This invention relates primarily to an air venting con-
struction and breather system for a combination washer-
drier though portions of its teaching may be singularly
applied to either a washing machine or a drying machine
for clothes or other fabrics.

This construction basically consists of a casing enclos-
ing a clothes receiving drum and provided with a water
inlet check valve permitting unidirectional air and water
flow into the casing while restricting air or water flow
from the casing in the opposite direction. A second
check valve located in an isolated quiescent area down-
stream of a vapor condenser communicating with the
casing relieves any air pressure build-up within the cas-
ing from various causes by discharging through this sec-
ond check valve cooled air that has passed through the
vapor condenser and given up some of its moisture in a
condensation process.

The benefits, objects and advantages of this venting
construction, as disclosed more fully hereinafter, may
be realized during both the washing and drying operations
of the illustrative combination washer-drier utilizing this
venting system.

During the washing operations of this combination unit,
this unidirectional venting system prevents the accidental
discharge of any soap suds through the water fill opening
in the casing side wall. This unidirectional air venting
system also eliminates the problem of "flow back" during
the tub filling operations. This problem which is pro-
duced by the deflection of water entering the casing by
reason of its encounter with expanding air leaving the
casing is eliminated through the use of the check valve
on the fill spout. In addition, since this illustrative
washer-drier utilizes a pressure sensitive switch which
senses the head of water within its fluid tight casing
to control the water level within that casing, this venting
system also serves to prevent an accidental or premature
actuation of this water level switch by a build-up of air
pressure as might otherwise be caused by either the com-
pression of the trapped air by fluid rising within the cas-
ing during the fill operations or by the sudden air com-
pression created by closing the air-tight cabinet door
covering the cabinet loading opening communicating with
the clothes drum. Filling a cold casing with warm or
hot water will also cause air expansion and premature
actuation of the water level switch unless the casing is
vented as is possible with the venting system.

During the drying operations when damp fabrics are
rumpled within the clothes receiving drum, air is com-
pressed and rarified in various parts of the casing by
movement of the tumbling fabrics within the drum. While
this action also occurs during the washing opera-
tions, the creation of the air pressure differential within
the casing in this manner during the drying operations
is more critical since moisture vapors created by the ap-
lication of heat to the moist fabrics during this period
tend to be discharged through the water fill opening in
the casing. Unless some means is taken to control the
venting of these hot vapors from the casing, they tend
to condense on the inner surfaces of the cabinet enclos-
ing the casing thereby producing rust and water accumu-
lation problems.

During the raftraction of air within the casing as
caused by the tumbling fabrics, cool air is also sucked
into the casing through the check valve in the water fill
spout to the casing. This air, like that in the casing at
the beginning of the drying operations, is heated to a
higher temperature during the drying operations and
consequently expands producing the same moisture vapor
venting problem.

In the illustrative embodiment this vapor pressure build-
up in the casing of the combination machine by either of
these causes is relieved by a second check valve down-
stream of a vapor condenser which releases air into the
ambient atmosphere only after that air has passed through
the vapor condenser to condense out the moisture from
this air and to cool it down to a temperature approxi-
mately equal to that of the ambient cabinet tempera-
ture so as to substantially eliminate this moisture vapor
problem.

In the present disclosure this second check valve down-
stream of the vapor condenser is positioned adjacent a
baffle member in a relatively quiescent area removed from
the turbulent air regions so that it is opened only by a
definite pressure build-up within the casing and not by
any minor air pressure fluctuations due to the discharge
of this air from the blower forming part of the vapor
condenser unit.

In the accompanying drawings:

Figure 1 is a front elevation of a combination washer-
drier, partially broken away, incorporating my invention;
Figure 2 is a side elevation, partially broken away,
showing the right side of the combination washer-drier
illustrated in Figure 1;
Figure 3 is a side elevation, partially broken away,
showing the left side of the combination washer-drier
shown in Figure 1;
Figure 4 is a rear elevation, partially broken away,
of the combination washer-drier unit shown in Figure 1
and showing the inlet and outlet of the unidirectional
vapor breather system utilized in that combination washer-
drier;

Figure 5 is a cross-sectional view taken on line 5—5
of Figure 4;

Figure 6 is an enlarged cross-sectional view taken on
line 6—6 of Figure 4 showing the vapor condenser and
air fan assembly of the combination washer-drier shown
in Figures 1—4;

Figure 7 is an enlarged cross-sectional view of the
supporting hub structure shown in Figure 5;

Figure 8 is a view taken on line 8—8 of Figure 4
showing the unidirectional air flow path through the illus-
trative washer-drier; and

Figure 9 is a view taken on line 9—9 of Figure 5 showing
the tub assembly sump and its cooperation with the
water level control switch.

