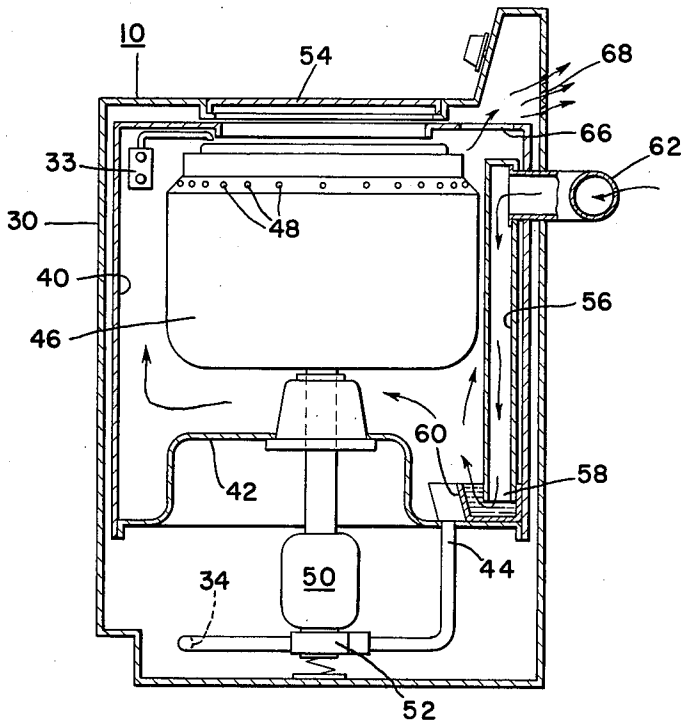
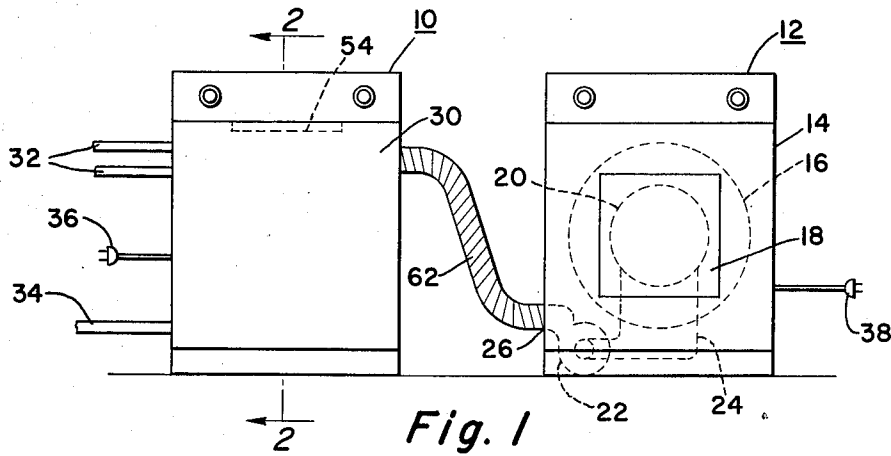


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WASHER AND DRYER WITH MEANS IN THE WASHER FOR
REMOVING LINT FROM THE DRYER
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INVENTORS
James W. Jacobs
George B. Long
BY
Fredrick M. Ritchie
Their Attorney

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WASHER AND DRYER WITH MEANS IN THE WASHER FOR REMOVING LINT FROM THE DRYER

James W. Jacobs and George B. Long, Dayton, Ohio, assignors to General Motors Corporation, Detroit, Mich., a corporation of Delaware

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This invention relates to a domestic appliance and more particularly to an improved carefree arrangement for disposing of lint from a dryer through the drainage system of an adjacent clothes washer.

During the drying of clothes, lint is generated by the tumbling of fabric, and this lint, along with evaporated moisture, is carried from the dryer by a circulating air stream. Prior art devices have sought to filter the lint from the exhausting air by means of a collecting net or screen disposed at some point in the exhaust air system. Such a prior art arrangement requires that the lint collecting screen be periodically cleaned. This invention is directed to an arrangement whereby periodic maintenance of the dryer filter screen or the like is eliminated by causing the lint to be disposed of along with the waste water of a companion clothes washing machine.

Accordingly, it is a general object of this invention to eliminate the need for a filter screen in a clothes dryer.

Another object of this invention is the provision of a lint disposal arrangement which uses the wash water drainage system of an adjacent clothes washer for collecting and disposing of the lint from the clothes dryer.

A more specific object is the provision of a separate washer and separate dryer arrangement wherein the exhaust of the dryer is conveyed into moisture condensing and lint depositing relationship with a trough of water in the clothes washer, said collected lint and condensate being removed from the clothes washer along with the soiled wash water by the pump-out system of the clothes washer.

Further objects and advantages of the present invention will be apparent from the following description, reference being had to the accompanying drawings wherein a preferred embodiment of the present invention is clearly shown.

