J. HURD.

Machine for Separating Liquids from Sugar.

No. 3,772.

Patented Oct. 3, 1844.

Fig. 1

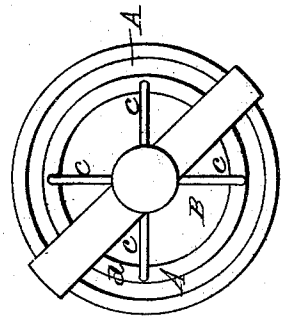


Fig. 3

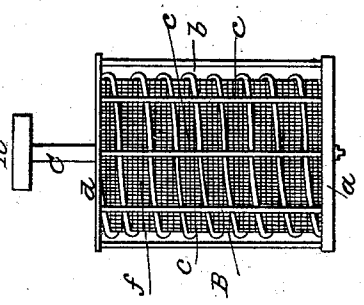
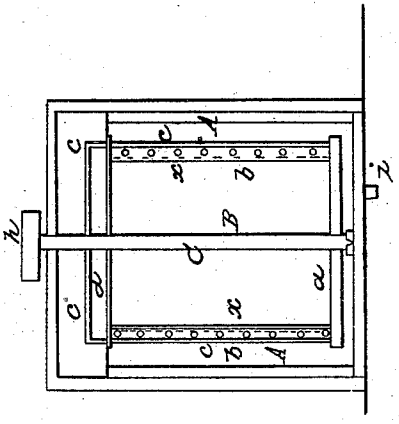


Fig. 2. section



N. PETERS. Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

JOSEPH HURD, OF STONEHAM, MASSACHUSETTS.

IMPROVEMENT IN CLEANING SUGAR.

Specification forming part of Letters Patent No. 3,772, dated October ', 1844.

To all whom it may concern:

Be it known that I, JOSEPH HURD, of Stoneham, in the county of Middlesex and State of Massachusetts, have invented a new and useful improvement in separating liquid matters from sugar or various other materials, or for passing cleansing-liquids through sugar or such other materials; and I do hereby declare that the following description and accompanying drawings taken together constitute a full and exact specification of the construction and operation of my invention.

The process of "potting" sugar or freeing it from sirup or treacle (molasses) as practiced in the West Indies and other countries consists in allowing it to stand for a considerable period of time in hogsheads, casks, or cisterns having holes bored through their bottoms. The force of gravity causes the sirup or treacle to gradually descend through the sugar and escape through the holes in the bottom of the hogsheads. In order, by the above operation, to expel the sirup or liquid sufficiently to render the sugar fit for the market, much time is necessarily consumed. Besides, large "curing-houses," as they are termed, adapted for the purpose, must be erected and maintained.

My improvement consists in effecting the separation of the molasses by a machine of a peculiar construction, which accomplishes the same through the agency of centrifugal force.

Figure 1 represents a top view of the said machine. Fig. 2 is a central and vertical section thereof. It consists of a cylindric or other proper-shaped cistern, A, surrounding and having within it another cylindric or other suitably-shaped vessel, B, which is attached to or has a vertical shaft, C, passing through its axis or central part, as seen in Fig. 2, and so arranged in bearings and in other respects as to be capable of being revolved on its axis, and thereby impart a corresponding motion to the vessel B.

An external view of the vessel B as it appears when removed from the vessel A is given in Fig. 3. As a convenient and simple mode of making it I construct it of a circular and solid bottom, *a*, (of wood or other proper material,) having raised upon it a cylindrical wire frame-work, *b*, formed of strong wire or strips of metal wound in a helix and secured in such a form by any suitable number of vertical wires or rods or strips, *c c*, &c., inserted and confined in the plate or bottom *a*, and a metallic ring or rim, *d*, the latter of which is connected to the central shaft, C, by arms *e e e e*. The frame-work *b* surrounds and is intended to give support to a hollow cylinder, *f*, of woven wire, whose inner surface is lined with flannel *x*, or other suitable material, the object of the whole being to suffer the escape of the sirup, molasses, or liquid matters through the sides of the vessel B, and at the same time to retain the sugar within it whenever the vessel is put in rapid revolution. The said vessel may be revolved within the cistern A by means of a pulley, *h*, fixed on the top of the shaft, around which (pulley) a band from the driving-power may extend and give motion to it.

The sugar containing the molasses is to be thrown into the interior of the vessel B, and when the said vessel is put in rapid revolution the centrifugal force generated in the molasses or sirup or liquid matter will expel it from the mass of sugar and drive it through the sides of the chamber B into the cistern surrounding the said chamber, from which it may be removed through an opening or faucet at *i*. Such a machine is so effectual in discharging molasses, sirup, or other liquid matters from sugar or other powdered or pulverized substance that but a short time is required to effect by it what requires a very long period by the old process hereinabove detailed.

Although I have described such a machine as my own practical experience has proved to be of the simplest and most convenient kind for the purpose for which I have used it, yet others varied in form and mode of construction may be made to operate in a similar manner, so as to expel the sirup, molasses, or other liquid from the sugar or other matter containing the same. I conceive the mechanism as hereinabove described to be very different from that heretofore patented by me for evaporating water from cloths, wool, &c., inasmuch as the said mechanism (patented) was only employed by me for the purpose of revolving the cloth, &c., in contact with the atmosphere, in order to evaporate the liquid, and therefore I only conceived of attaching the cloth, &c., to frames which were to have such contrivances applied to them as might be convenient for stretching the cloth or wool thereon in such

manner as would permit the air to have free access to all the threads of the cloth or fibers of the wool, so as to pass through the cloth or wool and evaporate the moisture.

The machine which is the subject of this specification effects its object—viz., that of expelling liquid from a mass of sugar or other material—through the agency of centrifugal force alone. I also use the said machine for washing sugar or other matters, and this I effect by gradually pouring or discharging water or other cleansing-liquid upon or near the center or other suitable parts of the mass of sugar or other material contained in the cylindric vessel B while the said vessel is in rapid revolution. The water or cleansing-liquid will thus be driven through the mass and sides of the vessel by the action of centrifugal force. Therefore

My invention, and that which I claim as an improvement, consists in—

1. The employment, in the manner set forth, of a cylindric or other proper shaped vessel, B, capable of receiving and holding a mass of sugar or other material, and whose sides are composed of a porous material of such strength and character as will retain the mass of sugar or other substance to be operated on, and at the same time permit the passage of the liquid matters (proceeding from the mass) through them when the said vessel is put in such rapid revolution as to generate in the liquid or liquids a sufficient degree of centrifugal force to expel it or them from the mass, as described.

2. In combination with a vessel so arranged and operated, a chamber or cistern, A, wholly or partially surrounding the same, or so connected with the same as to catch and retain or suffer to escape into a proper receptacle the liquid matters as they are expelled from the mass in the vessel B.

3. The combination, with the vessel B, of a means of supplying water or other cleansing-liquid to the central or other suitable part of the mass of sugar or other material to be cleansed, for the purpose of dressing or cleansing sugar, &c., as set forth.

4. The manner of dressing or cleansing sugar or other matters susceptible of being so dressed or cleansed—viz., by passing a current of water or other suitable cleansing-liquid into the interior of the mass, and from thence driving it through and out of the mass by centrifugal force, substantially as explained.

JOSEPH HURD.

Witnesses:
R. H. EDDY,
LEMUEL W. BLAKE.