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COMBINATION ICE AND FREEZING HOUSE.

We recently illustrated a novel plan for manufacturing ice (see page 54, Vol. XXXI.) during the winter season, which could be practised by any person owning a suitable house for the preservation of the ice. The main features of the process consisted in filling canvas tanks, supported in frames of wood or metal, with water, and allowing them to remain in a shed or freezing house until their contents were thoroughly frozen. A simple arrangement, whereby the tanks were afterwards submitted to warming by steam, allowed the ice to be readily removed in neatly shaped blocks, ready for storing.

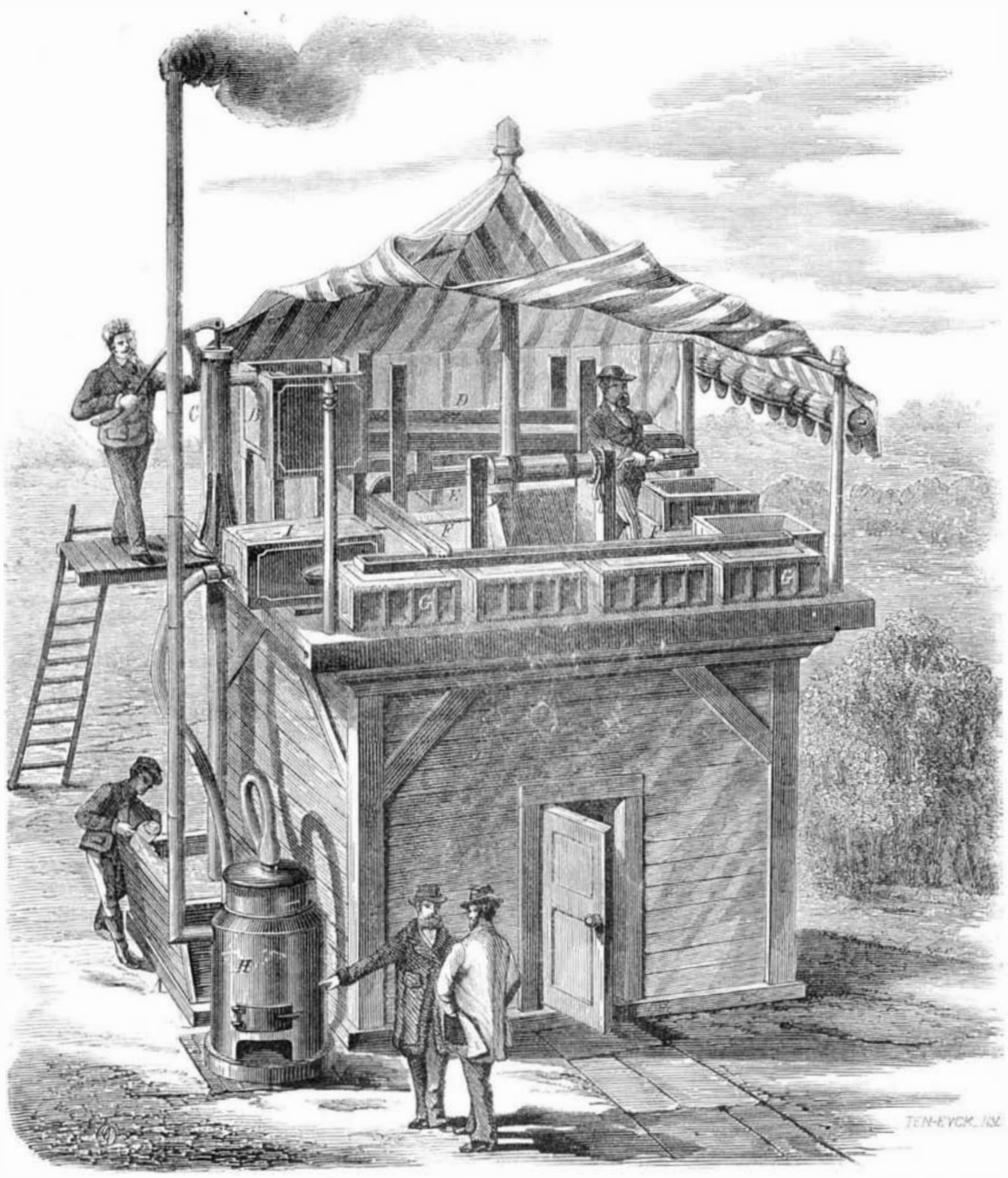
The invention which we now present is a freezing house in which the above operation is carried on, placed above an ice house, so that the manufacture of the ice can be carried on in the upper story and the frozen blocks lowered at once into the receptacle beneath. Above the ice house, which may be of the form shown and of any suitable construction, are erected standards for the support of roof and side awnings. At A is a large water tank which is filled from a well or hydrant, and from which the water is elevated to a regulating cistern, B, by means of the pump, C. By slightly raising the gate of this cistern, the water is allowed to pass in a thin sheet to the inclined canvas cooling plane, D, where it is exposed to the action of the cold air which freely blows through the open sides of the shelter. When the water has flowed to the bottom of the first plane it is caught by a second plane, E, which conducts it to leaders, F, by which it is distributed to the freezing tanks, G, which consist of canvas receptacles placed in frames, as above described.

When these tanks are frozen solid, a fire is made under the boiler, H, the steam from which passes through a flexible tube to the box, I. It is merely necessary to place the box over each tank for a moment to insure the loosening of the ice, when the block may be at once removed and lowered into the ice house by means of the winch shown.

