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Improved Evaporator.

It is a well-known fact that sugar, in any form, submitted to a temperature of 400° Fah., caramelizes, *i.e.*, turns brown; it is, in fact, fused and is no longer crystallizable; hence the absolute necessity of a low temperature to obtain the crystallization of all the crystallizable matter in saccharine juices, and avoid molasses of a tarry appearance and nature. Another fact is, that where the pressure of the atmosphere is partly or wholly removed, evaporation is more active, and ebullition obtained at a much lower degree than 212° Fah. Hence the application of a hot-air chamber, in this evaporator, gives evaporation in a comparative vacuum, thereby helping crystallization in the case of saccharine matters, besides saving considerable time and fuel

Fig. 1

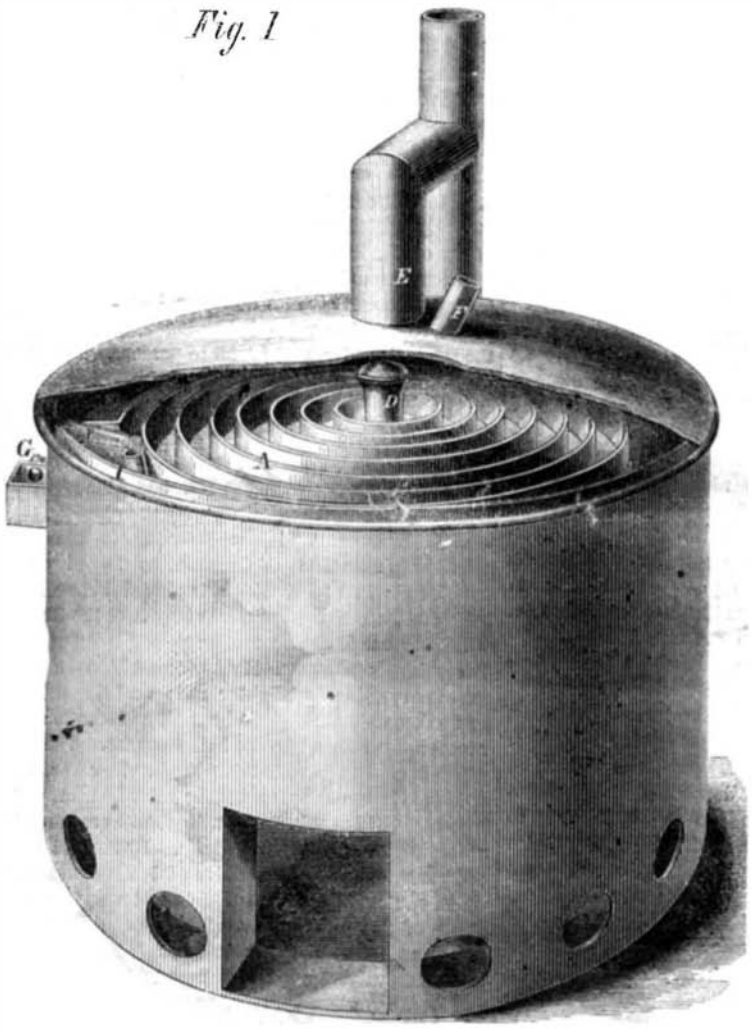
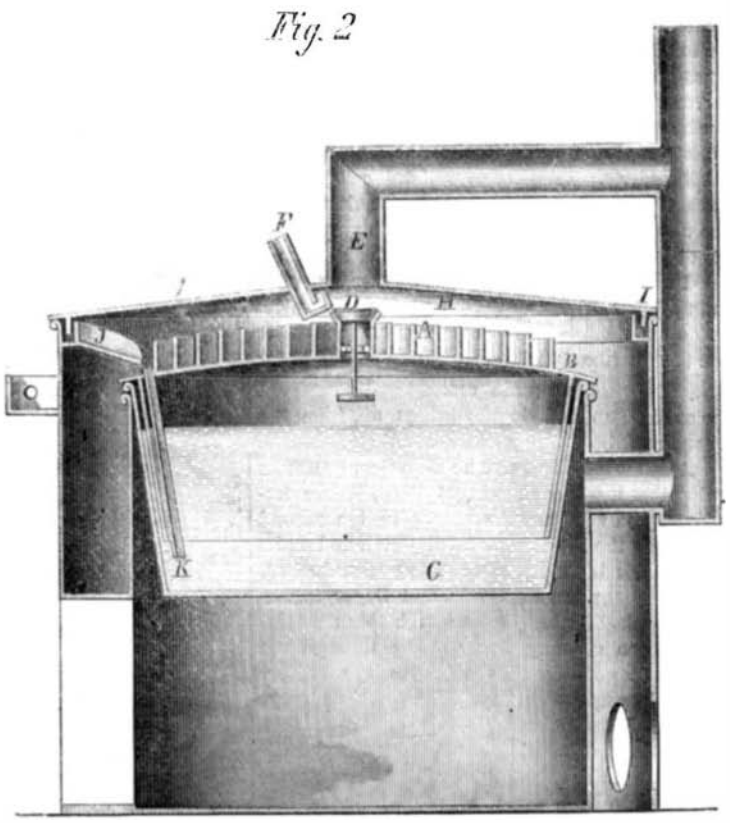


