J. J. McCARTY.

METHOD AND APPARATUS FOR CLEANING PIPES.

APPLICATION FILED NOV. 3, 1913.

1,156,417. Patented Oct. 12, 1915.

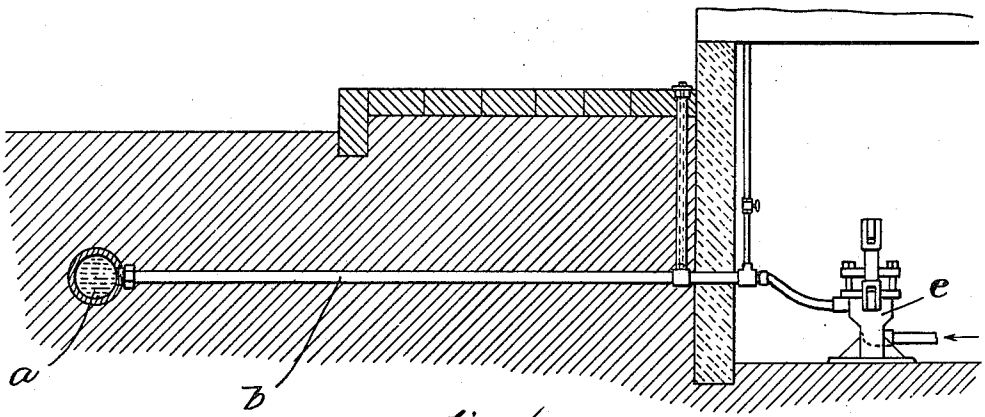


Fig. 1.

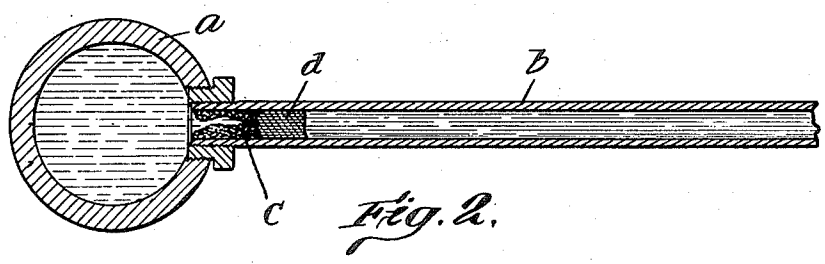


Fig. 2.

Witnesses:
H. B. Davis.
C. Doyle.

Inventor:
James J. McCarty
By Charles K. Offinn
attorney.

UNITED STATES PATENT OFFICE.

JAMES J. McCARTY, OF BOSTON, MASSACHUSETTS.

METHOD AND APPARATUS FOR CLEANING PIPES.

1,156,417. Specification of Letters Patent. Patented Oct. 12, 1915.

Application filed November 3, 1913. Serial No. 798,808.

To all whom it may concern:

Be it known that I, JAMES J. McCARTY, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented an Improvement in Methods and Apparatus for Cleaning Pipes, of which the following is a specification.

In water distribution systems, it frequently happens that the connections with the water main, which are usually of small diameter, as compared with the main, become clogged with rust, which usually accumulates closely adjacent the point where they are connected to the main. As the rust adheres strongly to the surface of the pipe, it has been found very difficult to remove the same, and it has usually been thought necessary to dig up the pipe and replace it.

The object of my invention, generally, is to provide a simple and effective means and method for removing rust accumulations without disturbing the pipe, so that the use of the pipe may be continued.

Prior to my invention various devices have been provided for cleaning pipes which are adapted to be forced therethrough by mechanical devices, or by air or water pressure, but, while said devices are effective in removing certain kinds of obstructions, for example, such as frequently clog waste, or sewer pipes, such devices are, so far as I am aware, entirely ineffective in removing rust accumulations of the kind above referred to, for the reason that much force is required to remove such accumulations, and it is impossible to apply sufficient force thereto to remove them with said devices. Moreover, such devices, if usable for this purpose, would be objectionable, if they were forced into the water-main where they could not be recovered, as they would be liable to cause difficulty in the future by obstructing other pipes.

More specifically, therefore, the object of my invention is to provide a means and method of removing rust obstructions in water pipes, which will enable the full force of the water or air pressure of a pump to be applied to the obstruction, and which, when the obstruction is forced into the water-main, will not also cause an object to be forced into the main which will thereafter be liable to clog other branch pipes.

I accomplish this object by providing fluid pressure means, and in connection therewith, a cleaning device, which consists of a fibrous mass of plastic material, preferably in the form of paper pulp, and is adapted to be caused to conform to all irregularities in the pipe and to expand laterally and close the same completely when it is forced against an obstruction by said fluid pressure means, so that any required pressure may be applied thereto, to remove the obstruction, and which, when forced from the branch into the main pipe, will become practically, completely disintegrated, so that it will not thereafter obstruct other pipes, or be in any way injurious to the water.

