Aug. 14, 1951 A. N. VORIPAIEFF 2,563,978

FLUID CONTROL APPARATUS

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Fig. 1.

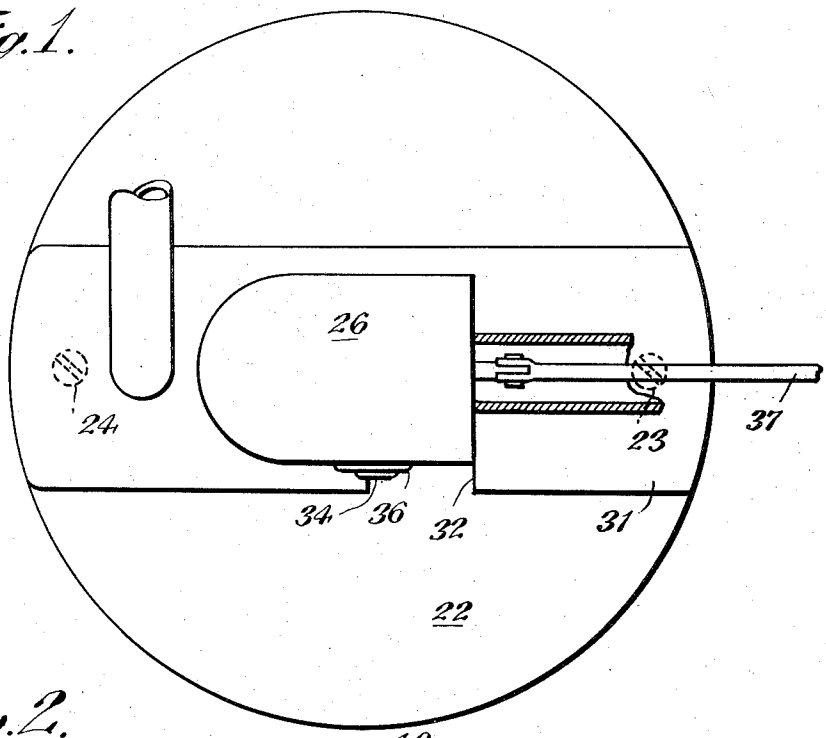
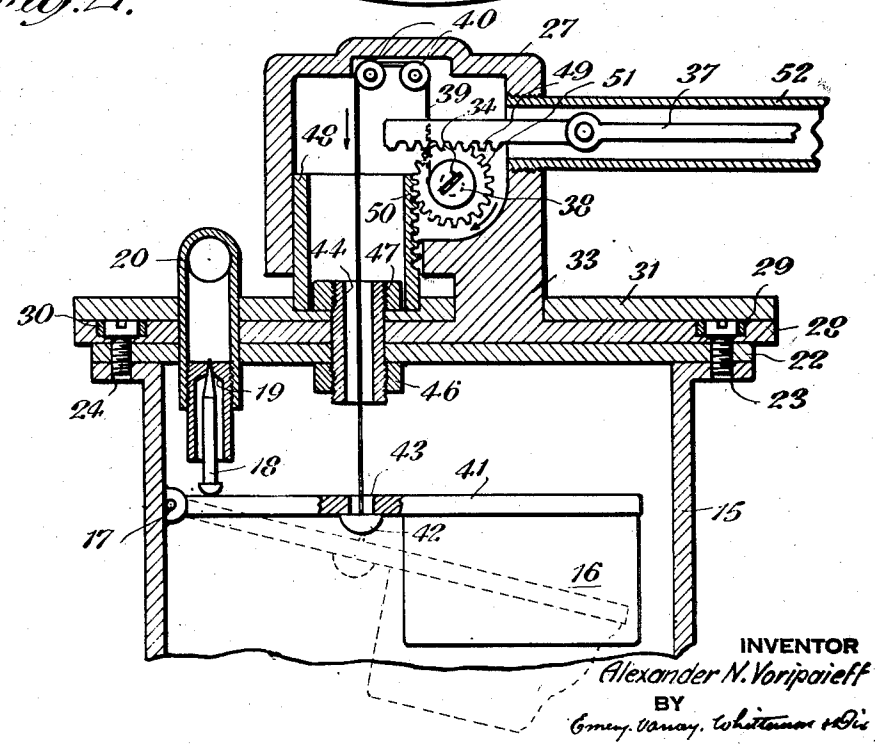


Fig. 2.



