F. GRINNELL.
Sprinkling-Pipe.

No. 201,242. Patented March 12, 1878.

Fig: 1.

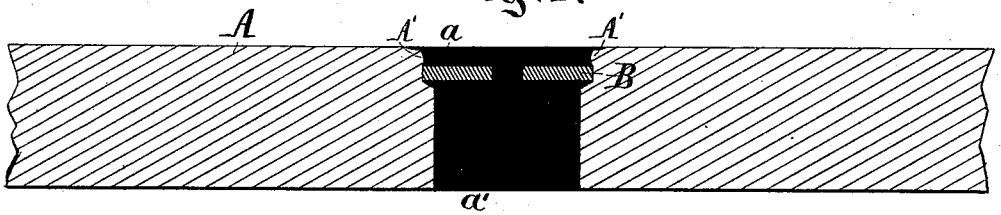
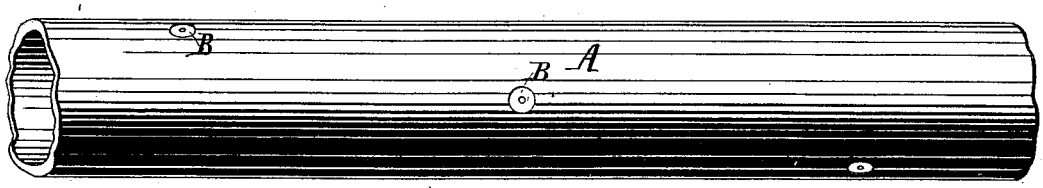


Fig: 2.



Witnesses:
A. Bury Johnstone
H. A. Johnstone.

Inventor:
F. Grinnell
by his attorney
T. D. Stetson

UNITED STATES PATENT OFFICE.

FREDERICK GRINNELL, OF PROVIDENCE, RHODE ISLAND.

IMPROVEMENT IN SPRINKLING-PIPES.

Specification forming part of Letters Patent No. **201,242**, dated March 12, 1878; application filed November 6, 1877.

To all whom it may concern:

Be it known that I, FREDERICK GRINNELL, of the city and county of Providence, in the State of Rhode Island, have invented certain new and useful Improvements Relating to Sprinkling-Pipes, of which the following is a specification:

It has become common, and is esteemed a wise precautionary measure against fire, to arrange perforated pipes leading near the ceilings of the several compartments of manufactories, particularly of cotton, woolen, and paper manufactories, where fine and highly-inflammable material is present.

The pipes are connected with a powerful pump or other source of supply, are divided in any required number of sections, and are made successively smaller as they extend and ramify. A strong supply at the base will discharge water from any one or all the sections of pipe in the building, being sprinkled in fine jets through the holes profusely distributed in the several branches of the pipes; but the success of the operation depends upon keeping the holes of a uniform small size. The pipes are usually of iron. If the holes are too large, the water will all escape in the lower part of the building, or in the beginning of a pipe or section, and will not maintain a high pressure to the top and to the extreme corners of the building. If, on the contrary, oxidation or other cause contracts the holes too much, the operation is entirely defeated.

Iron is cheap and strong. Economy forbids the use of brass or similar metals for the bodies of the pipes; but I have devised the bushing of holes in an iron pipe with brass or analogous non-corrodible metal, so as to combine the advantages of an iron with that of a brass pipe.

I produce, by machinery or otherwise, a great number of small washers or thin rings of brass or analogous non-corrodible material, and insert these and strongly confine them, by cheap and ready means, in holes formed too large in the iron pipes.

The following is a description of what I consider the best means of carrying out the invention.

In the accompanying drawings, forming a part of this specification, Figure 1 is a magnified section through a washer and the adjacent metal when set in the pipe. Fig. 2 is an entire side view of a short length of the sprinkling-pipe.

Similar letters of reference indicate like parts in both figures.

A is the iron pipe, and *a* is a large hole, drilled partly through from the outside. The hole is continued through of less diameter, as indicated by *a'*. B is a washer of hard brass, having a small and smoothly-punched hole in the center.

To set the washer, it is pushed down to its place by hand or by machinery, to rest on the shoulder at the junction of the large hole *a* with the small hole *a'*. After it is firmly set down to its proper position, the metal on the exterior of the pipe A adjacent to the hole *a* is slightly crushed by a blow with a hammer, or by other suitable means, so as to slightly rivet the adjacent iron A' over the edge of the washer B. This effectually and permanently confines it.

When the water is admitted to the interior of the pipe it issues with full force through the small smooth hole in the center of the washer B. The riveting holds the washer against escaping.

So long as no occasion for the use of the apparatus occurs, or equally after such occurrence, it remains in good condition for use.

The hole *a'* is so much larger than the hole in the center of the washer B that a considerable oxidation may occur without obstructing or materially affecting the flow of the water.

So long as a sufficient orifice of any form remains open to allow the water from the interior of the pipe to reach the washer B with its full pressure, the jet will issue with full force.

The brass or analogous material of the washer B is not subject to corrosion or other change.

My improved sprinkling-pipes require little attention. In very damp situations they should be examined and some of the holes carefully tested once in a year or two. They remain always ready for full and efficient use.

Modifications may be made in the details. I can use copper or various other materials instead of brass. Glass or iron coated with a vitreous material may serve. Instead of crushing in the metal, I believe I can hold the washer

B by strongly rusting it in place by touching the iron adjacent to it with a solution of sal-ammoniac.

I claim as my invention—

1. A sprinkling-tube having the holes bushed with non-corrodible material, substantially as herein specified.

2. The non-corrodible washer B, in combination with the perforated pipe A, having a hole, *a a'*, of different diameters, and with means A' for firmly confining the washer, as herein specified.

In testimony whereof I have hereunto set my name in presence of two subscribing witnesses.

FREDERICK GRINNELL.

Witnesses:

PHILLIPS ABBOTT,

A. HENRY GENTNER.