G. H. BENEDICT.

LIQUID COATING MACHINE.

APPLICATION FILED JULY 14, 1909.

952,093.

Patented Mar. 15, 1910.

2 SHEETS—SHEET 1.

Fig. 1.

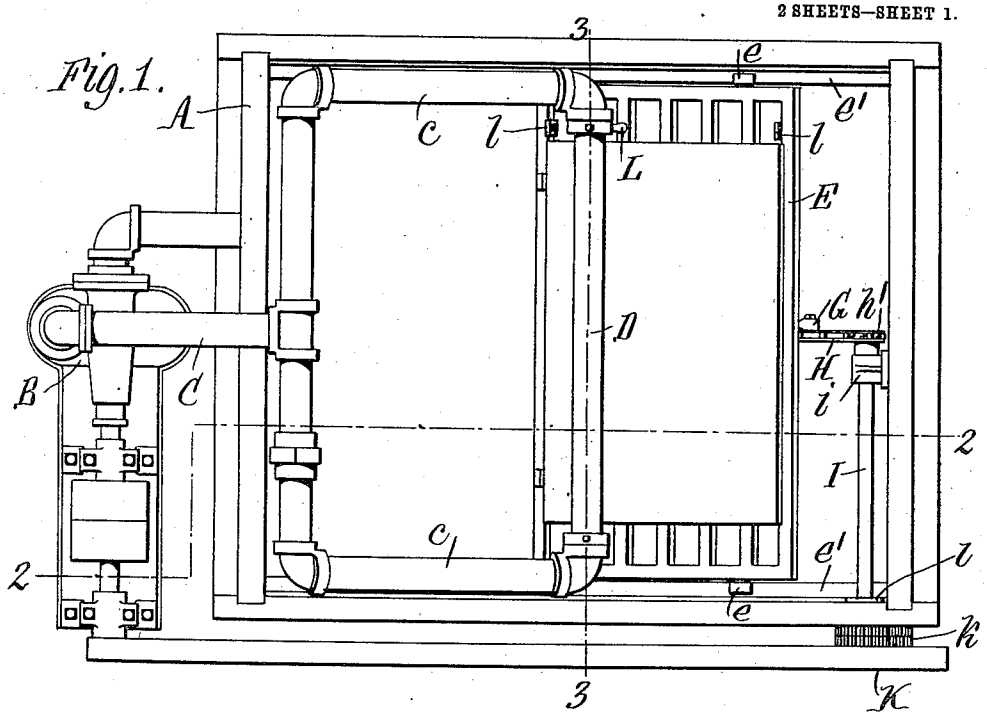
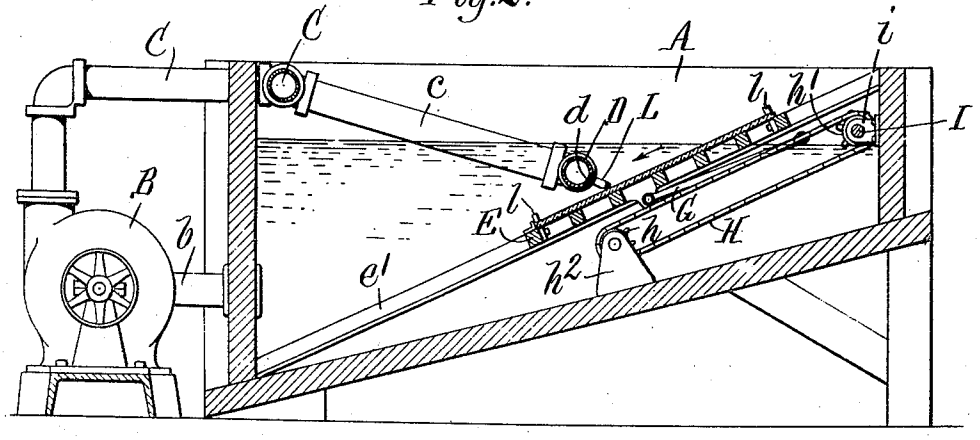


Fig. 2.



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2 SHEETS—SHEET 2.

Fig. 3.

