

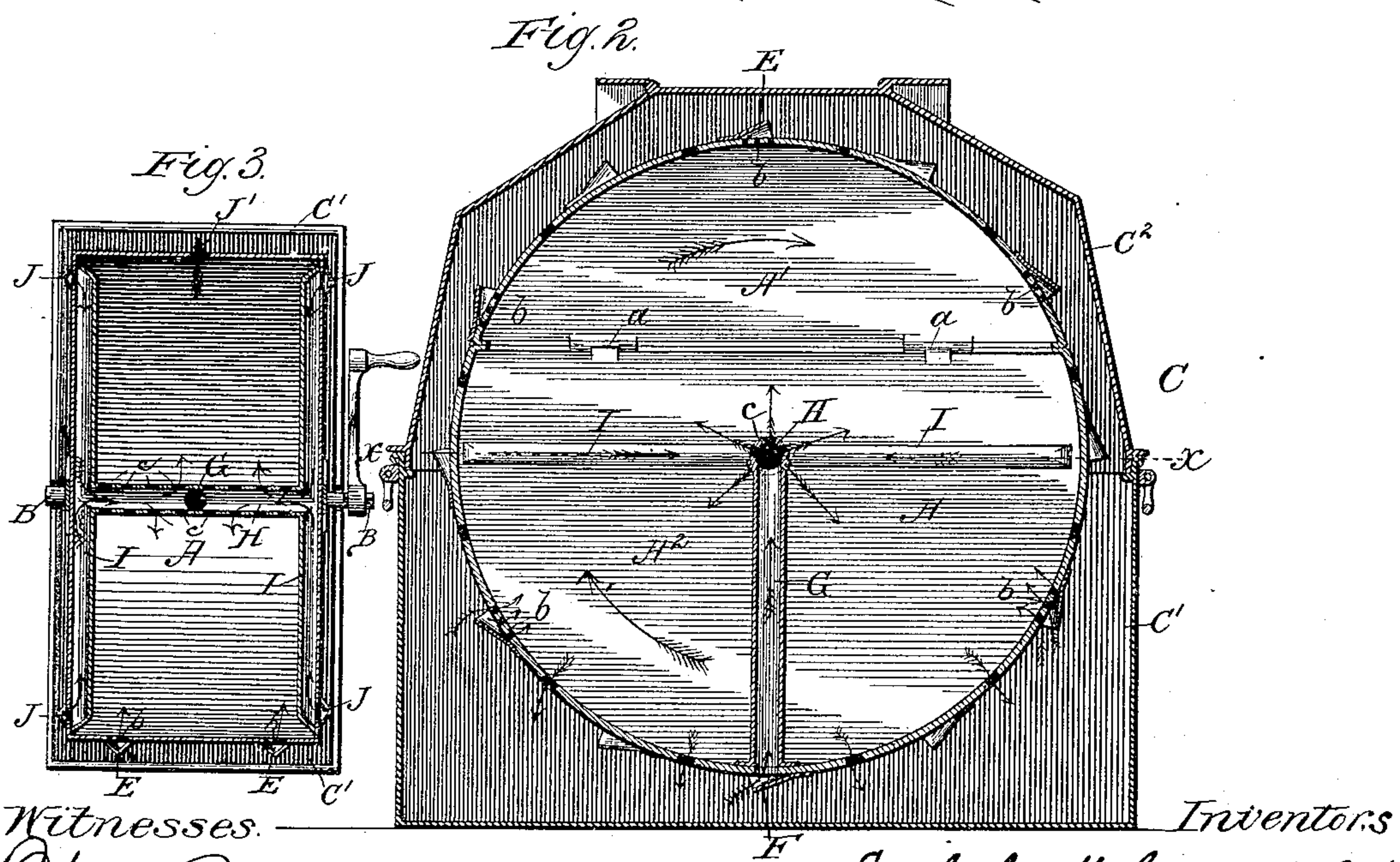
