

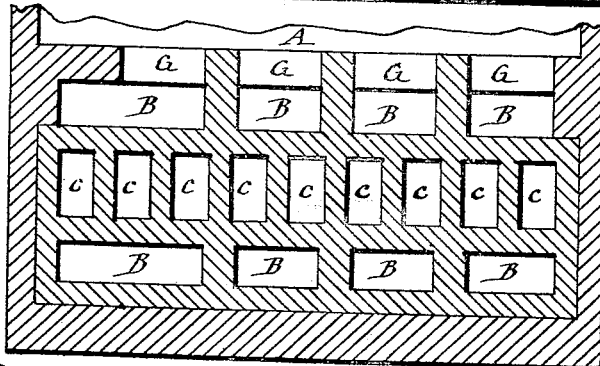
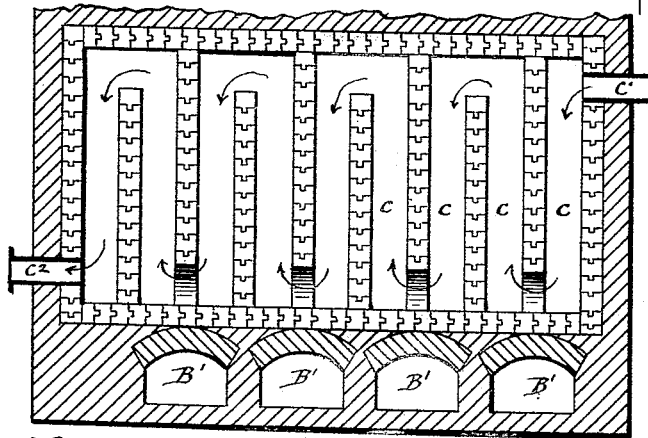
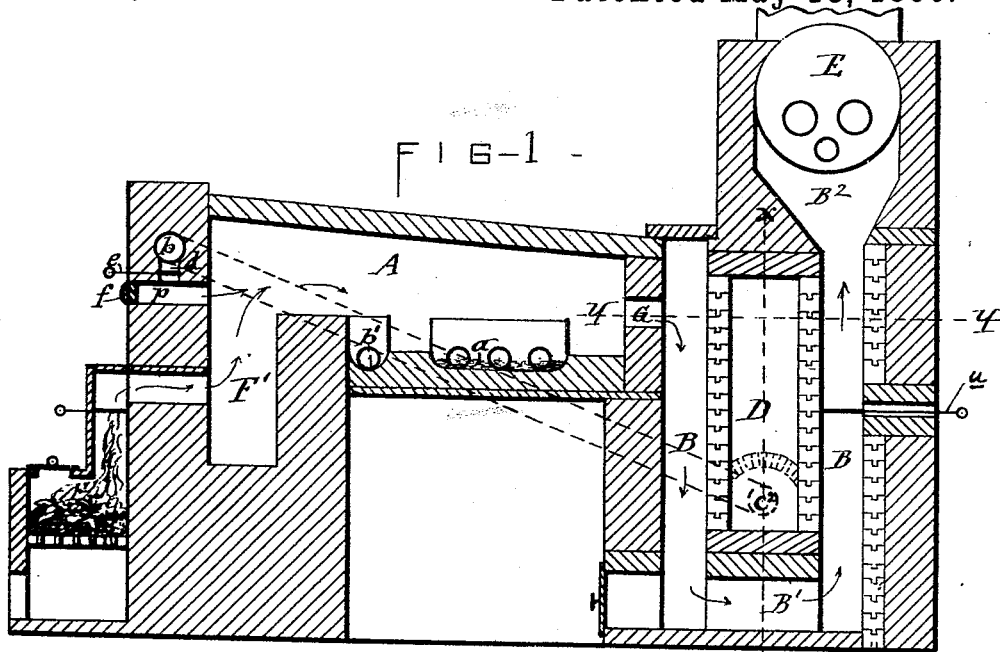
(No Model.)

E. PECKHAM.

METHOD OF AND APPARATUS FOR TREATING TUBES.

No. 342,130.

Patented May 18, 1886.



ATTEST-

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# UNITED STATES PATENT OFFICE.

EDGAR PECKHAM, OF SYRACUSE, NEW YORK.

## METHOD OF AND APPARATUS FOR TREATING TUBES.

SPECIFICATION forming part of Letters Patent No. 342,130, dated May 18, 1886.

Application filed March 14, 1884. Renewed April 17, 1886. Serial No. 199,210. (No model.)

*To all whom it may concern:*

Be it known that I, EDGAR PECKHAM, of Syracuse, in the county of Onondaga, in the State of New York, have invented new and useful Improvements in Methods of and Means for Treating Pipes and Tubes Preparatory to Welding the Same, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

This invention consists, first, in a novel treatment of metal pipes or tubes preparatory to welding the same, which treatment protects the pipe or tube from any injurious effects from the intense heat it is subjected to, and serves to assist the welding process, and furthermore produces a better finish of the internal as well as external surfaces of the pipe or tube.

The invention also consists in a novel construction of a furnace specially adapted for the aforesaid treatment, all as hereinafter more fully described, and specifically set forth in the claims.

In the annexed drawings, Figure 1 is a vertical longitudinal section of a pipe-welding furnace embodying my invention. Fig. 2 is a vertical transverse section on line *xx*, Fig. 1; and Fig. 3 is a horizontal transverse section on line *yy*, Fig. 1.

Similar letters of reference indicate corresponding parts.

