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INFLATABLE PLUMBER'S TEST PLUG WITH DRAIN

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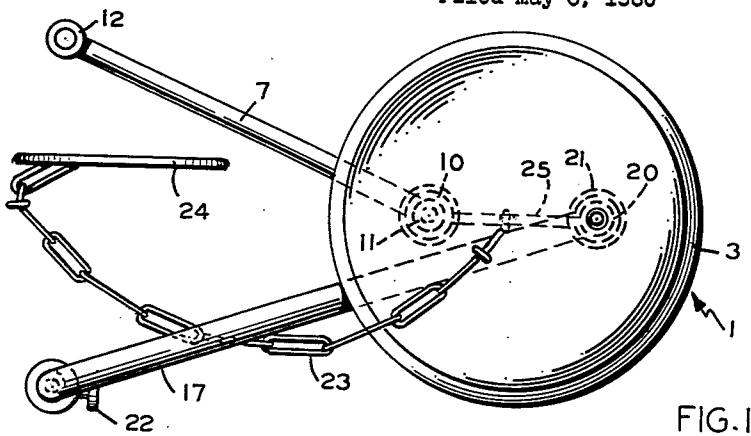


FIG. 1

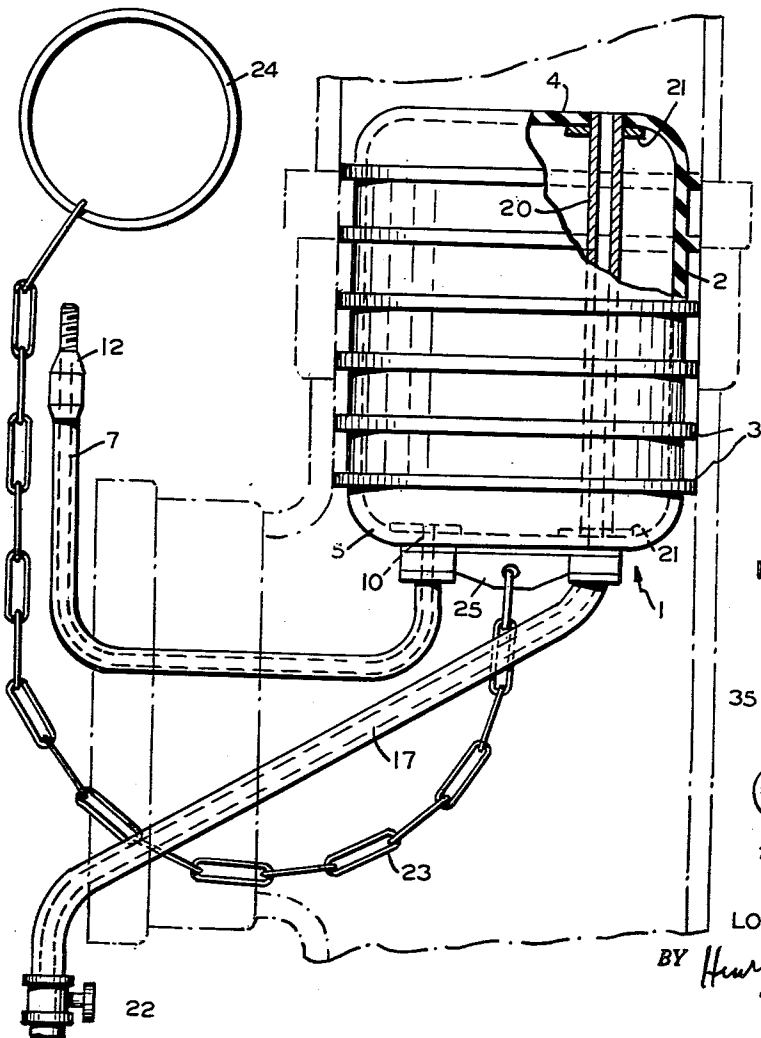


FIG. 2

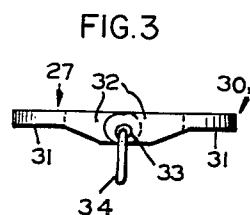


FIG. 3

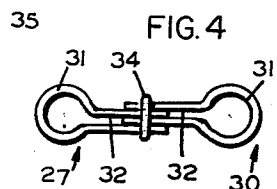


FIG. 4

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1

2

3,091,259 INFLATABLE PLUMBER'S TEST PLUG WITH DRAIN

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The present invention relates to improvements in plumber supplies and, more specifically, to a new and improved ball test plug of rubber or the like for use in waste and vent stacks or the like. There are known test plugs which are adapted for being inserted into a pipe of a plumbing system and for being inflated so as to form a temporary obstruction therein, allowing the system to be filled with water for testing purposes. To inflate these plugs or to release air therefrom after completion of a test, an operator has to insert his hands into the pipe containing the plug for the purpose of manipulating a control valve or the like on a short air stem extended from the plug. This is highly objectionable because when releasing the air from a test plug, the force of the water above the plug causes the plug to fall down suddenly, which can cause serious injuries to the hands of the operator, even to the extent of breaking or tearing off one or more of his fingers.

Therefore, one object of the present invention is the provision of a device of the character described which makes it possible to inflate, or to deflate, a test plug without inserting one's hands into a pipe, and which also allows to drain off the water in the pipe above the plug before releasing the air from the test plug, thus avoiding any danger in the use of such test plugs and greatly simplifying the operation thereof.

