June 11, 1929. A. W. ALTORFER 1,717,179

DRIER FOR WASHING MACHINES

Filed Nov. 21, 1927

FIG. 1.

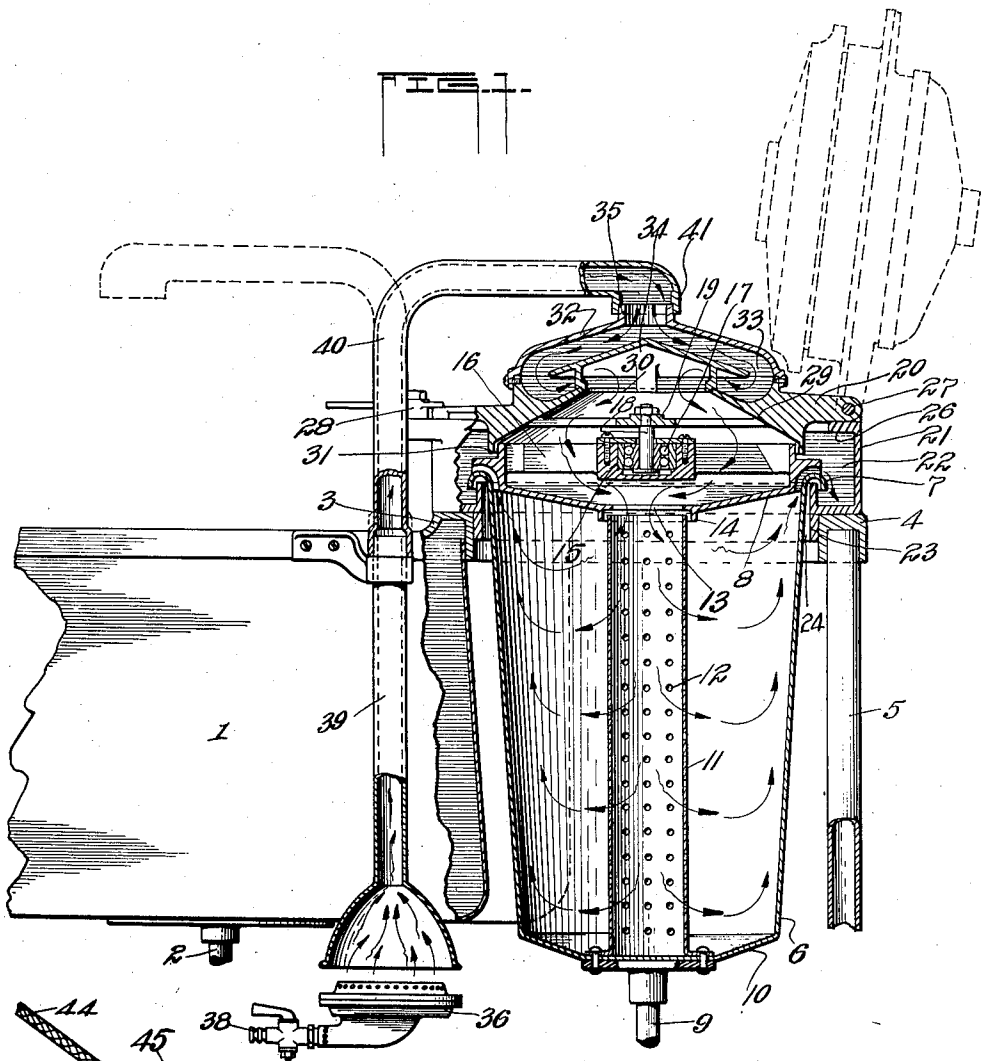

FIG. 2.

INVENTOR.

Alpheus W. Altorfer

By Laboratt & Laboratt

ATTYS

Patented June 11, 1929. 1,717,179

UNITED STATES PATENT OFFICE.

ALPHEUS W. ALTORFER, OF PEORIA, ILLINOIS, ASSIGNOR TO ALTORFER BROS. COMPANY, OF EAST PEORIA, ILLINOIS, A CORPORATION OF ILLINOIS.

DRIER FOR WASHING MACHINES.

Application filed November 21, 1927. Serial No. 234,878.

This invention has reference to driers for washing machines and it relates particularly to that type of drier employing centrifugal action for extracting water from clothing and other materials, following the washing action, and if desirable following the bluing or rinsing action.

The invention has for its principal object to provide a centrifugal extractor with means for inducting air thereinto, heating the air and causing the air to be circulated into and throughout the extractor, whereby to thoroughly dry the clothing and other materials ready for ironing.

The invention has for a further object to provide a heating means removably associated with the extractor, and a fan rotatable with said extractor to cause a circulation of air into and throughout the extractor. Such heating means may take the form of a "Bunsen" burner or an electric heater of the hair drying type or the equivalent of one or the other.

