April 23, 1963 J. W. WYCHE 3,086,384

KEY LOCK ACCESSORY

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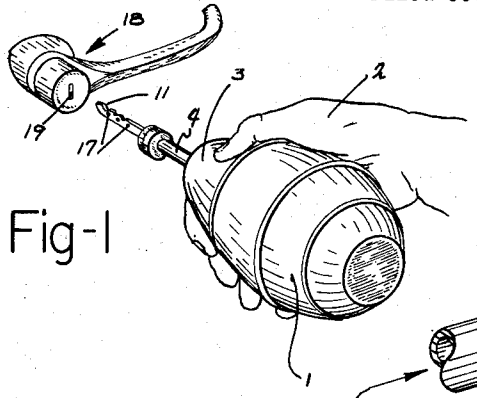


Fig-1

Fig-5

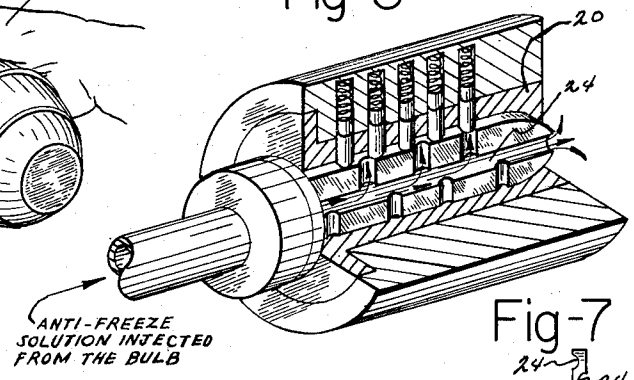
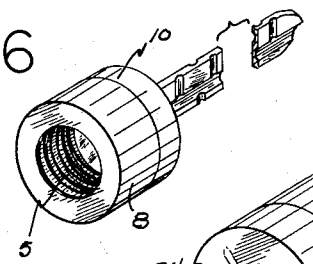


Fig-7

Fig-6



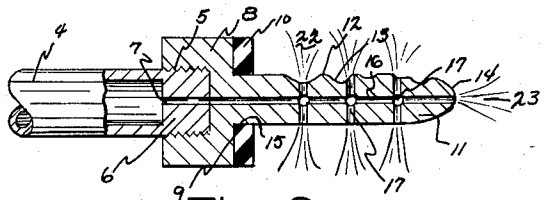


Fig-2

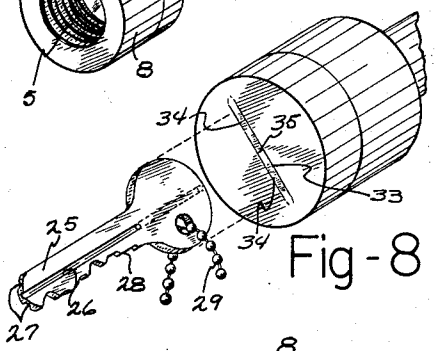


Fig-8

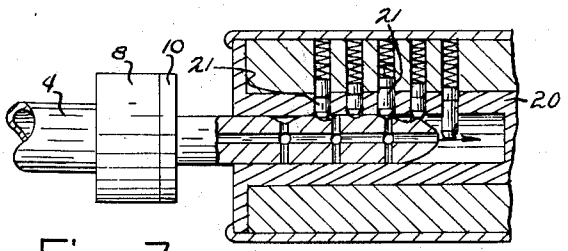


Fig-3

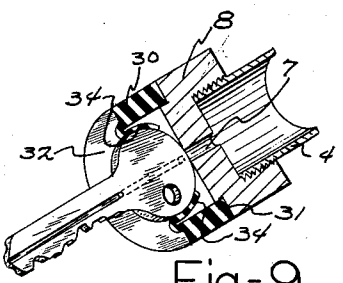


Fig-9

Fig-10



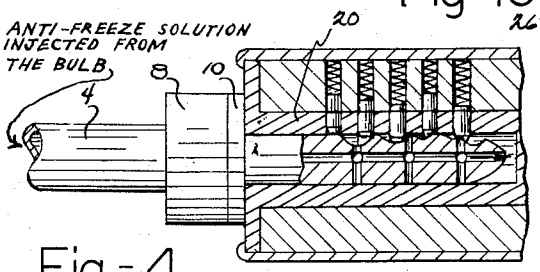


Fig-4

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KEY LOCK ACCESSORY

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The present invention relates to locks and more especially to the tumbler type of lock which employs a number of plungers contained within a barrel. These locks are used in great number on automobile doors and are operated by a flat or grooved "Yale" type of key. The purpose of the invention, in general, is to prevent freezing of the complicated lock parts which otherwise would impede the operation of the plungers or tumblers when the key is inserted to move the tumblers in a selected manner.

