

No. 610,726.

Patented Sept. 13, 1898.

W. T. RUETE.
ART OF BENDING ARMORED CONDUIT TUBES.

(Application filed Nov. 24, 1897.)

(No Model.)

Fig. 1.

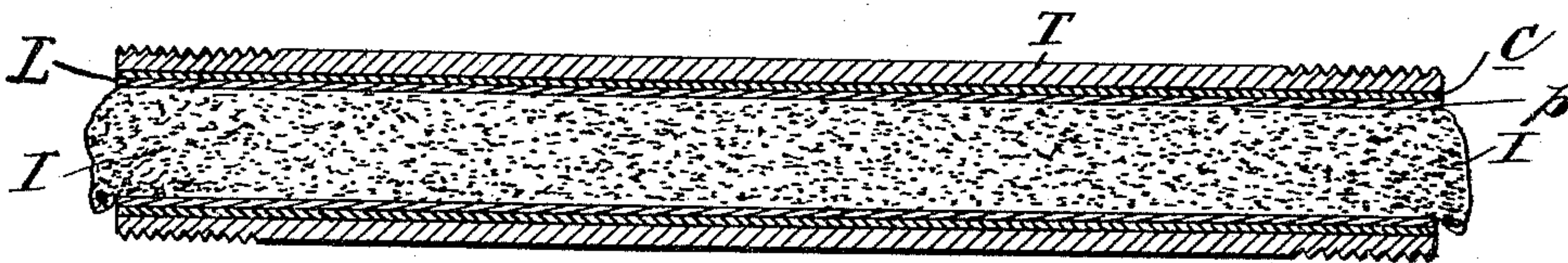


Fig. 2.

