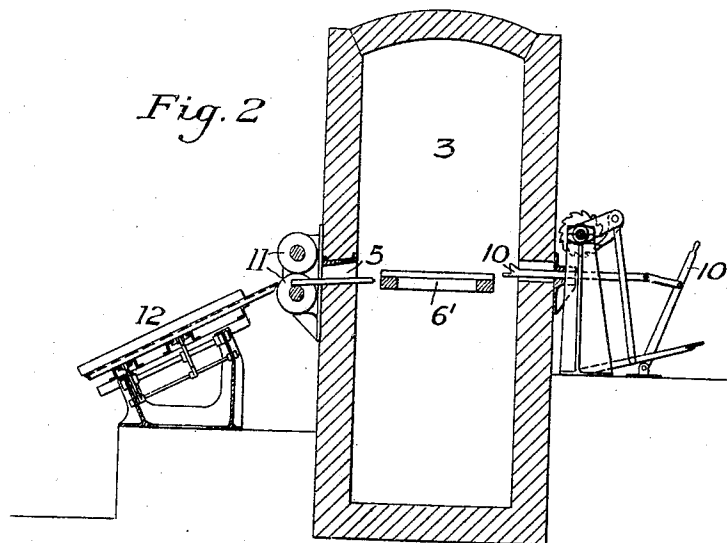
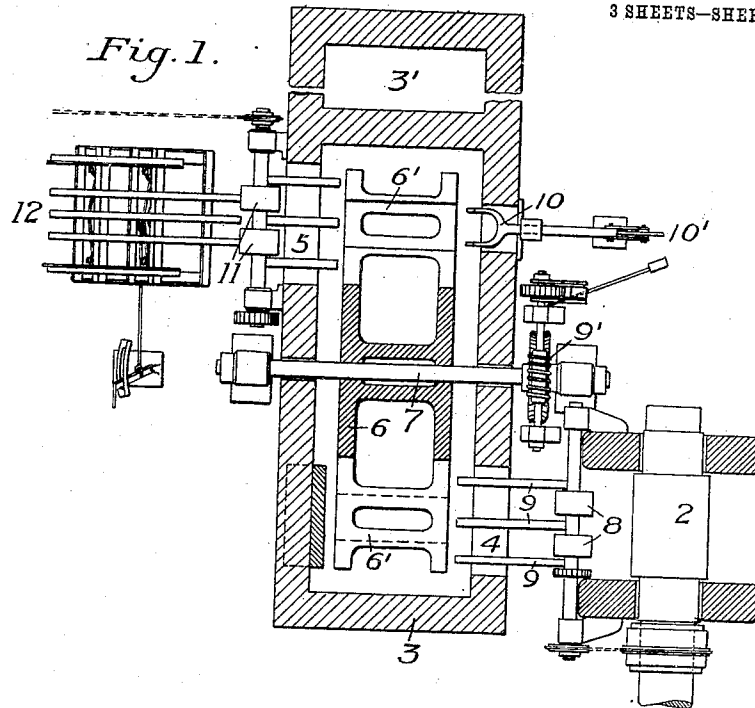


C. W. BRAY.
METHOD OF MANUFACTURING METAL SHEETS.
APPLICATION FILED OCT. 12, 1907.

941,850.

Patented Nov. 30, 1909.
3 SHEETS—SHEET 1.



WITNESSES

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Fig. 3.

