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**United States Patent
Siddall****8,786,454
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Air flow sensor

Abstract

A device for identifying the air flow condition within a clothes dryer having a lint filter, an exhaust passage, and a blower is disclosed. The device includes a sensor, an input having a first end connected to the sensor and a free second end, wherein the free second end is adapted to be disposed within the clothes dryer, upstream from a filter, and wherein the sensor detects a differential between an operating pressure at the free second end of input versus a reference pressure to thereby determine whether a sufficient vacuum is present within the clothes dryer, and an output that provides an output characteristic based on the differential, wherein the output characteristic changes from a first characteristic to a second characteristic when the differential surpasses a differential threshold.

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2105/60 (20200201); D06F 58/50 (20200201); D06F 2103/28 (20200201);
D06F 2103/36 (20200201)**Current International Class:**

G08B 21/00 (20060101)

Field of Search:

;340/603,626 ;73/700 ;34/88,89,558

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This application claims priority under 35 U.S.C. .sctn.119(e) to the U.S. Provisional Patent Application No. 61/189,935 filed on Aug. 25, 2008, the contents of which are fully incorporated herein by reference.

Claims

What is claimed is:

1. A device for identifying an air flow condition within a plurality of clothes dryers, each having: a door, a lint filter and a blower, the device comprising: a housing containing a power supply; a sensor disposed within the housing; a tubular member having a first end connected to the sensor and a second end that extends beyond an outer surface of the housing, wherein the tubular member defines a passageway extending between the first end and the second end such that the first end is in fluid communication with atmosphere that surrounds the outer surface of the housing, wherein the tubular member is retractably connected to housing and sensor such that a majority portion of tubular member is contained within housing when the device is not being used and can be extended therefrom beyond the outer surface of the housing and into a working position, wherein the tubular member is a flexible plastic tube and is extendable through the door

when arranged in a closed orientation without materially affecting the operation of the clothes dryer, wherein the second end of the tubular member is adapted to be disposed within the clothes dryer, upstream from a filter, and wherein the sensor detects a differential between an operating pressure at the free second end of the tubular member versus a reference pressure to thereby determine whether a sufficient vacuum is present within the clothes dryer; and an output that provides an output characteristic when the differential is less than a pre-determined differential threshold, wherein the output characteristic changes from a first characteristic to a second characteristic when the differential surpasses the pre-determined differential threshold, wherein the device is a handheld, portable device that can readily identify the flow condition in a plurality of clothes dryers.

2. The portable test device according to claim 1, further comprising: a housing, wherein the sensor is disposed within the housing, and wherein the tubular member is a tubular member and the second end of the tubular member extends outside of the housing.

3. The portable test device according to claim 2, wherein the tubular member is retractable such that second end of tubular member extends between a first operating position and a second non-operating position.

4. The portable test device according to claim 1, wherein the sensor includes a device selected from the group consisting of a transducer and a normally open pressure vacuum differential switch.

5. The portable test device according to claim 1, wherein the sensor includes two or more pressure vacuum differential switches to identify more than one vacuum conditions within the clothes dryer.

6. The portable test device according to claim 1, wherein the output includes one or more light emitting diodes.

7. The portable test device according to claim 6, wherein the output further includes an alarm that activates when the output characteristic is the second characteristic.

8. The portable test device according to claim 7, wherein the alarm is selected from the group consisting of a smoke alarm, a fire alarm, a carbon monoxide detector and any combination thereof.

9. The portable test device according to claim 7, wherein the alarm is communicatively attached to a receiver of a third party service provider.

10. The portable test device according to claim 1, wherein the reference pressure is the environmental pressure outside of the clothes dryer.

11. A method comprising the steps of: providing a portable test device having an air flow sensor, a tubular member having a first end connected to the air flow sensor and a second end that extends beyond an outer surface of the housing, wherein the tubular member defines a passageway extending between the first end and the second end such that the first end is in fluid communication with atmosphere that surrounds the outer surface of the housing, wherein the tubular member is retractably connected to housing and sensor such that a majority portion of tubular member is contained within housing when the portable test device is not being used and can be extended therefrom beyond the outer surface of the housing and into a working position, wherein the tubular member is a flexible plastic tube; interfacing the portable test device with a working device having an exhaust passage, wherein the working device is a clothes dryer having: a door, a lint filter and a blower, wherein the interfacing step includes inserting the second end of the tubular member into a clothes drying area of the clothes dryer, upstream from the lint trap, the exhaust passage and the blower; closing the door of the clothes dryer such that the second end remains within the clothes drying area; activating the clothes dryer for arrangement in an on condition; comparing internal pressure within the clothes dryer against an environmental pressure outside of the clothes dryer to identify whether a sufficient vacuum is present within the clothes dryer; determining an output characteristic when the difference between the internal pressure and the environmental pressure is less than a pre-determined threshold; and providing the output characteristic, wherein the detection occurs without modification of the dryer, wherein the tubular member is adapted to extend through the door when arranged in a closed orientation without materially affecting the operation of the clothes dryer.

