A. D. PUFFER, Jr.

TUMBLER-WASHER.

No. 174,090. Patented Feb. 29, 1876

Fig. 2.

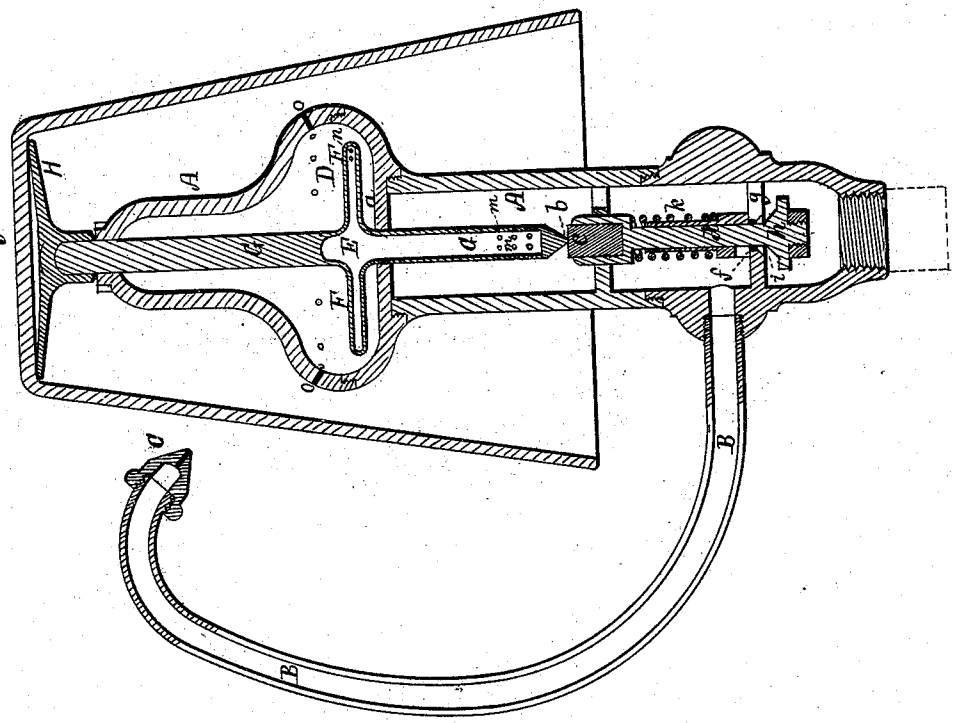


Fig. 1.
Reduced.

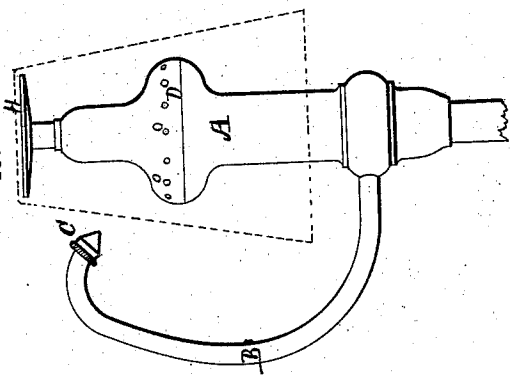
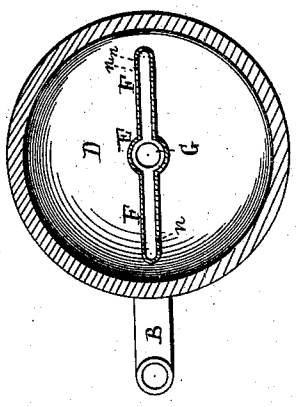


Fig. 3.



Witnesses.
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UNITED STATES PATENT OFFICE.

ALVIN D. PUFFER, JR., OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN TUMBLER-WASHERS.

Specification forming part of Letters Patent No. **174,090**, dated February 29, 1876; application filed January 4, 1876.

To all whom it may concern:

Be it known that I, ALVIN D. PUFFER, Jr., of Boston, Suffolk county, Massachusetts, have invented certain Improvements in Tumbler-Washing Machines, of which the following is a specification:

This invention relates to machines or apparatus for washing tumblers, in which the tumbler, while in an upright inverted position, is rotated with considerable rapidity, while one or more streams of water are directed upon its inner and outer surfaces.

My improvements consist, first, in imparting motion to the tumbler-supporting standard by power applied directly to the latter, in lieu of upon the tumber, as heretofore, by which means I obtain a greatly-increased power, with a decreased consumption of water.

My invention consists, secondly, in the employment of an upright spindle to which the motive-power is applied to rotate it; this spindle supporting the tumbler and resting at bottom upon a yielding or elastic step attached to the valve which controls the ingress of water, the whole being so arranged that the weight of the tumbler opens the said valve and water is admitted to rotate the tumbler and supply the means of cleansing the latter, while upon removing the tumbler after it is cleansed the valve automatically closes and the water is entirely shut off, thus avoiding much waste.

Minor features of my invention will be duly explained.

The drawings accompanying this specification and illustrating my invention represent in Figure 1 a side elevation, and in Fig. 2 a vertical section, and Fig. 3 a horizontal section of a portion of a tumbler-washing apparatus embodying my invention.