A further object of the invention is to provide the extractor with means disposed axially thereof to conduct the heated air down through the extractor and at a plurality of points release such heated air radially into the extractor to act on clothing and other materials therein to dry the same.

Other and further objects will more fully appear from the following description.

That the invention may be more fully understood, reference is had to the accompanying drawings forming a part of the description, illustrating a preferred embodiment of the invention, in which:—

Fig. 1 is a vertical sectional view of a drier embodying my invention, the head or cover therefor and an element of the air heating and air conducting means being shown in different positions, in dotted lines, and

Fig. 2 is a detail view showing one form of an air heating means and mode of attachment to the drier.

Like characters of reference denote corresponding parts throughout the figures.

In Fig. 1, for convenience in understanding the use of the invention on a washing machine, I have shown so much of a washing machine and supporting frame as to illustrate its application thereto.

The tub of the machine is designated 1, which may contain any suitable agitator or washing element, not shown, adapted to be actuated by the shaft 2 passing up through the bottom of the tub and arranged to be operated from any suitable driving mechanism, not shown. The frame of the machine includes a head frame 3 provided with an offset ring-like portion 4 to which a standard or post 5 is secured.

Normally disposed within the ring 4 and assuming a vertical position alongside the tub 1 is the preferably imperforate receptacle 6 having a closed lower end and an open upper end disposed above the upper surface of said ring 4 and the upper edge of said receptacle is turned outwardly and downwardly, as at 7, to present an upper curved bearing surface to receive a similarly formed surface on the under side of a cup-shaped disc 8. The two such surfaces, when the parts are assembled, adapted to provide radially arranged conduits or openings for the passage of water expelled from the receptacle 6 as a result of centrifugal action due to the rotation of said receptacle. To the lower end of the receptacle is suitably connected a shaft 9 adapted to be operated from the same source of power for operating the agitator shaft 2. I prefer to construct the bottom wall 10 of the receptacle 6 somewhat saucer shape and connected to said bottom and extending upwardly and axially within the receptacle and terminating near the upper end thereof is the tubular member 11, open at its upper end and being preferably slightly cone shape, whereby to provide a smaller upper end and a larger lower end. The wall of this member is provided with a multiplicity of air egress openings 12 to eject air entering into the upper end of said member radially into and throughout the body of said receptacle, as indicated by the arrows in Fig. 1.

The disc 8 tapers downwardly and inwardly and is provided axially with an opening 13 surrounded on its lower surface with the annular depending flange 14 providing a seat on the lower surface of said disc into which projects the upper end of the tubular member 11, the open end of which is immediately below the opening 13, in the disc, through which heated air enters to be discharged from the member 11 through the openings 12 therein. The disc 8 is further provided with a central

hub portion 15 from which radiates the plurality of radially arranged wings or vanes 16 connected at their outer ends to the rim of the disc. These wings or vanes serve as a fan, when the disc is rotated with the receptacle to induct air down through the central opening 13 in the disc and into the tubular member 11. The hub 15 is provided with a self aligning ball-bearing 17 from which projects the spindle 18, on which the disc rotates, and said spindle is journaled in a bearing 19 of a head 20 forming a closure for the upper end of the extractor and supporting the disc 8 through the spindle 18. The disc, adapted when the head is closed, to be brought into engagement with the upper bearing surface 7 of the receptacle 6 to close the upper open end thereof and to rotate therewith on the spindle 18, as will be understood.

Supported on the ring portion 4 of the head frame is a housing 21 having an annular chamber 22 formed by the outer annular wall of said housing and an inner annular flanged wall 23, the latter providing a central opening 24 in which the receptacle 6 is positioned and through which it is moved to place the receptacle in operative position or remove it therefrom. Said flanged wall has a bearing relation with the inner surface of the ring portion 4 on which the housing is manually and circumferentially adjustable to position the drain (not shown) in different radial positions about the drier, whereby water expelled from the receptacle may be discharged into the tub 1 or some other receptacle, not shown. Such a structure is not new and it is thought, therefore, need not be shown. Under normal working conditions the flanged bearing portion 7 of the receptacle overlies the flanged wall 23 of the housing 21, see Fig. 1, and insures the discharge of the water from the receptacle through the openings between the disc 8 and said flange 7, into the chamber 22 of said housing and without drippings finding their way down the outer surface of the receptacle.

The housing 21 is further provided with an overlying inwardly turned flange portion 26 providing a central opening through which the receptacle may be placed or removed and to enable the placing and removal of the disc 8, carried by the head 20, the latter being hinged at 27 to one side of the flanged portion 26 of the housing and diametrically thereto at the opposite side of said housing is provided a locking member 28 for securing the head 20 in closed position and the disc 8 in operative engagement with the receptacle 6, in manner shown. The head 20 has an inwardly inclined portion 29 providing a dome with a central opening 30, the lower edge of the wall forming such dome terminating in a downwardly extending annular flange 31 encircling a similarly formed portion on the disc 8, whereby air entering through the opening 30 in said head is directed downwardly and through the spaces between the vanes 16 forming the fan in the disc 8. The head 20 has secured on the top thereof a cover plate 32, which, together with the head provide a chambered portion 33 in the head and above and around the opening 30 of the dome 29 in which is positioned a deflection plate 34, above which and centrally located in the cover plate 32 is a short tubular extension 35 providing a vent for the entrance of air into the drier and also providing a means of attachment, as I shall explain, for the air heating and air conducting means to the drier.

