H. B. RICHARDSON.

TUMBLING AND POLISHING MACHINE.

APPLICATION FILED MAR. 22, 1912.

1,038,791. Patented Sept. 17, 1912.

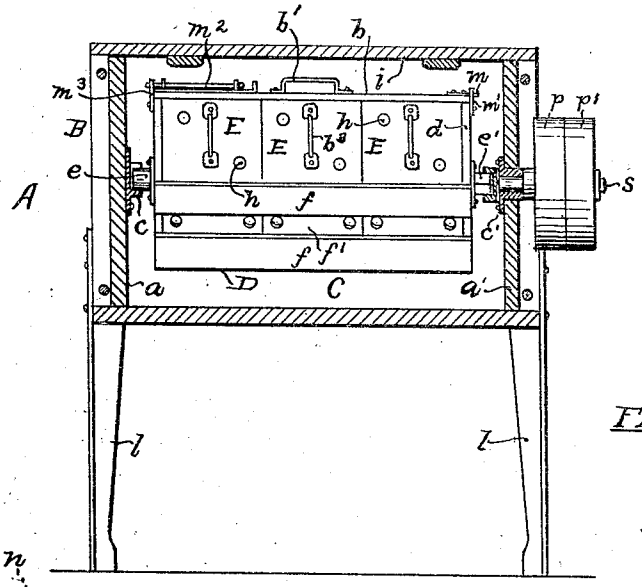

Fig. 1.

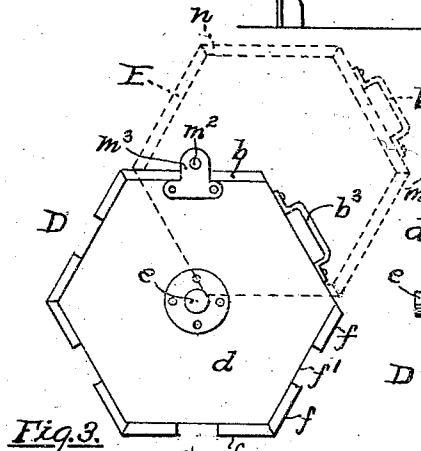

Fig. 3.

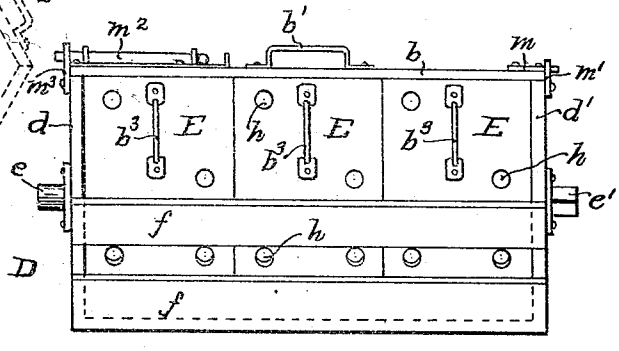

Fig. 2.

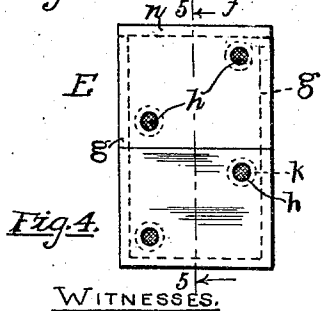

Fig. 4.

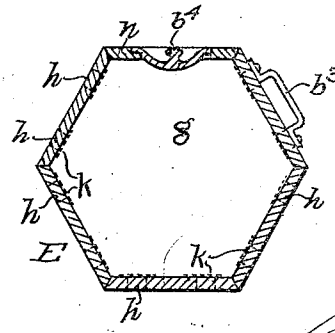

Fig. 5.

WITNESSES.

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HENRY B. RICHARDSON, OF ATTLEBORO, MASSACHUSETTS.

TUMBLING AND POLISHING MACHINE.

1,038,791. Specification of Letters Patent. Patented Sept. 17, 1912.

Application filed March 22, 1912. Serial No. 685,451.

To all whom it may concern:

Be it known that I, HENRY B. RICHARDSON, a citizen of the United States, residing at Attleboro, in the county of Bristol and State of Massachusetts, have invented certain new and useful Improvements in Tumbling and Polishing Machines, of which the following is a specification.

The improvement forming the subject of this application for Letters Patent relates to tumbling and polishing machines, so-called, employed for polishing or burnishing various articles of metal, such, for example, as jewelry novelties, optical goods, &c., and it consists in the novel construction and arrangement of the parts constituting the apparatus, all as hereinafter fully disclosed and claimed.

In the accompanying sheet of drawings, Figure 1 represents a longitudinal central sectional view, partly in side elevation, of a polishing machine embodying my improvement; Fig. 2 is a side view, in enlarged scale, of the open skeleton frame, provided with a series of independently removable containers for holding the articles to be polished; Fig. 3 represents a corresponding end view; Fig. 4 is a side elevation of one of the containers, detached; and Fig. 5 is a sectional view, taken on line 5—5 of Fig. 4.

