

(No Model.)

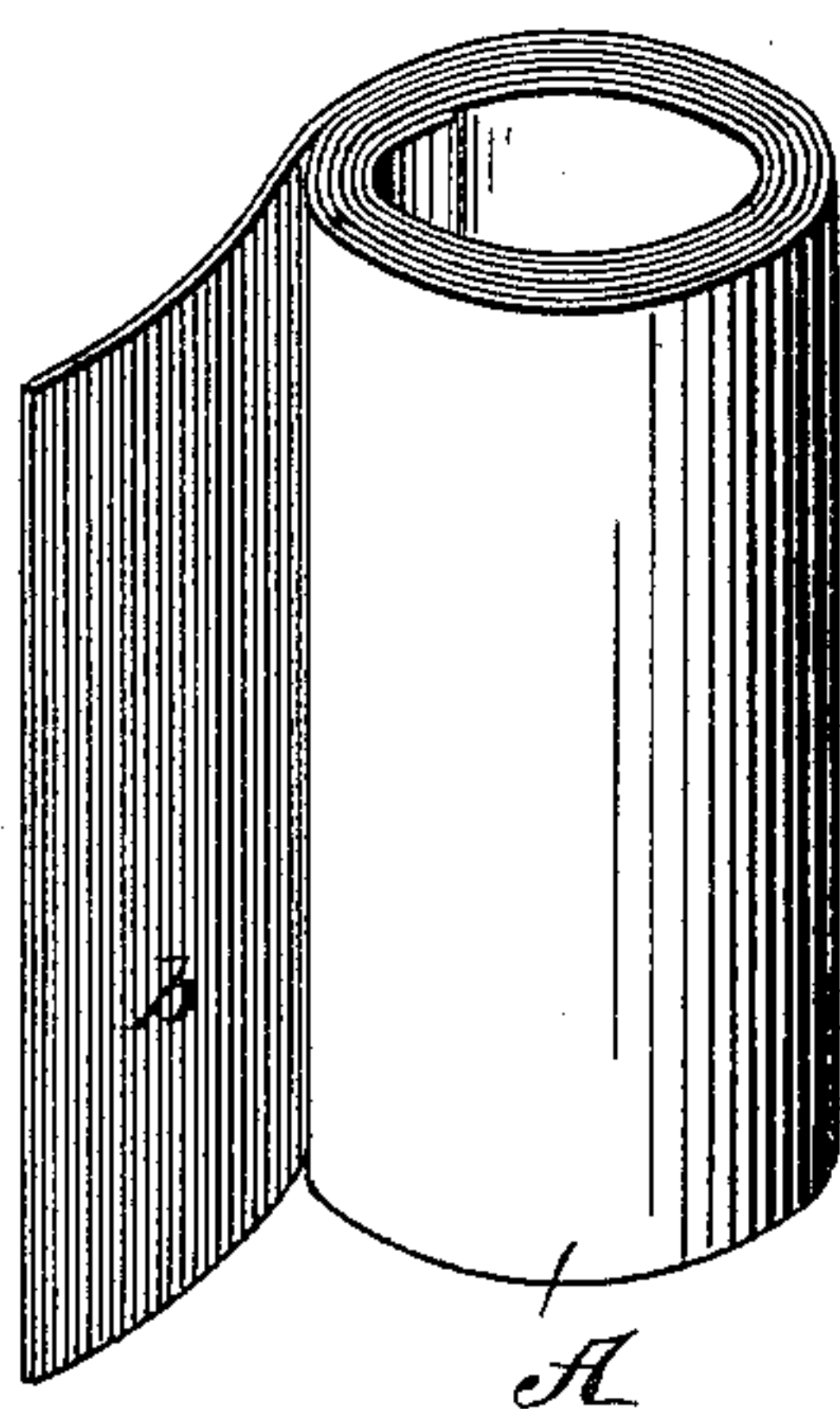
T. P. FORD.

TUBULAR PACKING FOR STEAM CONDENSER TUBES.

