

No. 636,352.

Patented Nov. 7, 1899.

M. OLSON.

CLEANING AND POLISHING MACHINE.

(Application filed Apr. 7, 1899.)

(No Model.)

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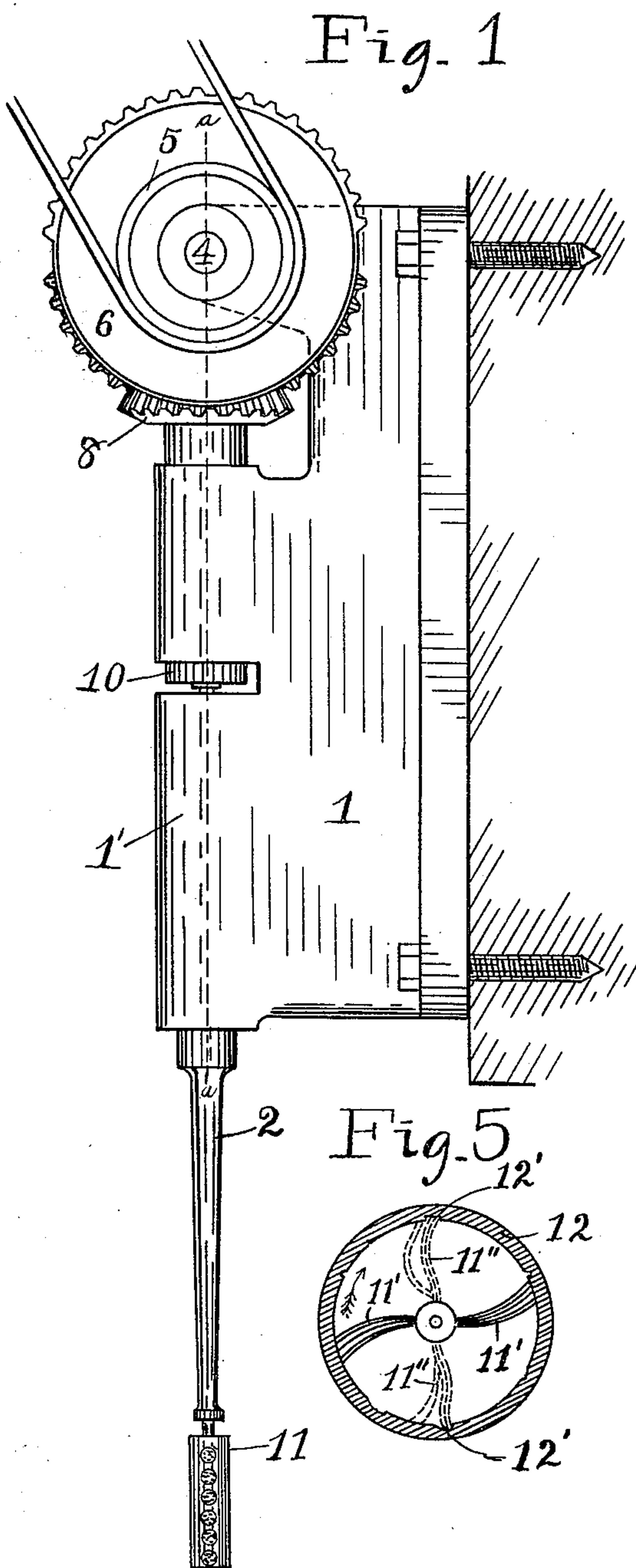
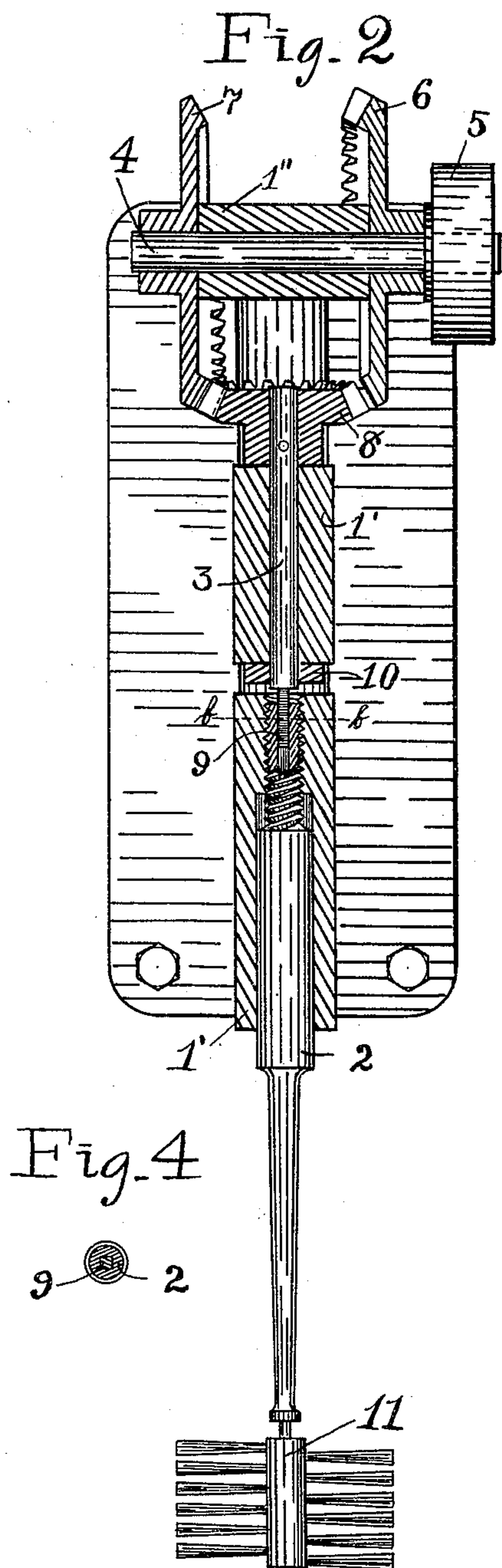
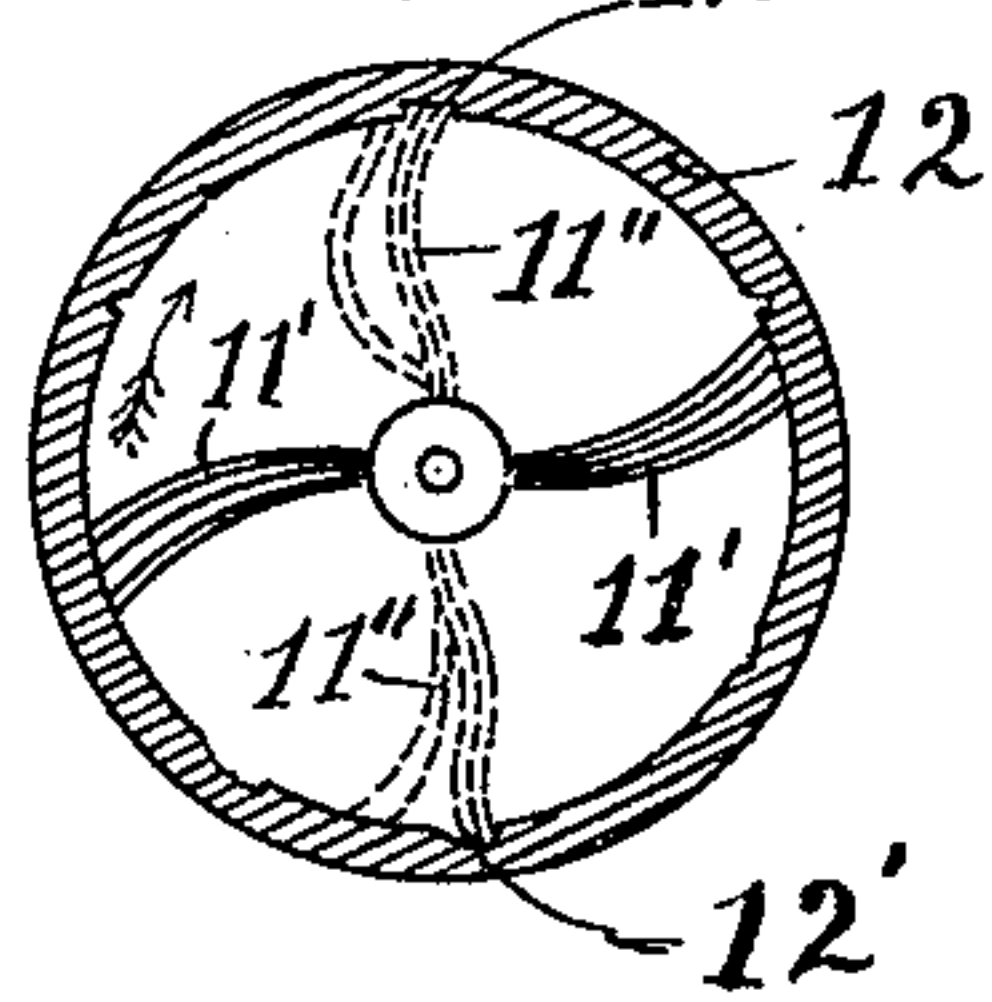