The machine as a whole is designated by the letter A. It is provided with a plurality of polygonal-shaped independent drawers or apertured containers E, removably mounted in a skeleton frame D, revolubly supported horizontally in a stationary main tank B; the chamber C of the latter is adapted to hold a cleansing fluid or wash of soap and water. At the same time polished steel balls, loosely mingling with the mass of goods temporarily confined in the perforated containers, serve to complete the polishing operation. Another result due to thus treating the goods is to harden the surfaces of the articles, and not to wear away or abrade them. The capacity or output of the machine exceeds that of several polishers, while the finish or luster imparted to the goods by the machine greatly excels manually finished goods.

The tank B has ends a, a^1, a bottom and cover i, the whole supported by legs l. It is also provided with bearings c, c^1; the latter, c^1, has a shaft s revolubly mounted therein carrying pulleys p, p^1, as shown. The inner end of the shaft is adapted to receive a pintle e^1 secured to the end d^1 of the frame D; the opposite end d of the latter carries a pintle e revolubly supported in the bearing c.

The frame D is hexagonal cross-sectionally and has four of its sides f provided with openings f^1 therethrough. On another side the wall is omitted, and the remaining side (the cover b) is removably secured to the frame's ends by suitable means, as for example, by bolts m, m^2, and fixed corresponding end plates m^1, m^3, perforated to receive the bolts. To facilitate the removal of the cover a handle b^1 may be provided. The frame D, as stated, is hexagonal and adapted to slidably receive therein transversely a series of independent drawers or work-containers E, also hexagonal in form. Each of the latter has end walls g and apertured side walls; the apertures h being protected by fine metallic screen-cloth k. Each member E may be further provided with a handle b^2 for obvious use. The members E have each a removable side or cover n and a recessed handle b^4 fixed to it thereby facilitating access to the container. The several covers n, when the members E are normally positioned in the frame D, lie immediately below the main cover b and are held in place by the end fastening bolts, before described.

The manner of operation is substantially as follows: Assuming the chamber C of the tank B to be partly filled with the washing fluid, say nearly to the underside of the pintles, and that a driving-belt, or other suitable driving means, is employed for rotating the frame D, and further assuming that the main cover b, as well as some or all of the container covers n have been removed to render the interior accessible; the operator places the articles to be polished in the respective compartments or containers E; a quantity of smooth, non-abrading steel balls is next deposited loosely in the containers, followed by replacing the several covers n and b and securing them in place. Now, upon revolving the frame D, the surface of the moving articles will thereby be engaged by the moving steel balls and the cleansing fluid circulating through the containers during said rotation. After the articles have been subjected to the cleansing and polishing treatment a length of time, as determined by the judgment of the operator in charge, the machine is stopped and the contents removed from the containers; this latter is ef-

fected by unlocking the cover *b* and detaching it from the frame D, after which any or all of the several covers *n* may be readily taken off, thereby exposing the treated contents for removal.

If desired, the frame D with the charged container may be elevated bodily from its bearings *c*, *c*[1], to the desired height, or even removed wholly from the machine before the covers are taken off. In some cases, it may be necessary to employ only one of the containers E, the frame D meanwhile remaining supported in its bearings; in such event the machine, when stopped, has the covers uppermost, as shown. Then, after removing the main cover *b*, the container is adapted to be drawn outward and upward by the handle *b*[3], say to the position indicated by dotted lines in Fig. 3, followed by removing the cover *n*. When thus elevated, the fluid contents thereof readily escape through the apertured sides or walls.

I do not claim broadly herein a machine adapted to cleanse and polish jewelry and other small articles of metal by means of circulating treating fluid through revoluble holders or containers having said articles confined therein and associated with polished steel balls.

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

1. In a tumbling and polishing machine of the general class described, the combination with a tank, of a polygonal-shaped apertured frame revolubly mounted in the tank, a cover member removably secured to one face of the frame, a series of apertured independent polygonal-shaped containers arranged side by side and removably fitting the interior of said frame transversely, and having the covers of the several work-charging openings of the containers normally held in place by the said frame opening cover.

2. In a machine of the class described, the combination of a hexagon-shaped main carrying frame having a longitudinal opening through its peripheral wall, a cover normally closing said opening, means for revolving the frame, a plurality of hexagon-shaped independent work containers slidably fitting said frame transversely, each having a work-charging opening, a cover normally closing each opening, the said frame cover being superimposed upon the container covers, and means for locking the several parts together against accidental separation.

3. The combination with a liquid tank, of an elongated polygonal-shaped hollow frame, a cover-protected opening communicating with the frame's interior, means for revolving the frame, a plurality of containers slidably fitting, transversely, the said frame, a main or charging opening formed in each container arranged to register with that of the frame, a cover element for each container, and means for removably securing the covers in position against accidental opening.

In testimony whereof I have affixed my signature in presence of two witnesses.

HENRY B. RICHARDSON.

Witnesses:

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CALVIN H. BROWN.

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