(No Model.)

C. HESSE.

WASHING MACHINE.

No. 403,669. Patented May 21 1889.

Fig. 6.

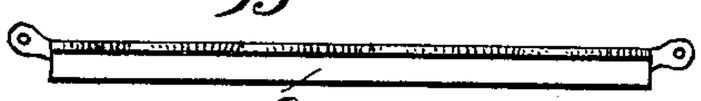


Fig. 1.

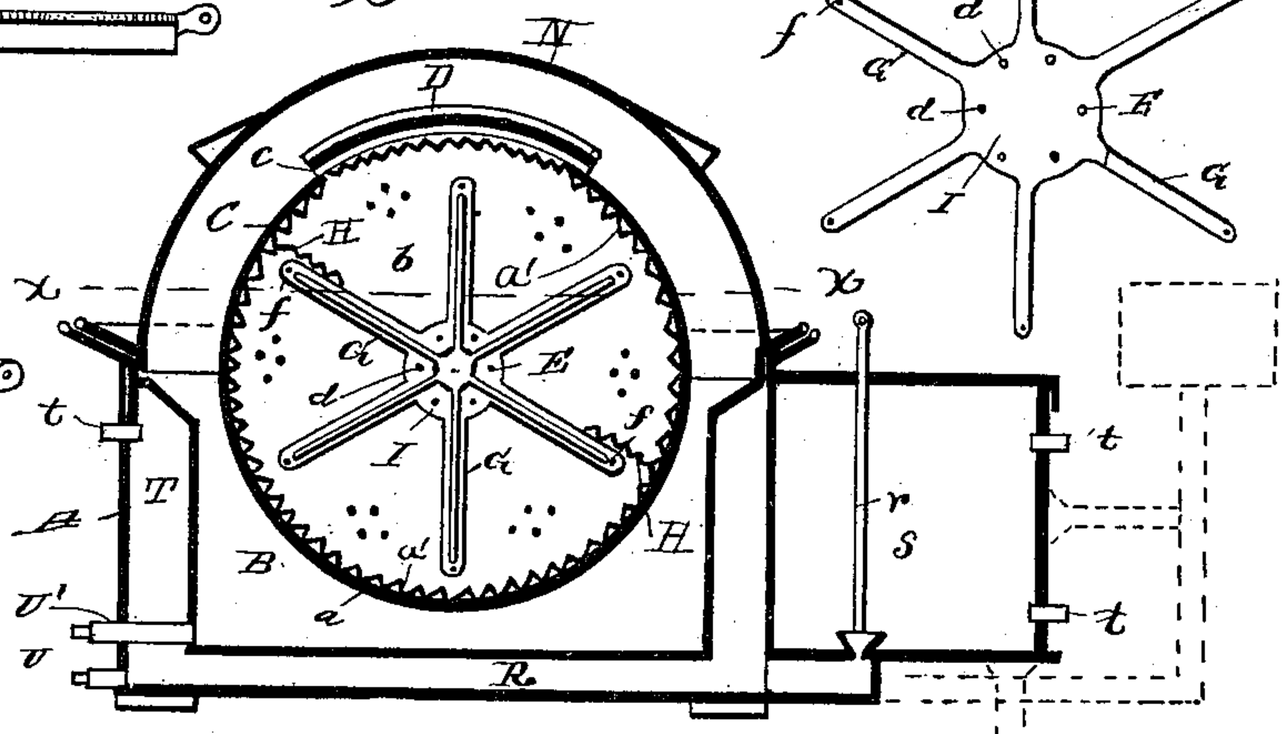


Fig. 3.

Fig. 7.

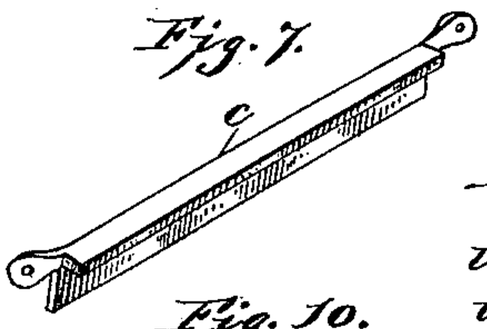


Fig. 10.

