

[54] **PROTECTION DEVICE AND TOOL FOR FIRE HYDRANT**[76] Inventor: **Louis Bello**, 280 Henderson St., Jersey City, N.J. 07302[22] Filed: **Mar. 5, 1973**[21] Appl. No.: **337,913**[52] U.S. Cl. **70/163; 137/296; 138/89; 220/323**[51] Int. Cl.² **B65D 55/14**

[58] Field of Search 137/296, 800, 300, 294; 85/3 R; 292/11, 29; 70/163, 167, 169, 171; 215/360; 220/55 E, 55 J, 55 Y, 24.525, 323; 138/89

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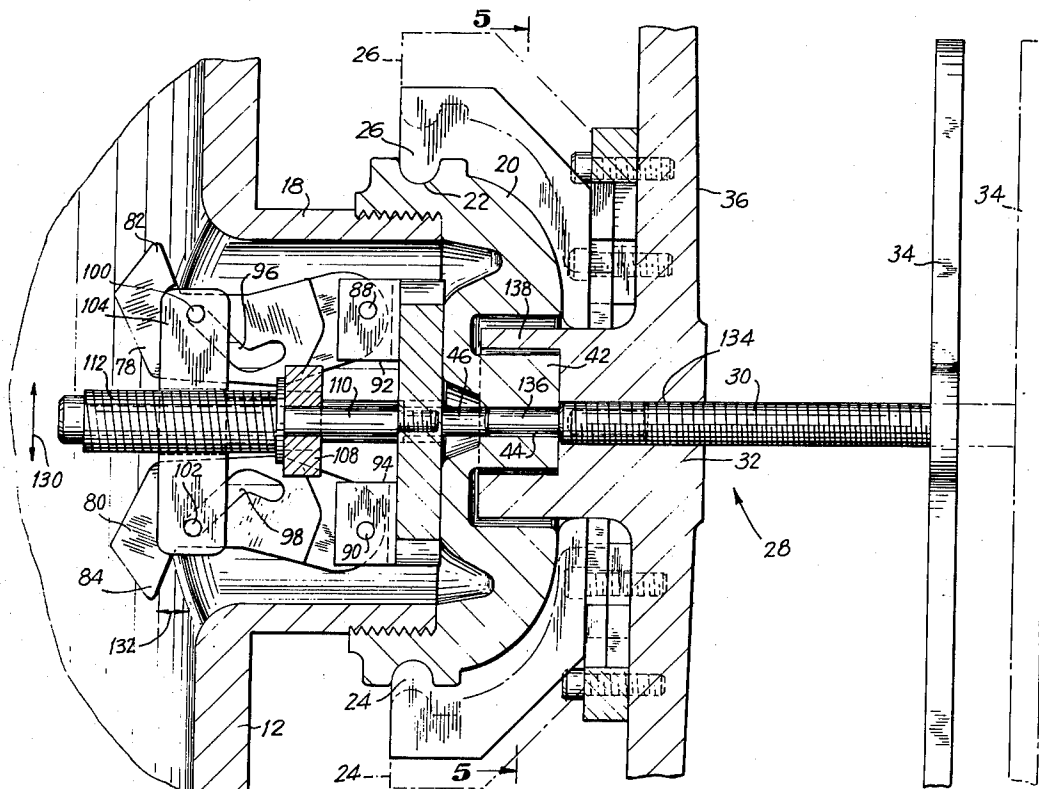
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[57] **ABSTRACT**

A protective device for preventing unauthorized use

24 Claims, 8 Drawing Figures

of a fire hydrant or the like having a cylindrical body and at least one cylindrical outlet extending therefrom. The apparatus includes a cover for hydraulically sealing the outlet and a clamping arrangement or clamp unit on the cover which has an extended condition in which the clamping arrangement is too large to be passed through the outlet and a retracted condition in which the clamping arrangement is sufficiently small to pass through the outlet. A control is operable through the cover to control the clamp unit to assume one of the aforesaid conditions. The clamp unit is insertable through the cylindrical outlet when in retracted condition and passes into the cylindrical body after which the clamp unit is released to assume the extended condition to prevent withdrawal thereof through the outlet whereby the cover on which the clamp unit is mounted is locked to the outlet. A tool is provided with clamps onto the cover. The cover is provided with a threaded bore through which a threaded member of the tool is rotated in order to drive a rod through a hole provided in the cover to operate the clamp unit. In some fire hydrants, a second cylindrical outlet is arranged adjacent the aforementioned cylindrical outlet and a cover is provided therefor, this cover being threadably engaged with the second cylindrical outlet and having an extension which is concealed and held in position by the first mentioned arrangement so that both the covers are locked on the respective cylindrical outlets.

