

985,776.

C. W. BRAY.
 PACK HEATING FURNACE.
 APPLICATION FILED FEB. 9, 1905.

Patented Mar. 7, 1911.
 3 SHEETS—SHEET 1.

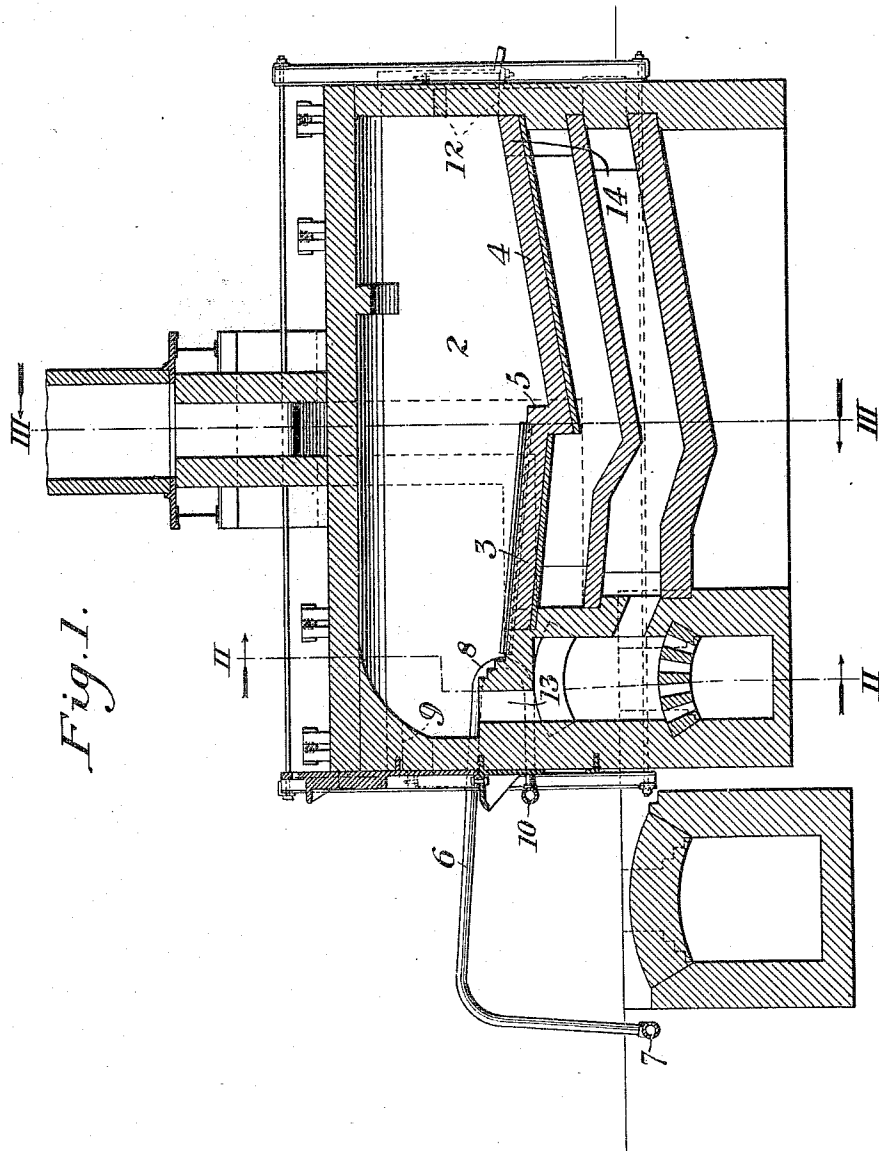


Fig. 1.

WITNESSES

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Warren W. Bivarty

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3 SHEETS—SHEET 2.