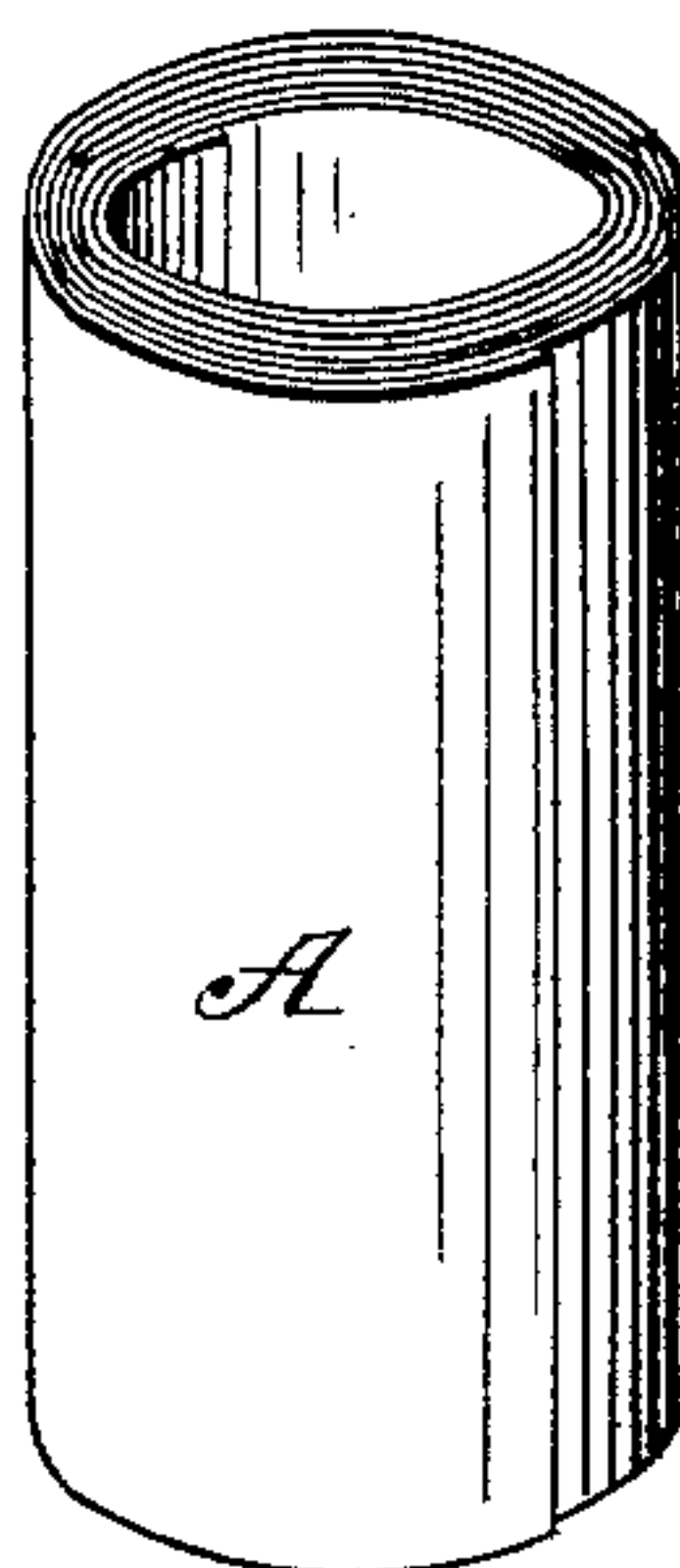
No. 433,282.

Patented July 29, 1890.

