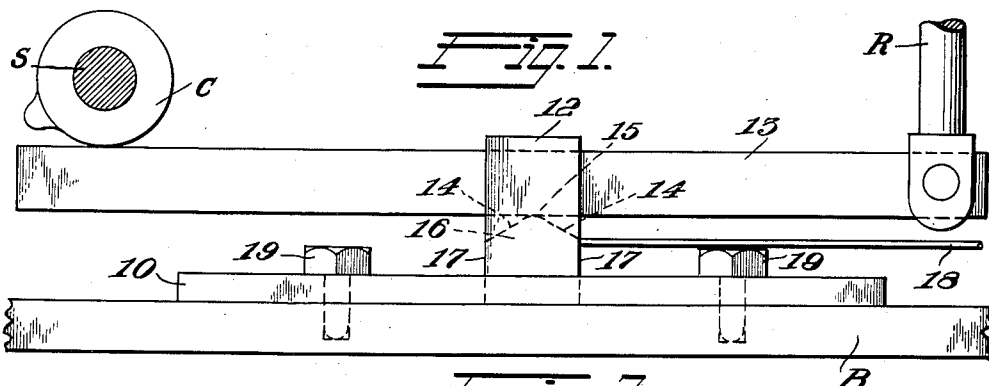
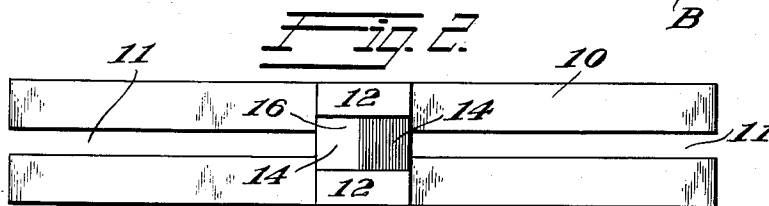
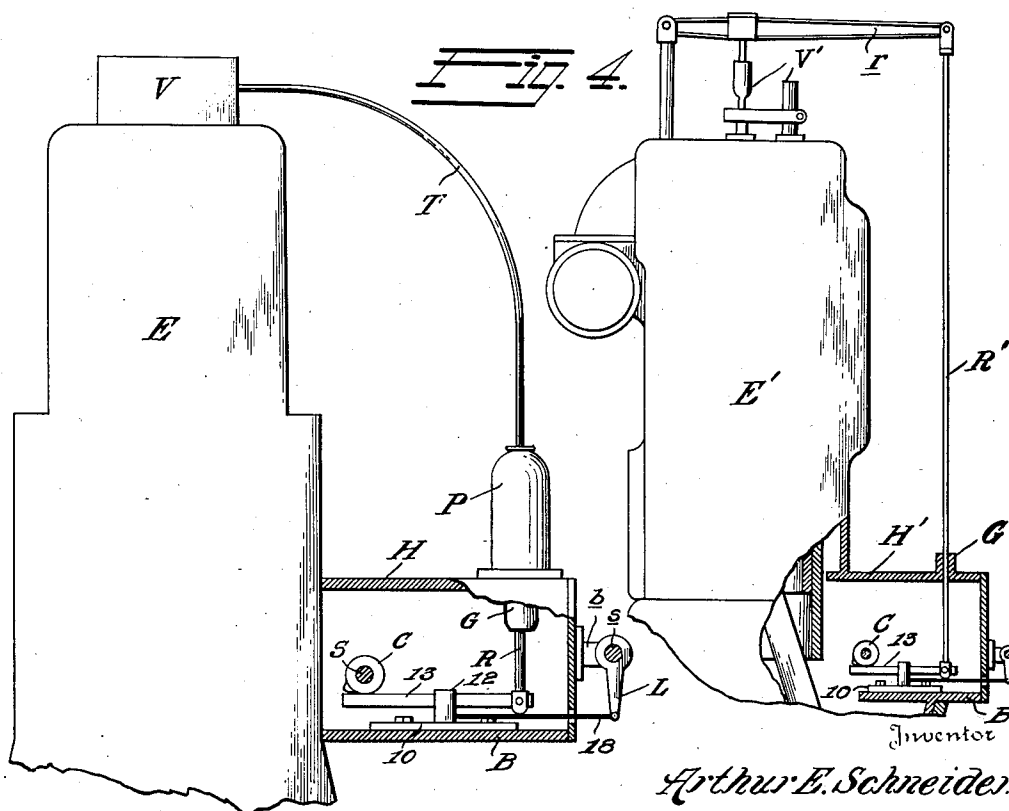
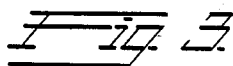
Aug. 17, 1937.