FIG. 1

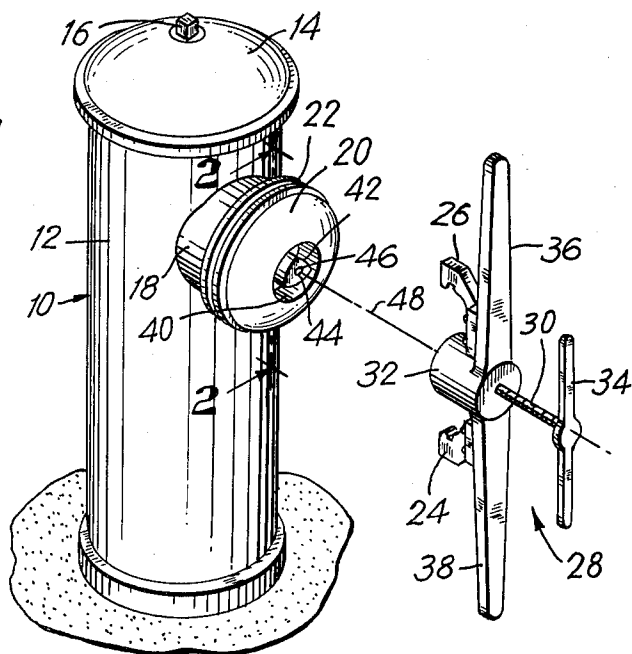
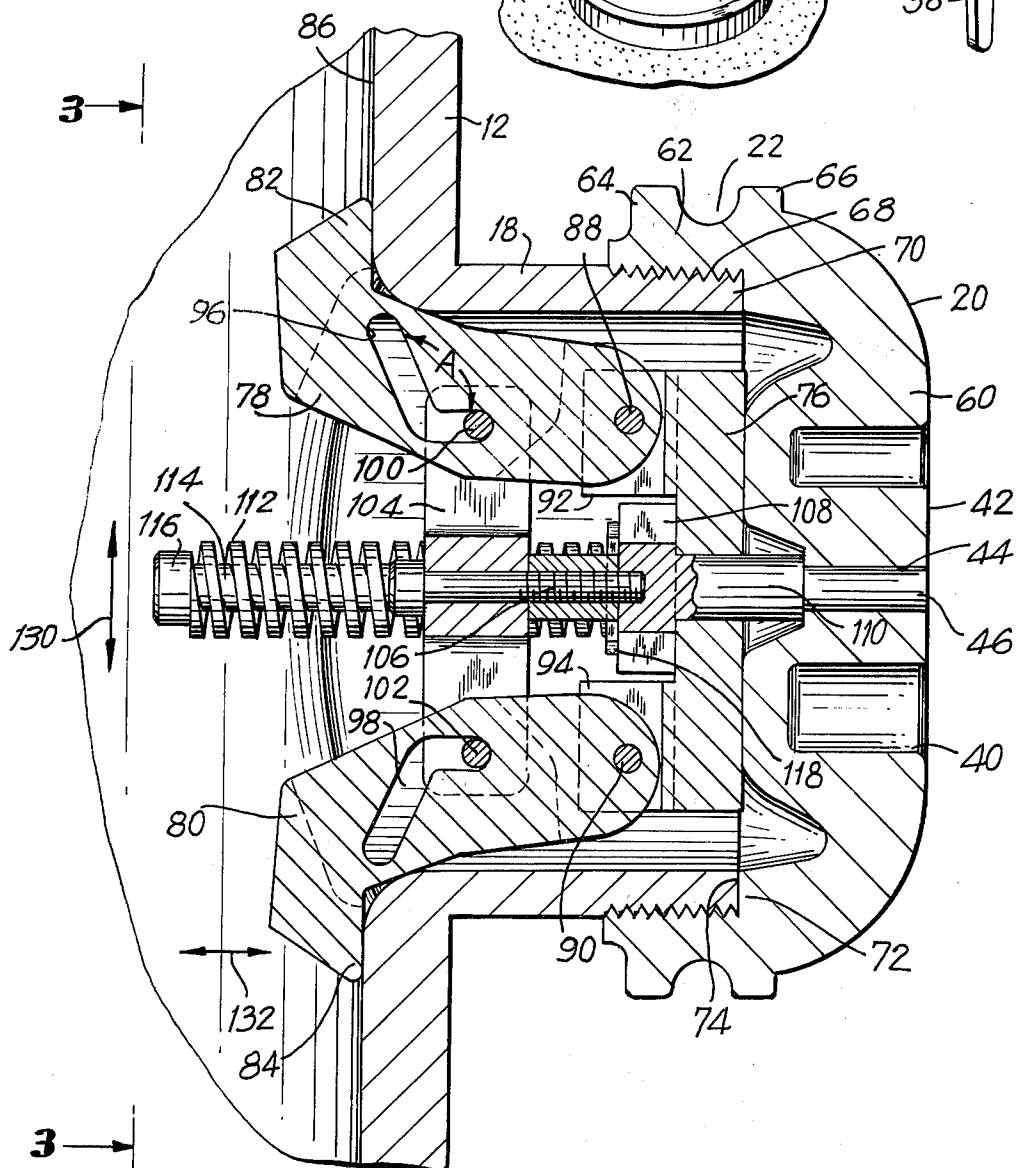


FIG. 2



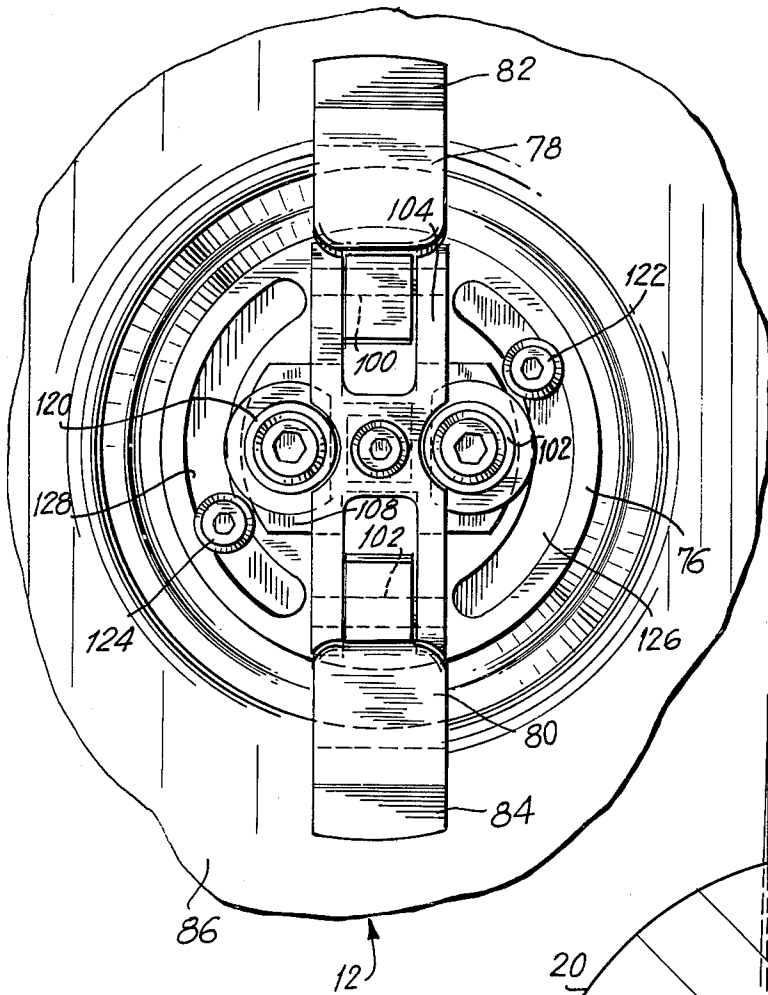
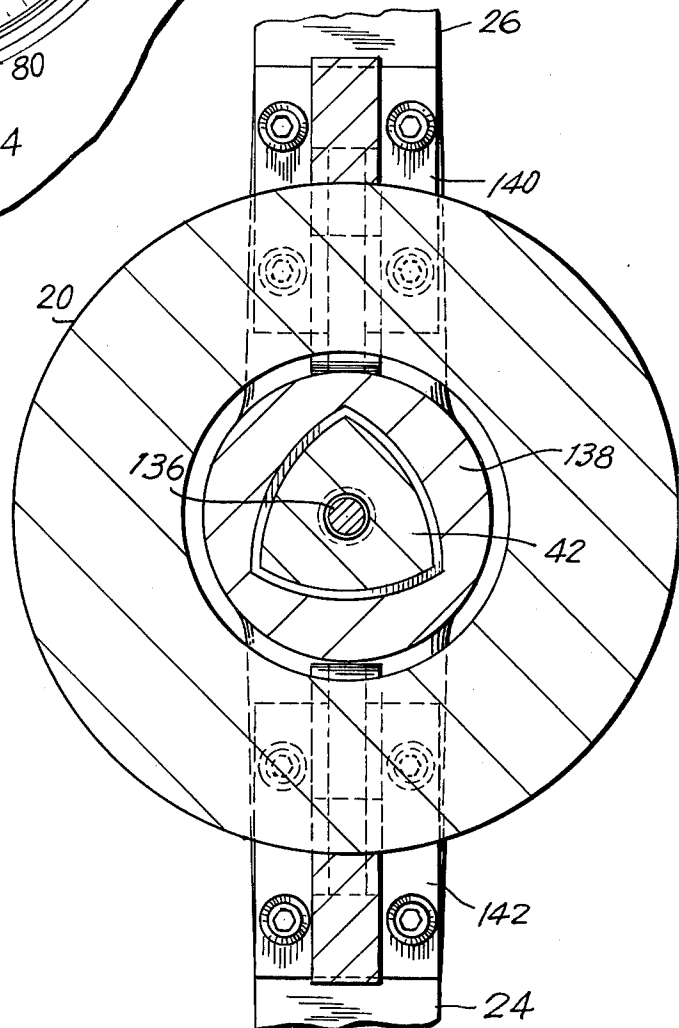


