No. 679,463. Patented July 30, 1901.

W. R. LONG.

SUGAR REFINING APPARATUS.

(No Model.) (Application filed Nov. 12, 1900.)

Fig. I.

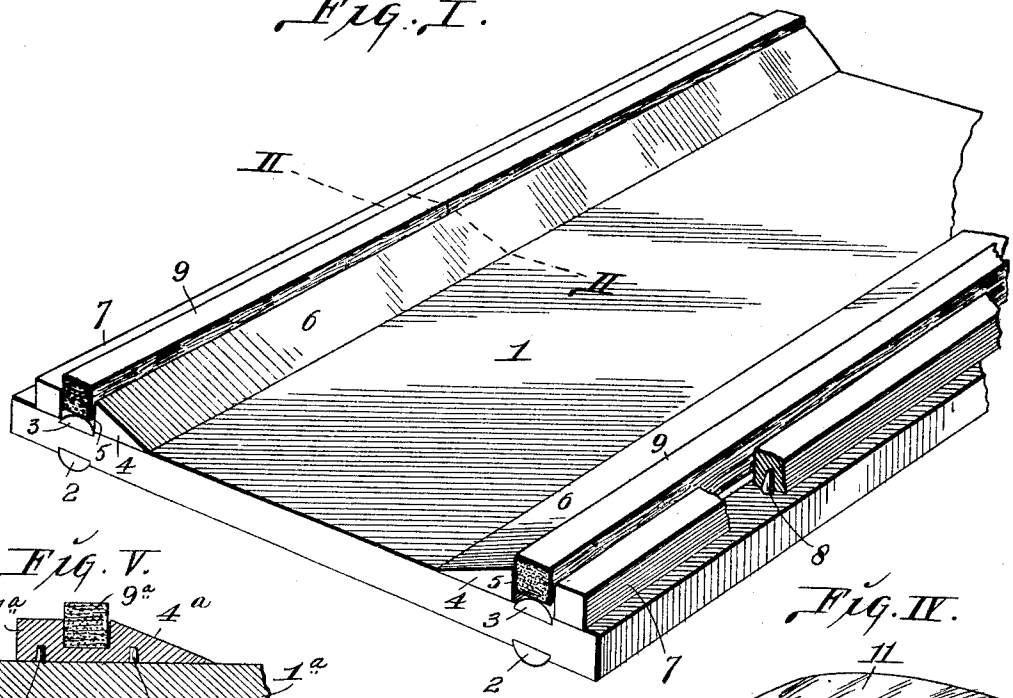


Fig. V.

Fig. IV.

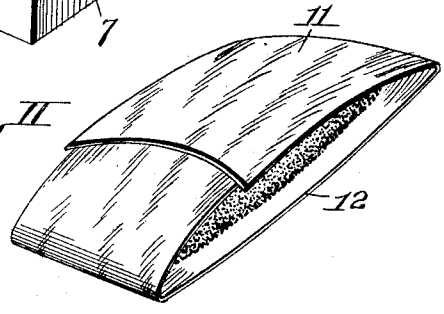


Fig. II

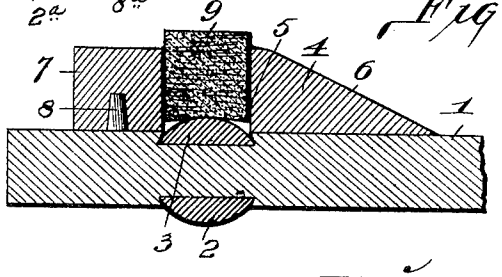
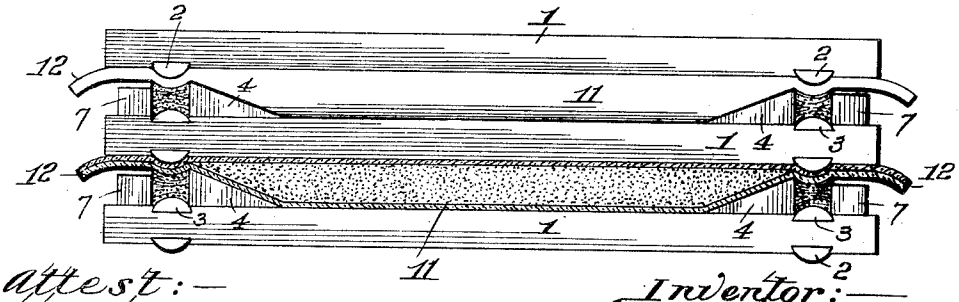


Fig. III.



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UNITED STATES PATENT OFFICE.

WILLIAM R. LONG, OF ST. LOUIS, MISSOURI, ASSIGNOR, BY MESNE ASSIGNMENTS, TO ST. LOUIS TRUST COMPANY, OF MISSOURI.

SUGAR-REFINING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 679,463, dated July 30, 1901.

Application filed November 12, 1900. Serial No. 36,163. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM R. LONG, a citizen of the United States, residing in the city of St. Louis, in the State of Missouri, have invented certain new and useful Improvements in Sugar-Refining Apparatus, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to apparatus for use in treating grape-sugar to refine it, the apparatus, briefly stated, comprising a series of frames having open ends and clamping sides, within which the sugar, previously formed into cakes and inclosed in envelops folded to form closed ends, is held and subjected to pressure in a hydraulic or other suitable press for the purpose of expelling the moisture and impurities contained by the sugar, the envelop being placed in a press so that its closed ends are at the open ends of the frame, while the sides of the envelop are retained by the clamping sides of the frame in a manner not only to prevent escape laterally of the material being pressed, but also to hold the folded ends and prevent their drawing outward.

