

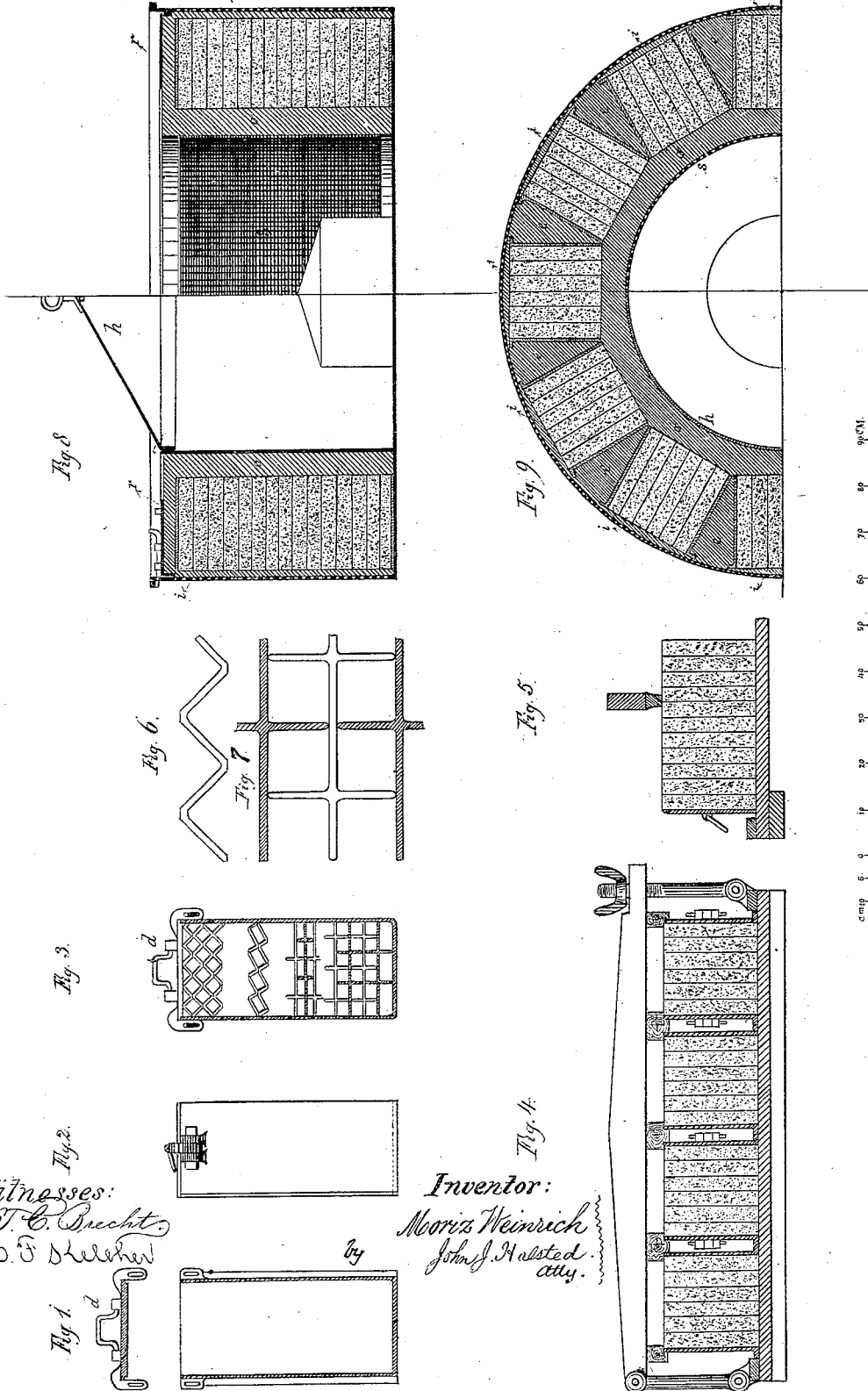
(Model.)

M. WEINRICH.

MANUFACTURE OF REFINED SUGAR IN STICKS AND LUMPS.

No. 265,352.

Patented Oct. 3, 1882.



Witnesses:  
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# UNITED STATES PATENT OFFICE.

MORIZ WEINRICH, OF VIENNA, AUSTRIA-HUNGARY.

## MANUFACTURE OF REFINED SUGAR IN STICKS AND LUMPS.

SPECIFICATION forming part of Letters Patent No. 265,352, dated October 3, 1882.

Application filed April 5, 1882. (Model.)

*To all whom it may concern:*

Be it known that I, MORIZ WEINRICH, of Vienna, in the Empire of Austria-Hungary, sugar-manufacturer, have invented a new and useful improvement in the manufacture of refined sugar in sticks and lumps in and by means of centrifugal machines, which is fully set forth in the following specification.

This invention has for its object the quick and economical manufacture of refined sugar in rectangular sticks simultaneously with sugar in lumps.

