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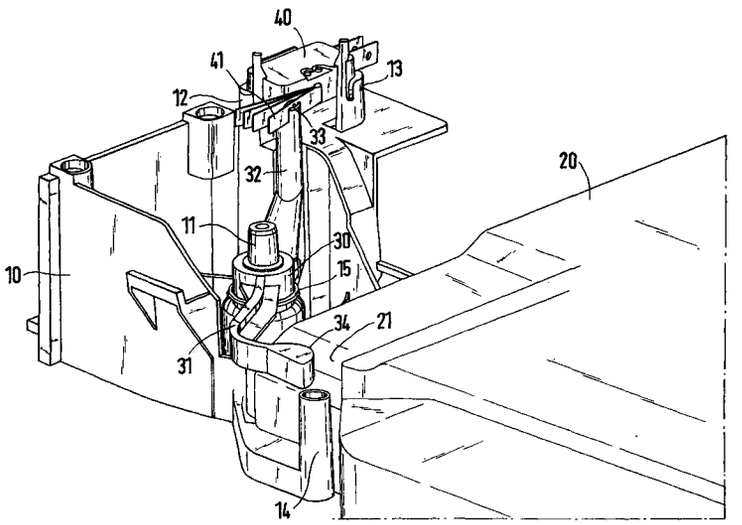
(54) Clothes dryer with a condensation device

(57) The invention concerns a clothes dryer with a condensation device with a condensate collector that controls a switching device which monitors the presence of the condensate collector and its full level and emits a control signal to the control circuit of the clothes dryer. The operation reliability is improved with a simple switching device where a two-arm, spring-loaded operating lever (30) is pivoted in a base part (10) that receives the condensate collector (20), whereby the feeler arm (31) of the operating lever (30) rests under pretension against a sidewall (21) of the condensate collector (20) that can be vertically adjusted to a degree, and the switching arm (32) is connected to an actuator (41) of an electrical switch (40), whereby the inserted condensate collector (20) holds the operating lever (30) in an actuated position for the switch (40) by its sidewall until the condensate reaches a set level, and when the set level is exceeded, the condensate collector sinks (20) until the feeler arm (31) of the lock-and-release lever (30) swings over an abrupt shoulder in the sidewall (21) of the condensate collector (20) and assumes a locked position in which the switch (40) is switched off, and the clothes dryer cannot be started.



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Description

[0001] The invention concerns a clothes dryer with a condensation device that has a condensate collector that controls a switching device which monitors the presence of the condensate collector and its full level and emits a control signal to the control circuit of the clothes dryer.

[0002] There is a prior-art clothes dryer of this kind in DE PS 22 56 404. With this clothes dryer, the control circuit prevents the drying program from starting when the condensate collector is not inserted or is inserted improperly in the device, or has not been emptied since a prior drying program. In addition, the control circuit stops the program when a specific amount of condensate has collected and the collector may overflow. The switching device is prevented from fluttering and switching on again when the electric switch abruptly changes to its shut-off position after a set full level is reached.

[0003] With this prior-art clothes dryer, the condensate collector rests on a balance beam of a scale. The switching device has two electrical switches, one of which responds when the condensate collector assumes a position on the spring-loaded balance beam, while the second switch responds when the balance beam exceeds a switching point set by the second spring. An unreliable weighing system is required for this prior-art clothes dryer, and the shut-off state when the condensate collector reaches a maximum level does not remain locked until the condensate collector is removed, emptied and reinserted.

[0004] The problem of the invention is to improve a clothes dryer of the initially-cited type so that a simple switching device reliably monitors the proper insertion of the condensate collector and also locks the switching device in its switched-off state until the condensate collector is properly reinserted.

[0005] This problem is solved according to invention with a two-arm, spring-loaded operating lever pivoted in a base part that receives the condensate collector, whereby the feeler arm of the operating lever rests under pretension against a sidewall of the condensate collector that is vertically adjustable to a degree, and the switching arm is connected to the actuator of an electrical switch, whereby the inserted condensate collector holds the operating lever in an actuated position for the switch by its sidewall until the condensate reaches a set level, and when the set level is exceeded, the condensate collector sinks until the feeler arm of the lock-and-release lever swings over a sudden shoulder in the sidewall of the condensate collector and assumes a locked position in which the switch is switched off, and the clothes dryer cannot be started.

[0006] Only when the condensate collector is correctly inserted can the switching device release the start of the clothes dryer by means of an electrical switch. If the set level is reached before the condensate collector overflows, then the switching device abruptly changes to a locked shut-off position that is only reversed when the full condensate collector is removed, emptied and properly reinserted and actively connected to the switching device. This prevents unintended flutter of the switching device by briefly switching on and off.

