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3,085,349

CLOTHES DRYING APPARATUS

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Fig. 1

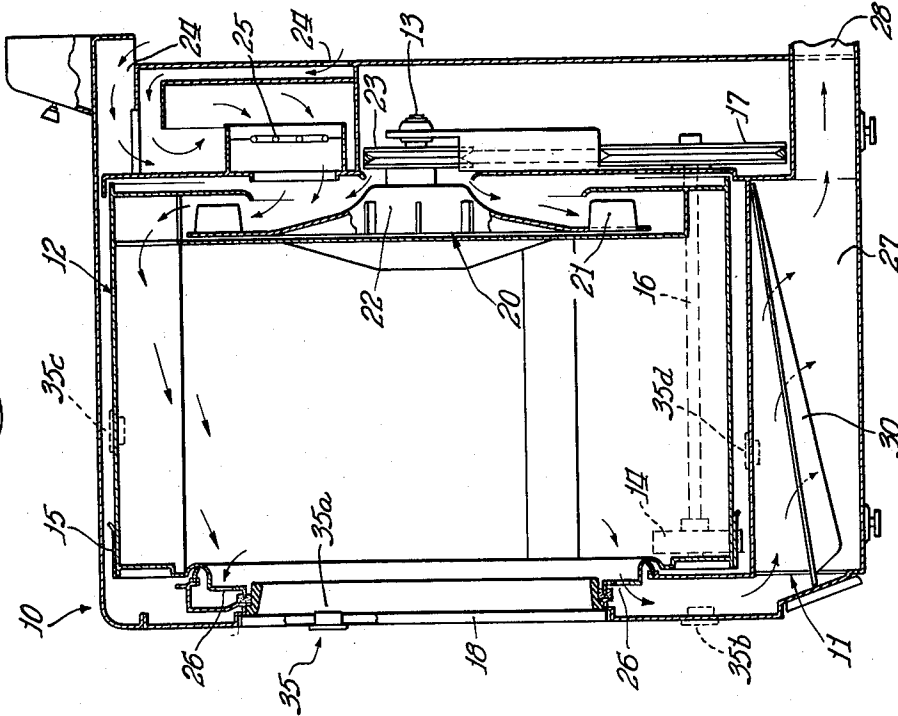


Fig. 2

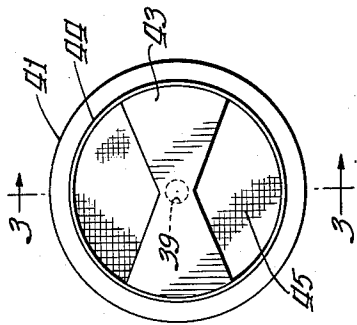


Fig. 3

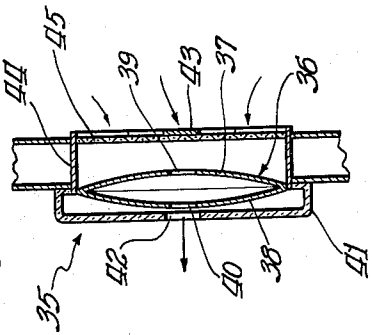
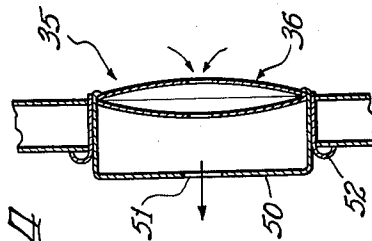


Fig. 4



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1

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CLOTHES DRYING APPARATUS

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3 Claims. (Cl. 34-89)

This invention relates to a clothes drying apparatus, and more particularly to a signalling device operable by the air used for drying to indicate an obstruction in the flow of said air.

Where a lint trap or other filtering device is used to filter the drying air as it leaves the clothes dryer, it is a common occurrence for the lint trap or filter to become clogged with lint to the extent that it greatly restricts the flow of drying air. This situation usually occurs, without the knowledge of the operator, with the result that the dryer fails to properly dry the clothes. In severe cases, a substantial blocking of the drying air will occur which will result in extremely poor efficiency or possibly even failure of the dryer. It is therefore extremely important to provide a clothes drying apparatus whereby the operator will be alerted when there is a substantial restraint of flow of the drying air resulting from clogging of the lint trap.

An important object of the invention is to provide a signalling device for a clothes drying apparatus of simple and economical construction for indicating a malfunction of the dryer.