Referring now to the accompanying drawings in de-
tail, it will be seen that the combination washer-drier unit
shown in these drawings includes a substantially flat sur-
faced base frame 10 mounted on legs 11. Mounted upon
this frame 10 are the channel members 13 and 14 which
are welded or securely affixed in some suitable manner
to the base frame 10 to form the two major supports for
the washer-drier unit illustrated in the accompanying
figures.

As apparent from an inspection of Figures 1 and 4
channel members 13 and 14 are substantially triangular
in elevational configuration with the apex of these mem-
brs receiving pivot pins 16 and 17. These pivot pins
16 and 17 are journaled in the flanged bearing sleeves 18
and 19, respectively, which form a two-point suppor

2,985,966 WASHER-DRIER VENTING SYSTEM
Paul A. Martin, Newton, Iowa, assignor to The Maytag
Company, Newton, Iowa, a corporation of Delaware
Filed Dec. 6, 1957, Ser. No. 701,129
9 Claims. (Cl. 34—75)
for the tub brackets 21 and 22, respectively. This allows the tub or casing which is generally indicated by the tub 24 and which is fastened to the brackets 21 and 22, to oscillate back and forth on pins 16 and 17 in an arcuate movement in response to various forces generated within that tub.

Tub 24 is maintained in an upright position on pins 16 and 17 by the two centering springs 25 connected between the tub 24 and base 10 through the spring anchor brackets 26 fastened to the latter member. Figures 1 and 3 show the tub 24 as being provided with a tub damper bracket 28 which forms the support for the damper leaf spring 29 carrying the damper pad 31 in ball and socket joint at the end of damper spring 29. Base frame 10 is provided with an upstanding damper plate 32 which is engaged by the damper pad 31 to absorb and dissipate the energy imparted to tub 24 causing it to oscillate on the supporting pivot pins 16 and 17.

Tub 24 includes a generally cylindrical side wall 71, a pair of spaced rear walls 72 and 73 and a front wall 74. The front and outer rear walls 74 and 72, respectively, are connected to the cylindrical side wall 71 by means of the encompassing flanged hoop-like members 76 while the partition wall 73 positioned between walls 72 and 74 is welded to side wall 71. It will be seen from an inspection of Figure 5 that the spaced rear walls 72 and 73 support the tub bearing assembly generally indicated by the reference numeral 80 and shown in detail in Figure 7.

The tub bearing assembly 80 includes a spacer hub 81 which is located between and which abuts the rear walls 72 and 73, and the threaded clamp member 82 receiving the spanner clamp nut 83 which, when tightened on member 82, produces a rigid support for the bearings 85 and 86 adjacent walls 72 and 73, respectively. A spacer sleeve 88 loosely encircling the drum drive shaft 89 regulates the spacing between these bearings which journal drum drive shaft 89.

The rear end of the drum drive shaft 89 is rigidly connected to the large drive pulley 91 whereas its front end is threaded into the hub 94 of the drum or clothes receptacle 95. Drum 95 includes a perforate rear wall 96 which is rigidly affixed to and cooperates with the spider-like member 97 to form a double cone support connected to the hub 94 and providing a rigid support for the clothes basket 95 on drum drive shaft 95. A sealing member 101 including a carbon nose ring 102 pressed against the rear surface of this revolute hub structure by coil spring 103 prevents water from the washing action carried on within the drum 95 and 86.

As apparent from an inspection of Figure 5, the clothes drum 95 also includes a perforate cylindrical side wall 104 carrying clothes elevating vanes 105. Side wall 104 merges into the short front wall 106 and joins the flanged rear wall 96 in an overlapping relationship to form a protruding flange 108 which, while not touching wall 73, cooperates with that wall 73 to form an effective air seal to prevent heated air entering tub 24 through cylindrical side wall 71 during the drying operations from being short circuited around the rear edge of drum 95.