FIG. 3

FIG. 5



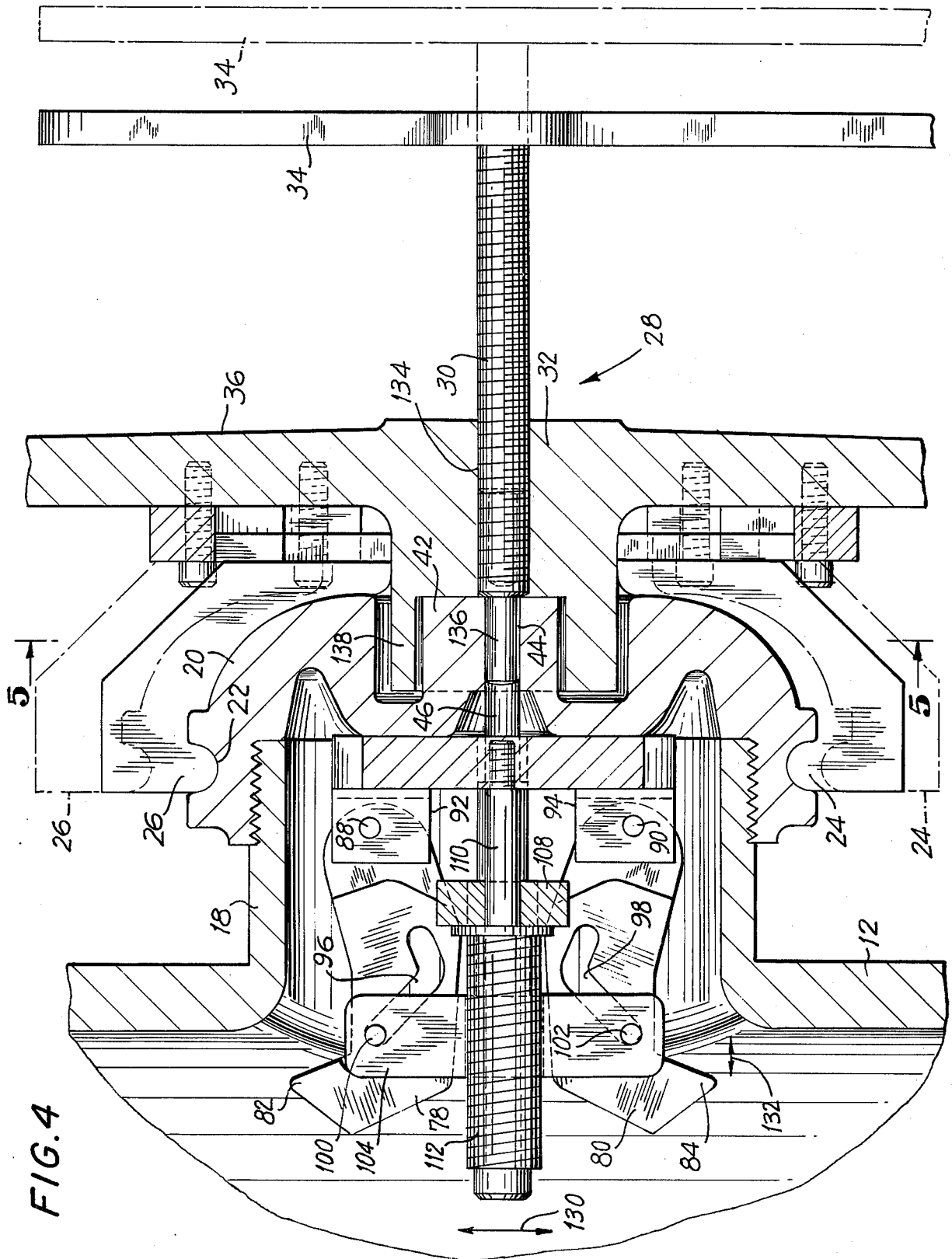


FIG. 6

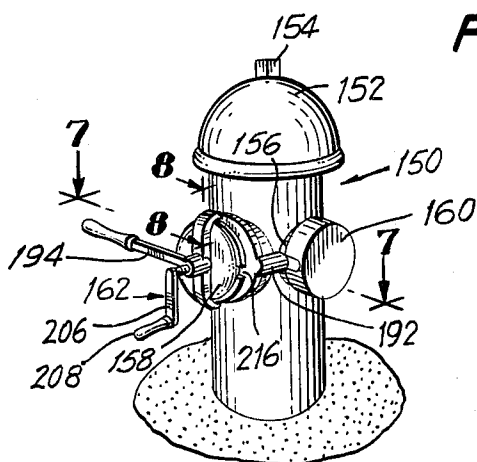


FIG. 7

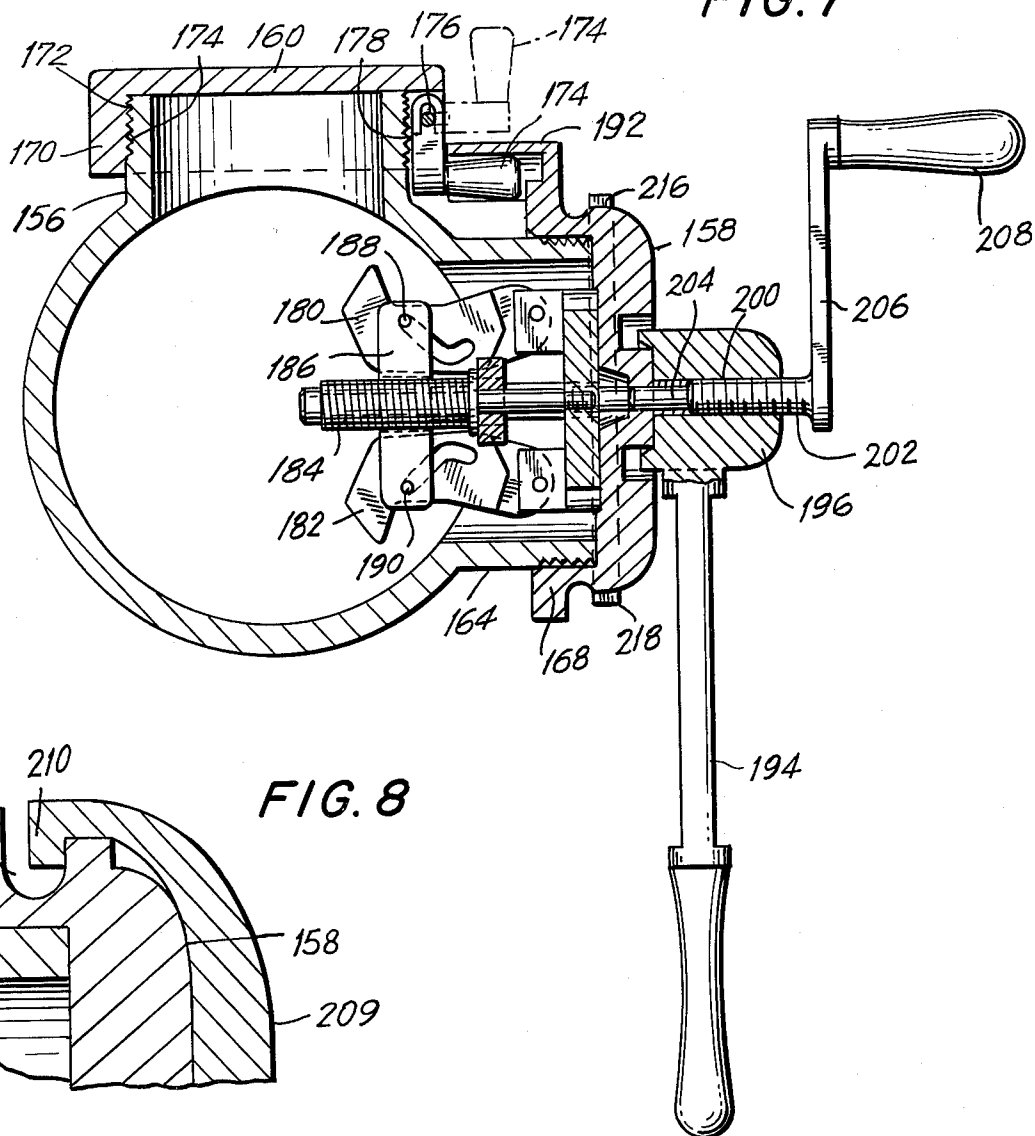
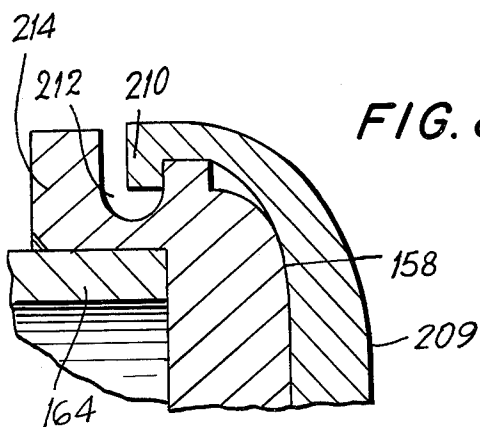


