2 Sheets—Sheet 1.

M. BRAY.

Japanning.

No. 199,504. Patented Jan. 22, 1878.

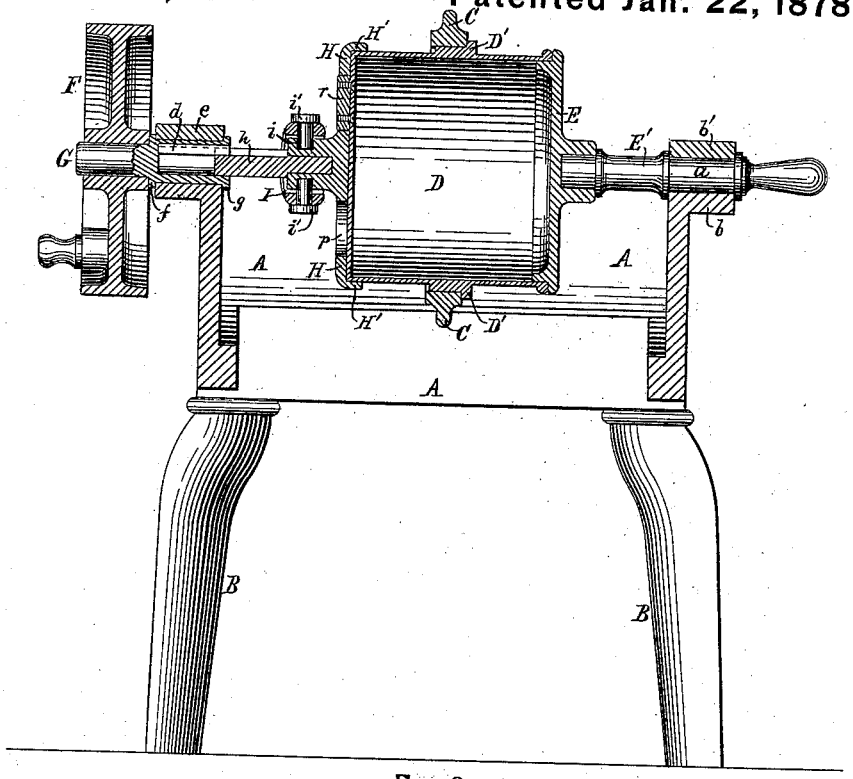

FIG. 2.

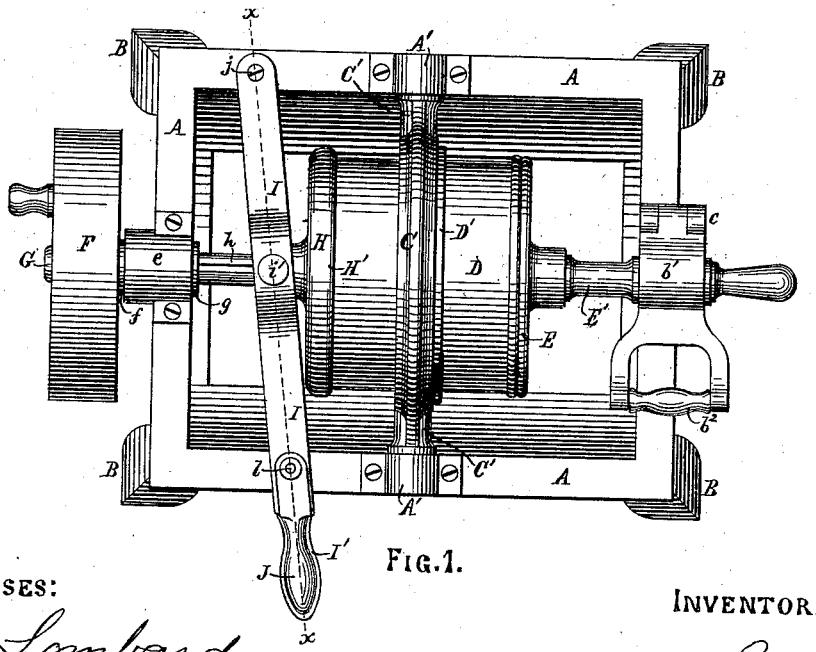

FIG. 1.

