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## Economical Method of Manufacturing Salt.

A new and economical system for a salt factory or block, as it is technically termed, is here illustrated, the drawings and description having been furnished us for publication by Messrs. Beach & Waterman, of Saginaw city, Mich., proprietors of the block.

Fig. 1 represents a perspective view of the entire working parts, having the building and reservoir in the rear removed. Fig. 2 is a transverse section view across the center. Fig. 3 is a transverse section across the furnaces near the front. The parties referred to say:—

“We noticed in the SCIENTIFIC AMERICAN of November 15, 1862, a statement from Mr. Nathan Chapin, of East Saginaw, Mich., relating to his new patent method of salt evaporation, which was then in operation, showing a saving of about one-third of the usual expense of manufacture with a prospect of still greater gain on removing the obstructions which he then saw. His investigations upon both the manufacture and the use of salt, are still in successful progress, and are attended with developments interesting to the people at large as well as to himself.

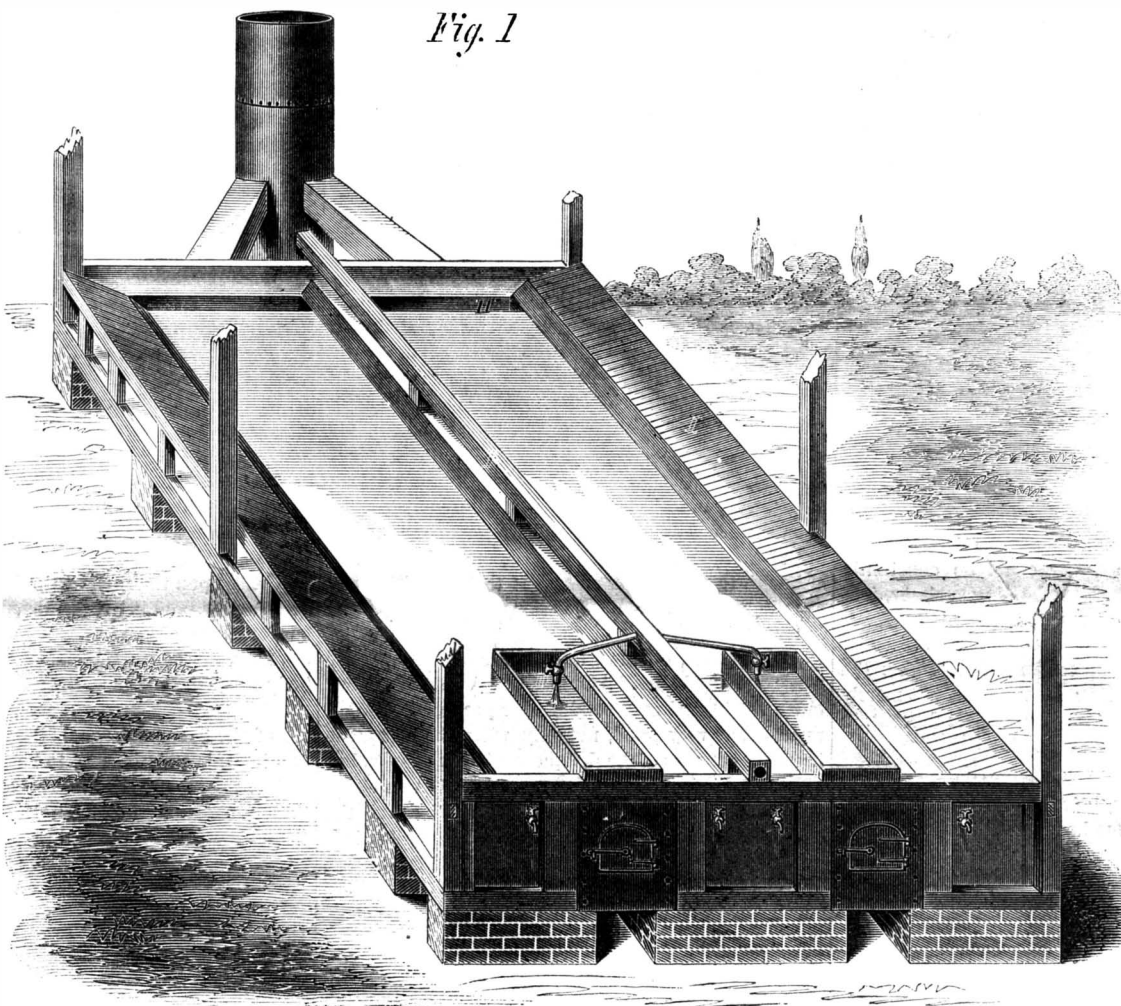
It is the superior advantages of his process that has led us to the business of salt making, and we are now running one of his improved blocks or manufactories of a moderate capacity, as an introduction to a more extended business. Our works consume three cords of dry elm and black ash wood in 24 hours. We turn out upwards of 40 barrels or 200 bushels of salt in the same time, with the help of one fireman and one raker, day and night. These men are able

