

[54] **FIRE HYDRANT CAP AND ACTUATING TOOL THEREFOR**

[76] Inventor: **Gerald A. Graham**, 9721
Kempwood Drive, Apt. 1405,
Houston, Tex. 77055

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137/800; 220/284; 251/291

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[56] **References Cited**

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Primary Examiner—Henry T. Klinksiek

Assistant Examiner—Richard Gerard

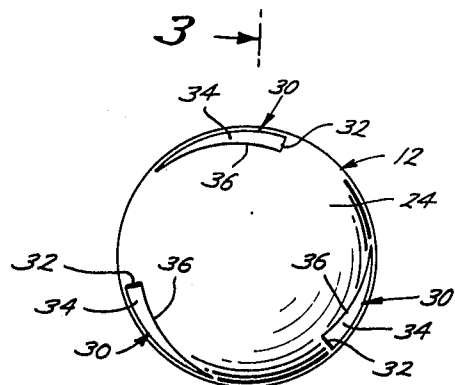
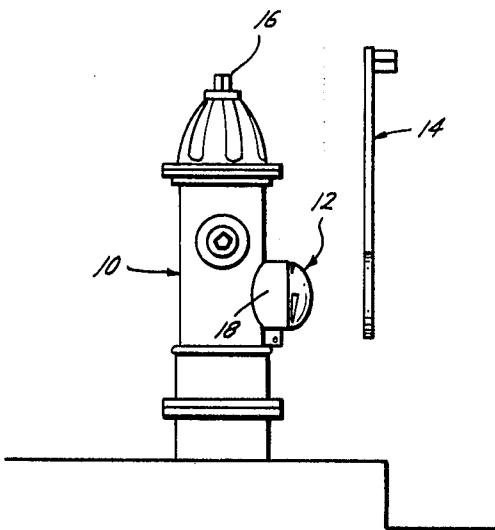
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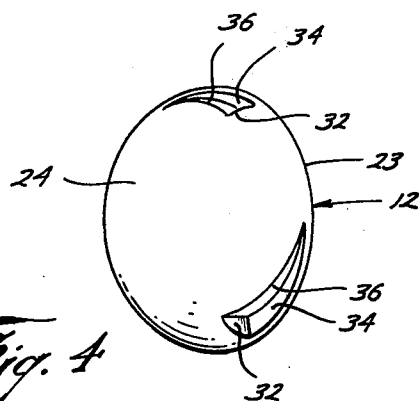
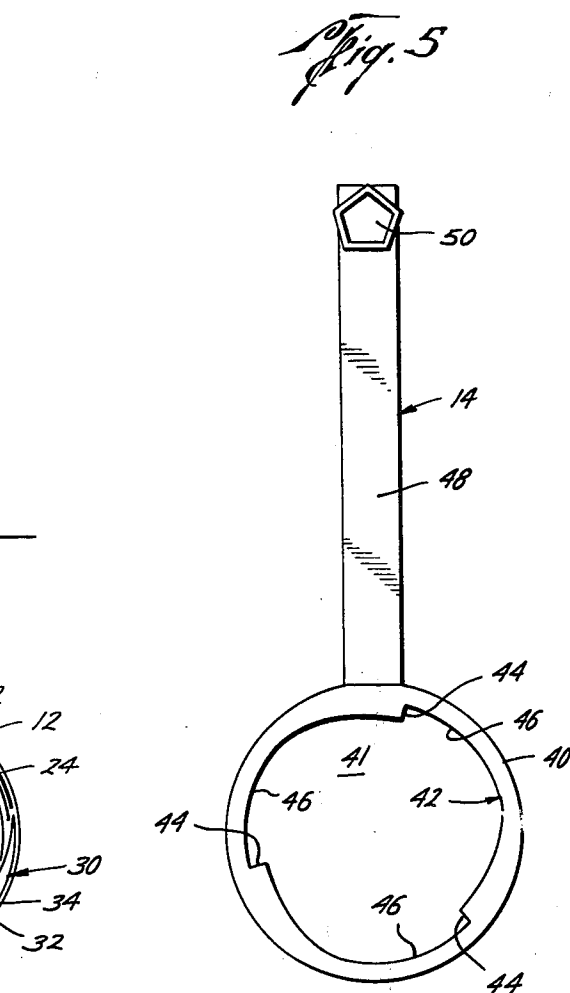
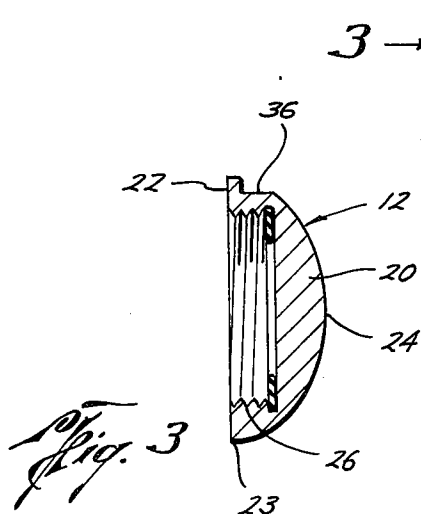
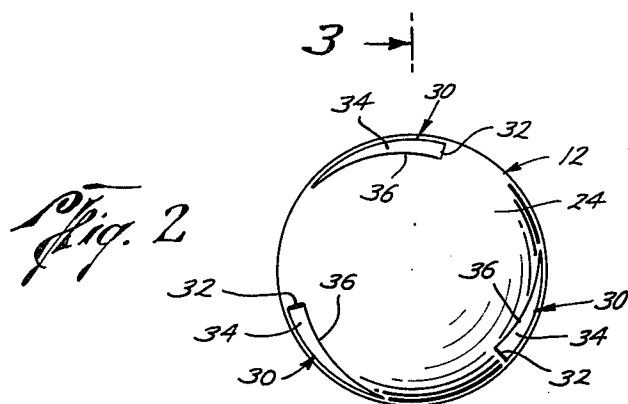
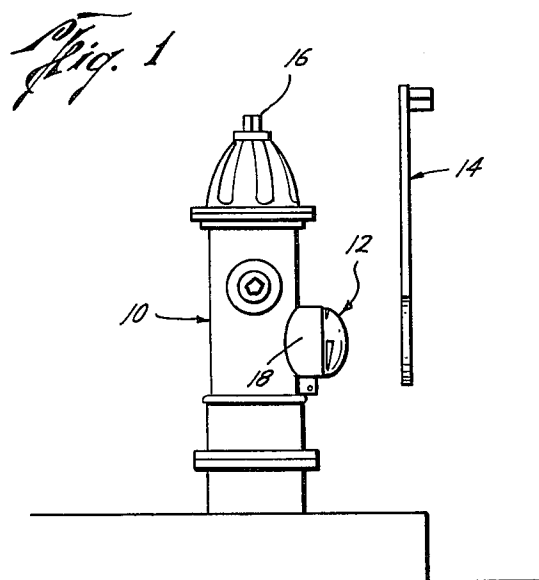
[57] **ABSTRACT**

