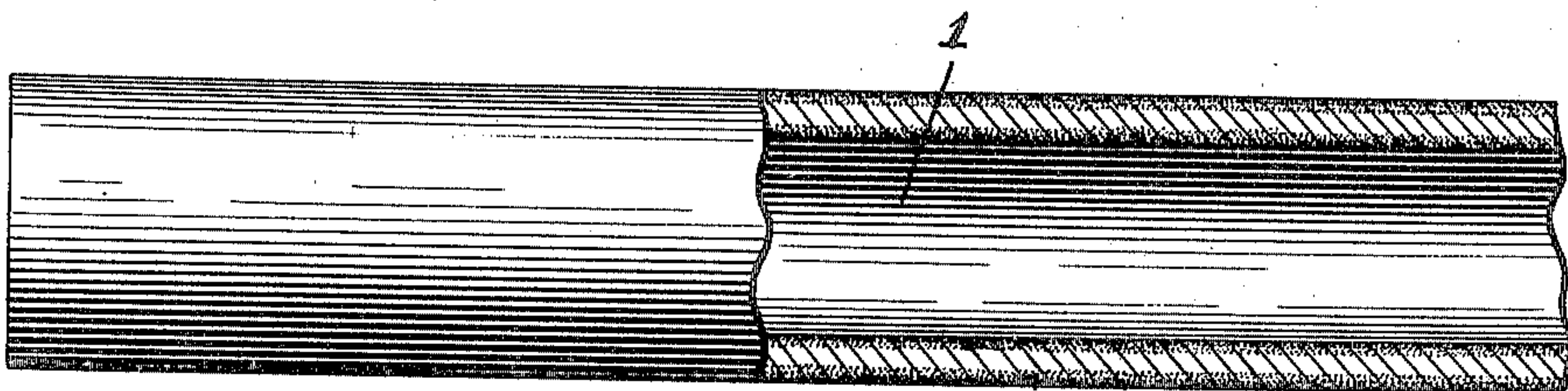


W. C. ROBINSON.
COATED METALLIC ARTICLE.
APPLICATION FILED APR. 15, 1909.

951,580.

Patented Mar. 8, 1910.



WITNESSES:

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UNITED STATES PATENT OFFICE.

WILLIAM C. ROBINSON, OF PITTSBURG, PENNSYLVANIA.

COATED METALLIC ARTICLE.

951,580.

Specification of Letters Patent.

Patented Mar. 8, 1910.

Application filed April 15, 1909. Serial No. 490,132.

To all whom it may concern:

Be it known that I, WILLIAM C. ROBINSON, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, a citizen of the United States, have invented or discovered a certain new and useful Improvement in Coated Metallic Articles, of which improvement the following is a specification.

10 In the practice of my invention the metallic article to be coated is first subjected to a treatment, whereby a metallic skin or coating is caused not only to adhere to the surface of the article, but to penetrate to a
15 greater or less extent into the surface. A skin or coating thus formed differs from a metallic coating which is deposited electrically upon the surface of the article, or which is formed thereon by dipping the article into
20 a molten bath, in that in either of the latter cases the coating may be knocked or chipped off; whereas when the coating material is caused to penetrate the surface, it is practically impossible to separate it therefrom,
25 and even if it be filed down to the original surface, the metal of the article will still be found to be substantially covered by the coating metal. This metallic coating can best be applied by the method known as
30 "sherardizing," substantially as described in Letters Patents of the United States No. 701,298 and No. 829,386. The invention is not however limited to any specific method of applying such penetrative metallic coating. Neither is the invention limited to any
35 particular metal which may be employed for the penetrative metallic coating. I prefer however to employ zinc for that purpose, particularly in coating articles of iron or
40 steel. A zinc coating applied in the manner above stated cannot be destroyed or chipped off in ordinary handling, or by ordinary abrasion, since it penetrates into the surface of the article, and seems to coat its individual
45 molecules or particles.

While zinc and other metals afford a highly efficient protection against the destructive action of alkalis, they are injuriously affected to a greater or less degree by contact
50 with acids. Therefore I apply to the metallic coating above described, a second coating of an acid-resisting substance, which is also of such character and applied in such manner as to not only form a coating, but
55 also to penetrate to a material extent the initial metallic coating and the article itself.

For this second coating I preferably employ a waxy substance, and while other waxes, both vegetable and mineral, are adapted for this purpose, I prefer to use
60 paraffin. The paraffin may be merely melted and heated to a high temperature, and the article having the initial metallic coating may be dipped therein; or the paraffin may be dissolved in a volatile liquid
65 carrier, such as gasoline, and thus applied to the article, when the gasoline, having performed its function as a carrier, will evaporate, leaving the paraffin in position. In either operation a thin skin or coating
70 of wax will be applied to the article, and the wax coating is thus also caused to penetrate the metallic coating and the article itself. When this wax coating has dried, it has been found that even if it be scraped away
75 as closely to the metal as possible, there will still remain a sufficient quantity to effectively resist the action of acids, the wax appearing to have formed a coating around the individual molecules or particles of metal,
80 and to have penetrated and filled all the pores in the metallic coating and in the surface of the article. By thus applying to a metallic article an initial penetrating metallic coating resistant to alkalis, and a second
85 penetrating coating resistant to acids, there is obtained a resultant composite or mechanically combined coating, which has also penetrated and mechanically combined with the metal of the surface of the article beneath, so that the individual molecules or
90 particles of said surface are effectively protected against the action of either alkalis or acids by a coating which cannot be broken or stripped away by ordinary handling or abrasion. The second coating,
95 when made of wax, may be so thin as to be sufficiently transparent to disclose the character of the underlying metal surface, and at the same time afford an efficient acid-
100 proof coating.

The invention is adapted to the coating of any metallic article which is subject to injury by alkalis and acids. It has been found of great value for the protection of
105 iron and steel conduits for electrical conductors, and fittings used in connection therewith. These conduits must often be placed in the walls of buildings and other structures made of cement or concrete
110 positions containing metallic cinder and slag from smelting furnaces. This cinder

is very hard, and usually contains acids which are highly injurious to iron and steel. It is found that conduits coated as herein described are particularly serviceable in such situations; the coating is not injured by abrasion of such substances, and it efficiently protects the body of the conduit from pitting and corrosion.

The accompanying drawing illustrates as well as it can be illustrated, a section of pipe 1, coated in accordance with the invention, the zinc and paraffin penetrating the surface of the article being indicated by the small dots.

I claim as my invention:

1. A metallic article having a metallic coating or skin adherent to and penetrating the surface of the article, and a second coating differing in character from the first and adherent to and penetrating said first coating.

2. A metallic article having a coating or skin of zinc adherent to and penetrating the surface of the article, and a coating of paraffin adherent to and penetrating the zinc coating.

3. A metallic article having a metallic coating adherent to and penetrating the surface of the article, and a transparent acid-resistant coating adherent to and penetrating said metallic coating.

4. Metallic tubing having a coating of zinc adherent to and penetrating the surface of the tubing and a coating of paraffin adherent to and penetrating the zinc coating.

In testimony whereof, I have hereunto set my hand.

WILLIAM C. ROBINSON.

Witnesses:

CHARLES BARNETT,
FRIEDA E. WOLFF.