

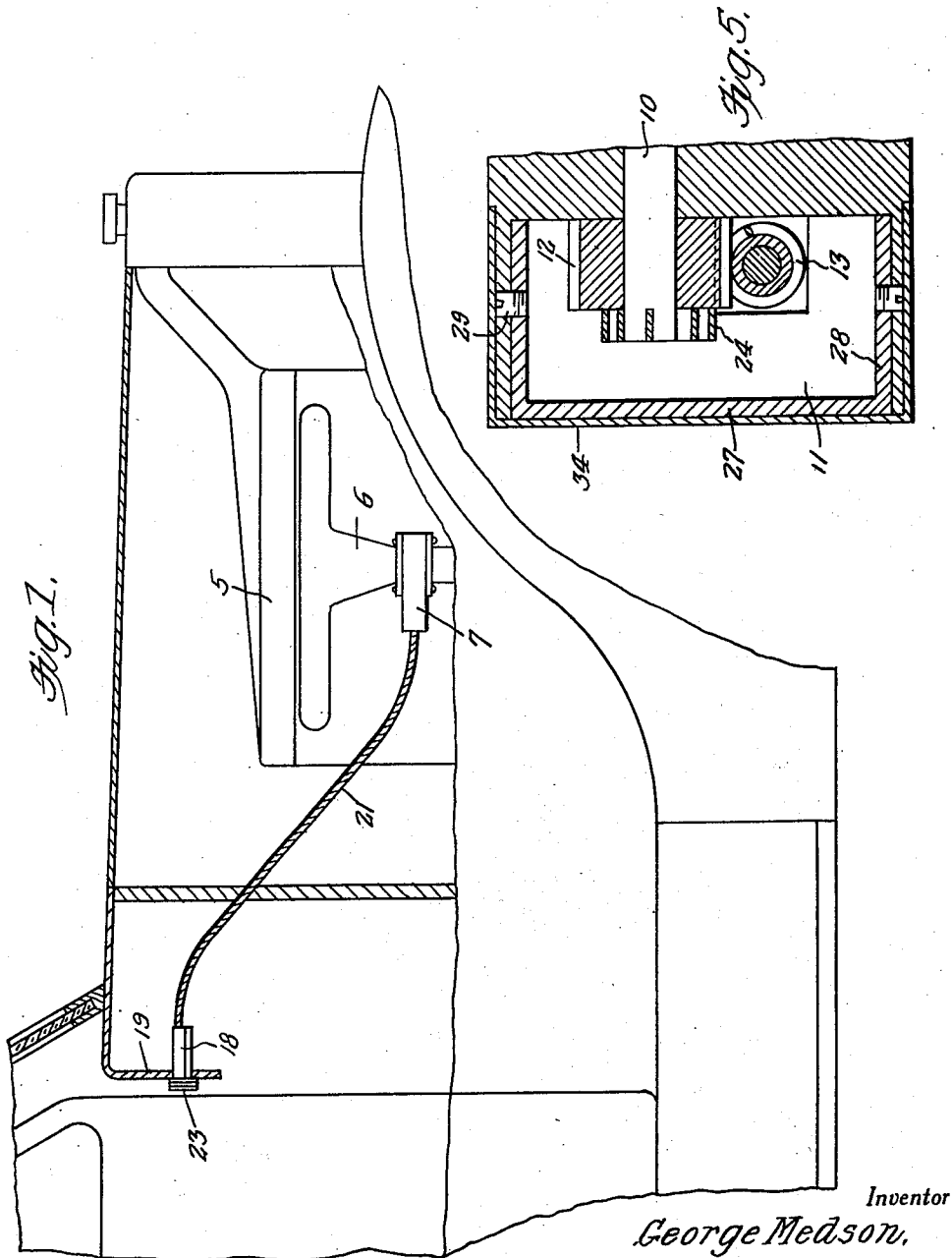
Oct. 22, 1940.