The door lock of an automobile from time to time, collects moisture from the dampness of the atmosphere or from driving rain. The moisture creeps to the innermost parts of the lock, in and around the tumblers. In freezing weather, this water turns to slush, or even ice, which often prevents the operation of the sliding mechanism. On occasion the ice will partially close up the keyhole.

It has been customary in order to prevent the entrance of water in a liquid or gaseous state to provide a swingable flap over the keyhole. But over long periods of time it has been found that notwithstanding the presence of a flap, a certain amount of moisture will still enter the locks from around the flap and in sufficient amount to prevent the tumblers from operating on a very cold day. Another remedy that has been tried is to hold a lighted match or cigarette lighter under the lock temporarily to thaw it out. But this simple melting operation still leaves the moisture within the lock with the possibility of again freezing and thus necessitate a second thawing-out effort.

Another object is to provide means for rendering moisture in the lock immune to freezing over considerable periods of time.

In brief, my invention contemplates the use of an "anti-freeze" solution injected at various times throughout the winter, perhaps twice, to combine with the residual moisture within the lock and reduce the freezing point of the moisture. The anti-freeze is preferably injected through a pressure device which forces the material into the remote recesses of the lock to assure that all moisture, however remote, has its freezing temperature considerably lowered.

The above objects and features of my invention will be better understood when reference is made to the following description and accompanying drawings, in which:

FIGURE 1 is a perspective view of the improved injection gun for introducing the anti-freeze into the keyhole;

FIGURE 2 is an enlarged sectional view of the gun nozzle in a key form showing the expulsion of an anti-freeze;

FIGURE 3 shows the key form of nozzle partially inserted into the key block;

FIGURE 4 is a view similar to FIGURE 3 but showing the nozzle inserted to its utmost depth;

FIGURE 5 is a perspective view of the key block, partly cut away to show the entrance of a different form of nozzle and the manner in which this nozzle presses against the tumblers to cause all of the residual moisture to mix with the anti-freeze solution;

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FIGURE 6 is a fragmentary view in perspective of the nozzle end of the gun and its support as employed in the key block of FIGURE 5;

FIGURE 7 presents an end view of the nozzle of FIGURE 6 and depicting the position of the grooves or passageways running along the length of the key;

FIGURES 8 and 9 are perspective views, partly in section, and illustrating the use of an ordinary automobile door key as a nozzle in connection with a special form of support; while

FIGURE 10 represents an enlarged end view of the ordinary automobile door key shown in FIGURES 8 and 9.

Referring to FIGURES 1 to 4, reference character **1** designates a squeezable bulb which may be made of rubber or flexible plastic material. An imaginary hand **2** is on the point of compressing the bulb. This bulb terminates in a hub portion **3** having a hole therein (not shown) which is adapted tightly to accommodate a screw threaded end (not shown) of a hollow rod or support member **4**.

If desired, a metal collar or sleeve may be tightly driven into the hub portion **3**, the sleeve being provided with screw threads for receiving the threaded end of the hollow rod or pipe. This pipe may conveniently be about 2" long and at the threaded end be provided with a nut for screwing or otherwise tightening the pipe in the end of the bulb.

The opposite or outer end of the pipe **4** is provided with screw threads **5** (FIGURE 2) and this end is closed by a solid wall **6** except for a small opening **7** extending longitudinally through the wall. The threaded end **5** receives the threads of a round collar **8** having a shoulder **9** against which abuts a thick round rubber washer **10**.

From the end of the collar **8** there extends a flat metal portion **11** shaped along one edge similar to a master key with projections **12** and depressions **13**, also a rounded end **14**, the washer **10** having a slotted opening **15** for tightly receiving the inner end of the flat portion **11** which is not serrated. The key portion **11** is provided along its center or axis with a small opening extending as far as the tip of the simulated key portion. There are crosswise miniature openings **17** preferably emerging at the depressions **13** and all in communication with the central bore **16**.