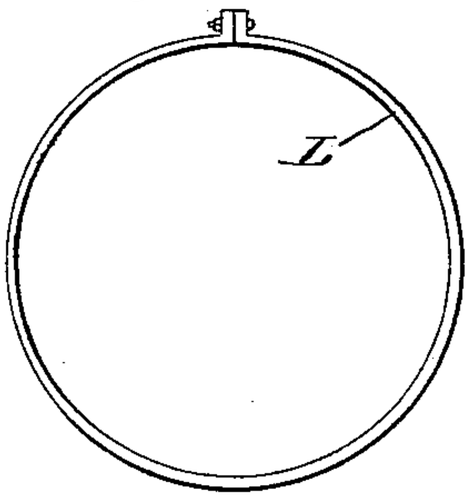


Fig. 2.

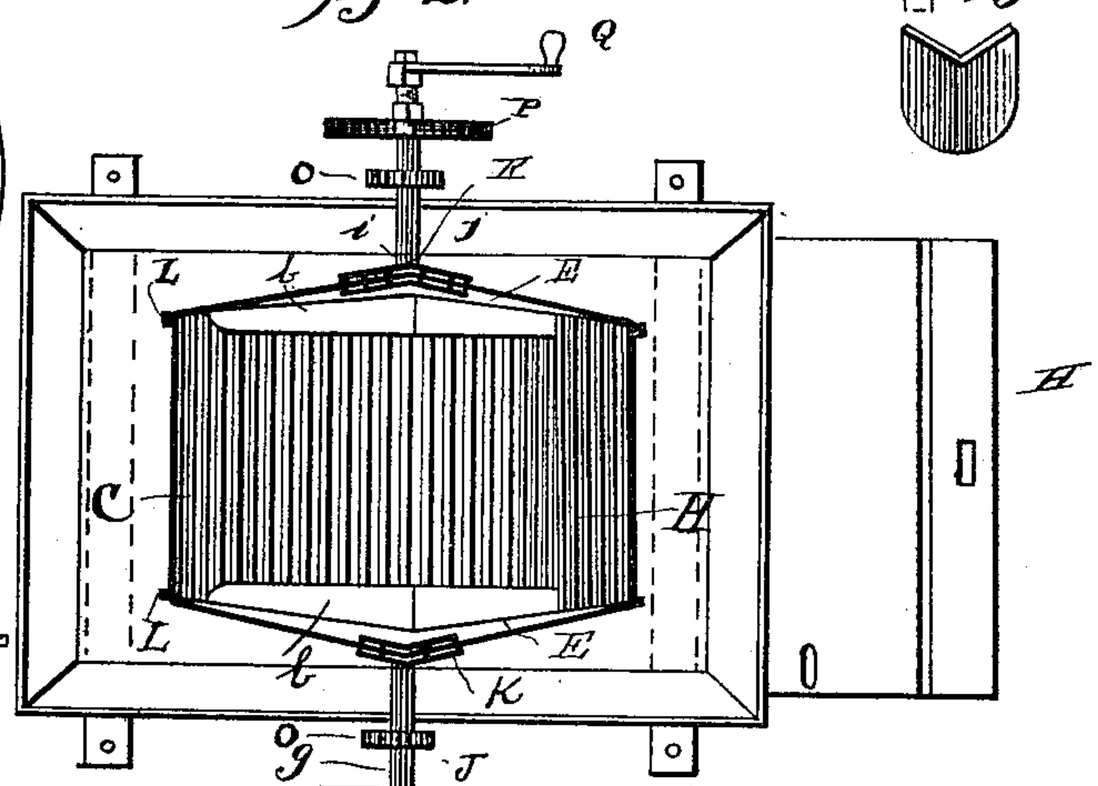


Fig. 13.

Fig. 4.

Fig. 9.