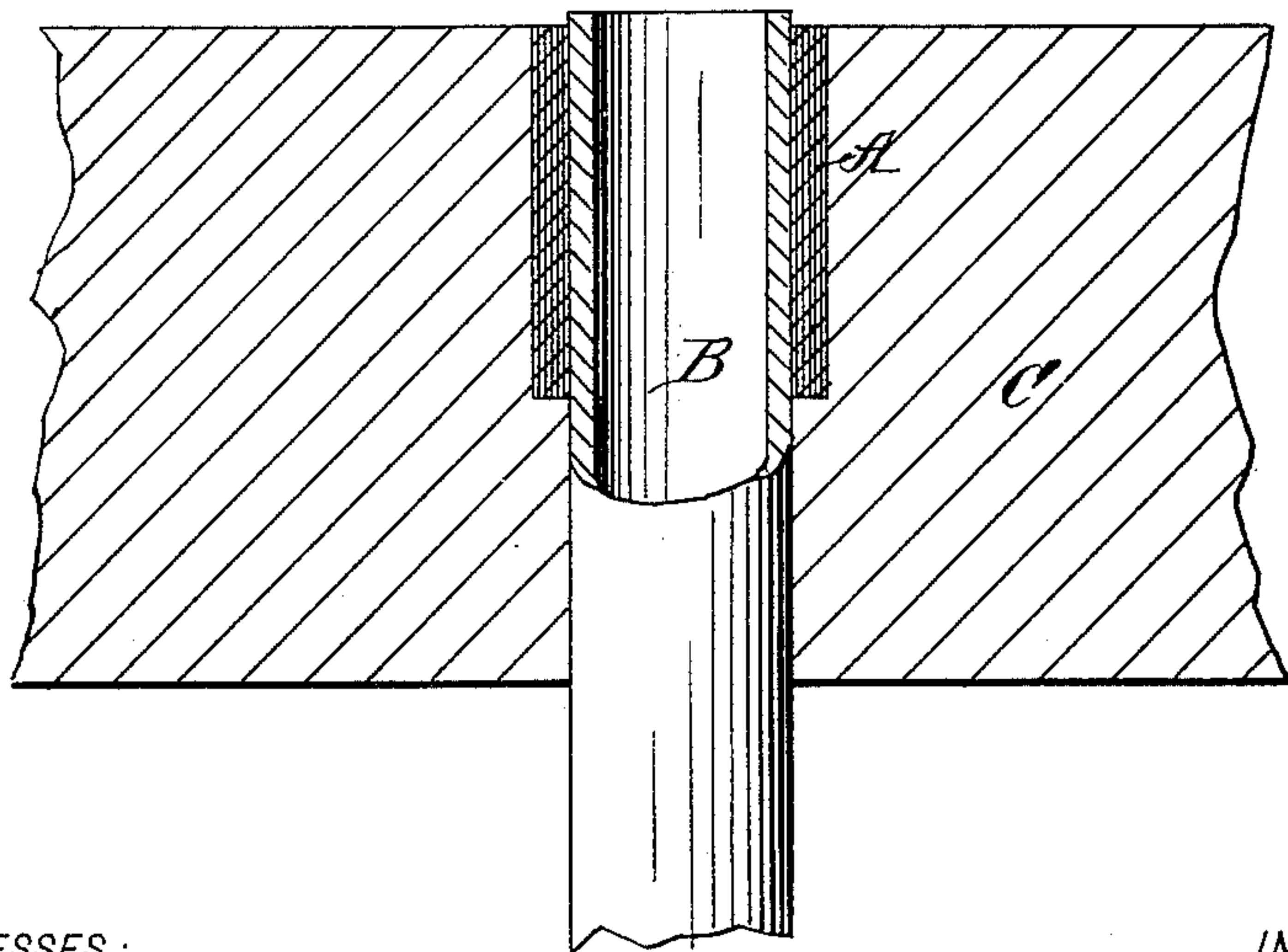
*Fig. 1.*



*Fig. 2.*



*Fig. 3.*



WITNESSES:

*John B. Deemer*  
*C. Sadgwick*

INVENTOR:

*T. P. Ford*  
*Munn & Co.*

BY

ATTORNEYS.

# UNITED STATES PATENT OFFICE.

TERRANCE P. FORD, OF NEW YORK, N. Y.

## TUBULAR PACKING FOR STEAM-CONDENSER TUBES.

SPECIFICATION forming part of Letters Patent No. 433,282, dated July 29, 1890.

Application filed September 17, 1889. Serial No. 324,250. (No model.)

*To all whom it may concern:*

Be it known that I, TERRANCE P. FORD, of the city, county, and State of New York, have invented a new and useful Improvement in Tubular Packings for Steam-Condenser Tubes, of which the following is a full, clear, and exact description.

