E. P. LARÉE.

ELEVATORS FOR SACCHARINE LIQUIDS.

No. 169,712. Patented Nov. 9, 1875.

Fig. 1.

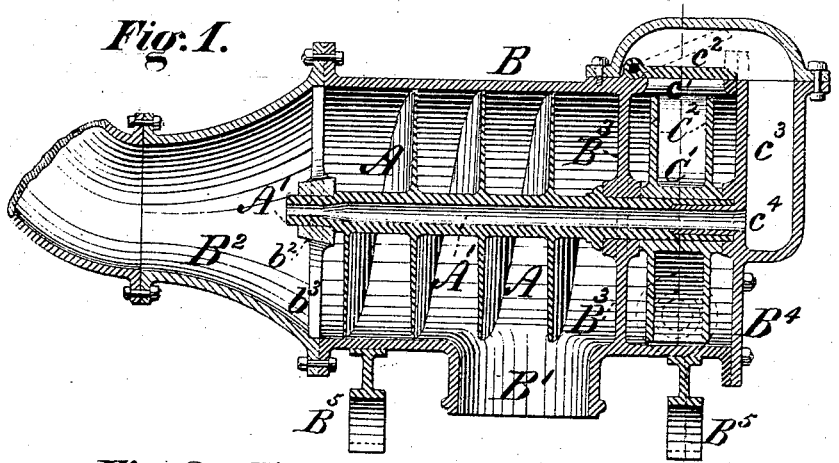



Fig. 2.

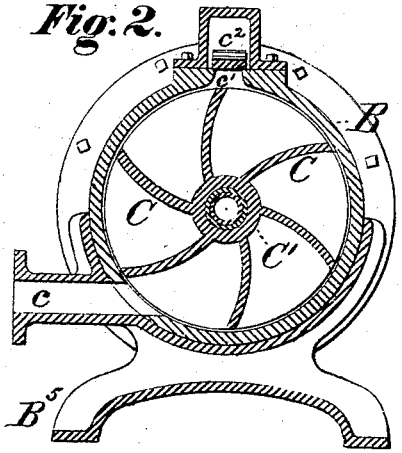



Fig. 3.

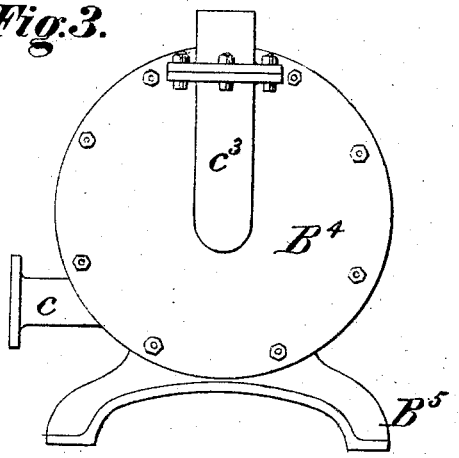
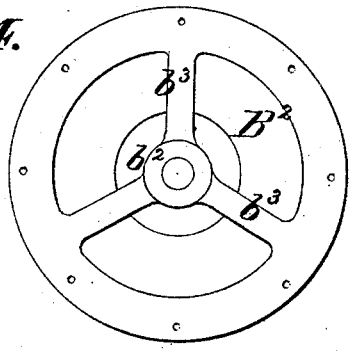



Fig. 4.




WITNESSES:

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# UNITED STATES PATENT OFFICE.

EUGÉNE P. LARÉE, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR OF ONE-HALF HIS RIGHT TO RAYMOND CAPE, OF SAME PLACE.

## IMPROVEMENT IN ELEVATORS FOR SACCHARINE LIQUIDS.

Specification forming part of Letters Patent No. **169,712**, dated November 9, 1875; application filed October 14, 1875.