In the drawings:

FIGURE 1 is a schematic side elevational view of the washer and dryer arrangement of this invention; and

FIGURE 2 is a sectional view, partly in elevation, of the clothes washer shown in FIGURE 1.

In accordance with this invention and with reference to FIGURE 1, a clothes washer 10 is shown positioned adjacent a clothes dryer 12. In general, the clothes dryer 12 is provided with an outer cabinet 14 enclosing a rotatable tumbling drum 16 and having an access door 18 in axial alignment with the front access opening 20 of the tumbling drum. Air flow through the tumbling drum 16 is induced by a blower 22, the inlet of which is connected to the access opening 20 by means of a front duct 24. The blower or air circulating means 22 is adapted to exhaust from the dryer 12 by means of an exhaust outlet 26. For further details of the clothes dryer 12 other than the lint collecting scheme, reference may be had to the patent to Whyte 2,843,945, issued July 22, 1958.

Turning now to the clothes washer 10, its construction is shown to include an outer cabinet 30 into which hot and cold water supply lines 32 lead to a mixing valve 33. A drain line 34 extends from the cabinet 30 to any convenient domestic sewer. Electric power may be supplied, respectively, to the washer 10 and the dryer 12 by means of an electric cord 36, 38.

Turning now to FIGURE 2, the novel lint disposal arrangement of this invention will be described with reference to the novel construction of the clothes washer 10. The outer cabinet 30 of the clothes washer encloses a generally cylindrical water container 40 having a closed lower end or bulkhead 42 from which a drain line 44 extends. A spin tub 46 is rotatably mounted on the bulkhead 42 within the water container 40, said tub including a plurality of circumferentially arranged outflow ports 48 through which soiled wash water may be centrifuged into the surrounding water container whenever the tub 46 is rotated. Such tub rotation may be accomplished by an agitating and spinning mechanism 50 of the type taught in either the patent to Sisson 2,987,904 issued June 13, 1961, or Brucken 3,087,321 issued April 30, 1963. A pump 52 is driven by either mechanism 50 in a manner to pump the soiled wash water from the water container 40 via the drain lines 44 and 34. Soiled wash water is created, of course, when dirty clothes are placed within the spin tub 46 through an access door 54 on the top of the clothes washer cabinet, and an automatic wash cycle is initiated.

The lint and condensate disposal arrangement within the clothes washer 10 is comprised of a duct means 56 attached to one side of the water container 40 between the spin tub 46 and the water container. The lower end 58 of the duct extends into an arcuate trough 60 which is positioned on the bulkhead 42 immediately adjacent the cylindrical wall of the water container 40—the trough 60 being adapted to contain a level of water therein which will submerge the end 58 of the duct 56. A flexible conduit 62 interconnects the exhaust 26 to the dryer 12 with the duct 56 in the clothes washer whereby to cause the dryer exhaust air to bubble through the water in the arcuate trough 60 whenever the blower 22 is operating. This bubbling action will condense the moisture from the dryer exhaust and will cause the lint to be wetted and separated from the air. Air bubbling out of the trough 60 may then escape from the cabinet of the clothes washer 10 by way of an opening 66 in the top of the water container 40 and louvers 68 in the back wall of the clothes washer.

In operation, clean wash water is supplied to the spin tub 46 by means of the water supply lines 32 and the agitating and spinning mechanism 50 is then operated to agitate the clothes for a predetermined interval to remove the soil therefrom. At the conclusion of the agitate cycle, the soiled wash water is removed from the tub 46 when the tub is rotated by the mechanism 50, said soiled wash water being centrifuged from the tub through the outflow ports 48—the rotating action of the tub 46 imparting a swirling action to the centrifuged water which spirals down around the cylindrical wall of the water container 40 until a portion thereof reaches the trough 60. At this point the swirling water will sweep the stagnant water from the trough 60 and carry with it the lint and condensate deposited therein from the dryer. This flushing or purging action will continue so long as the soiled wash water is being centrifuged from the tub with only a small amount of the swirling wash water remaining in the trough 60 at the conclusion of spin to condition the trough for handling subsequent condensing and lint separating operations for the dryer. The condensate and lint which have been purged from the collector trough 60 into the bottom of the water container 40 are then pumped to drain along with the soiled wash water via the drain lines 44 and 34. Thus, the purging action of the collector trough 60 serves also to condition the trough with another load of water through which subsequent dryer exhaust operations can continue to bubble.

Although the foregoing has been explained in connection with a submerged dryer exhaust to secure a bubbling moisture condensing and lint removing action, an alternate arrangement would have the duct 56 terminate above the water in the trough 60, relying on the surface contact of the hot moist dryer air to separate the lint and condense the moisture.

While the embodiment of the present invention as herein disclosed constitutes a preferred form, it is to be understood that other forms might be adopted.