Fig. 4



Fig. 5



WITNESSES

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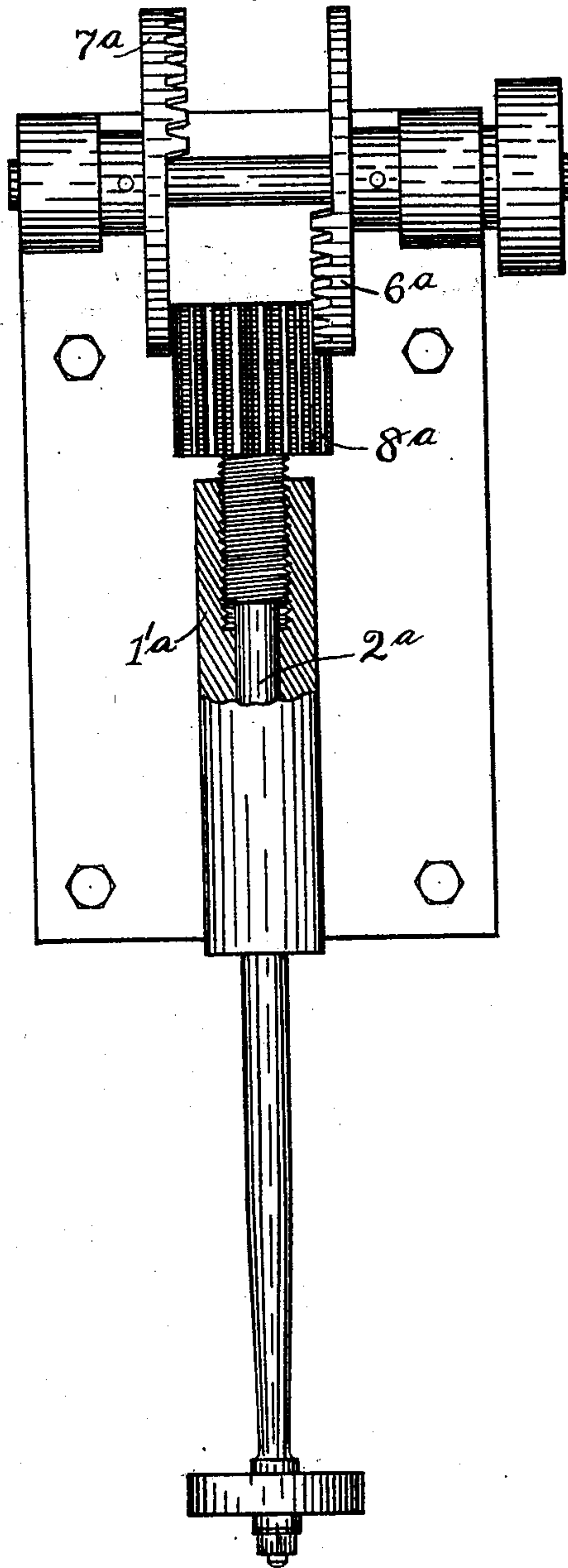
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Fig. 3



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# UNITED STATES PATENT OFFICE.

