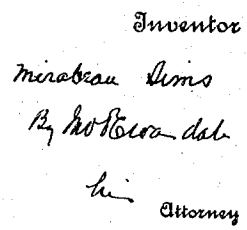


Patented May 13, 1919.



UNITED STATES PATENT OFFICE.

MIRABEAU SIMS, OF LLANERCH, PENNSYLVANIA, ASSIGNOR TO SIMS AUTOMATIC CONVEYER COMPANY INCORPORATED, A CORPORATION OF DELAWARE.

TRANSLATING MATERIAL.

1,303,604.

Specification of Letters Patent.

Patented May 13, 1919.

Application filed July 31, 1915. Serial No. 42,890.

To all whom it may concern:

Be it known that I, MIRABEAU SIMS, a citizen of the United States, residing at Llanerch, in the county of Delaware, State of Pennsylvania, have invented a new and useful Translating Material, of which the following is a specification.

This invention relates to the translation, or the moving from one place to another, of material either loosely in bulk, or packed in containers such as boxes or barrels. The object is to move material at a sufficiently high velocity (without waste of energy) to float the same on a column of air.

The invention comprises the method of actuating the material by atmospheric pressure, and consists in creating and maintaining below atmospheric-pressure-conditions proportioned or adjusted to the specific gravity, or the bulk and weight of the stock to be acted upon, so that the full force of the normal atmospheric pressure may be utilized to balance and support said stock.

A further factor in determining the below atmospheric pressure to be created, may be the speed or velocity with which it is desired to move the material.

While the below atmospheric pressure is carefully proportioned or adjusted to the specific gravity or bulk and weight of the material to be operated on, it will also be understood that the quantity to be moved in a given time and the distance which it is to be moved, involve considerations of volume and velocity as effecting the below atmospheric conditions or zones.

In order to release the material from the conditions just recited there is connected with the conductor an inclosing section having enlarged cross-sectional area where the lineal foot speed of travel of the air is substantially decreased, and the below atmospheric conditions are so modified that the material is no longer sustained by the atmosphere, but responding to the force of gravity, discharges to any required point.

This broad description applies either to material in bulk or to material inclosed in cases or receptacles.

Where the material is inclosed in receptacles, the receptacles are of cross-sectional area somewhat less than that of the conductor in which they are adapted to travel, and the below atmospheric conditions being created on one side, preferably the upper

side of receptacle, the air below at atmospheric pressure will tend to pass between the walls of the receptacle and the conductor, but since it cannot pass with sufficient speed to satisfy the below atmospheric conditions above, the receptacles will be balanced and supported by the atmospheric pressure and carried along to the desired point of release.

I have also found materials, finely divided, such as sand, sugar, etc., on account of the skin friction of the conductor, tend to travel near the center of the column of air, because the center of a column of air travels faster than its periphery following the lines of least resistance.

Referring to the drawings which illustrate, merely by way of example, suitable means for effecting my invention:

Figure 1 is a vertical section of the conveyer apparatus.

Fig. 2 is a horizontal section on line 2-2 of Fig. 1.

Similar numerals refer to similar parts throughout the several views.

The means shown in Fig. 1 is adapted for operation upon containers such as boxes. The conductor 7 is of corresponding but slightly greater cross-section than that of the box 8 so that a slight air space is provided between the sides of the box and the adjacent walls of the conductor 7. The blower 9 serves to create a below atmospheric pressure in the conductor above the box 8. This blower 9 is driven by the motor 14 controlled by the rheostat 15 by which its speed is regulated to secure the pressure in the required proportion to the weight and bulk of the box 8 and its contents. The box is inserted at the enlarged end 17. The air beneath the box being at atmospheric pressure will easily support the box when the pressure is sufficiently diminished from above. The slight amount of air that may pass around the sides of the box while not sufficient to satisfy the below atmosphere above will serve to counteract friction between the box and the walls of the conductor, and thus the box will readily respond to said atmospheric pressure and will move upwardly in the conductor and over the bend 10, into the enlarged chamber 13, whereupon, coming into zone of diminished velocity of air travel, it responds to the action of gravity and falls or slides toward the valve gate or discharge port 11. This

port normally contains a box seated therein between flaps 16 of leather or other yielding material, thus maintaining a substantially air tight closure of the port. The box is
5 held in such position against below atmospheric pressure in chamber, by pressure springs 18 or other suitable means. The momentum of the succeeding box, falling or sliding from point 11 to the box held as
10 a closure, is sufficient to force the latter beyond the port and free therefrom, to travel along a chute 12. The former now takes the place of the box displaced by it, until it in turn is displaced by the box following.
15 Referring to Figs. 1 and 2 it should also be noted that the tracks 32 are provided on the lower side of chamber 13 for facilitating the movement of the boxes from the point 10 to the discharge port 11.

What I claim is:—

1. The method which consists in delivering a receptacle by pneumatic pressure to a discharge port and automatically maintaining said discharge port closed by said receptacle against the admission of air until
20 and during the movement of another receptacle thereto. 25

2. The method which consists in delivering an article by pneumatic pressure to a discharge port and automatically maintaining said discharge port closed by said article against the admission of air until and during the movement of another article thereto. 30

MIRABEAU SIMS.

Witness:

MAE HOFMANN.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."