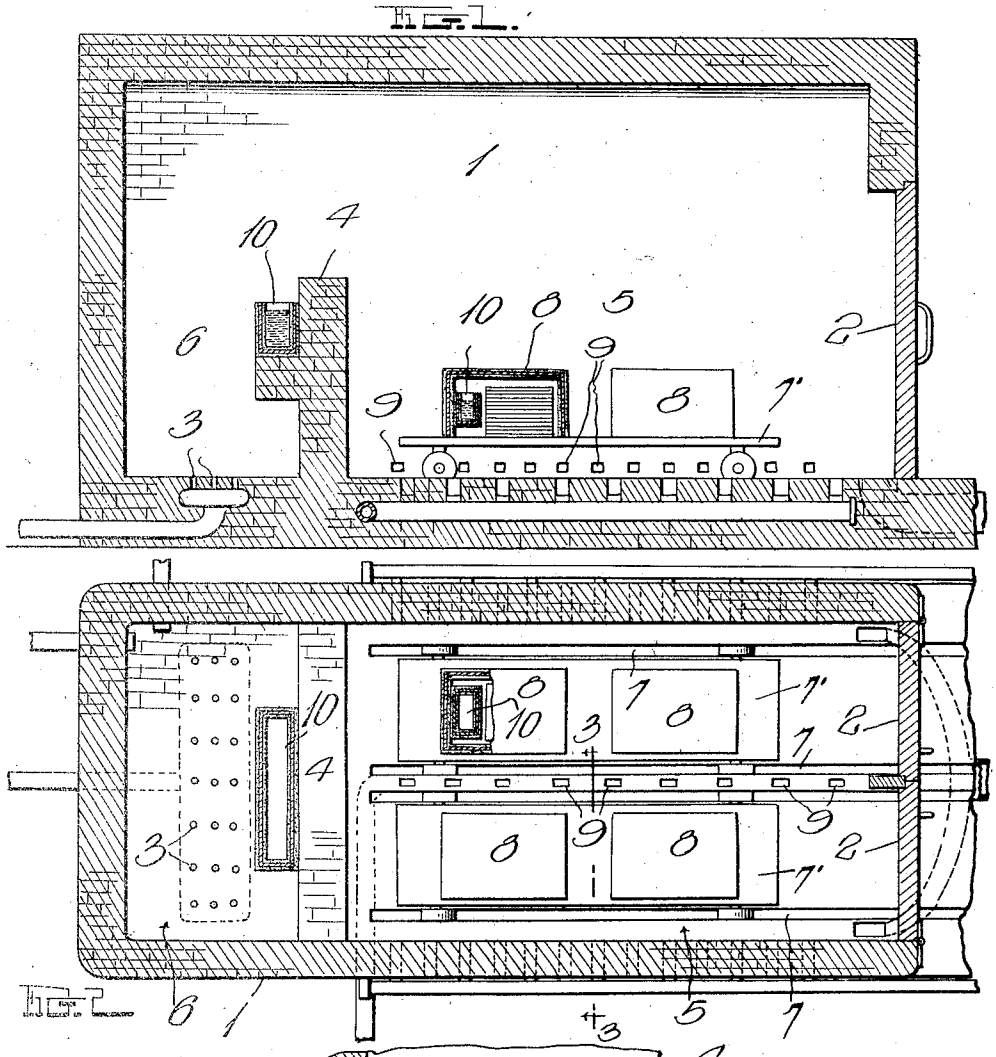
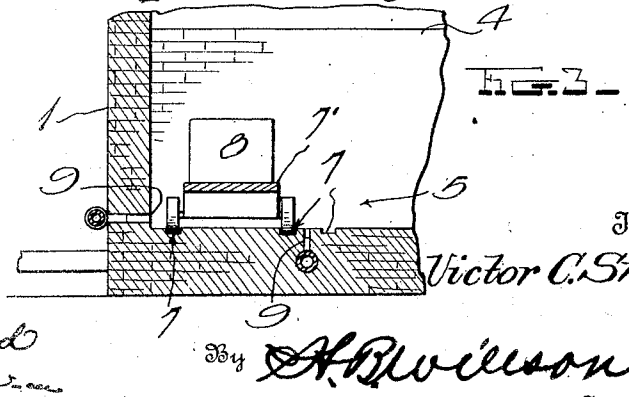
V. C. SMITH.

PROCESS FOR HEATING STEEL AND TIN PLATES.

APPLICATION FILED OCT. 1, 1915.

1,211,635. Patented Jan. 9, 1917





Witnesses

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UNITED STATES PATENT OFFICE.

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PROCESS FOR HEATING STEEL AND TIN PLATES.