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2,090,428

STROKE ADJUSTING MEANS FOR FUEL INJECTION DEVICES AND THE LIKE

Filed Oct. 3, 1936



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2,090,428

STROKE ADJUSTING MEANS FOR FUEL
INJECTION DEVICES AND THE LIKE

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Application October 3, 1936, Serial No. 103,931

1 Claim. (Cl. 123—139)

This invention relates to stroke adjusting means for engines and the like.

More particularly the invention relates to a device for operative connection with engines of various types whereby the injection of fuel into the cylinders is automatically regulated and the correct timing of such injection is maintained.

A primary object of the present invention is the provision of a device adapted for operative connection with the governor of an engine and which through operation of the governor will automatically vary the injection of fuel into the engine without changing the timing of such injection.

A further object of the invention is the provision of a device adapted for operative connection with an engine and which will automatically vary the stroke of fuel injection elements of the engine without affecting the timing of the injection elements.

A still further object of the invention is the provision of a device for automatically regulating the supply of fuel to engines and which is simple in construction and adapted for operative connection with engines of different types.

With the above objects in view as well as others which will become apparent in the course of the following disclosure, reference will be made to the accompanying drawing forming part of same, and wherein:

Figure 1 is a side elevational view of a preferred embodiment of the device forming the subject-matter of the present invention;

Fig. 2 is a top plan view of a slide member adapted for connection with the governor of an engine;

Fig. 3 is a more or less diagrammatic end elevation of one type of engine showing the application of my invention thereto; and,

Fig. 4 is a similar view of another type of engine showing the application of my invention thereto.

Referring to the drawing by reference characters, and wherein like characters designate like parts, 10 designates a slide member supported for movement longitudinally thereof on a suitable base B which forms the floor of a housing H for fuel injection elements of existing engines of different types, as is indicated in Figs. 3 and 4. The slide member 10 preferably and as illustrated comprises an elongated plate which is provided medially thereof with an elongated slot 11 extending from each end thereof to a point adjacent the center thereof. The slide member intermediate the adjacent ends of the slot 11 is provided integrally or otherwise with transversely

spaced flanges 12 defining a guide channel for the intermediate portion of a rocker arm 13.

The base of the guide channel is defined by outwardly converging surfaces 14 which merge into a rounded apex 15, providing a fulcrum 16 for the rocker arm 13.

As will be seen from Fig. 1, the outer edges of the surfaces 14 are disposed a substantial distance above the upper surface of the plate-like portion of the guide member, thus providing an uninterrupted vertical wall 17 adjacent each of the proximate ends of the slots 11. This construction provides for disposal of the rocker arm well above the plate-like portion of the slide member and, furthermore, one of such walls provides for the attachment by any suitable means of one end of a rod 18, the opposite end of which is adapted for operative connection with the governor of an engine, in a manner hereinafter described.

In order to maintain the slide member 10 in engagement with the base B and to confine same to longitudinal movement on the base, a stud bolt 19 is extended through each of the slots 11 and into a threaded opening in the base B, as is clearly illustrated in Fig. 1.

The rocker arm 13 is adapted for oscillation on the fulcrum 16 for effecting operative movement of fuel injecting elements in different types of Diesel engines. Accordingly, one end of the rocker arm is in operative engagement with a cam C carried by a cam shaft S and the opposite end of the rocker arm is pivotally connected with a vertically reciprocable rod R. It will, of course, be understood that a cam C and rod R are provided for each cylinder in the engine and, thus, one of the adjusting devices in accordance with my invention is adapted for regulating the injection of fuel into each cylinder of the engine to which the devices may be applied.