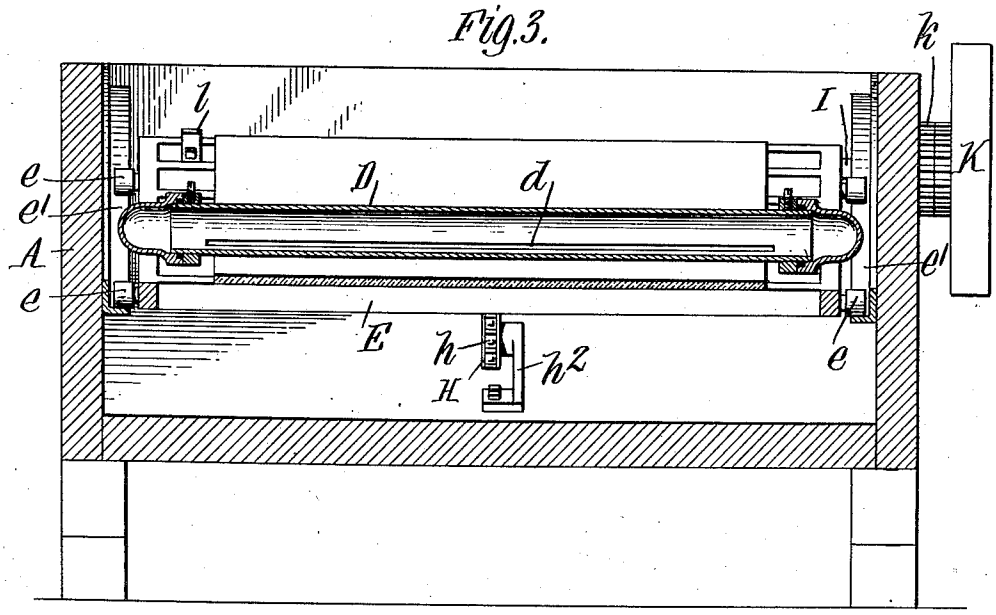


Fig. 4.

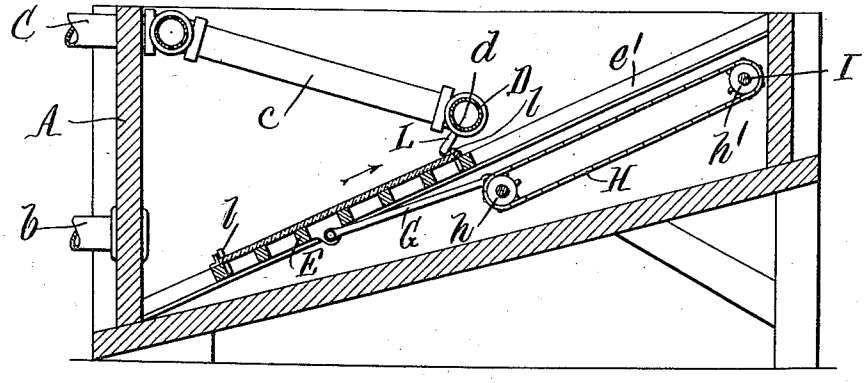
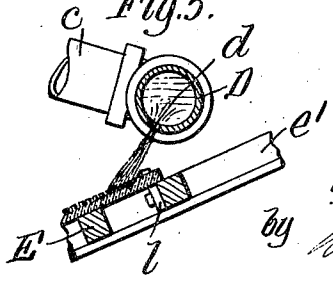


Fig. 5.



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UNITED STATES PATENT OFFICE.

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LIQUID-COATING MACHINE.

952,093. Specification of Letters Patent. Patented Mar. 15, 1910.

Application filed July 14, 1909. Serial No. 507,502.

To all whom it may concern:

Be it known that I, GEORGE H. BENEDICT, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Liquid-Coating Machines, of which the following is a specification.

This invention relates more particularly to improvements in liquid coating machines which are used in electrotype work for coating wax matrices with a black lead solution, but the invention is also applicable for coating other articles with other materials.

The object of the invention is to provide a simple and economical machine for this purpose in which the coating material in liquid form will be equally and uniformly distributed over the surface to be coated and a thin and even layer of the material will be deposited upon all parts thereof; and also to construct and arrange the liquid distributing means so as to insure a thorough and perfect coating of the side faces as well as the top face of the projecting portions of the matrix.

In the accompanying drawings, consisting of two sheets: Figure 1 is a plan view of a black leading machine embodying the invention. Fig. 2 is a longitudinal sectional elevation thereof in line 2—2, Fig. 1. Fig. 3 is a transverse sectional elevation thereof in line 3—3, Fig. 1. Fig. 4 is a fragmentary sectional elevation similar to Fig. 2, showing the parts in different position. Fig. 5 is a fragmentary section, on an enlarged scale, of the distributing device and adjacent parts.

Like reference characters refer to like parts in the several figures.

A represents a tank for containing the black lead bath or solution in which the matrix is placed, and B represents a suitable pump which is connected with the tank A by an intake pipe *b* and is provided with a discharge pipe C connected to a distributing pipe, spout or device D which is arranged transversely in the tank and has a discharge slot *d* on its underside. The pump discharge pipe C preferably connects by branches *c c* with the opposite ends of the distributing spout to insure a more nearly uniform discharge of the solution throughout the length of the spout. The tank A is kept partially filled with the black lead solution and a constant circulation of this solution is maintained by the pump B which draws the solution from the tank through the intake pipe *b* and returns it thereto through the discharge pipe C and the distributing spout D. The distributing spout D is preferably located some distance below the top of the tank so as to be submerged in the solution and close to the matrix, which is also submerged. This prevents the discharge of the distributing spout from spattering when it strikes the matrix.

