2 Sheets—Sheet 1.

L. STERNBERGER.

WASHING-MACHINE.

No. 192,027. Patented June 12, 1877.

Fig. 1.

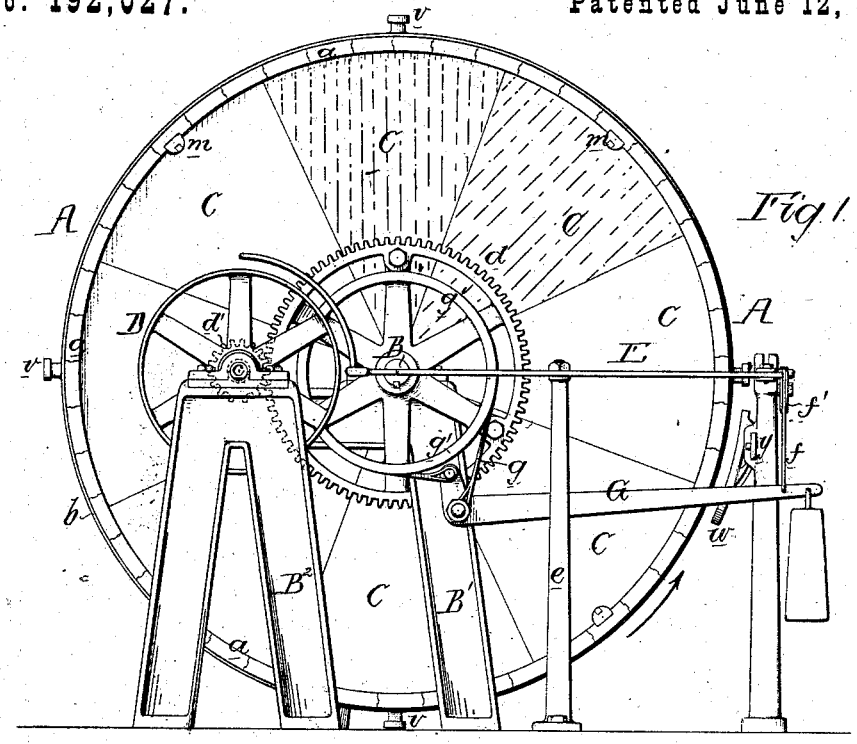
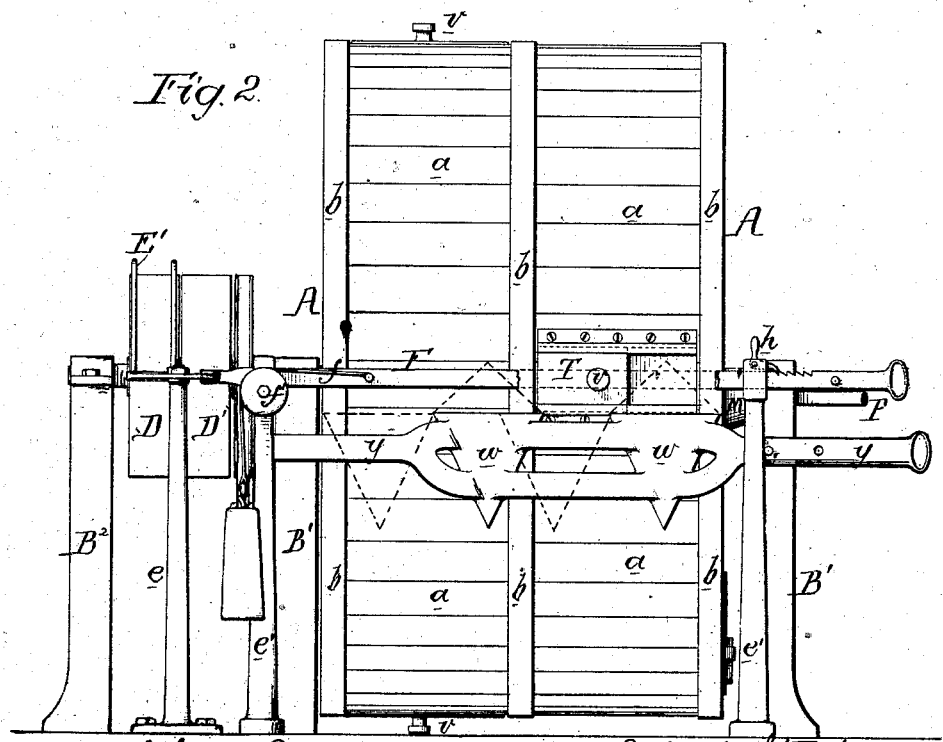


Fig. 2.



