W. & A. E. ROBARTS.
Washing-Machine.

No. 199,467. Patented Jan. 22, 1878.

Fig. 3.

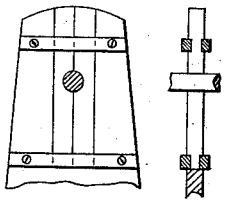


Fig. 2.

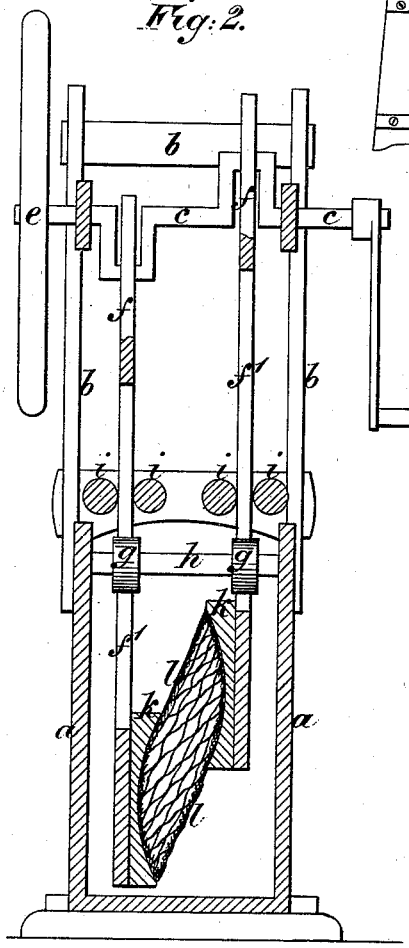
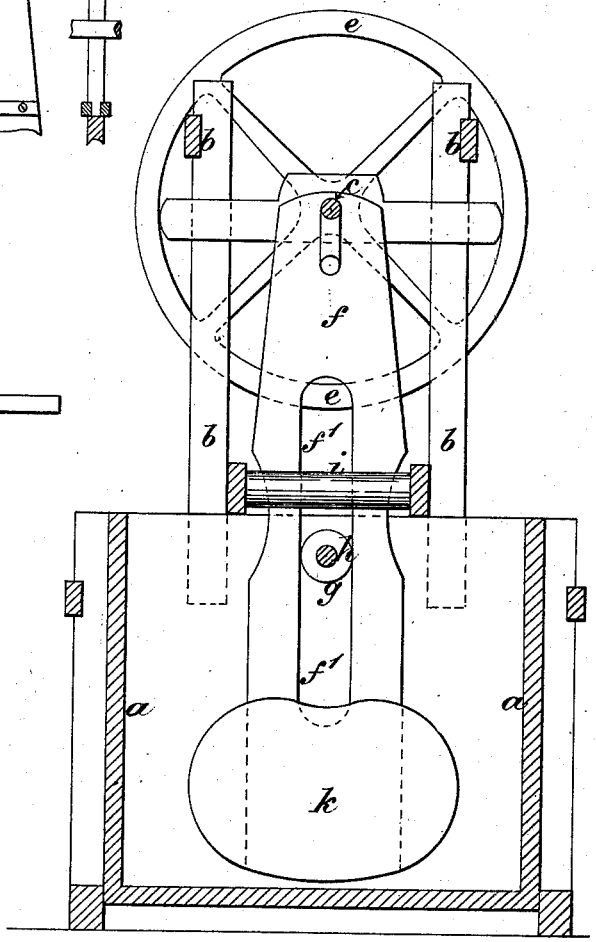


Fig. 1.



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UNITED STATES PATENT OFFICE.

WALTER ROBARTS AND ALFRED E. ROBARTS, OF GRAHAM'S TOWN, CAPE OF GOOD HOPE.

IMPROVEMENT IN WASHING-MACHINES.

Specification forming part of Letters Patent No. **199,467**, dated January 22, 1878; application filed December 18, 1877; patented in England, May 30, 1877.

