

(No Model.)

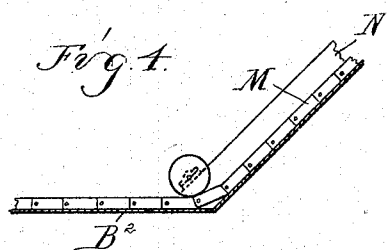
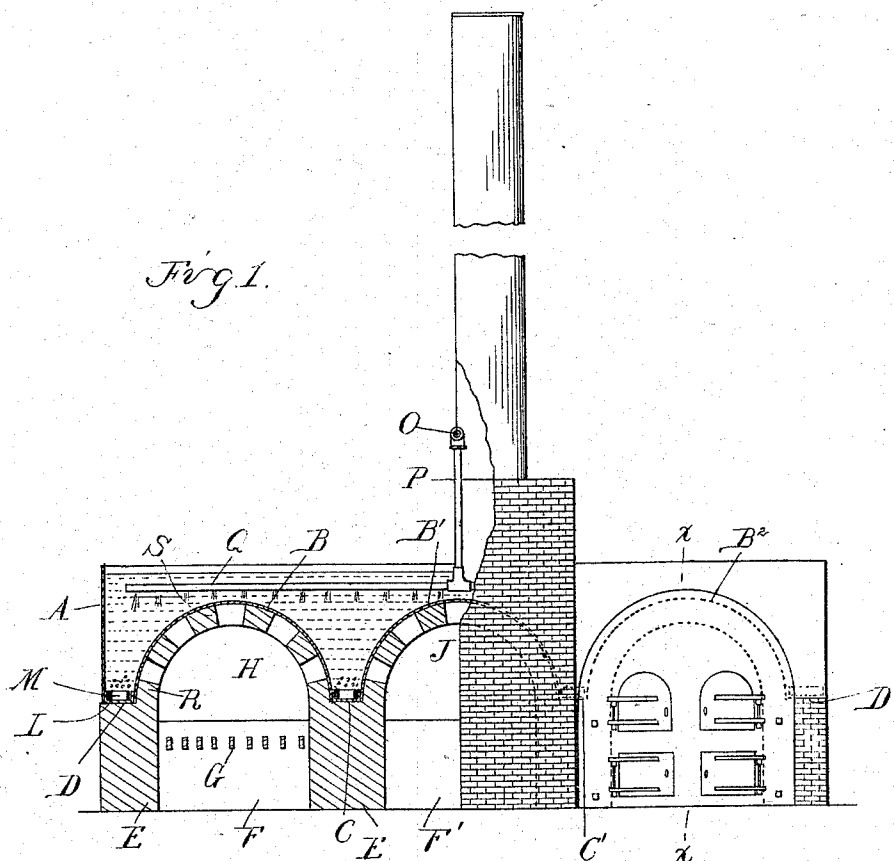
2 Sheets—Sheet 1.

T. CRANEY.

APPARATUS FOR MANUFACTURING SALT.

No. 542,044.

Patented July 2, 1895.



Witnesses  
A. B. Hobby  
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Fig. 1.

