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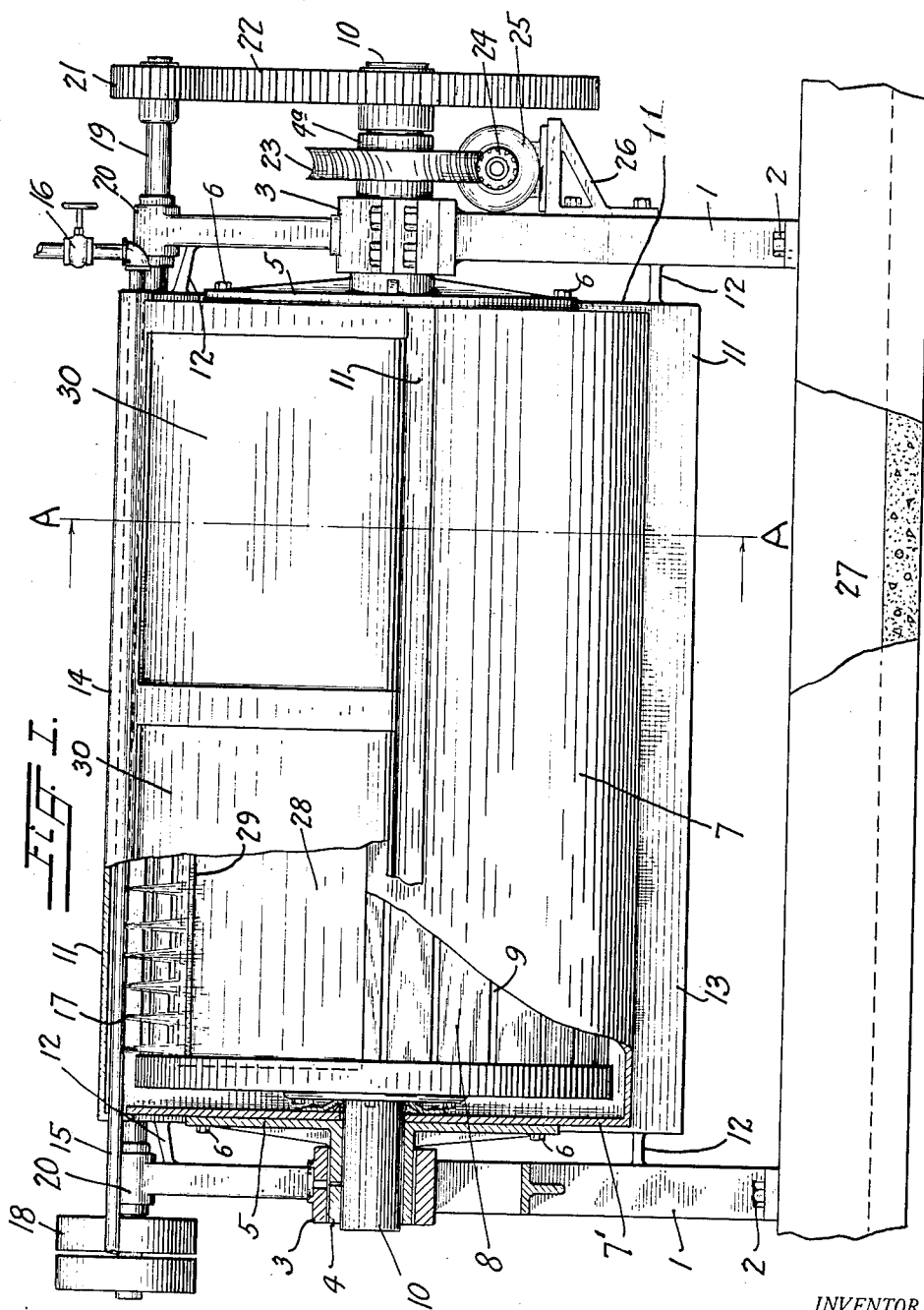
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CYLINDER LAUNDRY MACHINE

