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MEANS FOR ADJUSTABLY REGULATING THE FLOW OF YARD HYDRANTS

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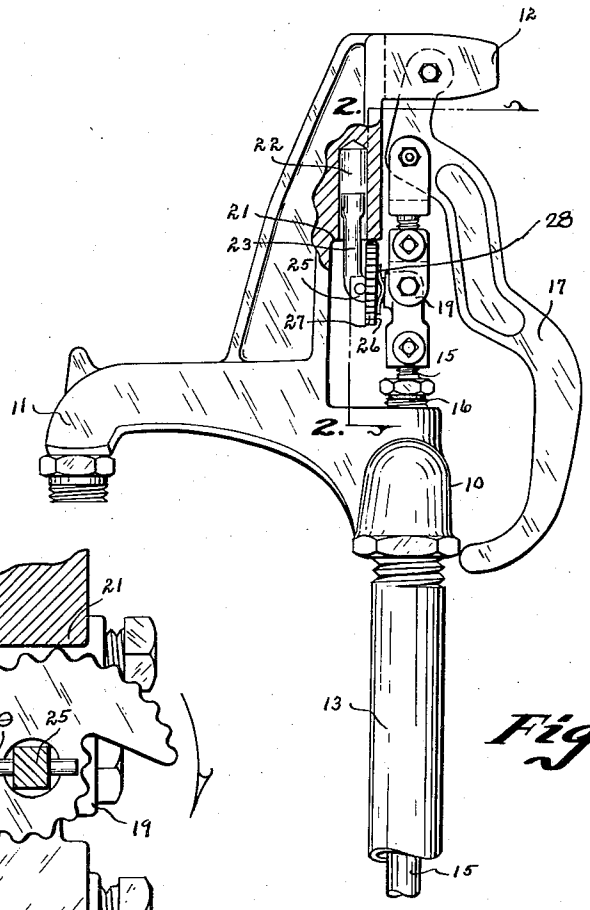

Fig. 1

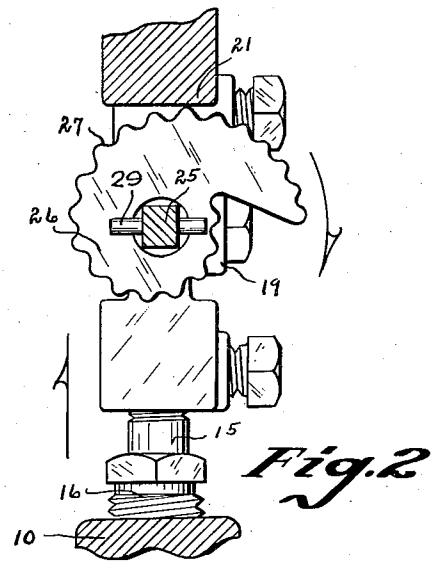

Fig. 2

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MEANS FOR ADJUSTABLY REGULATING THE FLOW OF YARD HYDRANTS

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This invention relates to yard hydrants and more particularly to a hydrant having an adjustable flow regulating means.

One of the most popular yard hydrants is a type having the appearance of a hand pump in that it has a spout and a vertically pivoted handle. The handle is not used for pumping, but when raised, it progressively opens a valve which is in communication with a source of water supply under pressure, such as that of a city water main; obviously one of the problems of such hydrants is that during freezing temperatures, any water in the system above ground or frost line will freeze, thereby ruining the hydrant. To prevent such a disaster, the valve means actuated by the handle is positioned in the ground below the frost line, and when the handle is in lowered position and the valve closed, all water above the valve and in the hydrant is permitted to drain from the same through an exposed drain passageway. With the unit so drained, there is no danger of damage from freezing. While such a structure is necessary and highly successful, it nevertheless produces a secondary problem. When it is desired to again use the hydrant the handle is raised, but no immediate water flow is realized. The tendancy, of course, is to raise the handle to its upper maximum position. The reason why no water flow is immediately forthcoming is due to the fact that the incoming water must first fill the unit before it can pass through the spout. The final result, unfortunately, is that with the valve completely open, the initial water flow through the spout is of unexpected undesirable excessive volume and force.