MARTIN OLSON, OF NEW YORK, N. Y.

## CLEANING AND POLISHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 636,352, dated November 7, 1899.

Application filed April 7, 1899. Serial No. 712,103. (No model.)

*To all whom it may concern:*

Be it known that I, MARTIN OLSON, a citizen of the United States of America, and a resident of the city of New York, county of Kings, State of New York, have invented certain new and useful Improvements in Cleaning and Polishing Machines, of which the following is a specification.

My invention relates to an improvement in machines for cleaning and polishing surfaces, and refers more particularly to machines used for cleaning and polishing rough or uneven surfaces and the inside surfaces of bottles and other like articles.

The object is to cause the ends of a brush or the surfaces of the device used on the work to expand or project outwardly with relation to a spindle upon which it is mounted and by which it is caused to revolve and rub against the surfaces to be cleaned, and thus to reach and act upon all of the surface on the articles to be cleaned or polished.

To this object my invention relates to the combination of parts hereinafter described, and particularly pointed out in the claims.

Similar reference-figures are used to designate like parts in the accompanying drawings, in which—

Figure 1 represents a side elevation of a machine embodying my improvements. Fig. 2 is a front elevation and shows some of the parts broken away to show sections on the dotted line *a a* in Fig. 1. Fig. 3 is a front elevation illustrating modifications of some of the features of the mechanism. Fig. 4 is a detail section. Fig. 5 is a sectional end view of a bottle with a brush therein and illustrates the action of the brush on uneven surfaces.

Referring to Figs. 1 and 2, the base or bed 1 of the machine, which is shown secured to a support by screws, is provided with a member 1', which is bored out to receive the spindle 2 and the shaft 3, which are revolvably mounted therein, and it also has a member 1'', which is bored out to form a bearing for the gear-shaft 4. A pulley or wheel 5 is fastened on the shaft 4 and may be revolved by a belt or other means. The bevel gear-wheels 6 and 7 are fastened to the shaft 4 and are adapted for engagement with the pinion 8 and

are shown having several of their gear-teeth cut away and are adjusted on their shaft in such a manner that the teeth of only one of them can be in engagement with the pinion 8 at a time. The pinion 8 is secured on one end of the shaft 3, which is provided at the opposite end with a non-circular portion or stem 9, which enters a correspondingly-shaped aperture or bore in the spindle 2. The collar 10 is fastened to the shaft 3 to prevent longitudinal movement thereof. A portion of the spindle 2 is threaded and enters the internally-threaded part of the member 1'. It will be seen that the spindle 2 is attached to the shaft 3 and is non-revoluble, but is longitudinally adjustable therewith, and that the unthreaded part is adapted to rotate and reciprocate in the smooth part of its bearing, the rotary movement being transmitted thereto by the shaft 3 and the reciprocating movement being caused by the threaded portion engaging with the member 1'. At the further end the spindle 2 is suitably formed for holding a brush 11, flexible polishing-wheel, or other device suitable for the work.

It will be understood that as the power is applied to the pulley 5, causing the shaft and gears 6 7 to revolve, the teeth on the gear 6, engaging with the pinion-teeth, cause the pinion and spindles to revolve in one direction, and after all the teeth in the gear 6 have traveled past the pinion and are out of engagement therewith the teeth on the gear 7 (which are located on that portion thereof which is opposite to the toothless part of the gear 6) engage with the pinion and cause it to revolve in the opposite direction, and as these motions are repeated at each revolution of the gears 6 and 7, which continually revolve in one direction, the pinion and its spindles are caused to revolve in alternately opposite directions. This alternating rotary movement of the spindles has the effect when a brush is used of changing the direction in which the bristles are inclined, and during the change the ends thereof are forced outwardly from the spindle and caused to act upon the remote parts and surfaces, which they would have missed or skipped by if the motion was only one way and the brush members remained at one inclination, and also by the action of the



threads on the bearing parts the spindle 2 causes the brush or device to reciprocate longitudinally over the surface acted upon.

