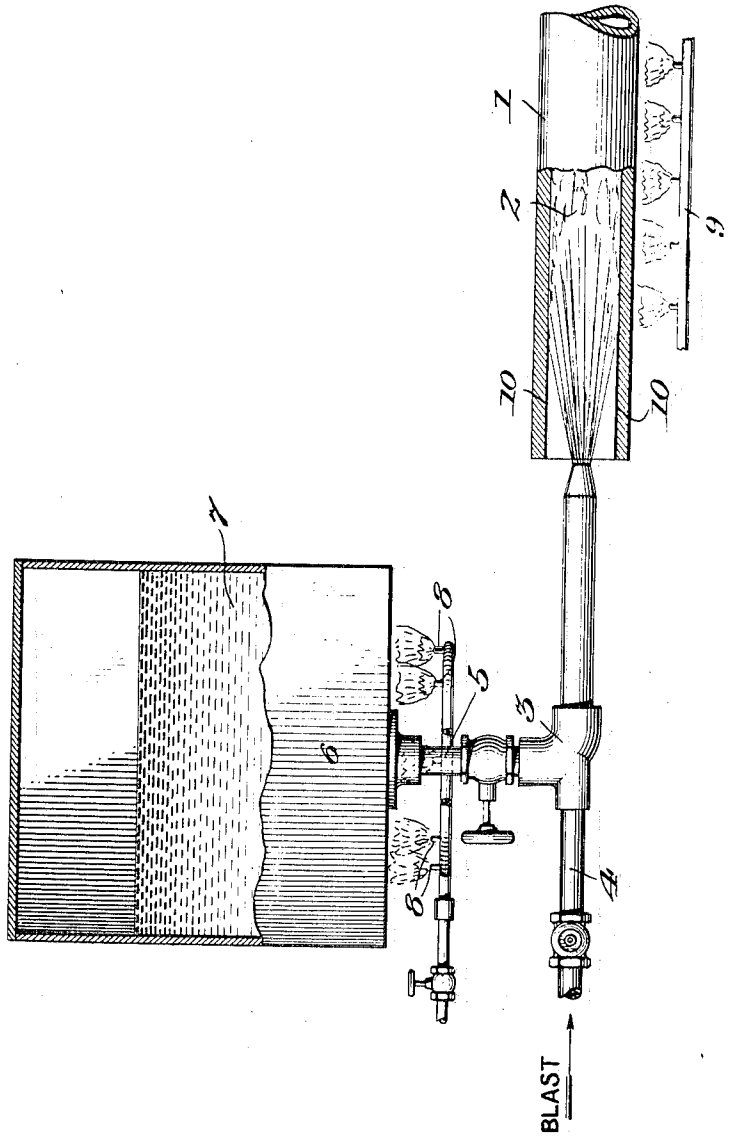
R. McK. THOMAS.

TREATMENT OF PIPES AND THE LIKE.

APPLICATION FILED MAY 16, 1910.

1,121,308.

Patented Dec. 15, 1914.



Attest:
W. A. Durand.
John C. Fitzmier

Robert McKean Thomas, Inventor:
by Alexander C. Prondfit,
Atty

UNITED STATES PATENT OFFICE.

ROBERT McKEAN THOMAS, OF ELIZABETH, NEW JERSEY, ASSIGNOR TO THOMAS & BETTS COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

TREATMENT OF PIPES AND THE LIKE.

1,121,308. Specification of Letters Patent. Patented Dec. 15, 1914.

Application filed May 16, 1910. Serial No. 561,627.

To all whom it may concern:

Be it known that I, ROBERT McKEAN THOMAS, of Elizabeth, New Jersey, have invented certain Improvements in the Treatment of Pipes and the like, of which the following description is a specification.

This invention relates to the treatment of metallic articles and is of particular utility in the preparation of metal tubes for use as a protective armor for electrical conductors, although I contemplate the utilization of my improvements in any field for which they are adapted by their nature.

An important object of my invention is to provide a method for removing from the iron or steel pipes used for electrical conduit the scales and similar excrescences inimical to the integrity of the insulation of conductors drawn therethrough, which method obviates the use of abrasive materials, such as particles of sand, heretofore commonly employed with an air blast to clean the interior of these tubes after completion of the usual pickling operation which loosens the scale and renders it easily removable.

