H. E. SMITH.

WASHING-MACHINES.

No. 195,176. Patented Sept. 11, 1877.

Fig. 2.

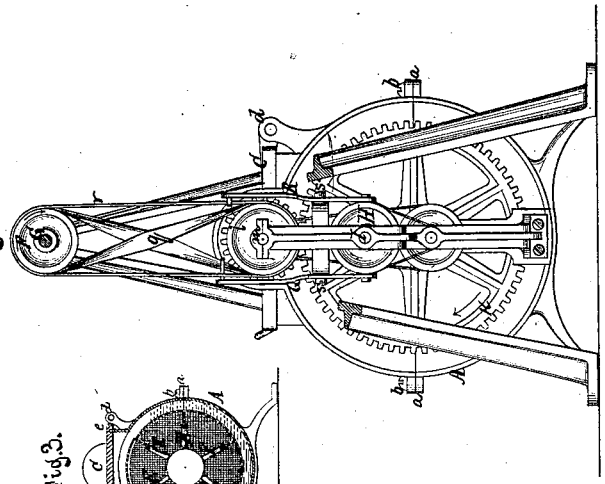


Fig. 3.

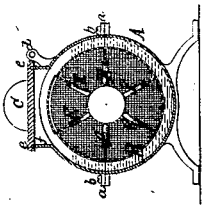
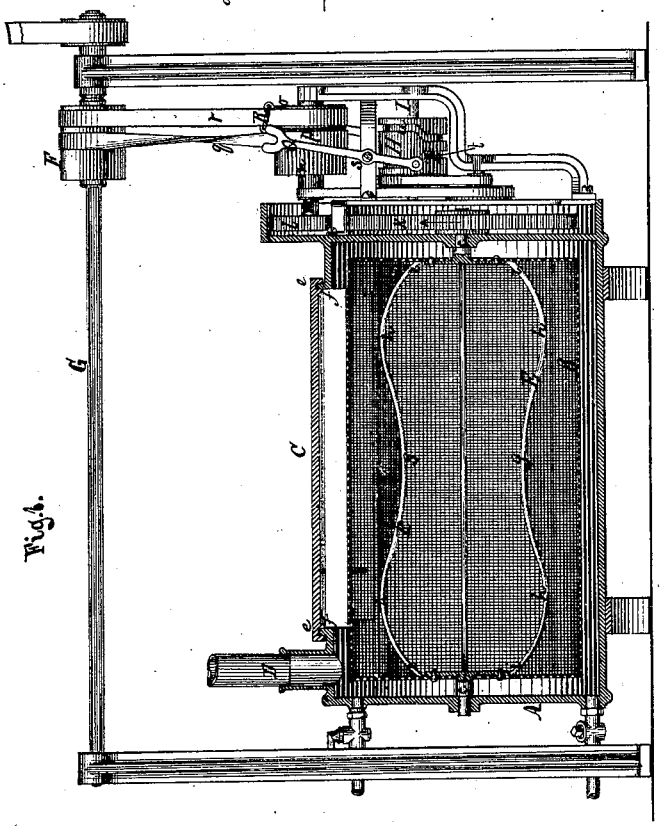


Fig. 4.



Witnesses.

Otto Hufeland.

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UNITED STATES PATENT OFFICE.

HAMILTON E. SMITH, OF NEW YORK, N. Y.

IMPROVEMENT IN WASHING-MACHINES.

Specification forming part of Letters Patent No. 195,176, dated September 11, 1877; application filed February 22, 1877.

To all whom it may concern:

Be it known that I, HAMILTON E. SMITH, of the city, county, and State of New York, have invented a new and useful Improvement in Washing-Machines, which improvement is fully set forth in the following specification, reference being had to the accompanying drawing, in which—

Figure 1 represents a longitudinal vertical section. Fig. 2 is an end view. Fig. 3 is a transverse section on a smaller scale than the previous figures.

Similar letters indicate corresponding parts.

This invention relates to an improvement in that class of washing-machines in which a perforated cylindrical clothes-drum is used, which revolves in a cylindrical case or suds-reservoir.

My invention consists in the combination, with a cylindrical reservoir and a perforated clothes-drum, of ogee-shaped beaters, the edges of which are provided with central swells, depressions, and curved ends, as will more fully hereinafter appear.

The invention also consists of certain other improvements, which will be fully hereinafter described.

