Sept. 7, 1954 J. E. KERCHEVAL 2,688,197

CLOTHES DRIER

Filed Jan. 7, 1952

FIG. 1.

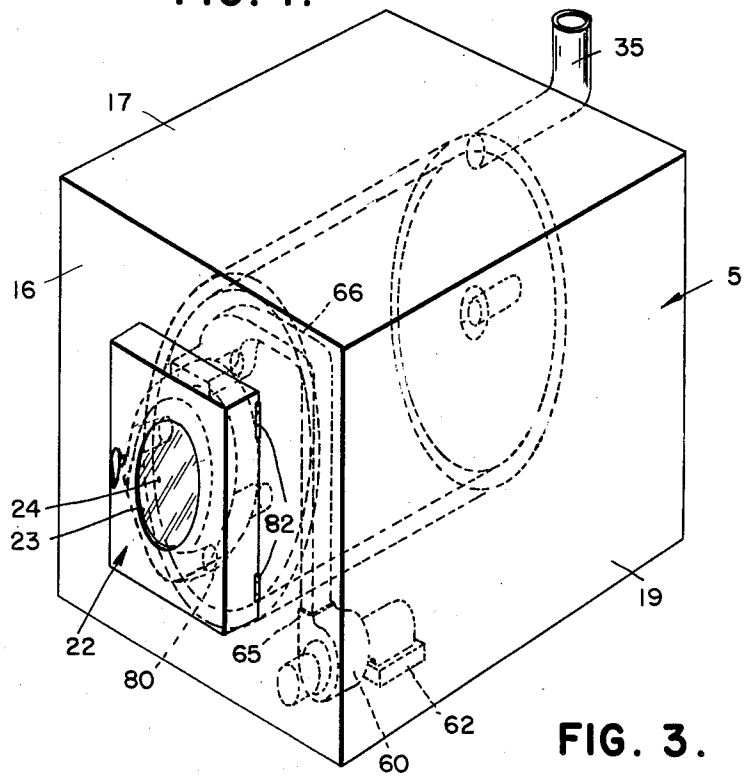


FIG. 2.

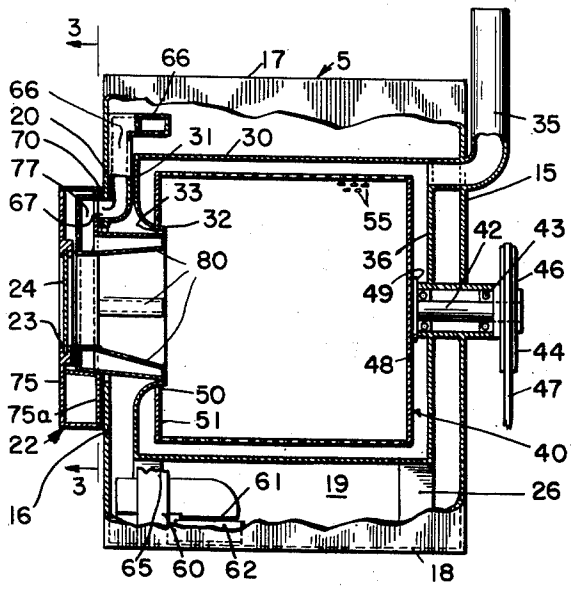
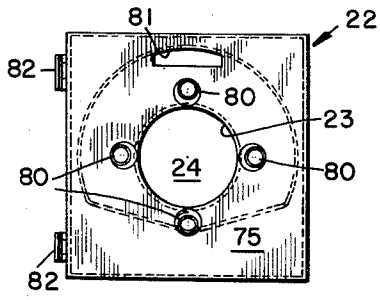


FIG. 3.



INVENTOR

JAMES E. KERCHEVAL

BY

ATTORNEYS

Patented Sept. 7, 1954

2,688,197

UNITED STATES PATENT OFFICE

2,688,197

CLOTHES DRIER

James E. Kercheval, Monterey Park, Calif.

Application January 7, 1952, Serial No. 265,314

4 Claims. (Cl. 34—133)

1

This invention has to do with clothes dryers and, is some aspects, has to do with clothes dryers so constructed as to form integral parts of washing machines.

One of the principal difficulties which has prevented any practical use of a clothes dryer as an integral part of a washing machine has been that of getting the hot air into the drying element without a construction which permits leakage of water while clothes are being washed, or which is otherwise too complicated and expensive for practical use. I am aware that various proposals have been made for incorporating a dryer element as an integral part of a washing machine, but so far as I am aware none has gone into practical use for the above stated reasons.

It is an object of my invention to provide a clothes dryer construction which may be readily incorporated as an integral part of a washing machine or may be utilized merely as a dryer.

Another object is to provide a dryer-washing machine combination wherein heated air may be efficiently introduced into the clothes receptacle in the machine without permitting leakage of water into the casing while the machine is being operated as a washer.

Other objects will appear hereinafter.

For the purpose of making my invention understood, I illustrate in the accompanying drawings, and will now describe, a washing machine-dryer combination embodying one presently preferred manner of carrying my invention into practice, and for the purpose of the ensuing description I shall refer to said drawings wherein

Fig. 1 is a perspective view;

Fig. 2 is a medial sectional view; and

Fig. 3 is a view taken on line 3—3 of Fig. 2.