For a complete understanding of the means and method which I employ in securing the above described results, reference is made to the accompanying drawing, in which,

Figure 1 is a sectional view illustrating the ordinary house-connection with a water-main and further illustrating the manner of carrying out my invention. Fig. 2 is a detail sectional view thereof on an enlarged scale.

In the drawing *a* indicates the ordinary water-main and *b* the branch-pipe, which is connected thereto, and extends into the cellar of a building; *c* indicating an obstruction, as rust, which has accumulated on the inner surface of the pipe *b* near the point of connection with the water-main *a*.

According to my invention I provide a fibrous mass *d*, preferably of very thin, tissue paper, (although other fibrous material may serve the purpose) which, when moistened, so that it becomes paper pulp, may be closely compacted, into a plastic mass, and may be made readily to conform to any shape, and which, when free in a relatively large volume of water, in a short time becomes, practically, completely disintegrated, so that the fibers separate. In practice the volume of the mass must be materially greater than the internal cross-sectional area of the pipe to be cleaned, so that it may be expanded laterally, or spread out sufficiently to act as a plug and close the same.

In carrying out my process, the branch pipe is opened at its inner end, and a moistened mass *d*, of the tissue paper, is inserted therein. The process is then continued by forcing water into the inner end of the pipe by means of a hydraulic pump, which is connected to any convenient supply. This

causes the mass to be moved along through the pipe until it lodges against the obstruction, and when it reaches the obstruction it will be spread out or will be caused to expand laterally, and be packed against the walls of the pipe by the fluid pressure which is applied thereto from behind, as indicated in Fig. 2, so that it will completely close or choke the pipe and the water which is being forced thereagainst will be prevented from escaping into the water-main. The full pressure of the hydraulic pump may then be brought to bear against the obstruction, and, by continuing to force in water, the pressure will be gradually raised until it becomes so great that the obstruction will become dislodged and will be forced from the branch pipe into the water-main. At the same time the mass *d* will also be forced into the main pipe, where it will be free to expand and become disintegrated as it is carried along by the water therein, so that it will not be liable, later, to clog other inlet pipes leading from the main, and also will not be in any way injurious to the water. The pipe having been freed of the obstruction, it is merely necessary to disconnect the pump and close the opening.

By this method the obstruction in the pipe may be readily and easily removed without otherwise disturbing the pipe connections.

While I find it, as a rule, more convenient to remove obstructions when employing the above described method, of forcing water, only, into the pipe, it is well within the scope of my invention to force in air after forcing in sufficient water to fill the portion of the pipe next the mass therewith. I have, however, found it practically necessary to introduce the water first, on account of its effect on the mass of tissue paper in causing the latter to become plastic and to conform readily to the interior shape of the pipe so as to close the same tightly.

I claim:—

1. The method of removing obstructions of rust, and the like, from branch pipes of a water main, which consists in inserting into the discharge end of the pipe a plastic mass of paper pulp, then forcing the mass through the pipe against the obstruction by fluid pressure, to cause the same to expand laterally and close the pipe tightly, and thereafter increasing the fluid pressure to dislodge the obstruction and force it into the main.

2. The method of removing obstructions of rust, and the like, from branch pipes of a water main, which consists in inserting into the discharge end of the pipe a plastic, disintegrated mass of fibrous material, then forcing the mass through the pipe against the obstruction by water under pressure, to cause the mass to expand laterally and close the pipe tightly, and then increasing the pressure of the water against the mass to dislodge the obstruction and force it, with the mass, into the main, where the mass may become disintegrated.

3. The method of removing rust obstructions and the like, from branch pipes of a water-main, which consists in inserting into the discharge end of the pipe a mass of thin paper, then introducing water into the pipe, and applying pressure thereto to force the mass through the pipe and cause the mass to become plastic and expand laterally and close the pipe tightly when the obstruction is encountered, and then increasing the water pressure against the mass until the obstruction is dislodged and forced, with the mass, into the main.

4. In combination with a pipe, means for cleaning the same, comprising a mass of plastic, disintegrated material, adapted to be shaped into a cylindrical mass of substantial length and of equal cross-sectional area to that of said pipe, and fluid-pressure devices to force said mass against an obstruction in the pipe to cause lateral expansion of the mass to provide a tight-fitting piston to which the water pressure is applied to force an obstruction from the pipe.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

JAMES J. McCARTY.

Witnesses:
L. H. HARRIMAN,
H. B. DAVIS.