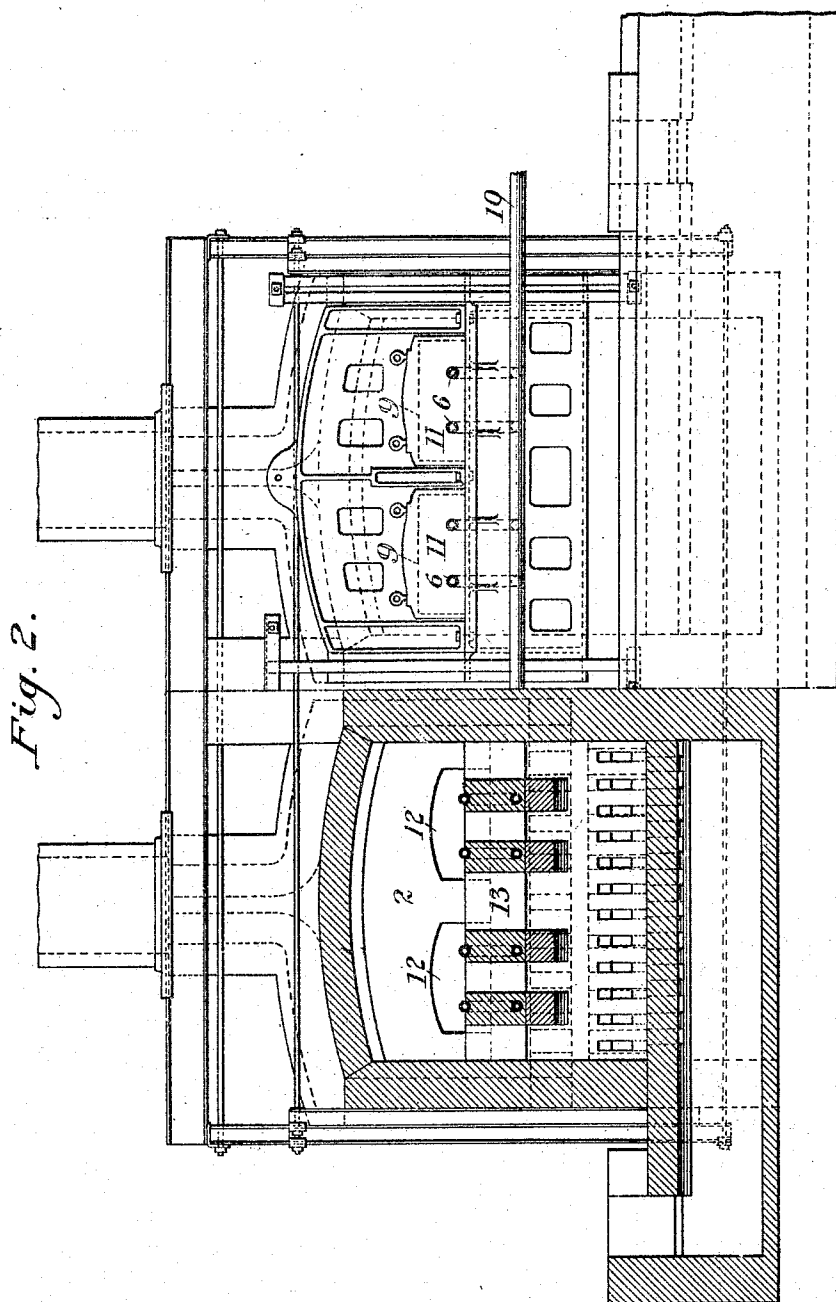


Fig. 2.

