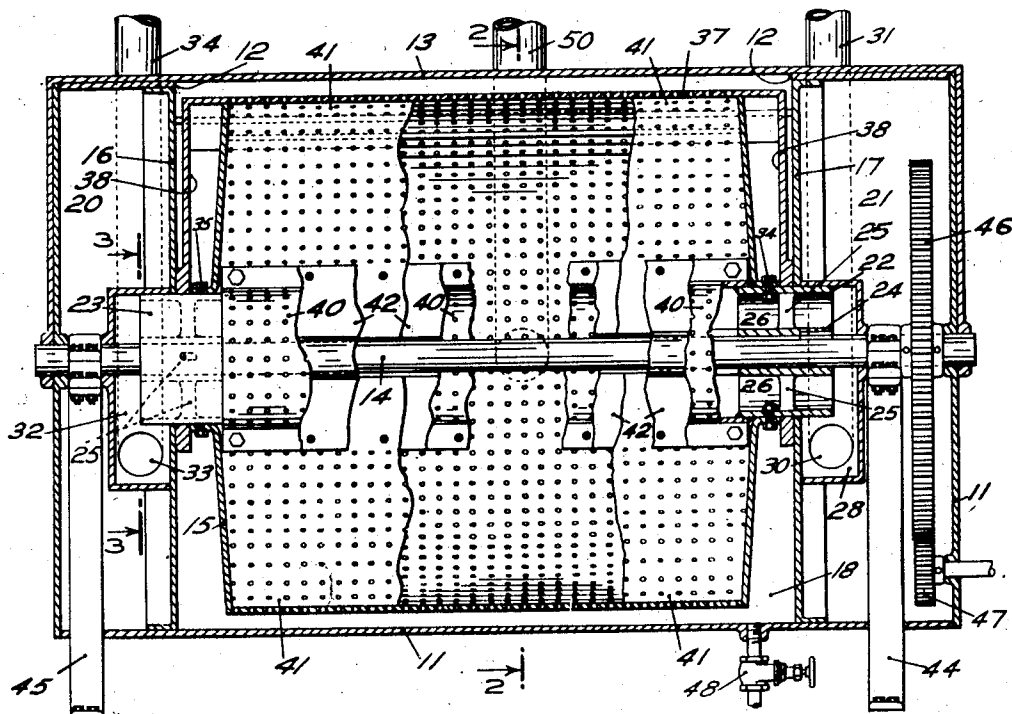
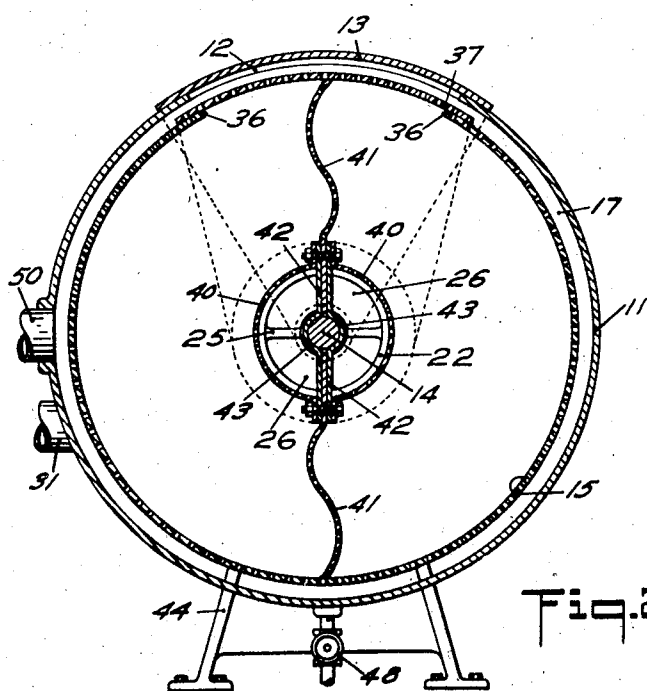
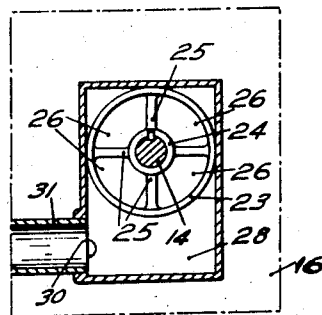


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E. R. GOULD
LAUNDRY DRYING MACHINE HAVING PLURAL
COMPARTMENTS AND A CENTRAL AIR TUBE
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INVENTOR
EDWARD R. GOULD
BY
W. Borden & Fox
ATTORNEYS

UNITED STATES PATENT OFFICE

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LAUNDRY DRYING MACHINE HAVING
PLURAL COMPARTMENTS AND A CENTRAL AIR TUBE

Edward R. Gould, Philadelphia, Pa.

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5 Claims. (Cl. 34—109)

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The present invention relates to laundry machines and more particularly to a novel machine for drying the saturated goods placed therein.

