J. W. Groat,

2. Sheets. Sheet. 1.

Washing Mach.

No. 113,762. Patented Apr. 18. 1871.

Fig. 1

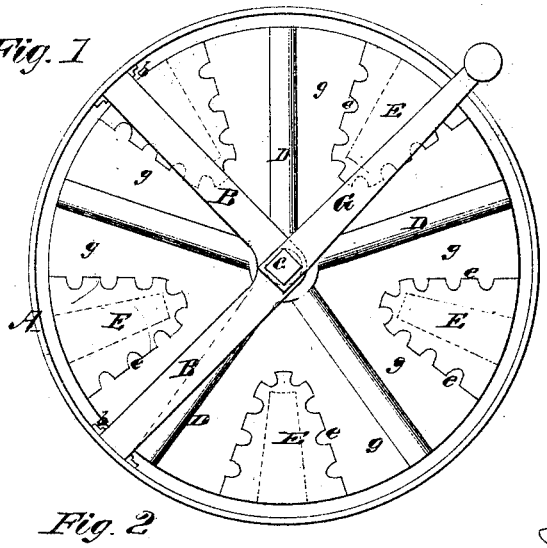


Fig. 2

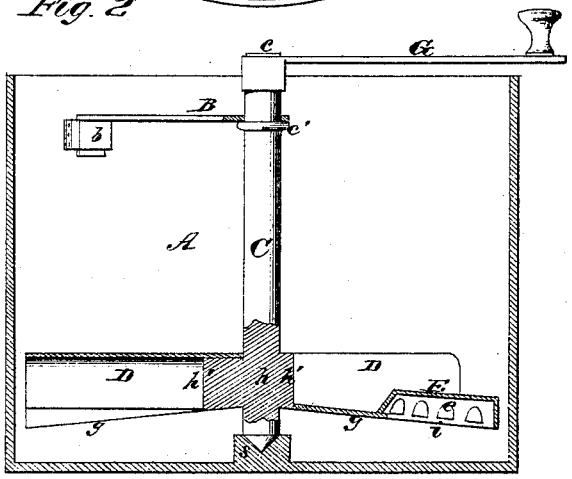
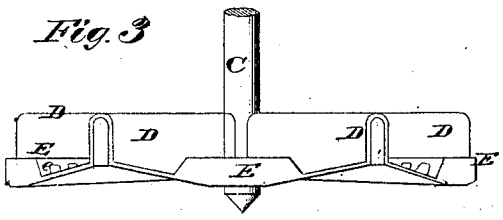


Fig. 3



Witnesses.
R. T. Campbell.
J. N. Campbell.

Inventor
J. W. Groat
by
Mason, Fenwick & Lawrence

2. Sheets, Sheet 2.

J. W. Groat,

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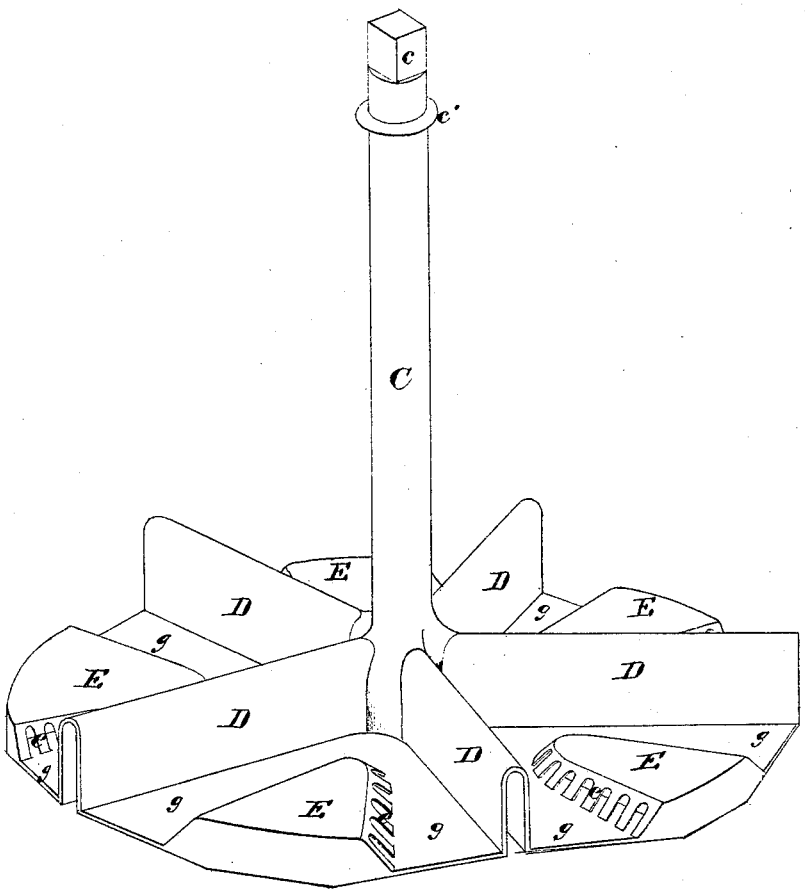

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United States Patent Office.

