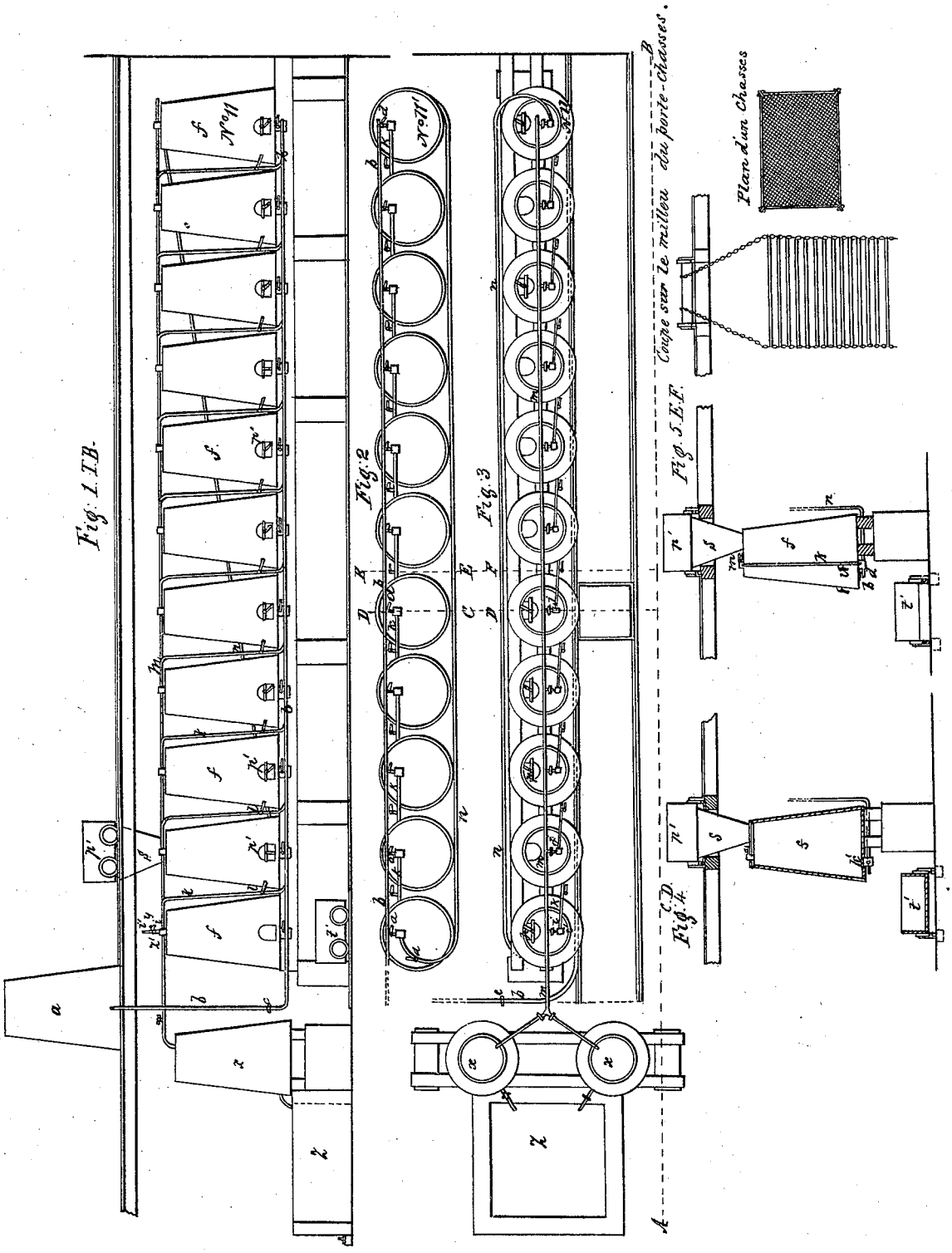
DE MANOEL & BRAFIN.

Evaporating Pan.

No. 5,454. Patented Feb. 22, 1848.



UNITED STATES PATENT OFFICE.

CHS. DE MANOËL AND E. BRAFIN, OF MARTINIQUE, WEST INDIES, ASSIGNORS TO MANOËL.

IMPROVEMENT IN MAKING SUGAR.

Specification forming part of Letters Patent No. **5,454**, dated February 22, 1848.

To all whom it may concern:

Be it known that we, CHARLES DE MANOËL and E. BRAFIN, both of the Island of Martinique, in the Territory of the Kingdom of France, have invented certain new and useful Improvements in the Manufacture of Sugar from Cane; and we do hereby declare that the following is a full, clear, and exact description of the principle or character which distinguishes them from all other things before known, and of the usual manner of making, modifying, and using the same, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation. Fig. 2 is a plan of the apparatus from below. Fig. 3 is a plan from above. Fig. 4 is a section on the line C D through the tub. Fig. 5 is a section on the line F F between the tubs.