Combined ice and freezing houses may thus be constructed of various sizes and productive capacities, ranging from 10 tuns, suitable for private houses, to 200 tuns, suitable for butchers and confectioners, and 1,000 tuns and over for commercial purposes. By their use ice can be produced in any desired quantities in locations where none is to be obtained from ponds or rivers, and in latitudes where rivers never freeze over, the only care necessary being to store the ice, when made, before a change of weather can affect it. The plan, we are informed, can be used with advantage as far south as Northern Alabama. In a more southerly location, the number of cooling planes can be increased. Freezing will be accomplished most rapidly when the canvas roof and walls are removed and the uncovered tanks are free to radiate their heat.

The quantity of ice produced during a winter north of Baltimore is estimated at not less than two tuns for each freezing tank twenty eight inches square by ten inches deep, and the cost, we are assured, need not exceed fifty cents per tun. Two men are sufficient to fill a 1,000 tun ice house, and smaller houses of from one to two hundred tuns need not require the labor of more help than is ordinarily employed about the premises.

Patented July 14, 1874. For further particulars as to buildings, apparatus, and patent rights, address the inventors, Messrs. Newsham, Haines & Henson, 108 Pacific street, Newark, N. J.



NEWSHAM, HAINES AND HENSON'S COMBINATION ICE AND FREEZING HOUSE.

Protecting Cast iron Pipes.

The water from mines frequently contains enough acid to attack cast iron pipes, destroying them in a short time. Oil colors and varnishes offer but a limited resistance, and the process of enameling employed in Oberschlesia, says M. Englehardt, of Ibbenburen, although permanent and effective, is expensive. Cement is cheaper, and is not acted upon by these waters, and the only question to be settled was whether it would adhere to the smooth iron with sufficient firmness.

Two similar pieces of rolled iron were taken, and one of them painted over five times with a very thin cement, so that the coating was 0 15 or 0 20 of an inch thick. Both pieces were suspended near together in that part of the shaft where the water had attacked the signal cable most violently, and were left there four months. On taking them out, the unprotected iron was found to be reduced to one third its original thickness; the other, in which a hole had been bored to suspend it, had suffered the same corrosion at the exposed portion; the cement covering was dark brown, but perfectly hard and unattacked by the acid. The cement was broken off, and the surface of the iron exhibited the dark blue color and luster that it had on leaving the rolls.

As this coating adhered so well to the smooth rolled iron, to which it cannot cling as tightly as to the rougher surface of cast iron, the experiment was continued on a larger scale. A 24 inch discharge pipe in the Oeyhausen shaft was protected on the inside with cement. The coating remained unchanged for two years, while the pump was in constant operation. At the beginning of last winter the pump was stopped; and the pipe being no longer under water, the cement was so much injured by the frost that it scaled off Several other experiments were made with similar results.

The pipes should be new, or, if old, well cleaned from rust before applying the cement, which is mixed as thin as is possible without injury to its tenacity. The pipe is moistened before the cement is applied, a thin coating of cement is put on and allowed to dry; when hard, it is moistened and a second coating applied, and so on four or five times. The operation cannot be conducted so well in very hot weather, as the cement dries too quickly; nor must the pipes be exposed to frost during the operation or afterward. This unfortunate sensitiveness to cold may, perhaps, yet be overcome by intervening some semi-elastic material between the iron and cement.

Measuring Distances by Sound.

Major de Boulengé, of the Belgian army, has recently devised an instrument for the above purpose, which he calls a battle telemeter, and which appears to give remarkably accurate results. The apparatus consists of a glass tube having graduations along its length representing distances measured. The tube is closed at its extremities, and is filled with liquid in which is a metallic traveler, formed of two disks united by a central rod. The diameter of the disks is a little less than that of the tube, so that when the latter is vertical the traveler will descend with a slow and uniform motion. A brass covering protects the glass, and has a slit through which the scale and traveler can be seen. Knowing the velocity of sound and that of the traveler, it is easy to construct the distance scale.

In operation, the edge of one disk is brought to the 0 mark; and the instrument being held horizontally, the flash of the cannon, for example, is noted; at that instant the telemeter is turned to a vertical position, and so held, the traveler, of course, descending meanwhile, until the sound is heard, when it is again brought horizontal. The position of the traveler denotes the distance to be read on the scale.

It is stated that, during the course of official experiments at the Belgian Artillery School, the instrument, in estimating distances of 3,200 yards, did not make over 21 yards of error, a quantity certainly insignificant when other causes of irregularities in firing are taken into consideration.

The force of the wind is said to have but little effect in impairing its accuracy, and the error due to temperature may be corrected by using, as the fluid, a mixture of alcohol and water in proper proportions.

The Mammoth Cave of Mexico.

It is said that the cave of Cacahuamilpa is the largest cave in the world. Several persons, who have visited the Mammoth Cave of Kentucky and that of Cacahuamilpa in Mexico, pronounce the latter the larger. A volcanic mountain with an extinct crater covers this cave. It is not described in guide books or books of travel. It has, in fact, never been adequately described. Mr. Porter C. Bliss has twice examined and explored it, the last time in February of the present year. Six hundred persons constituted the last exploring party; they were provided with Bengal lights and scientific appliances. After reaching a level at perhaps 50 feet depth, they proceeded 3¾ miles into the interior. The roof was so high—a succession of halls—that rockets often exploded before striking it. Labyrinthine passages leave the main hall in every direction. Stalagmites and stalactites are abundant. Below this cave, at a great depth, are two other immense caves, from each of which issues a branch of a great river, uniting here. These two rivers enter some five miles distant at the other side of the mountain, flow parallel, and issue at last together. Vast quantities of bats are the most numerous inhabitants of these caverns.