FIG. 8



PROTECTION DEVICE AND TOOL FOR FIRE HYDRANT

FIELD OF INVENTION

This invention relates to protection devices for preventing the unauthorized use of fire hydrants or the like and to tools for operating the same.

BACKGROUND

It is known that dangerous conditions may arise due to the unauthorized operation of fire hydrants for purposes other than those originally intended. Specifically, if the unauthorized operation of a large number of fire hydrants occurs, substantial water pressure may be lost whereby fire department equipment is placed at a disadvantage with respect to the fighting of fires or the like.

In U.S. Pat. No. 3,556,131, a device is provided for preventing the unauthorized operation of fire hydrants by concealing a hexagonal member which permits the operation of the fire hydrant and is located at the top thereof. This is accomplished by permitting only limited access to the hexagonal member which is concealed by connecting thereto a first member which is fixed thereon both axially and rotatably and by supporting, on this first member, a freely rotatable member which conceals the first member and prevents a rotative force from being applied to the hexagonal member.

This device is generally suitable for preventing access to the fire hydrants from above and can be used in conjunction with the present invention but is not generally suited for use in connection with the lateral cylindrical outlets with which many fire hydrants are provided.

In U.S. Pat. No. 3,453,897, which issued to Joseph N. Adinolfi, an external flange is provided around the bonnet of a hydrant concentric with the bore therein with a valve actuating stem passing through the bore of a support plate provided over the standpipe of the hydrant, the stem further passing into the bore of a yolk secured to the plate. The arrangement furthermore includes a rotatable rod mounted for axial movement above and spaced from the stem projecting through the bore in the bonnet, there being a clutch device in the yolk bore for interengaging the stem and the rod and spring means spacing the rod from the interengaging clutch in a locked position whereby a force is applied against the spring means to operate the clutch for interengaging the rod and stem so that the turning of the rod imparts motion to the stem. A tool is provided having a wrench for engaging the rod, a catch member for slidably engaging the flange of the bonnet and an arm for applying leverage against the spring and for turning the rod.

The above arrangement is fairly well suited for the upper portion of a fire hydrant but is not generally suitable for the lateral outlets provided on fire hydrants as is commonly known.

Various other locks and tamper-proof valve controls are known, such as, for example, in U.S. Pat. Nos. 1,645,917 and 3,384,339. These devices are generally not suited for the protection of the lateral extensions or outlets of fire hydrants and are only slightly, if at all, related to the invention to be disclosed herein.

SUMMARY OF THE INVENTION

It is generally an object of the invention to provide

improved means to prevent tampering with fire hydrants and the like.

It is another object of the invention to provide improved means for reducing the facility with which hydrants can be opened by unauthorized persons.

It is yet another object of the invention to provide improved means for preventing the unauthorized operation of fire hydrants or the like while at the same time affording convenient access to the same by authorized personal such as firemen, policemen and the like.

It is yet another object of the invention to provide an improved protective device which can be readily installed upon existing fire hydrants without the need for making special provisions in the previously installed hydrants.

Briefly, to achieve the above and other objects of the invention, there is provided a protective device for preventing unauthorized use of a fire hydrant or the like having a cylindrical body and at least one cylindrical outlet extending therefrom, said apparatus comprising a cover for hydraulically sealing said outlet, a clamp means on said cover and having an extended condition in which the clamp means is too large to pass through said outlet and a retracted condition in which the clamp means is sufficiently small to pass through said outlet, and control means operable through said cover to control said clamp means to assume one of said conditions, said clamp means being insertable in retracted condition through said outlet into said body whereat said clamp means is modified by said control means to assume extended condition to prevent withdrawal thereof through said outlet whereby said cover, on which said clamp means is mounted, is locked through said outlet.

According to a feature of the invention, the aforesaid control means includes a part detachably engageable with said cover, said cover having a limited passage therethrough, said part including means to pass through said passage and engage said clamp means.

According to a further feature of the invention, said part includes a section which is detachably connected to said cover in fixed position, a threaded member extending in threaded engagement through said section, a handle on said threaded member to rotate the latter with mechanical advantage, and a rod on said threaded member to extend through the limited passage in said cover.

In accordance with still a further feature of the invention, the aforesaid cover is provided with an annular groove and said part includes groove engaging members to hold the said section on said cover. The groove engaging members according to one embodiment of the invention may be displaceable towards and away from each other to enable positioning and holding the same in the aforesaid groove. In accordance with another embodiment of the invention, the groove engaging members may be fixed on said part and the groove is provided with key ways to enable insertion of the groove engaging members into said groove whereafter a turning of said part holds the groove engaging members in said groove.

According to still another feature of the invention, the aforesaid clamp means includes displaceable tongs, spring means loading said tongs towards maximum spacing from each other and a force transfer means to act on said tongs against said spring means in response to said rod to urge said tongs towards each other to en-

able insertion of the clamp means through said outlet.

According to one embodiment of the invention, the cover includes a skirt threadably engaging said outlet. According to another embodiment of the invention, the cover includes a skirt which slips freely over the outlet and is not threadably engaged therewith.

The cover in the aforesaid section may include inter-engaging means preventing rotation therebetween. In another variation of the invention, it is not necessary to use such interengaging means.

