May 23, 1933. E. G. CLARK 1,911,060

SEALING DEVICE

Filed May 16, 1932

Fig.1.

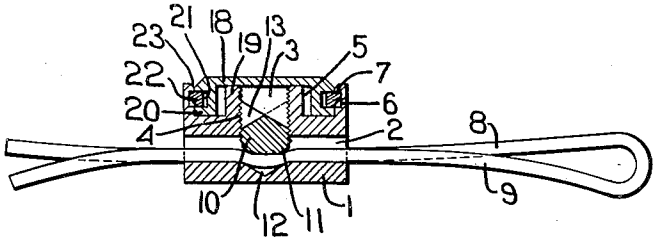


Fig.2.

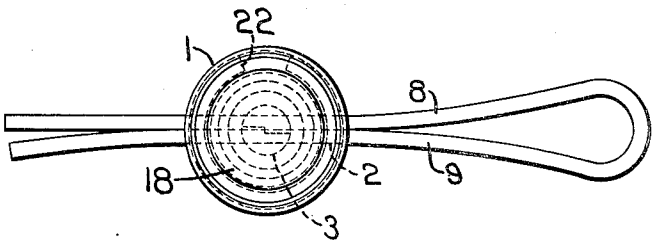


Fig.3.

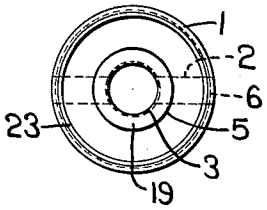


Fig.4.

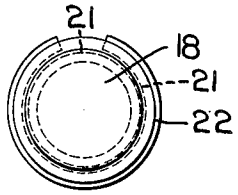
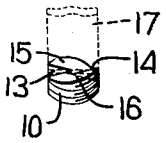


Fig.5.



Inventor.
Egbert Greely Clark
by Heard Smith & Tennant.
Attys.

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UNITED STATES PATENT OFFICE

EGBERT GREELY CLARK, OF MELROSE, MASSACHUSETTS

SEALING DEVICE

Application filed May 16, 1932. Serial No. 611,477.

This invention relates to improvements in seals, such as are employed upon keepers, or other devices, which are employed to prevent the opening or manipulation of devices which are intended to remain in locked position.

Seals for this purpose are commonly employed upon the lock of devices for freight cars, mail bags, and various other types of closures. They are also employed upon valves which are normally intended to remain in closed or open position.

The present invention will be more particularly described in connection with the locking devices for valves of automatic sprinkler systems which are normally intended to be maintained in open position, but it will be understood that the seal embodying the present invention may be employed in connection with any device or apparatus for which it is adapted.

In automatic fire extinguishing systems, such as sprinkler systems common in use, valves are provided in the sprinkler lines which are adapted to be closed temporarily to permit the setting or replacement of fusible devices forming part of the sprinkler heads and which in the presence of sufficient heat will be released to open the sprinkler heads and thereby discharge extinguishing fluid upon the fire. After the fusible devices have been installed or replaced the valves in the pipes are opened to permit the fire extinguishing fluid to pass to the sprinkler heads. It is exceedingly essential that such valves remain normally in open position in order that the sprinkler heads may be properly supplied with water at any time one or more of the fusible devices are blown. In order to insure that such valves remain in properly open position, inspectors are required frequently to observe the condition of the valves.

The present invention relates to a sealing device for a keeper or keepers which usually are in the form of wire loops inserted through suitable portions of the valve stem or valve head, and connected to an adjacent stationary rigid member, and which are operable to prevent the closing of the valve for breaking and removing the keeper.

One of the objects of the present invention is to provide a novel form of seal adapted to be permanently secured to the wire keepers, or other device to be sealed, which can be readily installed and which when once installed cannot be removed.

Another object of the invention is to provide a seal of the character above described so constructed as to permit permanent application of a cap to conceal the locking device of the seal, so that it cannot be tampered with, and also of such construction that the cap when once applied cannot be removed.