More particularly, it is an object of this invention to provide a signalling device for a laundry drying apparatus, wherein air is circulated to dry the laundry, which will provide an audible warning to the operator of an obstruction in the path of the circulating air.

With these and other objects in view, the present invention contemplates a laundry drying apparatus having a blower for providing a stream of air through the apparatus to dry the laundry. The air is exhausted through a lint trap or lint collector which is designed to remove lint from the air stream. An audible signal device, such as a whistle, is exposed to the air stream so that part of the stream will pass therethrough. In the event the lint trap becomes clogged with lint, the pressure will build up within the dryer and thus increase the volume of air passing through the device, with the result that the device will produce a signal sound when a predetermined pressure is reached within the dryer and thus indicate to the operator that the lint trap is clogged and requires cleaning.

Other objects, advantages and novel aspects of the invention will become apparent upon consideration of the following detailed description, in conjunction with the accompanying drawings, wherein:

FIG. 1 is a vertical sectional side view of a laundry drying machine showing alternate positions of the signalling device in or adjacent the path of the air stream.

FIG. 2 is a view of one embodiment of the signalling device taken from within the laundry machine showing a lint screen and baffle as a part thereof.

FIG. 3 is a sectional view taken along line 3-3 of FIG. 2 showing the whistle of the signalling device positioned between a protector and a screen and baffle.

FIG. 4 is a sectional view through a second embodiment of the signalling device showing the whistle thereof mounted in a crest which in turn is secured in a bezel within the enclosing panel of the drying apparatus.

Referring to FIG. 1 there is illustrated a clothes dryer with which the present signalling device may be associated. The presently disclosed dryer structure, except for the signalling device, is fully disclosed in Reiter Patent No. 2,798,306. The dryer is generally designated by the

2

numeral 10 and comprises a frame 11 and a laundry basket 12. The laundry basket is rotatably mounted within the frame 11 by virtue of a shaft 13 secured to the basket 12 and pivotally mounted within the frame 11, and a pair of spaced rollers 14 in rolling engagement with an outer surface 15 of the basket. The rollers 14 are secured to parallel shafts 16 which are rotatably supported in the frame 11. A pulley 17 is rigidly secured to one of the shafts 16 and motor (not shown) is adapted to rotate the pulley 17 to rotate the basket on the rollers 14. A door 18 is provided in the frame 11 to provide access to the basket 12.

A blower 20 is provided for directing air through the machine, as indicated by the arrows (FIG. 1), and includes a series of fan blades 21 mounted on a hub 22 which is rotatably mounted on a shaft (not shown) within the shaft 13. A pulley 23 is rigidly secured to the hub 22 and is also driven by the motor (not shown), which drives the rollers 14. It should be noted that the air enters the machine at 24, passes through a series of heating coils 25, is drawn into the blower 20 and subsequently exhausted into the basket 12 where it absorbs moisture from the clothes. The moisture-laden air in the basket 12 is then exhausted from the basket through openings 26 and enters an exhaust manifold 27 where it leaves the machine through an opening 28.

A lint trap 30 is provided in the exhaust manifold 27 for the purpose of removing lint and other foreign matter from the exhaust air as it passes through the exhaust manifold 27. The lint trap 30 requires periodic cleaning to free it from lint and other matter which it collects during operation of the machine, so that the machine can have a free flow of air for highest drying efficiency.

The signalling device of the present invention is generally designated by the numeral 35 (FIGS. 1-4), and will produce sound audible to the operator, when the lint trap 30 is substantially clogged. Thus, the operator will be signalled when the lint trap needs cleaning. The signalling device 35 can be positioned either at 35a (FIG. 1) in the door 18 of the machine, at 35b in the frame 11, at 35c in the basket, or at 35d adjacent the basket 12 in the frame 11. It should be noted that in all of these alternative positions, it is a prerequisite that the device be exposed to the path of the air as it passes through the machine. More particularly, the signalling device 35 has one side exposed directly to the path of the air flowing through the machine and the opposite side open to the atmosphere so that, should the lint filter become clogged, the air will build up pressure in the dryer so that it will be by-passed from the normal path thereof to the atmosphere through the signalling device 35.

One embodiment of the signalling device 35 is illustrated in FIGS. 2 and 3 and includes a whistle 36 having two concentric opposed concavo-convex discs 37 and 38. These discs have respective openings 39 and 40 in the center thereof to allow air to pass through as indicated by the arrows (FIGS. 3 and 4). The shape of the whistle 36 is such that, upon a predetermined rate of flow of air through the openings, a whistling sound will be produced.