Filed Dec. 2, 1929

3 Sheets-Sheet 1



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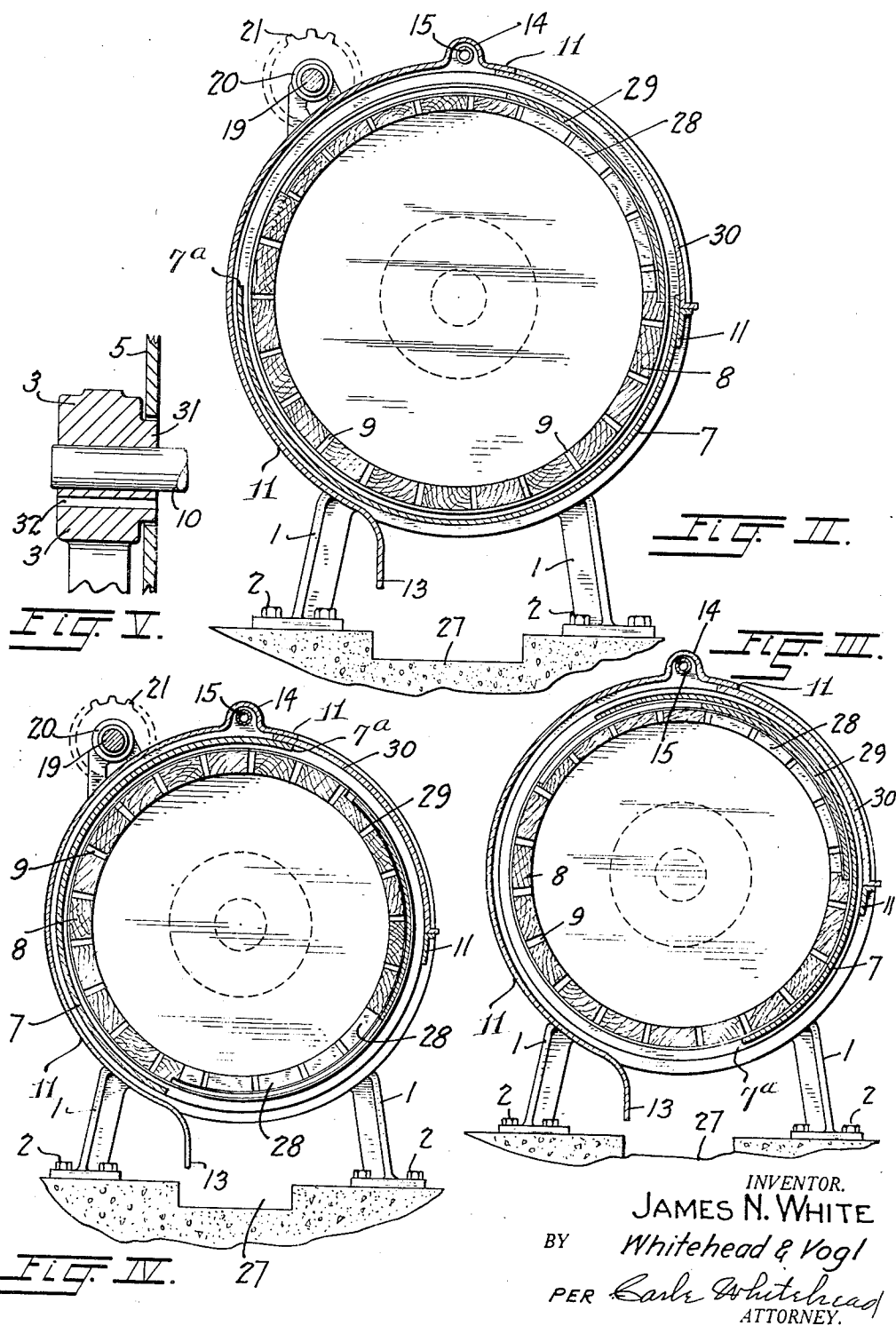
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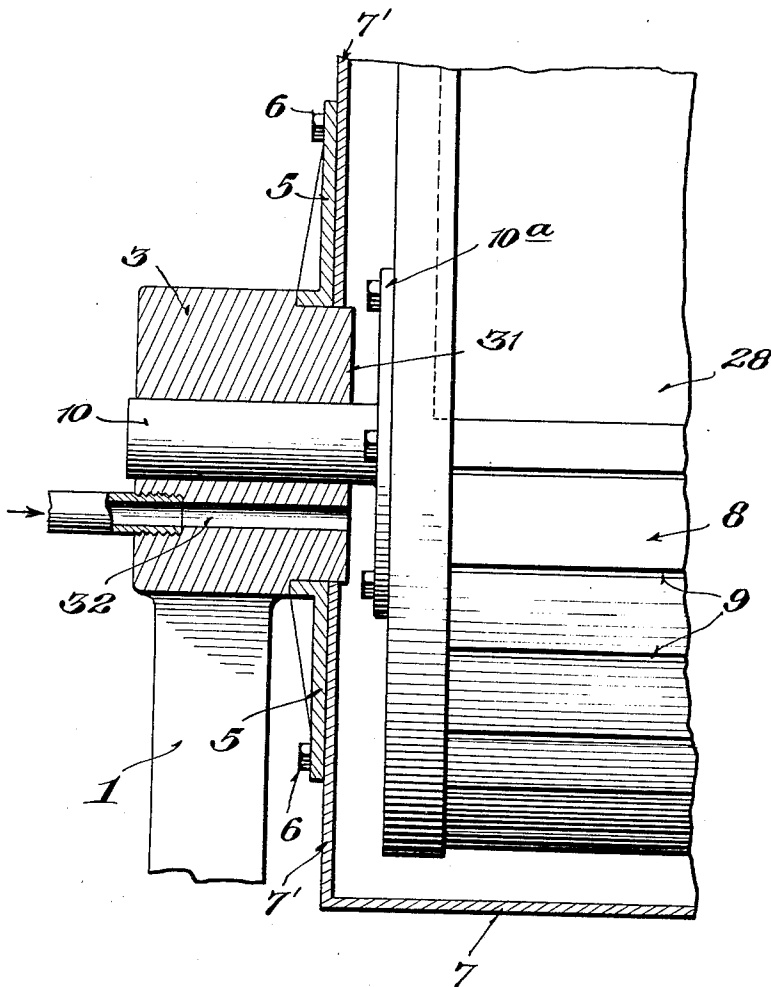
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Fig. VI