A further feature of the invention provides that the tongs are made with slots and the clamping means include pins engaged in these slots to control the movement of the tongs towards and away from each other. The tongs may include toes which move further away from and closer to the cover as the tongs move towards and away from each other respectively.

The aforesaid tongs may be pivoted on the cover and aforementioned slots may be of generally L-shaped configuration with legs connected at an obtuse angle.

In accordance with still a further feature of the invention, the fire hydrant involved may be provided with a second cylindrical outlet on the cylindrical body and the apparatus of the invention may further comprise a second cover which is adapted for covering and hydraulically sealing the second outlet, there being locking means on the first said cover to engage and lock the cover on the second outlet.

The spring means mentioned hereinabove may include two helical springs in parallel and the force transfer means may include a bridge between the springs and extending transversely of the latter with a rod connected to the bridge and aligned with the first said rod to be axially engaged by the latter, the bridge engaging said tongs and being acted on by said helical springs and normally urging the tongs to maximum spacing from each other under the action of said springs.

In connection with the second cover mentioned hereinabove, this would include a threaded skirt for threadably engaging the associated second outlet and an extension may be provided on this second cover, the locking means including a member on the first cover to conceal this extension and to prevent movement of the extension to prevent unscrewing the second cover from the second outlet.

According to a further feature of the invention, the extension may be a handle pivotally connected to the second cover and displaceable in part into a peripheral slot provided in the second cover.

According to further features of the invention, a tool may be provided for a cover of the above noted type, said tool including a body section for engaging over the aforesaid central portion and provided with a bore aligned with the first said bore and at least partly threaded, there being a rod extending through the second said bore and threadably engaged therein and adapted to extend into the first said bore, there being furthermore provided a first handle on the section to manipulate the latter, a second handle on the second said rod to rotate the latter, and clamps on said section to engage in the aforesaid groove.

The invention will be more particularly described below with reference to further objects, features and advantages thereof and with reference to the accompanying drawing.

BRIEF DESCRIPTION OF DRAWING

In the drawing:

FIG. 1 is a perspective view of a fire hydrant having a single lateral cylindrical outlet with a cover thereon and a tool for operating the same in accordance with one embodiment of the invention;

FIG. 2 is a fragmentary sectional view taken through line 2—2 in FIG. 1;

FIG. 3 is a fragmentary cross-sectional view taken through section line 3—3 of FIG. 2;

FIG. 4 is a view similar to that of FIG. 2 with the clamping means in retracted condition and with the tool applied to the arrangement;

FIG. 5 is a cross-sectional view taken along section line 5—5 of FIG. 4;

FIG. 6 is a perspective view of a fire hydrant provided with two lateral cylindrical outlets with access preventing devices applied thereto in accordance with a second embodiment of the invention;

FIG. 7 is a cross-sectional view taken along line 7—7 of FIG. 6; and

FIG. 8 is a fragmentary view illustrating the engagement of the tool in a groove in one of the covers and being more particularly a cross-sectional view taken along section line 8—8 in FIG. 6.

DETAILED DESCRIPTION

In FIG. 1 is illustrated generally a hydrant 10 consisting of an upright cylindrical body or standpipe 12 atop which is a cover 14 affixed thereto by a polygonal member 16. This polygonal member can be concealed or protected in ways not pertinent to the invention and which are therefore not illustrated.

The hydrant 10 is furthermore provided with a cylindrical outlet 18 on which is mounted a cover 20 provided in accordance with the invention. The cover 20 is provided with a groove 22 which is engaged by the clamps 24 and 26 of a tool generally indicated at 28. This tool furthermore comprises a threaded member 30 extending through a threaded bore provided in the section 32 of the tool and being rotated by means of a handle 34 extending diametrically across the member 30.

The section 32 is moreover provided with diametrically extending handle parts 36 and 38 by means of which the tool is manipulated and positioned so that the clamps 24 and 26 are positioned in the groove 22 of the cover 20.

Centrally located in the face of the cover 20 is a recess 40, a generally triangular cover section 42 being located therein and constituting an engaging member for engaging a like recess in the section 32 of tool 28 as will hereinafter be shown.

As will also be shown hereinafter, the section 42 is provided with a passage 44 presently obturated by a rod 46 both of these being axially aligned with the threaded member 30 as indicated by the axis 48. The purpose of all of this will be indicated with greater particularity hereinafter.

FIG. 2 is a fragmentary sectional section view taken through section line 2—2 of FIG. 1. Orientation between FIG. 2 and FIG. 1 may be readily seen by observation of vertical cylindrical body 12 and cylindrical outlet 18 as well as by cover 20.

As is seen in FIG. 1, the cover 20 is provided with a main body section 60 having a skirt 62 depending therefrom. The skirt 62 is provided with two annular

ridges 64 and 66 between which is formed the aforementioned groove 22. The skirt 62 is internally threaded as indicated at 68 and there is a threaded engagement between the skirt 62 and the end portion 70 of the cylindrical outlet 18.

Also seen in FIG. 2 is the passage 44 which extends through the cover 20 and which may be described as a limited passage since its diameter is relatively small, being in the order, for example, of from one-eighth to three-eighths of an inch. This passage, it will be seen, is obturated by the rod 46 which extends into the section 42 as in the illustrated state of affairs in FIG. 2. As noted above, the outer end of rod 46 is flush with the outer surface of section 42 under the illustrated conditions.

The cover 20 has shoulder portion 72 arranged internally thereof and adapted to seat against the planar extremity 74 of the cylindrical outlet 18. This, at least in part, forms a hermetic or hydraulic seal for the cylindrical outlet 18 but if desired, an O-ring can be utilized and set against the shoulder 72 of the cover 20.

On the inside of the cover 20 is mounted a plate 76 which forms a part of the clamping device by means of which cover 20 is locked to the cylindrical outlet 18. This clamping device includes two tongs 78 and 80 including toe sections 82 and 84 which engage against the internal wall 86 of the upright cylindrical body 12. The tongs are pivotally mounted on pins 88 and 90 on supporting blocks 92 and 94 mounted on the plate 76.

The tongs 78 and 80 are respectively provided with slots 96 and 98 which are generally L-shaped slots having legs which are connected at an obtuse angle A.

The pins 100 and 102 are mounted on the respective extensions of a bridge 104 which is engaged by a threaded bolt 106 with a block 108 connected to a rod 110 which is in effect an axial extension of the rod 46.

A helical spring 112 (which is one of a pair of such springs) is illustrated in FIG. 2, this spring being supported on a rod 114 having a head 116 thereon which prevents the escape of the spring 112 from the rod 114. The spring 112 bears at its distal end against a washer 118.

As illustrated in FIG. 2, the tongs 78 and 80 are in their extended condition or in other words are displaced to the maximum distance away from one another and such that the greatest transverse dimension thereacross exceeds the internal diameter of the cylindrical outlet 18 so that the cover 20 cannot be pulled away from the cylindrical outlet 18 due to the engagement of the toes 82 and 84 against the internal wall 86 of the upright cylindrical body 12. This condition also provides that the outer end of rod 46 is flush with the outer surface of cover section 42 and prevents the jamming of foreign material into passage 44.

