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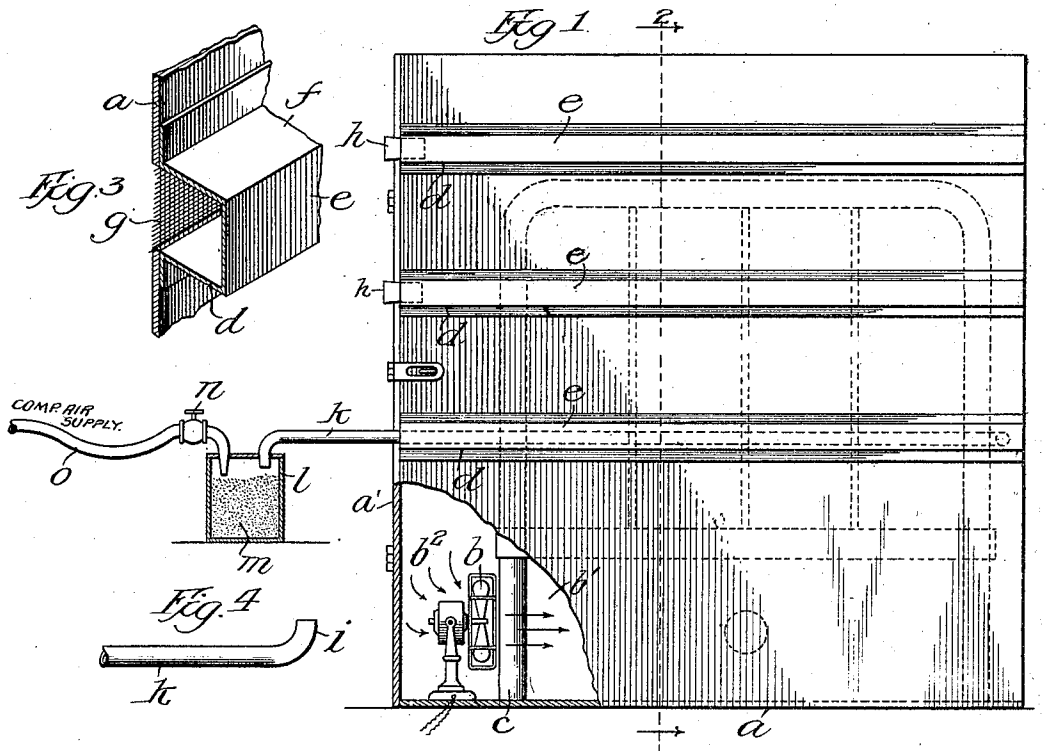
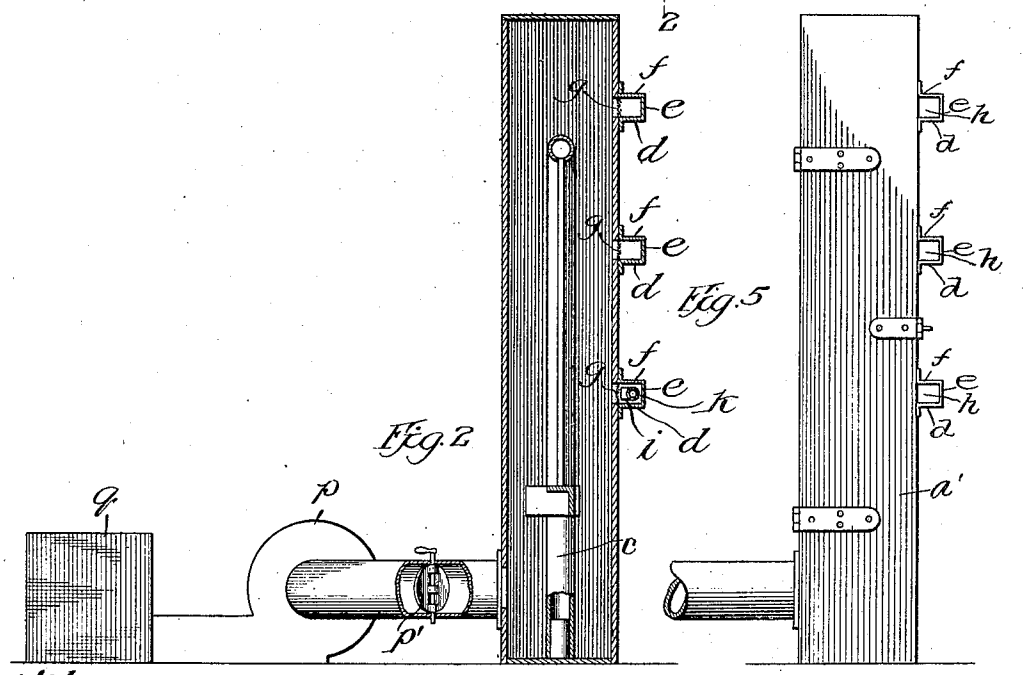
APPARATUS FOR COATING OBJECTS WITH SUBDIVIDED MATERIAL.