A fire hydrant cap which cannot readily be un-

threaded from a fire hydrant by conventional tools. A body having first and second ends with the first end having internal threads for attachment to a fire hydrant while the second end extends from the first end and includes a curved convex shape which cannot be readily gripped by a conventional tool. A plurality of tool engaging surfaces spaced from each other are positioned on the second end with each surface including a shoulder facing in a counterclockwise direction to provide engagement with a special tool for tightening the cap onto the hydrant. Each engaging surface includes a recess extending from each shoulder in a counterclockwise direction with a curved surface extending from a shoulder and progressively increasing in distance from the axis of the body for coaxing with a special tool for unthreading the cap from a hydrant. Preferably, three engaging surfaces are provided spaced equal distance around the periphery of the second end. A special actuating tool having a generally circular body and including an internal opening and a handle connected to the tool is provided for rotating the tool. The tool includes a plurality of actuating surfaces positioned about the internal opening for coaxing with the engaging surfaces on the second end of the cap for tightening and unthreading the cap.

8 Claims, 5 Drawing Figures





FIRE HYDRANT CAP AND ACTUATING TOOL THEREFOR

BACKGROUND OF THE INVENTION

Conventional fire hydrant caps can be easily opened with conventional pipe wrenches or crescent wrenches. Because of this, many instances have occurred in which the pipe caps have been removed and stolen. Or a great number of fire hydrants have been turned on at one time thereby lowering the water pressure and decreasing the ability of a fire department to adequately protect an area against fire.

The present invention is directed to a fire cap which is not readily openable by conventional tools such as a pipe wrench, a crescent wrench, or hammer and chisel, but can only be opened by a special tool in order to discourage the theft and/or unauthorized opening of fire hydrants.

SUMMARY

The present invention is directed to a fire hydrant cap having first and second ends with the first end having internal threads extending inwardly into the body for attachment to the outlet to a fire hydrant. The second end of the body extends from the first end and includes a convex curved surface, preferably in the form of a sector of a sphere, which is not readily engageable by conventional tools. A plurality of special tool engaging surfaces spaced from each other are positioned on the second end which require a special tool for unthreading the cap from the hydrant.

Still a further object of the present invention is the provision of a plurality of tool engaging surfaces positioned on the second end wherein each engaging surface includes a shoulder facing oppositely to the direction in which the cap is threaded onto a hydrant for providing a shoulder for engaging a tool for connecting the cap to a hydrant. In addition, each engaging surface includes a recess extending from the shoulder in a direction opposite to the direction in which the cap is threaded onto the hydrant which includes a curved surface which progressively increases in distance from the axis of the body for coacting with a special tool for unthreading the cap from a hydrant.