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E. A. Hemmenway

INVENTOR:

Mellen Bray

2 Sheets—Sheet 2.

M. BRAY.

Japanning.

No. 199,504. Patented Jan. 22, 1878.

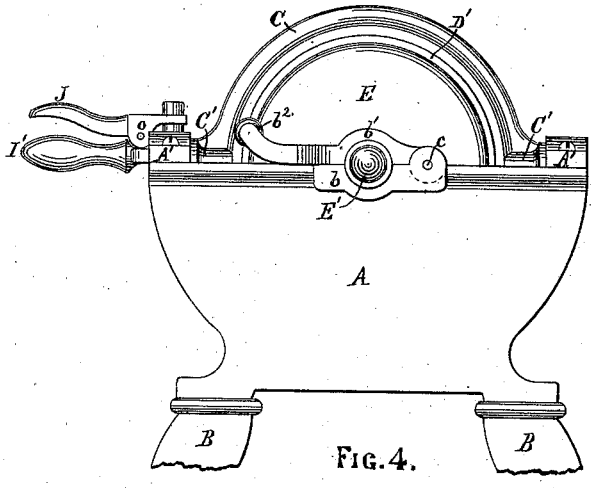

FIG. 4.

FIG. 7.

FIG. 8.

FIG. 9.

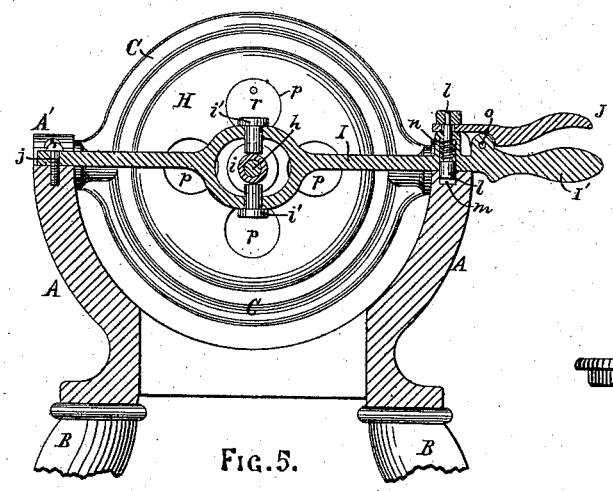

FIG. 5.

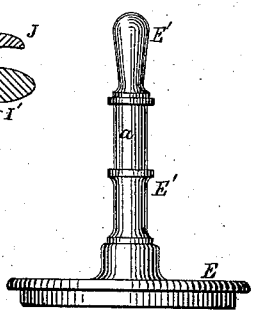

FIG. 6.

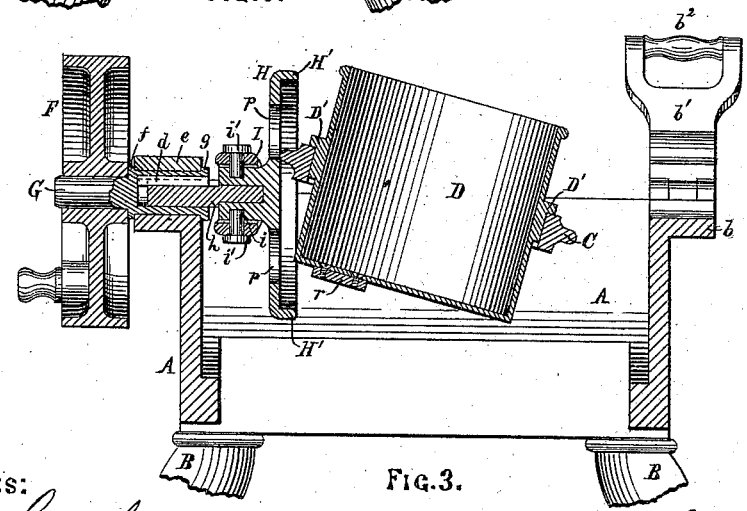

FIG. 3.

WITNESSES:

N. P. Lombard,

E. A. Hemmenway

INVENTOR:

Mellus Bray.