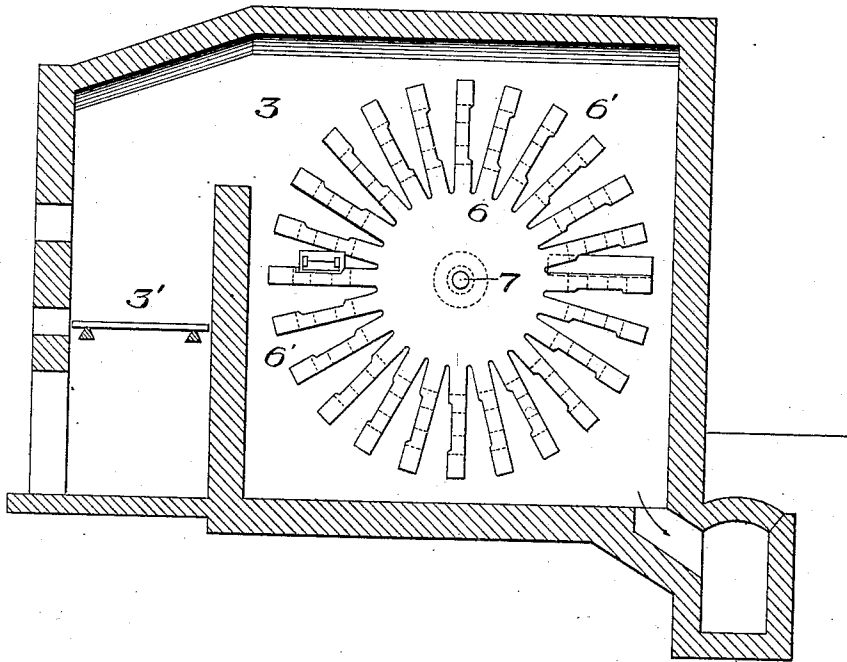
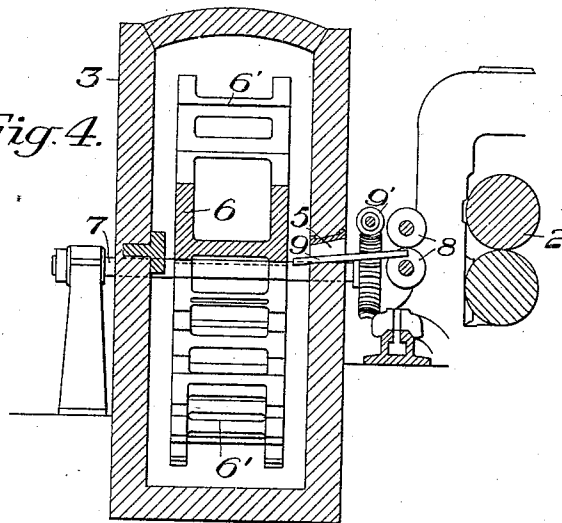


Fig. 4.



WITNESSES

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Fig. 5.

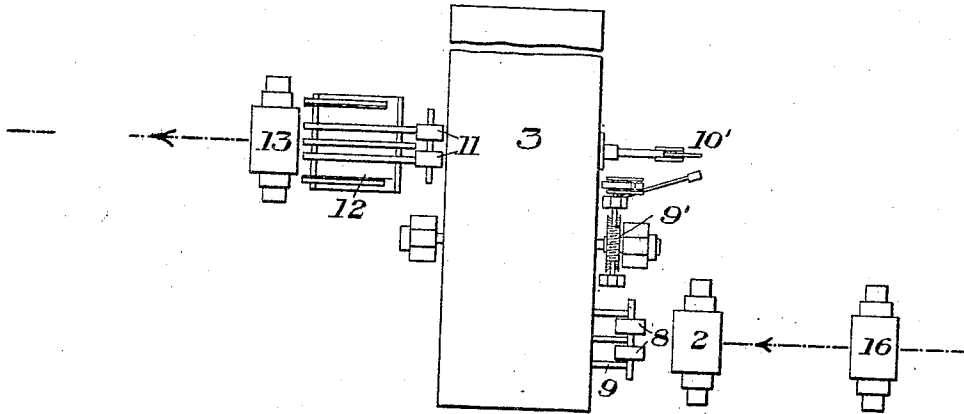
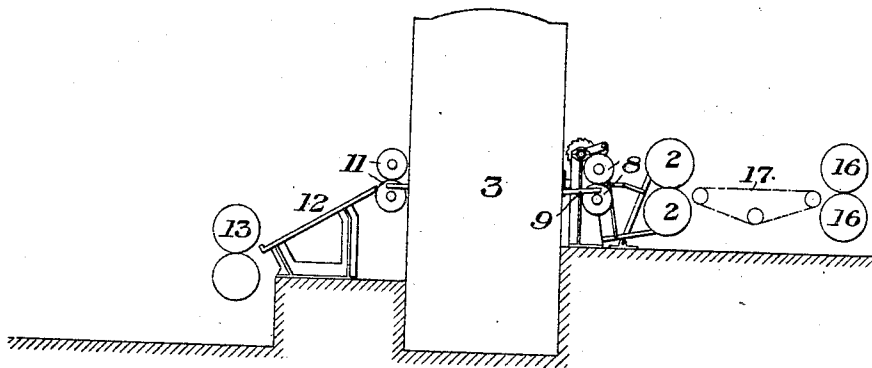


Fig. 6.



WITNESSES

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UNITED STATES PATENT OFFICE.

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METHOD OF MANUFACTURING METAL SHEETS.

941,850.

Specification of Letters Patent.

Patented Nov. 30, 1909.

Application filed October 12, 1907. Serial No. 397,134.

