

United States Patent Office.

ALGERNON K. JOHNSTON, OF BROOKLYN, NEW YORK.

Letters Patent No. 113,891, dated April 18, 1871.

IMPROVEMENT IN PIPES FOR WATER, GAS, &c.

The Schedule referred to in these Letters Patent and making part of the same.

I, ALGERNON K. JOHNSTON, of Brooklyn, Kings county, New York, have invented an Improved Pipe for Conducting Water or other Liquids, Gas, or for other uses to which metallic or clay pipes are put.

Lead and iron pipes, though in many places and for many uses are all that could be desired, still have serious objections urged against them when proposed for other uses.

For many purposes—as, for instance, that of drainage—they are too costly, while a further trouble is found in both being rapidly acted upon by water, in the one case poisoning the water, and in the other causing speedy deterioration of the pipe itself; and if the pipe is thin, as sheet-iron tinned, a very short exposure to moist earth brings to it complete destruction.

Wooden pipe, though cheaper, is even less durable.

Clay and cement pipes are not subject to these objections, but are, after all, almost shorn of their utility because of their weight, which makes the cost of transporting a very short distance from the kilns equal to or greater than their first cost; such, too, as are ordinarily used for purposes of farm-drainage are necessarily handled with the greatest caution, as they break readily.

To obviate these difficulties and secure a pipe which, while possessing none of the objectionable features referred to, shall yet be almost if not quite as cheap as the cheapest of the pipes named, I have invented and manufactured pipe made of paper and treated thoroughly with paraffine. This substance, besides rendering the paper or other fabric used water-proof, also makes it extremely tough and strong and almost indestructible. The pipes are light, and will bear transportation economically for great distances. There is no trouble in handling them. The paraffine, being acted upon by neither acids nor alkalies, protects the paper when exposed in the moist earth, and, moreover, strengthens the paper in a remarkable manner.

It is my purpose to first make use of my invention in the manufacture of drain-tile or pipe; and to do so secure good strong paper, cut it in such shape that when wound round a mandrel or cylinder a tube will be formed.

The person who is to make the tile having first enveloped the mandrel once, applies paste, glue, or some other adhesive substance to the inside of the remain-

der of the pattern, and continues to roll it until a pipe of the required thickness is obtained. The mandrel should then be removed and the cylinders permitted to dry. It is important that they be thoroughly dried, as otherwise the paraffine will not be as well absorbed in the next process.

In this process the cylinders are covered with melted paraffine, and I prefer that the paraffine be hot and not simply liquid. They should be left in the paraffine until they have absorbed all the paraffine they are capable of taking up. When drained and subsequently cooled they are ready for use, but will still further improve by exposure to the atmosphere for a few days.

It is obvious that rosin, tar, and many other substances not dissolved by water might be added to the paraffine before or after it is melted, or that the paper may be treated with one or more of these, or with a mixture of some or all of them either before or after the paraffine is applied.

To prevent the attacks of mice, moles, or other vermin I propose adding to the paraffine some substance obnoxious to them, preferably using crude paraffine, such as is obtained from the Canada petroleum, it being most pungent and so best.

It is also clear that the paraffine, or the mixture containing it, will produce the same effect whether introduced into the straw, manila, or other paper stock before its conversion into paper or thereafter.

In the construction of the tile I have made to this time I have chosen to adopt such a shape that the small end of each pipe shall just fit into the large end of the next; but I do not intend to confine myself to any particular shape, but will make these pipes or tile of any desirable form.

I do not claim a machine for making paper pipes, cloth pipes, or, indeed, a machine for making pipes of any textile fabric; neither do I claim any particular process of manufacturing pipes of these substances; but

I claim as my invention—

A pipe of paper, cloth, or other textile fabric treated with paraffine, substantially as and for the purposes set forth.

ALGERNON K. JOHNSTON.

Witnesses:

ANNA S. JOHNSTON,
JOHN JOHNSTON,
W. F. JOHNSTON.