APPLICATION FILED JAN. 18, 1911.

988,303. Patented Apr. 4, 1911.





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UNITED STATES PATENT OFFICE.

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APPARATUS FOR COATING OBJECTS WITH SUBDIVIDED MATERIAL.

988,303. Specification of Letters Patent. Patented Apr. 4, 1911.

Application filed January 18, 1911. Serial No. 603,251.

To all whom it may concern:

Be it known that I, FRANKLIN F. BRADLEY, citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Apparatus for Coating Objects with Subdivided Material, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to apparatus for coating objects with comminuted, subdivided or powdered material and is of particular service in spreading bronze powder upon objects whose surfaces to be coated are covered or painted with suitable adhesive material or paint, which in its fresh state holds the powder scattered thereupon and in its dry state firmly fixes the powder in place.

I have filed other applications relating to apparatus for coating objects with subdivided material as follows: Serial No. 543,215, filed Feb. 11, 1910; Serial No. 550,115, filed March 18, 1910; Serial No. 569,428, filed June 29, 1910; Serial No. 588,730, filed October 24, 1910; Serial No. 588,731, filed October 24, 1910; Serial No. 603,726, filed January 20, 1911; Serial No. 609,203, filed February 17, 1911. In my application Serial No. 609,204, filed February 17, 1911, I have claimed my novel method of coating objects with subdivided material.

In practicing my invention I employ a receptacle having a door-way or opening through which the objects to be coated may be passed into the receptacle interior in position to enable the air to be circulated around and toward the objects, the opening having a closure for preventing escape of material-laden air through the opening while the objects are being coated.

In accordance with one very important feature of my invention I employ mechanism within the receptacle for forcing the air to have a general movement so that the subdivided material that is to be placed upon the objects, and which is carried by the air, may be properly directed. The mechanism which I employ within the receptacle for giving the air flow in a general movement or predetermined direction preferably resides in a fan whose blades are so formed and arranged as to cause the air to be moved from and toward the fan in a circuit or stream, the fan which I employ being thus distinguished from those fans whose blades merely serve to churn the air without imparting any general movement thereto.

I will explain my invention more fully by reference to the accompanying drawings showing a preferred embodiment thereof, and in which—

Figure 1 is a side elevation, partially broken away, of a receptacle and contents, means for supplying the subdivided material to the receptacle being shown at the left thereof; Fig. 2 is a sectional view on line 2—2 of Fig. 1; Fig. 3 is a detail view, in perspective, of the shelving as it preferably enters into the structure; Fig. 4 is a detail view showing a nozzle structure in plan as it appears in Fig. 1; Fig. 5 is an end view of the structure as it appears in Fig. 1.

Like parts are indicated by similar characters of reference throughout the different figures.

The receptacle *a* is preferably made of sheet metal and incloses air circulating mechanism which is desirably in the form of an electric motor driven fan *b*, later to be more fully described. The receptacle has a door a^1 which is opened when the objects are to be inserted within the receptacle interior and which is closed when the objects are to be coated. The receptacle is suited in size and shape to the objects that are to be placed therein for the purpose of having subdivided material lodged thereupon, the location of the fan *b* within the receptacle permitting the receptacle to conform very closely to the object or objects that are to be inserted therein for the purpose stated, this close correspondence of the receptacle and contents being permitted because of the location of the fan *b* within the receptacle. I have shown a metal bed end *c* within the receptacle *a*.