WITNESSES

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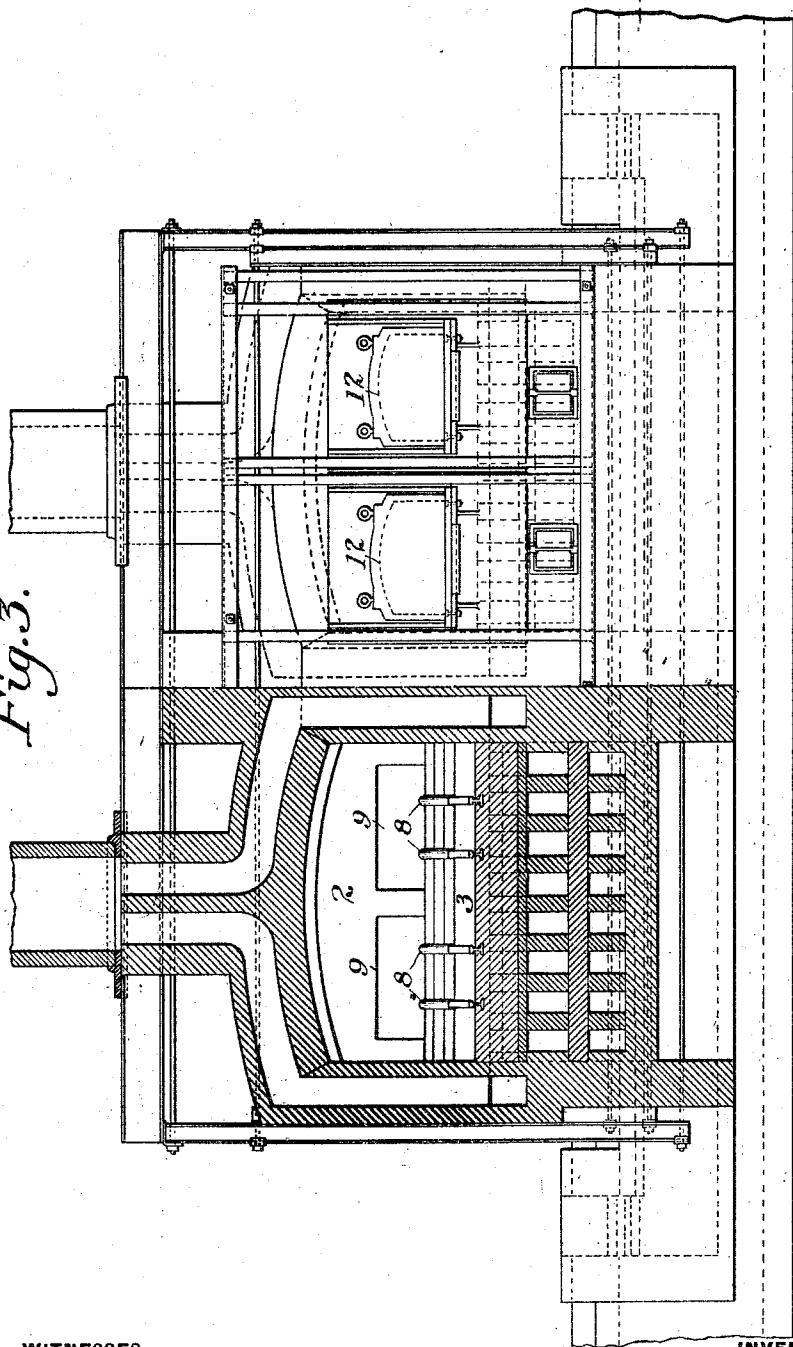
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3 SHEETS—SHEET 3.

Fig. 3.



WITNESSES

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UNITED STATES PATENT OFFICE.

CHARLES W. BRAY, OF PITTSBURG, PENNSYLVANIA, ASSIGNOR TO AMERICAN SHEET & TIN PLATE COMPANY, OF PITTSBURG, PENNSYLVANIA, A CORPORATION OF NEW JERSEY.

PACK-HEATING FURNACE.

985,776.

Specification of Letters Patent.

Patented Mar. 7, 1911.

Application filed February 9, 1905. Serial No. 244,870.

To all whom it may concern:

Be it known that I, CHARLES W. BRAY, of Pittsburg, Allegheny county, Pennsylvania, have invented a new and useful Pack-Heating Furnace, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

10 Figure 1 is a vertical longitudinal section of my improved furnace; and Figs. 2 and 3 are cross-sections on the lines II—II and III—III respectively of Fig. 1.

