May 27, 1924. 1,495,696

D. A. KINNIE ET AL

MANIFOLD LOCK

Filed March 24, 1922

Fig. 1.

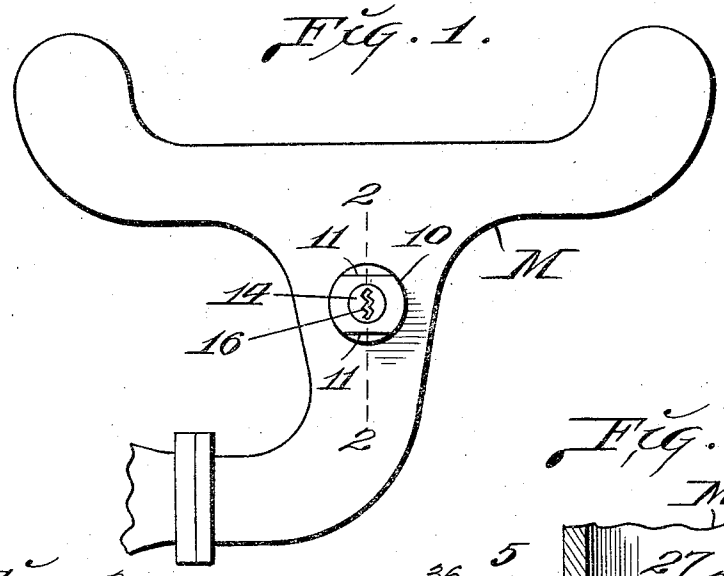


Fig. 2

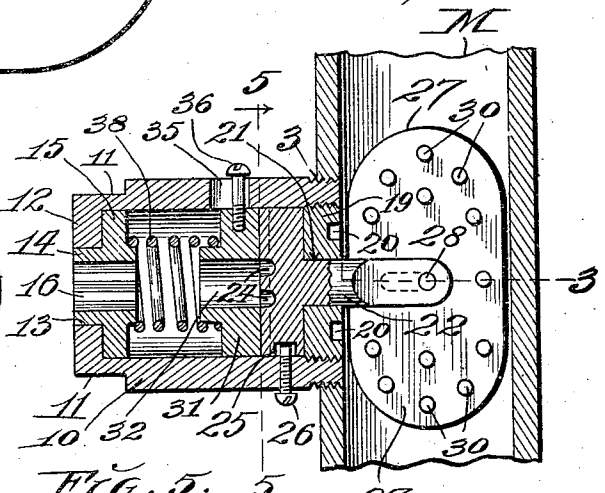


Fig. 3

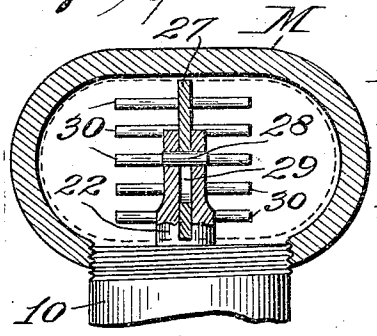
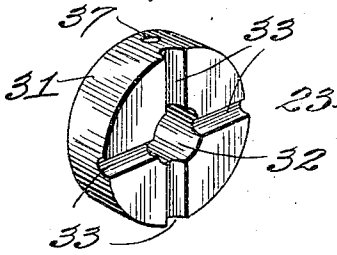


Fig. 5.

Fig. 4.



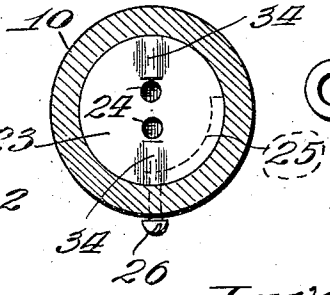


Fig. 6.



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UNITED STATES PATENT OFFICE.

DAVID ALFRED KINNIE AND DANIEL ROBERT COX, OF PASADENA, CALIFORNIA.

MANIFOLD LOCK.

Application filed March 24, 1922. Serial No. 546,275.

To all whom it may concern:

Be it known that we, DAVID A. KINNIE and DANIEL ROBERT COX, citizens of the United States, residing at Pasadena, in the county of Los Angeles and State of California, have invented new and useful Improvements in Manifold Locks, of which the following is a specification.

Our invention relates generally to locking devices, and more particularly to a combined valve and lock that is adapted to be applied to the intake manifold of an internal combustion engine for the purpose of cutting off the flow of gaseous fuel through said intake manifold, said device being capable of being locked in its closed position and consequently preventing the unauthorized use of the vehicle that is equipped with the engine to which the device is applied.

Our present invention is an improvement on the locking device disclosed in our copending application filed June 27, 1921, Serial No. 480,603.

The principal objects of our present invention are to generally improve upon and simplify the construction of the locking device disclosed in our application above mentioned, as well as other similar types of manifold and gasoline line locking devices; to provide a combined valve and lock that is relatively simple in structure, capable of being easily and cheaply produced, and which is very effective in performing its intended functions.