Yet a still further object of the present invention is the provision of three engaging surfaces spaced equal distance around the second end of the cap.

Still a further object of the present invention is the provision of an actuating tool for tightening and unthreading the cap from a fire hydrant in which the tool is arcuately shaped and has a plurality of actuating surfaces positioned interiorly of the tool for coacting with the engaging surfaces on the second end of the cap for tightening and unthreading the cap from a hydrant. Each of the actuating surfaces includes a shoulder positioned to coact with the shoulder on the cap engaging surfaces and includes a curved portion positioned to coact with a curved surface on a cap engaging surface. The tool may include a handle for rotating the tool and may include a pentagonal recess for actuating the fire hydrant valve.

Other and further features and advantages will be readily apparent from the following description of the preferred embodiment.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is an elevational view, showing the fire hydrant cap of the present invention in place on a fire hydrant and an actuating tool of the present invention in position to engage the cap,

FIG. 2 is an enlarged elevational view of one end of the fire hydrant cap of FIG. 1,

FIG. 3 is a cross-sectional view taken along the line 3—3 of FIG. 2,

FIG. 4 is a perspective view of the fire hydrant cap of the present invention, and

FIG. 5 is an enlarged elevational view of the actuating tool of the present invention.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to the drawings, and particularly to FIG. 1, the reference numeral 10 generally indicates a conventional fire hydrant on which the fire hydrant cap of the present invention, generally indicated by the reference numeral 12, has been attached by an actuating tool of the present invention, generally indicated by the reference numeral 14.

In the past, the conventional fire hydrant caps have been easily removable with conventional tools such as wrenches and the fire hydrants 10 were turned on wasting water and in many instances in some localities a great number of fire hydrants have been turned on simultaneously thereby lowering the water pressure in the fire fighting system severely limiting fire fighting capabilities.

Furthermore, many fire hydrant caps have been removed and had to be replaced at great expense.

The present invention is directed to providing a fire hydrant cap 12 having a body 20 having a first end 22 and a second end 24. As best seen in FIG. 3, the first end 22 is provided with internal threads 26 extending into the body whereby the threads 26 may be mated with coacting threads on the outlet 18 of the fire hydrant 10 for connecting the cap 12 to the hydrant 10. Preferably, the first end 22 of the cap 12 is flat for mating against the fire hydrant outlet 18. The second end 24 extends from the first end 22 from a generally circular intersection 23 with the first end 22 and includes a curved convex shape which is not readily engageable with conventional tools such as wrenches having parallel jaws and includes no sharp corners or edges which can be engaged by chisels for unthreading the cap 12. Preferably, the shape of the curved surface of the end 24 is in the form of a sector of a sphere although any curved convex surface may be utilized which cannot be easily gripped by conventional tools and rotated off the fire hydrant outlet 18.

In order to rotate the cap 12 onto and off of the fire hydrant 10, a plurality of tool engaging surfaces, generally indicated by the reference numeral 30, are positioned on the second end 24 of the cap 12. Each engaging surface 30 includes a shoulder 32 facing oppositely to the direction in which the cap is threaded onto hydrant outlet 18 for providing shoulders for engaging a tool for connecting the cap to the hydrant. As shown, the internal threads 26 on the first end 22 of the cap 12 are usually threaded for right-hand rotation and thus the shoulders 32 in FIG. 2 are directed in a counter-clockwise direction around the longitudinal axis 34 of the cap 12 to provide a surface for engaging an actuating tool for threading and tightening the cap 12 onto

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the hydrant 10. While, of course, the shoulders 32 may be engaged by a tool such as chisels and hammers, any force applied to the shoulders 32 will always be in a direction for tightening the cap 12 onto the hydrant 10, and cannot be engaged for unthreading the cap 12 by any conventional type wrench.

Each of the engaging surfaces 30 also includes a recess 34 extending from each shoulder 32 in a direction opposite to the direction in which the cap is threaded onto the hydrant outlet 18 and each recess 34 includes a curved surface 36 extending from the shoulder 32 and progressively increasing in radial distance from the longitudinal axis 34 of the body for providing a surface for coacting with a special tool for unthreading the cap 12 from the hydrant 10. It is noted that the curved surfaces 36 do not provide a gripping surface for engagement by any conventional tools for unthreading the cap 12.

As best seen in FIG. 2, it is preferred to provide three engaging surfaces 30 spaced equal distance, or approximately 120° apart, around the second end 24 of the cap 12 although the cap 12 may be satisfactorily operated with only two engaging surfaces 30.