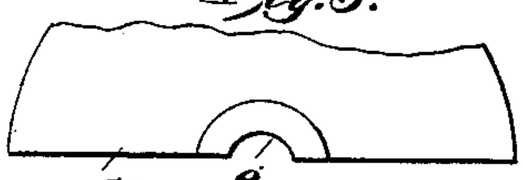


Fig. 5.

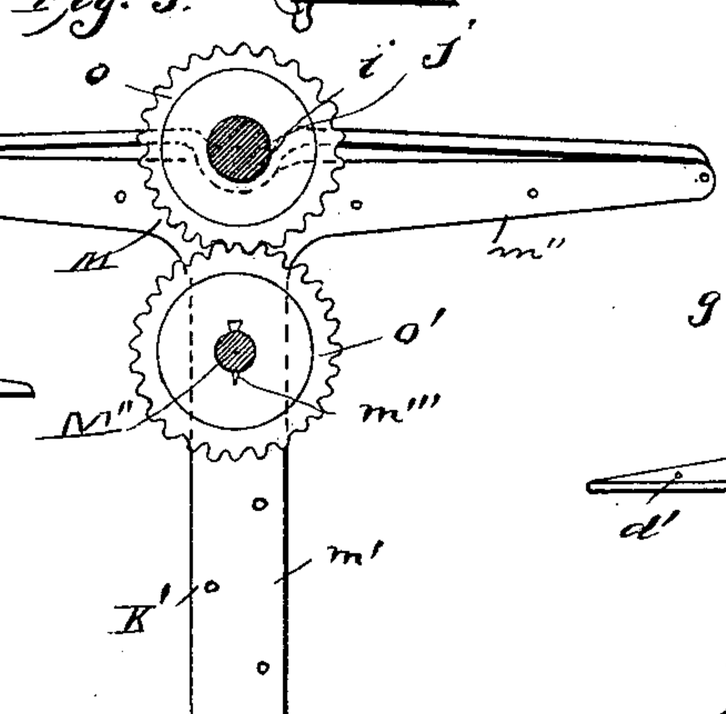


Fig. 8

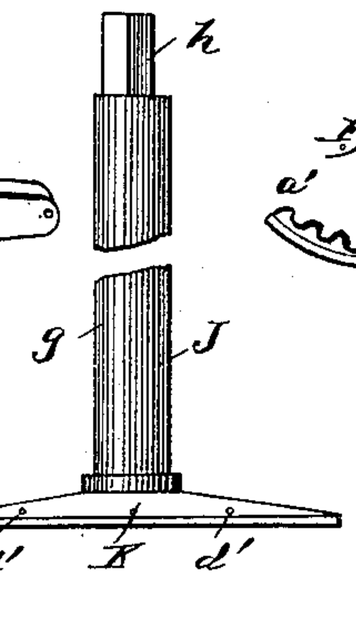
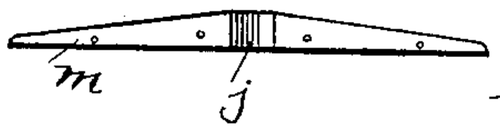


Fig. 12

Fig. 11



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Attorney

UNITED STATES PATENT OFFICE.

CHARLES HESSE, OF DANVILLE, ILLINOIS.

WASHING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 403,669, dated May 21, 1889.

Application filed October 4, 1886. Serial No. 215,275. (No model.)

To all whom it may concern:

Be it known that I, CHARLES HESSE, of Danville, in the county of Vermilion and State of Illinois, have invented certain new and useful Improvements in Washing-Machines; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form part of this specification.

My invention relates to that class of washing-machines in which a rotary closed drum or cylinder revolves through a suds-box, by which operation the contents of said drum are continually agitated and displaced by its revolution.

It consists in certain details of construction, arrangement, and combinations of parts, which I shall now proceed to fully describe, and the particular points of novelty in which will be specifically designated in the appended claims.