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
5 Method of Manufacturing Metal Sheets, 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 horizontal section of apparatus constructed in accordance with my invention; Fig. 2 is a vertical section of Fig. 1; Fig. 3 is a vertical section through the reheating furnace; and Fig. 4 is a vertical
15 section of Fig. 1. Fig. 5 is a top plan view and Fig. 6 is a side elevation showing the relation of the rolls preceding and succeeding the reheating furnace.

I have discovered that in the manufacture
20 of metal sheets, and particularly in the manufacture of black plate, important results in regularity of product and diminishing waste can be secured by providing a continuous reheating furnace into which the
25 sheets are introduced after being delivered from the roughing rolls, and a matcher to which the sheets heated uniformly in their passage through the furnace are matched preparatory to being delivered either directly,
30 or indirectly by a suitable conveyer, to the finishing rolls. The furnace, being a continuous furnace adapted to contain a considerable number of sheets which pass serially therethrough, serves to interrupt the
35 continuity of the rolling operation, and by equalizing the temperature of the sheets and delivering them in heated condition to the matcher, it diminishes the serious waste which has existed heretofore.

40 In the drawings, 2 represents the final set of rolls of the roughing train, and 3 is a continuous reheating furnace into which the sheets are delivered therefrom. This furnace contains suitable conveying mechanism for
45 receiving the sheets and carrying them to the delivery end of the furnace, and it consists preferably of a furnace structure having a combustion chamber or portion 3', a charging opening 4, a discharging opening
50 5, and a conveying wheel 6 mounted on a rotatory shaft 7, and having marginal pockets or holders 6', which are opposite to the openings 4, 5. The sheets are delivered from the rolls 2 between driven rollers 8 and upon

a guide 9 to the wheel 6 which is intermittently rotated by driving mechanism 9' to bring the holders successively and at suitable intervals into register with the opening 4.

The apparatus may be actuated so that each of the holders will receive one of the
60 sheets, or a greater number—two or more—may be delivered to each holder, and in either case the furnace will at all times contain a considerable number of sheets and each sheet will remain in the furnace exposed to
65 the heat for a considerable time.

As the holders 6' arrive successively at the opening 5 they are engaged by a pusher 10, actuated by a hand-lever 10', or otherwise, and are pushed from the holder through the
70 opening 5 and into the bite of driven rollers 11, by which they are delivered to a matcher 12, the construction of which may be as described in my Patent No. 718,974 dated January 27, 1903. The heated sheets are here
75 matched and the matched pack is then delivered to the finishing rolls by any suitable means, either directly or by a suitable intermediate transfer device as may be desired.

In Figs. 5 and 6, I show a set of rolls 13
80 succeeding the matcher. In this figure also, I show rolls 16 preceding and arranged in tandem with the rolls 2 and the carrier 17 between them.

Within the scope of my invention as defined in the claims, changes in the form and arrangement of the apparatus may be made by the skilled mechanic, since

What I claim is:

1. The method of continuously reducing
90 metal bars into sheets, consisting in passing the heated bars singly and successively through roughing rolls, then continuously feeding them away from the roughing rolls, and reheating said plates during such transit,
95 then matching the plates, and then feeding all of the matched packs through the same path and rerolling them during their passage through such path; substantially as described. 100

2. The method of continuously reducing
metal bars into sheets, consisting in passing the heated bars singly and successively through roughing rolls, then continuously
105 feeding them away from the roughing rolls, and reheating said plates during such transit, then feeding all of the plates forwardly in the same path, and matching and reroll-

ing them during their passage through such path; substantially as described.

3. The method of continuously reducing metal bars into sheets, consisting in passing
5 the heated bars singly and successively through successive sets of roughing rolls, then continuously feeding them away from the roughing rolls, and reheating said plates during such transit, then matching the
10 plates, and then feeding all of the matched packs through the same path and finish-rolling them during their passage through such path; substantially as described.

4. The method of continuously reducing
15 metal bars into sheets, consisting in passing the bars singly and successively through roughing rolls, then continuously feeding all of the successive plates through the same

path, reheating the said plates by the same heating means during such passage, and then
20 matching and rerolling the matched packs; substantially as described.

5. The method of reducing metal bars into sheets, consisting in rolling them singly and successively in roughing rolls, then feeding
25 them into one end of a heating furnace, carrying them through the furnace, feeding them out at the other end of the furnace, and then matching and rerolling the reheated matched packs; substantially as described. 30

In testimony whereof, I have hereunto set my hand this 9th day of October A. D. 1907.

CHARLES W. BRAY.

Witnesses:

A. G. YOUNG,

THOMAS H. CLARK.