UNITED STATES PATENT OFFICE.

MELLEN BRAY, OF NEWTON, MASSACHUSETTS.

IMPROVEMENT IN JAPANNING.

Specification forming part of Letters Patent No. **199,504**, dated January 22, 1878; application filed October 10, 1877.

To all whom it may concern:

Be it known that I, MELLEN BRAY, of Newton, in the county of Middlesex and State of Massachusetts, have invented a new and useful method and machine for applying a japan coating to small articles, of which the following, taken in connection with the accompanying drawings, is a specification.

My invention relates to a new method or process of applying a coating of paint or japan to small articles, such, for instance, as metallic buttons, the metal collets used in the manufacture of covered buttons, eyelets, rivets, shoe-studs, and various other articles too numerous to mention here, and also to a machine for carrying out said method or process.

It consists in first coating the inner surface of the walls of a close vessel or chamber with the semi-liquid japanning material or other paint by spreading it evenly over the same with a brush or equivalent means, placing a number of the small articles to be coated in said vessel, and then tumbling, shaking, or otherwise agitating said articles within said vessel until the japan or other paint placed upon the walls of the vessel is transferred to and evenly distributed over the surface of said small articles by constant and repeated contact of said articles with the walls of the vessel and with each other, as will be hereinafter more fully described.

My invention further consists in placing a number of articles of dissimilar shapes and different sizes, such, for instance, as button-collets and small rivets or shoe-studs, and small shot, or other small articles, of size and shape adapted to pass freely through the slot made to form the neck of the stud, in a vessel having its interior surface coated with the japanning material, and then tumbling, shaking, rolling, or otherwise agitating said articles within said vessel until the japan or other semi-liquid material spread upon the inner walls of the vessel is transferred to and evenly distributed over all parts of the surfaces of said articles by constant and repeated contact of said articles with the walls of the vessel and with each other, as will be hereinafter described.

My invention further consists in the use of a vessel made preferably of a cylindrical form, and provided with a removable head or other suitable means of access to its interior, and mounted or having a bearing in a ring or hoop, which encompasses the exterior of the vessel at or near the middle of its length, and is provided at opposite sides thereof with trunnions, which have bearings in the frame or bed of the machine, in such a manner that when said vessel is placed with its axis in a horizontal direction it may be revolved within said ring, and when disconnected from its driving mechanism the said vessel may be turned into a position with its axis in a vertical direction, or nearly so, and be supported in such position by the ring while the inner surface of said vessel is being coated with the japan or other semi-liquid material and the articles to be coated are being placed therein or removed therefrom, in combination with a driving-shaft mounted in suitable bearings on the bed or frame of the machine, and provided with a coupling-disk, so connected thereto as to be compelled to revolve with said shaft, while the disk is free to be moved in the direction of the length of said shaft, and adapted to be coupled to the end of said vessel when the latter is placed in a position with its axis coinciding with the axis of said shaft and coupling-disk, to compel said vessel to revolve with the driving-shaft, for the purpose of agitating the articles contained in said vessel, and causing all parts of said articles to be brought in contact with the walls of said vessel and with each other, thereby causing the coating of japan or other material placed upon the inner surface of the walls of said vessel to be evenly distributed over the surface of the articles contained within the vessel.

My invention further consists in the use of a cylindrical vessel mounted in a bearing in a gimbal-ring in such a manner that the axis of the vessel may be changed from a horizontal to a vertical direction, and provided with a removable head or cover secured to or formed upon the end of a short shaft, which shaft projects outwardly from the center of the cover in line with the axis of said vessel when the cover is placed in position thereon, and is adapted to be embraced by and revolved within a bearing formed on the bed or frame of the machine, the cap of which bearing is hinged to the frame or otherwise rendered

easily and expeditiously removable to allow said shaft to be swung into a vertical position.