With the foregoing and other objects in view, our invention consists in the features of construction and combination and arrangement of parts hereinafter more fully described and claimed, reference being had to the accompanying drawings, in which

Figure 1 is an elevational view of the intake manifold of an internal combustion engine showing our combined valve and lock in position thereupon;

Fig. 2 is an enlarged vertical section taken on the line 2—2 of Figure 1;

Figure 3 is a horizontal section taken on the line 3—3 of Figure 2;

Figure 4 is a perspective view of a spring pressed member that forms a part of our improved lock;

Figure 5 is a cross section taken on the line 5—5 of Figure 2;

Figure 6 is an elevational view of the key that is utilized in the manipulation of our improved lock.

Referring by numerals to the accompanying drawings, which illustrate a practical embodiment of our invention, 10 designates a hollow cylindrical member that is provided on its peripheral face adjacent to its outer end with two or more wrench-receiving faces 11, and the opposite end of the cylindrical member is externally threaded in order that it may be screw seated in the front wall of an intake manifold such as M. The outer end of the hollow cylindrical body 10 is closed by an integral plate 12, and formed in the center of said plate is an aperture 13 that serves as a bearing for a lug 14, which latter is formed integral with a disk 15, said disk being mounted for rotation within the forward end of the chamber in member 10 directly against the inner face of disk 12. Formed through the disk 15 and lug 14 is an axially disposed key hole 16 of irregular shape in cross section, which is adapted to receive a key 17 such as is illustrated in Figure 6, said key being provided on its inner end with a pair of spaced lugs or fingers 18.

Screw seated in the inner end of the cylindrical member 10 is a disk 19 provided in its outer face with two or more apertures 20 that are adapted to receive a spanner wrench, and formed in the center of this disk is an aperture 21 that serves as a bearing for an axially disposed stem 22. This stem is formed integral with or fixed to a disk 23, which latter is arranged for rotation within the forward end of member 10 directly against the rear face of disk 19, shown as threaded into said housing. Formed in the front face of the disk 20 and adjacent to its center is a pair of recesses 24 that are adapted to receive the lugs or fingers 18 on the rear end of key 17. Formed in the edge of disk 23 is an arcuate slot 25 that extends a quarter of the distance around the circumference of said disk, and seated in the lower portion of the walls of the hollow cylindrical member 10 is a pin or screw 26, the inner end of which is positioned in said arcuate slot.

Stem 22 projects a short distance beyond the disk 19, and said projecting portion is bifurcated in order to receive a plate or disk, such as 27, the marginal outline of which corresponds with the shape of the passageway through that portion of the manifold to which the locking device is applied, said plate or disk being slightly

smaller than said passageway in order that it may turn freely therein and at the same time practically close said passageway so as to cut off the flow of gaseous fuel therethrough. Valve plate or disk 27 is connected to the bifurcated end of stem 22 by a pin 28 that is seated in the parts of the stem and which passes through a short horizontally disposed slot 29 that is formed in the valve plate 27. This slot is provided in order that the plate may be moved outwardly a short distance away from the rear end of member 10 and swung into an angular position in order that said plate may be inserted through the threaded opening in the front wall of the manifold when the locking device is applied thereto. Seated in plate 27 and projecting outwardly from both faces thereof are pins 30, the same being preferably staggered, and which pins tend to break up and materially assist in effecting a thorough mixture of the air and hydrocarbon vapor as it passes from the carbureter through the intake manifold.

Arranged within the member 10 immediately in front of disk 23 is a disk 31 through which is formed an axially disposed opening 32 of sufficient size to accommodate the body of the key 17, and formed on the inner face of this disk is a series of four radially disposed grooves 33, the members of which are arranged ninety degrees apart. These grooves are adapted to receive the oppositely disposed members of a pair of ribs 34 that are formed on the outer face of disk 23, said ribs being preferably arranged in transverse alinement with the pair of recesses 24 (see Figure 5). Formed in the upper portion of the cylindrical housing 10 is a longitudinally disposed slot 35, and passing therethrough is a pin or screw 36, the point of which engages in a recess 37 that is formed in the periphery of disk 31.

Interposed between the disks 15 and 31 is a compression spring 38. Under normal conditions or with the valve in open position so as to permit the flow of gaseous fuel through the intake manifold the parts of the lock are in position so that plate 27 occupies a vertical position within the passageway through the manifold. The valve plate 27 is maintained in its set position by the pressure exerted by spring 38 against disk 31, said disk bearing directly against the face of disk 23 with the ribs 34 positioned in the oppositely disposed members of a pair of grooves 33. Obviously this arrangement prevents the valve plate 27 from shifting or swinging into a closed or partially closed position as a result of vibration and jolting of the vehicle to which the device is applied. With plate 27 in open position, the pins 30 project outwardly into the path of travel of the gaseous fuel through the manifold, and these pins tend to break up and effect a thorough mixture of the air and hydrocarbon vapor that form said gaseous fuel.