upon the skill and diligence of workmen, but upon an accurate compliance of the process to the chemical requirements of the brine for securing that end. The density of the brine, as it comes from the well, stands at 86, in a scale indicating saturation at 100. That is 14 degrees weaker than full saturation, which

high degree of temperature for several days, until it reaches the rear end of the vat, when all its solid impurities become formed and settled, and the brine in a refined state finds its way upon the graining pan in the same continuous manner, to be reduced to salt.

This pan is constructed of sheet metal and placed directly over the vat of heated brine. It sits partly down into it so as to receive its supply without forcing, and also receives its heat therefrom, by being transmitted through its sheet-metal bottom; the granulating process is carried on in the same continuous way, assisted, however, by a “strip” of direct heat from the submerged flue. This being made flat on its upper side constitutes a narrow portion of the pan through the center of its bottom.

“The salt is raked out at intervals of six hours and lodged on a draining rack placed upon one edge of the pan projecting over the mass of heated brine in the vat below so as to receive the steam therefrom.— This hastens the drainage so much that it is fit for packing in two hours after raking. The use of lime for cleaning the brine is principally or quite

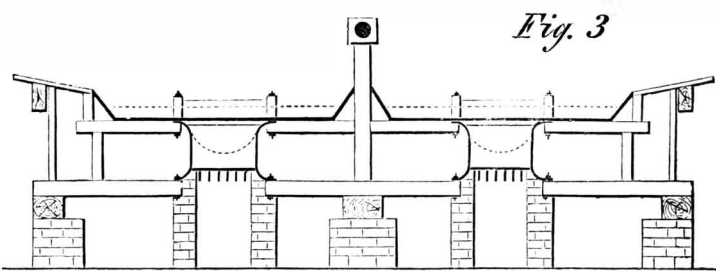
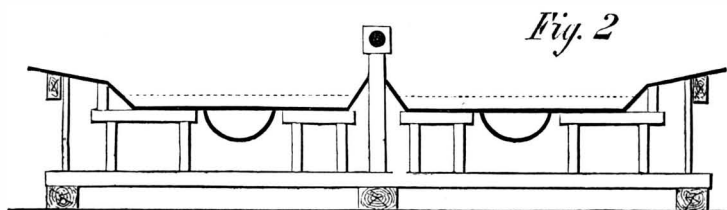


AN ECONOMICAL METHOD FOR MANUFACTURING SALT.

is the average strength of the brine of this valley.

“The apparatus appears to be free from the difficulties of incrustation and irritable effects of fire and salt, and is very simple in its construction; it consists, mainly, in a vat of brine about 14 feet by 84 and 26 inches deep, heated by a submerged furnace

unnecessary, and there seems to be no cause for stopping the operation for the season. We are using two parallel sets of this apparatus with salt bins on either side inclosed in a building. When used single it should occupy a building about 22 feet by 100 inside of the bins and fire room, with a furnace through the



to perform 100 per cent more labor were the block constructed to require it. This is twice the salt from a given amount of fuel and labor that any process in this region has yet produced, and it is of the most perfect quality. It has no chance to be otherwise as he quantity of salt by this method does not depend

and flue running lengthwise through it to a draught chimney in the rear. This vat is fed by a continuous stream of brine falling directly upon the furnace therein, to which it is limited until it boils to nearly the point of crystallization; it then flows off and unites with the mass in the vat, where it is kept at a

center. The larger the crystallizing surface may be, with proper temperature, the more it compensates for not boiling, and the more perfect the quality of salt.”

This block was patented on the 18th of April, 1862, by Nathan Chapin, East Saginaw, Mich.