[0007] When the feeler arm of the lock-and-release lever is held with a helical spring under pretension contacting the sidewall of the condensate collector, the presence of the condensate collector is easily monitored in the clothes dryer.

[0008] The sliding friction between the feeler arm and condensate collector is kept low in that the feeler arm ends in a feeler head with a horizontally convex contact surface that contacts the sidewall of the condensate collector.

[0009] The maximum level is easily and reliably set in that the condensate collector rests on a spring element on the base part that determines the vertical shift as the condensate collects and hence determines the set level to switch off the switch.

[0010] In one embodiment, the coupling between the switching arm of the lock-and-release lever and the actuator of the electrical switch is realised in that the switching arm of the lock-and-release lever has a seat on its free end for the actuator of the switch, and the seat on the switching arm of the lock-and-release lever is designed as a slot for a leaf-like actuator of the switch.

[0011] The operational reliability of the clothes dryer is easiest maintained when the switched-off position of the switch turns off the clothes dryer.

[0012] The invention will now be further explained with reference to a prospective partial view of an exemplary embodiment shown in the drawing.

[0013] The drawing shows a base part 10 of the clothes dryer that can be manufactured as an extruded part, and a journal 11 for a two-arm lock-and-release lever 30. In addition, a stop 14 of the base part determines the insertion position for a condensate collector 20 and also serves as a guide as it shifts vertically.

[0014] The lock-and-release lever 30 is under the tension of a helical spring 15 that rests on the base part 10 and the lock-and-release lever 30 so that a feeler arm 31 with a feeler head 34 rests on the facing sidewall 21 of the inserted condensate collector 20 under pretension. The contact surface of the feeler head 34 is horizontally convex facing the condensate collector 20 to keep the sliding friction low between the actively linked parts. A switching arm 32 of the lock-and-release lever 30 is linked to an actuator 41 of an electrical switch 40. The free end of the switching arm 32 is provided with a slot as a seat 33 for the actuator 41 of the switch 40 that receives the leaf-like actuator 41. The switch 40 is held by holders 12 and 13 of the base part 10.

[0015] The condensate collector 20 can be adjusted vertically to a limited degree on the base part 10, and it can be removed in an upward direction. The stop 15 can also be included to always guide the condensate collector 20 without rotation into the correct contact position

in relation to the feeler arm 31. The condensate collector 20 is supported by a spring element (not shown) on the base part 10. The spring element is such that the shifting path is set so that the feeler head 34 suddenly swings onto a abrupt shoulder 22 of the sidewall 21 when the level is full.

[0016] By means of the switching arm 32, the actuator 41 of the electrical switch 40 is swung so that it reliably assumes its shut-off position and shuts off the clothes dryer. Since this shutoff position remains locked until the entire condensate collector 20 is removed from the base part 10, emptied and reinserted, any flutter of the switching device as it switches on and off is reliably suppressed. If the condensate collector 20 is removed from the base part 10, then the helical spring 15 holds the lock-and-release lever 30 and hence the electrical switch 40 in its switched-off position. Only when the sidewall 21 of the condensate collector 20 below the shoulder 22 swings the feeler arm 31 back far enough can the switching arm 32 of the lock-and-release lever 30 move the actuator 41 of the switch 40 into its switched-on position, and the switching device can release the clothes dryer to start. The control circuit of the clothes dryer can be controlled by the electrical switch 40 to trigger the various switching-off procedures.

Claims

1. A clothes dryer with a condensation device with a condensate collector that controls a switching device which monitors the presence of the condensate collector and its full level and sends a control signal to the control circuit of the clothes dryer,
characterised in that

   a two-arm, spring-loaded operating lever (30) is pivoted in a base part (10) receiving the condensate collector (20);
   whereby the feeler arm (31) of the operating lever (30) rests under pretension against a sidewall (21) of the condensate collector (20) that can be vertically adjusted to a degree, and the switching arm (32) is connected to the actuator (41) of an electrical switch (40);
   whereby the inserted condensate collector (20) holds the operating lever (30) in an actuated position for the switch (40) by its sidewall until the condensate reaches a set level;
   and whereby, when set level is exceeded, the condensate collector sinks (20) until the feeler arm (31) of the lock-and-release lever (30) swings over an abrupt shoulder (22) in the sidewall (21) of the condensate collector (20) and assumes a locked position in which the switch (40) is switched off, and the clothes dryer cannot be started.

2. A clothes dryer according to claim 1,
characterised in that
the feeler arm (31) of the lock-and-release lever (30) is held with a helical spring (15) under pretension contacting the sidewall (21) of the condensate collector (20).