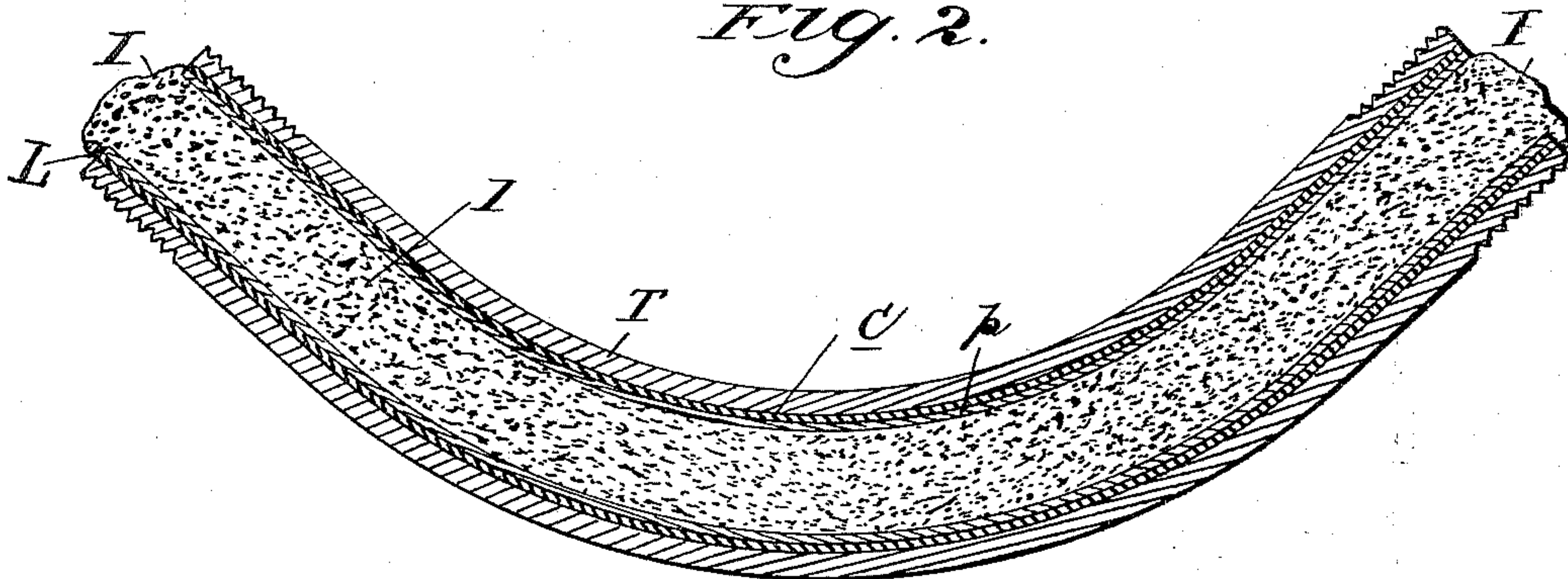
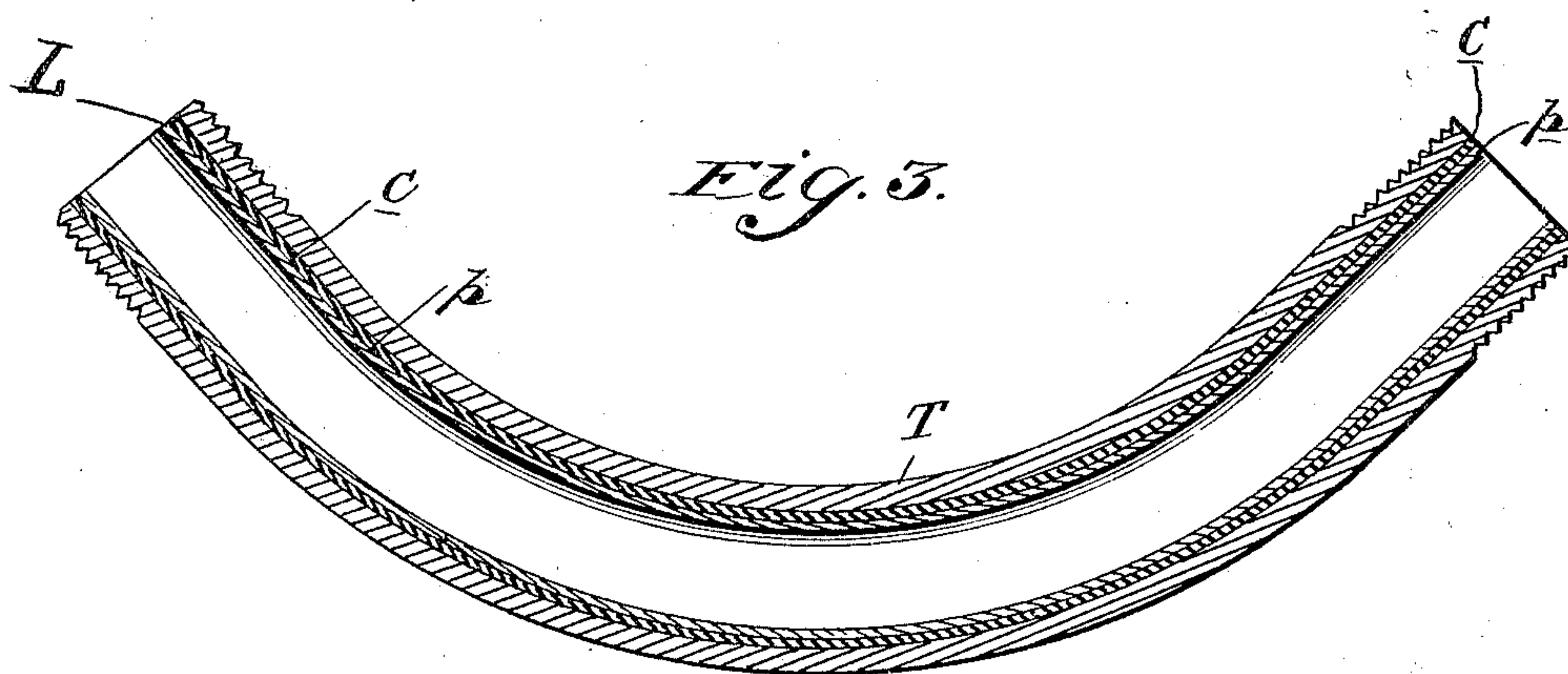


Fig. 3.



