M. BRAY.

Machine for Cleansing and Drying Small Metallic Articles.

No. 212,125. Patented Feb. 11, 1879.

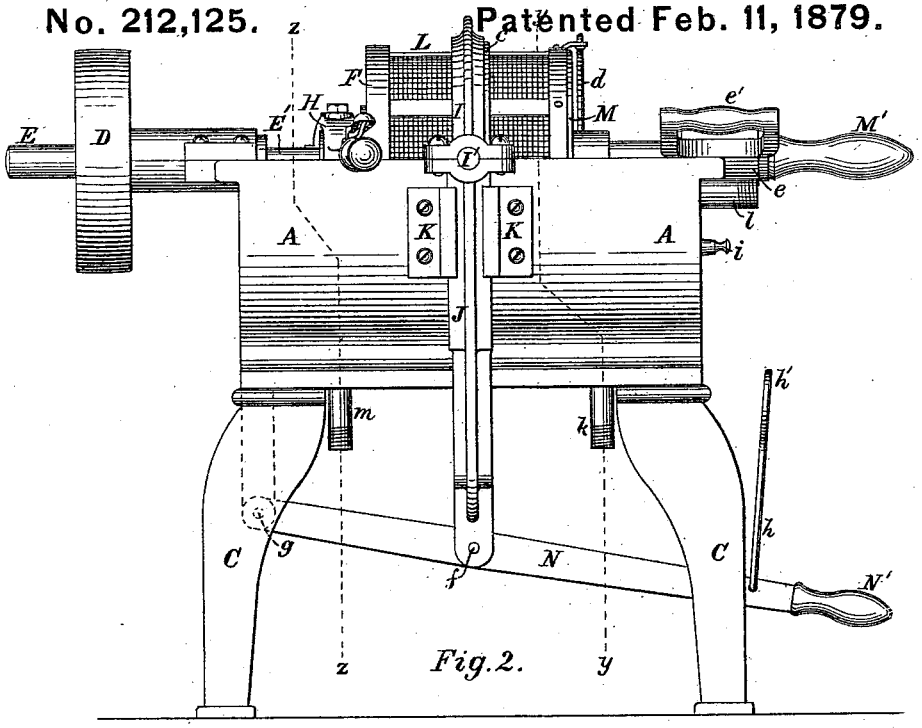

Fig. 2.

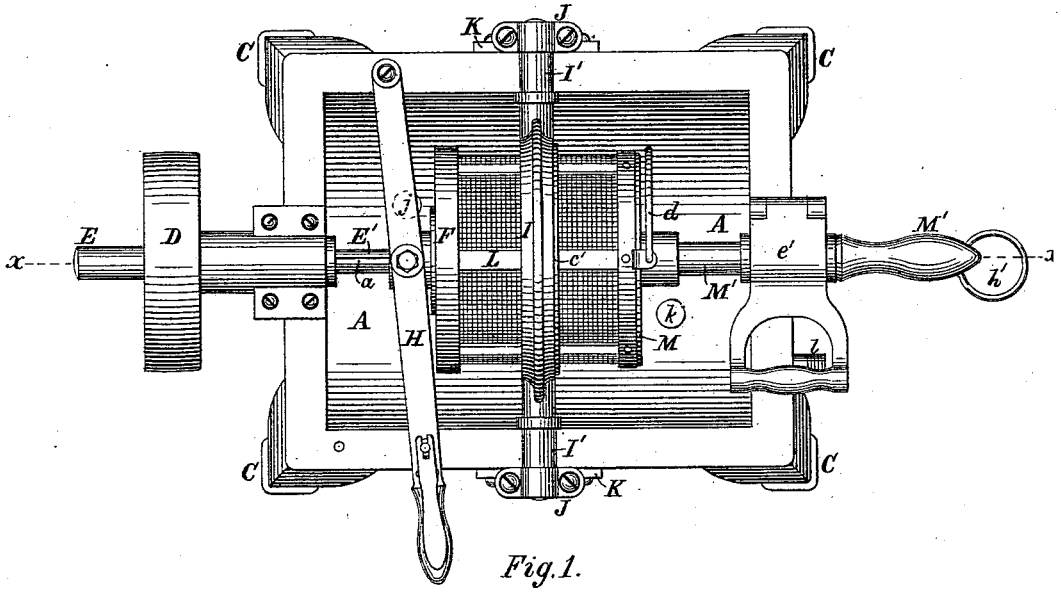

Fig. 1.