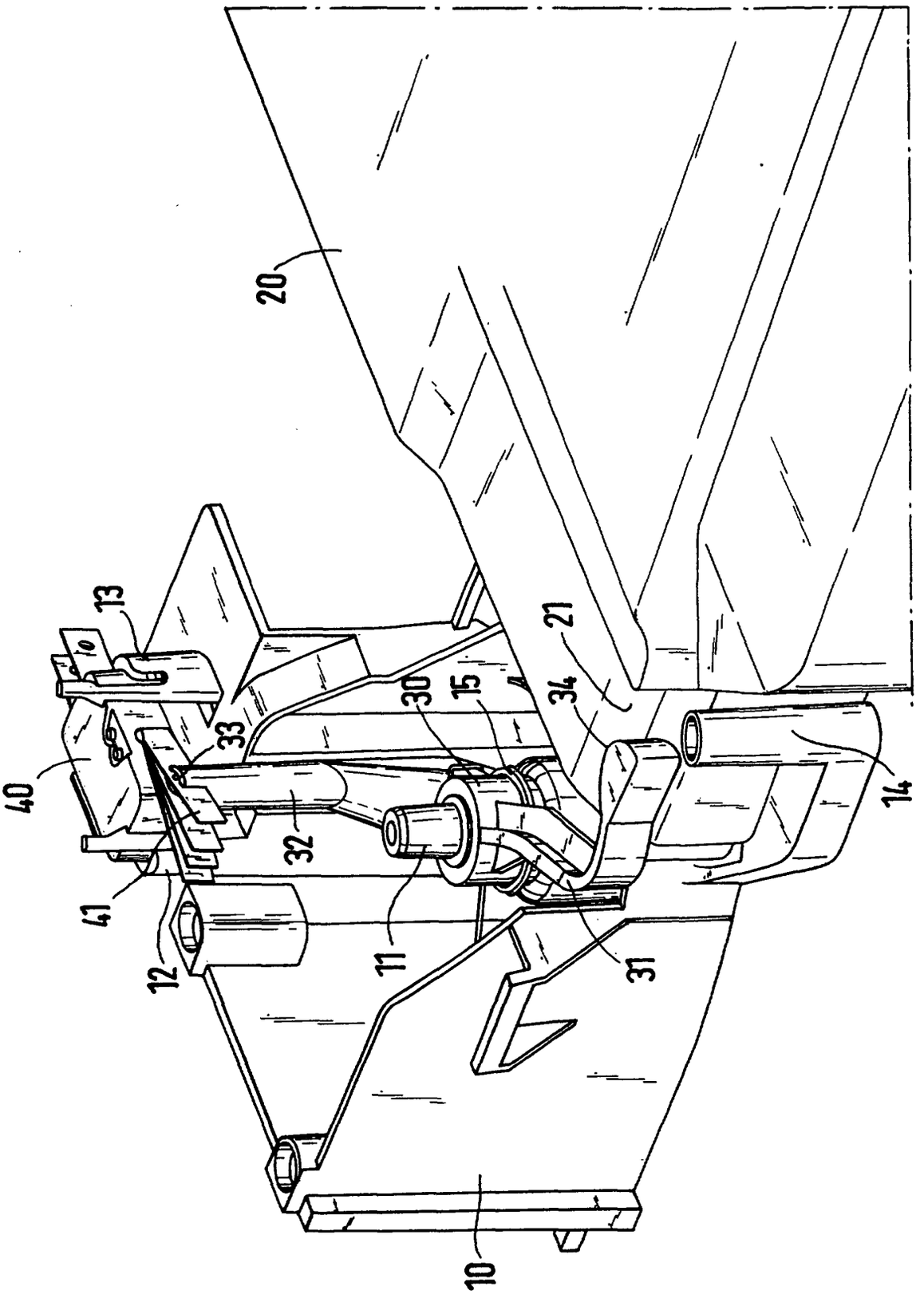
3. A clothes dryer according to claims 1 and 2,
characterised in that
the feeler arm (31) ends in a feeler head (34) with a horizontally convex contact surface that contacts the sidewall (21) of the condensate collector (20).

4. A clothes dryer according to one of claims 1 - 3,
characterised in that
the condensate collector (20) rests on a spring element on the base part (10) that determines the vertical shift as the condensate is collected and hence determines the set level to switch off the switch (40).

5. A clothes dryer according to one of claims 1 - 4,
characterised in that
the switching arm (32) of the lock-and-release lever (30) has a seat (33) on its free end for the actuator (41) of the switch (40).

6. A clothes dryer according to claim 5,
characterised in that
the seat (33) on the switching arm (32) of the lock-and-release lever (30) is designed as a slot for a leaf-like actuator (41) of the switch (40).

7. A clothes dryer according to one of claims 1 - 6,
characterised in that
the clothes dryer is turned off when the switch (40) is in its switched-off position.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