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CYLINDER LAUNDRY MACHINE

Application filed December 2, 1929. Serial No. 411,061.

This invention relates to cylinder laundry machines and particularly to that class thereof in which there is a revolubly mounted cylindrical clothes container enclosed by an outer cylindrical casing, a portion of which casing is stationary and another portion of which casing is rotatable.

An object of the invention is to provide in a machine of the class described, an improved structure for dumping clothes therefrom, and an improved structure for dumping the washing fluid therefrom and likewise to provide for the accomplishment of both of said results by one and the same element in the structure.

A further object is to provide, in a machine of the class described, improved, simple and efficient means for dumping the clothes; improved, simple and efficient means for dumping the washing fluid; improved, simple and efficient means for supplying the fluid to the interior of the machine, and a simple inexpensive and efficient machine for combining the above mentioned features.

The foregoing objects will appear more fully and other objects will appear from the following specification and claims as illustrated in the accompanying drawing in which like characters of reference indicate corresponding parts throughout, and in which

Figure I is a front elevation of a machine constructed in accordance with the present invention, portions thereof being broken away to disclose the interior and certain details of construction.

Figure II is a section on line AA of Fig. I, showing the rotatable section of the outer cylinder in normal position during the operation of the machine for washing.

Figure III is a section also on line AA of Fig. I showing the rotatable section of the outer cylinder in position for dumping the washing fluid from the machine.

Figure IV is a view also on line AA of Fig. I but showing the rotatable section of the outer cylinder in position for dumping the clothes from the machine.

Figure V is a detail view of a modification of the bearing assembly including a modi-

fication of the means for supplying washing fluid, steam, etc.

Figure VI is a view the same as Fig. V, but extended to include parts of the complete machine adjacent to those parts shown in Fig. V, to more clearly illustrate the association with the members of the machine of the modified bearing-fluid-inlet assembly shown in Fig. V.

The machine will be described as a washing machine but it will be understood that, with appropriate modifications, not affecting the present invention and obvious to those skilled in the art, the same may be used as a drying machine or for dyeing clothes.

It will also be understood that many changes may be made in details of construction without departing from the spirit or substance of the invention and within the scope of the appended claims.

