

G. W. REDEKER.
 CLEANING PROCESS FOR WATER PIPES.
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1,034,301.

Patented July 30, 1912.

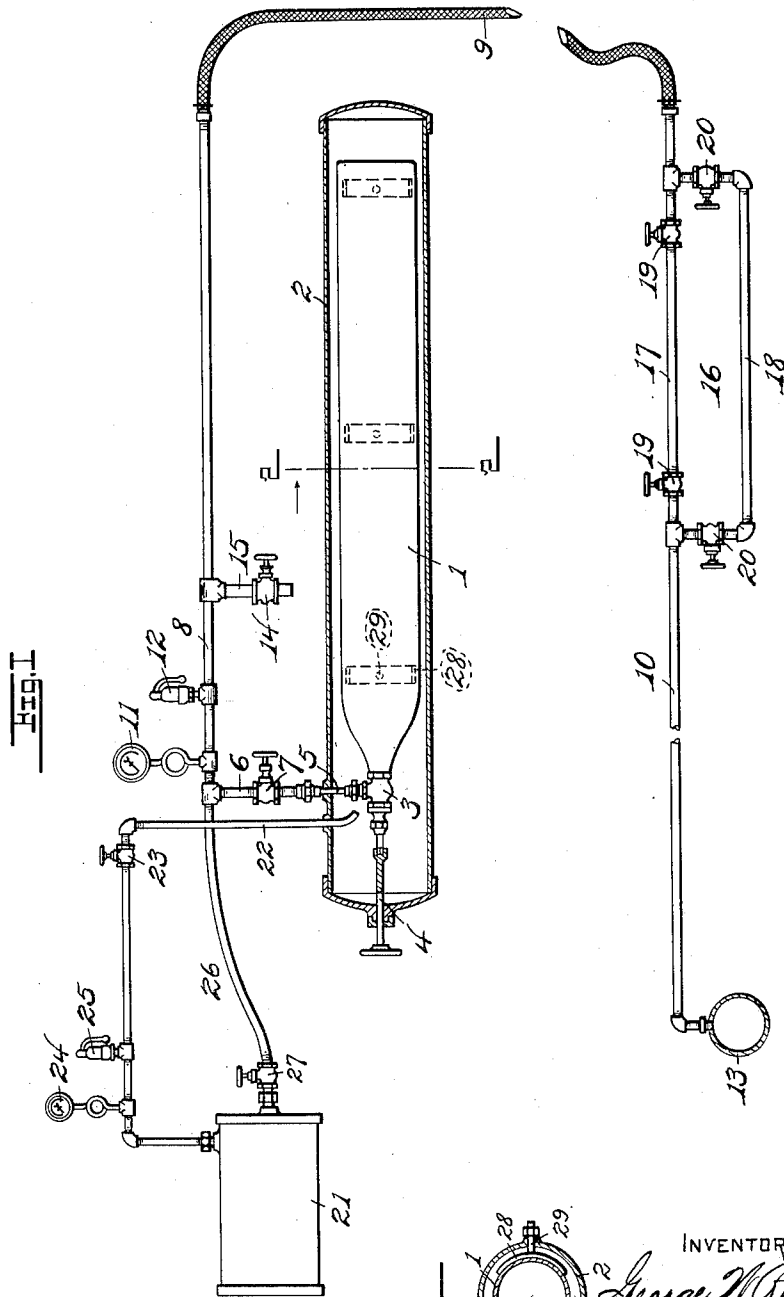


FIG. 1

FIG. 2

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CLEANING PROCESS FOR WATER-PIPES.

1,034,301.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, GEORGE W. REDEKER, a citizen of the United States of America, and resident of Wheeling, county of Ohio, and State of West Virginia, have invented certain new and useful Improvements in Cleaning Processes for Water-Pipes, of which the following is a specification.

This invention relates to a process for flushing or cleaning water service pipes.

The primary object of the invention is to provide a process whereby sediment and obstructions in house-service water pipes may be readily removed from any convenient accessible point therein and without the necessity of digging up streets and sidewalks to obtain direct access to the clogged or obstructed point or points.

A further object is to provide a process whereby the sediment and obstructions contained in house-service water pipes is discharged from said pipes into the open rather than into the mains from which said pipes are supplied.

In carrying out the aforesaid process, the apparatus illustrated in the accompanying drawing, forming a part of this specification, may be advantageously employed.

In said drawing, Figure 1 is a diagrammatic view of said apparatus applied to a water service line, the pressure-tank inclosing cylinder being shown in longitudinal section; and Fig. 2 is a section on the line 2-2, Fig. 1.

Referring to said drawing, in which like designating characters distinguish like parts throughout the several views—1 indicates a tank which is preferably filled with carbonic acid gas at high pressure, but which may contain any other suitable compressed gas, air, gas-forming chemicals, or gaseous or liquid material capable of discharging therefrom at continued high pressure. Said tank is preferably inclosed within a closed cylinder or casing 2 for a purpose which will presently be explained.

A suitable valve 3 is provided at the discharge end of the tank, the same being operated in any appropriate manner, as by a key 4 directed through the adjacent end of

the cylinder 2. Leading from said valve and extending outward through said cylinder is a small discharge pipe 5 which is connected to a larger pipe 6 having a gate-valve 7 thereon, the last-mentioned pipe being connected to one end of a pipe 8 whose opposite end is adapted for having a flexible pipe or hose 9 attached thereto. Said hose is adapted for having its opposite end attached to a house-service water pipe 10 at any suitable point, as at a faucet or other convenient point for admitting the applied pressure to said service pipes.

A pressure gage 11 and a pop safety or relief valve 12 are provided on the pipe 8, the former for indicating the pressure admitted therethrough to the service pipes, and the latter for permitting of the escape of pressure when it exceeds a predetermined point, preventing bursting of pipes.

