(No Model.)

H. E. SMITH.

WASHING MACHINE.

No. 402,865. Patented May 7, 1889.

Fig. 1.

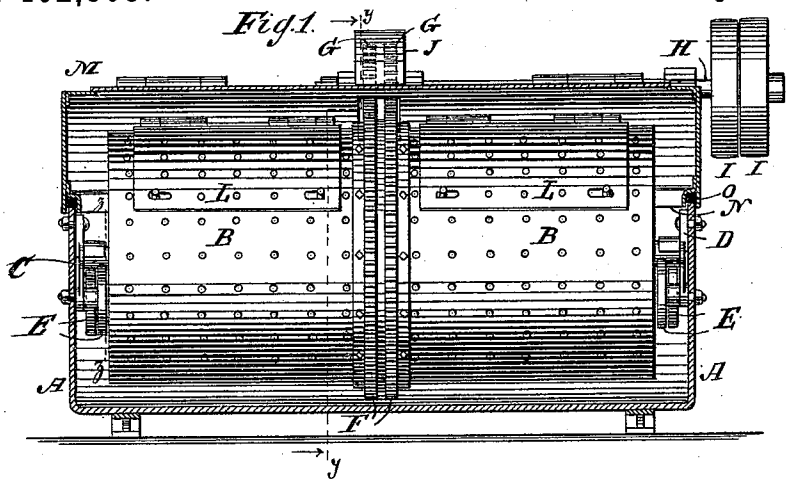


Fig. 2.

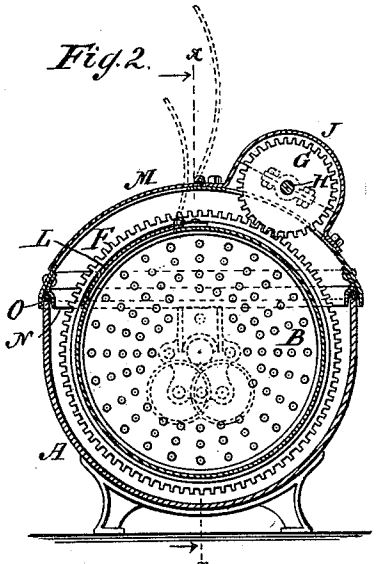


Fig. 4.

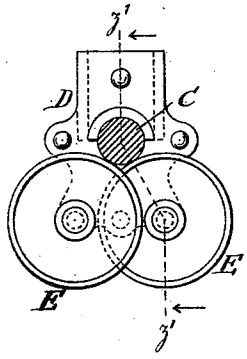


Fig. 5.

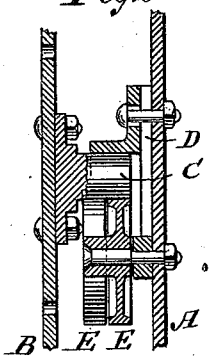
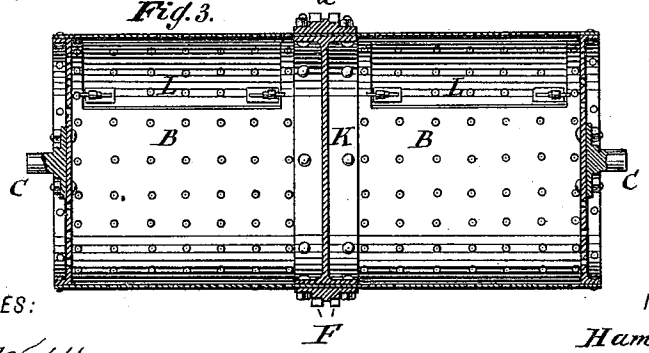


Fig. 3.



WITNESSES:

Eduard Wolff.

William Miller

INVENTOR,

Hamilton E. Smith.

BY Van Santvoord & Hauff

ATTORNEYS.

UNITED STATES PATENT OFFICE.

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

WASHING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 402,865, dated May 7, 1889.

Application filed September 29, 1887. Renewed February 18, 1889. Serial No. 300,390. (No model.)