In suitable supports, as standards 1 bolted to the floor as at 2, I provide bearings 3 and hollow gudgeons 4 which may be formed integral with webs 5 suitably fastened as by bolts 6 to the ends 7' of the rotatable section 7 of the outer casing, said section 7 comprising a tub enclosing, and for holding fluid to immerse the lower portion of container 8 when section 7 is in position shown in Fig. II.

A cylindrical clothes container 8, suitably perforated as indicated at 9, is provided on its ends with gudgeons 10 revolubly mounted within the hollow gudgeons 4 whereby at each end of the machine, the gudgeons 10, carrying the clothes container 8, freely revolve within the hollow gudgeons 4 which serve as bearings for the gudgeons 10, and hollow gudgeons 4 likewise freely revolve within the bearings 3 and independently of the gudgeons 10, whereby the clothes container 8 may be rotated independently of the rotatable section 7 of the outer casing and likewise the rotatable section 7 of the outer casing may be rotated independently of the container 8.

The outer casing has, in addition to the rotatable section 7, a fixed section 11 which may be supported in any suitable manner as by brace members 12 extending to the standards 1. The section 11 is, preferably

approximately three-quarter cylindrical, the front edge thereof being approximately at or a little below the longitudinal axis of the casing and the rear edge thereof being a little to the rear of the bottom of the casing and terminating in an apron 13, for the purpose hereinafter described. The section 7 rotates within the section 11 and is preferably about semi-cylindrical, whereby the section 11 always overlaps section 7, either partially or entirely, according to the position of section 7. The relative circumferential extent of sections 7 and 11 may be varied as desired so long as the two together form a complete outer casing, the stationary section of which will catch and lead to the bottom of the machine any water splashing or otherwise escaping over the edge 7^a of the rotatable section during either the washing or dumping operations.

In the upper portion of section 11, a longitudinal recess 14 is formed, through which extends a pipe 15, adapted to receive steam or washing fluid from any suitable source through and controlled by the valve 16 and to admit the same into the interior of the machine through perforations 17 and such steam or washing fluid will enter the container 8 through the perforations 9.

It will be understood that while the steam or washing fluid is being admitted to the container and thereafter during the washing operation section 7 will be at the bottom, thus cooperating with section 11 to form a complete outer cylinder as clearly shown at Fig. II.

The container 8 may be revolved by means of power supplied from any suitable source to pulley 18, affixed to shaft 19 mounted in bearings 20 on the standards 1 and carrying pinion 21 which meshes with gear 22 affixed to one of the gudgeons 10 carrying the container 8.

The rotation of section 7 is accomplished by affixing to extension 4^a of one of the gudgeons 4, a worm gear 23 which meshes with the worm pinion 24 operated by a motor indicated at 25, suitably supported as by a bracket 26. The worm gear 23 may be turned in either direction and when turned in one direction it will rotate section 7 to the position shown in Fig. III, which will open the outer cylinder at the bottom and allow the washing fluid to flow out of the machine and it will be noted that as section 7 rotates, any of the fluid that overflows the receding edge 7^a of section 7 will still be within section 11 and will flow down and over the apron 13 into a trough 27. In dumping the washing fluid from the machine, the section 7 will be rotated to the position shown in Fig. III so as to completely empty the machine of the washing fluid. Thereafter the worm gear 23 will be operated in the opposite direction, thus ro-

tating section 7 back through the position shown in Fig. II to the position shown in Fig. IV, whereupon the container 8 will be rotated to the position shown in Fig. IV, so that the cut-away portions 28 thereof, which cut-away portions are normally covered by the sliding doors 29, will be at the bottom, whereby the clothes will drop through the cut-away portions 28 out of the container and into the trough 27 or into any suitable receptacle which may be placed beneath the casing. It will be obvious that rinse water may be run from top to bottom through container 8 from pipe 15 when section 7 is not in the extreme of either of the dumping positions shown in Figs. III and IV; that is to say, whenever section 7 does not cover the under side of pipe 15.

It will be understood that the section 11 is provided with sliding doors 30 of usual construction and that the loading of the machine will be accomplished with the container and section 7 in the position shown in Fig. II, but that with the container and section 7 in this position, the doors 29 and 30 will be opened so as to permit the loading of the container with clothes through the openings or doorways afforded by the opening of the doors 29 and 30.