FIG. 3 shows the toes 82 and 84 engaging against the internal wall 86 of cylindrical body 12 and further illustrates the bridge 104 supporting the tongs 78 and 80 with pins 100 and 102 riding in the L-shaped slots provided in the respective tongs. Also appearing in FIG. 3 is the helical spring 102 along with its companion helical spring 120 which is symmetrically positioned on the opposite side of the bridge 104.

The plate 76 mentioned hereinabove is affixed to the cover 20 by means of bolts 122 and 124 which are accommodated in arcuate slots 126 and 128 to permit adjustment of the arrangement. The block 108 mentioned hereinabove is also illustrated.

Although the tongs 78 and 80 are illustrated in FIG. 2 in extended position, they are displaceable towards one another and away from one another as shown by the double headed arrow 130 in this figure. In addition, they are extendable away from and retractable towards the cover 20 as shown by double headed arrow 132. In fact, the condition illustrated in FIG. 2 is not the normal condition of the apparatus for the insertion thereon into the cylindrical outlet 18. The condition which is set up for this operation is next indicated with reference to FIG. 4.

In FIG. 4 is again shown the cylindrical body 12 with the cylindrical outlet 18 extending laterally therefrom. Also will be seen the cover 20 and the tool which is generally indicated at 28. The clamps 24 and 26 which are mounted on the tool 28 are, it will be noted, displaceable from an original position shown in phantom lines to an inner position shown in solid lines in which they more nearly approach one another and in which they engage in the groove 22 in order to hold the tool 28 on the cover 20.

As will also be seen in FIG. 4, handle 34 is moved from its original position as shown in phantom lines to an advanced position as shown in solid lines by rotation thereof which results from rotation of the threaded member 30 which due to its threaded engagement advances in the threaded bore 134 in the section 32 of the tool 28.

It will be further noted that the section 32 has a depending skirt 138 which has an interior recess which is the same shape as the section 42 so that these two parts form interengaging members preventing rotation between the main portion of the tool and the cover 20.

The axial advancement of the threaded member 30 within the threaded bore 134 advances a rod 136, which is an axial extension of the threaded member 30, into the hole or limited passage 44 extending through section 42 of the cover 20. This forces the rod 46 in axial direction in one of the directions indicated by the arrow 132. This in turn forces rod 110 to the left in FIG. 4 which in turn carries block 108 ahead of it thereby operating to displace the bridge 104 to the left and also compressing springs 112 and 120.

Displacement of the bridge 104 carries along the pins 100 and 102 which are displaced in the slots 96 and 98 in the tongs 78 and 80 as a result of which the tongs are drawn towards each other as indicated by the arrow 130 whereupon the toes 82 and 84 are moved towards each other to an extent whereby their maximum transverse dimension is sufficiently small to permit insertion of the same through the interior bore of the cylindrical outlet 18. It is in this retracted condition of the clamping device that the same may be inserted through the cylindrical outlet 18 or withdrawn therefrom. Thus, in the case of mounting the cover 20 on the cylindrical outlet 18 and locking the same to the fire hydrant, the tongs 78 and 80 are first brought to retracted condition and then the handle 34 of the tool 28 counter-rotated to release the rod 46 and thereby the bridge 140 so that the tongs can move to the extended condition in FIG. 2. It will be noted that for purposes of convenience in mounting the cover and locking the same to the fire hydrant the toes 82 and 84 as well as the tongs 78 and 80 are disposed to move a greater or lesser distance from the cover 20 in accordance with whether the tongs are in extended or retracted condition. In other words, the toes 82 and 84 are closer to the cover 20 in FIG. 2 in

order to lock the cover firmly to the fire hydrant and resist displacement of said cover while, in FIG. 4, the toes 82 and 84 of the tongs 78 and 80 are a greater distance from the cover 20 to enable the tongs to be moved without any interference into the expanded or extended condition for locking the cover on the hydrants.

FIG. 5 is a fragmentary sectional view taken along section line 5—5 of FIG. 4 and orientation with respect to FIG. 4 can be seen in the form of section 142 and skirt 138 of the tool 28. Herein can be seen the broken away portions of clamps 24 and 26 as well as the mounting brackets 140 and 142 which slidably hold the clamps 24 and 26 on the part 36 of the tool 28.

A further embodiment of the invention appears in FIGS. 6-8 wherein is illustrated a protective device for a fire hydrant having two cylindrical outlets extending laterally therefrom.

In FIG. 6 appears a fire hydrant 150 having a top portion 152 locked thereon by means of a polygonal member 154. The second cylindrical extension or outlet appears at 156 and a cover 158 is provided for the first cylindrical extension whereas a cover 160 is provided for the second cylindrical extension. A different form of tool is indicated at 162 and the operation of this arrangement will next be discussed with further reference to FIG. 7.

In FIG. 7 appears the first cylindrical extension 164 and the second cylindrical extension 156. Cover 158 covers cylindrical extension 164 and cover 160 covers cylindrical outlet 156.

The cover 158 has a skirt 168 which encircles the cylindrical outlet 164. The inner surface of the skirt 168 is smooth and there is no threaded engagement between the cover 158 and the cylindrical outlet 164. This enables the cover 158 to be slipped onto the cylindrical outlet 164 without rotation of the cover 158.

The cover 160, however, has a skirt 170 having an internally threaded portion or surface 172 which threadably engages the corresponding thread 174 on the cylindrical outlet 156. This means that the cover 160 is fitted to the cylindrical outlet 156 by being rotatably and threadably engaged therewith.

To facilitate the rotation and mounting of the cover 160, a handle 174 is pivotally mounted in a slot provided in the skirt 170 enabling the handle 174 to be pivoted from the position illustrated in solid lines to the position illustrated in phantom lines in which latter position the handle 174 may be used to facilitate threading the cover 160 on the cylindrical outlet 156.

It will also be noted that a pin 176 is provided on which the handle 174 is pivotally mounted. A slot 178 is provided in which the pin 176 rides in order to allow a certain axial displacement of the handle member 176 relative to the cover 160. The purpose of this is to accommodate slight rotational adjustments of the cover 160 which may be necessary in order to bring the handle 174 to the proper position for purposes of this embodiment of the invention in which the handle 174 must be aligned in parallel with the axis of the cylindrical outlet 164 as will be shown.

The clamping arrangement with respect to cover 158 is essentially the same as the clamping arrangement discussed hereinabove with reference to FIGS. 1-5. More specifically, the clamping arrangement includes tongs 180 and 182 the positions of which are controlled by a pair of springs such as indicated at 184 which are re-

sistant to the displacement of a bridge 186 on which are mounted pins 188 and 190 which are accommodated in slots by means of which the tongs 180 and 182 are moved from extended to retracted positions and vice versa.

However, in the illustrated embodiment and as is particularly evident in FIG. 7, the cover 158 is provided with a semi-tubular extension 192 also appearing in FIG. 6, the purpose of said tubular or semi-tubular extension being to accommodate therein the handle 174 which is both concealed and retained in position by said extension so that it is impossible to rotate the cover 160 and detach it from the threaded end of the cylindrical outlet 166.

In other words, the cover 160 is first threadably engaged with the cylindrical outlet 156, this action being facilitated by the use of the handle 174, whereafter the handle 174 is pivoted into the position shown in solid lines after which the cover 158 is slid without threaded engagement in an axial direction over the cylindrical outlet 164 with the semi-tubular member 192 engaging over and concealing and holding in position the handle 174.