My invention further consists of a vessel mounted in a bearing in a gimbal-ring in such a manner that the position of the axis of the vessel may be changed from a horizontal to a perpendicular, and provided at one end with a removable head or cover, and at the other end with a suitable boss, hub, lug, or recess, in combination with a coupling disk or clutch formed upon or secured to a horizontal shaft, so mounted in a bearing or bearings in the bed of the machine and connected with the driving-pulley that, while it is compelled to revolve with said pulley, it may be moved endwise to engage it with or disengage it from said vessel, said coupling-disk being provided with suitable holes, lugs, or bosses, adapted to engage with the corresponding devices on the vessel to compel said vessel to revolve with said coupling-disk and driving-shaft.

My invention further consists in the use of a cylindrical vessel mounted in a gimbal-ring, and provided with a collar to support it in said ring when placed with its axis in a vertical direction, and also provided with a removable head or cover at one end, in combination with a driving-shaft provided with a coupling-disk adapted to engage with the opposite end of said vessel, so as to compel said vessel to revolve therewith and to be moved away from said vessel to disengage it therefrom.

Figure 1 of the drawings is a plan view of a machine illustrating my invention. Fig. 2 is a central vertical longitudinal section of the same with the parts coupled together in position to rotate the vessel. Fig. 3 is a similar section, showing the vessel uncoupled from the driving mechanism, with its cover removed and the vessel turned up into position to receive the interior coat of the japanning material and the articles to be coated. Fig. 4 is an end view with the parts in the same position as in Figs. 1 and 2. Fig. 5 is a transverse vertical section on line *x x* of Fig. 1, and Fig. 6 is an elevation of the cover of the vessel and its projecting shaft or handle removed from the machine.

A is the bed or frame of the machine, supported upon the legs B B, and provided with the boxes A′ A′ to receive the trunnions C′ C′ of the gimbal-ring C, as shown. D is a metallic vessel, made in the form of a cylinder, with one closed head, and provided with a collar, D′, formed upon or secured to its exterior surface at or near the middle of its length, to bear against or rest upon the side of the gimbal-ring to support said vessel when turned into the position shown in Fig. 3.

E is a cover or head adapted to fit the open end of the vessel D, and provided with the short shaft or handle E′, projecting outwardly therefrom, and having formed thereon the journal *a*, adapted to rest in the box *b*, and to be embraced by the hinged or removable cap b^1, when the vessel is turned into the position shown in Figs. 1, 2, and 4.

The cap b^1 is pivoted at *c* to the box *b*, and is provided upon its front side with the handle b^2 to facilitate the opening and closing of the same.

F is the driving-pulley, mounted upon a short shaft, G, the inner portion of which is made hollow, and has set therein the spline-key *d*, said shaft G being mounted in the box *e* on the frame A, and held in position therein by the collars *f* and *g*, all as shown in Figs. 1 and 3.

H is a disk, secured upon the inner end of a shaft, *h*, the outer end of which is fitted to slide within the hollow shaft G, and is formed with a spline-groove to engage with the key *d*, by which it is made to revolve about its axis. The hub of the disk H has formed in its periphery a groove, *i*, into which the pins *i′ i′*, set in opposite sides of the bifurcated shipper-lever I, fit, as shown in Figs. 2, 3, and 5.

The lever I is pivoted at *j* to the frame A, and is provided at its opposite end with the handle I′ and the locking-pin *l*, adapted to engage with a hole, *m*, in the frame A, into which it is forced by the spring *n*, said pin being withdrawn, when desired, by means of the lifter J, pivoted at *o* to the lever I, as shown in Figs. 4 and 5.

The disk H is made somewhat larger in diameter than the diameter of the bottom or closed end of the vessel D, and is provided with the annular lip H′, extending around its outer edge, and adapted to embrace or inclose a portion of the cylindrical wall of said vessel, for the purpose of supporting the weight of said vessel and its contents while it is being rotated; and it is also provided with one or more openings, *p*, cut through it, each hole being adapted to receive and engage with the boss or hub *r*, formed upon or secured to the bottom of the vessel D at a point between its axis and its periphery, in such a manner that when coupled together, as shown in Figs. 1 and 2, the vessel D will be compelled to revolve with the disk H.