In Fig. 3 the spindle 2<sup>a</sup> is shown supported in its bearing and is provided with threads which engage with the threaded part of the base member 1<sup>a</sup> and is provided with a pinion 8<sup>a</sup> of the kind known as a "spur-pinion," the teeth of which engage with the gears 6<sup>a</sup> and 7<sup>a</sup> and are longer than the distance which the gear and shaft move longitudinally. The teeth on the gears 6<sup>a</sup> 7<sup>a</sup> are formed suitable for engagement with the pinion-teeth, and the actions attained by this construction are similar to those described in reference to Fig. 1, the difference being that the pinion in Fig. 3 travels forwardly and back longitudinally with the brush-carrying spindle and the pinion in Fig. 1 remains longitudinally stationary.

In Fig. 4 is shown a sectional view of the spindle 2 and the stem 9, taken on the dotted line *b b* in Fig. 1.

A section of a bottle 12 is illustrated in Fig. 5, which shows recesses or cavities 12' on the inside surface of the bottle and also shows a brush entered into the bottle, the bristles or flexible members 11' of which are shown in the inclined position which they occupy while the brush is being revolved in the direction indicated by the arrow. The dotted lines 11'' show approximately a position of the flexible members of the brush when the rotary motion is changed to the opposite direction to that indicated by the arrow. The distance from the rigid part of the brush to the surface acted upon being less than the length of the bristles, the bristles becoming caught in the recesses are caused to deflect or bend and the ends are forced into the crevices, upon the surfaces of which they act, cleaning and polishing them. This operation takes place when the bristles are being changed from the position shown at 11' to a similar but oppositely-inclined position. As the reversing of the motion is constantly repeated, the brush is caused to enter the recesses from both sides.

Various devices other than a brush or wheel may be attached to the spindle to constitute the cleaning or polishing tool.

I do not limit myself to applying my improvements only to machines for cleaning

bottles, as my invention may be used on machines for cleaning and polishing surfaces on various articles.

Having thus described my invention, I claim—

1. In a cleaning and polishing machine a spindle carrying a polishing-tool, and revolvably held in a support and provided with screw-threads which engage with threads on the support, means for transmitting alternately-reversing rotary motions to the spindle, the threads on the spindle and support adapted to feed the spindle and polishing-tool longitudinally and alternately in opposite directions as the direction of the rotary movement of the spindle changes, substantially as shown and described.

2. In a machine for polishing and cleaning the combination of a spindle journaled in a support and bearing a cleaning and polishing device at one end and a gear on the opposite end, screw-threads on the spindle engaging with threads on the support adapted to cause a reciprocating movement of the spindle as the spindle is rotated alternately in opposite directions, a pair of gears on a shaft and adapted to rotate and each to engage alternately with the spindle-gear and to transmit to the spindle motions alternately changing to opposite directions substantially as and for the purpose set forth.

3. In a polishing and cleaning machine the combination of a spindle consisting of two sections and journaled in a support and having a polishing-tool on one section and a gear on the other section, the polishing-tool section revolvably fast and longitudinally adjustable with the gear-carrying section, means for engaging with the gear and rotating the spindle alternately in opposite directions screw-threads on the polishing-tool section engaging with threads on the support and adapted for reciprocating the polishing-tool section simultaneously with the reversing rotary movements of the spindle substantially as described and set forth.

Signed by me at New York, N. Y., this 3d day of April, 1899.

MARTIN OLSON.

Witnesses:

EDWARD J. O'CONNOR,  
JOSEPH L. A. McMENAMIN.