Witnesses
Edward Rowland.
M. M. Robinson.

Inventor
William T. Ruete.
By his Attorney
Charles J. Kintner

UNITED STATES PATENT OFFICE.

WILLIAM T. RUETE, OF NEW YORK, N. Y., ASSIGNOR TO THE INTERIOR
CONDUIT AND INSULATION COMPANY, OF SAME PLACE.

ART OF BENDING ARMORED CONDUIT-TUBES.

SPECIFICATION forming part of Letters Patent No. 610,726, dated September 13, 1898.

Application filed November 24, 1897. Serial No. 659,686. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM T. RUETE, a citizen of the United States, residing at New York, in the county of New York and State of New York, have made a new and useful Invention in the Art of Bending Armored Conduit-Tubes, of which the following is a specification.

My invention is directed to a novel method or process of bending iron or metal armored conduit-tubes—such, for instance, as is disclosed in United States Patents to Edwin T. Greenfield, bearing No. 552,060, granted December 24, 1895, and Nos. 585,863 and 585,864, granted July 6, 1897; and its object is to devise a method or process whereby armored conduit-tubes, and particularly elbows of the type referred to, may be more safely bent to extreme degrees of curvature at ordinary atmospheric temperatures without rupturing or impairing either the armor or the insulating-lining.

My invention will be fully understood by referring to the accompanying drawings, in which—

Figure 1 represents a longitudinal sectional view of a short section of iron-armored conduit-tubing designed to form an elbow and filled with a solid mass of liquefiable material. Fig. 2 illustrates a similar view of the same structure after it has been bent. Fig. 3 illustrates a similar view of the completed elbow after the mass of liquefiable material has been removed and the entire structure submitted to the necessary treatment to prepare the elbow for commercial use.

Prior to my invention it was the practice to bend elbows from short sections of such armored conduit-tubing by heating the same and inserting therein a flexible cylindrical mandrel of substantially the same length and exterior diameter as the interior diameter of the insulating-lining, after which the tube as thus heated was bent to the desired degree of curvature and the mandrel then removed. This method, however, was necessarily slow in practice, owing to the fact that only a limited number of such sections could be heated and prepared for bending at the same time, and was objectionable for the reason that it was not always possible to so insert such a

mandrel as to give to the entire mass sufficient solidity to avoid breaking or rupturing of the armor and for the further reason that such heating unless carefully effected might impair or damage the lining. My present invention contemplates the filling of short sections of armored conduit-tubes with a supporting or sustaining medium of a hydrocarbon compound adapted to permeate and thoroughly attach itself to the inner wall of the insulating-lining, such as is described in United States Patent to Greenfield and Nagel, No. 441,839, granted December 2, 1890, or of the general nature of liquefiable insulating mediums used in connection with armored conduit-tubes having pliable or flexible insulating-linings and bending the same after the filling has been put in place and allowed to solidify, finally removing this filling and simultaneously treating the entire lined elbow in a heated bath of a similar insulating material.

Referring to the drawings in detail for a full and clear understanding of the invention, T represents a short section of iron or metal armored conduit-tube of the type hereinbefore referred to and designed in the present instance for an elbow adapted to connect adjacent sections of similar lined tubing, the opposite ends of the tube being screw-threaded for such purpose, as shown.