Witnesses
John K. Rupertus
Harry Smith

Leopold Sternberger
by his Attorneys
Howson & Sons

2 Sheets—Sheet 2.

L. STERNBERGER.

WASHING-MACHINE.

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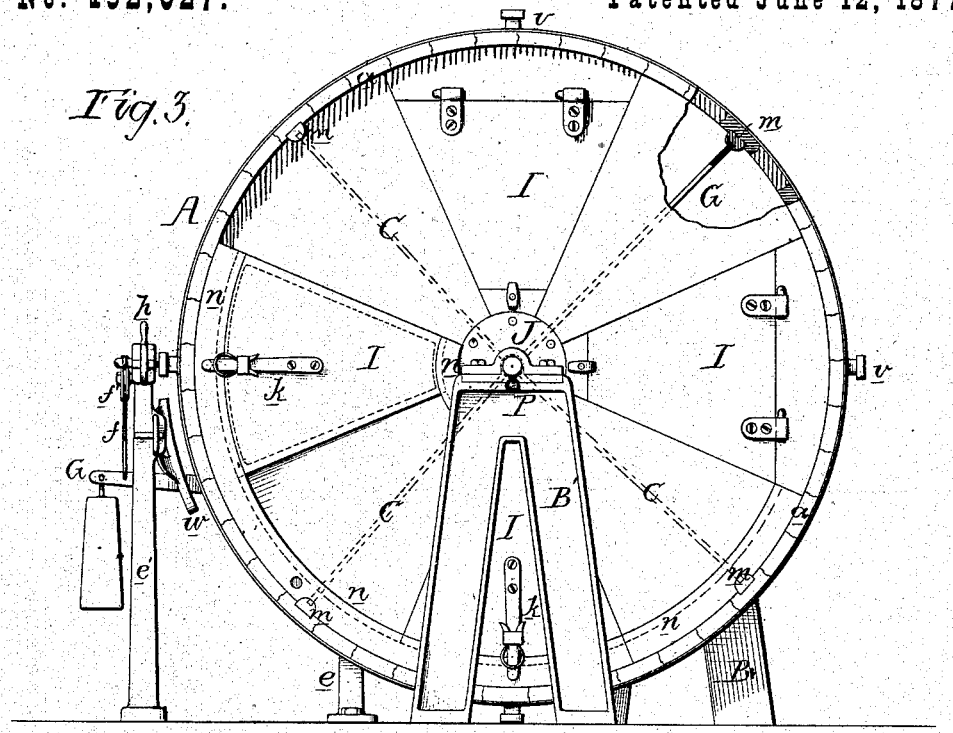
Fig. 3.



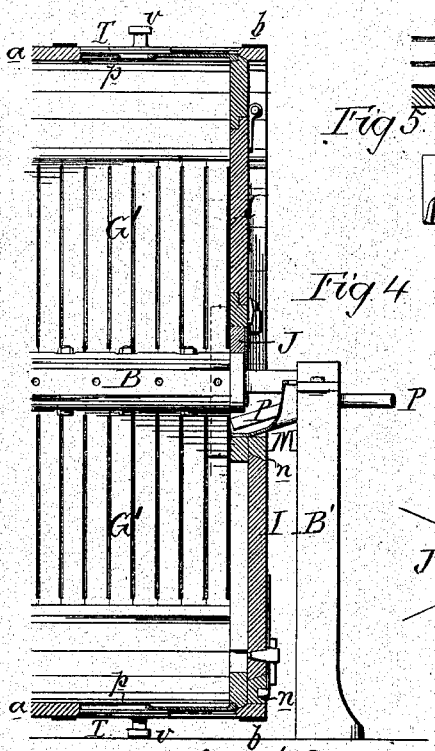


Fig 4

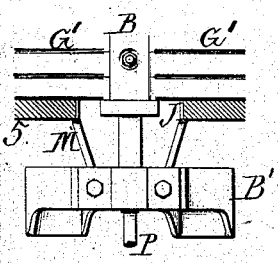


Fig 5.

Fig. 6

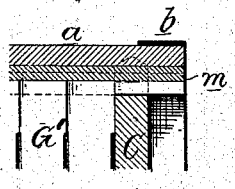


Fig. 7

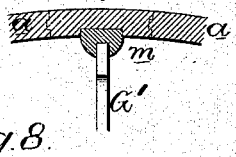


Fig. 9.