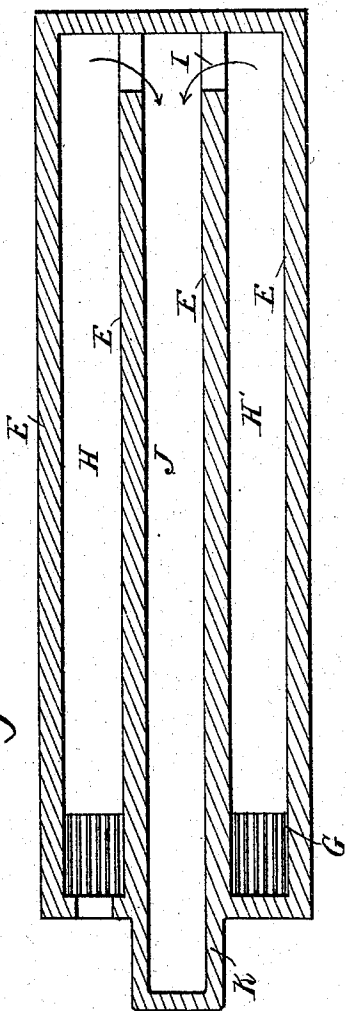
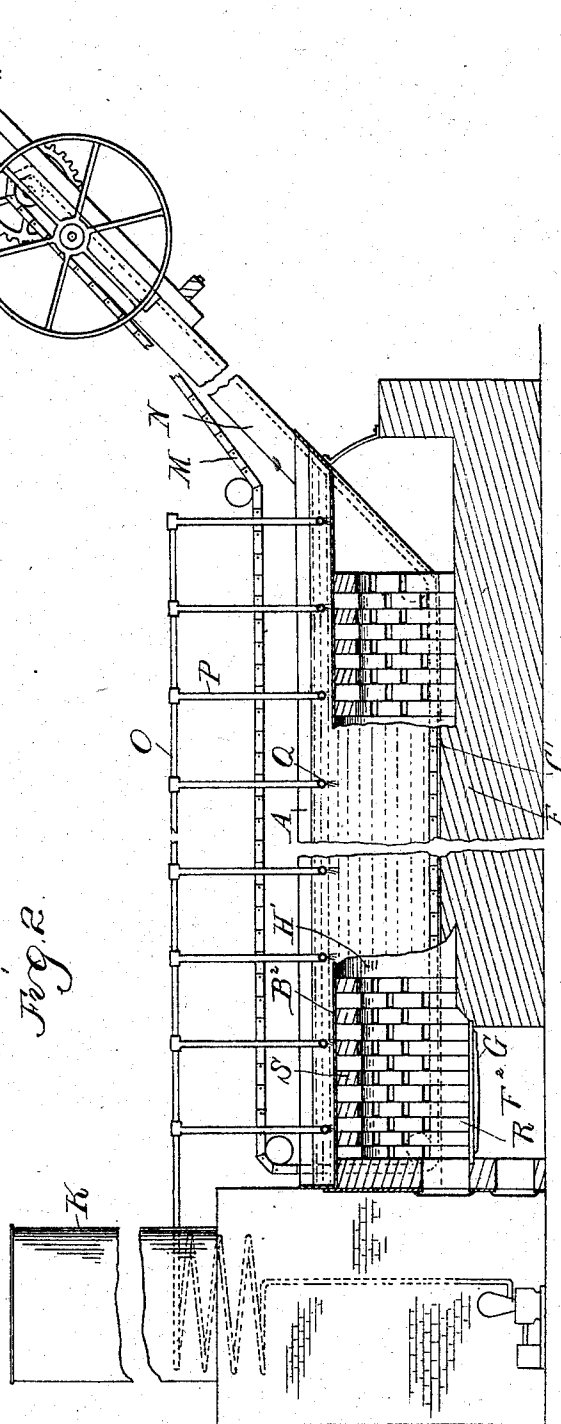


Fig. 2.



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# UNITED STATES PATENT OFFICE.

THOMAS CRANEY, OF BAY CITY, MICHIGAN.

## APPARATUS FOR MANUFACTURING SALT.

SPECIFICATION forming part of Letters Patent No. 542,044, dated July 2, 1895.

Application filed December 18, 1894, Serial No. 532,167. (No model.)

*To all whom it may concern:*

Be it known that I, THOMAS CRANEY, a citizen of the United States, residing at Bay City, in the county of Bay and State of Michigan, have invented certain new and useful Improvements in Apparatus for Manufacturing Salt, of which the following is a specification, reference being had therein to the accompanying drawings.

10 This invention consists in the peculiar construction of a furnace evaporating apparatus comprising a plurality of furnaces for a single plan, whereby I obtain the direct heat for the evaporation of the brine and with  
15 the greatest economy in its use, besides enabling me to carry off the salt as fast as it accumulates by conveyers extending through the pan.