The serrations **12, 13** on the edge of the key, the upper edge as shown in FIGURE 2, are arranged in skeleton form so that the key portion can fit practically all of the key blocks now being used on doors of automobiles. The key block, handle and the support bushing for attaching the assembly to an automobile door is generally indicated at **18** in FIGURE 1. A keyhole **19** is also illustrated for receiving the skeletonized key **11**.

FIGURES 3 and 4 show the progressive movement of the simulated key into the key block. The latter is illustrated at **20**. There are five spring-pressed tumblers **21** of ordinary construction in the block, the lower ends of these tumblers having a round surface in order readily to be pressed upwardly when the serrated edge of the key portion **11** is pressed inwardly.

The rounded ende **14** of the key portion **11** serves successively to press the tumbler upwardly against their springs and these tumblers then are urged downwardly by their spring when the key is inserted for the full distance as shown in FIGURE 4. The rubber washer **10** squarely

abuts the block **20** for reasons that will be explained hereinafter.

In operation, it is necesary to fill the bulb **1** with an anti-freeze mixture from any convenient source such as from the radiator of the automobile which has been winterized. This anti-freeze may comprise any of the anti-freezing solutions found on the market, preferably of a glycol base. Any suitable form of anti-freeze may be employed of the type coming within the definition of having a low molecular weight polyhydroxy water miscible, non-cororsive organic glycol or alcohol.

For introducing the anti-freeze in the bulb, particularly if the source of the solution is taken from an automobile radiator, it has been found desirable to unscrew the collar **8** from the pipe **4**. The latter is then dipped into the radiator solution and after squeezing the bulb **1**, it is then released and the fluid will enter through the bore **7**. Thereupon, the collar **8** and its key-like extension are screwed on to the pipe **4**.

The key portion is then introduced into the keyhole **19** as shown in FIGURES 3 and 4 until the rubber washer **10** abuts the end of the key block **20**, thereupon when the bulb is again squeezed, the anti-freeze solution is forced through the pipe **4**, the bore **7**, the passageway **17**, where it will emerge as indicated in FIGURE 2 as sprays with considerable velocity and thus the anti-freeze is forced into the slight clearance between the tumblers **21** and their respective miniature cylinders. These sprays are indicated in FIGURE 2 by the reference character **22**. It will be noted that there is a spray **23** also emerging from the end of the simulated key in order to put a film of this fluid around the slot in the key block.

I have found that by applying the anti-freeze mixture several times during the winter to the key openings in the various door locks of an automobile which forces the fluid to mix with any moisture which has collected within the lock, due perhaps, to residual humidity or to a driving rain, that a sudden cold snap will not allow the moving parts within the lock to freeze.

It will be understood that the improved bulb and key-like appendage is used mainly for preventing the moisture within the lock from freezing, although the device has some application in cases where the parts have already frozen but one is still able to insert the key portion. By preventing the moisture from whatever cause from freezing, the key block would never be in a position to become inoperative even though the introduction of the anti-freeze may be made only two or three times a season.

I have found that the anti-freeze mixture, particularly those of a glycol base, does not tend to rust the moving parts of the key block and, what is equally important, the mixed solution seems to retain its potency within the block for long periods of time.

I am aware of the fact that some automobile manufacturers provide swinging metal flaps over the keyholes in an attempt to prevent the entrance of moisture during both winter and summer. While these flaps do keep out a certain amount of the moisture, nevertheless enough water in vapor form will still creep into the block and the metal flap tends to keep out the warm air which might otherwise tend to evaporate the trapped moisture. Thus, in this particular case, the use of the anti-freeze injecting gun again becomes necessary.

It is sometimes convenient to inject the anti-freeze in the manner stated and employing the improved device whenever the car is being lubricated and especially when the anti-freeze is being added to the radiator at the beginning of the winter season. In this way, the "winterizing" of the lock is not overlooked.

FIGURES 5, 6 and 7 show a key nozzle which has a straight or plane upper edge, i.e. without serrations, and in which longitudinal grooves **24** are provided at each side of the flat nozzle, somewhat similar to the grooves that are normally provided in the ordinary automobile door key. Due to the straightness of the upper edge of the simulated key portion, there will be a greater clearance between this edge and the upper edge of the slot within the key block **20** so that as the gun is pressed against the outer end of the block and the bulb pressed, the anti-freeze solution finds easy access along the slot from one tumbler to the other. The solution is also preferably ejected from the end of the key element as indicated.

One advantage of the device shown in FIGURES 5 and 7 is that the slots **24** may be somewhat larger and therefore carry a little more anti-freeze than the small passageway **16** of the key portion shown in FIGURE 2 and the slots may be easier to provide.