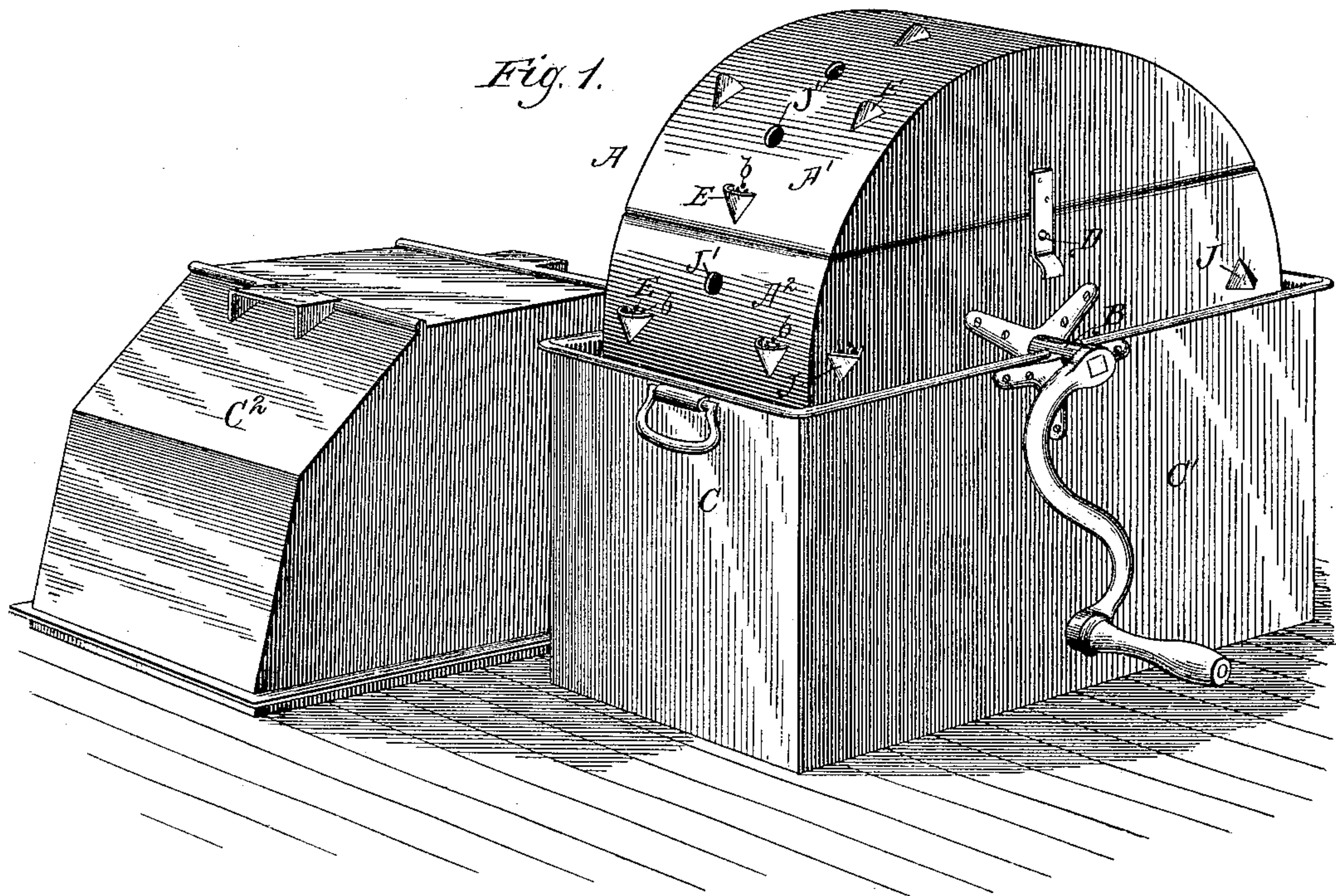
(No Model.)