The clamping of the cover 158 onto the cylindrical outlet 164 in the manner described above therefore serves the purpose not only of holding the cover 158 in position but furthermore it serves the purpose of locking and securing the cover 160 in position so that the single clamping unit on the cover 158 suffices for locking both covers in position and thereby preventing unauthorized use of the hydrant.

The tool 166 used in connection with the embodiment illustrated in FIGS. 6-8 is different from the first tool described hereinabove. It consists of a handle 194 extending radially in only one direction from the central portion 196 of the tool. Portion 196, however, is provided with a threaded bore 200 through which extends a threaded member 202 operating through a rod 204 in the manner indicated hereinabove. The threaded member 202, however, simply has thereon a crank 206 with a handle 208 thereupon, this replacing the diametral handle member in the tool described hereinabove.

Furthermore, in the tool of the present embodiment, the clamps are fixed relative to the section 196, these clamps consisting of the extremities of a diametral strap 209 at the ends of which are fixed clamps 210 as illustrated by way of example in FIG. 8. The clamps 210 are groove engaging members engaging in the groove 212 in the skirt 214 of the cover to hold the tool on the cover to enable operation of the clamp unit as described above relative to the prior embodiment.

Both embodiments of the invention share in common that a pair of tongs may be retracted towards one another to enable the insertion of the associated clamping unit through a laterally extending cylindrical outlet of a hydrant, the clamping unit being mounted on a cover which is retained against the outlet of the hydrant by moving the tongs of the clamping unit to extended position whereat the toes of such tongs engage against the interior wall of the hydrant to lock the associated cover in position. The second embodiment of the invention involves the further improvement of locking a second cover in position by preventing the rotation of the same and therefore the threaded disengagement of such cover by firmly holding in position an extension on such second cover. By way of constituting a feature of

the invention, such extension may be provided in the form of a pivotal handle which facilitates putting the second cover into threaded engagement with the associated outlet.

From what has been stated above it will now be apparent that the invention provides a protective apparatus for preventing unauthorized use of a fire hydrant or the like having a cylindrical outlet. As seen the apparatus comprises a cover for hydraulically sealing the outlet, such as, for example, the outlet 18 in FIG. 1 and the outlets 156 and 164 in FIG. 7. Moreover, there is provided a clamp means having an extended condition in which the clamp means is too large to pass through the associated outlet and a retracted condition to which the clamp means is sufficiently small to pass through said outlet. Furthermore, a control means is provided which is operable through the cover to control the clamp means to assume one of the aforesaid conditions, said clamp means being insertable in retracted condition through the outlet into the body whereat the clamp means is modified or expanded by said control means to assume the extended condition to prevent withdrawal thereof through the outlet whereby the cover, on which said clamp means is mounted, is locked to said outlet.

As a feature of the invention, it has been shown that the control means includes a part detachably engaged with the aforesaid cover, said cover having a limited passage such as for example, the passage 44 in FIG. 2 therethrough, said part including means to pass through said passage and engage said clamp means, such part being, for example, the rod 136 which is an extension of the threaded member 30 as appears in FIG. 4.

As a further feature of the invention the aforesaid part includes a section which is detachably connected to said cover in fixed position, this being, for example the section 32 as appears in FIG. 1. A threaded member which is the threaded member 30 extends in threaded engagement through the aforesaid section and a handle, such as the handle 34 in FIG. 1, is provided on the threaded member to rotate the latter with mechanical advantage so that the rod 136 on the threaded member 30 extends through the limited passage 44 in the cover 20, all as appears in the embodiment of FIGS. 1-5 and is also substantially employed in the embodiment of FIGS. 6-8.

As has also been shown, the cover is provided with an annular groove and the aforesaid part includes groove engaging members such as the clamps 24 and 26 in FIG. 1 and such as the clamp 210 in FIG. 8 to hold the tool which operates the clamping means on the aforesaid cover. In the first embodiment of the invention illustrated in FIGS. 1-5, the groove engaging members are displaceable towards and away from each other to enable positioning and holding the same in the associated groove. In the embodiment of the invention shown in FIGS. 6-8, the groove engaging members or clamps are fixed on a strap forming part of the tool and the groove is provided with key ways such as is indicated at 216 in FIG. 6 and also at 216 and 218 in FIG. 7.

It has also been shown above that the clamp means of invention includes displaceable tongs such as, for example, the tongs 78 and 80 in FIG. 2, there being provided spring means 112 and 122 in the embodiment of FIGS. 1-5 and 184 in the embodiment of FIGS. 6-8

loading the tongs towards maximum spacing from each other, there being a force transfer means such as, for example, the bridge 104 in FIG. 2 to act on the tongs against the spring means in response to the rod such as the rods 46 and 110 in FIG. 2 to urge the tongs towards each other to enable insertion of the clamp means through the associated outlet.

In the embodiment of FIGS. 1-5 the cover includes a skirt threadably engaging the associated outlet. In the embodiment of FIGS. 6-8, the main cover fits slidably on the associated outlet without threadably engaging the same, whereas the secondary outlet is provided with a threaded end which threadably engages with the skirt of the associated cover.

As a feature of one embodiment of the invention, the cover and related section of the tool include interengaging means preventing rotation therebetween, as is seen in the form of the section 42 in the cover of FIG. 1 and in the recess provided in the skirt 138 of the tool as appears in FIG. 4.

It has also been shown that the tongs are provided with slots such as, for example, the slots 96 and 98 in FIG. 2 and that the clamping means include pins such as the pins 100 and 102 which are engaged in these slots to control the movement of the tongs towards and away from each other. The tongs it will be noted include toes such as the toes 82 and 84 which move further away from and closer to said cover as the tongs move towards and away from each other respectively as indicated by the arrows 130 and 132 shown by way of example in FIG. 2.

Also indicated in the above description is the pivotal connection of the tongs by means of pins 88 and 90 to a plate attached to the cover 20. Furthermore, it will be noted that the slots provided in the tongs 78 and 80 are generally of L-shape whereof the legs are connected at an obtuse angle such as has been indicated at angle A in FIG. 2.

By way of a further specific feature of the invention, the aforesaid spring means include two helical springs in parallel and the above noted force transfer means includes a bridge between the springs and extending transversely of the latter and a rod connected to the bridge and aligned with the first said rod to be axially engaged by the latter, the second said rod being adapted to obturate the passage extending through the cover, said bridge engaging said tongs and being acted on by said helical springs, said bridge normally urging said tongs to maximum spacing from each other under the action of said springs.

As the second embodiment of the invention there has been shown a fire hydrant comprising a second cylindrical outlet on the vertical cylindrical body, said apparatus further comprising a second cover which is adapted for covering and hydraulically sealing said second outlet and locking means on the first said cover to engage and lock the second said cover on the second outlet, said locking means including without limitation the semi-tubular extension 192 appearing, for example, in FIG. 7 and operating in cooperation with the handle 174.

Other objects and features of the invention include the provision of a tool for a cover provided with an annular groove as discussed above and having a central portion provided with a bore therethrough for access to a locking device included on said cover in the form of a clamping means. This tool includes a body section for

engaging over said central portion of the cover and provided with a bore aligned with the bore in the aforesaid cover and at least partly threaded, a rod extending through the second said bore and threadably engaged therein and adapted to extend into the bore of the cover, a first handle on said section to manipulate the latter, a second handle on the second said rod to rotate the latter and clamps on said section to engage in said groove.