The whistle 36 of the signalling device 35 (FIGS. 2 and 3) is protected on the outside by a shield 41 which has an opening 42 to allow the free flow of air there-through from the signalling device 35. The device 35 is protected on the inside of the dryer by a baffle 43. The whistle 36 and the shield 41 are retained in a sleeve 44 which is held in the wall of the machine at one of the alternatively selectable positions 35a-35d. A lint screen 45 is provided between the whistle 36 and the baffle 43 so as to prevent lint clogging of the whistle.

Another embodiment of applicant's invention is illustrated in FIG. 4 and includes the whistle 36 as illustrated in FIGS. 2 and 3. In this embodiment, the whistle 36

3

is mounted in a shield 50. The shield 50 has an air opening 51 and is frictionally supported in the frame or other of the alternative positions (36a-36d) by a sleeve or bezel 52.

In operation, the blower 20 and the basket 12 are actuated by the motor so that the blower causes air to be circulated as indicated by the arrows (FIG. 1) when the basket 12 is rotated. After the air enters the machine at 24, it is pre-heated by the heating elements 25. The blower forces the hot air through the basket 12 so that it will absorb moisture from the laundry and have a drying effect thereon. The moisture-laden hot air then passes through the openings 26 in the basket 12 and subsequently through the lint trap 30 in the exhaust manifold 27 and the exhaust opening 28.

During the operation of the machine, the lint trap 30 will collect lint and other foreign matter from the air to prevent these materials from being exhausted from the machine. Eventually, the lint trap will become clogged with lint, if it is not periodically removed and cleaned. Under these circumstances, the flow of air will be greatly retarded or completely stopped by the clogged lint trap. Inasmuch as the blower 20 will nevertheless continue to operate, a high air pressure will be created between the blower 20 and the lint trap 30 with the result that a greater volume of air will be forced through the signalling device 35. When the lint trap 30 is sufficiently clogged, to a predetermined state, the volume of air forced through the whistle 36 will be sufficient to make the whistle operative so that it will produce an audible sound to signal the operator of the clogged condition of the lint trap.

It is to be understood that my invention is not to be limited to the specific constructions and arrangements shown and described, except only insofar as the claims may be so limited, as it will be understood to those skilled in the art that changes may be made without departing from the principles of the invention.

I claim:

1. A signalling device for a laundry drying machine comprising the combination of a blower for providing a stream of pressurized air through the drying machine, a lint filter in the exhaust path of said air stream, a sound producing signalling device exposed to said air stream and adapted to allow part of said pressurized air to vent therethrough to the atmosphere, said signalling device having a whistle in the path of said vented air and operable thereby when said air pressure is higher than a pre-

4

determined maximum, due to lint clogging said filter, a filter screen secured to said signalling device for filtering air prior to venting through said whistle, a baffle secured to said signalling device adjacent said filter screen for protecting said screen, and a shield secured to said signalling device adjacent the atmospheric side of said whistle.

2. A signalling device for a laundry drying machine comprising the combination of a blower for providing a stream of pressurized air through the drying machine, a lint filter in the exhaust path of said air stream, and a sound producing signalling device exposed to said air stream and adapted to allow part of said pressurized air to vent therethrough to the atmosphere, said signalling device having a whistle in the path of said vented air and operable thereby when said air pressure is higher than a predetermined maximum due to lint clogging said filter, a filter screen secured to said signalling device for filtering air prior to venting through said whistle, a baffle secured to said signalling device adjacent said filter screen for protecting said screen, and a vented shield between said whistle and the atmosphere and having an opening in alignment with the opening in said whistle.

3. A signalling device for a laundry drying machine comprising the combination of a blower for providing a stream of pressurized air through the drying machine, a lint filter in the exhaust path of said air stream, a sound producing signalling device exposed to said air stream and adapted to allow part of said pressurized air to vent therethrough to the atmosphere, said signalling device having a whistle in the path of said vented air and operable thereby when said air pressure is higher than a predetermined maximum due to lint clogging said filter, a filter screen secured to said signalling device for filtering air prior to venting through said whistle, a baffle secured to said signaling device adjacent said filter screen for protecting said screen, a vented shield between said whistle and the atmosphere having an opening in alignment with the opening in said whistle, and a bezel for mounting and frictionally retaining said signalling device in the drying machine.

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