Tub 24 includes a lower recessed portion 111 which forms the sump for tub 24. Sump 111 communicates with the drain pump 112 and includes a perforate tray 114 for preventing foreign particles passing through the perforate drum 95 into tub 24 from entering and damaging pump 112. Tray 114 is removable from its position shown in Figure 5 through the drum access door 115 provided in the side wall 104.

Tub 24 also includes the circular loading opening 117 which is encircled by the bellows seal 118 having its opposite end fastened to a similar opening formed in the cabinet 119 enclosing this combination unit. Sealing member 118 includes a number of convolutions permitting arcuate movement of tub 24 relative to cabinet 119.

A rectangular door 121 hinged on cabinet 119 carries a transparent door glass 122 having a cylindrical portion extending rearwardly through the bellows seal 118 which is provided with a flexible annular sealing lip 124 engageable with the periphery of the door glass window 122. This seals the unit while enabling the operator of the machine to observe the operations taking place within tub 24 during the washing and drying processes. The lamp 126 fastened to the outer of tub 24 shines through a transparent member 127 carried in tub 24 for illuminating the interior of that member during the loading operations of this machine.

Tub 24 also includes a heater housing 131 which supports a heating element 132 capable of radiating heat energy through an opening located in the cylindrical tub wall 71 and covered by the heater housing 131. Heater housing 131 also mounts the thermostat 133 which is connected in series with heater 132. A lowered shielded member 134 carried by tub 24 and positioned between heater housing 131 and the heating element 132 creates a divided air flow into tub 24. This maintains housing 131 in a relatively cool condition and directs a major portion of the heat from heating element 132 into the clothes drum 95 by way of the perforate side wall 105.

The power necessary to rotate drum 95 through the large pulley 91 is applied by the single speed motor 137 mounted on bracket 138 carried on a lower portion of tub 24. The output shaft of motor 137 is connected to a flexible universal coupling 139 which is connected in turn to the transmission input shaft 140 constituting an extension of the motor shaft.

A split pulley 141 having a pair of axially separable sheaves spliced to each other is rigidly connected to shaft 140 through one of its sheaves. The other sheave is constantly biased toward the shaft connected sheave by means of the compression spring 142 which encircles the shaft extension 140. This arrangement automatically regulates the tension in the small belt 144 which regulates the drain pump 112 whenever motor 137 is energized.

Shaft extension 140 also drives the two-speed transmission unit 145 and the pulley 146 affixed to the end of that portion of shaft 140 extending completely through transmission 145. Transmission 145 is provided with an output pulley 147 which is connected to the large drum shaft pulley 91 through belt 148. In the illustrative embodiment shown in the accompanying drawings, the energization of solenoid 149 controls the speed of pulley 147, causes the clothes receptacle 95 to be rotated at a speed of approximately 300 revolutions per minute while the deenergization of that solenoid causes receptacle 95 to tumble its contents at approximately 50 revolutions per minute.

The pulley 146 affixed to the end of shaft 140 is connected to the fan pulley 151 through the belt 152 so as to drive pulley 151 at a speed approximately equal to that of motor 137. As shown in Figure 6, pulley 151 is rigidly connected to an impeller shaft 155 which is journaled in a bearing 156 supported by the removable circular plate 157 bolted to the rear walls 72 of tub 24.

A combination transmission support and belt tensioning device is provided by the slotted bracket 158 which is connected to the rear wall 72 through the adjustable machine screws 159. Bracket 158 journals shaft 140 allowing the transmission unit 145 to pivot freely around the bearing receiving that latter shaft. By moving the transmission unit 145 and its mounting bracket 158 away from the fan pulley 151, the slack may be taken out of belt 152. The slack is automatically taken out of the tumbler drive belt 148 by means of the compression spring 161 mounted between bracket 158 and the transmission unit 145 and tending to pivot the transmission 145 downwardly around shaft 140. The tension in the drain pump belt 144 is automatically maintained during
these adjustments by means of the spring biased split pulley 141. A combination blower condenser unit capable of moving air through tub 24 scrubbing lint from this air and condensing out the moisture from hot vapors produced within casing 24 during its drying operations is positioned between portions of the spaced walls 72 and 73. As shown in Figure 6, the partition wall 73 is provided with an inlet duct defined by a flanged opening 164 to which receives a rubber annular extension ring 164 terminating just short of the blades of an impeller member 165 fixed to the impeller shaft 155.