I have shown in Figs. 1 and 2, respectively, different means of heating and supplying heated air to the drier, which is caused to be circulated by the fan down through the head 20, disc 8 and into the receptacle through the tubular member 11 therein. In Fig. 1 the heating means may be that provided by a "Bunsen" burner 36, and in Fig. 2 such heating means may be in the form of a well known hair drier 37, which is preferably electrically heated.

Referring to Fig. 1, the burner 36 may be supported from the frame of the machine in any suitable manner, not shown, and have a means 38 for the connection of a hose, not shown, receiving its supply of fuel from the usual gas jet or other connection, not shown. Supported on a side of the machine is a vertically disposed flue 39 having a bell-shaped mouth overlying the burner 36 through which the heated air enters or is drawn, to be eventually conducted down into the receptacle 6. Removably attachable to the upper end of the flue 39 and swingable thereabout is an air conducting elbow 40 which has a discharge outlet 41 adapted to have a slip on and off connection with the short tubular extension 35 on the cover plate 32 and when so connected, as shown in full lines in Fig. 1, is in the position for the induction of heated air into the head 20 and which is caused to be circulated through the head and down into and throughout the receptacle 6, in the manner shown. This elbow 40 is removable when not in use and whenever desired, or may be swung into an out of the way position, as shown in dotted lines, whenever desired.

Referring to Fig. 2, the element 37 for supplying heated air to the drier and which is here shown in the form of a well known type of hair drier has a coupling end 42 insertable into and removable from the short tubular extension 35 on the cover plate 32 for supporting the same on top of the drier, when in operative position, and said element 37 has a hand-hold 43 to adapt its placement and removal. Said element also has an electrical connection 44 to operate the motor 45 and to supply current to the resistance coil 46 by means of which air inducted into the drier may be heated. No attempt is made to illus-

trate the details of the element 37 as its structure is well known and also since no claim is made to such a structure per se.

What I claim is:—

1. In a drier for clothing and other materials, in combination, a rotatable receptacle arranged for the expelling of water therefrom at its upper end, means to carry off water so expelled by said receptacle, a head hingedly supported to adapt its movement toward and from said receptacle and having a coupling member with an air inlet, a deflecting means below said air inlet, a fan carried by said head rotatable by the receptacle and adapted to cause a circulation of air in the receptacle, air heating means, and means associated with said heating means adapted for attachment with and detachment from the coupling member of said head.

2. In a drier for clothing and other materials, in combination, a rotatable receptacle arranged for the expelling of water therefrom at its upper end, means to carry off water so expelled by said receptacle, a head hingedly supported to adapt its movement toward and from said receptacle and having a coupling member with an air inlet, a deflecting means below said air inlet, a fan carried by said head rotatable by the receptacle and adapted to cause a circulation of air in the receptacle, air heating means, means associated with said heating means adapted for attachment with and detachment from the coupling member of said head, and means in the receptacle to conduct air down into the receptacle axially thereof and at predetermined points radially thereof.

3. In a drier, a rotatable receptacle, a hollow head overlying the receptacle and having an opening communicating with the receptacle and having an opening in its top, a closure for the top opening of the head, a coupling extending outwardly from the closure and forming an air inlet for the head, and air heating means having a complementary coupling detachably connected to said coupling of the closure.

4. In a drier, a rotatable receptacle, a hollow head overlying the receptacle and having communication with the receptacle, a coupling forming an air inlet for the head projecting outwardly from the upper end thereof, and air heating means having a complementary coupling detachably connected to said coupling of the head.

5. In a drier, a rotatable receptacle, a hollow head overlying the receptacle and having an opening communicating with the receptacle and having an opening in its top, a closure for the top opening of the head, a coupling extending outwardly from the closure and forming an air inlet for the head, air deflecting means in the head extending below and across said air inlet and over and beyond the opening in the head which communicates with said receptacle, and air heating means having a complementary coupling detachably engaged with the coupling of the closure.

6. In a drier, a rotatable receptacle, a head overlying the receptacle, a coupling connected to the head and forming an air inlet thereto, a fan carried by the head and rotatable with the receptacle, air deflecting means below the air inlet and above the fan, and air heating means having a complementary coupling detachably engaged with the coupling of the head.

In witness whereof, I have hereunto affixed my hand this 18th day of November, 1927.

ALPHEUS W. ALTORFER.