Abrasives such as sand, when of suitable quality, are expensive, owing to the cost of transportation to the place of use from the distant source of the abrasive, and their use not only results in unevenly cleaned pipes, owing to lack of uniformity in the quality of the abrasive, and danger or discomfort to operatives from the gritty atmosphere in which they work, but also may affect the pipe wall unfavorably by the vigorous scratching thereof and destruction of the natural matte surface which affords the most favorable base for adhesion of the protective coating. The rolling of pipe tends to produce, under the scale, the above mentioned natural matte coating the presence of which is favorable, rather than unfavorable, to prevention of rust and of other deterioration of the metal, and my process avoids the abrasion of this natural coating.

I have discovered that it is quite possible to clean the pipe of scale adequately by the use of non-abrasive media of various kinds, all of which fall within the scope of my invention, and as one convenient detergent medium of non-abrasive properties I may instance molten metal in finely divided form, this being an effective means by which my improved method may be carried into practice. By using molten tin, zinc or other metal with the cleaning blast, furthermore, not only will the cleaning operation be accomplished quickly and thoroughly without scarifying the pipe, but such a mode of treatment accomplishes concurrently the operation of coating the pipe with the blasting particles, such as zinc or tin, thus effecting in one operation what has heretofore required at least two, viz., the cleaning and coating. Instead of using molten metal for the non-abrasive cleaning medium, the pipes may be heated, and finely comminuted metal applied thereto, preferably by means of the cleaning blast, which will leave the metal in place on the walls as a coating. Or, the coating material may be blown in cold and the pipe suitably treated thereafter to spread and fix the coating, as by heating the pipe. The latter method is an especially useful one for applying zinc in the form of zinc-dust, as the introduction of zinc-dust in a blast to a heated pipe would invite an explosion, under ordinary circumstances.

The finely divided metallic substance may be used in various other forms such as a metallic compound, a metallic composition or a metallic salt, the metallic constituent selected being fixed in the form of a coating in suitable fashion, as by heating the pipe, and the gaseous, volatile, or otherwise fugitive, constituent being removed by the current. As examples of such materials, I contemplate the employment of finely ground fusible metal such as solder, with powdered rosin as a flux; or stannous chlorid, this having a suitable ingredient to aid in fixing the metallic deposit, upon decomposition.

The simplest and briefest operation is, in most instances of my improved treatment the most effective, consisting in heating the pipes, preferably after they have been pickled to loosen the scale, and applying to the heated pipes the air-blast containing the finely divided metallic substance. The result is that the scale is driven off before the blast, and the blast is retarded and deflected by friction and the scale into contact with the heated pipe, giving up thereto its metallic constituent, while the gaseous compounds, or other fugitive ingredients given off, aid to split off the scale, to increase the expulsive effect of the blast thereupon, and to smooth the metallic coating in place, while it is still plastic.

It will be observed that the use of the blast in conjunction with molten metal, whether the latter be applied with the blast, or prior thereto, serves to smooth out the coating and to avoid such fins and other imperfections as have prevented heretofore the general use for electrical conduit of pipes galvanized by the hot process, which frequently leaves such projections.

The various features of my invention will be illustrated and described fully in the drawings and specifications and pointed out in the claims.

In the drawing, the figure shows, in somewhat diagrammatic form, one suitable form of apparatus for carrying into effect my novel process.

In the embodiment of my invention selected for illustration and description to enable ready and complete understanding of my improvements, the part designated by the reference numeral 1 is a pipe to be cleansed of the scale indicated by the reference numeral 2, and at 3 I have shown one suitable form of means to apply the cleansing blast, consisting of an injector having a pipe 4 which may be connected with a suitable source (not shown) of air or steam under pressure, while 5 designates a conduit connected with a source 6 of a suitable non-abrasive cleaning material which I prefer to constitute of molten metal 7, and to render this fluid, I may provide suitable means such as the burners 8.

The reference numeral 10 designates the coating of metal left by the blast, such as zinc, and which may be fixed by heating the pipe 1 during, or after, the application of the blast as by burners 9.

Having described my invention thus fully, and suitable means by which my improved treatment of pipes and the like may be put into practice, I wish it understood that I do not limit myself to the specific materials and sequence of operations selected for description, nor do I limit myself in general otherwise than as set forth in the claims read in connection with this specification.

What I claim, and desire to secure by Letters Patent is:—

1. The herein described method of treating metal tubes, said method consisting in subjecting said tubes to the cleansing action of a blast containing molten metal.

2. The herein described method of treating metal tubes, said method consisting in pickling said tubes and subjecting them to the cleansing action of a blast containing molten metal.

Signed at New York in the county and State of New York this thirteenth day of May, 1910.

ROBERT McKEAN THOMAS.

Witnesses:
ALEXANDER C. PROUDFIT,
HOBART D. BETTS.