A housing for the impeller 165 is produced by the cooperation of walls 72 and 73 with an imperforate scroll-shaped side wall 166 shown on dotted lines in Figure 4, which bridges the space between walls 72 and 73 to enclose the separate vapor condenser and blower unit formed between these walls. A condenser water pipe 167 directed toward the hub of impeller 165 allows the latter member to break up the stream of condensing fluid discharged from the condenser pipe 167 and thereby produces a cool spray and mist for condensing out hot moisture vapors entering this blower condenser unit through opening 163 during the drying operations of this combination machine.

A series of small curved moisture entraining baffle plates 168 and a horizontal baffle plate 169, shown in the broken away portion of Figure 4 also bridge walls 72 and 73 to centrifugally separate out the droplets of moisture carried in the air leaving the blower condenser unit via an outlet duct and entering the heater housing unit 131 for reheating and recirculation through tub 24 and clothes drum 95. These plates 168 and 169 are not concerned with any vapor condensing function as that function is completely accomplished within the confines of members 71, 72, 73 and 166. Members 168 and 169 do, however, prevent excess moisture in fluid form from being carried through the outlet duct of the condenser into heater housing 131.

The water for the vapor condensing operation is supplied through the external conduit 172 while water for the washing operation is supplied through the conduit 173 which empties into the cup 174 provided with a flap check valve 175 and draining into the front washing and drying chamber of tub 24 between walls 73 and 74. Flapper valve 175 not only prevents suds from escaping from cup 174 during the washing operation but also prevents steamy vapors from escaping from within the front washing and drying chamber of tube 24 and condensing on the cooler inside surface of cabinet 171. Since there is a tendency to compress air within the closed front drying chamber within the confines of walls 71, 73 and 74 due to the expansion of heated air and due to the pumping action of the tumbler fabrics within drum 95, the flap check valve 175 covering the vapor breathing hole 178 in rear wall 72 is provided. This allows air to escape from tub 24 in a unidirectional breathing action through these two flap check valves 175 and 177 without producing condensation on the inner cabinet surfaces since the air escaping through breather hole 178 is cooled by the blower condenser unit within scroll 166 before being discharged through exhaust aperture 178.

Since sump 111 which receives the washing and condensing fluids discharged into casing 24 is positioned between walls 73 and 74, a small drain aperture 176 is provided in wall 73 to enable the condensing fluid, its resulting condensate and the lint and debris from the air entering the combination blower-condenser unit to flow into sump 111 and into the drain pump 112 for discharge to an external drain. While not shown in detail in the accompanying drawings, a valve is provided between sump 111 and the drain pump 112 in order to retain the washing fluids without casing 24 during the washing operations of this machine.

It should be noted that since the function of drain aperture 176 is to drain fluids from the space between walls 72 and 73, its size and shape is dictated by the quantity of liquid flowing through it and the possible effects of lint accumulation in this area. Any oversized aperture or conduit in, through or around wall 73 would have the undesirable effect of short circuiting unheated air into the front drying chamber and the clothes receptacle 95 during the drying operations.

In operation during the washing process, water is fed into casing 24 to the desired fluid level through conduit 173, the air gap between the end of conduit 173 and cup 174 as required by plumbing codes, cup 174 and the check or flapper valve 175 positioned within cup 174. The fluid level within casing 24 is controlled by means of the conventional adjustable pressure diaphragm switch mechanism 182 electrically connected to a fill valve solenoid (not shown) and communicating with sump 111 through hose 183 as illustrated in Figure 9.

During this filling operation any expansion of cooler air retained within casing 24 is prevented by check valve 175 from expanding outwardly through cup 174 against the incoming wash fluids and creating "blow back" or a deflection of water from conduit 173 or cup 174. Check valve 175 also prevents any soap suds generated during the washing operation from backing out cup 174.