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Inventor:
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2 Sheets—Sheet 2.

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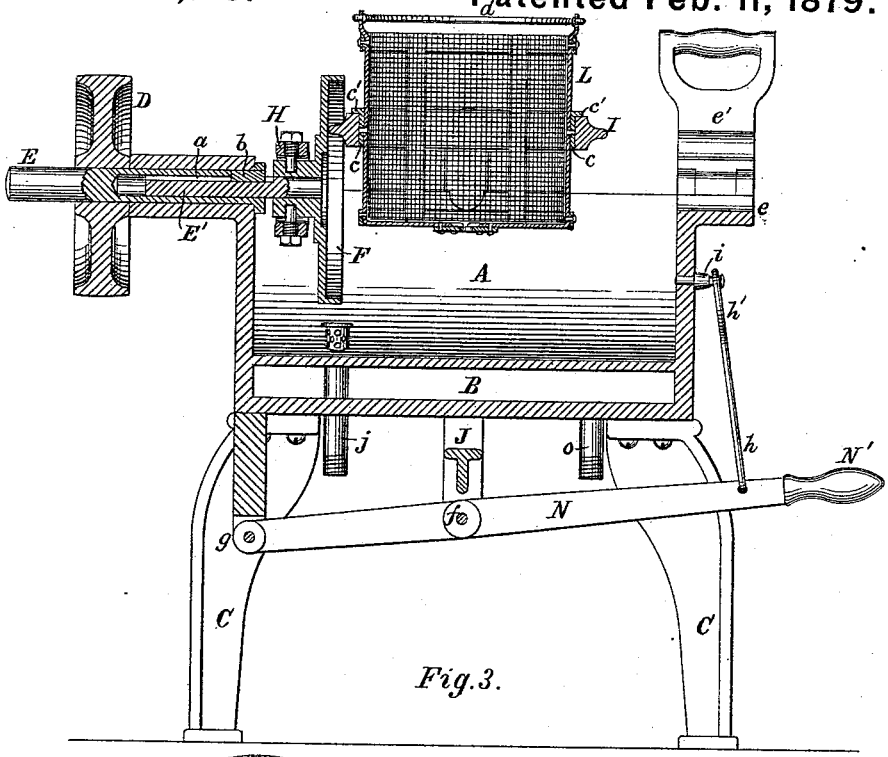

Fig. 3.

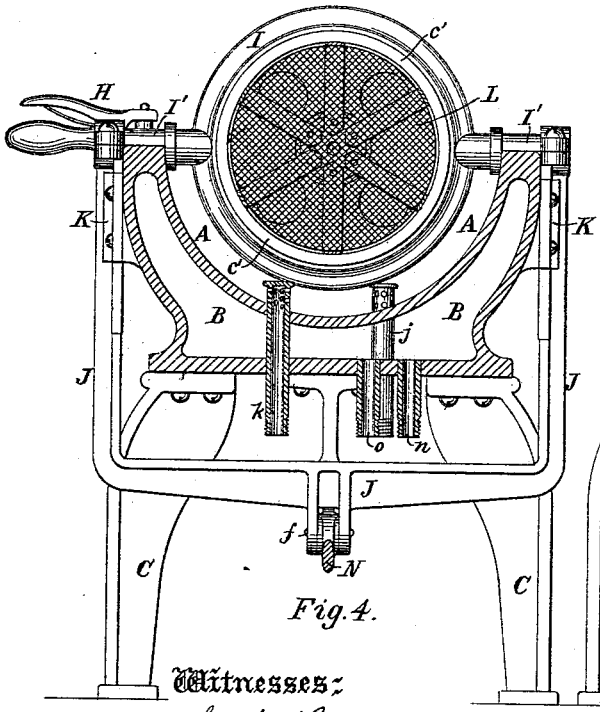

Fig. 4.

