J. H. VAN De WATER.

Washing-Machines.

No. 158,547. Patented Jan. 5, 1875.

FIG I

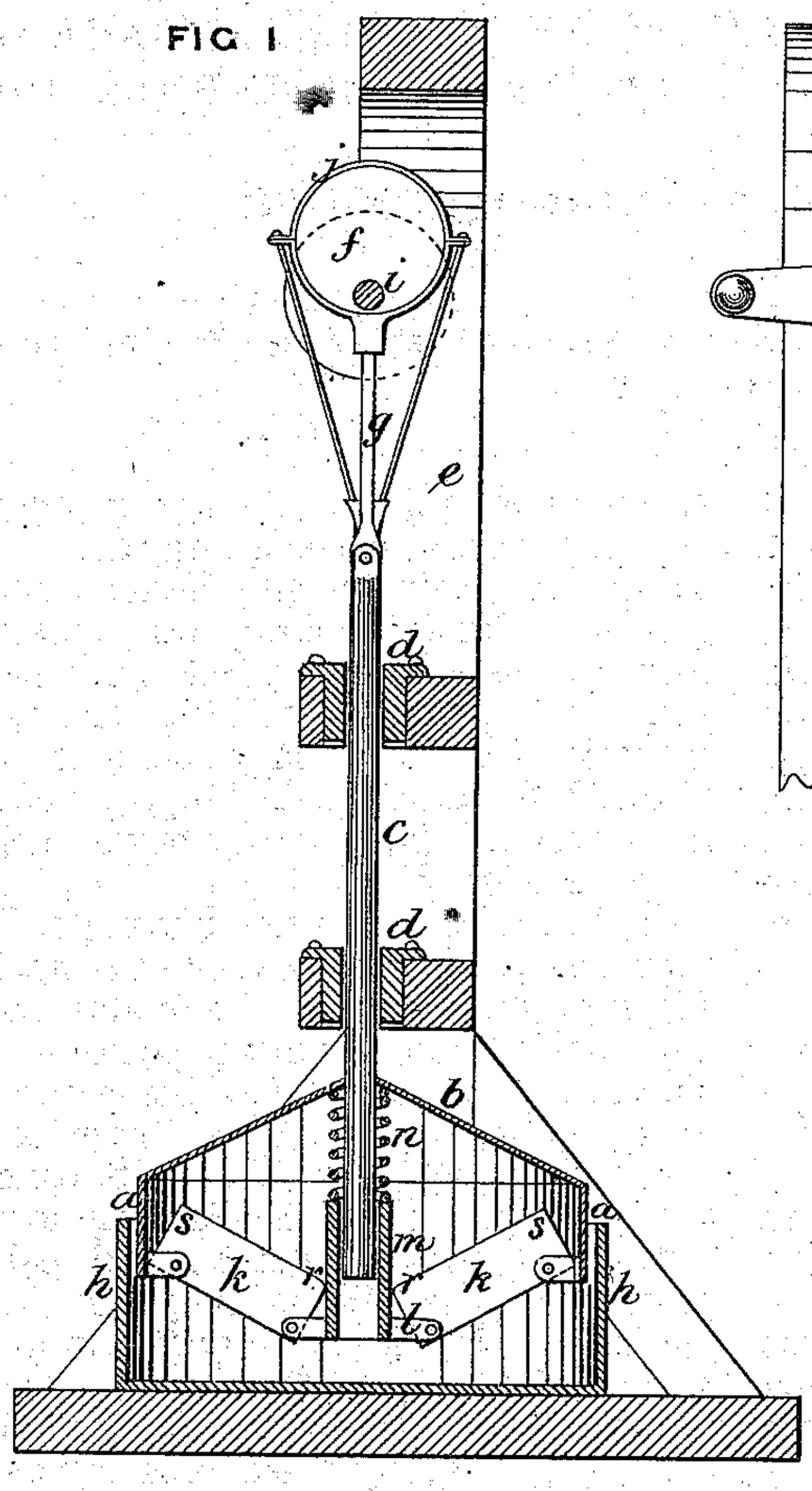


FIG IV