While the device in accordance with my invention is adapted for use with various types of engines, nevertheless I have disclosed the application to two different types only which it is believed will suffice to show the adaptability of my invention.

In Fig. 3 is illustrated diagrammatically an engine E commercially known as the "McIntosh & Seymour" type and which embodies a fuel pump P having a connection T with a spray valve V, there being of course a pump and valve for each cylinder in the engine. The rod R extends through a suitable guide G and, upon vertical reciprocation thereof through rocking or oscillating movement of the rocker arm 13 induced by

the cam C, operates the pump P which through pressure opens the spray valve V to inject fuel into the cylinder with which the valve is connected.

- 5 Engines of this type, as is commonly known, are provided with speed regulating governors and, as indicated in Fig. 3, a shaft *s* is oscillatably mounted by means of suitable bearing brackets *b* on the housing H, and the shaft *s* is suitably
10 connected with the governor of the engine. Fixed to the shaft *s* is one end of a lever L, to the opposite end of which is pivotally secured the outer end of the rod 18.

- The operation of the device in accordance with my invention and operatively connected with an engine as illustrated in Fig. 3 is as follows: When the engine is running, fuel will be injected into the various cylinders through the respective valves V and pumps P, the latter of which are
20 operated by the push rods R which are reciprocated by the oscillating arms 13, the arms being oscillated by the respective cams C. When the engine is in operation the governor will oscillate the shaft *s* clockwise and counter-clockwise upon
25 acceleration and deceleration, respectively, of the engine, thereby imparting a like movement to the lever L. The lever L, through its connection with the slide 10 by means of the rod 18, will shift the fulcrum 16 toward the left or right as viewed in Fig. 3 proportionately to the acceleration or
30 deceleration of the engine, thereby automatically altering the stroke of the rod R without affecting the timing thereof. As the stroke of the rod R is varied the amount of fuel delivered to the
35 engine will be varied proportionately.

- Thus it will be seen that with my device the supply of fuel is automatically regulated in accordance with the speed of the engine, and it is to be particularly noted that the timing of the
40 fuel injection will not be changed during the shifting of the fulcrum to vary the stroke of the push rod R.

- In Fig. 4 I have disclosed the application of my device to a different type of engine E' which is
45 diagrammatically illustrated and is what is com-

mercially known as the "Atlas Imperial". This engine is operated by fuel injected into the cylinders by means of variable lift spray valves V' which are operated by rockers *r* actuated by relatively long rods R' which pass into the housing H' through guides G' and are pivotally connected to the rocker arms 13.

From the above disclosure it will be seen that the device in accordance with my invention is simple in construction and is adapted for ready
10 connection with engines of various types for automatically regulating the supply of fuel to the cylinders of such engines, resulting in smoother operation, also in greater fuel economy.

While I have disclosed but a single specific
15 embodiment of my invention, nevertheless the same is to be considered as illustrative only and not restrictive, and that I may make such changes and alterations as fairly fall within the scope of the sub-joined claim.

What I claim and desire to secure by United States Letters-Patent is:—

An attachment for an engine having a housing for fuel injection elements provided with a horizontal floor and containing a rotatable cam and a portion of a vertical reciprocating rod, a lever having one of its ends connected to the rod and its other end engaging the cam, and a governor actuated member arranged exteriorly of said housing, comprising a slide member of substantially H-shape in plan slidably resting on said floor and having slotted portions, stud bolts extending through the slotted portions into said floor for guiding the slide member, the medial portion of the slide member forming a substantially inverted V-shaped fulcrum having up-
25 standing posts at opposite ends thereof, said lever extending between said posts and resting on the fulcrum, and a rod extending freely
30 through a wall of the housing and having its ends connected respectively to the governor actuated member and the slide member for controlling the slide member by the governor actuated member.

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