Referring now to the drawings, the numeral 5 generally denotes a washing machine casing having a back wall 15, a front wall 16, a top wall 17, a bottom wall 18 and side walls 19. The front wall has an access opening 20 normally closed by a swingable door 22 whose center portion is provided with a window 23 closed by a transparent pane 24.

Within the casing there is stationarily supported, upon supports 26, an outer drum 30 whose front end wall 31 curves inwardly at 32 to define a round opening 33. A conduit 35 communicates with the interior of the outer drum through the rear wall 36 thereof.

An inner drum or clothes receptacle 40 is mounted to rotate within and relative to the outer drum by means of a stub shaft 42 journalled in bearing 43 within a tubular housing 44,

2

the housing being fixed to and extending through openings in casing wall 15 and the rear end wall 36 of the outer drum. A V-pulley 46 is fixed on the outer end of the shaft 42 exteriorly of the casing and is driven by a belt 47 from a conventional motor not shown. Shaft 42 is fixed to the inner end wall 48 of the inner drum as by means of a plate 49 welded to the latter wall.

It will be observed that the inturned front wall portion 32 of the outer drum extends inwardly through an opening 50 provided in the front wall 51 of the inner drum to a point inwardly beyond the wall 51, so that as the inner drum is rotated with the wet clothes therein or with water in the outer drum, water will not escape through the opening 50. Of course, suitable conventional water inlet and outlet valve controlled conduits, not shown, are provided to introduce wash and rinse water into the drum 30 and to discharge it therefrom. The peripheral wall of the inner drum is provided with perforations 55 so that water in the outer drum may flow into the inner drum through the perforations, and so that during any spinning of the inner drum to extract moisture from the washed clothes, the water may escape from the inner drum, and also so that hot air, introduced into the inner drum as hereinafter explained, may escape.

After clothes within the inner drum have been washed by rotating or oscillating the inner drum, the inner drum is further rotated to extract by centrifugal action as much as possible of the moisture remaining in the clothes, after which hot air is introduced by the means now to be described.

Within the bottom portion of the casing 5 I mount a power driven blower 60, of conventional construction, whose inlet 61 immediately overlies a heating element 62. An air outlet conduit 65, communicating with the blower outlet, has an end extension 66 communicating at its outlet end with an orifice 67 in the front wall 16 of the casing, which orifice is normally covered by door 22, the wall 16 carrying a gasket 70 surrounding said orifice.

The door carries an air manifold surrounding the window, formed by annular wall 75 and annular inner plate 75a and defining an annular air chamber 77. The plate 75a carries air discharge nozzles 80 communicating with the chamber and disposed to discharge air into the interior of the inner drum through the openings 32 and 50. The plate 75a has an inlet orifice 81 opening into the air chamber and disposed to register with orifice 67 when the door is closed, that portion of

the plate **75***a* defining the orifice **81** bearing against the gasket **70** when the door is closed.

It will thus be seen that the door, which is hingedly mounted on the casing by hinges **82**, carries within it the above described manifold which, when the door is closed, establishes communication with the hot air supply and discharges the air into the inner drum to dry the clothes therein, the air then passing out of the drum through the perforations **55** and finally out of the outer drum through the conduit **35**.

I claim:

1. In a clothes dryer, a casing having a front wall provided with an access opening and an orifice opening through said wall, a clothes receptacle in said casing, a conduit in said casing communicating with said orifice, means for supplying hot air under pressure to said conduit, a door swingably mounted on the casing in normal closing relation to said access opening, and an air conduit in said door having its inlet end disposed to register with and engage said orifice when said door is closed and having its outlet disposed to discharge air into said casing through said access opening.

2. In a clothes dryer, a casing having a front wall provided with an access opening and an orifice opening through said wall, a clothes receptacle in said casing, a conduit in said casing communicating with said orifice, means for supplying hot air under pressure to said conduit, a door swingably mounted on the casing in normal closing relation to said access opening, said door having a transparent window therein, an annular air manifold mounted in said door inwardly of said window, said manifold having an inlet portion disposed to register with and engage said orifice when said door is closed and having circumferentially spaced outlet portions disposed to discharge air into said casing through said access opening.

3. In a clothes dryer, a casing having an access

opening, a door closing said opening, a perforated inner drum mounted to rotate in the casing coaxial with said opening, said inner drum having an end wall toward said access opening provided with a medial opening in register with said access opening, an outer drum surrounding said inner drum, an end wall of said outer drum curving inwardly and extending through said medial opening and having an opening coaxial therewith, an air manifold mounted in and carried by said door, means for supplying hot air under pressure to said manifold and an air nozzle carried by and extending from said manifold through said medial opening.

4. In a washing machine, a casing having an access opening in one of its side walls, a clothes drying receptacle in the casing and having a filling opening registering with said access opening, a source of hot air under pressure, a conduit having its inlet end communicating with said source of hot air under pressure and having its outlet end discharging through said side wall adjacent said access opening, a door swingably mounted on the casing in position to normally close said access opening, said door carrying a manifold member having outlet elements projecting into said filling opening in said receptacle when said door is closed, said manifold member having an inlet opening arranged to register and communicate with said conduit outlet end only when said door is closed.

References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
1,717,179	Altorfer	June 11, 1929
1,755,465	Wilson	Apr. 22, 1930
2,074,508	Hetzer	Mar. 23, 1937
2,108,084	Strobridge	Feb. 15, 1938
2,328,256	Breckenbridge	Aug. 31, 1943
2,608,769	O'Neil	Sept. 2, 1952