In these drawings, A represents a tubular standard, which constitutes one of a number of similar size and character, which are combined with a suitable basin to produce an apparatus for washing tumblers, the lower end of the standard A being connected with a suitable water-supply under pressure.

Attached to the lower part of the standard A, and connecting with its interior, is a pipe, B, which rises upward in a curved or spiral path and terminates at top in a nozzle, C, so disposed with respect to the standard and to a tumbler applied to the latter as to direct downward upon such tumbler a stream of water by which the exterior of the tumbler is cleansed.

Toward its upper part the standard A is enlarged and forms a globular chamber, D, to receive the motor E, such motor consisting of two or more horizontal arms F F, which radiate from an upright tubular spindle G, such spindle being disposed centrally within the standard A, and being steadied by a guide or shelf, *a*, which constitutes the bottom of the chamber D, and by the extreme upper end of the standard A.

The upper end of the spindle G receives a disk, H, upon which the tumbler rests, while the lower end of such spindle is reduced to a pivot, *b*, which rests and rotates upon a step, *c*, making part of an upright stem or rod *d*, which is disposed within the lower part of the standard A, and steadied at its upper end in a guide, *e*, which spans the interior of such standard.

The lower end of the stem *d* passes through an orifice, *f*, created in a tight shelf, *g*, which closes the lower part of the standard A, and immediately below this shelf the stem terminates in a valve, *h*, which operates in connection with a valve-seat, *i*, that surrounds the lower part of the orifice *f*, the said shelf and valve-seat being disposed below the mouth of the pipe B, as shown in the drawing.

A spring, *k*, surrounds the valve-stem *d*, and exerts its stress between the shelf *g* and a shoulder, *l*, formed upon such stem, with such effect as when relieved of the weight of the tumbler to raise the valve and close the port or orifice *f*, and shut off flow of water to the pipe B and the motor E.

The weight of the tumbler is borne by the spindle G, and, to obviate the friction upon the latter as much as possible, I reduce its lower end to a point, or nearly so, as shown at *b*, and form it, as well as the step *c*, of hardened steel, to lessen wear as much as possible. The lower part of the spindle G and the arms F F are hollow or tubular, and communicate freely with each other, and the extreme lower end of the former is pierced with several holes, *m m*, &c., for admission of water, while in the ex-

treme end of each arm F, and upon one side, I create one or more orifices, *n*, the orifices of one arm being situated on the side opposite those of the other arm. Furthermore, I create in the wall of the upper part of the chamber D several apertures, *o o*, &c., by means of which water from such chamber may be directed in small streams upon the interior of the tumbler, to cleanse the latter.

The operation of my invention is as follows, it being understood, as has been before stated, that water under pressure fills the tubular standard or column A, and that the valve-port *i* is closed: A tumbler, shown at *p*, which is to be washed, is placed bottom upward upon the top of the disk or button H, and its weight lowers the spindle G, and consequently the stem *d*, and opens the valve-port *i*; the result of which is that water flows through the pipe B and is discharged upon the outside of the tumbler, and not only aids by its momentum in rotating the tumbler by and with the spindle G, but cleanses the exterior of such tumbler. The water also flows upward into and fills the standard A below the shelf *a*, and enters and flows through the tubular portion of the spindle G and the arms F F, and escaping through the ports *n* fills the chamber D, from whence it passes in small streams through the ports *o* and is directed upon the interior of the tumbler, to cleanse the latter.

The resistance which the streams of water issuing from the ports *n* meet in the body of water within the chamber D has the effect of imparting rotary motion to the spindle G, with power quite sufficient to rotate the tumbler which is supported upon such spindle. This resistance may, however, be obtained in other ways, as, for instance, the resistance which air, admitted to the chamber D, would offer to the jets of water issuing from the ports *n* would be sufficient under some circumstances to rotate the tumbler; or the inner walls of the chamber D may be corrugated or partitioned or otherwise formed to present the desired resistance, as I do not confine myself to details in this respect.

When the tumbler is cleansed it is removed, and the spindle G and stem *d*, relieved from its weight, are forced upward by the stress of the spring *k*, and the valve *h* closes the port *i* and shuts off passage of water to the interior of the standard A above such valve, thereby effecting a great saving of water.

I claim—

1. In a tumbler-washer, the combination, with the water-admission pipe or standard, of a tumbler-support rotated by the direct action of the water admitted to said support from the water pipe or standard, substantially as shown and set forth.

2. As a motor, the spindle G and hollow perforated arms F F when inclosed in a contracted chamber, whereby great resistance is offered to the jets of water issuing from such arms, substantially as and for purposes stated.

3. The combination of the standard A, motor E, spindle G, stem *d*, and valve *h*, and seat *i*, substantially as herein shown and set forth.

4. The combination of the spindle G and motor E, the stem *d* and its valve *h* and the seat *i*, with the tubular standard A and its perforated chamber D and the pipe B, substantially as and for purposes stated.

A. D. PUFFER, JR.

Witnesses:

W. E. BOARDMAN,

A. D. PUFFER.