To shift the valve plate into position to cut off the flow of gaseous fuel through the intake manifold, key 17 is inserted through key hole 16 and through aperture 32 in disk 31, and when the lugs or fingers 18 have been engaged in recesses 24 disk 23 may be rotated a quarter of a turn, thereby swinging plate 27 from a vertical to a horizontal position, as illustrated in Figure 3, and consequently closing the passageway against the flow of sufficient gaseous fuel therethrough to effect an operation of the engine.

As disk 23 is thus rotated, disk 31 will be moved forwardly a short distance against the resistance offered by spring 38, which movement is effected by the bearing of the ribs 34 against the surfaces of the slots in which said ribs are positioned, and this forward sliding movement of disk 31 is permitted by the arrangement of the pin or screw 36 in the slot 35. When the plate 27 has been turned in to closed position or in a plane substantially at right angles to the plane it occupies while in open position, disk 31 will be forced against the surface of disk 23 by spring 38, so that the ribs 34 will re-engage in a pair of the grooves 33 and plate 27 will be retained in its shifted position until again actuated by the key 17.

While we have shown our improved valve and lock associated with the intake manifold of an internal combustion engine, it will be understood that with minor changes and particularly in the form of the valve plate 27 said locking device may be utilized in connection with the conduit or tubular member that supplies gasoline to a carbureter.

A combined valve and lock of our improved construction is comparatively simple, may be easily and cheaply produced, and when locked prevents the unauthorized use of the vehicle to which it is applied.

It will be understood that minor changes in the size, form and construction of the various parts of our improved valve and lock may be made and substituted for those herein shown and described without departing from the spirit of our invention, the scope of which is set forth in the appended claims.

We claim as our invention:

1. The combination with an intake manifold, of a housing secured to said manifold, a pair of disks arranged within said housing, which disks have interengaging parts, one of said disks being mounted for rotary movement upon an additional disc threaded into said housing, and a valve plate carried by said rotary disk and arranged within the gaseous fuel passageway through the manifold.

2. The combination with an intake manifold, of a housing secured to said manifold,

a pair of disks arranged within said housing, which disks have interengaging parts, one of said disks being mounted for rotary movement upon an additional and relatively fixed disc, a valve plate carried by said rotary disk and arranged within the gaseous fuel passageway through the manifold, and a spring bearing against the other disk for holding the same in yielding engagement with the rotary disk.

3. The combination with an intake manifold, of a housing secured to said manifold, a pair of disks arranged within said housing, which disks have interengaging parts, one of said disks being mounted for rotary movement upon an additional member provided with a bearing aperture, a valve plate carried by said rotary disk and arranged within the gaseous fuel passageway through the manifold, and said rotary disk being provided with a key-receiving recess.

4. The combination, with an intake manifold, of a housing secured to said manifold, a pair of disks arranged within said housing, which disks have interengaging parts, one of said disks being mounted for rotary movement upon a relatively fixed member provided with a bearing aperture, a valve plate carried by said rotary disks and arranged within the gaseous fuel passageway through the manifold, a spring bearing against the other disk for holding the same in yielding engagement with the rotary disk, and said rotary disk being provided with a key-receiving recess.

5. The combination with an intake manifold, of a housing secured thereto, a key-controlled member arranged for rotary movement within said housing and upon an apertured plate therein, a valve plate connected to said key-controlled member and positioned within the passageway through the intake manifold, and members projecting from said valve plate.

6. The combination with an intake manifold, of a housing connected thereto, a pair of disks arranged within said housing, one of which disks is arranged for rotary movement upon an additional plate fixed within said housing, the other disk being arranged for longitudinal sliding movement, a spring bearing against the last mentioned disk for maintaining the same in engagement with the rotary disk, the adjacent faces of said disks having interengaging parts, and a valve plate carried by the rotary disk and arranged within the passageway through the manifold.

7. The combination with an intake manifold, of a housing secured to said manifold, a pair of disks arranged within said housing, which disks have interengaging parts, one of said disks being mounted for rotary movement, a valve plate carried by said rotary disk and arranged within the gaseous fuel passage way through the manifold, and said rotary disk being provided with a key-receiving recess, and being rotatable upon a disk threaded into said housing.

8. The combination, with an intake manifold, of a housing secured to said manifold, a pair of disks arranged within said housing, which disks have interengaging parts, one of said disks being mounted for rotary movement, a valve plate carried by said rotary disks and arranged within the gaseous fuel passageway through the manifold, a spring bearing against the other disk for holding the same in yielding engagement with the rotary disk, and said rotary disk being provided with a key-receiving recess, and being rotatable upon a disk threaded into said housing.

In testimony whereof we have signed our names to this specification.

DAVID ALFRED KINNIE.
DANIEL ROBERT COX.