E. S. McCALLISTER & W. HOAGLAND.

WASHING MACHINE.

No. 350,758.

Patented Oct. 12, 1886.



Witnesses.

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UNITED STATES PATENT OFFICE.

EARL S. McCALLISTER AND WILLIAM HOAGLAND, OF ELGIN, ILLINOIS,
ASSIGNORS, BY MESNE ASSIGNMENTS, TO SAID McCALLISTER, AND
JAMES B. LANE AND ROBERT P. LANE, BOTH OF ROCKFORD, ILL.

WASHING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 350,758, dated October 12, 1886.

Application filed August 31, 1885. Serial No. 175,764. (No model.)

To all whom it may concern:

Be it known that we, EARL S. McCALLISTER and WILLIAM HOAGLAND, both citizens of the United States, and residing at Elgin, county of Kane, and State of Illinois, have invented certain new and useful Improvements in Washing-Machines, of which the following is a specification.

This invention relates to improvements in washing-machines, in which the clothes are contained in a perforated receptacle revolved within a closed shell or casing, and in which water supplied to is forced through the clothes by a rapid rotation of the perforated receptacle.

The object of this invention is to provide means for conducting the water from peripheral openings in the clothes-receptacle to a perforated axial pipe, and to combine with such a connection means for forcing the water into said axial pipe, whereby the momentum of the said clothes-receptacle may be utilized to overcome centrifugal force and the gravity of the water, and the water be discharged outwardly through the perforations in said axial pipe.

Another object is to combine with such a device means for forcing water and steam contained in the casing directly into the clothes through the periphery of the clothes-receptacle, whereby the clothes contained in the receptacle may be subjected to a constant stream of changing water forced simultaneously through the clothes from the center outwardly, and vice versa, and the gravity of the water in conjunction with centrifugal and centripetal forces utilized to promote a thorough and rapid cleansing of the clothes.

We attain these objects by devices illustrated in the accompanying drawings, in which Figure 1 is a perspective view of a machine embodying our invention, with the cover of the casing removed to one side; Fig. 2, a central vertical section; Fig. 3, a horizontal section on line *x x*, Fig. 2.

Similar letters of reference indicate the same parts in the several figures of the drawings.

A indicates a cylindrical clothes-receptacle supported upon suitable trunnions, B, secured

to its sides in any well-known manner, which trunnions have their bearings in suitable boxes provided at the sides of the shell or casing C, one of them being sufficiently elongated to project beyond the said casing and have its end squared for reception of a crank-handle, to which power is applied for rotating the said receptacle. However, it is obvious that our machine may readily be adapted for operation by steam-power for use in laundries and other places of a similar character where a large amount of washing is done, and in such cases a belt-pulley would be secured upon the said trunnions, instead of the crank-handles, as in the case of hand-power machines.

The casing C, within which the clothes receptacle revolves, is preferably composed of a main body, C', for containing the water, and a removable cap or cover, C'', fitting closely thereon, and constituting, in connection with the main body, a steam-chamber for confining the steam generated from the heated water in the main body of the casing.

The clothes-receptacle which is supported by and revolves upon the trunnion B, within the casing C, as before described, is preferably cylindrical, as shown; but it is obvious that it may be of any other form—as, for example, polygonal—and yet be capable of its present function.

Some means must be provided for introducing the clothes into the receptacle, and to this end the said receptacle is made in two parts, A' and A'', as clearly shown in Fig. 2, hinged together at *a*, and prevented from opening when in operation by a spring-catch, D, of any well-known form and construction. The receptacle is provided at intervals on its periphery with a series of perforations projecting over which on the outside of the casing are a corresponding number of cups or hoods, E, said cups having the shape of a half-funnel and secured to the periphery of the receptacle in such manner that the open or flaring end of the hood will project in the direction of rotation of the cylinder, as indicated by arrow. (See Fig. 2.) These cups or hoods during the entire time the perforations are submerged, while the cylinder is being rotated, give di-