In the drawing, the letter A designates a cylindrical reservoir, which is made of cast-iron or any other suitable material, in two halves, which are connected by flanges *a* and screws *b*, so that the same can be readily taken apart whenever it may be desirable for the purpose of cleaning or otherwise. The heads of this reservoir form the bearings for the gudgeons *c*, which extend from the heads of a perforated cylindrical drum, B, so that this drum can revolve freely in the reservoir.

Said reservoir is provided with a cover, C, which swings on hinges *d*, Fig. 2, and in the inner surface of this cover is a groove, *e*, for the reception of a suitable packing, which, when the cover is turned down, bears on a ridge, *f*, that rises from the reservoir. By these means the cover closes down tight, and the escape of vapors and bad odors from the interior of the reservoir is prevented.

From the reservoir rises a pipe, D, which is to be extended out in the open air, so that the vapors and bad odors are carried off and prevented from filling the house or the room in which my machine is used. If the vapors are permitted to escape into the room in which the machine is used, the bad odors soon permeate the whole house, to the great annoyance and injury of the inmates.

The clothes-drum B is provided with a lid which swings on hinges, and is locked by spring-bolts or other suitable fastenings. Said drum is made of perforated sheet metal or of wire netting, and in its interior are secured a series of beaters, E, the edges of which are ogee-shaped, being provided with a swell, *g*, with depressions *h*, one on each side of said swell, and with outwardly-curved ends *i*.

The reservoir A is filled with suds nearly up to its top, the clothes are placed in the drum, and after both the drum and the reservoir have been closed the drum is revolved. By the action of the swells *g* of the beaters the clothes are carried down into the suds, and as the clothes slide off laterally toward the heads of the drum they are caught by the curved ends *i* and carried in toward the middle of the drum, and by these means a uniform action on all the clothes in the drum is produced, and the operation of washing is effected in a comparatively short time.

The beaters E are perforated, so that they move through the suds with comparatively little resistance.

One of the gudgeons of the clothes-drum extends through the head of the reservoir A, and on this gudgeon is mounted a cog-wheel, *k*, which engages with a pinion, *l*, that is secured on a counter-shaft, *m*. On this shaft are mounted two loose pulleys, *n o*, and an intermediate fast pulley, *p*, and from these pulleys extend two belts, *q r*, one twisted and the other open, over a drum, F, mounted on the line or driving shaft G. With the belts *q r* are combined two belt-shippers, Q R, one with each of the belts. These belt-shippers swing on pivots *s*, and their lower or tail ends engage with cam-grooves *t u*, which are formed in a drum, H. This drum is mounted on a shaft, I, to which a slow revolving motion is imparted by any suitable connection with the loose pulley *n* of the twisted belt *q*, or with the line-shaft, G.

In the example shown in the drawing, a chain-wheel is formed on the hub of the loose

pulley *n*, and by means of chains and chain-pulleys the motion is transmitted to the drum H. The motion of this drum is always in one and the same direction, and the twisted belt *q* is of such a width that it never passes entirely off from the loose pulley *n*, and that said loose pulley continues to revolve even if the belt *q* is thrown on the fast pulley *p*.

The cam-grooves *t u* are so timed that the belt-shippers do not both begin to move at the same time; but if the twisted belt *q* is on the fast pulley, (see Fig. 1,) and, after the clothes-drum has made a certain number of revolutions in the direction of the arrow marked on the cog-wheel *k*, Fig. 1, the belt-shipper Q is caused to move so as to throw the belt *q* on the loose pulley *n*, and after this belt has been shipped the belt-shipper R throws the belt *r* on the fast pulley *p*. By imparting to the belt-shippers a successive action, the belts *q r* are prevented from coming in contact with each other, and the motion of the clothes-drum is reversed without difficulty.

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

1. The combination, with a cylindrical suds-reservoir, and with a perforated clothes-drum, B, of ogee-shaped beaters E, the edges of said beaters being provided with central swells *g*, depressions *h*, and curved ends *i*, substantially as and for the purpose herein shown and described.

2. The combination, with a cylindrical suds-reservoir, A, and with a perforated clothes-drum, B, of two belts, *q r*, one twisted and the other open, two belt-shippers, Q R, engaging with said belts, and two cam-grooves, *t u*, for moving said belt-shippers in succession, one after the other, substantially as and for the purpose set forth.

In testimony that I claim the foregoing I have hereunto set my hand and seal this 20th day of February, 1877.

HAMILTON E. SMITH. [L. S.]

Witnesses:
W. HAUFF,
E. F. KASTENHUBER.