JULIUS W. GROAT, OF FREMONT, OHIO.

Letters Patent No. 113,762, dated April 18, 1871.

IMPROVEMENT IN WASHING-MACHINES.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, JULIUS W. GROAT, of Fremont, in the county of Sandusky and State of Ohio, have invented a new and improved Washing-Machine; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing making part of this specification, in which—

Figure 1, plate 1, is a top view of the machine complete.

Figure 2, plate 1, is a diametrical section through the machine.

Figure 3, plate 1, is an edge view of the rotary washing-wheel.

Figure 4, plate 2, is a perspective view of the washing-wheel and its shaft.

Similar letters of reference indicate corresponding parts in the several figures.

This invention relates to improvements on washing-machines which have horizontal ribbed or flange-wheels arranged in the bottoms of the vessels which contain the articles while being cleansed.

The washing is performed with such machines by the revolution of their wheels and the rubbing of the ribs and the dashing of the water against the articles.

The nature of my invention consists—

First, in a washing-wheel which is applied to a vertical shaft, and which is composed of radial arched arms open at the bottom, and connected together by double inclined webs or feathers which have openings through them for allowing water to be dashed upward through the wheel against the articles being cleansed.

Second, in the combination of raised covers or guards having grated or perforated sides with the perforated inclined webs between the radial arms, as will be hereinafter explained.

To enable others skilled in the art to understand my invention, I will describe its construction and operation.

In the accompanying drawing—

A represents a wash-boiler, which may be made of any desired capacity and suitably strengthened.

This boiler is cylindrical, and in the center of its bottom is a raised step, *s*, for receiving the conical end of a vertical shaft, C.

Near the upper end of the boiler A, and fastened to it inside, are two flat staples, *b b*, which receive the bent ends of a horizontal triangular support, B, which sustains the shaft C near its upper end, and, by means of an annular rib, *c'*, on this shaft, keeps it down in place while the machine is in operation.

The triangle B is removable, and is slipped out of its staples *b b* when it is desired to remove the shaft C and its wheel.

The upper end *c* of shaft C is prismatic, and receives the end of a handle, G, by which the shaft is rotated or oscillated.

On the shaft C is formed a hub, *h*, from which radiate arms *h' h'*, corresponding in number to the number of arched ribs which are formed on the washing-wheel.

The upper surfaces of the arms *h'* are rounded, to correspond to the rounded or arched form of the ribs on said wheel.

The washing is executed by means of a wheel of peculiar construction, which is preferably made of metal, galvanized to prevent rust, and which is secured, by its hollow radial arched ribs D to the radial arms *h'* of the hub *h* on the vertical shaft C.

The attachments of the wheel to its arms *h'* may be effected by means of rivets or solder, or by both combined.

The wheel consists of a number of raised radial arches, ribs, or beaters, D, having open bottoms and closed arched tops, and rising from webs *g*, which are respectively inclined in opposite directions, and perforated at *i* (see fig. 2) for the free escape of water from below above the webs, where it will be acted by the ribs D and dashed among the clothes.

The openings *i* are in the middle of the spaces between the ribs D, and the webs incline in two directions toward each opening.

To prevent the articles which are being washed from passing through or closing the openings *i*, I arrange a guard, E, over each one of these openings, the sides *e* of which guard are inclined or perforated to allow a free circulation of water through the openings.

It will be seen from the above description, when taken in connection with the annexed drawing, that, when articles to be cleansed are put into the boiler or vessel A upon the wheel, with soap and water, and the wheel is turned back and forth about its axis, the inclined webs *g* will cause water below the wheel to dash up through the openings *i*, where the currents will be struck by the ribs D and dashed against and through the articles; at the same time the ribs D will operate to rub and turn the articles and agitate the water violently above the wheel.

Not only do I obtain an advantage by my improved construction of washing-wheel over others for the same purpose in its operation upon the articles being washed and the agitation of the water in the vessel, but I also obtain an advantage in the con-

struction of the wheel, in that it is very light and very strong and durable, and can be readily manufactured out of sheet metal at a small cost.

Having described my invention,

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

1. The washing-wheel, constructed with radial arched open-bottom ribs or beaters D and inclined perforated webs *g*, substantially as described.

2. The covers or guards E, having perforated sides *e*, and applied over openings *i i* between the radial ribs or beaters D, substantially as and for the purposes described.

JULIUS W. GROAT.

Witnesses:
J. R. BARTLETT,
FRANK BRAYTON.