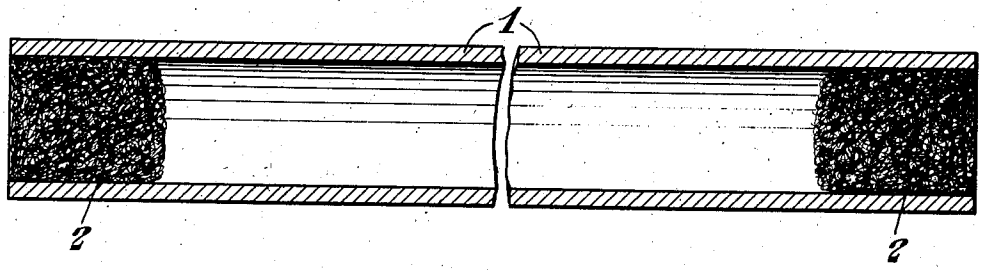
Nov. 24, 1942. M. G. MURRAY ET AL 2,303,132

METHOD OF HEAT TREATING METALLIC PIPES AND TUBES

Filed Nov. 20, 1940



Inventors:
MALCOLM G. MURRAY and
FREDERICK C. RAAB.
by: John E. Jackson
their Attorney.

Patented Nov. 24, 1942

2,303,132

UNITED STATES PATENT OFFICE

2,303,132

METHOD OF HEAT TREATING METALLIC PIPES AND TUBES

Malcolm G. Murray, Ellwood City, and Frederick C. Raab, Beaver, Pa., assignors to National Tube Company, a corporation of New Jersey

Application November 20, 1940, Serial No. 366,484

1 Claim. (Cl. 148—13

This invention relates to the heat treating of metallic pipes and tubes and more particularly to plugs for closing the ends of the same to minimize scaling on the inside surfaces as the result of annealing for long periods of time.

After the heat treating or annealing of metallic pipes and tubes, the interior scale is difficult to remove and frequently requires the use of sand-blasting apparatus, which greatly extends the pickling or cleaning time. In the case of small tubes, the ends may be pointed and this provides and inexpensive and satisfactory closure. With larger tubes, however, pointing is not satisfactory and the ends of the pipes are frequently plugged with various fire clay compositions. These fire clay compositions shrink considerably on drying and fail to provide effective seals.

It is among the objects of the present invention to provide a method of heat treating metallic pipes and tubes which will effectively eliminate interior scaling resulting from the application of heat.

Another object is to provide a method of the class described which is inexpensive and one which may easily be practiced.

The foregoing and other objects will be more apparent after referring to the single drawing which is a longitudinal sectional elevation illustrating a device which may be used to practice the method of the invention and is shown as applied to both ends of a conventional pipe.

Referring more particularly to the drawing, the numeral 1 designates a pipe which it is desired to heat treat. According to the teachings of the present invention, the pipe 1 prior to the heat treating operation is supplied at both of its ends with a plug 2 which is composed of steel wool. This material can be easily forced into the ends of the pipe to form a tight plug due to its resiliency. Due to the fact that the steel wool has the same thermal coefficient of expansion as the steel tube, oxidation causes it to increase somewhat in volume so that it does not shrink away from the walls of the tube in the manner of the fire clay compositions referred to hereinbefore. The coarse nature of the steel wool plug 2 permits the escape of air from the interior of the pipe during the heating period, while during the period the pipe is cooled, the inrush of air is impeded and an appreciable part of the oxygen filtered out by the large exposed surface of the steel wool.

According to a permissive modification, there may be used in lieu of the steel wool described hereinbefore metallic wool made from "Stainless steel" or alloys of the "Nichrome" class. These alloys have a coefficient of expansion substantially greater than that of steel, and while the cost thereof is higher they could be reused several times, thus resulting in economy.

While we have shown and described one specific embodiment of our invention, it will be seen that we do not wish to be limited exactly thereto, since various modifications may be made without departing from the scope of the invention as defined in the appended claim.

We claim:

The method of heat treating metallic pipes and tubes which includes plugging the ends thereof in a substantially tight manner with metallic wool having a thermal coefficient of expansion not materially less than that of the metal of the pipe or tube being treated, exposing the said pipe or tube to heat, permitting the pipe or tube to cool, and removing the metallic wool from the ends of the cooled pipe or tube.

MALCOLM G. MURRAY.
FREDERICK C. RAAB.