Another object of the present invention is the provision of a device of the character described which is of substantially the same size and weight as the hitherto known test plugs, and which is simple in construction, durable, sturdy, reliable in operation, and well adapted for withstanding the rough usage to which devices of this type ordinarily are subjected.

With the foregoing and other objects which will appear as the description proceeds, the invention consists of certain novel details of construction and combinations of parts hereinafter more fully described and pointed out in the claims, it being understood that changes may be made in the construction and arrangements of parts of the embodiment disclosed without departing from the spirit of the invention as claimed.

In the accompanying drawing I have set forth an illustrative embodiment of my invention.

In said drawing:

FIGURE 1 is a top plan view of a preferred embodiment of my invention;

FIG. 2 is a side elevational view;

FIG. 3 is a detailed side view of a double hose clamp; and,

FIG. 4 is a plan view of the clamp of FIG. 3.

Similar reference characters refer to similar parts throughout the several views.

In the drawing the numeral 1 denotes a hollow plug of rubber or the like having a substantially cylindrical side wall portion 2 preferably provided with annular ribs 3, and having a first end portion 4 as well as a second end portion 5. The plug 1 is so dimensioned that it fits snugly into the pipes, stacks, toilet bowl traps, or the like to be tested. Its outer diameter may be, for instance, 2 inches for testing 2-inch pipes, or 3 inches for testing 3-inch pipes, or 4 inches for testing 4-inch pipes and so forth.

An air hose 7 has one of its ends secured to a reinforced section 10 of the second end portion 5 of the

plug 1, and an opening 11 in the section 10 is in registering alignment with the interior of the hose 7, so that air can be forced into the plug 1 through the hose 7. A valve 12 is provided at the other end of the hose 7. A water discharge hose 17 is either entirely extended through the plug 1, or is secured to a non-bendable or non-collapsible pipe 20 of plastic material or of metal or the like, which is extended through the plug and which has flange portions 21 that are secured to the first end portion 4 and the second end portion 5 by means of vulcanizing or the like. Both the pipe 20 and the elements 7 and 10 may be arranged off centre relative to the plug 1, as illustrated in the example shown in FIG. 1, or the pipe 20 may be extended through the centre of the plug 1, and only the elements 7 and 10 arranged off centre. A cock valve 22 is provided at the outer free end of the hose 17. A chain 23, which preferably has at one end a ring member 24, is secured to the bottom portion 5, preferably by means of a clamp 25.

This clamp may be either a rigid element encompassing with its ends the end portion of the hoses 7 and 17, or it may consist of a pair of ring members 27 and 30 (FIGS. 3 and 4), each of which has a circular portion 31 and a pair of straight end portions 32 which have registering holes 33 through which extends a link 34 of the chain 23. In order to test a pipe or a plumbing system, the plug 1 is inserted into a pipe, such as the T-pipe 35, for instance, and the elements 7, 17 and 23 are extended through a convenient opening in the pipe 35. Then air is pumped into the plug through the hose 7 to a pressure of about thirty pounds per square inch. Thereafter the system, or the like which is to be tested, is filled with water above the plug 1, while the valve 22 is closed. After the test has been completed, the water is removed from the system or the like, by opening the valve 22, and is drained into a garden hose or the like. Then the plug 1 can be deflated, by opening the valve 12, and the plug can be removed easily and without any danger to the operator, by pulling it out of the pipe by means of the chain 23.

Thereby the aforementioned formation and arrangement of the members 27 and 30 will allow the link 34 to tilt the members 27 and 30 toward each other during the pulling of the chain 23, so that the second end portion 5 of the plug 1 will become somewhat concave, which will ease the pressure and overcome any sticking of the lower annular rib 3 against the inner side of the pipe 35, thus greatly facilitating the removal of the plug 1.

Since certain changes may be made in the above article and different embodiments of the invention could be made without departing from the scope thereof, it is intended that all matter contained in the above description or shown in the accompanying drawing shall be interpreted as illustrative and not in a limiting sense.

It is also to be understood that the following claims are intended to cover all of the generic and specific features of the invention herein described, and all statements of the scope of the invention which as a matter of language might be said to fall therebetween.

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

1. A test plug comprising a cylindrical resilient hollow body having first and second end wall portions as well as a side portion, an air hose in communication with the interior of said body being extended from the second one of said end wall portions, a drain hose secured to said second end wall portion, a rigid conduit extending through said body and connected to said drain hose, a pair of ring members having circular portions encompassing end portions of said air hose and of said drain hose adjacent said second end wall portion and having also

3

straight portions extending from said circular portions and partially overlaying each other and having registering holes, and a chain link extending through the registering holes in the straight portions of said ring members for pivotally joining the overlaying sections of the straight portions of said ring members so as to collapse said pair of ring members upon pulling the chain link, thereby partially collapsing an end wall portion of said resilient hollow body.

2. In a test plug which consists of a resilient hollow body having side and end wall portions as well as of an air hose connected to the interior of the hollow body and secured to an end wall thereof and of a drain hose extended through the hollow body, collapsible clamp means for facilitating the removal of the hollow body from a pipe, said clamp means comprising a pair of ring members having circular portions encompassing end portions of said air hose and of said drain hose adjacent an end

4

wall portion of the hollow body and having also straight portions extending from said circular portions and partially overlaying each other and having registering holes, and a chain link extending through the registering holes in the straight portions of said ring members for pivotally joining the overlaying sections of the straight portions of said ring members.

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