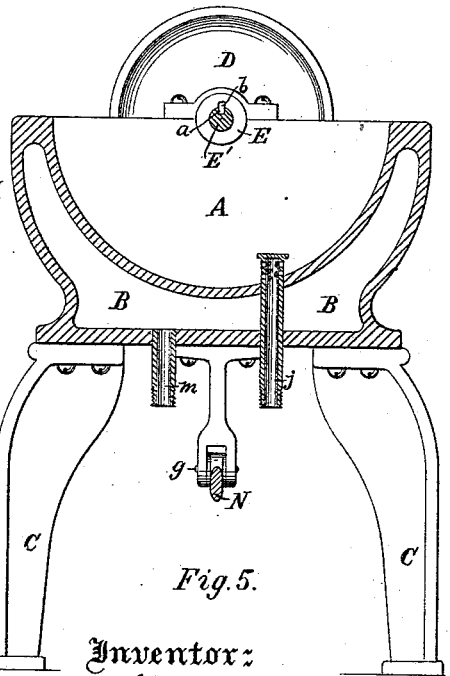

Fig. 5.

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UNITED STATES PATENT OFFICE.

MELLEN BRAY, OF NEWTON, MASSACHUSETTS.

IMPROVEMENT IN MACHINES FOR CLEANSING AND DRYING SMALL METALLIC ARTICLES.

Specification forming part of Letters Patent No. **212,125**, dated February 11, 1879; application filed September 11, 1878.

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 Machine for Cleansing, Rinsing, and Drying Small Metallic Articles, of which the following, taken in connection with the accompanying drawings, is a specification.

My invention relates to a machine for automatically removing oil, grease, or other adhering substances from small metallic articles preparatory to japanning the same, or to performing thereon some further operation in the process of manufacture, and is especially adapted to cleansing tubular rivets and shoe-studs and various other small articles upon which oil is used in their process of manufacture.

My invention consists in the use of an open-work basket or vessel, cylindrical in form, provided with a removable head or other suitable and convenient means of access to its interior, and mounted or having a bearing in a ring or hoop, which encompasses the exterior of the basket or vessel at or near the middle of its length, and is provided at opposite sides thereof with trunnions, which have bearings in the upper ends of a vertically-movable frame, in combination with a tank or receptacle adapted to hold a cleansing-liquid, all so arranged that said basket or vessel, when partially filled with the articles to be cleansed, may be revolved about a horizontal axis, with its lower portion immersed in the liquid contained in said tank, tumbling said articles one over another, causing repeated and constant frictional contact of said articles one with another while exposed to the action of the cleansing-liquid; and when uncoupled from its driving mechanism the basket or vessel may be turned about the axis of the encompassing and supporting ring into a position with its axis in a vertical direction, or nearly so, and be supported in such position by said ring, and then be raised out of and entirely above the cleansing-liquid contained in the tank to allow the liquid to drain from the basket or vessel and the articles contained therein.

Figure 1 of the drawings is a plan of a machine embodying my invention. Fig. 2 is a front-side elevation with the basket or perforated vessel coupled to the driving-shaft, and in condition to be revolved about its axis thereby. Fig. 3 is a vertical longitudinal section on line *x x* on Fig. 1, with the basket or vessel uncoupled from the driving-shaft and turned about the axis of the gimbal-ring into a position with its axis vertical, and having its cover and the attached portion of the shaft removed. Fig. 4 is a vertical transverse section on line *y y* on Fig. 2, and Fig. 5 is a vertical transverse section on line *z z* on Fig. 2.

A is a tank or receptacle to hold the cleansing-liquid, and B is a steam-chamber enveloping or partially surrounding the tank A, said tank and steam-chamber being both formed in and composing integral parts of a single structure, said structure being preferably a casting of suitable thickness to sustain the necessary pressure of steam, and mounted upon suitable legs C C, as shown.

D is a pulley mounted upon a short shaft, E, the inner end of which is made tubular, to receive the shaft E′, connected therewith by a groove, *a*, and key *b*, and having secured to its inner end a coupling-disk, F, provided with an annular lip around its outer edge, adapted to encompass the bottom of the basket L, as will be hereinafter described.

The shaft E′ is so fitted to the tubular portion of the shaft E that it may be moved endwise therein by the shipper-lever H, and secured at either extreme of such motion, substantially in the same manner as described in Letters Patent No. 199,504, granted to me January 22, 1878, for improvements in japanning.

I is a gimbal-ring, of the same construction as that described in the patent just cited, but differing from that in that it has its bearings in the upper ends of the bifurcated frame J mounted in slides K upon opposite sides of the tank A, and adapted to be moved vertically therein, said frame being limited in its downward motion by the trunnions I′ I′, resting in open bearings formed in the upper edge of the tank A, when the axis of the gimbal-ring I is in the same horizontal plane as the axis of the shaft E.