A represents a furnace employed for heating the rolled-up blanks of metal pipes or tubes preparatory to welding the longitudinal seams of said blanks. The requisite heat is derived from coal burned either on the grate F, as shown in Fig. 1 of the drawings, or on a suitable grate placed in the combustion-chamber F', the combustion being aided by a hot-air blast introduced over the combustion-chamber F' by a port, *p*, which extends through the wall of the furnace and communicates with the main blast-pipe *b* by a branch pipe, *d*, both of which pipes are arranged in the wall so as to be isolated from the interior of the furnace, and thus protected from the intense heat thereof, and also prevent external radiation of heat from the pipes. The branch pipe *d* is provided with a damper or valve, *e*, by which to

control the air-blast. The port *p* is lined with fire-brick or other refractory material, and the outer end is provided with a stopper or plug, *f*, which is removable to afford access to the interior of the port for cleaning it. The hot blast I obtain by means of a hot-blast oven, D, arranged in a vertical position between two vertical fire-flues, B B, which are connected with each other underneath the hot-blast oven, as shown at B'. The upper end of one of the flues B communicates with the furnace A, as shown at G, Figs. 1 and 3 of the drawings, and the upper end of the other flue B terminates with an enlargement, B<sup>2</sup>, in which a boiler, E, is set to be heated by the products of combustion escaping from the flue B. A damper, *c*, is arranged in the latter flue, so as to enable the operator to control the escape of the products of combustion.

The hot-blast oven D consists of a hollow partition placed in an upright position between the flues B B, as aforesaid, so as to be effectually impinged by the heat passing through said flues. Through the aforesaid hollow partition I extend in a tortuous or sinuous course an air-blast duct, *c*, which is tapped or connected with the main blast-pipe *b*, as indicated by dotted lines in Fig. 1 of the drawings. The duct *c* may be either formed by subdividing partitions built of brick and extended alternately from the top and bottom of the oven D, the latter partitions part way the height thereof, as shown in Fig. 2 of the drawings, those partitions which extend from the top downward being supported by arches sprung across the oven D, or the aforesaid duct may consist of a metal pipe extended in a tortuous course through the interior of the oven. The cold air enters the oven at *c'*, and the heated air escapes from it at *c''*, as shown in Fig. 2 of the drawings. The hearth of the furnace A is formed with the usual groove, *b'*, for the reception of the skelps to be heated preparatory to welding the same, an opening being provided in the wall of the furnace at the end of the groove *b'*, to admit of transferring the skelps endwise from the furnace to the welding apparatus, which latter is deemed unnecessary to be here illustrated.

By the side of the groove *b'*, and preferably

parallel therewith, I provide the hearth of the furnace with a depression, *a*, of sufficient length and width to contain a number of skelps, which are introduced through an opening in the rear wall of the furnace at the end of the depression. In the depression *a*, I introduce cinders or suitable fluxing material, such as fluor-spar, sand, or other material which will readily flux. The amount of said material used varies, to produce, when melted, from one-half inch to two inches or more in depth, according to the size of the pipe or tube to be treated.

The process of treatment of the pipes or tubes preparatory to welding the same and the effect of said treatment are as follows: The furnace *A* being brought to an ordinary red heat, the fluxing material, which is comminuted or pulverized, is introduced and properly distributed in the depression *a* of the hearth through the usual opening at the rear or charging end of the furnace. Then the temperature of the furnace is to be raised to a welding heat, which melts the flux in the depression *a*. Then the skelps are introduced endwise through the aforesaid opening in the wall of the furnace into the depression *a*, and in the process of heating the skelps they are rolled over in the bath of flux and toward the groove *b'*, into which they are finally rolled. The rolling of the skelps is accomplished by means of a long-handled fork or crocheted bar, introduced through the opening in the rear end wall of the furnace at the end of the depression *a*, the fork grasping the end of the skelp, and by turning the fork the skelp is rolled. In the groove *b'* the skelps are subjected to a more intense heat, and from thence they are guided directly to the welding apparatus, which usually consists of rolls arranged diametrically opposite each other, and having a peripheral groove corresponding to the size of the pipe or tube when welded. A so-called "ball" of the size of the interior of the aforesaid pipe or tube is arranged between the rolls, and enters the interior of the pipe or tube to resist the pressure exerted by the rolls in the welding process.

In rolling or transferring the pipes or tubes

from the depression *a* to the groove *b'*, the melted flux becomes thoroughly spread over both the internal and external surfaces of the pipes or tubes, and thereby forms thereon a coat which protects the same from the destructive influences of the intense heat they are subjected to. In passing the same through the aforesaid welding apparatus the flux is pressed into and smoothed on the surfaces of the pipes or tubes, and also promotes or aids the welding of the joint thereof.

Having described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The method of treatment of metal pipes and tubes preparatory to welding the same, consisting, essentially, in subjecting said pipes or tubes to a heated bath of fluxing material, and subsequently transferring them to the usual guide-groove in the welding-furnace, substantially as set forth.

2. In a pipe-welding furnace, a pipe-heating hearth having at or near the side of the usual pipe-guiding groove a longitudinal depression for the reception of the skelps and holding the flux preparatory to transferring the skelps to the aforesaid groove, substantially as and for the purpose set forth.

3. In combination with the furnace *A*, the flues *B B*, connected with each other at one end and connected at the opposite end of one of said flues with the furnace, a hollow partition between the flues *B B*, tortuous air-blast ducts through said partitions, and the blast-pipe *b*, extended from the aforesaid ducts to the combustion-chamber of the furnace, substantially as set forth and shown.

In testimony whereof I have hereunto signed my name and affixed my seal, in the presence of two attesting witnesses, at Syracuse, in the county of Onondaga, in the State of New York, this 11th day of March, 1884.

EDGAR PECKHAM. [L. s.]

Witnesses:

C BENDIXON,  
WM. C. RAYMOND.