This pressure vancing system used with the illustrative washer-drier serves to prevent a premature actuation of pressure sensitive diaphragm switch 182 by relieving any build-up of pressure that might occur within casing 24. Such a build-up of pressure could be caused by filling the cold casing or tub 24 with warm or hot water causing an air expansion to take place within tub 24 or could be caused, unless otherwise prevented, by the compression of air trapped within casing 24 by fluids rising within that casing. The closing of the airight cabinet door 121 can also cause a sudden air compression within casing 24 unless casing 24 is properly vented. However, by automatically relieving that air pressure within casing 24 through openings 163 and 178 and the one-way valve 177, the pressure actuated diaphragm switch 182 sensing the head of washing fluid retained within casing 24 is not prematurely actuated by the creation of air pressure within casing 24.

During the washing operations drum 95 and its load of fabrics is rotated at a tumbling speed in the body of fluid retained within casing 24 to effect a conventional tumbling and cleansing action which is followed by a series of rinsing and centrifuging operations in the absence of that washing fluid so as to leave these fabrics in a damp condition at the start of the drying operation. It will be noted that during this washing operation, the lower portion of casing 24 between walls 72 and 73 including the opening 176 is washed free of any lint which may have remained in this part of the casing during the previous drying operation.

During the drying operations of the illustrated machine when heat is applied to the fabrics within drum 95 by the energization of heater 132, an evaporation of moisture from these fabrics takes place. Since the impeller 165 rotates whenever the drive motor 137 is energized, the resulting moisture vapors are drawn through opening 163 in the partition wall 73 and are carried into the blower housing formed by the cooperation of the scroll 166 with walls 71, 72 and 73. The moisture vapors entering this blower housing, which partially encompasses the impeller member 165, are cooled and condensed due to their intimate contact with the misty spray and fog produced by the impingement of the cooling fluid flowing through tube 167 onto the hub of the rotating impeller 165. It will be apparent from Figure 6 that the impingement of this cooling fluid against the hub of impeller 165 rather than against the impeller blades themselves will reduce the amount of splashback through opening 163.

While the efficiency of this condenser unit is dependent
upon many design factors, tests have shown that units 
built in accordance with the illustrative drawings condense 
out all of the moisture removed from the air during its 
circulation between walls 72 and 73 by the time that 
that air leaves the effluent opening 180 formed by the 
cooperation of the lower end of scroll 166 with its adja-
cent casing walls.

Since the air leaving drum 95 and entering the hous-
ing formed within scroll 166 encounters a violent misty 
spay which thoroughly scrubs the air entering that 
blower housing free of any suspended particles, all air-borne 
lint entering opening 163 is thoroughly scrubbed from 
the air and saturated with cooling fluid prior to the time 
that it leaves the effluent port 180.

It should be noted at this point that during the drying 
operations when the fabrics are tumbled within drum 95, 
air is compressed and rarified in various parts of casing 
24 by movement of the tumbling fabrics within drum 95. 
While a similar action also occurs during the washing 
operation for this machine, the creation of the air pres-
sure differentials within various parts of the casing 
in this manner during the drying operations is more critical 
since the moisture vapors created by the application of 
heat to the moist fabrics during this drying operation 
would tend to be discharged through the fill spout 174 
through the drum and not by the check valve 175.

Hot moisture vapors escaping through cup 174 in this 
manner during the drying operation would tend to con-
dense on the inner surfaces of cabinet 119 and produce 
rust and water accumulation problems if it were not for 
the presence of the check valve 175 within cup 174.

During the rarification of the air within casing 24 as 
caused by tumbling of damp fabrics within drum 95 
during the drying operations, cool air is also sucked into 
casing through the check valve and the water fill spout 
174 whenever the air pressure adjacent that spout becomes 
less than that of the ambient atmosphere. This incom-
ing air, like that in casing 24 at the beginning of the 
operations, is heated to a higher temperature during 
the drying operations by heater 132 and consequently 
expands to produce a similar moisture vapor venting 
problem.

In the illustrative washer-drier embodiment this vapor 
pressure build-up in casing 24 by either of these causes 
is relieved by venting through the check valve 177 on 
the rear wall 72. It will be noted that this venting of 
air through opening 178 is permitted only after these 
hot moisture vapors have passed through the combination 
blower-condenser unit and have been discharged through 
the effluent port 180 formed by the cooperation of the 
lower end of scroll 166 with its adjacent casing walls.