In the use of the present invention the valve is opened after the fusible devices upon the sprinkler heads have been properly set, the keeper applied to the open valve to prevent it from being closed, and the seal applied to the keeper. Thereafter, the inspector, after examining the valve to see that it is properly open and sealed in open position, may apply to the seal a cap, thereby preventing possible tampering with the locking device of the seal. The cap desirably is provided with a suitable number of indicia identifying the inspector, thus insuring greater care of inspection and avoiding possible negligence by the inspector whose duty it is to examine each and every valve of the installation.

These and other objects and features of the invention will more fully appear from the following description and the accompanying drawing, and will be particularly pointed out in the claims.

In the drawing:

Fig. 1 is a vertical sectional view of a seal embodying the present invention shown in the position in which it locks the strands of a wire keeper;

Fig. 2 is a plan view of the same;

Fig. 3 is a plan view of the body portion of the seal with the cap removed and with the locking screw absent;

Fig. 4 is a plan view of the cap showing its locking spring in expanded position; and,

Fig. 5 is a perspective view of a locking screw which is rotatable in one direction only, illustrating in dotted lines a portion of a propelling tool, such as a screw driver, in

position to rotate the screw in a direction to advance the same.

The illustrative embodiment of the invention shown in the drawing comprises a seal having a preferably solid cylindrical body 1 provided with a transverse recess 2, preferably extending therethrough, and a preferably axial bore 3 provided with a screw threaded wall 4. The body 1 desirably has an annular channel 5 extending downwardly from its upper face with the outer wall undercut to provide a groove 6 having at its upper edge a flat shoulder 7. A keeper, desirably is in the form of a looped wire adapted to be passed through the device to be locked by the seal and the strands 8 and 9 of the loop are inserted through the recess 2 in the body portion. The seal is provided with a suitable locking device which is adapted to be moved in a direction only to lock the keeper, or other device to be sealed, firmly within the recess 2.

In the preferred construction shown the locking device comprises a short screw 10 having a tapered end 11 to engage the keeper, or other device to be locked, and the base 1 is provided with a recess 12 which desirably is an extension of the bore 3 beyond the recess 2, so that when the locking device is set up firmly the wire legs 8 and 9 will be forced partially into the recess 12 and slightly bent, thereby more effectually preventing their withdrawal from the recess. The locking device or screw is provided with an upper portion or head which is adapted to be engaged by a propelling tool only when the tool is rotated in a direction to advance the locking device into clamping relation to the keeper or other device to be locked.

In the preferred construction the screw is provided with substantially radial vertical shoulders 13 and 14, with inclined surfaces 15 and 16 upon the opposite side of and approaching the shoulders 13 and 14 respectively. The shoulders are offset sufficiently from radii to permit the bit 17 of a screw driver, or other propelling tool, positively to engage the shoulders when the propelling tool is rotated in a direction to advance the screw, while the inclined surfaces 15 and 16 are inclined at such angle as to prevent effective engagement of the screw driver with the screw when the propelling tool is rotated in the opposite direction.

Desirably the screw is so short that when it is in locking engagement with the keeper, its upper end or head will be located so far within the bore that a punch, nail, or other device, cannot be inserted into engagement with the inclined surface of the upper end of the screw at an angle which would permit rotation of the screw by pressure or impact upon the punch or nail.

By reason of the construction above described, therefore, the locking device is permanent and cannot be removed. Obviously other forms of locking devices adapted to be propelled only in one direction may be employed within the spirit and scope of the invention.

The invention further comprises a non-detachable cap so constructed that it may be applied to cover the bore containing the locking device and further protect the locking device from tampering. Any suitable non-detachable cap may be employed for this purpose. As illustrated herein the cap comprises a cylindrical metallic member 18 having a centrally recessed portion adapted to enclose the central portion 19 of the body and fit within the outer wall of the channel of said body. The cap thus formed may be described as being provided with a peripheral flange 20 adapted to fit within the channel of the body. The flange is provided with an annular groove 21 and an expanding member, preferably a ring 22 of resilient wire, is located within the groove 21. The ring 22 is of a size slidably to fit within the groove 21 and is so constructed that when in place approximately half of its diameter projects beyond the periphery of the flange 20, so that when the cap is forced inwardly into the recess 5 of the body, the ring will expand sufficiently to engage beneath the upper shoulder of the groove 6 in the wall of the channel, thereby preventing removal of the cap. The ring 20 desirably is of rectangular cross section presenting a flat upper face to engage the upper shoulders of the grooves 6 and 21. The lower outer corner of the ring 22 desirably is beveled off to provide an inclined face which will facilitate the entry of the ring into the channel of the body when the cap is applied thereto.