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Fig. 3.

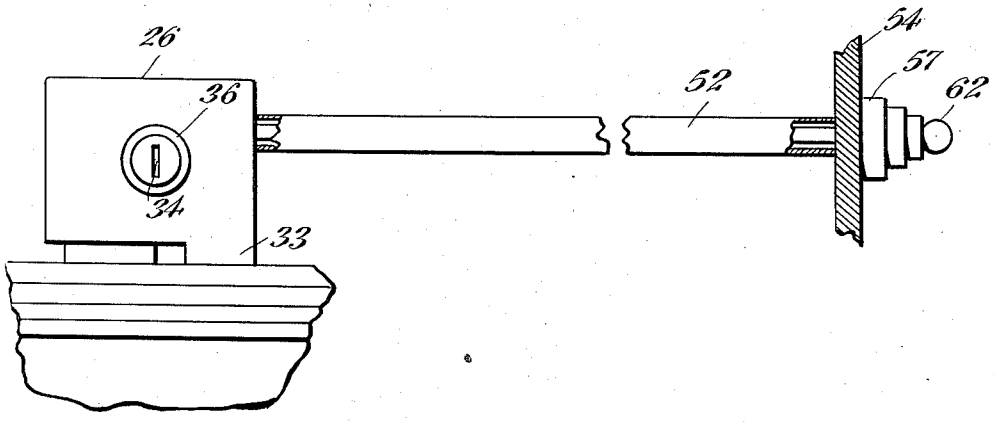
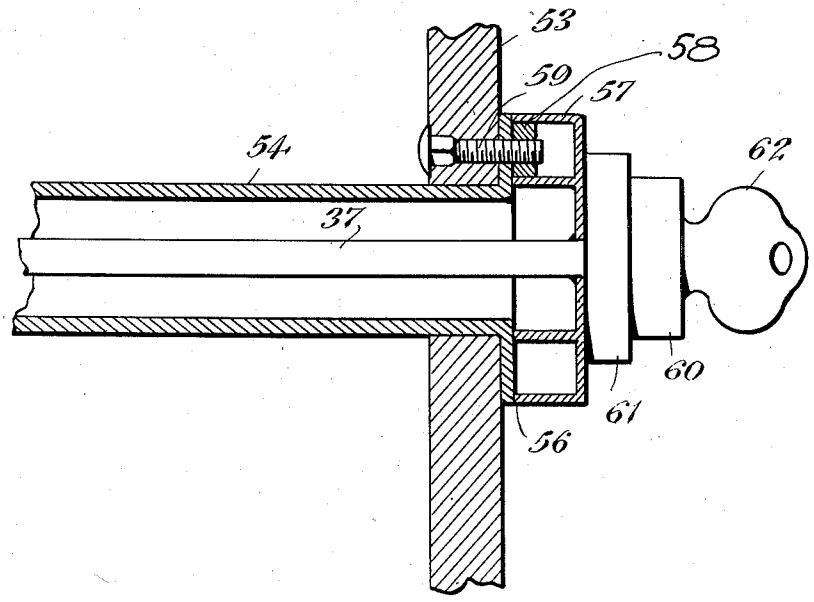


Fig. 4.



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FLUID CONTROL APPARATUS

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5 Claims. (Cl. 137—68)

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The invention relates to a locking device for a control apparatus. By "control apparatus" is meant any apparatus, such as a valve, door, gate, electric switch or the like, by which passage through a conduit, an opening or a carrier is permitted or blocked.

The locking device of the present invention has a wide range of utility, and may, for example, be used in connection with a fuel valve control mechanism, such as one employed in a liquid or gaseous fuel supply line leading to an internal combustion engine furnace or other point of fuel consumption.