1,211,635. Specification of Letters Patent. Patented Jan. 9, 1917.

Application filed October 1, 1915. Serial No. 53,551.

To all whom it may concern:

Be it known that I, VICTOR C. SMITH, a citizen of the United States, residing at Wheatland, in the county of Mercer and State of Pennsylvania, have invented certain new and useful Improvements in Processes for Heating Steel and Tin Plates; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to a method or process for heating bars or sheets of steel and tin.

The object of the invention is to provide a process for heating steel and tin plate either in the form of bars or sheets in such a manner as to prevent the bars or plates of metal from scaling and from sticking or welding together.

In the method ordinarily employed for heating tin or steel bars in a gas furnace the great heat employed and the oxygen of the air contained in the furnace or annealing pot causes the bars or sheets to stick or weld together thereby causing more or less trouble to the workmen. These bars also scale during such heating which detracts from the quality of the finished product.

This invention is designed to overcome these objections and does so by taking up or consuming the oxygen in the air confined in the furnace and which produces the objections above referred to.

The method employed for removing the oxygen from the atmosphere within the furnace or annealing pot consists of the following steps:—placing in the furnace in which the bars of tin or steel are to be heated at any desired point, preferably at a point where the heat is greatest, a soft metal, lead being preferably used which melts and boils at a comparatively low temperature. This melting of the lead confined in a receptacle generates lead oxid which takes up the oxygen from the air in the furnace and hence prevents the formation of scales and the welding together of the bars or sheets of tin or steel being heated in said furnace. This melting of the lead also reduces the temperature of the furnace at the point where it is located and hence renders the temperature uniform throughout the furnace.

In the accompanying drawing an apparatus is shown for carrying out this method or process in which: Figure 1 is a longitudinal vertical section; Fig. 2 is a horizontal section; and, Fig. 3 is a detail transverse section taken on the line 3—3 of Fig. 2.

In the embodiment of the apparatus illustrated, a furnace 1 is shown such as is ordinarily used for heating bars or sheets of steel or tin and has the usual doors 2 at its front end for the insertion of the material to be heated, said doors being usually placed at the front end of the furnace, while the burning or heating gas enters at the rear thereof as is shown at 3 and passes up over the back wall 4 of the furnace which separates the material containing chamber 5 from the combustion chamber 6. The floor of the chamber 5 is preferably provided with tracks 7 on which small trucks 7′ and which carry the material to be heated are designed to travel entering through the doors 2. After these trucks are placed in the chamber 5 on the tracks 7 or rather before entering said chamber, box-like covers 8 are placed on them over the metal to keep out the air and prevent it and the gas from coming in contact with the metal. If found necessary or desirable, air and gas may also be admitted to the chamber 5 through burners shown at 9 on the sides of the chamber and at the center thereof.

Receptacles 10 for holding the soft metal are designed to be secured to the back wall 4 of the furnace within the combustion chamber thereof and within the covers 8 which are placed over the metal to be heated. After the trucks containing the metal have been run into the chamber 5 the doors 2 are closed and in view of the fact that these doors are arranged at the front end of the furnace, the heat within the furnace will be greatest at the rear thereof or at points spaced from the doors and hence the soft metal containing receptacles are preferably arranged where the heat is greatest so that on the melting of the soft metal the atmosphere within the furnace will be rendered uniform so that the metal will be uniformly heated. The intense heat generated within this furnace will cause the soft metal which is preferably lead, within the receptacles 10 to melt and boil and thereby generate lead oxid which absorbs or consumes the oxygen in the surrounding atmosphere and thus prevents the bars or sheets of metal from sticking or welding together

and at the same time prevents the formation of scales on said bars thereby preventing injury to the bars being heated.

The receptacles 10, it will be understood, are to be constructed of any suitable material capable of withstanding the heat to which they are to be subjected, being preferably made of metal covered with fire clay.

I claim as my invention:

1. A method of heating tin and steel bars which consists in placing them in a furnace supplied with the necessary heat and consuming the oxygen from the atmosphere which is contained in the furnace and surrounds the bars being treated.

2. A method of heating metal bars which consists in placing them in a suitable furnace and subjecting them to the action of an atmosphere in which a soft metal is melted and boiled at a low temperature, thereby preventing said bars from scaling and welding.

3. A method of heating metal bars which consists in placing them in a furnace, supplying the necessary heat to said furnace for heating the bars to the desired extent, and melting and boiling lead within said furnace at a point where the heat is greatest, whereby the temperature in the furnace is rendered uniform, the oxygen of the atmosphere in the furnace consumed and scaling and sticking of the metal bars is prevented.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

VICTOR C. SMITH.

Witnesses:
THOS. D. ARMSTRONG,
NORA JOYCE.