F. F. BRADLEY.

PROCESS OF COATING OBJECTS WITH SUBDIVIDED MATERIAL.

APPLICATION FILED OCT. 14, 1911.

1,088,874.

Patented Mar. 3, 1914.

2 SHEETS—SHEET 1.

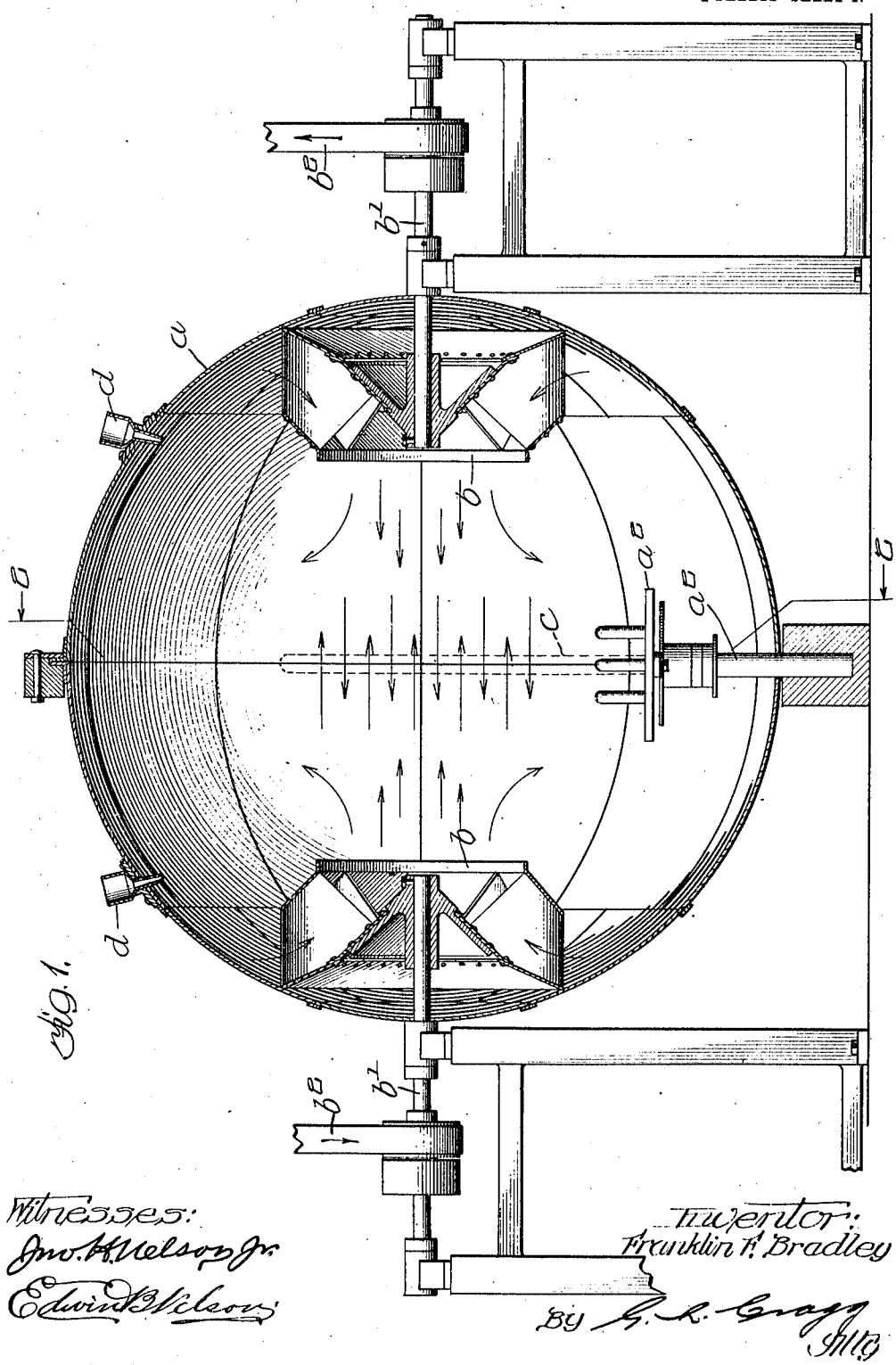


Fig. 1.