Referring to the accompanying drawings, Figure 1 is a longitudinal sectional view through the complete machine. Fig. 2 is a horizontal section of the same, taken on the plane of line *x x*, Fig. 1. Fig. 3 is a detail view of one of the interior ribbed braces of the drum-head. Fig. 4 is a section of the same. Fig. 5 is a detail view, in elevation, of one of the exterior braces, together with the gearing mechanism for the revolving shaft. Figs. 6 and 7 are detail views of the side strips or flanges for guiding the removable door of the clothes holder or drum. Fig. 8 is a view of one of my improved gudgeons. Fig. 9 is a view of the cover for the suds-box, the upper portion being broken away. Fig. 10 is a detail view of one of the strengthening-hoops for the sides of the drum. Fig. 11 is a top plan view of the brace shown in Fig. 5. Fig. 12 is a detail view of the corrugations secured upon the interior surface of the side of the drum, shown curved instead of angular. Fig. 13 is a detail view of an angle-piece for strengthening the corners of the machine.

Like letters of reference mark the same parts in all the figures.

Referring to the drawings by letter, A is the frame or casing for holding the ordinary suds-box B and the revolving drum or clothes-holder C. This drum is made of any suitable sheet metal of the form shown, having circular sides *a* and convex or conical ends *b*. The interior or sides of this cage or drum are provided with corrugated metal, *a'*, which extends entirely around the interior circular side thereof, and is suitably secured to the sheet metal, *a*, by rivets or otherwise.

D is the door through which the clothes are inserted and withdrawn, and it consists of a plate of sheet metal similar to the material of the drum and covered on the inside with corrugated metal secured and guided by the side strips, *c c*, which are riveted through holes, as shown in Figs. 6 and 7, to a projecting flange (not shown) of the head or end *b*, which projects slightly beyond the surface of the sides *a*. Thus the door D is shoved in between the guide-strips *c c* until it covers the opening in the periphery of the side *a* and presses up against another strip (not shown) similar to *c c*, placed at right angles to said strips and parallel to the edge of the opening, the other end of the door being securely fastened by any suitable device.

E E are the improved interior convex braces, which serve the double purpose of both bracing the heads of the drum and of lifting the clothes from the bottom thereof, thereby causing the contents to fall or slide over the corrugations *a'* during the revolution of the cage. These braces are designed to be used in large machines, where great strength and security are required, and they consist each of the ribbed radiating arms G G, having the two transverse corrugated lifting-bars H H and the central circular portion, I, provided with rivet-holes *d d*, all cast convex in shape to fit the heads *b* and in one piece. The braces are securely fastened by rivets through holes *f f* in the arms G G to the drum-heads. These lifting-bars each consist of a single straight strip of sheet metal longitudinally corrugated, projecting inwardly toward the center of the drum, and extending from and secured to an arm, G, of one end brace, E, to a corresponding arm, G, of the brace E at the opposite end of the drum.

J J are the gudgeons of the drum. They

consist each of the stem or shaft *g*, having the rectangular end *h* for the handle or crank and the convex circular plate K, of the same size as portion I, and provided with rivet-holes *d' d'*, said parts being all cast in one single piece. Thus it will be readily seen that after the braces E E are secured in the before-described manner to the drum-heads the gudgeons J J are fitted over each apex of said heads and are secured rigidly thereto by rivets passing through the plates K K, the metal heads *b*, and the portions I I of the braces E, thereby rendering the drum-heads perfectly rigid and braced.

The side of the drum is made more secure against the heavy pressure within by two metal hoops, L L, surrounding the drum and fastened in the manner shown in Fig. 10.

Centrally on each side of the frame or casing A is a semicircular depression, *i*, in which the gudgeons rest and have their bearing. Immediately underneath these depressions is secured the T-brace M, which consists of the central flat bar *m'*, the ribbed arms *m''* at right angles to bar *m'*, the semicircular depression *j*, coincident with depression *i*, and the short shaft M'', formed on the bar *m'*, said bars and shaft being all cast in one single piece. This brace is riveted to the sides of the frame or casing through the holes K', with the depression *j* fitted under the depression *i*, thereby bracing and strengthening the sides of the machine and supporting the bearing of the gudgeons.