Other objects, features and advantages of the invention will be apparent from the foregoing description. The invention, however, it not to be considered as limited to the embodiments of the foregoing description and are limited only as appears in the claims which follow hereinafter.

What is claimed is:

1. Protective apparatus for a fire hydrant or the like having a cylindrical body and at least one cylindrical outlet extending laterally therefrom, said apparatus comprising a cover for hydraulically sealing said outlet, said cover having a side adapted to face said cylindrical outlet, a clamp means coupled to said side of the cover and having an extended condition in which the clamp means is too large to pass through said outlet and a retracted condition in which the clamp means is sufficiently small to pass through said outlet, and control means extending through said cover and operable to control said clamp means to assume one of said conditions, said clamp means being insertable in retracted condition through said outlet into said body whereat said clamp means is modified by said control means to assume extended condition to prevent withdrawal thereof through said outlet whereby said cover, on which said clamp means is mounted, is locked to said outlet, said control means including a part detachably engageable with said cover, said cover having a limited passage therethrough, said part including means to pass through said passage and engage said clamp means, said part including a section which is detachably connectible to said cover in fixed position, a threaded member extending in threaded engagement through said section, a handle on said threaded member to rotate the latter and a rod on said threaded member to extend through the limited passage in said cover, the rod obturating the passage and having an outer end flush with the cover with the clamp means in extended condition.

2. Protective apparatus as claimed in claim 1 wherein said cover is provided with an annular groove and said part includes groove engaging members to hold the said section on said cover.

3. Protective apparatus as claimed in claim 2 wherein the groove engaging members are displaceable towards and away from each other to enable positioning and holding the same in said groove.

4. Protective apparatus as claimed in claim 3 wherein the groove engaging members are fixed on said part and the grooves provided with key ways to enable insertion of the groove engaging members into said groove whereafter a turning of said part holds the groove engaging members in said groove.

5. Protective apparatus as claimed in claim 1 wherein said clamp means includes displaceable tongs, spring means loading said tongs towards maximum spacing from each other, and force transfer means to act on said tongs against said spring means in response to said

rod to urge said tongs towards each other to enable insertion of the clamps means through said outlet.

6. Protective apparatus as claimed in claim 5 wherein said cover includes a skirt threadably engaging said outlet.

7. Protective apparatus as claimed in claim 5 wherein said cover includes a skirt which slips freely over said outlet.

8. Protective apparatus as claimed in claim 5 wherein said cover and section include interengaging means preventing rotation therebetween.

9. Protective apparatus as claimed in claim 5 wherein said tongs include toes which move further away from and closer to said cover as the tongs move towards and away from each other respectively.

10. Protective apparatus as claimed in claim 5 comprising means pivoting said tongs on said cover.

11. Protective apparatus as claimed in claim 5 wherein said tongs are provided with slots and said clamp means include pins engaged in said slots to control the movement of the tongs towards and away from each other.

12. Protective apparatus as claimed in claim 11 wherein said slots are generally L-shaped with legs connected at an obtuse angle.

13. Protective apparatus as claimed in claim 1, comprising a second cylindrical outlet on said cylindrical body, said apparatus further comprising a second cover, said second cover being adapted for covering and hydraulically sealing said second outlet, and locking means on the first said cover to engage and lock the second cover on said second outlet.

14. Protective apparatus as claimed in claim 13, wherein said second cover includes a threaded skirt for threadably engaging said second outlet, comprising an extension laterally protruding from said second cover, said locking means including a member on the first said cover to conceal said extension and to prevent movement of said extension to prevent unscrewing said second cover from said second outlet.

15. Protective apparatus as claimed in claim 14 wherein said extension is a handle pivotally connected to said second cover and displaceable in part into a peripheral slot provided in said second cover.

16. Protective apparatus as claimed in claim 15 wherein said member is a semi-tubular part rigidly mounted on the first said cover to extend along the first said outlet.

17. Protective apparatus as claimed in claim 16 wherein said handle is respectively displaceable transversely and longitudinally of said threaded skirt.

18. Protective apparatus as claimed in claim 5 wherein said spring means includes two helical springs in parallel and said force transfer means includes a bridge between said springs and extending transversely of the latter and a rod connected to said bridge and aligned with the first said rod to be axially engaged by the latter, the second said rod being adapted to obturate the passage extending through the cover, said bridge engaging said tongs and being acted on by said helical springs, said bridge normally urging said tongs to maximum spacing from each other under the action of said springs.

19. Protective apparatus as claimed in claim 18, comprising a second cylindrical outlet on said cylindrical body, said apparatus further comprising a second cover, said second cover being adapted for covering

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and hydraulically sealing said second outlet, and locking means on the first said cover to engage and lock the second cover on said second outlet.

20. Protective apparatus as claimed in claim 19, wherein said second cover includes a threaded skirt for threadably engaging said second outlet, comprising an extension on said second cover, said locking means including a member on the first said cover to conceal said extension and to prevent movement of said extension to prevent unscrewing said second cover from said second outlet.

21. Protective apparatus as claimed in claim 20 wherein said extension is a handle pivotally connected to said second cover and displaceable in part into a peripheral slot provided in said second cover.

22. Protective apparatus as claimed in claim 21 wherein said member is a semi-tubular part rigidly mounted on the first said cover to extend along the first said outlet.

23. Protective apparatus as claimed in claim 22 wherein said handle is respectively displaceable transversely and longitudinally of said threaded skirt.

24. Protective apparatus for a fire hydrant or the like having a cylindrical body and at least one cylindrical outlet extending laterally therefrom, said apparatus comprising a cover for hydraulically sealing said outlet, said cover having a side adapted to face said cylindrical outlet, a clamp means coupled to said side of the cover and having an extended condition in which the clamp means is too large to pass through said outlet and a retracted condition in which the clamp means is sufficiently small to pass through said outlet, and control means extending through said cover and operable to control said clamp means to assume one of said condi-

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tions, said clamp means being insertable in retracted condition through said outlet into said body whereat said clamp means is modified by said control means to assume extended condition to prevent withdrawal thereof through said outlet whereby said cover, on which said clamp means is mounted, is locked to said outlet; said control means including a part detachably engageable with said cover, said cover having a limited passage therethrough, said part including means to pass through said passage and engage said clamp means; said part including a section which is detachably connectible to said cover in fixed position, a threaded member extending in threaded engagement through said section, a handle on said threaded member to rotate the latter and a rod on said threaded member to extend through the limited passage in said cover; said clamp means including displaceable tongs, spring means loading said tongs towards maximum spacing from each other, and force transfer means to act on said tongs against said spring means in response to said rod to urge said tongs towards each other to enable insertion of the clamp means through said outlet; said spring means including two helical springs in parallel and said force transfer means including a bridge between said springs and extending transversely of the latter and a rod connected to said bridge and aligned with the first said rod to be axially engaged by the latter, the second said rod being adapted to obturate the passage extending through the cover, said bridge engaging said tongs and being acted on by said helical springs, said bridge normally urging said tongs to maximum spacing from each other under the action of said springs.

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