The receptacle is provided with shelving *d*, three distinct shelves being shown, the shelves outsetting from the main casing wall in order not to interfere with the insertion of the objects to be coated and forming the bottom of channel ways extending along a

side of the receptacle, and completed by means of vertical portions *e* and top portions *f*. The channel ways are separated from the balance of the receptacle space by means of screening *g* provided for the purpose of preventing large particles from finding access to the object to be coated. The bronze powder may be placed upon one or more of the shelves, and if it is thus placed while the fan *b* is in operation all of the channel ways except the one within which the powder is being inserted are closed as by means of plugs *h*. The powder may be inserted within the channel ways in a manner which is most desired. I have shown a nozzle *i* upon the end of a pipe *k* through which the bronze powder may be forced. The nozzle *i* and pipe *k* are here shown in the form of a pipe of which the nozzle constitutes an elbow rigidly related with respect to the balance of the pipe, although I do not wish to be limited to this characteristic. If the powder is forced gently through the pipe *k* the pipe is turned to enable the nozzle *i* to face a shelf *d*, whereupon the powder may be laid upon the shelf and thereafter removed therefrom by the operation of the fan *b*. If the powder is forced through the pipe under considerable pressure the nozzle *i* would be turned to occupy a horizontal position, such as is indicated in Figs. 1, 2 and 4, whereupon the powder may be directly injected without first finding lodgment upon the shelf, and by moving the nozzle back and forth the powder may be suitably distributed within the receptacle. I have illustrated a supply box *l* that contains the bronze powder *m* and from which the bronze powder may be forced through the pipe *k* when the valve *n* in a flexible air pressure pipe *o* is open. The box *l* may be carried in the hands so that it may be moved toward and from the receptacle and also turned thereby to determine the places at which the powder will find entry within the receptacle. In the event of its being desired, the excess of the subdivided material which remains within the receptacle after the object has been coated may be withdrawn by a suction fan *p* when set into operation, the excess powder finding lodgment within a collection box *q* to which it is passed by the suction fan. A damper p^1 is desirably employed for opening and closing communication between the exhaust fan *p* and the receptacle interior.

The blades of the fan are shaped or disposed to act as component parts of a screw to cause the fan, when properly rotated, to force the air to move from it, as indicated by the arrows b^1 in Fig. 1, the blades of the fan forcing the air to move in a comparatively definite direction from the fan and causing the air to be drawn to the fan in a comparatively definite direction as indicated by the arrows b^2 in Fig. 1. The fan *b* thus causes the air where it has fullest flow, to follow a circuit or stream which is determined by the construction of the fan, the fan forcing movement of the air toward the wall opposite it, this wall and the other walls of the receptacle coöperating with the fan in defining the circuit that the air is to follow whereby the material with which the air is laden is properly carried to all exposed parts of the objects that are to receive a coating. By employing the fan which does not merely churn the air but which is effective in defining the path that the air is to follow, a comparatively small fan may be employed, it being obvious that a fan that merely churns the air would have to be of very large proportions even to approach the results which are secured with the aid of the fan illustrated.

While I have used the term "air" throughout the specification and claims, it is obvious that any inert elastic fluid may be used and I use the term "air" in the claims in this broad sense.

While I prefer a fan *b* of the precise construction shown for accomplishing the results which are the object of my invention, I do not wish to be limited to this instrumentality within the receptacle for defining the general path followed by the air where it has fullest flow, and while the blades of the fan are, by reason of their entire location within the receptacle, adapted to effect return movement of the air to the fan, I do not wish to be limited to this characteristic.

Having thus described my invention, I claim as new and desire to secure by Letters Patent the following:—

1. Apparatus for coating objects with subdivided material carried by air including a receptacle for the objects; and fan mechanism within the receptacle constructed to effect the forced passage of air in a stream within the receptacle toward and from the fan in order to carry the material with which the air is laden to exposed parts of the object that are to receive the coating.

2. Apparatus for coating objects with subdivided material carried by air including a receptacle for the objects; and mechanism within the receptacle constructed to effect the forced passage of air in a stream within the receptacle toward and from the mechanism in order to carry the material with which the air is laden to exposed parts of the object that are to receive the coating.

3. Apparatus for coating objects with subdivided material carried by air including a receptacle for the objects; and fan mechanism within the receptacle constructed to effect the forced passage of air in a stream within the receptacle in order to carry the

material with which the air is laden to exposed parts of the object that are to receive the coating.

4. Apparatus for coating objects with subdivided material carried by air including a receptacle for the objects; and mechanism within the receptacle constructed to effect the forced passage of air in a stream within the receptacle in order to carry the material with which the air is laden to exposed parts of the object that are to receive the coating.

In witness whereof, I hereunto subscribe my name this 16th day of January A. D., 1911.

FRANKLIN F. BRADLEY.

Witnesses:
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GEO. C. DAVISON.