N is the cover, (shown in Fig. 9,) designed to fit over the suds-box, and is provided with two corresponding depressions, *e e*, similar to those of the sides and coincident therewith.

The shafts *g g* of the gudgeons J J have the gear-wheels O O keyed rigidly thereon near the bearings *i i* of the sides of the machine. These wheels O O each mesh with the wheels O' O', loosely mounted on the shafts M'' M'', and secured thereon by pins *m''' m'''*, as shown in Fig. 5. The object of these two wheels O O O' O' is to make the shafts *g g* revolve more easily.

In very large machines, where it is desirable to run the apparatus by steam, I provide the two fly-wheels P P, keyed to the shafts *g g* midway between the journal-bearing and the handle Q. To these wheels P P may be attached suitable belts for imparting rotary motion to said shafts.

My device is provided with the usual water-jacket, R, and reservoirs S, the water in which reservoir may be heated by any suitable means, such as gasoline, as shown. This reservoir communicates with the jacket R by a suitable valve operated by valve-rod *r*, as shown.

It is obvious that the reservoir S and heating device therefor may be dispensed with, if desired, and the steam-jacket T and steam-pipes *t t* may be substituted for conveying steam underneath the suds-box or supplying hot water to jacket R.

U is a pipe for drawing off the water from steam-jacket R, and the pipe U' is for conveying off the waste water of the suds-box, both which pipes may be provided with suitable plugs, as shown, or other device for controlling its action.

The operation of my invention may be described as follows: The parts being in position shown in Fig. 2, with the gudgeons securely bolted through the drum-heads and resting in their bearing-ports in the sides of the casing, the soiled clothes are now introduced through the door D, which is then closed and securely fastened. Motion is then imparted to the drum or cage by the crank-handles or the belts on the fly-wheels. During the revolution of the drum the corrugated bars H H serve to catch the clothes or contents, carrying them up to the top, where they are released by the descent of the said bar and allowed to slide down over the corrugations *a'* until again taken up by the other bar, and in such manner the operation is continued for the desired length of time.

My invention, when provided with the devices hereinbefore described, is of great strength and security and operates to great advantage, especially in hotels and laundries, where large machines of this construction are required.

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. In a boiler washing-machine, the combination of the outer casing, the suds-box, the revolving drum located therein and provided with convex heads, strengthening-loops extending around the periphery of the drum, the interior braces secured to the heads of said drum and each cast in one piece, and consisting of a central convex portion, I, to fit in the closed concave center of a head and having a series of transverse rivet-holes, and the ribbed radiating arms G, having rivet-holes *f*, the gudgeons for supporting and revolving the drum, each cast in one piece separate from the drum, and the braces E, and consisting of a short stem, *g*, at the inner end provided with a flat concave plate, K, to fit snugly upon the exterior of the closed convex center of a head, said plates K and the closed centers of the heads being provided with transverse rivet-holes registering with the holes *d* in centers I, whereby the plates K and centers I are secured to the drum-heads by the same rivets passing through the same, all combined and operating substantially as described.

2. A washing-machine comprising a suds-box, a rotary drum located therein and having a corrugated periphery and convex heads and provided with a suitable opening normally closed by a door, the gudgeons for supporting the drum, each consisting of a short stem at the inner end provided with a circular concave plate fitting upon a closed exterior center of the convex drum-heads, the

interior braces secured to the heads of said drum and each cast in one piece, and consisting of a central convex portion corresponding to the plates of the gudgeons and fitting in the interior center of a head, and the ribbed radiating arms projecting inwardly to catch the clothes, the said plates of the gudgeons and centers of said braces being riveted together through the drum-heads, and a pair of lifting-bars each composed of a single straight piece of sheet metal longitudinally corrugated and extending from one end of the drum to the other, secured to the end of an arm of each brace and projecting inwardly, whereby the clothes are lifted by said bars and the arms of the braces, substantially as described.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

CHARLES HESSE.

Witnesses:
JULIUS SOLGER,
F. R. HARDING.