The upper edge of the outer wall of the channel desirably is provided with a bevel 23 inclined toward the channel, so that when the cap is applied to the channel the expansible wire 22 will engage the inclined face 23 so that with light pressure the cap may be forced downwardly sufficiently to enable the spring to expand into the groove 6 in the outer wall of the channel, so that it will be partially within the channel wall and partially within the groove in the flange of the cap, as illustrated in Fig. 1. The cap will, therefore, be locked permanently to the body. The peripheral edge of the cap fits within the outer wall of the channel 5 and below the plane of the top thereof and desirably also is beveled to prevent any possible engagement of a tool which might be used to pry off the cap.

It will be obvious from the above description and illustration in the drawing that the keeper, or other device to be sealed, may be readily inserted through the recess 2 in the body, or sufficiently therein to be properly engaged by the locking device, that when the locking screw, or other locking device, is

set up, the keeper, or other device, will be permanently clamped therein, and that when the seal is applied, any possible tampering with the screw, or other locking device, will be prevented.

As heretofore stated, the cap may be provided with suitable insignia designating the inspector or person applying the seal, thereby placing upon him the responsibility of insuring a proper sealing of the device to which the seal is applied.

While the preferred body of the seal as herein described is of solid metal, which has been bored and tapped for the locking screw, it will be understood that other constructions may be employed of forged or stamped metal, or of other suitable infrangible material, and that various modifications in form, construction and arrangement of parts may be employed within the meaning and scope of the following claims.

Having thus described the invention, what is claimed as new, and desired to be secured by Letters Patent, is:

1. A seal comprising a body having a recess to receive the device to be sealed, and provided with a bore, having a screw threaded wall, communicating with said recess and with a channel surrounding said bore having an undercut wall, a clamping member mounted in said bore movable only in a direction to engage and lock said device, and a cap fitting within said channel provided with means expansible below said undercut wall operable to prevent removal of said cap.

2. A seal comprising a body having a recess to receive the device to be sealed, and provided with a bore, having a screw threaded wall, communicating with said recess and with a channel surrounding said bore having an undercut wall, a clamping member mounted in said bore movable only in a direction to engage and lock said device, a cap having a flange slidably fitting with said channel and having a peripheral groove, and a spring ring within the channel of said cap operable when the flange of the cap is inserted within the channel to expand into the undercut of said wall and thereby permanently lock the cap upon said body.

3. A seal comprising a body having a recess to receive the device to be sealed, and provided with a bore, having a screw threaded wall, communicating with said recess and with a channel surrounding said bore having an undercut wall, a clamping member mounted in said bore movable only in a direction to engage and lock said device, a cap having a flange slidably fitting with said channel and having a peripheral groove, and a spring ring of rectangular cross section, having the lower portion of its outer wall beveled inwardly and of larger diameter than the cap, within the channel of said cap operable when the flange of the cap is inserted within the channel to expand into the undercut of said wall and thereby permanently lock the cap upon said body.

4. A seal comprising a body having a recess to receive the device to be sealed and provided with a bore communicating with said recess and with a channel surrounding and co-axial with said bore, a clamping member mounted in said bore movable only in a direction to engage and lock said device, a cap having a flange slidably fitting within the outer wall of said channel, and resilient means within said channel operable to engage said body and the flange of said cap when the cap is forced into assembled position and lock the same against removal.

5. A seal comprising a body having a recess to receive the device to be sealed and provided with a bore communicating with said recess and with a channel surrounding and co-axial with said bore, a clamping member mounted in said bore movable only in a direction to engage and lock said device, a cap having a flange slidably fitting within the outer wall of said channel, and resilient means within said channel operable to engage said body and the flange of said cap when the cap is forced into assembled position and to lock the same with the periphery of said cap wholly within the outer wall of said channel, thereby to prevent effective engagement of the releasing tool with said cap.

In testimony whereof, I have signed my name to this specification.

EGBERT GREELY CLARK.