L is an open work basket or vessel, made preferably of wire-netting, and of a cylindrical form, and provided with a central hoop, *c*, having a projecting annular lip, *c′*, adapted to

engage with the gimbal-ring I, as shown in Fig. 3.

The basket L is provided with a bail, *d*, of ordinary construction, for convenience in handling said basket when it is removed from the machine, and it is also provided with a cover or head, M, formed upon or secured to the short shaft or handle M′ projecting outwardly therefrom, and having a bearing in a box, *e*, provided with a hinged or removable cap, *e′*, substantially in the same manner as described in the patent before cited.

N is a lever, pivoted at *f* to the frame J, and having its fulcrum at *g*, by an upward movement of the handle end N′ of which the frame J may be moved vertically to raise the basket L out of the liquid contained in the tank A. When the basket is uncoupled from the driving-shaft and turned into a vertical position, as shown in Fig. 3, a stirrup or a rod, *h*, provided with an eye, *h′*, at its upper end to engage with the pin *i*, serves to retain the basket in such elevated position to drain the liquid from the articles contained therein.

The tank A is supplied with water through the pipe *j*, connecting with the service water-pipe of the building, the flow being controlled by a suitable cock in a well-known manner, and when no longer needed it is discharged through the pipe *k* into the waste-pipe of the building, with which it connects, said pipe being provided with a suitable stop-cock, by which communication between the tank and waste-pipe may be cut off. The water is prevented from rising too high in the tank A by the overflow-pipe *l*.

The steam-chamber B is supplied with steam through the induction-pipe *m*, connected with the source of supply, and the water of condensation escapes through the pipe *n;* and *o* is another eduction-pipe, which connects with a safety-valve through which the steam escapes when the pressure in the chamber B rises above a given point.

The operation of my invention is as follows: The basket L is partially filled with the articles to be cleansed, and placed in the gimbal-ring I, in the position shown in Fig. 3. The cover M is placed in position, the stirrup *h* is disengaged from the pin *i* and the frame J, and ring I is allowed to fall, or is moved downward, carrying the basket L therewith till the trunnions I′ of the gimbal-ring I rest in the bearings formed in the upper edge of the tank A, when the gimbal-ring I is partially rotated about its axis till the shaft M′ rests in the bearing *e*. The shaft E′ is then moved toward the basket L by means of the lever H until the disk F engages with the basket with sufficient force to compel said basket to be revolved with the shafts E and E′ and the disk F, when they are set in motion, which is now done, water having been previously admitted to the tank A and steam to the chamber B, an alkali having also been added to the water to form an alkaline solution.

The basket is kept revolving in such solution, heated to a high temperature by the steam in the chamber B, until the oil or grease is effectually destroyed by the alkali, when the alkaline solution is withdrawn and pure water let into the tank, and the basket is kept revolving in that till the alkali is all washed away, when the basket is uncoupled from the driving-shaft, the gimbal-ring is rotated by raising the shaft M′ into a vertical position, and the shaft M′ (and with it cover M) is removed. The lever N is then raised and the stirrup *h* made to engage with the pin *i*, as shown in Fig. 3, where the basket is allowed to remain till the water is drained from the articles contained therein. The water is then withdrawn from the tank A, the basket is lowered, turned about the axis of the gimbal-ring, coupled to the driving-shaft, and made to revolve therewith, tumbling the articles contained therein till all the moisture is completely evaporated from the articles contained in the basket by exposure to the heat occasioned by the steam in the chamber B, when the operation is complete.

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

1. The combination of the tank A, steam-chamber B, vertically-movable bifurcated frame J, gimbal-ring I, open-work basket or perforated vessel L, driving-shaft E E′, disk F, and shipper-lever H, all arranged and adapted to operate substantially as and for the purposes described.

2. The combination of the gimbal-ring I, bifurcated frame J, the open-work basket or perforated vessel L, lever N, stirrup *h*, and pin *i*, all arranged and adapted to operate substantially as and for the purposes described.

Executed at Boston, Massachusetts, this 7th day of September, A. D. 1878.

MELLEN BRAY.

Witnesses:
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MELLEN N. BRAY.