rection to and cause the water to be forced through the perforations, and the momentum of the said receptacle, together with the converging walls of the cups, serve to forcibly inject the water into the center of the receptacle and through the clothing therein contained. One of these cups, F, serves as a hood for the outer end of a pipe, G, leading radially from the periphery to the center of the receptacle, where it unites with another pipe, H, extending axially through the receptacle, this latter pipe having a series of perforations at *c* to permit the egress of the water forced therein. This pipe H receives an additional supply of water through the passages or pipes I, extending radially across the ends of the cylinder and having their open ends hooded by cups J, secured to the outside face of the ends, as shown in Fig. 1. The momentum of the rotating receptacle, acting in conjunction with the half-funnel-shaped cups of the pipes, forces the water inwardly through the pipes by centripetal force in the same manner as the water is forced through the hooded peripheral perforations in the cylinder. Water supplied to the axial pipe H in this manner is discharged through the perforations therein and with considerable force by centrifugal force, and hence there is a constant supply of water forced inwardly through the peripheral perforations and outwardly through the perforations in the axial pipe, and as a result the water is constantly changed in and forced through the clothes in directions best promoting their cleansing. The cups and pipes also serve to form hydrostatic columns for forcing the water through the perforations and pipes, for in passing out of the water they will be partially or wholly filled with the water, by reason of the momentum acquired, and the gravity of the water, in conjunction with the momentum, will exert a hydrostatic pressure, forcing the water through the perforations into the receptacle. This hydrostatic pressure is particularly effective in the pipes G and I, which carry water in a sufficient amount to nearly equalize the pressure from the peripheral openings, and to promote this end we prefer to have the perforations *c* in pipe H of a larger size than the other perforations.

The casing or shell is designed to be only partially filled with boiling water, and hence the upper part thereof will constitute a steam-chamber. During their passage through this chamber the cups or hoods will act upon the steam in the same manner as upon the water, and force the steam through the perforations and passages or pipes into the receptacle, thereby utilizing to the greatest limit the cleansing properties of both water and steam.

For the purpose of permitting the exit of the used water, dirt, and other foreign substances that may accumulate within the receptacle, we have provided a series of perforations, J', located at intervals intermediate the hooded peripheral perforations, preferably larger than the said peripheral perfora-

tions, through which the centrifugal force resulting from the rotation of the receptacle will force the said substances.

The arrows in Fig. 2 indicate the direction in which the water is forced inwardly and outwardly through the several perforations.

In using the machine, and after the casing is partially filled with hot water and the clothes introduced into the receptacle, power is applied to the crank-handle and the receptacle rotated. As the receptacle revolves, its momentum, in connection with the hoods, forces the water into the receptacle, and, owing to the forces already described, the water and steam are directed through the clothes in opposite directions, while at the same time the clothes are shifted in the receptacle, and will thereby be subjected to the fullest extent to all of the advantages common to the forcible injection of hot water and steam through the interstices of their fabrics.

In conclusion, we may add that although in the drawings we have illustrated only one radial pipe leading from the center of the periphery to the axial discharge-pipe, and only two sets of radial pipes along the end walls of the receptacle, we do not limit ourselves to this construction, for it is obvious that any number of such pipes might be employed without a substantial departure from our invention.

Having described our invention, what we claim, and desire to secure by Letters Patent, is—

1. In a washing-machine, a revolving receptacle provided with a pipe extending radially in the receptacle, said pipe opening at one end at the center of said receptacle and at the other end in the periphery thereof, in combination with a hood projecting partly over the said peripheral openings, substantially as described.

2. In a washing-machine, a revolving receptacle provided with a perforated axial pipe and pipes opening therein, and opening at their outer ends in the ends of the receptacle, and hoods projecting partially over said outer ends, substantially as described.

3. In a washing-machine, a revolving receptacle having a series of peripheral perforations in said receptacle, and a corresponding series of hoods projecting partially over said perforations, whereby water and steam are forced into the receptacle through said perforations, in combination with a perforated axial pipe, radial pipes connected therewith and opening on the periphery and ends of said receptacle, and hoods projecting partially over said openings, whereby water and steam are forced into and discharged through the perforations in the said axial pipe into the receptacle, substantially as described.

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