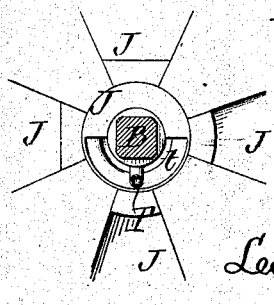
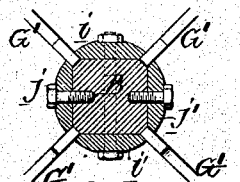


Fig. 8.



Witnesses John K. Ruperetus.
Harry Smith

Leopold Sternberger
by his Attorneys.
Howson & Sons

UNITED STATES PATENT OFFICE.

LEOPOLD STERNBERGER, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN WASHING-MACHINES.

Specification forming part of Letters Patent No. **192,027**, dated June 12, 1877; application filed March 19, 1877.

To all whom it may concern:

Be it known that I, LEOPOLD STERNBERGER, of Philadelphia, Pennsylvania, have invented a new and useful Improvement in Washing-Machines, of which the following is a specification:

This invention consists of certain improvements, fully described hereinafter, in washing-machines, such as are used in factories and are run by power.

In the accompanying drawings, Figure 1, Sheet 1, is a view of one end of the machine; Fig. 2, a front view of the same; Fig. 3, Sheet 2, a view of the end of the machine opposite to that shown in Fig. 1; Fig. 4, a vertical section of part of the machine; and Figs. 5, 6, 7, 8, and 9, detached views, illustrating the construction of different parts of the machine.

A is a cylindrical vessel carried by a shaft, B, which is adapted to bearings on frames B′.

The vessel A is composed of ends, referred to hereinafter, and a body of tongued and grooved staves, *a*, the whole being firmly bound by suitable hoops, *b*.

The end of the cylinder, shown in Fig. 1, is composed of a number of triangular pieces, C, the grain of the wood in each triangular piece being in the direction shown by dotted lines, in order that expansion and shrinkage may not distort the said end.

Bolted or otherwise secured to this end of the cylinder is a cog-wheel, *d*, which gears into a pinion, *d′*, carried by the driving-shaft *c*, the latter having a fast pulley, D, and loose pulley, D′.

To a post, *e*, is hung a lever, E, which carries at one end belt-shifting arms E′, and is connected at the opposite end to one end of a bar, F, carried by posts *e′ e′*, and provided with a suitable handle.

A stud on the bar F is connected to the long arm of a weighted bell-crank lever, G, by means of a cord, *f*, passing over a pulley, *f′*.

The lever G is hung to the frame B′, and its short arm is connected to one end of a strap or band, *g*, the latter being adapted to the periphery of a wheel, *g′*, on the shaft B, and being connected at its opposite end to some fixed object—in the present instance to the fulcrum-pin of the lever—the whole thus constituting the ordinary friction-brake.

It will be seen that by thus connecting the bar which controls the belt-shifter with the friction-brake the rotation of the vessel A will be arrested the instant the belt is shifted from the fast to the loose pulley.

In the upper edge of the bar F are formed a number of ratchet-teeth, to which is adapted a pawl, *h*, hung to one of the posts *e′*, the pawl serving to retain the bar in the position shown in Fig. 2, but permitting the same to be readily released when it is desired to shift the driving-belt from the fast to the loose pulley.

The interior of the vessel A is separated, in the present instance, into four compartments, by means of four slatted partitions, G′, (see dotted lines in Fig. 3,) which extend from end to end of the vessel, and from the staves to the central shaft B, the corners of which are cut off, as shown in Fig. 8, so as to afford a firm bearing for the inner ends of the slatted partitions.

The partitions are retained on the shaft by means of four blocks, *i i′* and *j j′*, secured to the shaft, as in Fig. 8, the blocks *j j′* being readily detachable, and when detached permitting the removal of all the partitions without disturbing the blocks *i i′*. These blocks also serve to cover the metal shaft B, and prevent the water or articles of clothing from coming in contact with it.

The outer end of each of the partitions G′ is adapted to a groove in a strip, *m*, which fits into a recess in one of the staves of which the body of the vessel is composed. (See Figs. 6 and 7.)

The object of this arrangement is to permit the removal of any or all of the partitions G′, when necessary, without disturbing the staves, such removal being accomplished by withdrawing the strip *m* so as to release the outer ends of the slats forming the partition, which, upon being released at their inner ends, can be readily withdrawn.