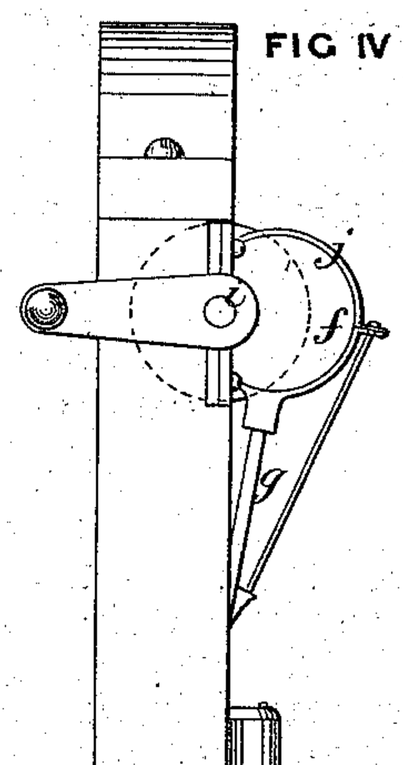


FIG II

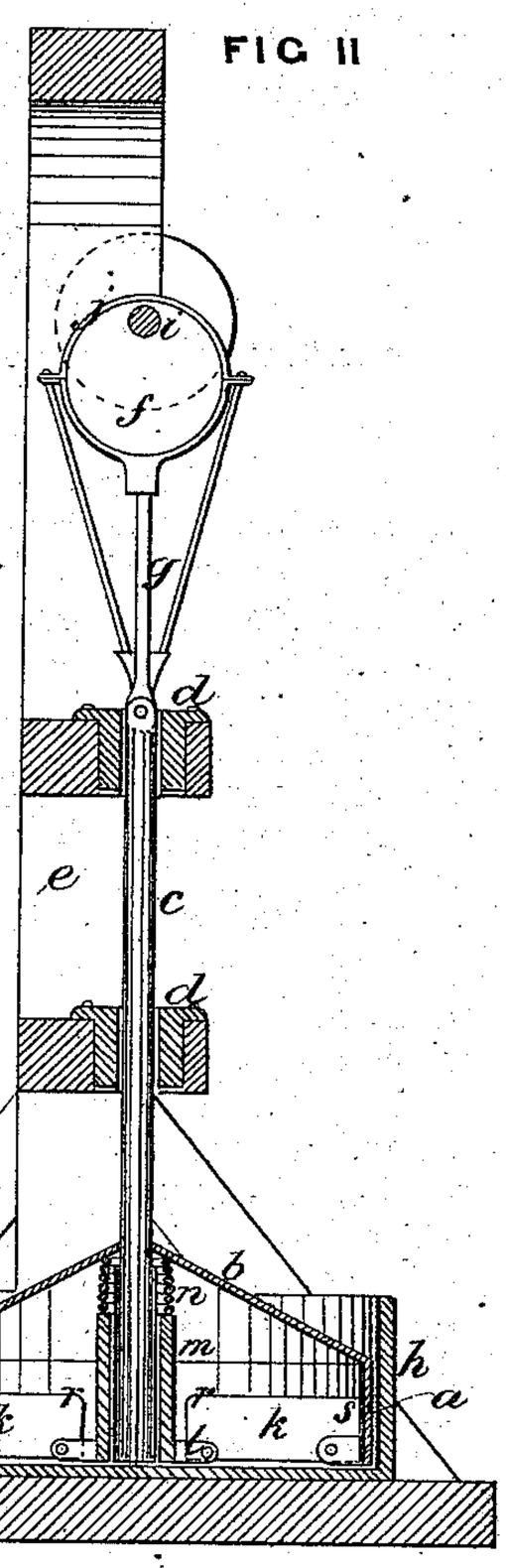
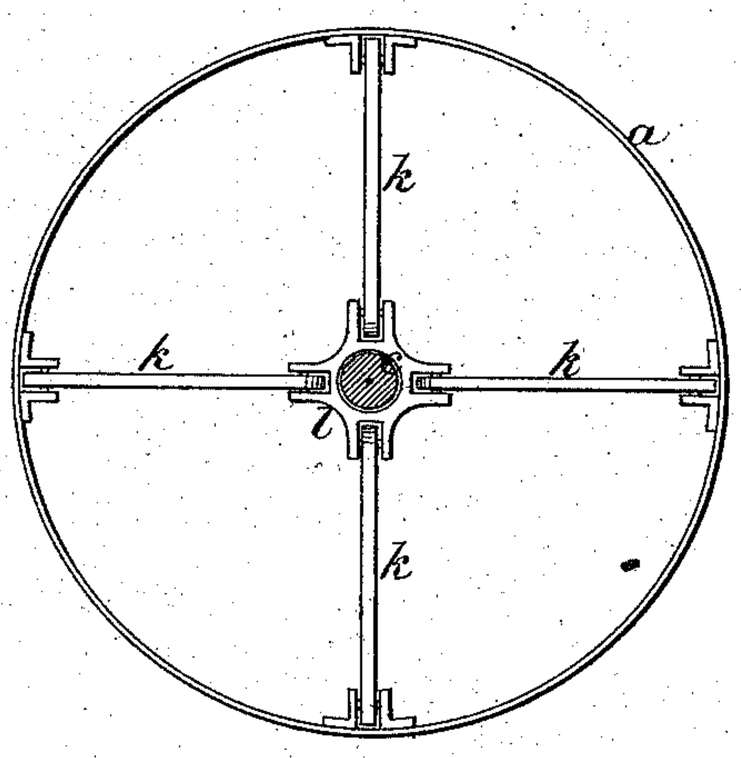