The operation of my invention is as follows: The vessel D being placed in the position indicated in Fig. 3, and the cover E being removed, the whole inner surface of the vessel D and the inner face of the cover E are coated with the semi-liquid japanning material or other paint by spreading it evenly thereon by means of a brush. The articles to be coated are then placed in the vessel in bulk, and in suitable quantity. The cover E is then placed in position upon the vessel to tightly close its open end, and then the vessel is turned about the axis of the trunnions C′ C′ of the gimbal-ring C until the journal *a* of the shaft E′ rests in the box *b*, when the hinged cap b^1 is swung down onto said journal, and the disk H is moved into engagement with the bottom of the vessel D, with the boss or

hub r fitting into one of the holes p, by moving the handle I′ toward the right until the pin l drops into the hole m in the frame A.

The driving-pulley F is then set in motion, and the vessel D is made to revolve about its axis, while the articles contained therein, by virtue of their tendency to fall to the lowest part of the vessel, are made to roll and tumble one over the other, and are successively brought in contact with all parts of the interior surface of the vessel, and with each other, until the coating placed upon the interior of the vessel is taken up and transferred therefrom to the surface of the articles contained therein, and by constant and repeated contact of each of said articles with the other said material is evenly distributed over the surfaces of all of said articles.

When the vessel has been rotated a sufficient length of time the disk H is uncoupled from the vessel D, the cap b^1 is raised into the position shown in Fig. 3, and the vessel D is turned into the position shown in the same figure, and the cover E is removed, when the vessel D may be removed from the ring C, and the articles contained therein may be turned therefrom into the baking-pan, when the operation may be repeated.

When the articles to be coated are of such shape that portions of their surfaces cannot be brought into contact with any portion of the surface of the vessel or of each other—such, for instance, as the button-collet shown in Fig. 7—a number of smaller articles—say like the rivet shown in Fig. 8—must be placed in the vessel with the collets, and both are coated and baked together, and then separated by sifting out the smaller articles.

In case there are no rivets or other small articles that require coating at the same time that the collets are to be coated, a number of small shot may be placed in the vessel with the collets, to serve as distributers to convey the japan coating to those parts that would not be acted upon by the collets themselves; and when articles are to be coated which have formed therein narrow slits or grooves, such as is shown in the shoe-stud illustrated in Fig. 9, shot small enough to pass freely through the groove s of said stud should be placed in the vessel with said studs.

What I claim as new, and desire to secure by Letters Patent of the United States, is—

1. The process of coating small articles with a semi-liquid japanning material or other paint, as herein set forth, by first spreading said material evenly upon the inner surface of a close vessel or chamber, placing therein a number of the articles to be coated, and then causing said articles to be tumbled, shaken, or otherwise agitated within said vessel, substantially as and for the purposes described.

2. In the method herein described of coating small articles with a semi-liquid or paint-like japanning material, the employment of articles of dissimilar shapes and unequal sizes, as set forth, whereby all portions of the surfaces of the articles to be painted may be uniformly coated, as described.

3. The vessel D, provided with a removable cover, and mounted in the gimbal-ring C, in combination with the coupling disk H, mounted upon the driving-shaft, and adapted to engage with the bottom of said vessel D to compel it to revolve therewith, substantially as as and for the purposes described.

4. The combination of the vessel D, cover E, provided with the short shaft or handle E′, having formed thereon the journal a, the fixed half-box b, hinged cap b^1, and the gimbal-ring C, all arranged and adapted to operate substantially as and for the purposes described.

5. The combination of the vessel D, provided at one end with the removable cover E, and at its other end with the boss or lug r, the gimbal-ring C, adapted to support the vessel in a horizontal or vertical position, and the disk H, provided with the annular lip H′ and one or more holes or recesses, p, and mounted upon the driving-shaft, and adapted to engage with or be disengaged from said vessel, substantially as and for the purposes described.

6. The vessel D, provided with the collar D′, removable cover E at one end, and the boss r at the other end, in combination with the gimbal-ring C and the coupling-disk H, adapted to engage with said vessel to cause it to revolve therewith, and to be disengaged therefrom to allow said vessel to be turned into a vertical position, substantially as and for the purposes described.

Executed at Boston, Massachusetts, this 5th day of October, A. D. 1877.

MELLEN BRAY.

Witnesses:

N. C. LOMBARD,

E. A. HEMMENWAY.