L represents the insulating-lining, composed in this instance of a layer of oil-cloth *c*, closely adhering to the inner surface or wall of the tube T, and an interior layer or layers *p*, of paper, in turn closely adhering to the inner surface or wall of the layer *c*, said armored conduit-tube being substantially like that disclosed in the before-mentioned patents granted to Edwin T. Greenfield on the 6th day of July, 1897.

I represents a supporting or sustaining filling, preferably of such liquefiable insulating material as is generally used in connection with conduit-tubes of the character indicated, this filling having been poured into the lining-tube in liquid form and allowed to solidify, as shown, its function being to firmly secure or support all portions of the insulating-lining against the inner surface or wall of the armor during the process of bending and in

such manner that the armor will not break or rupture and that there shall be no rupture in the lining itself or that it shall not be separated from the inner surface or wall of the armor. After the tubes are thus filled they are placed in a suitable bending-machine and bent to the desired degree of curvature, this process of bending being effected at ordinary atmospheric temperatures and without any damaging or rupturing effect to the armor or insulating-lining or any change of its relation to the armor. After a number of such elbows have been constructed and been bent, as described, I usually tie them together in bundles and treat them in a heated bath of insulating material in substantially the manner described in the aforesaid patent to Greenfield and Nagel, thereby causing the fillings or cores to liquefy and thoroughly impregnate the pores of the insulating-lining. They are then removed and stood upon end, so as to drain off any surplus insulating material, and are ready for commercial use.

I do not limit myself in the practice of the before-mentioned method or process to use in connection with any special type of armored conduit-tube, although I prefer to use it in connection with the before-mentioned types of such tubes, my invention being directed, broadly, to a method of bending an armored conduit-tube provided with an insulating-lining by first filling said conduit-tube with a flexible liquefiable mass, then allowing the same to cool, then bending the filled conduit, and, finally, removing this liquefiable mass in any manner, but preferably by heat.

In the foregoing specification I have described the use of a flexible liquefiable filling with a raw or untreated lining-tube. The advantage of applying the filling to the tube at this stage of its manufacture and then bending it before treatment consists in the fact that the filling material takes a better hold upon the inner surface of the insulating-lining and the insulating-lining itself is in a more flexible or better condition for bending, as the effect of the treatment to which it is subsequently subjected is to give it a more bony character and increase its liability to fracture. I do not, however, limit myself to the filling of the conduit and the bending before treatment, because I can effect the bend-

ing by my method or process even after the insulating-lining has been treated, as described.

I am aware that it is old in the art to bend metal tubes, such as gas-pipes, by filling them with sand, which is held in place within the tube by packing, after which the tube thus filled is bent by subjecting it to pressure, as disclosed in United States Patent to Wright, No. 174,609, granted March 7, 1876, and I make no claim hereinafter broad enough to include any such method of bending tubes, my most generic claim being directed to the utilization of a filling material which is first subjected to heat sufficient to liquefy it and then allow it to cool after it is placed in position within the tube which is to be bent.

Having thus described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. The described method or process of forming a curved or bent armored conduit-tube having a flexible porous lining, consisting in first filling the tube with a mass of liquefiable insulating material and allowing the same to solidify, then subjecting the tube to a pressure sufficient to bend it to the desired degree of curvature, and finally subjecting the entire structure to a bath of molten or liquid insulating material sufficiently heated to liquefy the mass and cause it to impregnate the pores of the insulating-lining.

2. The described method or process of forming a curved or bent armored conduit-tube having a flexible raw or untreated lining, consisting in first filling the tube with a mass of liquefiable insulating material and allowing the same to solidify, then subjecting the tube to a pressure sufficient to bend it to the desired degree of curvature, and finally subjecting the entire structure to a bath or treatment of molten or liquid insulating material sufficiently heated to liquefy the mass and cause it to impregnate the pores of the insulating-lining.

In testimony whereof I have hereunto subscribed my name this 18th day of November, 1897.

WM. T. RUETE.

Witnesses:

C. J. KINTNER,

W. B. VANDELOZTER.