

No. 663,156.

Patented Dec. 4, 1900.

J. F. BUDKE.

METHOD OF STRAIGHTENING METAL SHEETS.

(Application filed Dec. 1, 1899. Renewed Oct. 26, 1900.)

(No Model.)

FIG. 1.

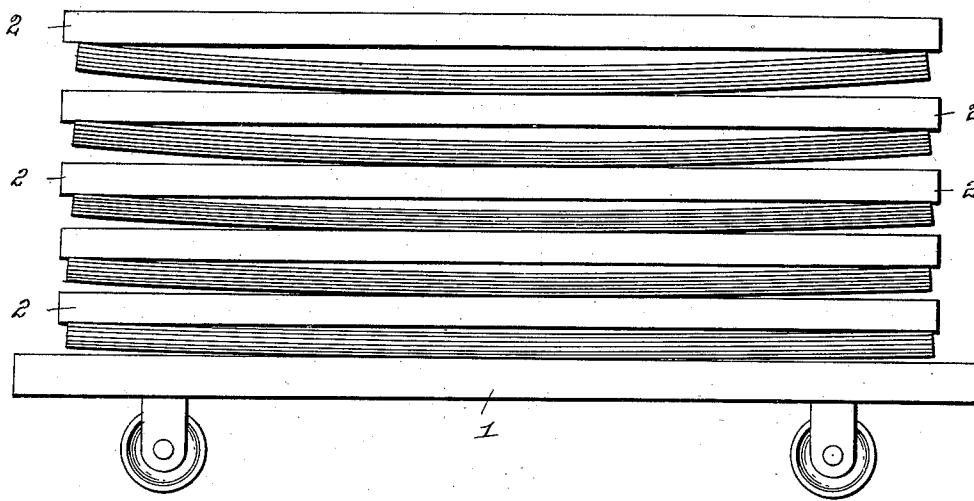
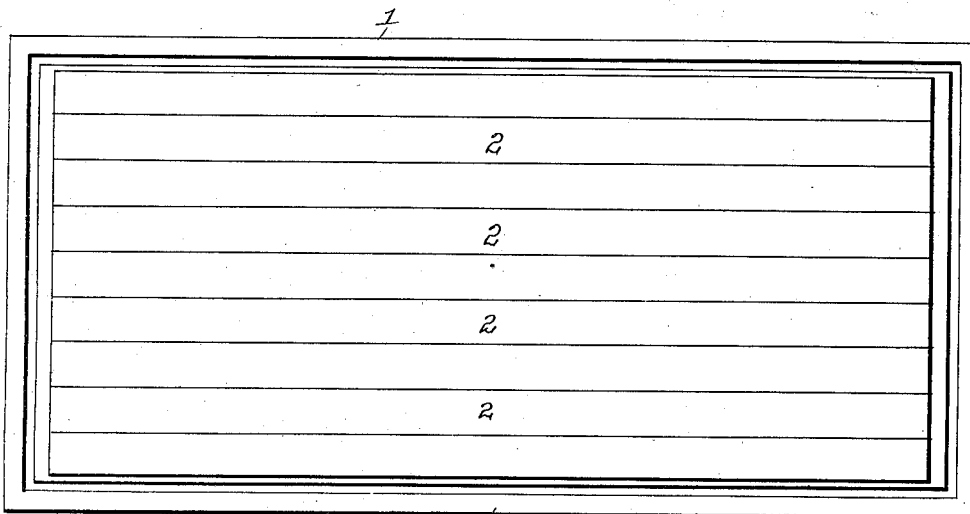


FIG. 2.



WITNESSES:

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UNITED STATES PATENT OFFICE.

JOHN F. BUDKE, OF CANNONSBURG, PENNSYLVANIA.

METHOD OF STRAIGHTENING METAL SHEETS.

SPECIFICATION forming part of Letters Patent No. 663,156, dated December 4, 1900.

Application filed December 1, 1899. Renewed October 26, 1900. Serial No. 34,473. (No model.)

To all whom it may concern:

Be it known that I, JOHN F. BUDKE, a citizen of the United States, residing at Cannonsburg, in the county of Washington and State of Pennsylvania, have invented or discovered certain new and useful Improvements in the Manufacture of Sheet Metal, of which improvements the following is a specification.

The invention described herein relates to certain improvements in the manufacture of sheet metal, such improvements being especially applicable in the manufacture of sheets for use in stoves, ranges, &c. Sheets for such purposes are required to be entirely free from curves or bends, as they are employed for forming the walls of ovens, &c. The sheets as they come from the finishing-rolls are generally curved or bent longitudinally, and as the curves are not removed by the final annealing it is customary after annealing to secure the ends of each sheet in suitable clamps, which are drawn apart, thereby subjecting the sheets to a sufficient stretch to remove all bends or other distortion. This method is unsatisfactory, as the stretching would destroy the surface and also distort the fiber of the metal.

The object of the present invention is to provide for the straightening of the sheets simultaneous with the final annealing, thereby effecting a large saving in labor and cost of production.

In the accompanying drawings, forming a part of this specification, Figure 1 shows in side elevation the arrangement of sheets and straightening-bars preparatory to annealing, and Fig. 2 is a plan view of the same.

In the practice of my invention the sheets, which are more or less curved or bent as they come from the final rolling operation, are arranged on the carrying and flattening bed 1 in piles of three or four inches, more or less, in thickness, preferably with their concave surfaces up. An intermediate straightener is then placed on this pile, said straightener resting upon the high points of the pile. Another pile of sheets is then placed on the straightener, and a second straightener is placed on this pile, and so on, until a pack of the desired height is formed. The straighteners, which have parallel sides, are preferably

formed by a series of metal bars 2 of a length a little greater than the size of the sheets in the direction of their curvature—*e. g.*, if the sheets are bent or curved longitudinally the bars should be a little longer than the sheets. A sufficient number of bars should be placed on each pile to entirely cover the upper surface thereof. By employing a sectional weight the sections can accommodate themselves to the movements of the pile of sheets as they settle down when heated in the annealing-oven. The bars are made of such transverse dimensions that the piles will become soft and settle down under the superincumbent weight before the bars will be heated sufficiently to be bent by the overlying weight. The sheets of all the piles except the top one will be subjected to the weight of the superincumbent piles, which will be sufficient, acting through the straighteners, to flatten out the sheets of such piles. To flatten the sheets of the top pile, the straighteners are made sufficiently thick to effect that purpose. After the pack has been formed in the manner stated it is placed in an annealing-oven and heated to the usual annealing temperature—*i. e.*, from 1,400° to 1,800° Fahrenheit. As the sheets soften they will flatten down to the surfaces of the bed 1 and those formed by the bars or weights and when cooled slowly will retain their straightened condition.

No claim is made herein to the apparatus employed in the practice of the method, as the same forms the subject-matter of an application to be hereafter filed.

I claim herein as my invention—

As an improvement in the art of straightening metal sheets the method herein described which consists in arranging the sheets in piles with a series of interposed rigid straightening beds or plates, and then subjecting the sheets to sufficient heat to render the sheets pliable under the superincumbent weight and thereby permit the straightening of the same, substantially as set forth.

In testimony whereof I have hereunto set my hand.

JOHN F. BUDKE.

Witnesses:

DARWIN S. WOLCOTT,
F. E. GAITHER.