In the drawing the doors 29 and 30 are shown as sliding doors. No details of construction are shown or described because the construction of the doors is no part of the present invention. The doors in a fixed section of the casing may be of any standard construction. The doors in the container are preferably sliding doors which permit rotation of the container with the doors open as well as closed.

Heretofore special drainage means have been provided in cylinder laundry machines for emptying the same of the washing fluid. Such drainage means generally involve pipes and valves protruding from the casing and not only cause additional expense in original production and in the matter of care and repair incident to operation, but catch dirt and various articles and generally interfere with operations around the machine, as any projection from the machine will do. Moreover, the drainage of such a machine through a pipe is comparatively slow and generally results in leaving settlings which have to be rinsed out. All of these objections are overcome by the provision of the rotatable section of the casing in the present invention, which quickly and completely dumps the washing fluid from the casing and does it so quickly and effectively that no settlings are left to require subsequent rinsing. Moreover, the outer surface of the casing is left comparatively smooth and free from such projections as pipes, valves, etc.

The advantages resulting from the opening of the bottom of the casing, thus per-

mitting the dumping of the clothes from the container by the simple expedient of inverting the container, will be obvious to those familiar with the operation of washing machines and need no explanation or emphasis.

The present invention, not only gives the advantages of quick and complete dumping of washing fluid, as above described, and the advantages of the dumping of the clothes out of the bottom of the container entirely by gravity and by the simple expedient of inverting the container, but affords all of these advantageous results by the provision of the one element, namely, the independently rotatable section of the casing.

Combined with the above elements and with the above combination, is the means for conducting fluid into the interior of the machine.

Furthermore, all of the above results are accomplished in a machine which is of the utmost simplicity and cheapness in both construction and operation, there being practically no complicated or delicate parts involved.

Fig. V illustrates a modification of the bearing assembly in which the hollow gudgeons 4 are eliminated and the gudgeons 10 bear directly in and upon the bearings 3. In this form the bearings 3 are extended to form an annular bearing 31 for the web 5 whereby the web 5 bears upon the bearing 31 and against the inner end of bearing 3. In this form, fluid may be supplied to the interior of the machine through a hole 32 provided through the bearings 3 and 31.

In the foregoing specification, structural details have not been dwelt upon, but it is believed that the disclosure hereof in the drawing is sufficient in itself to enable anyone familiar with this class of structure to construct a machine in accordance with this invention, but sufficient description of the detail has been added in the specification to eliminate any possible difficulty in this regard.

It will be understood that the machine hereinabove described is particularly adapted to washing operations in which the clothes are successively washed, rinsed, and blued without removing them from the container 8. Such successive operations involve the use of several separate and distinct fluids, each one of which must be removed from or let out of the machine before the next one is injected. The operation frequently requires as high as eight or ten successive fluids, necessitating a corresponding number of eliminations of the fluids from the machine. With this in mind, the advantages of the independent rotation of the revoluble section 7 for the purpose of uncovering the bottom of the machine for quick elimination of fluid therefrom without regard to the cylinder 8 will be apparent. At each of these operations, the machine herein

described saves not only that time which is ordinarily required to drain the machine through the usual pipe and valve structure, but also empties the machine of fluid, dirt, and sediment in a more effective manner, by reason of the quickness of the eliminating operation and the movement of the fluid-containing section 7 whenever it is moved to dump contained fluid.

In the foregoing specification, reference is made to the use of this machine for drying purposes and to modifications thereof for such purposes. As there stated, various modifications, obvious to those skilled in the art, may be made, but it will also be obvious to those skilled in the art that the machine as above described may be used as a drier immediately following the emptying from the machine of the last fluid to be used. When the fluid is emptied, section 7 may be independently revolved to the position disclosed in Fig. IV, cylinder 8 remaining closed and being revolved or not, as may be desired. With section 7 in this position, air, which may be heated or under pressure or both, may be let into the machine from the under side and from any suitable source of supply, which may be positioned under the machine for this purpose. Such air will not only circulate around the cylinder 8, but will penetrate the same through the perforations 9, and such air will escape at the top of the machine. The rotation of cylinder 8 during this drying operation will facilitate the drying.