To all whom it may concern:

Be it known that we, WALTER ROBARTS and ALFRED EDGAR ROBARTS, of Graham's Town, Cape of Good Hope, have invented new and useful Improvements in Washing-Machines, which improvements are fully set forth in the following specification, reference being had to the accompanying drawings.

This invention has for its object improvements in washing-machines suitable for washing clothes and other articles.

For this purpose a rectangular tub or vat is employed to contain the soap, water, and articles to be washed, as well as the disks or palms, as hereinafter described. Over this tub or vat a cranked axle is carried by standards, which axle is worked or driven by a winch of any convenient throw or length on one side, and a fly-wheel on the other. Two cranks are formed in the axle, opposite the one to the other, and from each a flat wooden crank-rod descends into the tub or vat. To the lower end of each crank-rod a disk or palm is fixed, the inner surface of which disk or palm is concave, and is either corrugated or perforated with holes, or both, and the two disks or palms are connected by a net-work of netting, rope, or movable bars, the connecting net-work being sufficiently wide to allow free motion to the disks or palms when the winch is turned, and thus forming a flexible basket, into which the clothes and other articles to be washed are placed. An opening is left at the top of the basket to admit of the articles being easily put in and taken out. The crank-rods are guided by horizontal friction-rollers, between which they pass, and underneath there is another horizontal roller at right angles to these, which passes through a vertical slot in each of the rods. This roller thus forms a fulcrum about which the rods rock, so that the disks or palms at their lower ends receive circular motions, while they always travel in opposite directions. These movements keep the water in constant agitation and the clothes in constant rotation, in such manner that the washing is rapidly and effectually accomplished.

In order that the said invention may be most fully understood and readily carried into effect, we will proceed to describe the drawings hereunto annexed.

Referring to the drawings, Figures 1 and 2 are sectional elevations of a washing-machine constructed according to this invention.

In Fig. 1 the side of the machine is removed, and in Fig. 2 the front *a* is the tub, suitable for containing the water or detergent liquid for washing. It is provided with a plug-hole, (not shown,) for drawing off the water or liquid when it is desired to empty the tub.

b b is a frame, with standards fixed to the tub, and serving to carry the cranked axis *c*, which can be turned by means of the winch-handle *d*. At the farther end of the axis *c* is the fly-wheel *e*. Suspended from each of the two cranks, which are opposite the one to the other, there is a flat connecting-rod, *f*. The way in which it is preferred to connect this rod with the crank is shown in detail by Fig. 3.

f' f' are slots formed in the connecting-rods *f*, and *g g* are rollers fitted loosely into these slots. They are mounted so as to be able to turn upon the spindles *h h*, fixed in the sides of the tub *a*. Pins inserted into the spindles *h h* prevent the rollers *g* moving longitudinally upon them.

i i are other rollers, between which the connecting-rods *f* pass. These rollers are reduced in diameter at their ends, and the necks so formed are inserted into holes in cross-bars, which form part of the frame *b*.

k k are concave disks or palms fixed to the lower ends of the connecting-rods *f f*, and it is preferred that these disks or palms should be corrugated or perforated, so that their surfaces may have a more effectual rubbing and squeezing action on the articles to be washed.

l is a net-work connecting the disks or palms *k*, and forming a flexible basket, open at the top to receive the clothes or articles to be washed.

Having thus described the nature of our said invention, and the manner of performing the same, we would have it understood that we claim—

1. The flexible basket for containing the clothes or other articles to be washed, such

basket consisting of the moving disks or palms *k k* and the flexible connecting net-work *l*, or its equivalent, substantially as described.

2. The combination, substantially as hereinbefore set forth, of the two disks or palms, their slotted connecting-rods, the two-cranked axis from which said rods are suspended, the fulcrum-rollers, and the guide-rollers at right angles thereto, whereby the palms are given up-and-down circular motions in opposite directions, move in parallel vertical planes and unchanging paths, and are caused to thoroughly rub the articles between them.

3. The combination, forming a washing-machine, of a tub for containing the water or liquid for washing, a flexible basket, and apparatus for giving a continually-varying form to the said basket, substantially as described.

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