The wax matrix or other article to be coated is placed in the tank A and is caused to reciprocate slowly therein beneath the distributing spout D. Any suitable mechanism may be employed for this purpose. In the construction shown, a carriage or tray E is movably mounted within the tank A, having end rollers *e* which travel on inclined tracks *e'* on the sides of the tank, and the wax matrix rests upon this carriage. A pivoted rod or link G connects this carriage with one of the links of a sprocket chain H which travels over sprocket wheels *h* and *h'*. The sprocket wheel *h* is journaled in a suitable bearing h^2 secured to the bottom of the tank, and the wheel *h'* is mounted upon a drive shaft I which is journaled in suitable bearings *i* in the tank. The shaft I extends through one side of the tank and is operatively connected through the medium of a suitable speed reducing gearing *k* with a drive pulley K which is belted to the drive shaft of the pump B. This mechanism produces a slow speed of the carriage operating shaft relative to that of the pump shaft, and causes the carriage E to reciprocate slowly beneath the distributing spout.

In order that the full effect of the discharge stream from the spout D may be received by all parts of the matrix, the pipe D is mounted in the branch pipes *c c* so that it can be turned to direct its discharge against the matrix in a direction opposed to the direction of movement of the matrix and at an angle thereto. Suitable means are provided for turning the spout D to one position while the carriage is traveling in one direction and for turning it to the other position during the opposite travel of the carriage. As shown in Figs. 1, 2 and 4, the spout D is provided at one end with a depending rigid arm L, and the carriage E has lugs or parts *l* at its upper and lower

ends which engage this arm when the carriage has nearly reached the end of its movement in either direction, and turn the spout D so that its discharge slot will direct the discharge against the matrix in a direction opposite to its movement.

By reason of the construction and action of the distributing spout, the discharge is forced against the sides as well as the top faces of the projections and depressions in the surface of the matrix, thus insuring a thorough coating of all parts thereof.

The construction and arrangement of the distributing spout and carriage for the matrix in the tank are such that the liquid is discharged evenly and uniformly from the spout upon all parts of the matrix without any splashing or spattering thereof. During the movement of the matrix back and forth in the tank all parts of its surface are brought within close proximity to the distributing spout so that the full force of the discharging liquid is received thereon. The inclined tracks upon which the carriage travels extend to the top of the tank at one end and the matrix can be easily placed upon and removed from the carriage when it is at the upper end of its reciprocating movement. The bottom of the tank is also preferably inclined, as shown in Figs. 2 and 4, the intake pipe *b* being located in the lowest portion of the tank. This reduces the amount of solution required for the tank and causes the solution to constantly flow toward the lower end of the tank, thus keeping all parts of the solution in circulation and preventing any settling of the black lead upon the bottom of the tank.

I claim as my invention:

1. In a liquid coating machine, the combination of a tank, a distributing spout arranged to discharge the liquid into said tank, and means for supporting the article to be coated in an inclined position in said tank and for moving the same past the distributing spout in a direction opposite to the direction of movement of the discharge from said spout, substantially as set forth.

2. In a liquid coating machine, the combination of a tank, a movable support in said tank for the article to be coated, means for reciprocating said support, a swiveled spout arranged transversely in said tank above said support and having a discharge opening in its underside, means for supplying the liquid to said spout, and means operated by said support for turning said spout to direct the liquid discharged therefrom against the article in a direction opposite to the direction of movement of said support, substantially as set forth.

3. In a liquid coating machine, the combination of a tank, means for supporting and moving the article to be coated in the tank, and a spout arranged transversely in the tank to discharge the coating liquid against the article in a direction opposite to the direction of movement of the article, substantially as set forth.

4. In a liquid coating machine, the combination of a tank, means for supporting and reciprocating the article to be coated in the tank, a liquid distributing spout, and means for moving the spout to direct the liquid against the article in a direction opposite to the direction of movement of the article in its travel in both directions in said tank, substantially as set forth.

5. In a liquid coating machine, the combination of a tank, means for supporting and reciprocating the article to be coated in the tank, a transverse swiveled distributing spout, and means operated by the said supporting means for turning the spout to direct the liquid against the article to be coated in a direction opposite to the direction of movement of the article in its travel in both directions in said tank, substantially as set forth.

Witness my hand, this 2nd day of July, 1909.

GEORGE H. BENEDICT.

Witnesses:
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