Nov. 28, 1972 W. G. LANDWIER 3,704,170

DISHWASHER CONDENSER SYSTEM

Original Filed June 24, 1968

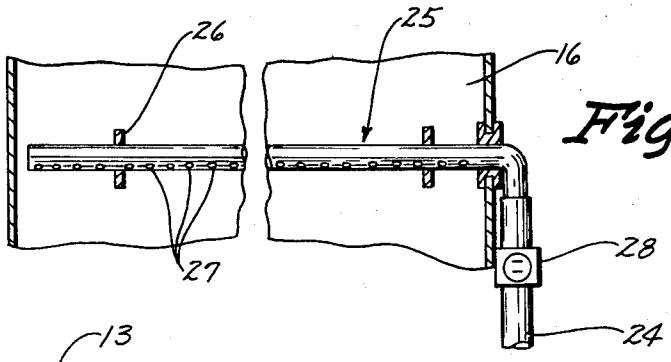
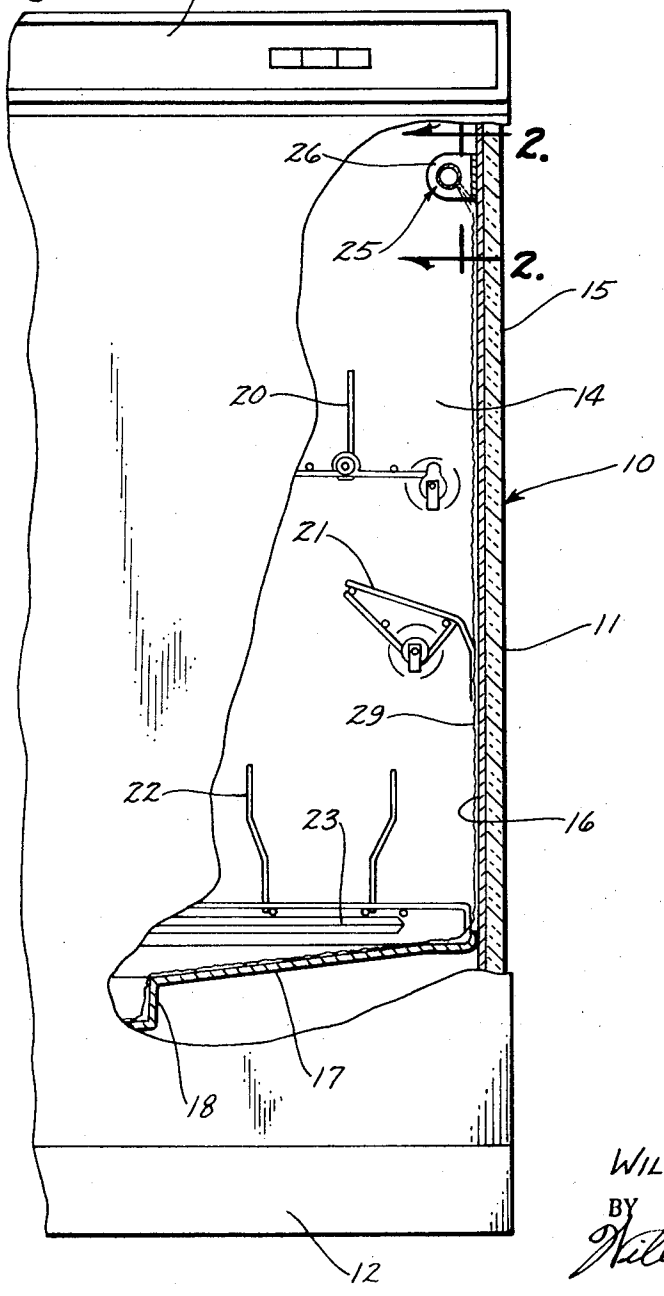


Fig. 2

Fig. 1



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United States Patent Office 3,704,170 Patented Nov. 28, 1972

3,704,170

DISHWASHER CONDENSER SYSTEM

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Continuation of abandoned application Ser. No. 739,558, June 24, 1968. This application Nov. 16, 1970, Ser. No. 90,062

Int. Cl. B08b 3/02

U.S. Cl. 134—25 A 2 Claims

ABSTRACT OF THE DISCLOSURE

Dishwashing apparatus is provided with a cold water supply conduit so that an inside wall can be kept wet with a cold water film during the drying portion of the cycle in order to condense the water evaporated from the dishes.

This application is a continuation of Ser. No. 739,558, filed June 24, 1968, now abandoned.

BACKGROUND OF THE INVENTION

Field of the invention

The invention relates to apparatus, such as dishwashers, for washing and drying dishes and has reference in particular to dishwashers having a water film condensing system.

Description of the prior art

Dishwashing machines generally devote the terminal portion of the sequence of operations to a dish drying operation in which the moisture laden vapors are exhausted from the washing chamber into the room atmosphere. Prior patents in the dishwaser art show little or no activity directed to overcoming this undesirable characteristic. The closest prior art is related to clothes dryer apparatus such as shown in Smith U.S. Pat. 2,717,456, issued Sept. 13, 1955, and assigned to the assignee of the instant invention.