It is therefore obvious that the machine described can be used without substantial interruption for the successive washing, rinsing, bluing, and drying of the clothes, each of these operations, and especially the successive performance thereof, being greatly facilitated and some of said operations being rendered possible, by the structure which makes possible and provides for the rotation of section 7 independently of cylinder 8, and to an extent sufficient in either direction to uncover the bottom of the machine and the bottom of cylinder 8.

I claim:

1. In a laundry machine, a clothes-containing rotatable cage, means for rotating the cage, a tub in outside nested relation to the cage and rotatable concentric with, but independently of, the cage, and means for rotating the tub independently of the cage for dumping fluid over the edge of the tub as the same is tipped in the rotation thereof.

2. In a laundry machine a clothes-containing rotatable cage, a rotatable tub outside of, but mounted for rotation concentric with, but independently of, the cage and normally enclosing the lower portion of the cage for holding fluid; means for rotating the cage; means for rotating the tub in either direction from said normal position and independently of the cage.

3. In a laundry machine, a clothes-containing rotatable cage, means for rotating the cage, a tub in outside nested relation to the cage and rotatable concentric with, but independently of, the cage, means for rotating the tub independently of the cage for dumping fluid over the edge of the tub as the same is tipped in the rotation thereof, and a fixed arcuate fluid guide member partially enclosing the tub.

4. In a laundry machine, a rotatable clothes-containing cage, an arcuate casing comprising a plurality of sections, one section being fixed and another section being rotatable about the axis of the cage between the cage and the fixed section, the cage and the casing being in relatively nested relation, the rotatable section comprising a tub for holding fluid for immersing the lower portion of the cage, means for rotating said rotatable section independently of the cage, said fixed section comprising a portion adapted to guide fluid escaping from the rotatable section.

5. In a laundry machine, a rotatable clothes-containing cage, a section of cylindrical casing adjacent the cage and rotatable about the axis of, but independently of, the cage and normally enclosing the lower portion of the cage to hold fluid, a conduit for conducting fluid from the outside to the inside of the machine, means for rotating the said section independently of the cage, a fixed member outside of said section and comprising both a cover for the top of the machine and a guide for fluid escaping from said section, said fluid conduit being positioned beneath said cover and above the arc of rotation of the section.

6. In a laundry machine, a rotatable clothes-containing cage, a section of cylindrical casing adjacent the cage and rotatable about the axis of, but independently of, the cage and normally enclosing the lower portion of the cage to hold fluid, a conduit for conducting fluid from the outside to the inside of the machine, means for rotating the said section independently of the cage, a fixed member outside of said section and comprising a cover for the top of the machine, said fluid conduit being positioned beneath said cover and above the arc of rotation of the section.

7. In a laundry machine having a clothes-containing cage rotatable on gudgeons and a casing formed in sections normally surrounding the cage and one of said sections being rotatable around the axis of the cage, a bearing-fluid-inlet assembly comprising a bearing member having an interior bearing for one of said gudgeons and an exterior bearing for the rotatable section and a fluid-inlet conduit through said bearing member between said interior and exterior bearings for conducting the fluid from outside the machine to the inside of the casing.

8. In a laundry machine a rotatable clothes-containing cage having doorways for loading and unloading the cage, a section of cylindrical casing adjacent the cage and rotatable about the axis of, but independently of, the cage and normally enclosing the lower portion of the cage to hold fluid, means for rotating the said section independently of, and for uncovering the bottom of, the cage, means for rotating the cage, including the bringing of said doorways to the bottom of the cage for dropping clothes therefrom when the bottom of the cage is uncovered.

9. In a laundry machine, a rotatable clothes-containing cage having doorways for loading and unloading the cage, an arcuate casing comprising a plurality of sections, one section being fixed and another section being mounted for rotation about the axis of the cage between the cage and the fixed section, the cage and the casing being in relatively nested relation, the rotatable section normally comprising a tub for holding fluid for immersing the lower portion of the cage, means for rotating said rotatable section independently of, and for uncovering the bottom of, the cage, means for rotating the cage, including the bringing of said doorways to the bottom of the cage for dropping clothes therefrom when the bottom of the cage is uncovered.

In testimony whereof I affix my signature.
JAMES N. WHITE.