15 My invention relates to the furnaces employed for heating packs of sheets or plates. Heretofore in such furnaces, the packs have been inserted through the same opening as that from which they were withdrawn after heating. This makes the operation slow and inconvenient and requires the use of

20 highly skilled labor for charging the packs. My invention is designed to cheapen the cost of the heating operation and provide a furnace in which the metal may be fed in at one end and taken out at the other end. The piles of packs may be kept apart from the packs when separated, and the operation may be carried on continuously and rapidly. The charging operation is a purely mechanical one, not calling for the use of

30 skilled labor. In the drawing, I show a double furnace, though it may be arranged either as a double or a single furnace. In the form shown 35 each chamber 2 is the same as the other, and is provided with a floor having shelves 3 and 4. These shelves are preferably separated by a step or shoulder 5 and are preferably inclined toward each other; that is the rear shelf 3 is inclined downwardly and forwardly toward the center of the furnace and the front shelf is inclined rearwardly and downwardly toward the center part of the furnace. The inclination of the rear 40 shelf enables the packs to be more easily fed forward from the piles to be placed upon the shelf 4. The inclination of the front shelf 4 is to make it easier to turn and manipulate the packs; and also to avoid excessive heating of the rear portion of the pack which is farther removed from the roof than the front portion, by this inclination. The piles of packs may set upon external supports consisting preferably of a series of

water-cooled pipes 6 extending from the supply pipe 7 upwardly and thence downwardly and inwardly through the charging openings 9 to the rear end of the shelf 3; whence the pipes are bent backwardly to form the portions 8 which extend to the outlet pipe 60 10. Water is continuously circulating through these pipes and the pile of several packs rests on them externally until the operator pushes it in over the pipes to a point where it drops and rests upon the shelf 3. 65

The feed-in openings are preferably provided with vertically-sliding doors 11 which may be counter-weighted and raised and lowered by hand. The feed-out openings at the front end of the furnace are at the front upper end of the inclined shelf 4; and through these openings having the doors 12 the heater may draw a pack from the piles on the rear shelf and spread such packs in any desirable manner on the front shelf 4. 70 Each pack when brought to a proper temperature and condition is brought out through the feed-out openings, and taken to the finishing mill. 75

I have shown the furnace as provided below the hearth with a double-surface regenerator system, the air being heated before mixing with the entering gas. The mixture enters the furnace through the inlet ports 13 at the rear end and passes out 80 through the exit ports 14 at the front end. 85

In using the furnace the packs may be fed in in any desirable way, though I prefer to feed in a pile of said packs, these piles resting upon the rear shelf. As before stated 90 the heater may separate these piles and distribute the packs upon the front shelf from which they are taken out. This front portion of the furnace is arranged so that the heater may turn the packs up so that they rest against the side walls and manipulate them in the usual manner. 95

The advantages of my invention result from providing a pack furnace with a charging opening at one end and a feed-out 100 opening at the opposite end, also from dividing the furnace bottom into two different portions, at least one of which is inclined. The operation may be carried on continuously, the amount of skilled labor is reduced, 105 and the packs are evenly and uniformly heated. By arranging the inlet port or ports 13 at the rear, any air which enters

through the door or doors is carried up and consumed, thus preventing scaling of the sheets from the oxygen of uncombined air.

Either one of the shelves may be made substantially horizontal, and the furnace may be varied in many other ways.

I claim:—

1. A pack-heating furnace having a rear charging opening and a front feed-out opening, closures for said openings, a substantially continuous furnace bottom having a front portion, and a rear portion both arranged to receive the packs in stationary position thereon, and water-cooled pipes at the rear opening forming an external pack support and extending inwardly into the rear end of the furnace bottom within the furnace; substantially as described.

2. A pack-heating furnace having a rear charging opening, and a front feed-out opening, the furnace bottom being divided transversely into two portions, each of which is inclined longitudinally; substantially as described.

3. A pack-heating furnace having a rear charging opening and a front feed-out opening, the furnace bottom having oppositely inclined shelves with an intermediate step or shoulder between them; substantially as described.

In testimony whereof, I have hereunto set my hand.

CHARLES W. BRAY.

Witnesses:

G. C. KIMBALL,
S. A. DAVIS.