Referring now to FIGS. 1 and 5, the actuating tool 14 for threading and unthreading the cap 12 from the hydrant 10 is best seen. The tool 14 includes a generally arcuate portion 40, and is preferably circular. Portion 40 includes an internal opening 41 for fitting around the end 24 of cap 12 and includes a plurality of actuating surfaces generally indicated by the reference numeral 42, which are equal in number to the number of tool engaging surfaces 30 on the cap 12 for coacting therewith. Each actuating surface 42 includes a shoulder 44 positioned to coact with one of the shoulders 32 on the cap 12. Each of the actuating surfaces also includes a curved portion 46 which extends from a shoulder 44 in a clockwise direction and progressively decreases in distance from the center of the circular portion 40 and is shaped to coact with the curved surfaces 36 on the cap 12.

The tool 14 may also include a handle 48 connected to the circular portion 40 for rotating the circular portion 40. In addition, the handle may include a hexagonal recess 50 for actuating a valve stem 16 of a fire hydrant.

In use, the cap 12 may be threaded onto the outlet 18 of a fire hydrant 10 by means of the threads 26. The actuating tool 14 may be inserted over the end 24 bringing the shoulders 44 on the tool 14 into engagement with the shoulders 32 of the cap 12 and rotation of the handle 48 of the tool 14 will tighten the cap 24 onto the hydrant 10. In the event that it is desired to remove the cap 12 from the hydrant 10, the actuating tool 14 is again fitted over the end 24 of the cap 12 placing the curved portions 46 on the tool 14 into engagement with the curved surfaces 36 on the cap and the tool 14 is rotated in a counterclockwise direction to unthread the cap 12 from the outlet 18.

The present invention, therefore, is well adapted to carry out the objects and attain the ends and advantages mentioned as well as others inherent therein. While a presently preferred embodiment of the invention is given for the purpose of disclosure, numerous changes in the details of construction and arrangement of parts will readily suggest themselves to those skilled in the art and which are encompassed within the spirit of the invention and the scope of the appended claims.

What is claimed is:

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1. A fire hydrant cap comprising,
 - a body having first and second ends,
 - said first end having internal threads extending inwardly into the body for attachment to a fire hydrant,
 - said second end extending from the first end and having a curved convex shape,
 - a plurality of tool engaging surfaces spaced from each other and positioned on the second end, each engaging surface including a shoulder facing oppositely to the direction in which the cap is threaded onto a hydrant for providing shoulders for engaging a tool for connecting the cap to a hydrant,
 - each engaging surface including a recess extending from said shoulder in a direction opposite to the direction in which the cap is threaded onto the hydrant, said recess including a curved surface progressively increasing in distance from the axis of the body and includes a sidewall which extends parallel to the longitudinal axis of said cap for coacting with a tool for unthreading the cap from a hydrant.
2. The apparatus of claim 1 wherein there are three engaging surfaces spaced equidistance around said second end.
3. The apparatus of claim 1 wherein the curved convex shape of the second end is generally a sector of a sphere.
4. The apparatus of claim 1 including,
 - an arcuately shaped tool having a plurality of actuating surfaces positioned interiorly of the tool for coacting with the engaging surfaces on the second end of the cap for tightening and untightening said cap from the hydrant, each actuating surface including a shoulder positioned and shaped to coact with a shoulder on the cap engaging surfaces and including a curved portion positioned and shaped to coact with a curved surface on the cap engaging surfaces on the second end of the cap.
5. A fire hydrant cap comprising,
 - a body having first and second ends,
 - said first end having internal threads extending inwardly into the body for attachment to a fire hydrant,
 - said second end extending from a generally circular intersection with the first end and having a curved convex shape generally in the form of a sector of a sphere,
 - a plurality of tool engaging surfaces spaced from each other and positioned on the second end, each engaging surface including a shoulder facing in a counterclockwise direction in the second end for providing shoulders for engaging a tool for tightening the cap on the hydrant,
 - each engaging surface including a recess extending from each shoulder in a counterclockwise direction in the second end, said recess including a curved surface extending from a shoulder and progressively increasing in distance from the axis of the body and includes a sidewall which extends parallel to the longitudinal axis of said cap for coacting with a tool for unthreading the cap from a hydrant.
6. The apparatus of claim 5 wherein there are three engaging surfaces spaced equidistance around said second end.
7. The apparatus of claim 5 including,
 - a generally circular tool having an internal opening and a handle connected to the tool for rotating the

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tool,
said tool including a plurality of actuating surfaces
positioned about the internal opening for coacting
with the engaging surfaces on the second end of the
cap for tightening and untightening said cap from a
hydrant, each actuating surface including a shoulder
positioned and shaped to coact with a shoulder

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on the cap engaging surfaces and including a
curved portion positioned and shaped to coact with
a curved surface on the cap engaging surface on
the second end of the cap.

8. The apparatus of claim 7 wherein the tool includes
a pentagonal recess for actuating a fire hydrant.

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