SUMMARY OF THE INVENTION

The invention contemplates that dishwashing apparatus, wherein the dishes are washed with water and then dried by heat, be provided with a cold water film during the drying portion of the cycle in order to condense the water which is evaporated from the dishes. More particularly, the invention proposes that dishwashers be provided with a cold water supply conduit and that an inside wall be kept wet with a cold water film for condensing the water evaporated from the dishes.

Another object of the invention resides in the provision of a condensing system for dishwashers which will essentially include a cold water supply conduit, a solenoid valve and necessary piping for discharging a film of cold water onto an interior wall of the dishwasher. A wide cold water film on an interior wall of a dishwasher such as described has proven effective in condensing the moisture with a relatively low heat input and may possibly eliminate the need for a circulating fan.

Another object is to provide a film condensing system for a dishwasher which will simplify the cabinet construction by eliminating the need for vents and wherein the exhausting of hot air, water vapors and detergent odors will also be eliminated.

With these and various other objects in view the invention may consist of certain novel features of construction and operation as will be more fully described and particularly pointed out in the specification, drawings and claims appended thereto.

DESCRIPTION OF THE DRAWINGS

In the drawings which illustrate an embodiment of the device and wherein like reference characters are used to designate like parts—

FIG. 1 is an elevational view of a portion of a dishwasher, partially in section, and illustrating the improvements of the invention; and,

FIG. 2 is a fragmentary sectional view taken substantially along line 2—2 of FIG. 1, and showing the cold water supply conduit for producing the water film.

DESCRIPTION OF THE PREFERRED EMBODIMENT

In the embodiment of the invention as shown in FIG. 1, the numeral **10** indicates the cabinet of a dishwasher having side walls **11**, a base portion **12**, a top control panel **13**, and an interior washing and drying chamber **14**. The side walls **11** of the dishwashing device may include an outer portion of insulating material **15** and an inner metal portion **16** having the characteristic smooth surface and extending from top to bottom of the chamber. The inner surface may be coated to provide proper corrosion resistance. The bottom of the drying chamber **14** is formed by the bottom plate **17** which provides the sump **18**. The supports within the drying chamber for supporting the dishes are indicated by numerals **20, 21** and **22** and the spray arm for the washing water is indicated by the numeral **23**. Access means (not shown) is provided to permit access into the chamber for loading and unloading the articles being washed.

In accordance with the invention a cold water supply pipe or conduit **24** communicates with a spray tube **25** located adjacent the inner portion **16** of one wall within the drying chamber and more particularly in the vicinity of the top of the wall. The metal supports or brackets **26** are employed for supporting the conduit from said wall. The said spray tube **25** is provided with a plurality of spray openings **27** and the solenoid valve **28** controlling flow of cold water to the spray tube **25** is located exteriorly of the drying chamber.

In the dishwashing apparatus as disclosed, the dishes are washed with hot water and then dried by heat. During the drying cycle the solenoid valve **28** is energized to cause the same to open for spraying cold water from the spray tube **25** and form a film **29** on the wall inner portion **16** within the chamber **14**. This interior wall surface of the dishwasher is thus kept wet by a film **29** of cold water as shown in FIG. 1. The cold water film will effectively condense the water evaporated from the dishes during the drying cycle. The cold water and condensate will flow to the sump **18** and then to a drain (not shown).

Although the water film condensing system of the invention requires the addition of a cold water valve with attendant piping, the construction of the cabinet is, however, simplified by eliminating the need for vents. The exhausting of hot air, water vapors and detergent odors into the room is thereby substantially eliminated.

The instant invention establishes a condition in a dishwasher drying chamber by which the differential vapor pressure phenomenon is effective for achieving condensation of vapor from the dishwasher chamber. It is known that the vapor pressure is highest at the hottest and wettest condition and lowest at the coldest driest condition. It follows then from the laws of physics that the forces seek to obtain equilibrium and thereby cause transmigration of vapor from the high vapor pressure area to the low vapor pressure area adjacent the water film, some of the vapor being in turn, condensed and discharged to drain. This condensing cycle may be accomplished in a chamber without intentional circulation of the air. Increased circulation of air, however, may be introduced by an auxiliary fan associated with the heater.

As a by-product of the present dishwasher condensing system, it may be found desirable to use the cold water supply for a preliminary cold water rinse.

The invention is not to be limited to or by details of construction of the particular embodiment thereof illustrated by the drawing, as various other forms of the device will, of course, be apparent to those skilled in the art without departing from the spirit of the invention or the scope of the claims.

I claim:

1. A method of washing and drying articles in the substantialy closed chamber of a dishwashing apparatus comprising the steps: effecting operation of movable means within said chamber for washing and rinsing articles contained therein; interrupting operation of said movable means and heating the air within said chamber to evaporate moisture from the articles contained therein; injecting cold water into said chamber to form a cold water film on at least one wall thereof to induce condensation of water vapor from the heated moisture-laden air within said chamber; and circulating the water vapors within the chamber under the sole influence of non-mechanically induced circulation including the directing of water vapors toward the cold water film under the influence of differential vapor pressures.

2. A method of washing and drying articles in the substantially closed chamber of a dishwashing apparatus as defined in claim 1 and further including the step of maintaining said chamber substantially closed to prevent auxiliary circulation of air into and within said chamber.

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U.S. Cl. X.R.

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