20 The invention consists in the peculiar arrangement, construction, and combination of the various parts, all as more fully hereinafter described.

25 In the drawings, Figure 1 is a sectional elevation of an apparatus embodying my invention. Fig. 2 is a section therethrough on line  $xx$ , looking to the left. Fig. 3 is a horizontal section above the grates of the furnace. Fig. 4 is a vertical section of the end of the tank showing the conveyer.

30 A are the side walls of the tank, the bottom of which comprises three arch-shaped sections  $B B' B^2$ , separated by the horizontal sections  $C C'$  and having the side horizontal sections  $D D'$  extending the whole length thereof. The horizontal sections of this tank  
35 are supported on longitudinal walls E, forming between them beneath the arched sections of the bottom the longitudinal chambers  $F F' F^2$ . At the forward end of the longitudinal chambers F and  $F^2$  are suitable grates G, and the fronts of these chambers are provided with the usual coal and ash doors for supplying the grates with fuel and maintaining combustion thereon. In rear of these grates and  
40 extending the entire length of the arched sections of the bottom of the tank are the flues  $H H'$ . These flues at their rear ends connect through the connecting-passage I with the rear end of the central flue J, which  
45 is beneath the arch  $B'$  of the bottom of the tank, and at the forward end of the flue J is the smokestack K. In the horizontal sec-

tions of the bottom I arrange suitable troughs L, in which run the conveyer chains M, which operate from a single source of power and at  
55 the ends of the tank engage into the inclined troughs N for carrying off the salt as it crystallizes. Centrally from the tank is the air-supply pipe O, having at suitable intervals the depending branches P, at the bottom of which  
60 are the horizontal cross-pipes Q, perforated on the underside for discharging air downwardly into the tanks. The walls E at the upper ends have the side extensions R, which will cover the lower sides of the arched sections  
65 of the bottom, where it protects the troughs formed between the arched sections of the bottom from the direct heat from the fire.

S are a series of brick arches extending from the top of the section R of the brick-  
70 work forming the under face of the arches of the bottom of the tank, these brick arches being separated and formed of checker-work to allow sections of the bottom to receive the direct impact of the heat, but at the same  
75 time prevent the heat from striking any large portion of the bottom directly and thereby prevent the burning of the salt.

With this construction of device I evaporate in the two outer tanks with the direct  
80 heat of the fire and in the central tank with the heat from the products of combustion from the outside tank and thereby economize in fuel. The air-jets being nearer to the arched sections of the bottom will keep a con-  
85 stant circulation of the brine at these points, washing off any salt which might accumulate there and at the same time assist materially in producing crystallization and the proper graining of the salt.

What I claim as my invention is—

1. In an evaporating apparatus, the combination of a metallic pan, having an arch shaped bottom, a furnace beneath the same, and sectional brick arches or checkerwork on  
95 the under face of the bottoms, substantially as described.

2. In an evaporating apparatus, the combination of a metallic pan, having three arch shaped bottom sections, horizontal bottom  
100 sections between the arch shaped sections, furnaces beneath the outer arches, connections between the inner and outer arches at one end, a stack at the other end of the cen-

tral arch, and conveyers in the horizontal bottom sections.

3. In an evaporating apparatus, the combination of a metallic pan having a series of  
5 arch shaped bottom sections and intermediate horizontal bottom sections, of furnaces beneath the arches, walls supporting the tank under the horizontal sections the side extensions R of the walls beside the horizontal sections and the conveyers between the arches.  
10

4. In an evaporating apparatus, the combination of a metallic pan having a series of arch shaped bottom sections and intermediate

horizontal bottom sections, furnaces beneath the arches, conveyers in the horizontal sections, air pipes depending into the tank, cross  
15 pipes at the bottom of the air pipes extending over the arches, and formed with jet openings directed downward, substantially as and for the purpose described. 20

In testimony whereof I affix my signature in presence of two witnesses.

THOMAS CRANEY.

Witnesses:

M. B. O'DOHERTY,  
A. F. BARTHEL.