In the machines of this character heretofore in use it has been customary to initially remove the major portion of the saturation from the goods by using a centrifugal machine and thereafter transferring the partially dried goods to a hot air drying machine for complete drying. These latter machines generally inject heated air at or near the inner periphery of the shell or outer tank so that not only is considerable time lost while the air attempts to thoroughly penetrate the load, but also considerable air falls to contact the load at all owing to the substantially free channel near the circumference which leads to the discharge. In some drying machines attempts to overcome these disadvantages by forcing air into and out of the shaft of the drum into contact with the load, but these have been found impractical because the open compartment surrounding the shaft causes the goods forming the load to become entangled with the shaft and wind around thereon to damage the goods, as well as making removal from the machine very difficult. Furthermore, in such shaft air supply means the parts have to be of massive design to carry any reasonable load and to resist the pounding and torque of a heavily loaded machine. It can readily be seen that to handle loads of several hundred to several thousand pounds the cost and required weight of parts are almost prohibitive.

Some of the objects of the present invention are: to provide an improved drying machine wherein the foregoing disadvantages of prior machines is overcome; to provide a drying machine wherein both saturation removal and final drying can be carried out; to provide a drying machine wherein relative light parts are so assembled and arranged that torque strains are reduced to a minimum; to provide a drying machine wherein the load is divided in small masses such that pounding action is effectively distributed; to provide a novel shaft construction, wherein means are included to prevent the load from becoming entangled with moving parts; to provide a drying machine wherein heated air has free access to the load without clogging the desired circulation thereof; and to provide other improvements as will hereinafter appear.

In the accompanying drawings, Fig. 1 represents a longitudinal section partly broken away of a drying machine embodying one form of the present invention; Fig. 2 represents a section on

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line 2—2 of Fig. 1; and Fig. 3 represents a detail in section on line 3—3 of Fig. 1.

Referring to the drawing, one form of the present invention comprises an outer cylinder 11 fixedly supported and having a longitudinally disposed access opening 12 arranged to be opened and closed by an arcuate door 13, which latter is journaled on an axially disposed shaft 14 for free manual swinging action. This cylinder 11 is of usual two part construction with its sections bolted together, as will be understood.

For mounting a perforated load-receiving cylindrical shell 15 within the cylinder 10, two partitions 16 and 17 divide the interior of the cylinder 11 into a shell-receiving compartment 18, and two end compartments 20 and 21, these latter respectively being centrally apertured to respectively form journals for two outwardly disposed tubular trunnions 22 and 23 of spider form, having hubs 24 respectively keyed to the shaft 14 to rotate therewith. The radial spider arms 25 of the trunion 22 form passages 26 communicating at one end with a coaxial opening in one end of the shell 15, and at the other end with a closed chamber 28 having an outlet 30 leading to a conduit 31 connected to either a source of heated air under pressure or to an exhaust, depending upon the direction of the circulation. The trunion 23 is similarly arranged at the other end of the shell 15 but communicates at its outer end with a closed chamber 32 having an outlet 33 leading to a conduit 34 connected to a source of heater air under pressure or to an exhaust, depending upon the direction of the circulation. Both the trunnions 22 and 23 are circumferentially bolted or otherwise attached to the ends of the shell 15, as shown at 34 and 35.

The periphery of the shell 15 is perforated for free passage of air or water and has an access opening 36 arranged to be opened and closed by an arcuate door 37 also of perforated construction. The door 37 is carried by end quadrants 38 which are respectively journaled on the trunnions 22 and 23 for free swinging movement.

In order to introduce heated air into the load while preventing the latter from becoming entangled with the shaft 14, a perforated tube 40 of slightly larger internal diameter than the trunnions 22 and 23 surrounds the shaft 14 in coaxial relation and has its ends overlapping and welded respectively to the inner ends of the trunnions. As shown, this tube 40 is in the form of two flanged segments arranged in opposed relation to receive between them two perforated radial screens 41, which are clamped between two

radial flange plates 42, each of which is a part of a hub section 43, which latter is keyed to the shaft 14. These plates 42 and hub parts are of non-corrodible material as a protection for the shaft and consequently the shaft 14 can be made of relatively cheap material instead of expensive Monel metal or the like. The shaft 14 is journaled at its ends respectively in bearings carried by standards 44 and 45. These bearings are located in the respective compartments 20 and 21 and are therefore completely separated from contact with water and air to thereby give long life. Also, the driven gear 46 for the shaft 14 is located in one of these compartments, being here shown in compartment 21 and driven from an exterior source of power (not shown) by means of pinion 47. A valve pipe 48 communicates with the interior of the cylinder 11 for drain purposes.

For completing the circulation of heated air, a duct 50 enters the cylinder 11 at a convenient location and communicates with the interior thereof, while its outer end leads to a source of supply or to an exhaust fan according to the direction of the circulation. Thus, heated air can traverse the conduits 31 and 34, the trunnions 22 and 23, the perforated tube 40, the shell 15, cylinder 11, and conduit 50, thereby completely penetrating the load in the two screen-separated chambers of the shell 15.

