No. 682,404. Patented Sept. 10, 1901.

# A. J. DEMMLER.

## ANNEALING BOX.

(Application filed Aug. 4, 1900.)

(No Model.)

Fig. 1.

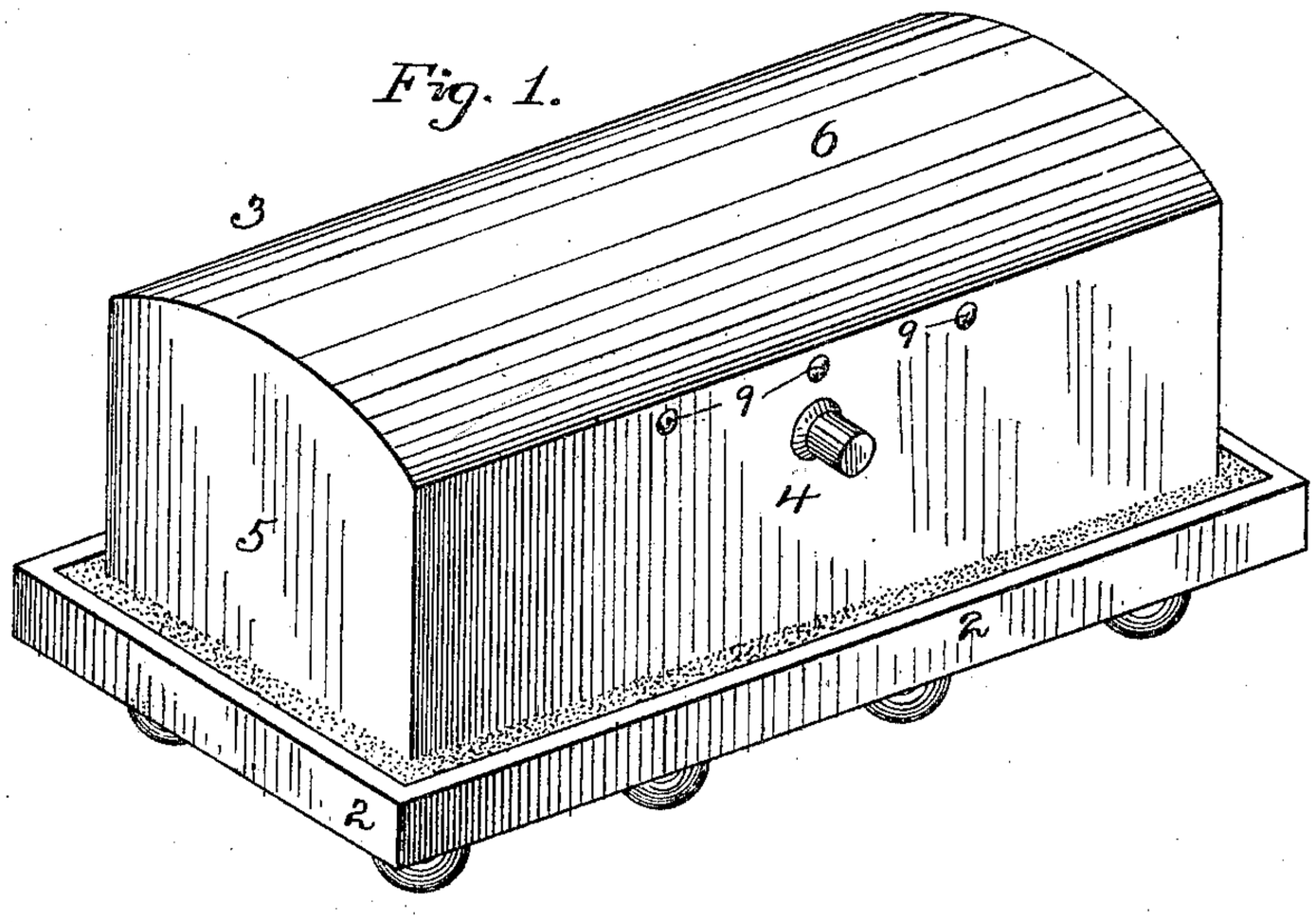



Fig. 2.

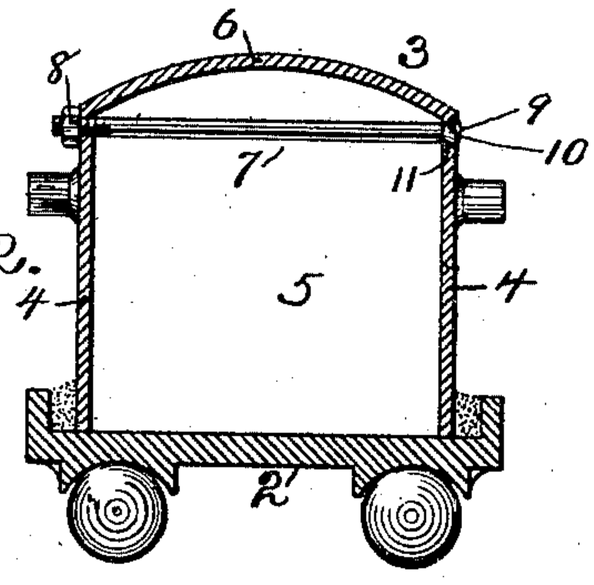
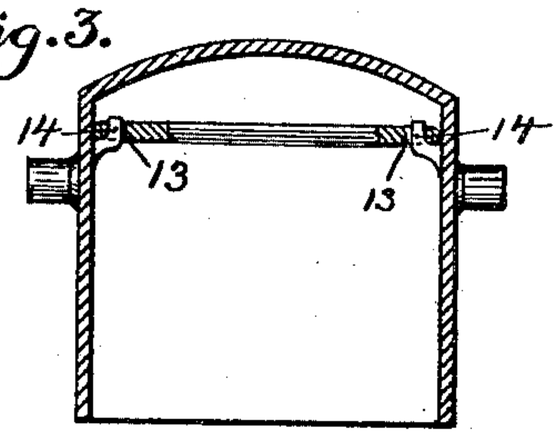



Fig. 3.