My invention consists in features of novelty hereinafter fully described, and pointed out in the claims.

Figure I is a perspective view of one of the frames of the apparatus. Fig. II is an enlarged sectional view taken on line II II, Fig. I. Fig. III is an end view of three of the frames assembled with the sugar inclosed by its incasing envelops shown between the frames, one of the envelops being shown in vertical section. Fig. IV is a perspective view of one of the sugar-incasing envelops. Fig. V is a sectional view similar to Fig. II, showing a modification.

1 designates frame-plates provided at their under sides near the edges with rounded beads 2. Directly opposite the rounded beads 2 are similar beads 3, each of said beads 2 and 3 projecting beyond the planes of the plate.

4 designates triangular members situated upon the upper sides of the frame-plates, at the inner edges of the beads 3. The faces 5 of these triangular members extend vertically from the inner edges of the beads and the faces 6 incline downwardly to the upper planes of the plates 1.

7 designates ribs fixed to the upper sides of the plates 1, between the beads 3 and the edges of the plates, the said ribs being held to the plates by dowels 8 or other suitable means. The association of the triangular members 4 and ribs 7 furnishes pockets between them, within which pads 9 of pliable material, such as felt, are laid and maintained in position by suitable means. In Fig. V, I have shown a modification wherein the triangular member 4^a and the strip 7^a are integral instead of separate, and the pad 9^a is seated in the pocket between the two parts. In this construction the pieces named may be secured to the plate 1^a by dowels 8^a or other suitable means of attachment.

11 designates envelops in which the sugar is incased before being placed between the plates 1. These envelops are preferably sheets of fabric, such as canvas or duck, and when the sugar is placed therein the ends of the sheets are folded over and overlapped, as seen in Fig. IV, leaving open edges 12.

In the practical use of the apparatus the plates 1, with the parts carried thereby, as described, are assembled in a suitable hydraulic or other press, one above another, and with the envelops containing the cakes of sugar positioned between the plates. In placing the incasing envelops and incased sugar between the plates the open edges 12 of the envelops are positioned between the triangular members 4, ribs 7, and the pliable pads 9, located beneath the edges of the envelops and the beads 2 of the surmounting plate located above the envelop edges. Then upon pressure being applied the sugar within the envelops is compressed therein, thereby causing the expulsion of the moisture and impurities contained by the sugar through the envelop, during which time the open edges of the envelops are held pliably clamped between the frames by which they are confined. By this arrangement the envelops are held securely in position between the frames in such manner that the sugar is prevented from

escaping therefrom during the process of expelling the moisture and impurities from the sugar.

The pliable strips 9 and coincident beads 2 on the faces of the plates 1, opposed to the pliable strips 9, receive the edges of the open sides of the envelops 11 between them in such manner that the pressure upon the envelops is of a yielding nature, while at the same time secure enough to prevent the egress of the sugar from the envelops. The beads 2 are of rounding form in order to present a protruding surface that will depress the envelop into the strip, as seen in Fig. III, and form bends in the envelop edges, pressed downwardly and centrally upon the pads 9, producing close contact between the envelop edges and the beads 3 at the lower sides of the pads 9, at the same time acting to centralize the pressure against the envelop edges lying upon the pads.

I claim as my invention—

1. In an apparatus of the character described, the combination of a frame having open ends and clamping sides, a coöperating clamping-plate and an envelop to contain a product to be treated under pressure to expel moisture therefrom, having its ends folded over the product to form closed ends and open sides, means carried by said plate and means on the clamping sides of said frame coöperating to yieldingly clamp the open sides of the envelop, substantially as described.

2. In an apparatus of the character described, the combination of a series of frames arranged to receive envelops containing a product to be treated under pressure to expel moisture therefrom, pliable strips carried by said frames, adapted to receive the edges of of said envelops under pressure exerted from the opposing frame, and beads on the face of the plate opposed to the pliable strips and adapted to confine the product in the envelop by embedding the open sides of the envelop in the pliable strips, substantially as described.

3. In an apparatus of the character described, the combination of a series of frame-plates arranged to receive envelops containing a product to be treated under pressure to expel moisture therefrom, members positioned on the upper sides of said plates parallel with each other, pliable strips positioned between said members, and rounded members located at the lower sides of said plates adapted to confine said envelops by clamping them at their edges between said rounded members and pliable strips, substantially as described.

4. An apparatus for subjecting material to pressure consisting of an envelop inclosing the material to be pressed, and means clamping the oppositely-disposed edges of the envelop while leaving the ends unobstructed.

5. An apparatus for subjecting material to pressure consisting of an envelop folded at the ends to inclose the material, and means clamping the edges of the envelop and leaving the folded ends unobstructed, whereby when pressure is applied the expressed material escapes through the folded ends of the envelop.

6. An apparatus for subjecting material to pressure consisting of a series of superimposed plates having clamping members on their upper and lower sides near the lateral edges and envelops interposed between said plates having folded ends and open edges, which edges are clamped between the clamping members on the plates.

7. An apparatus for subjecting material to pressure consisting of a frame having inclined sides and open ends, a superimposed plate or frame and an envelop folded over at the ends and inclosing the material to be pressed, and clamped at the edges between the inclined sides of the frame and the superimposed plate or frame.

8. An apparatus for subjecting material to pressure consisting of a series of superimposed plates having unobstructed ends and provided with clamping means along the edges thereof upon both the upper and lower sides, and envelops interposed and clamped between the several plates.

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In presence of—
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