FIG III



WITNESSES

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UNITED STATES PATENT OFFICE.

JAMES H. VAN DE WATER, OF CONQUEST, NEW YORK, ASSIGNOR OF ONE-HALF HIS RIGHT TO GEORGE A. CROOKER, OF ASHTABULA, OHIO.

IMPROVEMENT IN WASHING-MACHINES.

Specification forming part of Letters Patent No. **158,547**, dated January 5, 1875; application filed November 7, 1874.

To all whom it may concern:

Be it known that I, JAMES H. VAN DE WATER, of Conquest, in the county of Cayuga and State of New York, have invented certain new and useful Improvements in Washing-Machines; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings and to the letters of reference marked thereon, which form a part of this specification.

My invention relates to that class of washing-machines in which the washing is effected by the pressure and suction of a hollow plunger carried by a vertical stem.

The object of my improvement is to avoid the quick stroke and pounding action of the plunger, which very materially prevents an effective suction action; and for this purpose I combine with the hollow sucker, provided with a hinged pressing-web, an eccentric driver, the action of which is to impart a uniform progressive pressure upon the clothes to compress them in the tub, and to withdraw the pressing-sucker by a similar movement, in order to obtain a slow or prolonged suction upon the clothes, instead of the quick or jumping action given by the crank, and which only produces a momentary and partial suction, while the steady progressive action of the eccentric driver causes the sucker to draw with a comparative slow action, and thereby obtain a much better effect in washing the clothes, as such gradual suction gives it greater force, and causes it to act through the body of the clothes instead of a surface action under a quick stroke. I have also combined with the hollow sucker a pressing-web, consisting of a series of radial hinged vanes having their inner ends carried by a sleeve upon the sucker-stem, and which is constantly pressed down to project the free ends of the vanes below the curb of the sucker, in order that upon the descent of the latter the central portion of the web of vanes will first strike the clothes and bear them down into a hollow form, while the continued descent of the sucker under increased resistance of the clothes causes the vanes to assume horizontal positions, and upon the ascent of the sucker the spring causes the vanes to continue their pressing action and hold the clothes under the sucking action, instead of allowing them to follow the ascent of the sucker, the elevation and descent of the sucker imparting a vibrating movement to the vanes upon their outer curb-hinges, and by this means render the operation of the sucker more rapid and effective.

