(No Model.)

E. A. HARVEY.

ANNEALING FURNACE.

No. 423,049. Patented Mar. 11, 1890.

FIG. 1.

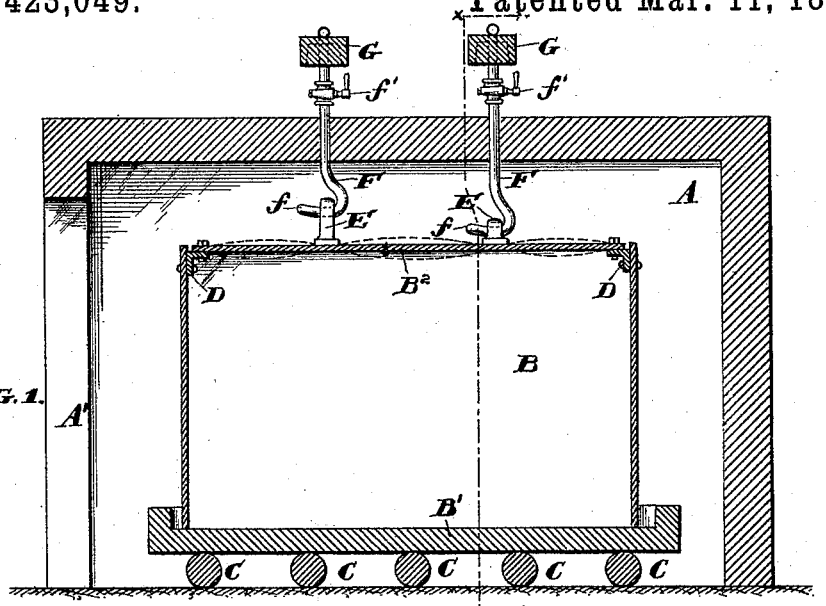


FIG. 2

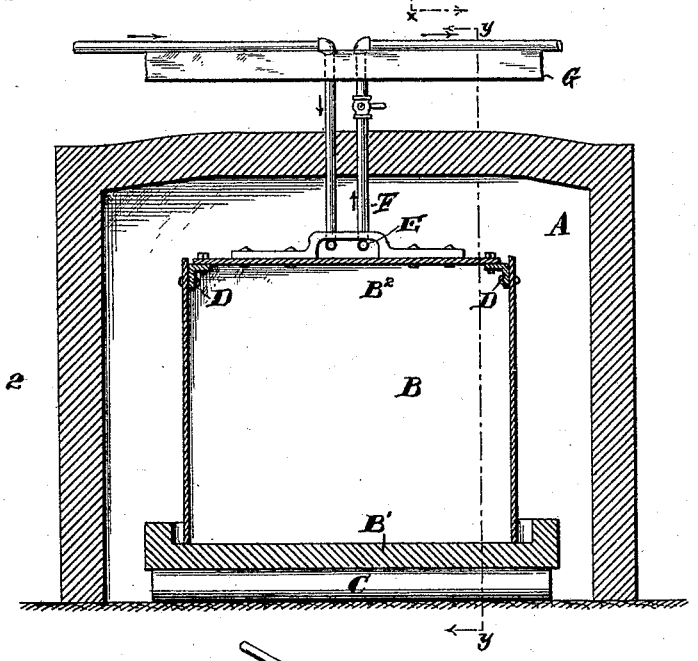
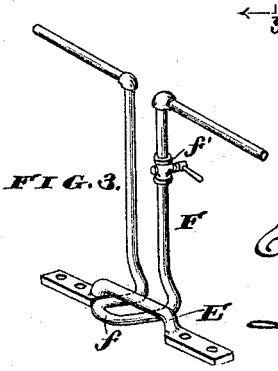


FIG. 3.



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UNITED STATES PATENT OFFICE.

EDMUND A. HARVEY, OF WILMINGTON, DELAWARE.

ANNEALING-FURNACE.

SPECIFICATION forming part of Letters Patent No. 423,049, dated March 11, 1890.

