UNITED STATES PATENT OFFICE.

THOMAS H. DUNHAM, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN HOSE AND TUBING.

Specification forming part of Letters Patent No. **170,828**, dated December 7, 1875; application filed May 31, 1875.

To all whom it may concern:

Be it known that I, THOMAS H. DUNHAM, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Hose and Tubing; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it pertains to make and use the same.

My invention consists of fabrics made, for cloth hose and tubing, from threads of metal and fiber, combined with tallow, tar, and ocher, making fabrics of great strength and durable, protected from exposure, from fire and water, and other injury.

The ordinary hose now in use is liable to mildew and rot with exposure, and will not bear the service or strain required in its use, especially the hose used by steam fire-engines, which requires to bear great pressure, and, when much used, will only last about one year, and will often give out when most needed for use, involving great loss and damage.

My invention is intended to obviate the many objections to, and disadvantages of, such cloth hose and tubing, and I will now state more fully the manner of carrying it out, and of manufacturing according to my invention.

I take metal threads and fiber threads, and spin them together, having all the qualities needed, forming them so as to bear alike, suitable for weaving. I then prepare a bath of tar, heated at 212° Fahrenheit, to which I add to every barrel of tar, ten to twenty pounds of tallow, three to five pounds of rosin, one pound of potash or sal-soda, ten to twenty pounds of clay, or ocher, chalk, sulphate of ammonia, or other soluble salt of an alkali or alkaline earth, or its equivalent. I run the yarns through this compound, when boiling, filling them up with it thoroughly, after which I press out all not required. I then dry the yarns over heated cylinders or steam-pipes, drying them fully, when I weave them into cloth hose or tubing required, in solid, compact form, as duck, or as the fabrics require.

After the goods are woven, I apply a coating of cement on either side, composed of clay and chalk, lead, oil, and sulphur, or equivalent cement, to give protection, and save from damage by fire or water.

I claim as my invention, and desire Letters Patent for—

1. Cloth hose or tubing made of metal and fiber threads, treated with tallow, tar, ocher, sulphate of ammonia, or its equivalent, and woven into a solid, compact tube, as stated.

2. Hose or tubing composed of threads of fiber and metal, permeated with tallow, tar, ocher, sulphate of ammonia, or its equivalent, and woven up into a compact tube, which is coated inside and out with cements, substantially as described.

3. The improvement in the process of forming hose, consisting in permeating the threads, prior to weaving, with tallow, tar, ocher, sulphate of ammonia, or other soluble salts of an alkali or infusorial earth, weaving them into a close, compactly beat-up tubing or fabric, and coating with clay, whiting, or chalk, or other cement, or its equivalent, the proportions being substantially as described.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

THOMAS H. DUNHAM.

Witnesses:

THOMAS C. CONNOLLY,

A. E. BEECHER.