The nature of our invention consists in drying and pulverizing sugar-cane and then washing the saccharine matter therefrom, to be manufactured into sugar by evaporation in the ordinary way. The cane is first cut by a cane-cutter in pieces of small size, after which it is dried in a proper stove or kiln, and then it is pulverized in a mill, which fits it for the process about to be described. A series of any number of tubs or vats, *f*, are placed in line together, eleven of which are shown in the drawings. Above these tubs a reservoir of water, *a*, is placed, from which a pipe, *b*, descends to a level with the bottom of the tubs *f*, and then runs along horizontally below them all. This pipe *b* is connected with each of the tubs by a short branch pipe, in each of which there is a stop-cock, *d*, which, when open, connects the tub with the pipe *b*. This pipe is also furnished with a stop-cock, *c*, for closing all communication with the tubs. The top of the first tub has a small metal box, *i*, on its top that opens into it, from which a pipe, *k*, descends to the bottom of the second tub, where it connects with it after passing the water through a perforated plate, K, Fig. 4. The second tub connects with the third in a similar way, as do also all the others with those next succeeding, thus connecting the whole. To each of the pipes *k* there is a stop-cock, so as to cut off either of the tubs from the series. From the last tub, No. 11, in the drawings a pipe, *n*, attached to its top in the same relative position as those before named, (marked *k*,) runs back to the bottom of the first tub, with which it is connected, and to it is attached a stop-cock, *o*. Another pipe, *m*, runs along the top of the tubs, which connects by short lateral pipes furnished with stop-cocks *j*, by which either of the tubs can be connected or disconnected with it. This pipe leads to the filterers *x* when they are used, and otherwise to the reservoir direct.

Beside the above-described pipes, each of the tubs is furnished with a trap-door or manhole, *p*, at the top, and a similar one, *p'*, on the side near the bottom, through which the pulverized cane is received and discharged. A railway is situated over the tubs, and on it a small car, *p'*, traverses over the tubs, below which car there is a funnel or spout, *s*, that serves to direct the pulverized cane from the car *p'* into the tubs. Another car, *t'*, runs along on a railway just below the bottom of the tubs and in a position to receive the contents of the tubs when they are to be emptied.

The operation of this apparatus is as follows: The car *p'* on the railway above the tubs is filled with the dry pulverized sugar-cane and then brought over the tub in which the cane is to be deposited. The bottom of the car is then opened and its contents fall down through the hopper *s* into the tub below, which, when filled with the cane, is closed by the door *p*, and after the whole series is thus filled in like manner the water in the reservoir *a* is let into the first tub through the pipe *b* by opening the stop-cocks *c* and *d*. The water which is first let into the bottom of this tub rises until the tub is filled. It then escapes through the box *i* into the pipe *k*, which conveys it to the bottom of the second tub partially saturated with the saccharine matter contained in the cane through which it has passed. It then runs through the second tub in the same way, and then through the others till it has reached a sufficient degree of saturation—say, about 20° or 25° of the arcometer of Baumé—and which generally reaches 20° at the fifth tub. The stop-cock *j* is then opened and permits the water thus saturated with sugar to pass through the pipe *m* into one of the two filterers *x* or into the reservoir *z* direct. It is then taken to the kettles or battery direct and boiled. (This kettle is not shown in the drawings.) A tube of glass, *i'*, is inserted into the box *i*

of each tub, into which the areometer can be placed. By opening the stop-cock x' the saturated water is admitted into this tube. The cock is then stopped and the degree of saturation ascertained, after which it is drawn off through a small faucet, y'. When the saccharine matter is all drawn from the cane in the first tub, the areometer will descend to zero, and it is no longer necessary to let the water pass through it. The cocks d and l are therefore closed above and below, so as to cut off this tub from the series, and the corresponding stop-cocks of the second tub are opened, a new tub being also added at the opposite end of the series, and after the second tub is exhausted—that is, cut off—and so on through them all, retaining the same number at all times in the series, and when one tub is exhausted and cut off another is added, through which the water has to pass. After the first tub is exhausted, without suspending the operation of saturating the water that continues to pass through the apparatus, it is cut off, as before stated, and the exhausted cane contained therein is removed by opening the door and drawing it out into the car t', which is on the railway below. The tub is then again filled from the car above. When the last tub of the series has been reached, the stop-cock o is opened and a communication established through the pipe n between it and the first one, which has been filled with the fresh cane, and the operation is thus continued.

The tubs and pipes are made of any suitable material, and of any proportions found most convenient. Their number also is immaterial, if there are enough to give the requisite saturation to the water.

Having thus fully described our improved process, what we claim therein as new, and desire to secure by Letters Patent, is—

Extracting the sugar from the sugar-cane, substantially in the manner described, by drying and pulverizing the cane and then extracting the sugar by passing water through it, substantially in the manner and for the purpose set forth.

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