The air leaving the blower condenser unit has lost much 
of its moisture and has been cooled down to a temperature 
which is approximately equal to that of the ambient 
cabinet temperature prior to being vented through the 
check valve 177. The air leaving opening 178 while 
being somewhat saturated is relatively dry compared to 
that within casing 24 and because of its cooler tempera-
ture will not condense on the interior surfaces of cabinet 
119 with the result that the vapor problems together with 
the disadvantages of rust and water accumulation are 
substantially eliminated.

While most of the cooling fluid, condensate and lint 
discharged from the blower housing formed between 
walls 72 and 73 is discharged through the opening 176 
and the sump 111 to drain, the air flow through this 
combination unit, which is approximately 150 cubic feet 
per minute, has a tendency, due to the restricted area of 
effluent opening 180 of that blower housing, to produce 
some carry-over of the smaller moisture particles past 
opening 176.

In order to separate these smaller moisture particles 
and any lint carried by them from the air stream prior to 
its re-entry into heater housing 131, that air stream is 
passed through a series of small curved moisture 
entraining baffle plates 165 which causes a sharp reversal 
of the air flow to take place after it has been discharged 
from the blower housing between walls 72 and 73. This 
reversal of air flow, which is directed approximately 
toward the rotational axis of drum 95, causes these 
misere particles to become centrifugally separated from 
the air stream with the result that they are caught on 
these baffles 165 to reduce the total moisture content 
of the air as it travels upwardly between walls 72 and 73.

The positioning of baffle 169 between walls 72 and 
73 represents an additional means for preventing the air 
leaving baffles 168 from progressing directly toward 
heater housing 131. Baffle 169 requires the air passing 
from the blower housing and baffle members 168 to 
progress upwardly between scroll 166 and the end of 
blower 169 as it passes around the tub bearing assembly 80.

Air progressing upwardly in this diagonal direction 
must again reverse its direction of travel prior to entry 
to heater housing 131 thereby presenting an additional 
opportunity for residual moisture droplets to be separated 
from the air stream prior to its re-entry into housing 131 
to complete its closed circuit air path through the combi-
nation unit. Since these particles tend to move toward scroll 166, this latter member has in actual prac-
tice been slightly spaced from side wall 171 to allow these 
droplets to drain to the bottom of casing 24 and pass 
through opening 176.

It will be seen from an inspection of the air path 
between walls 72 and 73 that the check valve 177 is actu-
ally located downstream from the discharge end of the 
blower-condenser unit and is placed above baffle 169 in a 
quiescent region apart from any turbulent air conditions 
that may exist around other various air deflecting mem-
bers between walls 72 and 73. Such a placement of 
flapper valve 177 in addition to the natural residui and 
inherent bias of that flapper element tends to prevent 
that check valve from opening due to minor pressure 
fluctuations between these walls due to the rotation of 
the bladed impeller 165 rather than by reason of a sub-
stantial pressure build-up within casing 24. While check 
valve 177 has been positioned above baffle 169 for 
this purpose, it is within the scope of this invention to 
provide a check valve in other parts of the walled mem-
bers behind the partition wall 73 to perform the same 
function. This invention also encompasses the use of a 
conduit connected to an opening similar to opening 176 
and provided with a check valve within that conduit to 
perform a function similar to that of flapper valve 177.

This application relates to subject matter common to 
but not claimed in the copending John C. Mellinger ap-
plication, Serial No. 866,450, filed September 26, 1957, 
and assigned to the same assignee as that for the instant 
invention.