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ENGINE LOCK VALVE

Original Filed Dec. 23, 1937 2 Sheets-Sheet 1



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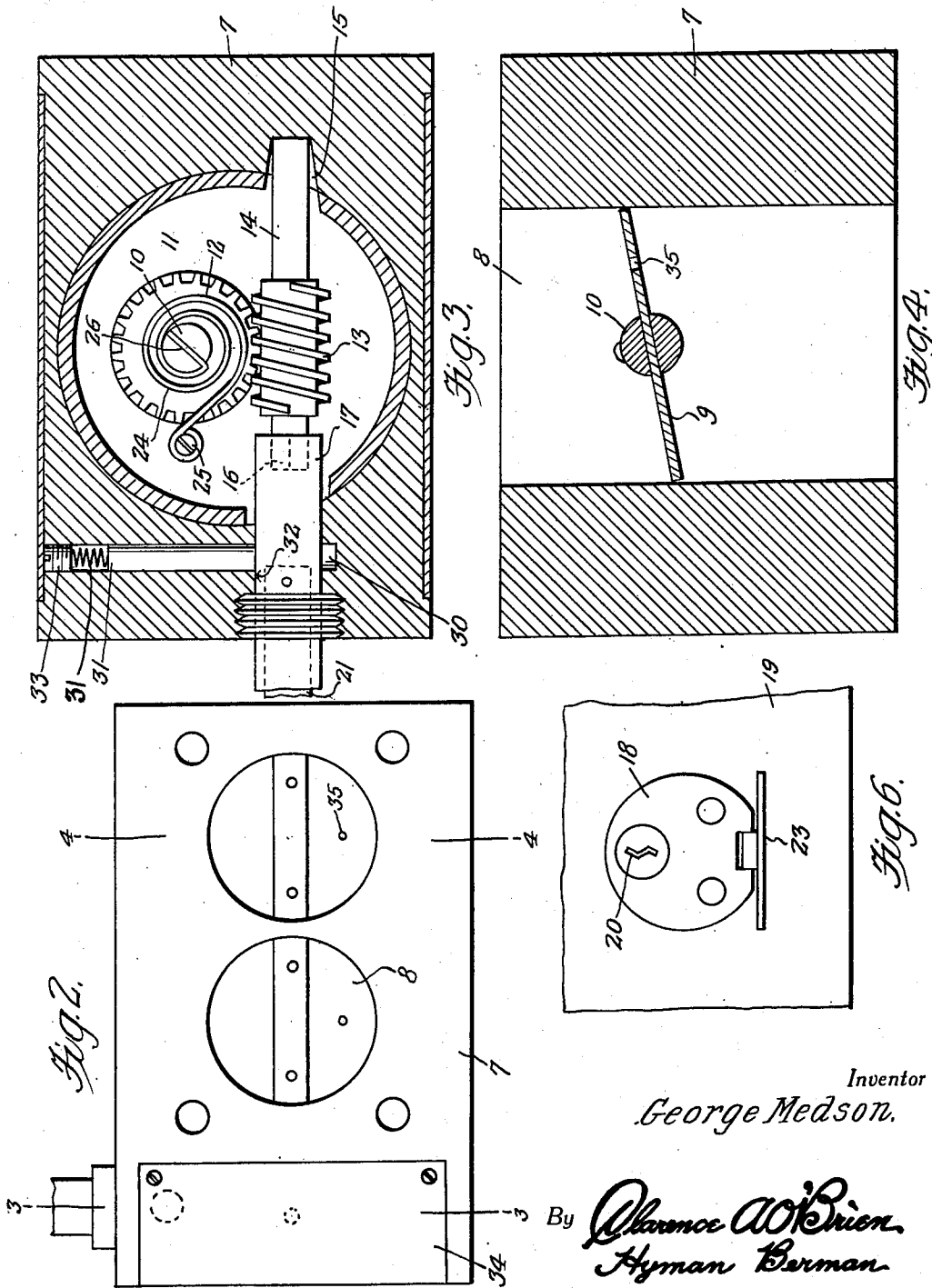
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2 Sheets-Sheet 2



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## UNITED STATES PATENT OFFICE

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## ENGINE LOCK VALVE

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Renewed March 16, 1940

3 Claims. (Cl. 251—6)

The present invention relates to lock valves for internal combustion engines and has for its primary object to provide a lock valve for controlling the fuel feed line of the engine to prevent unauthorized use of the engine.

Briefly the invention comprises a butterfly valve interposed in the intake manifold of the engine and having control means leading therefrom to the instrument board of the automobile upon which the engine is mounted and providing a key controlled lock for the opening and closing movement of said valve.

An important object of the invention is to provide the safety means to prevent tampering with the control mechanism for the butterfly valve whereby to prevent use of the automobile upon a disconnection of the lock.

A further object is to provide an apparatus of this character of simple and practical construction, which is efficient and reliable in operation, relatively inexpensive to manufacture and install in operative position and otherwise well adapted for the purposes for which the same is intended.

Other objects and advantages reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming part hereof, wherein like numerals refer to like parts throughout and in which:

Figure 1 is a fragmentary side elevational view of an automobile engine showing the invention in operative position with respect thereto and with parts broken away and shown in section.

Figure 2 is a plan view of the casing for the butterfly valve shown removed from the engine.

Figure 3 is a sectional view taken substantially on a line 3—3 of Fig. 2.

Figure 4 is a sectional view taken substantially on a line 4—4 of Fig. 2.