In FIGURES 8 and 9 there is shown the application of my improved anti-freeze injecting gun to the ordinary and individual key for an automobile door. This key indicated at **25** has a groove **26** midway between the edges of the key and grooves **27** spaced apart at the other side of the key. The serrated edge **28** is intended to conform to the specific requirements of an individual lock, the personal nature of which is indicated by the key chain **29**.

Whereas these grooves **26**, **27** normally extend only for a limited portion of the length of a typical key, in accordance with my invention I propose to extend these grooves, at little or no extra cost, for the entire length of the key so that there will be a continuous grooved passageway at one side of the key throughout the entire length and two passageways on the other side of the key.

For receiving the key edgewise into the improved injector gun, I provide a thick heavy washer **30** which fits snugly (and may be glued therein) in a shouldered portion **31** of the collar **8**. The washer **30** may be comprised of rubber and the outer end is provided with a fairly thick wall **32** of rubber which has a slitted opening **33** therein (FIGURE 8). This opening is closed by two integral flap portions **34** which meet at the middle **35** and are adapted to be pressed inwardly to expose the opening **33** when the key **25** is inserted edgewise into the washer. The position of these flaps **34** upon the insertion of the key is shown in FIGURE 9.

The rubber material out of which the washer **30** is made should be such that upon removing the key endwise from the washer, the flaps **34** will close and present almost a hermetic seal. However, when the key is pressed endwise into the miniature flaps **34** temporarily to open them, there is no space around the hand portion of the key and the end wall. Consequently, when the bulb **1** is squeezed, the anti-freeze solution passes through the pipe **4**, the opening **7** and through the passageways **26**, **27** that have already been provided in many standard forms of door keys.

Due to the tight fit of the serrated edge **28** and the key tumblers of a specific lock and the tight fit of the head or hand portion of the key with respect to the closeable flaps **34**, little or none of the solution is lost out of the keyhole. It will be understood that in this case the solution emerges merely from the end of the key, although if desired cross passageways can still be provided in regulation keys and the latter will serve their normal purpose of locking and unlocking the door just as effectively as before.

In order to extend the grooves **26**, **27** through the entire length of the key as set forth hereinbefore, it may be desirable to elongate the washer **30** and allow the key to enter the flaps to such a distance that the beginning of the grooves **26** of a regulation key will still be in communication with the fluid passing through the bore **7**.

From the foregoing it is evident that I have disclosed a method and apparatus by which the annoying problem of lock freeze-up can be avoided, particularly on automobiles that are permitted to stay out of doors during freezing weather. The improvement avoids the necessity of heating the lock by matches, candle, cigarette lighter or by any form of electrical heater since its purpose is not to thaw out a frozen lock but to prevent

the lock from freezing. The fluids may be conveniently applied once or twice every winter and the fluid can be conveniently taken from the radiator, if necessary, while the car is being serviced.

It will be understood that various modifications and arrangements in structure could be made without departing from the spirit of my invention and, accordingly, I desire to comprehend such modifications and substitutions of equivalents as may be considered to come within the scope of the appended claims.

Having thus fully described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. A freeze-preventing device for a key lock comprising in combination, a squeezable bulb, a hollow support member projecting therefrom and a nozzle detachably secured to said member, said nozzle having the general shape and size of a key for insertion into a lock on an automobile door, said nozzle having longitudinal and transverse passageways over its length and terminating in openings, said passageways being in communication with the interior of the bulb through said hollow support member, an anti-freeze solution in said bulb whereby upon squeezing the bulb, the solution is forced through the support member into the longitudinal and transverse passageways and out through the openings when the nozzle is inserted into the lock.

2. A freeze-preventing device for a key lock comprising means for injecting an anti-freeze solution into the key lock, said means including in combination, a squeezable bulb containing an anti-freeze solution, a pipe extending from the bulb and a key shaped nozzle detachably secured to said pipe, said nozzle being provided with lengthwise and transverse passageways in communication with said pipe whereby when the nozzle is inserted into the keyhole of a lock and the bulb squeezed, the anti-freeze solution is forced through the pipe and said passageways to be ejected at the longitudinal and transverse edges of the key shaped nozzle into the moving parts of the lock.

3. A freeze-preventing device for a key lock comprising, in combination, a pipe having an extension of flat, narrow configuration and having a serrated edge, and of a length, shape and size as to fit into the keyhole of a door lock, said extension being provided with openings in communication with said pipe, liquid in said pipe having a freezing temperature lower than that of water and means for applying pressure to said liquid when the key extension is inserted into said key lock.