In practice, when the hose connection has been made to the service pipes, the gate-valve 7 is opened so as to allow the water in said pipes to flow back to the valve 3 of the pressure tank 1. The said valve 3 is then opened quickly to suddenly release a heavy, or the full, pressure of the gas in the tank. Owing to the fact that water is practically non-compressible, the impact of the gas with the column of water, due to the sudden release of the gas, produces a violent shock and induces a sudden recoil in the water column which extends throughout the entire length of the service pipes. This violent movement of the water, resulting from the impact, loosens or detaches the scale, sediment and other foreign matter in the pipes. The valves 3 and 7 are then simultaneously closed and a valve 14 in a drain-pipe 15 connected to the pipe 8 is immediately opened. This permits the water in the service pipes to rush out through drain-pipe 15 under full pressure, carrying therewith the dislodged foreign matter; or, if desired, the hose may be disconnected from the faucet and said matter permitted to discharge from the latter.

In some cases it will be found that the pipes have become corroded, or that an obstruction exists in the pipes which effectually

ally resists dislodgment under the violent shock due to the sudden release of the gas. In such cases, I interpose between the hose 9 and the service pipe 10 a connection which is herein designated generally by the numeral 16 and which consists of a pipe 17 having direct connection at its opposite ends with said hose 9 and pipe 10, and a by-pass pipe 18 connected at opposite ends to said pipe 17 adjacent to the ends of the latter. A pair of gate-valves 19 is provided on said pipe 17 between the connections of the by-pass pipe thereto, one of said gate-valves being located adjacent to each of said connections. The portion of said pipe 17 which is between said gate-valves is filled with a material which, when forced through the service pipes, will scrape and scour said pipes, cracked ice being preferably employed for this purpose, for the reason that portions thereof remaining in the pipes will readily melt and present no obstruction. Either prior to the application of the pressure from the tank 1, or prior to closing off said pressure, as hereinbefore explained, according to the direction which it is desired the ice shall take, the gate-valves 19 are opened and the valves 20 adjacent to opposite ends of by-pass pipe 18 are closed. The application of pressure from the tank, applied slowly or the pressure of water returning from the main, as the case may be, forces the ice through the pipes, the irregular edges of the ice serving to effectually scrape and scour said pipes and to carry therebefore the dislodged foreign matter contained by the latter. When it is desired to direct the ice and dislodged material outward through the hose, the pipe 17 is filled with ice and the gate valves 19 closed. The valves 20 then being opened, the water from the main passes around on both sides of the pipe 17 through the by-pass pipe 18. Then the valves 20 are closed, the valves 19 are opened, and a faucet is opened, whereupon the water from the main advances the ice toward the said open faucet.

Carbonic acid gas discharged from the tank 1 under high pressure will quickly cause vapor or moisture to freeze and thus effectually close the valve 3 and small discharge pipe 5. To avoid this freezing, suitable means is preferably employed for directing heat against said valve 3. While any preferred means may be resorted to, that shown in the drawings has been found efficient for the purpose, the same consisting of a small boiler 21 having a steam-pipe 22 leading therefrom through the cylinder 2 and adapted to discharge steam against said valve 3. A throttle valve 23, a steam-gage 24, and a pop safety valve 25 are preferably provided in said steam-pipe, as shown. Water is supplied to the boiler in any ap-

propriate manner, as by a pipe 26 connected to the pipe 8, a valve 27 being provided in said pipe 26.

The cylinder 2 serves to confine the steam discharged from steam-pipe 22, which steam is utilized for heating the tank, causing the inclosed gas to expand, and, consequently, increasing the pressure. Adjustable oppositely disposed clamps are employed for supporting the tank 1 within the cylinder 2, said clamps comprising curved supporting plates 28 having stems 29 fixed thereto and projected outward through the cylinder wall.

What I claim, is—

1. The process of flushing house-service water pipes which consists in directing gas at high pressure into said pipes to produce a violent impact with the water in the latter, and then closing off the gas to allow the water to discharge from said pipes.

2. The process of flushing house-service water pipes which consists in connecting a tank containing a highly compressed gas or liquid to a service pipe, discharging contents of said tank into said pipe at high pressure to produce a violent impact with the water in said pipe, then cutting off the forcing pressure, and then allowing the water to unobstructedly discharge from said pipe.

3. The process of flushing house-service water pipes which consists in connecting a tank containing a highly compressed gas or liquid to a service pipe, discharging contents of said tank into said pipe at high pressure to impart a violent shock to the column of water in the latter, then cutting off the forcing pressure, and then opening a pipe to allow the water to discharge through the opened pipe.

4. The process of flushing house-service water pipes which consists in connecting a carbonic acid gas tank to a service pipe, discharging gas from said tank at high pressure to impart a violent shock to the column of water in the service pipes, then cutting off said pressure and opening one of said pipes to allow the water to discharge through the opened pipe.

5. The process of flushing house-service water pipes which consists in suitably connecting a valve-closed carbonic acid gas tank to a service pipe at a point remote from the supply main, opening the valve of said tank to discharge gas into the pipe at high pressure to impact violently with the water in said pipe, then cutting off the gas pressure from said pipe and opening the latter to allow the water to discharge from said pipe.

6. The process of flushing house-service water pipes which consists in connecting a carbonic acid gas tank to a service pipe, dis-

charging gas from said tank at high pressure to impact violently with the water in the service pipes, directing heat against the tank-valve, then cutting off the pressure
5 from said tank and opening one of said pipes to allow the water to discharge through the opened pipe.

In testimony whereof I affix my signature in presence of two subscribing witnesses.

GEORGE W. REDEKER.

Witnesses:

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H. E. DEMLAK.