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2 SHEETS—SHEET 2.

Fig. 2.

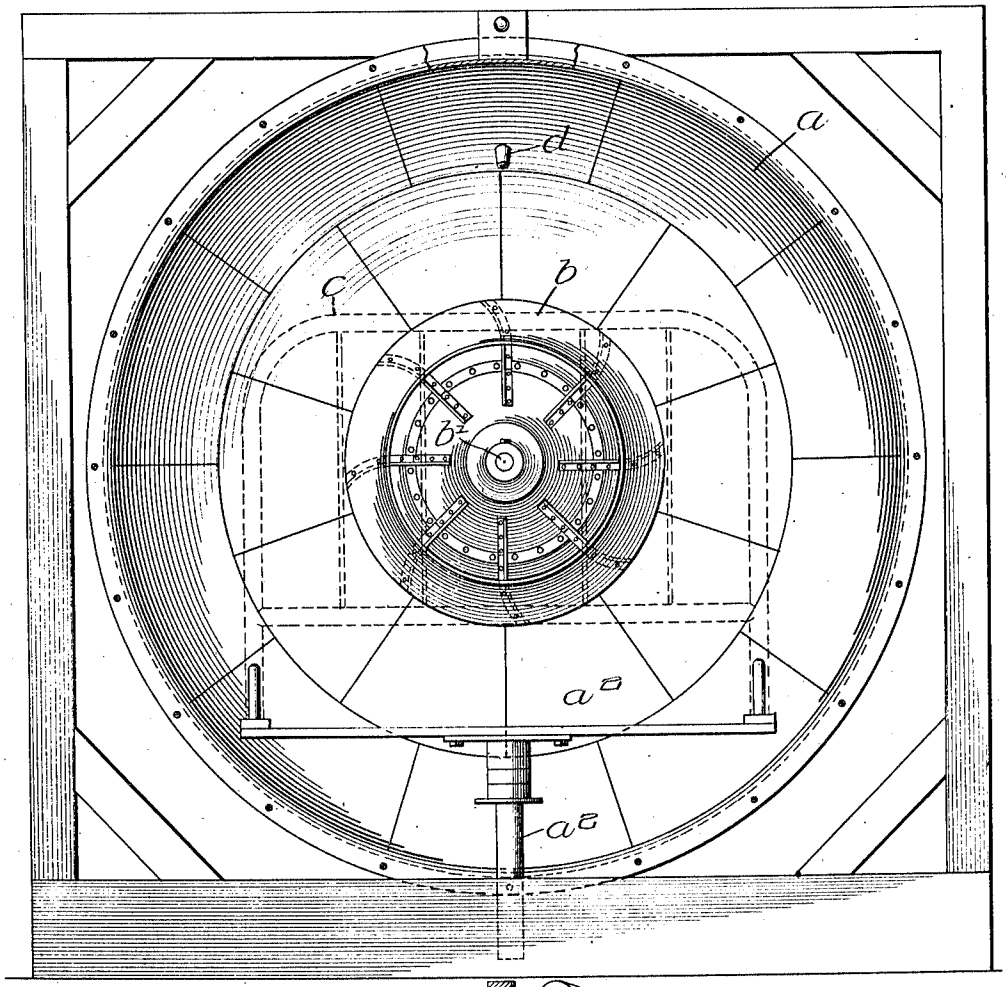
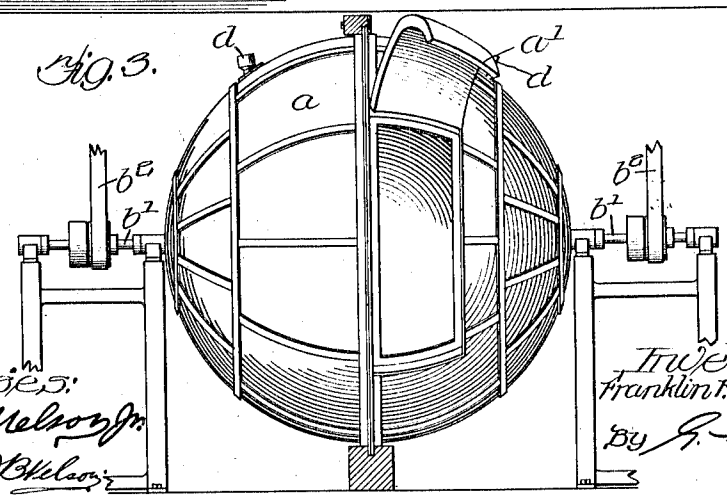


Fig. 3.