To all whom it may concern:

Be it known that I, HAMILTON E. SMITH, a citizen of the United States, residing at New York, in the county and State of New York, have invented new and useful Improvements in Washing-Machines, of which the following is a specification.

This invention consists in the construction of washing-machines, as hereinafter described and claimed.

Figure 1 is a longitudinal central section of the device in the plane *x x*, Fig. 2. Fig. 2 is a section in the plane *y y*, Fig. 1. Fig. 3 is a longitudinal central section of a cylinder. Fig. 4 is a section in the plane *z z*, Fig. 1. Fig. 5 is a section in the plane *z' z'*, Fig. 4.

Similar letters indicate corresponding parts.

In the drawings, the letter A indicates a case, and B is a cylinder. From the heads of the cylinder project gudgeons C. On the interior of the heads of the case A are formed bearings D for the gudgeons C. In the example shown in the drawings the bearings D are represented as having anti-friction rollers E for the support of the gudgeons C, whereby said gudgeons and the cylinder B are enabled to rotate easily. By locating the bearings D within the case A the gudgeons C can be so formed as not to project through the case A. As the perforation in the case necessary for the passage of the gudgeons might cause leakage of the contents of the case, such perforation of the case is to be avoided.

A spur-gear, F, is made to embrace the cylinder. Said spur-gear is shown as being made double, or as consisting of two spur-gears. A shaft, H, is journaled on the case A, and gears with the spur-gear F by means of the gear-wheels G. Pulleys I I are shown secured to the shaft in the usual manner, one pulley being fast and the other loose. A cap or cover, J, is shown as protecting the gear-wheels G. The shaft H is made to rotate or oscillate the cylinder.

The cylinder B is provided with a partition, K, which divides the cylinder into two compartments, and which strengthens the cylinder-walls at the place where the spur-gear F is applied to the cylinder. Doors L allow of the introduction into the cylinder-compartments of the articles to be washed.

The case A is made sectional or in the shape of a half-case, so that the upper portion of the case is open. Said sectional case is closed by a cover, M. Near the edge O of the cover M is applied a ledge, N, so as to form a recess on the cover, said recess being formed to receive and embrace the edge of the sectional case, so as to secure a tight closing of the case.

In the operation of the device the cylinder B is first rotated in one direction and then in the opposite direction. Such reversing of the motions of the cylinder B would cause a jarring or striking of the teeth of the spur-gear F and wheel G, if such wheel and spur-gear were single, in consequence of the backlash of said teeth. To prevent such backlash, I make the spur-gear F and the cog-wheel G each of two toothed rims, and place the teeth of one rim or of one set of rims slightly in advance of the teeth of the other rim or of the other set of rims a sufficient distance to destroy such backlash. Such backlash can be prevented, for example, by either placing the teeth of one rim of the wheel G slightly in advance of the teeth of the other rim of said wheel, or by placing the teeth of one rim of the spur-gear F slightly in advance of the teeth of the other rim of said spur-gear, or by placing both the teeth of one rim of the wheel G and of one rim of the spur-gear F slightly in advance of the teeth of the other rim of the wheel G and of the other rim of the spur-gear F. In practice the most convenient plan will be to advance only the teeth of one rim of the wheel G slightly beyond the teeth of the other rim of said wheel a sufficient distance to prevent backlash.

In the example shown in the drawings the spur-gear F is applied at or near the center of the cylinder B, so that the power which actuates the cylinder is centrally applied instead of being applied at or near an end of the cylinder. By applying the power centrally to the cylinder B the power is evenly distributed to both ends of the cylinder and strain of the cylinder is prevented.

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

A washing-machine composed of the case A, having a cover, M, and cap J, the bearings D, located within the said case at each end

thereof and having anti-friction rollers E E, the cylinder B, having gudgeons C C, engaging said anti-friction rollers, the spur-gear F, surrounding the central portion of the cylinder, and the driving-gear G, meshing therewith and located beneath the cap J, substantially as described.

In testimony whereof I have hereunto set my hand and seal in the presence of two subscribing witnesses.

HAMILTON E. SMITH. [L. S.]

Witnesses:

W. C. HAUFF,

E. F. KASTENHUBER.