In the accompanying drawings, Figure 1 represents a vertical section of a machine embracing my invention, the hollow sucker being shown in its elevated position; Fig. 2 a similar section, the sucker being shown in its lowest descent; Fig. 3, an inverted view of the sucker and its web of vibrating vanes; and Fig. 4, a view of the driving device.

The sucker consists of a cylindrical curb, *a*, having a conical closed top, *b*, and mounted upon a vertical stem, *c*, secured in guides *d d* in the cross-timbers of a suitable frame, *e*, and connected with the driver *f* by a jointed connection, *g*, whereby a reciprocating movement is imparted to the sucker. The curb *a* of the sucker plays freely within the tub *h*, and its action upon the clothes is not that of a pounder having short quick strokes, but is uniform and progressive, and produced by an eccentric, *f*, mounted upon a driving-shaft, *i*, for the purpose of giving a gradual pressing action upon the clothes, and a comparatively slow sucking ascending action, which not only makes the force of the suction stronger, but of greater duration, than could possibly be obtained by a quick jumping ascent. The combination of the eccentric driver *f* with the sucker *a b* therefore produces an important function in the pressing and sucking action upon the clothes. The jointed connection *g* of the sucker-stem is united to the eccentric by a yoke, *j*. To increase the effectiveness of the washing action, I combine with the sucker *a b* a web of radial vanes, *k*, hinged at their outer ends to the inner periphery of the curb *a*, and at their inner ends to the armed collar *l* of a sleeve, *m*, mounted upon the lower end of the carrying-stem *c*, so that the reciprocating movement of the sucker causes the vanes *k* to be vibrated upon their outer hinges. A coiled spring, *n*,

on the stem *a* bears upon the upper end of the sleeve *m*, and constantly presses it and the inner ends of the vanes *k* down below the level of the curb *a*, and gives the web the form of a skeleton-cone, which, as the sucker descends, strikes the clothes in advance of the curb, and bears them down in the center with a gradual increasing pressure until the resistance of the clothes forces up the sleeve *m* and the vanes *k* into horizontal positions, in order that upon the ascent of the sucker they will press hard upon and hold the clothes against their tendency to rise with the force of the suction, and by this means cause the sucking action to be well diffused through the body of the clothes, and to extend to the bottom of the tub. The downward flexure of the vanes *k* is limited by their inner jointed ends *r* striking against the sleeve, as shown in Fig. 1, and their upward movement is arrested by their outer ends *s* striking against the inner surface of the curb, as shown in Fig. 2, so that when the vanes are under their greatest pressure upon the clothes they will be in horizontal positions. The sucker is made of sheet metal, and secured upon the stem in any suitable manner, and is driven either by hand or power.

I claim—

1. The combination, with the sucker *a b* and the yielding web of radial arms, of the driving-eccentric *f*, connected to the sucker-rod by the jointed connection *g*, to produce the advantages herein stated.

2. The combination, with the reciprocating sucker *a b*, of the web of hinged radial vanes *k*, substantially as and for the purpose herein set forth.

3. The radial vanes *k*, in combination with their carrying-sleeve *m* and the spring *n*, substantially as herein set forth.

4. The combination, with the web of radial arms *k*, of the sleeve *m* and the curb *a*, whereby these parts form stops *r s* to limit the movement of the arms upon their hinges, as described.

In testimony that I claim the foregoing I have affixed my signature in presence of two witnesses.

JAMES H. VAN DE WATER.

Witnesses:
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J. W. HAMILTON JOHNSON.