Application filed June 17, 1889. Serial No. 314,598. (No model.)

To all whom it may concern:

Be it known that I, EDMUND A. HARVEY, of Wilmington, county of New Castle, State of Delaware, have invented a new and useful Improved Annealing-Furnace, of which the following is a true and exact description, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to the construction of annealing-furnaces and annealing-boxes, such as are used in the annealing of sheet metal, and my object is to provide a device in connection with such furnaces and boxes whereby the tendency of the box to collapse under the influence of the heat to which it is exposed can be counteracted; and my invention consists, generally speaking, of the combination, with a furnace, of an annealing-box arranged to rest on the bottom thereof and supporting-rods arranged to engage the top of the box and prevent it from sagging under the influence of heat.

Preferably I form the suspending rods of pipe, through which water can be kept flowing, so as to prevent the metal from losing its strength and rigidity through the heat of the furnace, and the simplest and best form of my device consists in such a pipe bent into a hook adapted to engage a clevis on the top of the annealing-box, reference being now had to the drawings, which represent my device in what I consider its most perfect form, and in which—

Figure 1 is a longitudinal section through the furnace and through the annealing-box in said furnace. Fig. 2 is a cross-section on the line *x x* of Fig. 1, and Fig. 3 a perspective view showing the water-cooled hook and the clevis on the box-cover.

A is the annealing-furnace, having the opening A′, through which the annealing-box B is introduced and withdrawn.

B′ is the cast-iron base of the box, and B^2 its top or cover, which I have shown as being reversible, in accordance with my invention, for which I filed application for a patent on the 11th day of June, 1889, numbered 313,842, D being flanges on which the reversible cover rests.

C C, &c., are rolls on which the base B′ of the annealing-box rests in the furnace.

E are clevises secured to the top or cover of the annealing-box.

F are the cover-sustaining rods, here shown as consisting of a bent pipe passing through the top of the furnace and secured to beams G above the same, the lower ends of the pipes being bent into hooks *f*, adapted to engage the clevises E on the box-top, and a cock *f′* being provided to regulate the flow of water through the pipe. It is advisable where the hook form of water-pipe is used to make the forward hook higher than the one in the rear of the furnace and to correspondingly vary the height of the clevises, as shown, so that the hooks *f* will each engage the clevis they are to sustain without interfering with the others.

Any convenient form of engaging device can of course be used to attach the supporting-rods to the box-top; but where the rods are kept cool by flow of water through them a hook will be found sufficiently strong and exceedingly cheap and convenient in use.

The mode of use of my device is as follows: The supporting-rods form a part of the furnace proper and an annealing-box is slid into the furnace and its top secured to the supporting-rods, as by the engagement of the hooked ends of said rods with clevises E. The furnace is then closed and the box, gradually softening by the heat, tends to sink down, but is sustained by the rods, and therefore but little, if at all, distorted; and a box thus sustained will remain useful practically as long as the iron of which it is made remains intact, while ordinarily boxes collapse to such an extent as to be worthless long before their sides are appreciably injured.

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

1. In combination with an annealing-furnace, an annealing-box having its top fastened to its sides and adapted to enter said furnace and rest upon the bottom thereof, and supporting-rods extending from the top of said furnace and arranged to engage and support the top of the box against sagging.

2. In combination with an annealing-furnace, an annealing-box having its top fastened to its sides and adapted to enter said

furnace and rest upon the bottom thereof, and supporting-rods consisting of sections of pipe adapted to permit a flow of water through them extending from the top of said furnace and arranged to engage and support the top of the box against sagging.

3. In combination with an annealing-furnace, an annealing-box having its top fastened to its sides and adapted to enter said furnace and rest upon the bottom thereof, and supporting-rods consisting of sections of pipe adapted to permit a flow of water through them extending from the top of said furnace and formed with hooks at their lower ends and arranged to engage and support the top of the box against sagging.

EDMUND A. HARVEY.

Witnesses:
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