One object of the present invention is to provide a new and improved locking device of the general character described, which forms a small compact unit or accessory, which may be easily fitted or attached to a control mechanism, which is easily operable to lock said control mechanism in predetermined control position, and which is effective to render said locking device and said control apparatus pick-proof.

As a feature of the present invention, the locking device is adapted to be attached as a compact unit or accessory to a control apparatus, and when attached is operable to lock said control apparatus in predetermined position and at the same time to move a part of said device into protective position to render said locking device and said control apparatus pick-proof against unauthorized entry. This protective part is separate from the locking means for the control apparatus, but is located adjacent thereto and forms a self-contained compact unit therewith.

As a further feature, the locking device is attached to the control apparatus through releasable mounting means such as screws and bolts, and the locking device is operable not only to lock said control apparatus against movement but also to move simultaneously a protective part or member on said locking device into position to render said mounting means unavailable for release. In its preferred embodiment, this protective member takes the form of a housing movable by the operation of locking the control apparatus, into position to enclose the mounting means and render it inaccessible for unauthorized tampering.

The locking device has certain of its vital or critical parts preferably manufactured of very hard alloy material, so that they cannot be easily bent, cut or broken without destroying the control apparatus.

One of the specific uses of the locking device of the present invention may be in connection

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with the carburetor of an internal combustion engine, and the locking device is operable in this connection to close positively the fuel inlet valve in the supply line to the engine and to lock said valve against unauthorized tampering. In the case where the locking device is mounted in an automobile, it would be effective in preventing theft of said automobile. In every other case where the locking device is used in connection with the control of fuel from a source of supply, said device prevents unauthorized tampering with said source of supply.

In one embodiment of the invention, the locking device is operable into locking position by manipulation near the device, while in another embodiment, the locking device although attached close to the control apparatus is operable by manipulation from a remote station. In the latter case, where the locking device is attached to the fuel line of an automobile, the remote station may be located on the dash of the automobile.

Other features and advantages of the invention herein will be noted from the following description and the accompanying drawings illustrating the preferred product embodying the features herein. In these drawings,

Fig. 1 is a top plan view of a carburetor with the accessory mounted thereon;

Fig. 2 is a sectional elevational view of the carburetor and the improved accessory and illustrating the constructional features thereof;

Fig. 3 shows the accessory in position on the carburetor and provides for the remote control locking of the accessory; and

Fig. 4 is an enlarged sectional view of one of the locking portion of the accessory.

When the novel device is incorporated in or attached to a carburetor, its main function is to shut off the fuel at a predetermined time and allow the engine to turn over a few times until most of the liquid fuel remaining in the carburetor has been exhausted. In this manner the automobile does not have fuel on which to run, and thus the motive power unit of the automobile or car becomes unusable.

It is well known that heretofore automobiles were easily stolen by a quick and easy bridging of the electrical connections so that the engine may be started without trouble. By incorporating the improved novel locking device herein, the car cannot be started and moved under its own power by an unauthorized person without a very considerable manipulation and without sizeable tools and without doing considerable repair and

without such damage to the fuel system that could not be repaired without the use of new parts. All of these operations take time and attract attention.

Referring now to Figs. 1, 2 and 3 of the drawings, the locking device of the present invention is shown assembled with or attached to a control apparatus, which in the specific form shown comprises the carburetor of an internal combustion engine having a carburetor bowl 15 associated with a valve mechanism for the supply of fuel in an automobile and a float member 16 pivoted at 17 for moving a valve 18 to its valve seat 19 to close off the supply of fuel from fuel line 20. A plate 22 covers the bowl 15 and has openings therein for receiving the ends of fastening elements such as bolts 23 and 24.

The novel locking device adapted for original installation or for accessory installation or attachment to the control apparatus, is shown in its preferred form as an accessory body 26 having a frame comprising an upright extending body portion 27 and a lower flat or plate portion 28 which preferably is affixed to the plate 22. The heads of the fastening element means 23 and 24 are usually smaller than depressions 29 and 30 formed in the plate portion 28.