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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

# UNITED STATES PATENT OFFICE.

ALBERT J. DEMMLER, OF WELLSVILLE, OHIO.

## ANNEALING-BOX.

SPECIFICATION forming part of Letters Patent No. 682,404, dated September 10, 1901.

Application filed August 4, 1900. Serial No. 25,855. (No model.)

*To all whom it may concern:*

Be it known that I, ALBERT J. DEMMLER, a resident of Wellsville, in the county of Columbiana and State of Ohio, have invented a new and useful Improvement in Annealing-Boxes; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to annealing-boxes for annealing sheet iron and steel and like materials, its object being to provide an annealing-box which is not liable to collapse when highly heated. These boxes were originally made of cast-iron; but they were found to burn out rapidly under the high heat, and this led to their being made of plate metal riveted together. Such boxes have, however, been found faulty, in that the joints are liable to open slightly and permit the entrance of the outside air, which causes the oxidation of the metal, so that the best boxes have of late years been generally made of cast-steel, which is found to stand the high heat better than the cast-iron and to a great extent avoid leakage. The difficulty in the use of cast-steel boxes has been, however, in the liability of the boxes to collapse under the high heat to which they are subjected in the annealing-furnace, the tops of the main bodies gradually sinking, so that the boxes have an average life of only about fifty heats. This same difficulty has also been found with the plate-metal boxes. By my invention I am enabled to overcome this difficulty and to extend the life of the boxes more than double.

The invention consists, generally stated, in an annealing-box having its main body portion or cover provided with a trussed top portion, such as by the use of a series of confining rods or bolts extending across the body between the straight sides and close to the arched or raised top thereof and serving to bind or hold up the top portion, and thereby prevent its collapse.

To enable others skilled in the art to make and use my invention, I will describe the same more fully, referring to the accompanying drawings, in which—

Figure 1 is a perspective view of the annealing-box having the invention applied thereto. Fig. 2 is a cross-section of the same. Fig. 3 illustrates another way in which the tie-bolts may be supported.

The box is preferably formed from cast-steel, the bed or bottom 2 being formed in the ordinary way and supporting the cover or main body 3, which is preferably formed of a single casting and has the straight side walls 4, end walls 5, and arched or raised top 6. Close to the arched top—that is, just at the base of the arch and attached to the straight side walls—I place the tie bolts or rods 7, which in the most approved form extend across the body of the box at intervals, it being found that three of such bolts are effective, though for a larger-sized box I prefer to employ four or more. The bolts may be secured in place either by nuts, as illustrated at 8, or by riveting, the regular bolt having a head 9, which is preferably made tapering, as shown at 10 in Fig. 2, and fits into a tapering recess 11, formed therefor in the body of the box. The bolt is generally made heavy and strong, the bolts heretofore employed having been two inches thick, and a heavy nut being secured on the other end and the parts screwed up firm and tight, so as to prevent leakage. Another way of forming the truss while preventing possibility of leakage is illustrated in Fig. 3, where the tie-bolt is formed with hooks or eyes 13 at each end and fits over and connects to hooks or loops 14, formed on the inner walls of the cover close to the arched top. In either case whatever may be the means of forming the truss its function is to so support the upper part of the cover as to prevent any spread thereof which would permit of the sagging of the arched or raised roof under the extremely high heat of the furnace. As these boxes have been employed, they are used in the ordinary way, the sheets or other material to be annealed being built up on the bed 2, the cover 3 being placed over the same, and the joint luted with sand. The box is placed in the annealing-furnace and raised to and maintained at a high red heat, often approaching a white heat. The bolts extending across between the straight side walls of the cover provide a simple form of truss, resisting the tendency to sinking or collapsing of the highly-heated top portion, while the highly-heated side portions, which

would naturally yield and bulge out when softened by the high heat of the annealing-furnace, and thereby permit the arched top to sag or sink down, are held against such strain, and all possibility of spreading or bulging of the upper part of the cover is prevented by the tie-bolts, which, even at the high heat to which the box is subjected on account of their direct connections with the (walls) side walls of the box, form a truss and so prevent the spread of the body portion or the bulging or sinking of the top.

I have found from practical use that the annealing-boxes having this particular construction have a life at least double that of the ordinary annealing-box without such trussing. A saving is therefore effected amounting to at least one-half the cost of the boxes, which in the ordinary sheet-metal plant is one of the greatest expenses.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. An annealing-box having a cover provided with straight side walls and an arched or raised top portion, and rods extending across between the straight side walls and close to the arched top portion.

2. An annealing-box having an integral cast cover provided with straight side walls and an arched or raised top portion, and rods extending across between the straight side walls and close to the arched top portion.

3. An annealing-box having a cover provided with straight side walls and an arched or raised top portion, and rods engaging connections on the inner faces of the straight side walls and extending across the box close to the arched top portion.

In testimony whereof I, the said ALBERT J. DEMMLER, have hereunto set my hand.

ALBERT J. DEMMLER.

Witnesses:

JAMES I. KAY,

J. D. BUCKLEY.