This invention has for its object the production of a superior thimble or packing for the tubes of steam-condensers—that is, the packing used between the tubes and head-sheets of such and similar structures. These packings, which serve to make water and steam tight the joints of the parts above named in tubular steam-condensers by the insertion of the packings within recesses or apertures in the head-sheets, through or into which and the packings the ends of the condensing-tubes fit, are usually made of manila or other paper in sheets, which are coated with glue or other cement and then wrapped or rolled upon a mandrel to make a spirally-wrapped tube of suitable diameter and thickness, the glue causing the wraps to adhere to or one outside the other, after which said tube may be cut into lengths of the required size to form a series of independent thimbles or packings, each section constituting the packing for the end of a condensing-tube; or, instead of thus making a long tube and afterward cutting it up into lengths suitable for making a series of independent packings, each packing may be separately made from a strip of a width corresponding to the length of the packing to be produced. Such tubular packings thus made from unprepared paper having a thin pellicle of glue applied to its one side or face, but being otherwise unprepared, are very liable to lose their compactness and form by the action of the steam and water of the condenser upon them; also, to become soft or pulpy at their exposed ends and to rot and oxidize or stick, in common with the tubes, and thereby to make it difficult to take out the tubes when necessary without injuring or breaking the head-sheets. These defects my invention obviates by making the packings more compact and, so far as the material of which they are made, but not so far as their folds are concerned, water-proof, and so that they will resist any oxidizing or

corroding and sticking action, substantially as hereinafter described.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 represents a view in perspective of a thimble or packing embodying my invention, with the end portion of its outer fold unwrapped to show the glue or cement applied to the surface of the strip of which the packing is made. Fig. 2 is a perspective view of the finished thimble or tube; and Fig. 3, a mainly-sectional view of one of the head-sheets of a condenser in part, a condensing-tube in part fitting therein, and of the tubular packing applied.

A indicates the tubular packing, made of paper, burlap, linen, or other suitable fibrous material, but preferably manila paper. This packing I make by first forming it into a tube by wrapping or spirally rolling the fibrous material around a suitable mandrel, a thin pellicle of glue or cement having been previously applied to the one surface of the strip to make its folds adhere, as in the paper-tube packings hereinbefore described. I then heat said tube or packing in an oven, and afterward immerse it in a mixture composed of linseed-oil, paraffine, and charcoal-dust substantially in or about the proportions of one gallon of linseed-oil, one pound of paraffine, and one pound of charcoal-dust. This mixture should be heated to about 90° before immersing the packing-tubes, which are immersed in such heated mixture and allowed to remain therein for about one hour, (more or less,) after which they are taken out and allowed to cool and dry. The oil and paraffine will have the effect of filling the paper or fiber to prevent absorption of water when the packing is in use, and the charcoal by its absorption within the pores of the fiber will prevent the latter from rotting. If desired, however, the charcoal might be omitted from the waterproofing composition. A tubular packing thus made and prepared will retain its compactness and form, will be highly durable and not rot, and will be free from being affected by the water and steam of the condenser. It consequently will not



stick or oxidize in common with the condens-  
ing-tube B, which may accordingly be readily  
taken out, as also the packings be driven or  
drawn out when necessary without risk of  
5 injuring or breaking the head-sheet C of the  
condenser. Any steam or water penetrating  
such packings will simply serve to loosen the  
glued or cemented folds, which will rather  
add to the efficiency of the packing by swell-  
10 ing it, but will not be absorbed by the fiber  
of the packings, thereby improving the pack-  
ing, as above stated. These packings are to  
be applied to the heads and tubes of the con-  
denser as other tubular packings made of un-  
15 prepared material have been applied. It will  
be noticed that by saturating the packing af-  
ter it has been given its tubular form, the  
adhesive substance will hold the coils or folds

together, while, if the material was saturated  
with oil before being wound into tubular 20  
form, the adhesive substance would not ad-  
here to the several folds, at least effectively,  
and an imperfect packing would be the result.

Having thus described my invention, what  
I claim as new, and desire to secure by Let- 25  
ters Patent, is—

As an improved article of manufacture, a  
packing-tube formed of a strip rolled or  
wound into tubular form with an intervening  
adhesive substance securing the several folds, 30  
and a water-proof composition applied to the  
tube thus formed, substantially as set forth.

TERRANCE P. FORD.

Witnesses:

A. GREGORY,  
EDGAR TATE.