4. As an article of manufacture, a freeze-preventing device for a key lock, said device comprising, in combination, a pipe having a key extension adapted to be inserted into a key lock, said extension being serrated along one edge to simulate the corrugations of an individual key, openings extending longitudinally and transversely through the key extension, said openings being in communication with the interior of said pipe, a squeezable bulb secured to said pipe, an anti-freeze mixture in said bulb, the interior of the bulb being in communication with the interior of said pipe and the openings in the key extension whereby when the bulb is squeezed, the mixture is forced into the pipe and out through the openings in the key extension.

5. A freeze-preventing device for a key lock having operating tumblers, said device comprising, in combination, a pipe closed at one end except for a small opening, a collar secured to said one end of the pipe and having an opening in register with the small opening in the pipe, a flat extension on said collar having a longitudinal passageway in line with the openings in the collar and pipe, one edge of said extension being serrated to simulate the shape of a key and the extension having the thickness, length and shape as loosely to fit the keyhole of said lock and thereby adapted to be inserted into a keyhole as far as the tumblers thereof, and means for applying an anti-freeze solution under pressure to the

open end of said pipe in order to cause said solution to flow through said openings and passageway into the key lock when said flat extension is inserted the full distance therein.

6. A freeze-preventing device for a key lock having operating tumblers, said device comprising, in combination, a pipe closed at one end except for a small opening, a collar secured to one end of the pipe and having an opening in register with the small opening in the pipe, a flat extension on said collar having a longitudinal passageway in line with the openings in the collar and pipe, a washer positioned about said flat extension and abutting said collar, one edge of said extension being serrated to simulate the shape of a key and the extension having the thickness, length and shape as loosely to fit the keyhole of said lock and thereby adapted to be inserted into the keyhole as far as the tumblers thereof, and means for applying an anti-freeze solution under pressure to the open end of said pipe in order to cause said solution to flow through said openings and passageway into the key lock when said flat extension is inserted the full distance therein.

7. A freeze-preventing device for a key lock having operating tumblers, said device comprising, in combination, a pipe closed at one end except for a small opening, a collar secured to one end of the pipe and having an opening in register with the small opening in the pipe, a flat extension on said collar having a longitudinal passageway in line with the openings in the collar and pipe, a washer positioned about said flat extension and abutting said collar, one edge of said extension being serrated to simulate the shape of a key and the extension having the thickness, length and shape as loosely to fit the keyhole of said lock and thereby adapted to be inserted into the keyhole as far as the tumblers thereof, and means for applying an anti-freeze solution under pressure to the open end of said pipe in order to cause said solution to flow through said openings and passageway into the key lock when said flat extension is inserted the full distance therein, said passageway comprising an opening which extends longitudinally through said extension and having an exit at the end of the extension.

8. A freeze-preventing device for a key lock having operating tumblers, said device comprising, in combination, a pipe closed at one end except for a small opening, a collar secured to one end of the pipe and having an opening in register with the small opening in the pipe, a flat extension on said collar having a longitudinal passageway in line with the openings in the collar and pipe, one edge of said extension being serrated to simulate the shape of a key and thereby adapted to be inserted into the keyhole of a lock as far as the tumblers thereof, and means for applying an anti-freeze solution under pressure to the open end of said pipe in order to cause said solution to flow through said openings and passageway into the key lock when said flat extension is inserted the full distance therein, said passageway comprising a plurality of openings, of which one at least, extends longitudinally through said extension, and at least one passageway extends transverse across said extension, all of said openings having exits at the edge and end of the extension.

9. A freeze-preventing device for a key lock having operating tumblers, said device comprising, in combination, a pipe closed at one end except for a small opening, a flat extension secured to said pipe having a longitudinal passageway with an opening in the pipe, said extension being serrated along at least one edge to simulate the configuration of an individual key, a squeezable bulb secured to the end of the pipe opposite from said extension, an anti-freeze mixture in said bulb, the interior of the bulb being in communication with the interior of said pipe in order to cause said mixture as a solution to flow through said opening in the pipe and the passageway into the key lock when said extension is inserted into the lock, said passageway comprising a plurality of openings, one

of which, at least extends longitudinally through said extension, and at least one passageway extends transversely across said extension, all of said openings having exits in the edge and end of said extension.

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