*To all whom it may concern:*

Be it known that I, EUGÉNE PROSPER LARÉE, of the city and county of Philadelphia, in the State of Pennsylvania, have invented a certain new and useful Improvement in Elevators for Saccharine Liquids, of which the following is a specification:

The object of my invention is to provide a simple and convenient apparatus for elevating saccharine liquids from one defecating pan or boiler to another, so as to obviate the slow and injurious operation of ladling, and thereby to economize time and labor, and improve the quality of the clarified liquid; to which end my improvement consists in the combination of a screw-conveyer and an inclosing casing with a steam-engine, which rotates the screw-conveyer, and an ejector, operated by the exhaust-steam of the engine, as hereinafter more fully set forth.

In the accompanying drawings, Figure 1 is a vertical longitudinal central section of an elevator for saccharine liquids embodying my improvement; Fig. 2, a vertical transverse section of the same at the center of the steam-supply pipe; Fig. 3, an end view of the same; and Fig. 4 a view in elevation of the delivery-nozzle.

To carry out the object of my invention I provide a screw-conveyer, A, which is formed upon or secured to a hollow shaft, A′, and is mounted in bearings in a casing, B, within which it is fitted neatly, so as to revolve without undue friction. A receiving-nozzle, $B^1$, is formed upon the lower portion of the casing, and a delivery-nozzle, $B^2$, is secured to one end thereof, the other end being closed by a plate, $B^4$. The diameter of the delivery-nozzle is reduced gradually toward its outer end, upon which a flange is formed for the attachment of a discharge-pipe. A hub, $b^2$, is formed at the center of the inner end of the delivery-nozzle to serve as a bearing for the hollow shaft, A′, and is united to the nozzle by arms $b^3$, so as to admit of the passage of the saccharine liquid to the discharge-pipe.

The screw-conveyer extends from the delivery-nozzle $B^2$ to a transverse partition, $B^3$, which divides the casing B into two compartments, the larger of which serves for the reception of the screw-conveyer, and the smaller to contain a rotary steam-engine, secured upon the hollow shaft A′, which passes through a bearing in the partition $B^3$. In this instance the engine shown is of very simple construction, consisting of a series of curved arms, C, which are united to a hub, $C^1$, between two disks, $C^2$. A steam-supply pipe, *c*, leads into the engine-compartment and an exhaust-opening, $c^1$, therein, furnished with a hinged valve, $c^2$, which opens outward, communicates with an exhaust-passage, $c^3$, terminating at an opening, $c^4$, in the end plate $B^4$ of the casing. The opening $c^4$ is immediately opposite the open end of the hollow shaft A′, so that the exhaust steam from the engine passes thereto and escapes into the delivery-nozzle of the casing, through a contracted nozzle on the end of the shaft. The arrangement of the shaft and delivery-nozzle, as above, serves to form an ejector, which is operated by the exhaust steam. The office of the valve $c^2$ is to prevent any flow of the saccharine liquid into the engine-compartment.

In the operation of the apparatus, which rests by its feet $B^5$ upon the bottom of the defecator or boiling pan, the rotation of the engine imparts a corresponding movement to the screw-conveyer, which elevates the liquid from the pan into the casing and discharges it into the delivery-nozzle and discharge-pipe. The exhaust steam escaping from the contracted nozzle of the shaft tends to form a vacuum in the casing, and thereby correspondingly facilitates the action of the screw-conveyer.

By the use of my apparatus I am enabled to discharge the contents of a large pan with great celerity, and the liquid being discharged in a solid stream, the injurious effects of exposing it in small portions to the atmosphere (as in ladling) are avoided.

It is obvious that the form of engine employed is immaterial, as it may be varied without departing from the spirit of my invention; and I do not, therefore, confine myself to any specific construction thereof.

I claim as my invention, and desire to secure by Letters Patent—

1. The combination of a screw-conveyer, an

inclosing-casing, and an ejector, substantially as set forth.

2. The combination of a screw-conveyer and a rotary engine, both secured upon a hollow shaft, which receives the exhaust steam at one end and discharges it from the other, into a casing inclosing the conveyer and engine, substantially as set forth.

3. The combination of the casing, divided into two compartments, the exhaust-passage, and the exhaust-valve, substantially as set forth.

EUGÉNE P. LARÉE.

Witnesses:
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RAYMOND CAPE.