Fig. 2



KOHLY & CURTIS'S EVAPORATOR.

The evaporator proper consist of a scroll-shaped passage, A (Fig. 1), formed by matallic walls on the top of the case, B (Fig. 2), and a boiler, C, wherein said chamber sets. This boiler is partly filled with water, and it is the steam from the water which supplies the requisite heat to evaporate the fluids contained in the channels, A. The heat is prevented from getting too great by the safety valve, D, inserted in the case, B; it being well known that for certain pressures the steam has a certain degree of heat which this safety valve, therefore, regulates by rising when the pressure is too great. Through the pipe, E, this steam escapes into the main flue, and this aids the draft in the furnace of the boiler beforementioned. The liquid to be vaporized is admitted through the pipe, F, and discharged at G (Fig. 1), and whatever moisture condenses on the roof, H, of the boiler, flows down it to the joint, I, which it fills and keeps tight while any surplus falls into the trough, J, and returns through it and the pipe, K, to the boiler again. It is claimed for the action of the steam escaping through the valve, D, that it creates a partial vacuum in the evaporating chamber, and thus facilitates the process.

The various advantages of this apparatus are as follows:—Perfect regularity of the heat applied; impossibility of scorching the saccharine matters; a considerable saving of time in evaporation by a constant flow in and out uninterrupted; the absorption of moisture by the dry air, and the ebullition in a comparative vacuum. The apparatus can be made self-skimming, if required, avoiding thereby a very filthy and tedious work; a great economy of fuel, as every particle of waste heat from the whole apparatus can be turned to account, after it comes out of the evaporator, to warm the contents of the feeding tank or vat. The whole operation must, of necessity, be cleanly done; the apparatus, being covered, no dust, flies, wasps, smoke, or other matters, can get access to it and spoil the contents. In naked fire evaporators it is not usual to start the fire before the cane mill. In this one it is quite different, and no matter how brisk the fire, it is impossible to injure the sirup.

The apparatus can be applied to any common farmer's boiler, or to larger ones, by a slight alteration, viz., removing or putting a tight bottom under the rim below the volute channel, and forcing the steam by a hole in the side of the under rim.

The apparatus is so simple and compact that it can hardly, if properly constructed, get out of order; it is light, and takes very little room when not in use, and is also very easy to clean. It can be applied equally to the evaporation of all saccharine matters, condensing of wine and cider, also to salt water, and many other uses in chemico-industrial works.

"To illustrate the enormous amount of flowing and evaporating surface," says the inventor, "a common apparatus, 6 feet in diameter—the size for sorghum and maple-sugar makers—would give an area of 27 square feet, and 58 feet length of channel. For plantations and large factories this apparatus will show a striking advantage in the single item of economy of room required for attaining the object in view, without speaking of other advantages enumerated above."

For the sale of State and territorial rights apply to the inventors, H. Kohly or J. Curtis, Potosi, Mo.

INK FOR ZINC.—The following is a recipe for indelible black ink to be used for writing on zinc:—Take 30 parts of verdigris, 30 of sal-ammonia, 8 of lamp-black, 8 of gum-arabic, and 300 of water; dissolve the gum in water, and pour it over the other ingredients, well mixed and reduced to powder. A quill pen should be used for writing.

THE United States Pacific Railroad Telegraph line will be complete from Chicago to San Francisco in one year from the present time. Twelve hundred miles are already under contract, to be completed in 1865. This will make the second telegraph line to the Pacific, one being already in operation.