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UNITED STATES PATENT OFFICE.

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PROCESS OF COATING OBJECTS WITH SUBDIVIDED MATERIAL.

1,088,874. Specification of Letters Patent. Patented Mar. 3, 1914.

Application filed October 14, 1911. Serial No. 654,678.

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 Processes of 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 a process of coating objects with comminuted, subdivided or powdered material and is of particular service in spreading bronze powder upon objects whose surfaces are coated or 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 the coating of objects with subdivided material that are now pending and which are listed as follows: Serial No. 543,215, filed February 11, 1910, Serial No. 550,115 filed March 18, 1910, Serial No. 603,726, filed January 21, 1911, Serial No. 611,042, filed February 27, 1911, and Serial No. 588,731, filed October 24, 1910.

I will explain my invention more fully by reference to the accompanying drawings showing the preferred form of apparatus which is employed.

In the drawings Figure 1 is a sectional elevation of the preferred form of apparatus; Fig. 2 is a sectional view on line 2 2 of Fig. 1; and Fig. 3 is an elevation, illustrated on a smaller scale than Figs. 1 and 2, of the apparatus.

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

A receptacle *a* preferably has its interior surface curved substantially throughout, this curvature being preferably spherical. The receptacle is desirably made of sheet metal and is therefore preferably globular in form. The receptacle substantially confines a body of air within its interior, a door *a'* being preferably employed for substantially completely closing the receptacle, this door being of such a size as to permit the objects that are to be coated with the subdivided material to be passed through the door opening as these objects are placed within and withdrawn from the receptacle. It is understood that the receptacle is preferably stationary and that it may contain suitable supports for the objects that are to be coated.

The machine illustrated is adapted particularly to the application of subdivided material, such as bronze powder, to the sized surfaces of metal beds, a support a^2 suitable for the location of bed structures thereupon being employed.

I employ fans *b b* at the horizontal poles of the globular structure, these fans being known as cone fans which are obtained upon the market from the Buffalo Forge Company, of Buffalo, New York. These fans are mounted upon shafts b' that are driven by the belts b^2 in the directions indicated by the arrows illustrated upon the belts.

The object having a multiplicity of surfaces to be coated such as those with which a metal bed end *c*, for example, is provided, is supported within the receptacle upon the object support a^2, the object *c* having first received a coating of suitable adhesive material such as wet varnish. The object is thus substantially surrounded in substantially all planes by the body of gas. The subdivided material, such as bronze powder, is admitted to the receptacle interior through the channels *d*. The object *c*, which is located between the fans *b*, has air directed thereupon by the fans in streams of opposite directions, the opposing streams of air mingling at the bed end *c* and there thoroughly distributing bronze powder which is carried by the air, upon the bed end. The bronze powder is carried by the air and the air which carries the bronze powder is moved by the fans in the manner described so that the air will carry the particles of bronze powder that float therein to the coated object where the particles of bronze powder will settle.

I speak of the bronze powder as floating upon the air, meaning that the air has floating action upon the bronze powder for a sufficient length of time to enable the air to carry the bronze powder to the parts that are to be coated therewith. It is possible for the particles of bronze powder to settle in the course of time but owing to the curvature of the interior of the casing the currents of air are so directed toward the fans that any particles which have settled will be caught up and returned to the streams of air flowing toward the object that is to be coated. The curved surface readily guides

the air toward the fans after the fans have discharged the air toward the object to be coated so that friction is much reduced and the power which is required to operate the fans is greatly lessened.