This accessory body 26 may be held in position on the carburetor in any satisfactory manner so as to prevent unauthorized disassembly or removal of the accessory and in the preferred disclosure herein, a cover 31 is provided so that it will extend over the fastening elements 23 and 24. Projections from this cover 31 are positioned so that they will enter the spaces 29 and 30, thereby preventing this cover from being twisted out of position and the fastening elements 23 and 24 from being removed. This cover is also provided with a slot 32 which allows the cover to slide around the neck 33 of the accessory body 26.

In order to prevent unauthorized destruction or changes in the construction of this accessory device, the accessory body 26 and the cover 31 may be made of any suitable alloy material that will resist destruction. It is usual and preferred herein that such alloys have high hardness.

Within the upright part 27 of the accessory body 26, there is provided suitable apparatus which may be manipulated by any satisfactory means such as by a key inserted in a slot 34 of a lock 36 for the purpose of moving the float element 16 to close the valve 18 on the seat 19, and at the same time to move some of its own parts so that there will not be any exposed portion of the accessory, or the top of the carburetor that can be manipulated by unauthorized persons for disassembly purposes.

Instead of having the lock mounted on the upper part 27 of the accessory, a suitable lock may be positioned at a remote point from the installation of the accessory, all as shown in Figs. 3 and 4. In this remote control operation of the accessory parts, an arm 37 is employed to operate the moving parts of the accessory.

Inside of the accessory 26 it is preferred to provide a shaft 38 which can carry any suitable type of mechanism for moving the valve 18 against its seat 19 thereby cutting off the supply of fuel. In this preferred structure, the moving part between shaft 38 and the float mechanism 16 is preferred to be flexible and in this instance constitutes a flexible wire 39 which passes over rollers 40 and down through cover 31 and plate portion 28 and plate 22 of the carburetor to engage the pivoted arm 41 carrying the float. It is preferred to have this flexible wire 39 pass through the arm 41 and have a relatively large head 42 provided on the underside of the arm 41. An opening 43 in the arm 41 is sufficiently large to allow the arm to pivot about pivot point 17 without restricting the movement of the arm 41 when performing its normal operation of supplying fuel as demanded by the motive power unit or engine of the automobile while running. The dotted lines show in the bottom of Fig. 2 the float in a lower position and show the wire 39 in loose form and in a position that does not in any manner bind or guide or interfere with the normal movements of the float 16 and the arm 41. Thus, the valve in the fuel supply line can be moved at predetermined times to close position, and this movement may be accomplished by the key operating the shaft 38 or in operating the arm 37.

One of the preferred means of assembling the novel accessory device to the carburetor is shown in cross section in Fig. 2. In the desired construction it is preferred to provide as mounting or attaching means a heavy wall tube 44 which passes through openings in cover 31, plate portion 28 and plate 22, as they are assembled to have these openings properly in registry. If desired, this tubing may be of any alloy and of high hardness. This tube 44 may be fastened in position in any suitable manner but it is preferred to provide the ends of the tube with threads for receiving nuts 46 and 47 which when screwed tightly firmly and releasably hold the accessory on to the carburetor.

With this preferred construction of the accessory, and its assembly on the carburetor as thus far described, it will be noted that there is no way of removing the bolts or set screws 23 and 24 and if these cannot be reached then the only entrance to the interior of the accessory is the space just above the cover 31, as shown in Fig. 2. In order to prevent unauthorized release of the nut 47 after it has been screwed into holding position, there is provided a suitable protective slide member in the form of a housing and more specifically a sleeve so that at definite times it may be moved downwardly and around the nut 47 and thereby prevent unauthorized entrance into the accessory. It will be noted that the lower end of sleeve 48 goes into the countersunk part of cover 31. Thus, when the valve is closed by the operation of the accessory, no fuel can flow through the valve mechanism and the accessory cannot be tampered with to bypass the valve in its closed position.

In the most satisfactory manner of operating the flexible wire 39 and the sleeve 48 in the accessory device, it is preferred to provide a rack 49 on the end of rod 37 and to provide a rack 50 in the side of sleeve 48. A suitable sprocket wheel 51 is provided on shaft 38 and when this wheel is operated by a key in slot 34 or by the movement of rod 37, the flexible wire 39 will be wound on shaft 38 and sleeve 48 will be moved downwardly to enclose the nut 47. This sleeve 48 is also preferably made of a high strength alloy which will resist destruction by most any sizeable tool, and it is especially hardened so that the use of a hacksaw would require long and tedious work before the sleeve could be cut. Thus, there is provided a very satisfactory pickproof type of accessory for mounting on a fuel supply mechanism.