Therefore, one of the principal objects of my invention is to provide an adjustable flow regulator for yard hydrants of the non-freeze type that by adjustment prevents delayed unexpected great volume flow from the hydrant after its valve has been opened.

More specifically, the object of this invention is to provide an adjustable stop means for operatively limiting the upward swinging movement of the handle of a hydrant.

A still further object of this invention is to provide a means for locking a yard hydrant in a closed condition.

Still further objects of my invention are to provide an adjustable flow regulator means for yard hydrants that is economical in manufacture, durable in use, and refined in appearance.

These and other objects will be apparent to those skilled in the art.

My invention consists in the construction, arrangements, and combination, of the various parts of the device, whereby the objects contemplated are attained as hereinafter more fully set forth, specifically pointed out in my claims, and illustrated in the accompanying drawing, in which:

FIG. 1 is a side view of my yard hydrant with a section cut away to more fully illustrate its construction.

FIG. 2 is an enlarged plan view of my adjustable flow means for hydrants and is taken on line 2—2 of FIG. 1.

While I describe my device as particularly adapted for use on a water hydrant of the pump handle, antifreeze type, obviously it can be used successfully on certain other type valve means and also for other fluids besides water.

In the drawings I have used the numeral 10 to generally designate a yard hydrant having the outlet spout 11, horizontal U-head 12, and the water post pipe 13 having its top communicating with the spout 11. The post pipe 13 has its lower end portion extending into the ground and in communication with a source of water supply under pressure. At the lower end of the post pipe is the usual imposed valve (not shown) and which is opened or closed by the usual valve control rod 15. This rod extends upwardly inside the post pipe and thence through a packing gland 16 to the lower inside of the horizontal U-head 12 as shown in FIG. 1. Pivoted to the top of the horizontal U-head 12 is the valve actuating handle 17. A linkage 19 pivotally connects the top of the rod 15 at one end and to the handle 17 at its other end. By this construction when the handle is raised the valve (not shown) will be progressively opened. When the handle is in its lowered position the valve (not shown) will be in a closed position and no liquid will pass upwardly through the post pipe and out of the spout. As herebefore indicated, such yard hydrants have a water drain hole (not shown) which is exposed when the valve is in a closed position for draining all freezable water from the spout, head, and pipe post.

It is to such a yard hydrant that I use my device and which I will now describe in detail.

In such horizontal U-shaped hydrant heads is a horizontal shoulder area 21 extending toward the handle as shown in FIG. 1. Extending upwardly in this shoulder area is an inverted well 22. The numeral 23 designates a stub shaft having its upper end portion slidably mounted in the inverted guide well 22. The lower end of this shaft is bent horizontally toward and is rigidly joined to the linkage 19. This horizontal portion of the lower end of the stub shaft is a bearing designated by the numeral 25 and is rectangular in cross section as shown in FIG. 2. Rotatably mounted around this bearing portion 25 is my notched cam stop means generally designated by the numeral 26. This cam has its periphery extending or expanding spirally outwardly from its center as it extends in one arcuate direction as shown in FIG. 2. By this construction the cam stop wheel means may be rotated on the bearing 25 to bring its notched periphery 27 closer to or further away from the shoulder 21 of the hydrant head, depending of course, which direction the member is rotated. The cam wheel thus is an adjustable stop means that is engageable with the shoulder 21, for preventing further upward movement of the handle and valve rod. In fact, if desired, the member 26 may be rotated to an extreme position to lock and prevent all upward movement of the handle and valve control rod. This locking of the hydrant may be desirable to prevent the accidental opening of the hydrant by animals or like. Usually, however the operator will first adjust the desired flow by raising the handle to the desired selected position, and then the cam wheel is rotated to a position where it engages the shoulder 21. This setting will remain until reset. When the hydrant is again used, the handle will be raised only to the predetermined setting of the stop cam wheel. The ensuing flow of water, when it raises to a level to pass out of the spout, will only be that of the previous desired valve setting. The notched periphery of the wheel cam prevents its accidental rotation by its cam surface coming into contact with the shoulder 21. By the bearing member 25 being rectangular in cross section, and the hole in the cam wheel being round, the stop cam wheel will not become frozen onto the bearing member 25 by snow, sleet, or like. The cam wheel 26 is yieldingly held in its placed rotation by a spring means 28 between it and the linkage 19, and by a pin 29 extending through the bearing portion 25 and forward of the forward side of the cam as shown in FIG. 2. By the stub shaft being offset, the linkage is prevented from objectionable rotation.

