

No. 685,176.

Patented Oct. 22, 1901.

H. S. ROSS.
TUBE PROTECTOR.

(Application filed Jan. 16, 1901.)

(No Model.)

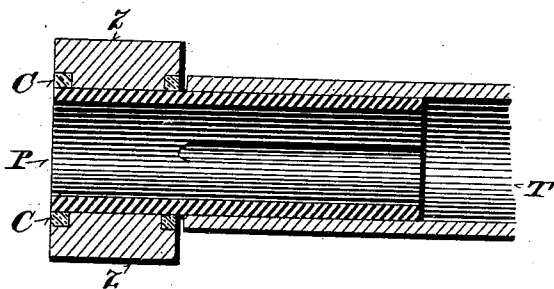


Fig. 1.

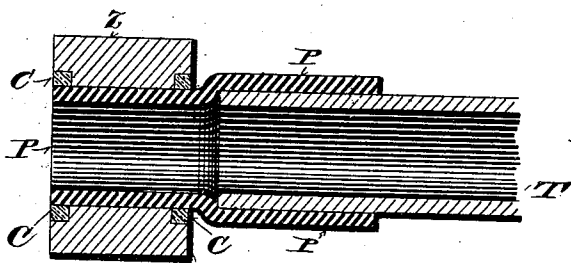


Fig. 2.

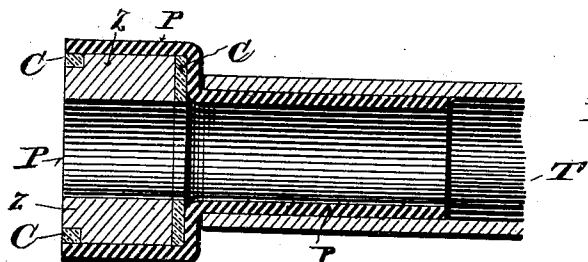


Fig. 3.

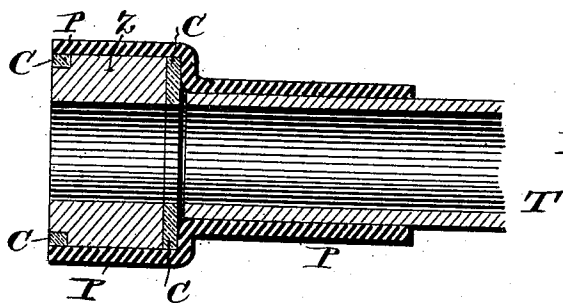


Fig. 4.

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UNITED STATES PATENT OFFICE.

HENRY SCHUYLER ROSS, OF NEW YORK, N. Y.

TUBE-PROTECTOR.

SPECIFICATION forming part of Letters Patent No. 685,176, dated October 22, 1901.

Application filed January 16, 1901, Serial No. 43,538. (No model.)

To all whom it may concern:

Be it known that I, HENRY SCHUYLER ROSS, a citizen of the United States, and a resident of the city, county, and State of New York, have invented a certain new and useful Improvement in Tube-Protectors, of which the following is a specification.

The object of my invention is to provide an economical, efficient, and easily-applied means of preventing corrosion in condenser tubes and pipes containing liquids; and it consists in a metallic holder adapted to fit snugly against the surface near the mouth of a tube to be preserved from corrosion and provided with a ring, plate, or other piece of zinc secured electrically to the outer end of said holder.

In constructing this tube-protector it should be born in mind that it is desirable that the zinc ring or plate and the metal holder should have large surfaces in contact with each other thoroughly shielded against the attack of liquids or gases, and also that the holder when attached to the tube should have large surface contact with the surface of the tube, and also should easily be removed or attached to the tube. These requirements being kept in view, the zinc piece or ring may be secured to the outside or the inside of the holder and the holder may be made to slip into or over the mouth of the tube, so as to make contact with the internal surface or the external surface of the tube, as most convenient. The shape of the holder is preferably that of a split tube; but the shape is not material and the desired contact with the condenser-tube may be brought about by having the diameter of the holder such as to make a snug fit inside or outside the tube. I much prefer, however, to have the holder made of spring metal, so that the elasticity of the metal will maintain a constant contact with the condenser-tube when sprung into or around its mouth.

In the accompanying drawings I have shown both ways of inserting the protector.

Figure 1 shows the protector inserted in the condenser-tube and provided with a zinc ring on the outside of the outer end. Fig. 2 shows a similar protector sprung onto the tube instead of inserted therein. Fig. 3 shows the protector inserted in the tube and with a zinc

inside its outer end. Fig. 4 shows a similar protector sprung onto the tube.

Same letters indicate similar parts in the different figures.

P is the protector, preferably made of spring metal and bent so as to form a tube or partially-split tube, so as to adapt it for insertion within or for springing around the end of the condenser-tube.

T represents the end or mouth of the condenser-tube of ordinary construction or other pipe to be protected.

Z is the zinc piece, in the form of a ring, plate, or otherwise, preferably of uniform thickness and adapted to be secured within or around the outer end of the protector P. A packing or gasket of heat-resisting non-conducting material—such, for instance, as Portland cement—*c c* is to be set into or around the zinc ring for the double purpose of shielding the contact-surfaces between the zinc and the metallic holder constituting the protector from attack by liquids or gases and of preventing short-circuiting or decomposition of the zinc everywhere except on its periphery. This gasket should therefore be extended as far as practicable to the outer periphery of the zinc. While desirable, this confining of the oxidation to the periphery of the zinc is not essential to the working of the protector, the special advantage of thus confining the corrosion being that as every oxidizing-point of the zinc surface is thus equidistant from the metal holder the production and transmission of electricity will be uniform, and thereby the protecting power of the zinc will be greater than where the zinc corrodes unevenly.

As before stated, the contact-surfaces of the protector and the tube to be protected may be fitted or made to fit snugly by grinding; but I prefer to rely upon the elasticity of the metal of the protector to maintain a constant spring-contact.

It will be readily understood that the contact portion of the protector may be extended into or along the tube as far as may be desired and also in cases where less powerful protection is required portions of the protector-tube may be cut away, all that is necessary being that sufficient metal should pro-

ject into or around the tube to maintain the
contact required to protect the special tube
in question. Tubes containing hot liquid
require more protection than those contain-
5 ing cold.

I claim—

A tube-protector which consists of a tu-
bular metallic holder adapted to fit snugly

against a surface near the mouth of a tube
to be preserved from corrosion and provided 10
with an annular piece of zinc secured elec-
trically to the outer end of said holder.

HENRY SCHUYLER ROSS.

Witnesses:

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