Figure 5 is a fragmentary sectional view through one end of the casing showing the compartment for enclosing the gear mechanism and

Figure 6 is a fragmentary front elevational view of the instrument board showing the locked casing in position thereon.

Referring now to the drawings in detail, wherein for the purpose of illustration I have disclosed a preferred embodiment of the invention, the numeral 5 designates an automobile engine having a fuel intake manifold 6 and within which a butterfly valve casing 7 is positioned. The casing is provided with one or more passages 8, each passage being aligned with the manifold or manifolds, where more than one manifold is employed, and within each passage a butterfly valve 9 is posi-

tioned for controlling communication through said passages, each of said valves being mounted on a shaft 10 journaled in the casing. One end of the casing is formed with a chamber 11 within which one end of the shaft 10 projects and upon which is keyed or otherwise secured a worm gear 12.

A worm 13 is operatively engaged with the gear 12, said worm being secured on a shaft 14, one end of which is loosely positioned in a tapering recess 15 in the wall of the chamber 11 and the other end of the shaft 14 is square in cross section as shown at 16 and inserted in the recessed end of a flexible shaft 17 which extends outwardly through the wall of the casing and is connected to a lock casing 18 mounted upon the instrument panel 19 of the automobile. The lock 18 is of the key control type and having the key-hole slot 20 whereby upon the turning of the key in the lock the shaft 17 will be rotated. The flexible shaft 17 is enclosed within a flexible housing 21 having one end connected to the lock casing 18 and its opposite end threadedly connected to the casing 7 as at 22. The face of the lock casing 18 is also provided with a hinged cover 23.

A spring 24 is secured at one end to a screw 25 within the chamber 11 and is coiled about the shaft 10 with the opposite end of the spring secured to said shaft as at 26. The spring serves to yieldingly retain the butterfly valves 9 in a normally closed position.

The end of the chamber 11 is closed by a cover 27 having a skirted portion 28 fitted inwardly of the walls of the chamber and secured thereto by screws 29.

A recess 30 also extends inwardly from one wall of the casing 7 and intersects the opening through which the shaft 17 is inserted and within said recess is positioned a plug 31 normally maintained in the upper portion of the recess by said shaft, the lower end of the plug normally resting on the shaft as will be apparent from an inspection of Figure 3 of the drawings. The plug 31 is yieldably urged inwardly of the recess by a coil spring 31' held in position by a plug 33 and accordingly should the shaft 17 be removed by unauthorized persons the plug 31 will drop downwardly across the opening 32 provided for the shaft 17 and thus prevent the insertion of a tool to manipulate the gear 12. Also upon a removal of the shaft 17 the end 16 of the shaft 14 will drop downwardly in the chamber 11 out of engagement with the shaft 12 to prevent unauthorized manipulation of the worm 13 and when so disengaged the spring 24 will operate to close the butterfly valve.

The outer end of the recess 30 is closed by the threaded plug 33 and access to said plug is prevented by a cap 34 which is fitted over the end of the casing 7, the ends of the cap underlying the connected ends of the manifold 6 to prevent removal of the cap 34 without a complete disconnection of the manifold.

The valves 9 are preferably provided with a small opening 35 to enable sufficient fuel to pass therethrough to permit idling of the engine when the valves are closed.

It is believed the details of construction and manner of operation of the device will be readily understood from the foregoing without further detailed explanation although it is to be understood that while I have shown the invention adapted for use in controlling the passage of fuel through the intake manifold of an internal combustion engine it will also be apparent that the device is equally well adapted as a lock for other types of gas feed lines.

What is claimed is:

1. A valve mechanism for fuel feed lines comprising a casing interposed in the feed line and having a fuel feed passage extending therethrough, a butterfly valve mounted in said passage, a shaft for said butterfly valve, driven means within the casing operatively and detachably connected to said shaft for moving the butterfly valve into an open and closed position,

drive means for said driven means detachably connected thereto and normally supporting the driven means in shaft operating position and spring means for closing said valve upon a disengagement of said drive means.

2. A control valve for fuel feed lines comprising a casing interposed in the feed line, said casing having a fuel passage therein, a butterfly valve controlling said passage, a shaft for said valve, a gear on the shaft, a worm shaft operatively engaged with said gear, one end of the worm shaft being tiltably journaled in the casing, a drive shaft extending from the casing and having its inner end operatively engaging and removably supporting the other end of said worm shaft, said worm shaft gravitating from engagement with the gear upon removal of the drive shaft and spring means yieldably urging the valve in a closed position.

3. In a valve structure including an operating shaft on the valve, a drive connection for the shaft drive means operatively engaging the drive connection and normally supporting the latter in shaft operating position, said drive connection comprising a continuation of the drive means and separable therefrom and said drive connection gravitating out of engagement with the shaft of the valve upon a separating movement of the drive means.

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