Some changes may be made in the construction and arrangement of my means for adjustably regulating the flow of yard hydrants without departing from the real spirit and purpose of my invention, and it is my intention to cover by my claims, any modified forms of structure or use of mechanical equivalents which may be reasonably included within their scope.

I claim:

1. An actuating means for use with a yard or like hydrant, said means comprising, in combination, a stationary support member having a shoulder portion, a mounting member extending rigidly from said support member, a handle pivotally mounted on said mounting member, a linkage operatively connected to said handle for movement therewith, and a cam wheel having an outwardly spiraling periphery as it extends in one arcuate direction, said cam wheel being operatively rotatably mounted on said linkage to adjustably engage said shoulder portion when said handle is moved in one direction about its pivotal mounting.

2. An actuating means for use with a yard or like hydrant, said means comprising, in combination, a stationary support member having a shoulder portion, a mounting member extending rigidly from said support member, a handle pivotally mounted on said mounting member, a linkage operatively connected to said handle for movement therewith, and a cam wheel having an outwardly spiraling notched periphery as it extends in one arcuate direction, said cam wheel being operatively rotatably mounted on said linkage to adjustably engage said shoulder portion when said handle is moved in one direction about its pivotal mounting.

3. An actuating means for use with a yard or like hydrant, said means comprising, in combination, a stationary support member having a shoulder portion, a mounting member extending rigidly from said support member, a handle pivotally mounted on said mounting member, a linkage operatively connected to said handle for movement therewith, a bearing member operatively secured to said linkage, and a cam wheel having an outwardly spiraling periphery as it extends in one arcuate direction, said cam wheel adjustably rotatably embracing said bearing member and engaging said shoulder portion when said handle is moved in one direction about its pivotal mounting.

4. An actuating means for use with a yard or like hydrant, said means comprising, in combination, a stationary support member having a shoulder portion, a mounting member extending rigidly from said support member, a handle pivotally mounted on said mounting member, a linkage operatively connected to said handle for movement therewith, a bearing member rectangular in cross section operatively secured to said linkage, and a cam wheel having an outwardly spiraling periphery as it extends in one arcuate direction, said cam wheel adjustably rotatably embracing said bearing member and engaging said shoulder portion when said handle is moved in one direction about its pivotal mounting.

5. An actuating means for use with a yard or like hydrant, said means comprising, in combination, a stationary support member, having a shoulder portion, a mounting member extending rigidly from said support member, a handle pivotally mounted on said mounting member, a linkage operatively connected to said handle for movement therewith, a bearing member operatively secured to said linkage, a shaft operatively slidable on said support member and secured to said bearing member, and a cam wheel having an outwardly spiraling periphery as it extends in one arcuate direction, said cam wheel adjustably rotatably embracing said bearing member and engaging said shoulder portion when said handle is moved in one direction about its pivotal mounting.

6. An actuating means for use with a yard or like hydrant, said means comprising, in combination, a stationary support member, having a shoulder portion, a mounting member extending rigidly from said support member, a handle pivotally mounted on said mounting member, a linkage operatively connected to said handle for movement therewith, a bearing member operatively secured to said linkage, a shaft operatively slidable on said support member and secured to said bearing member, and a cam wheel having an outwardly spiraling periphery as it extends in one arcuate direction, said cam wheel adjustably rotatably embracing said bearing member and engaging said shoulder portion when said handle is moved in one direction about its pivotal mounting; said shaft being slidably secured to said support member by having a portion of its length slidably extending into a well in said support member.

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