It will now be apparent that a complete unitary laundry machine has been devised wherein provision is made for relieving the parts of torque strains, providing for the sub-division of the load of material into smaller masses, and including a novel air circulating system whereby all of the load is subjected to a substantially uniform drying. Furthermore, the construction makes possible the use of an extra heavy shaft which is protected from corrosion by an enclosure hub of non-corrodible material. Also, the shaft bearings are located remote from and out of contact with the washing liquid and heated air so bearing break-downs are all practical purposes eliminated.

Having thus described my invention, I claim:

1. A laundry machine comprising a fixed cylinder having a door for access to the interior thereof, two partitions dividing said cylinder into two end compartments and an intermediate compartment, a shell peripherally perforated having an access opening, a perforated door for controlling said opening, said shell being located in said intermediate compartment, a shaft extending axially of said shell to project into the respective end compartments, bearing means in the respective end compartments for journalling said shaft, open end tubular trunnions attached to the respective ends of said shell, each trunnion having supporting spokes and a hub keyed to said shaft, a closed chamber in each end compartment having communication with the outer end of the adjacent trunnion, a perforated tube concentrically mounted in spaced relation about said shaft, means for causing said tube to rotate with said shaft, and conduit means for circulating heated air in a path formed by said cylinder, said chambers, said trunnions, said tube, and said shell.

2. A laundry machine comprising a fixed cylinder having a door for access to the interior thereof, two partitions dividing said cylinder into two end compartments and an intermediate compartment, a shell peripherally perforated having an access opening, a perforated door for controlling said opening, said shell being located in

said intermediate compartment, a shaft extending axially of said shell to project into the respective end compartments, bearing means in the respective end compartments for journalling said shaft, open end tubular trunnions attached to the respective ends of said shell, each trunnion having supporting spokes and a hub keyed to said shaft, a closed chamber in each end compartment having communication with the outer end of the adjacent trunnion, a perforated tube concentrically mounted in spaced relation about said shaft, two radially disposed screens interconnected between said shell and tube to provide two load receiving chambers, means for causing said tube to rotate with said shaft, and conduit means for circulating heated air into a path formed by said cylinder, said chamber, said trunnions, said tube, and said shell.

3. A laundry machine comprising a fixed cylinder having a door for access to the interior thereof, two partitions dividing said cylinder into two end compartments and an intermediate compartment, a shell peripherally perforated having an access opening, a perforated door for controlling said opening, said shell being located in said intermediate compartment, a shaft extending axially of said shell to project into the respective end compartments, bearing means in the respective end compartments for journalling said shaft, open end tubular trunnions attached to the respective ends of said shell, each trunnion having supporting spokes and a hub keyed to said shaft, a closed chamber in each end compartment having communication with the outer end of the adjacent trunnion, a perforated tube concentrically mounted in spaced relation about said shaft, a hub of non-corrodible material encircling said shaft and keyed thereon, means for supporting said tube on said hub, and conduit means for circulating heater air in a path formed by said cylinder, said chambers, said trunnions, said tube, and said shell.

4. A laundry machine comprising a fixed cylinder having a door for access to the interior thereof, two partitions dividing said cylinder into two end compartments and an intermediate compartment, a shell peripherally perforated having an access opening, a perforated door for controlling said opening, said shell being located in said intermediate compartment, a shaft extending axially of said shell to project into the respective end compartments, bearing means in the respective end compartments for journalling said shaft, open end tubular trunnions attached to the respective ends of said shell, each trunnion having supporting spokes and a hub keyed to said shaft, a closed chamber in each end compartment having communication with the outer end of the adjacent trunnion, a perforated tube concentrically mounted in spaced relation about said shaft, means for causing said tube to rotate with said shaft, a hub encircling said shaft and keyed thereon, two radially disposed screens connected to said shell, means for connecting said screens to said hub, and conduit means for circulating heated air in a path formed by said cylinder, said chambers, said trunnions, said tube, and said shell.

5. A laundry machine comprising a fixed cylinder having a door for access to the interior thereof, two partitions dividing said cylinder into two end compartments and an intermediate compartment, a shell peripherally perforated having an access opening, a perforated door for control-

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ling said opening, said shell being located in said intermediate compartment, a shaft extending axially of said shell to project into the respective end compartments, bearing means in the respective end compartments for journalling said shaft, open end tubular trunnions attached to the respective ends of said shell, each trunnion having supporting spokes and a hub keyed to said shaft, a closed chamber in each end compartment having communication with the outer end of the adjacent trunnion, a perforated tube concentrically mounted in spaced relation about said shaft, means for causing said tube to rotate with said shaft, a hub of non-corrodible material encircling said shaft and keyed thereon, two radially disposed screens connected to said shell, means for connecting said screens to said hub, and conduit means for circulating heated air in a path formed

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by said cylinder, said chambers, said trunnions, said tube, and said shell.

EDWARD R. GOULD.

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