The sugar, when made in sticks agreeably to my invention, may be readily cut or divided into the form of cubes, while that part which is made in lumps may be used in any other convenient manner. In order to obtain this result I use rectangular forms or frames (see Figures 1 to 3 of the drawings) made of sheet-iron, malleable cast-iron, or other suitable material, the heights of which are preferably about two centimeters, or 0.78 inch, less than the height of the centrifugal drum. The depth and the breadth should be about from fifteen to twenty centimeters, or 5.89 to 7.8 inches, according to the diameter of the centrifugal drum. One of the smaller sides, *d*, Fig. 1, of the frame or form is provided with a handle, and is jointed with the other three sides by keys or wedges. When these wedges are removed the smaller side can be taken off. These forms are either singly or collectively, as closed frames, put on a base-plate or stand and pressed by means of a bridle or bow (as shown in Figs. 4 and 5 of the drawings) on the base-plate, so that they form underneath closed boxes or receptacles. Then in these frames are placed plates in such a manner that the entire form becomes divided into a number of prismatic spaces of a rectangular, quadrangular, or of any other suitable section, according to the shape of the cubes of sugar to be cut from the sticks. To that end or effect these plates have the shape or form represented in Figs. 3, 6, and 7 of the accompanying drawings. The employment of similar plates in the manufacture of sugar in sticks has been tried before, but not yet in centrifugal machines, so far as I am aware, and which therefore constitutes a quite new application. These plates are in preference made of malleable cast-iron, or sheet-iron or steel, as

also, if desired, of ebonite, brass, tin, or other suitable material. The forms thus arranged with plates are filled up to the border with hot and tense cooked sugar and put in a warm room for its solidification. Next I begin with the combined centrifugal work. It is essential to make use of a strong and solidly-constructed centrifugal machine, which should be provided with a shaft in a fixed bearing or with a balance-regulator. The drum must have a removable collar, *r*, as shown in Fig. 8, and the collecting-drum for liquoring with steam must have a cover to be locked. In the empty centrifugal machine, after removal of the collar, I put a cap, *h*, (see Fig. 8, left side,) with a conical head and a handle on it, or a cylindrical sieve of wire-gauze, *s*, (see the right-hand side of Fig. 8,) which must be well stiffened above and below. The diameter of the cap or of the cylinder is about thirty-five (35) to forty-five (45) centimeters—or thirteen and seventy-seven hundredths (13.77) inches to seventeen and seven-tenths (17.7) inches—smaller than that of the drum, so that an annular space from seventeen to twenty-three centimeters—or six and sixty-seven hundredths (6.67) to nine and five-hundredths (9.05) inches—breadth will remain between the drum and the cap. The forms removed from their base-plate, which have been filled with the cooled "fillmass," or raw sugar, or "fillgood," are placed in this space, so that one of the two open sides is directed toward the center and the other toward the circumference of the drum. (See Figs. 8 and 9.) In this position the outer edges of the forms touch the drum, while inside a free space of about two to four centimeters (0.78 to 1.56 inches) remains between the inclosed cap and the forms. Next the free spaces *o*, *i*, and *e*, Fig. 9, before, behind, and between the forms, are filled with raw sugar, or with mashed and squeezed sugar, or with the fillmass, being taken directly from the vacuum-pan, and after fastening the collar *r* the centrifugal machine is put in action.

By using the cap *h* in the machine the same has to be taken out after some hundred revolutions, while by using the cylindrical sieve *s* the latter remains in the machine during the whole operation.

As soon as the machine is in full action I be-

gin with the operation of liquoring. For this purpose I employ either water or sugar solutions, or also steam, or, if desired, a combination of liquor with steam. By preference I employ as a purifying means a dry expanded steam, the temperature of which ought not to exceed 85° Celsius, (185° Fahrenheit,) because steam is, in comparison to the liquor, cheaper, acts more rapidly, and the quality and quantity of the refined sugar obtained is at least equal to that resulting by any other process. In comparison with water, the quantity of sugar obtained is greater and its quality more consistent. By using steam the liquored sugar can be completely dried in the centrifugal machine in a very short time. Through the action of steam the layer of sugar—viz., the fillmass, or what is called in France “masse-cuite,” and in Germany “fülle-masse”—before the forms get warmed, is partly dissolved, and acts, in combination with the steam, upon the sugar sticks contained in the forms, and also upon the raw sugar or fillmass placed behind and between the forms. The operation of liquoring is continued for such a time until a light yellowish sirup flows out from the centrifugal machine. The admission of steam is then cut off and the centrifugal machine is allowed to revolve eight to ten minutes without any further admission of steam. Meanwhile the white sugar in and around the forms becomes completely hard and dry in consequence of its own high temperature and of the rapid circulation of air. The centrifugal machine is then turned up and

emptied. The sugar sticks are taken out from the forms (after removing the cover *d*) and are divided at once in the form of sugar cubes. The white sugar lumps may be worked up as liquor, crushed or ground sugar.

Having now described and particularly ascertained the nature of my invention and the manner in which the same can be carried into effect, I would state that I am aware that receptacles with inclined or radial sides have been used, and that sugar blocks have been made with transverse grooves therein. This I do not claim; but

I claim—

1. In combination with a centrifugal machine, rectangular prismatic frames or molds subdivided into prismatic cells by means of removable ribbed or zigzag plates having ribs or projections, as shown and described, which support the next adjacent plate, and with it constitute the walls of such cells, and whereby the sugar may be formed into prismatic sticks.

2. The combined manufacture of sugar sticks simultaneously with sugar lumps in centrifugal machines and by means of the rectangular forms, as hereinbefore described.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

MORIZ WEINRICH.

Witnesses:

Dr. ED. SCHMIDT,  
JOH. LUX.