Referring now to Figs. 3 and 4 wherein the re-

mote control operation will be described, the operating arm 37 is surrounded by a heavy wall pipe or tubing 52 of alloy material of high hardness and one which will resist destruction by substantially all of the smaller and lighter tools.

In the preferred installation of this accessory as applied to a carburetor of an automobile, the piping 52 leads from the accessory 26, to a dash 53 of an automobile. The lock portion on the dash is particularly illustrated in Fig. 4 wherein the piping 54 is turned over or flanged against the front of the dash, as shown at 56. A plate 57 is provided to engage the end of the overturned or flanged portion 56 and it covers nut 58 engaging bolt 59 which holds the piping 54 in position on the dash. The lock receiving part 60 is preferred to be constructed so that it can be pushed into collar 61, to thereby move arm 37 and operate the gear 51, thereby moving wire 39 and lever 41 to close the valve. This movement acts to move sleeve 46. The engine will continue in operation until some of the gas in the bowl 15 has been consumed and then the engine will stop operation, because of lack of fuel. The key 62 of the lock may then be turned to finally lock the arm 37 in its position of having closed the valve 18.

It will be understood that various modifications and changes may be made in the preferred form of the invention herein, and such modifications and changes are to be understood as part of this invention, as outlined in the following claims.

The invention claimed is:

1. In a fluid supply line, the combination of a valve mechanism therein, automatic means for regulating the position of said valve in response to the demand for flow of fluid, a structure for supporting said valve, an accessory, means for attaching said accessory to said structure, said accessory including means for locally covering said attaching means against unauthorized access, means operable to positively close and lock said valve in closed position, and means to render said structure and said accessory substantially proof against unauthorized operation of said valve, said last mentioned means being geared to said valve closing means so as to be operated thereby to form a compact, self-contained unit therewith.

2. In a fuel supply line, the combination of a valve mechanism therein, control means for the valve in said mechanism to govern the flow of fuel therethrough, an accessory body for assembly with said mechanism, a lock associated with said body for locking its parts in predetermined positions, means for attaching said accessory body to said valve mechanism, said body when assembled on said control means covering said attaching means against unauthorized access and permitting normally said valve to operate at predetermined times, and a moving mechanism within said body operated by said lock to positively close said valve to stop the flow of fuel therethrough.

3. In a fuel supply line, the combination of a valve mechanism therein, automatic means for controlling the position of said valve in response to demands for fuel, a valve operating accessory assembled with said valve mechanism to move said valve at predetermined times to completely stop the flow of fuel therethrough, a lock associated with said accessory, means for positively holding said accessory to said automatic control means, and a movable element within the locking accessory operating to close over said holding means when said lock has been moved to its locked position.

4. An accessory for attachment to a fluid supply valve mechanism, comprising a body to be fastened to said valve mechanism, means for fastening said body to said valve mechanism, a cover for engaging a portion of said body and for covering said fastening means against unauthorized access, an engaging means for positively holding said body and said cover to said valve mechanism, a movable element carried by said accessory and movable to cover said engaging means at predetermined times, an extension member carried by said body and adapted when moved to one position to cause a valve in said valve mechanism to be closed, and an operating means carried by said body for operating said extension member to close said valve and to move said movable element to cover said engaging means to further render the accessory proof against unauthorized tampering.

5. A locking device for a control apparatus comprising means for attaching said locking device to said control apparatus, a removable key for said locking device, means responsive to the operation of said key for locking said control apparatus in predetermined position, a housing for protectively and locally shutting-in said attaching means against access, and for rendering thereby said attaching means proof against unauthorized removal in the locked position of said control apparatus, said housing being supported for movement from inoperative position to said protective shutting-in position, and means responsive to the operation of said key for moving said housing into said protective position at the same time said control apparatus is locked.

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