I claim:
1. A unidirectional vapor breathing system for a closed 
circuit clothes drier comprising, means including wall 
members defining a closed drying chamber, means for 
heating said drying chamber to evaporate moisture from 
fabrics placed therein, check valve means in one of said 
wall members in communication with the ambient at-
mosphere permitting air flow into said chamber from the 
ambient atmosphere but preventing reversed air flow 
thereforth, a vapor condenser having an inlet duct 
communicating with said chamber for receiving moisture 
vapors therefrom, said vapor condenser being provided 
with an outlet duct communicating with said chamber 
for the return of cool air to said chamber, and a second 
check valve means in said outlet duct for exhausting cool 
air to the ambient atmosphere whenever air pressure 
within said chamber exceeds that of said ambient atmosphere.
2. A unidirectional venting system for a laundry ap-
ppliance comprising, means including wall members 
defining a closed drying chamber, means for heating said dry-
ing chamber to evaporate moisture from fabrics placed 
in said chamber, a check valve means in one of said
wall members in communication with the ambient atmosphere providing for unidirectional air flow into said chamber from the ambient atmosphere whenever the air pressure within said chamber is less than that of the ambient atmosphere, a vapor condenser means having an inlet duct communicating with said chamber for receiving and condensing moisture vapors from said chamber, said vapor condenser means further including an outlet duct communicating with said chamber and providing a closed circuit air path through said chamber and said vapor condenser means, and a second check valve means between said outlet duct and the ambient atmosphere for exhausting cool air from said vapor condenser means into the ambient atmosphere whenever the air pressure within said chamber exceeds that of the ambient atmosphere.

6. In a laundry appliance, means including wall members defining a closed drying chamber, a cabinet member having interior surfaces facing said wall members, a drum revolvably mounted within said chamber to receive and tumble fabrics to be dried, means for heating said drum, a check valve means in one of said wall members in communication with the ambient atmosphere providing for unidirectional air flow into said drying chamber from the ambient atmosphere whenever the air pressure within said chamber is less than that of the ambient atmosphere, a vapor condensing means provided with an inlet duct communicating with said chamber for receiving and condensing moisture vapors therefrom, said vapor condenser means further including an outlet duct communicating with said chamber and providing a closed circuit air path through said chamber and said vapor condensing means, and a second check valve means located between said outlet duct and the ambient atmosphere for exhausting cool air from said vapor condenser means into the ambient atmosphere whenever the air pressure within said chamber exceeds that of the ambient atmosphere.

7. In a laundry appliance, means including wall members defining a drying chamber, a cabinet member having interior surfaces facing said wall members, a drum revolvably mounted within said chamber to receive and tumble fabrics to be dried, means for heating said drum, a check valve means in one of said wall members in communication with the ambient atmosphere providing for unidirectional air flow into said drying chamber from the ambient atmosphere whenever the air pressure within said chamber is less than that of the ambient atmosphere, a vapor condensing means providing with an inlet duct communicating with said chamber for receiving and condensing moisture vapors therefrom, said vapor condenser means further including an outlet duct communicating with said chamber and providing a closed circuit air path through said chamber and said vapor condensing means, and a second check valve means located between said outlet duct and the ambient atmosphere for exhausting cool air from said vapor condenser means into the ambient atmosphere whenever the air pressure within said chamber exceeds that of the ambient atmosphere.

8. In a closed circuit washer drier, means including wall members defining a closed chamber for washing and drying fabrics placed therein, a water receiving means for running washing fluids through one of said wall members and into said chamber, check valve means in said water receiving means permitting unidirectional air and fluid flow into said chamber but preventing reverse flow therethrough, means for heating said chamber for evaporating moisture from fabrics placed with
in said chamber, vapor condenser means having an inlet duct communicating with said chamber for receiving moisture vapors therefrom, said vapor condenser means being provided with an outlet duct communicating with said chamber for the return of cool air from said vapor condenser means to said chamber, and a second check valve means located in said outlet duct and in communication with the ambient atmosphere for exhausting cool air to the ambient atmosphere whenever the air pressure within said chamber exceeds that of said ambient atmosphere.

9. A unidirectional vapor breather system for a closed circuit clothes drier comprising, means including wall members defining a closed drying chamber, a cabinet member having interior surfaces facing said wall members, means for heating said drying chamber to evaporate moisture from fabrics placed within said chamber, a vapor condenser means provided with an inlet duct communicating with said chamber for receiving and condensing moisture vapors therefrom, said vapor condenser means further including an outlet duct communicating with said chamber and providing a closed circuit air path through said chamber and said vapor condenser means, and check valve means in said outlet duct in communication with the ambient atmosphere for exhausting cooled and relatively dry air to the ambient atmosphere whenever air pressure within said chamber exceeds that of said ambient atmosphere and preventing condensation on said cabinet member.

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