What is claimed is as follows:

1. In combination, a clothes washer having clean water inlet means and soiled water discharge means, said water discharge means including tub means rotatable for centrifuging soiled water therefrom and trough means in the path of the water being centrifuged, said trough means being purged by the swirl of the water centrifuged and adapted to retain a portion of said water after said centrifuging, a clothes dryer having means for circulating a stream of drying air into moisture and lint removing relationship to said clothes and for exhausting the lint and moisture laden air from said clothes dryer, and duct means in communication with said clothes dryer at one end thereof for receiving the lint and moisture laden air exhausted and connected with said clothes washer at the other end thereof for conveying said lint and moisture laden air thereto, said duct means at said other end extending into said trough means below the surface of said portion of water for directing said lint and moisture laden air into moisture condensing and lint depositing relationship with said portion of water, the purging of said trough means by the water centrifuged from said tub means serving to condition the condensed moisture and lint for removal from said clothes washer along with the soiled water centrifuged from said tube means.

2. In combination, a clothes washer having clean water inlet means and soiled water discharge means, said water discharge means including tub means rotatable for centrifuging soiled water therefrom, cylindrical water container means enclosing said tub means and in water receiving relationship to the water centrifuged, trough means in said water container means in the path of the water being centrifuged and pump means for draining the water centrifuged from said water container, said trough means being purged by the swirl of the water centrifuged and adapted to retain a portion of said water after said centrifuging, a clothes dryer independent of said clothes washer and having blower means for circulating a stream of drying air into moisture and lint removing relationship to clothes being dried and for exhausting the lint and moisture laden air from said clothes dryer, and duct means in communication with said clothes dryer at one end thereof for receiving the lint and moisture laden air exhausted and connected with said clothes washer at the other end thereof for conveying said lint and moisture laden air thereto, said duct means at said other end extending into said trough means below the surface of said portion of water for directing said lint and moisture laden air into moisture condensing and lint depositing relationship with said portion of water, the purging of said trough means by the water centrifuged from said tub means serving to sweep the condensed moisture and lint into said water container for removal from said clothes washer by said pump means along with the soiled water centrifuged from said tub means.

3. In combination, a clothes washer having clean water inlet means and soiled water discharge means, said water discharge means including means operable for removing soiled water from said clothes washer and collector means in the path of at least some of the water being

removed, said collector means being purged by at least some of the water removed and adapted to retain a portion of water after said removal, a clothes dryer having means for directing a stream of drying air into moisture and lint removing relationship to said clothes and for exhausting the lint and moisture laden air from said clothes dryer, and means in communication with said clothes dryer for receiving the lint and moisture laden air exhausted and connected with said clothes washer for conveying said lint and moisture laden air thereto, said last named means extending toward said collector means and the surface of said portion of water for directing said lint and moisture laden air into moisture condensing and lint depositing relationship with said portion of water, the purging of said collector means by water being removed from said clothes washer serving to condition the condensed moisture and lint for removal from said clothes washer along with the water being removed.

4. In combination, a clothes washer having clean water inlet means and soiled water discharge means, said water discharge means including means operable for removing soiled water from said clothes washer and collector means in the path of at least some of the water being removed, said collector means being purged by at least some of the water removed and adapted to retain a portion of water after said removal, a clothes dryer having means for directing a stream of drying air into lint removing relationship to said clothes and for exhausting the lint laden air from said clothes dryer, and means in communication with said clothes dryer for receiving the lint laden air exhausted and connected with said clothes washer for conveying said lint laden air thereto, said last named means extending toward said collector means and the surface of said portion of water for directing said lint laden air into lint depositing relationship with said portion of water, the purging of said collector means by water being removed from said clothes washer serving to condition the lint for removal from said clothes washer along with the water being removed.

5. In combination, a clothes washer having clean water inlet means and soiled water discharge means, said water discharge means including means operable for removing soiled water from said clothes washer and collector means in the path of at least some of the water being removed, said collector means being purged by at least some of the water removed and adapted to retain a portion of water after said removal, a clothes dryer having means for directing a stream of drying air into lint removing relationship to said clothes and for exhausting the lint laden air from said clothes dryer, and means in communication with said clothes dryer for receiving the lint laden air exhausted and connected with said clothes washer for conveying said lint laden air thereto, said last named means extending toward said collector means and the surface of said portion of water for directing said lint laden air into lint depositing relationship with said portion of water, the purging of said collector means by water being removed from said clothes washer serving to condition the lint for removal from said clothes washer.

References Cited by the Examiner

UNITED STATES PATENTS

2,750,779	6/1956	Whyte	68—19
2,843,943	7/1958	Geldhof et al.	
3,078,702	2/1963	Conlee	68—20

WALTER A. SCHEEL, *Primary Examiner*.

WILLIAM I. PRICE, *Examiner*.