I prefer at first to operate the fans at equal speeds, say 700 revolutions per minute, so that opposing streams of air are directed toward the object to be coated at substantially equal pressures, the fans being of similar capacity and operating to force air at equal pressures when running at equal speeds, these opposing streams of air mingling at the object *c* and there effecting thorough distribution of the bronze particles to enable these bronze particles to reach all of the surfaces that are coated with adhesive material. To improve and make more certain the results of the operation I also operate the left hand fan at a speed of say 350 revolutions and the right hand fan at 1,200 revolutions and thereafter reverse these speeds so as to cause the left hand fan to rotate at 1,200 revolutions per minute and the right hand fan at 350 revolutions per minute. In this way the stream of air whose passage is forced by each fan alternately predominates over and is alternately predominated over by the stream due to the other fan so that the particles of subdivided material are with certainty conveyed to all parts of the object to be coated that are provided with adhesive material.

After the object has been left within the receptacle a sufficient length of time to enable it to be coated, the belts b^2 are shifted to loose pulleys and the fans *b* are allowed sufficiently to slow down or stop whereafter the door *a'* is opened and the object which is then coated with subdivided material is withdrawn.

I have filed a division of this application, Serial No. 665,955, filed December 15, 1911, in which claims are presented that are drawn specifically to cover the unequal pressures under which the opposing streams are directed toward the object to be coated.

The blades of the fan are so shaped as to enable the fans to force the air to move from them in comparatively definite directions toward and by the object to be coated, the interior surface of the receptacle cooperating with the fans to effect return of the air to the same.

Air or any other suitable gas which is inert with respect to the substances may be employed in my process.

While I prefer fans *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 the employment of these instrumentalities within the receptacle for defining the general path followed by the air where it has fullest flow, and while the blades of the fans are, by reason of their entire location within the receptacle, particularly well adapted to effect return movement of the air to the fans, I do not wish to be limited to the employment of fans within the receptacle interior.

Claims upon the apparatus herein disclosed are presented in my co-pending application Serial No. 654,679, filed October 14, 1911.

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

1. The process of coating objects having a multiplicity of surfaces with subdivided material which consists in placing adhesive material upon a multiplicity of surfaces of the object to be coated, substantially confining a body of gas in which the subdivided material is adapted to float, distributing the subdivided material with which the object is to be coated in the body of gas, substantially surrounding the object in substantially all planes by the body of gas, causing some of the gas in which subdivided material is floating to flow by the object in opposing streams under substantially equal pressures, causing the opposing streams to mingle where the object is located, and thereafter causing the gas to move toward the object under unequal pressures whereby various parts of the object having adhesive material thereon are coated with the subdivided material.

2. The process of coating objects having a multiplicity of surfaces with subdivided material which consists in placing adhesive material upon a multiplicity of surfaces of the object to be coated, substantially confining a body of gas in which the subdivided material is adapted to float, distributing the subdivided material with which the object is to be coated in the body of gas, substantially surrounding the object in substantially all planes by the body of gas, causing some of the gas in which subdivided material is floating to flow by the object in opposing streams under substantially equal pressures, and causing the opposing streams to mingle where the object is located, and thereafter causing the gas to move toward the object under unequal pressures which alternately predominate upon the opposite sides of the object to be coated whereby various parts of the object having adhesive material thereon are coated with the subdivided material.

3. The process of coating objects having a multiplicity of surfaces with subdivided material which consists in placing adhesive material upon a multiplicity of surfaces of the object to be coated, substantially confining a body of gas in which the subdivided material is adapted to float, distributing the subdivided material with which the object is to be coated in the body of gas, substantially

surrounding the object in substantially all planes by the body of gas, causing some of the gas in which subdivided material is floating to flow by the object in opposing streams under substantially equal pressures, and causing the opposing streams to mingle where the object is located and thereafter causing the gas to move under unequal pressures toward the object to be coated, the pressures alternately predominating on different sides of the object whereby various parts of the object having adhesive material thereon are coated with the subdivided material.

In witness whereof, I hereunto subscribe my name this tenth day of October, A. D. 1911.

FRANKLIN F. BRADLEY.

Witnesses:
E. L. WHITE,
G. L. CRAGG.