The end of the vessel opposite that shown in Fig. 1 is represented in Fig. 3, and consists

of a number of trianugular pieces, C, similar to those which constitute the other end, four of these pieces, however, being provided with openings through which access can be had to the four compartments of the vessel. These openings are furnished with doors I, which may be simply hinged and secured by turn-buckles, as shown in the upper portion of Fig. 3, but which I prefer to adapt at the inner and outer edges to curved guides *n n*, the latter permitting the doors to be moved around so as to uncover the openings, and spring-bolts *k* being employed to secure the doors when in either an open or closed condition.

The pieces C, which form this end of the vessel A, do not extend to the central shaft, but are arranged to turn on a fixed ring, J, secured to or forming part of a trough, M, projecting from the bearing B′, while the end of the shaft B of the vessel passes through, and turns in the upper half of this fixed ring J, as well as in the bearing B′.

The lower half of the ring J is cut away, thus forming a recess, *t*, which, as the vessel A revolves, communicates alternately with the different compartments of the same, so that soap or a soapy solution introduced into the trough M will pass into the interior of the vessel without splashing or waste.

Water may also be introduced into the interior of the vessel, when desired, through a pipe, P, Figs. 4 and 9.

In the body of the vessel A are four openings, *p*, each covered with a screen of wire-cloth, perforated plate, or similar material, and each communicating with one of the compartments into which the interior of the vessel is separated, and to guides on the body of the vessel. Adjacent to these openings are adapted sliding valves T, which, as the vessel revolves in the direction of the arrow, are opened or closed, or maintained in either of these conditions in accordance with the position of cams *w*, carried by a bar, *y*, adapted to slots in the posts *e′ e′*, and arranged to act on anti-friction rollers carried by studs *v* on the valves.

When these cams are in the position shown by full lines in Fig. 2, the valves will remain closed, but if the cams are moved to the position shown by dotted lines, the valves will be opened as the vessel revolves.

In the present instance the valves are not arrranged in line, and two cams are necessary to operate them, but when all the valves are in line one cam will be sufficient, and in order to prevent accidents, should the vessel A be rotated in the wrong direction, the upper ends of the cams may be inclined, as shown by dotted lines in Fig. 2, instead of being flat, as shown by full lines.

When the valves T are opened, water in the compartments will escape through the openings *p* when the latter are below the horizontal axis of the machine, so as to be below the level of the water in the compartments, a ready means being thus afforded of draining off the dirty water after the material in the machine has been washed, and of rinsing the material by allowing fresh water to enter the compartments through the pipe P and pass from the same through the openings *p*.

The above-described machine is of large size, and is intended, principally, for use in factories where large quantities of material have to be washed.

The cylinder should be revolved at a comparatively low rate of speed, and the compartments should only be partially filled with material, so that as each compartment passes above the center the mass which it contains will fall upon the slatted partition in advance, and thus be subjected to a beating action, which is the most effectual in causing a thorough cleansing.

An important feature of the invention is the use, in connection with the belt-shifter, of a friction-brake, because it is essential that the rotation of the vessel A should be stopped at the instant the belt is shifted, and any further movement of the vessel prevented, in order that the compartment from which the material has to be removed will be retained in an accessible position.

I claim as my invention—

1. The combination of the vessel A, its shaft B, and friction-brake, and the shaft *c* and its fast and loose pulleys D and D′, with the belt-shifting lever E and friction-brake lever G, all substantially as described.

2. The combination of the bar F with the weighted brake-lever G, strap *f*, and pulley *f′*, as set forth.

3. The combination of the bar F, its ratchet-teeth, and the pawl *h* with the weighted brake-lever G, operated by the bar F, as described.

4. The combination of the vessel A, its shaft B, and partitions G′ with sheathing and retaining strips *i i′* and *j j′*, as described.

5. The combination of the shaft B and partitions G′ with the strips *i i′* and *j j′*, the latter being secured to the shaft so as to be readily detachable, as set forth.

6. The combination of the partitions G′ with the detachable strips *m*, as specified.

7. The body of the vessel, consisting of staves *a* combined with ends composed of triangular strips, the latter having the grain of the wood running radially from the center to the periphery of the vessel, as set forth.

8. The combination of the end of the vessel and its curved guides *n n* with the sliding doors I, as described.

9. The combination of the vessel A, having in its periphery openings covered with screens, with sliding valves T.

10. The combination of the vessel and its valves with an adjustable cam or cams for operating said valves.

11. The combination of the end of the vessel A with the stationary ring J, having a recess or opening, *t*, as and for the purpose set forth.

12. The combination of the ring J with the trough M, as specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

LEOPOLD STERNBERGER.

Witnesses:

HERMANN MOESSNER,
HARRY SMITH.