June 15, 1954

C. A. FINLEY

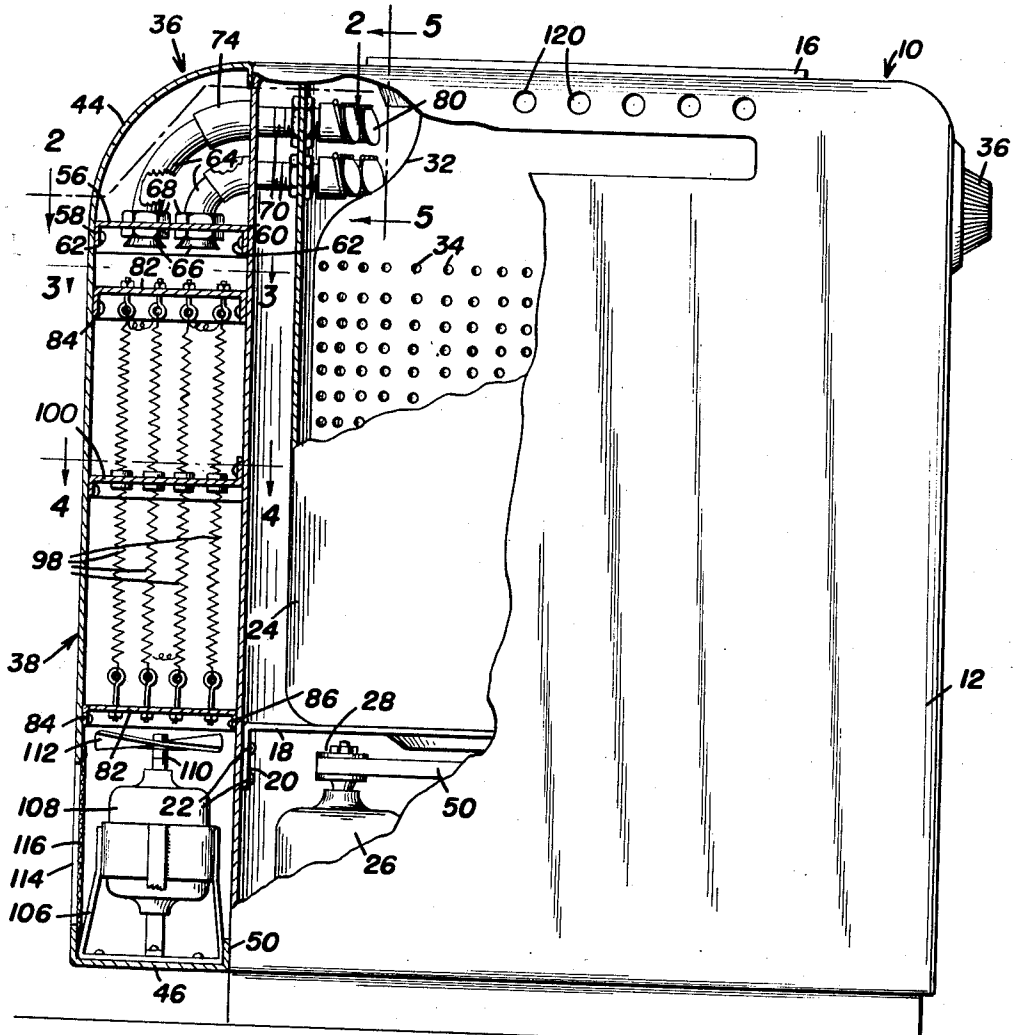
2,680,917

ELECTRIC CLOTHES DRIER

Filed Feb. 25, 1952

2 Sheets-Sheet 1

Fig. 1



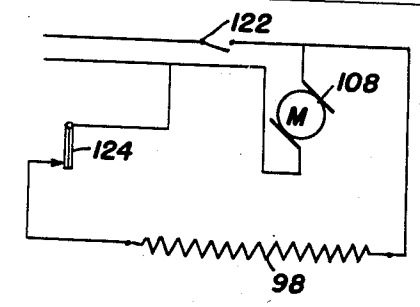


Fig. 7

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Fig.2

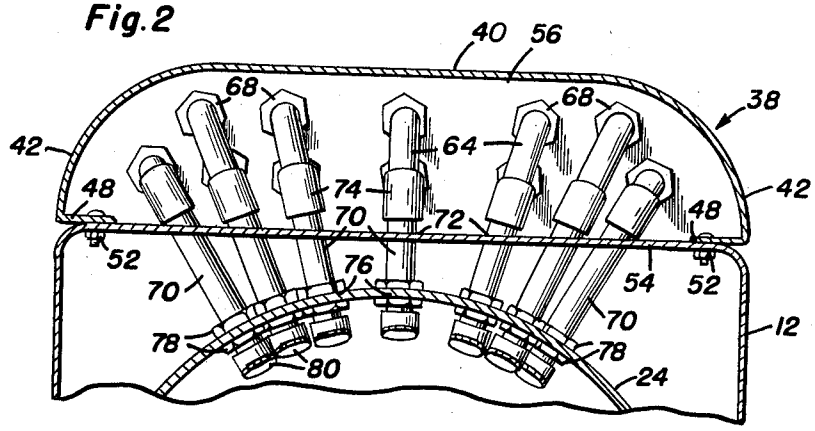


Fig.3

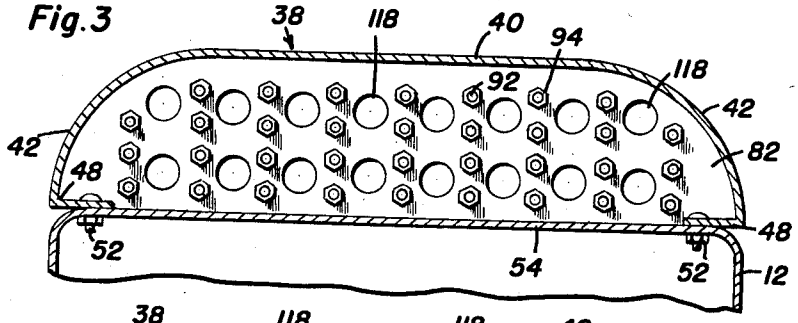


Fig.4

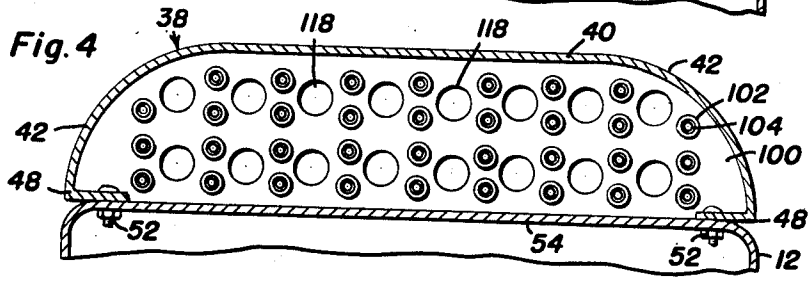


Fig.5

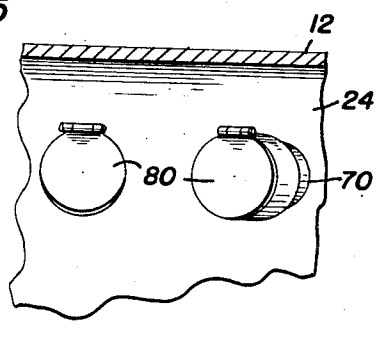
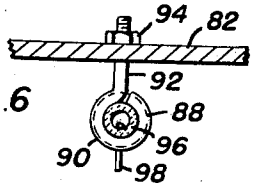


Fig.6



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ELECTRIC CLOTHES DRIER

Clyde A. Finley, East Point, Ga.

Application February 25, 1952, Serial No. 273,210

3 Claims. (Cl. 34—133)

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This invention relates in general to an electric clothes drier, and more specifically to an electric clothes drier for attachment to an electric washing machine.

A primary object of this invention is to provide an improved electric clothes drier which may be attached to conventional spinner type washing machines in order to convert same into a combined washing and drying machine for clothes.

Another object of this invention is to provide an improved electric clothes drier in the form of a separate integral unit which may be secured to the exterior housing of conventional spinner type electric washing machine, said machine being adapted to be connected into the electrical circuit of the washing machine in order to be automatically connected in sequence with the washing and rinsing stages of the washing machine.

Another object of this invention is to provide an improved electric clothes drier which includes pipe means for connection to a washing machine housing, heating means, and blower means.

Another object of this invention is to provide an improved electric clothes drier which is an integral unit which may readily be attached to a conventional spin type washing machine whereby an electric clothes drying machine may be constructed at a low cost.

A further object of this invention is to provide an improved attachment for electric washing machines in the form of an electric clothes drier having electric heating coils for heating air, said electric heating coils being provided with control means for varying heat of the coils and the associated air passing thereover.

With these objects definitely in view, this invention resides in certain novel features of construction, combination and arrangement of elements and portions as will be hereinafter described in detail in the specification, particularly pointed out in the appended claims, and illustrated in the accompanying drawings which form a material part of this specification, and in which:

Figure 1 is a side elevational view of a conventional spinner type washing machine having attached thereto the improved electric clothes drier attachment, which is the subject of this invention, parts of the washing machine and clothes drier attachment being broken away and shown in sections in order to clearly illustrate the construction thereof;

Figure 2 is a partial transverse horizontal sectional view taken substantially upon the plane indicated by the section line 2—2 of Figure 1

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and showing the arrangement of the tubes for conducting air from the clothes drier heating element to the interior of the electric washing machine;

Figure 3 is a transverse horizontal sectional view taken substantially upon the plane indicated by the section line 3—3 of Figure 1 and showing the arrangement of a supporting plate for electric heating coils and the means for supporting same;

Figure 4 is a partial transverse horizontal sectional view taken substantially upon the plane indicated by the section line 4—4 of Figure 1 and showing the construction of an intermediate supporting plate for the electric heating coils and the manner in which they are insulated from said supporting plates;

Figure 5 is an enlarged fragmentary transverse vertical sectional view taken substantially upon the plane indicated by the section line 5—5 of Figure 1 and showing the construction of rod means on the pipes communicating the heating means to the washing machine whereby water is prevented from passing into the pipes;

Figure 6 is an enlarged fragmentary transverse vertical sectional view showing the means for supporting one end of a heating coil from one of its associated supporting plates; and,

Figure 7 is a wiring diagram of the electrical circuit for the heating attachment secured to the washing machine.

Similar characters of reference designate similar or identical elements and portions throughout the specification and throughout the different views of the drawings.

Referring now to the drawings in detail, it will be seen that there is illustrated in Figure 1 a conventional spinner type washing machine which is referred in general by the reference numeral 10. The washing machine 10 includes a generally rectangular housing 12 having a base 14 and a cover plate 16 at its upper end. Mounted within the housing 12 is a horizontal supporting plate 18 adjacent the lower end thereof. The horizontal supporting plate 18 is secured to the side walls of the housing 12 by an integral flange 20 on each edge thereof, said flange 20 being secured to the respective side wall of the housing 12 by conventional fasteners 22. The horizontal supporting plate 18 divides the housing 12 into an upper and lower compartment with a washing tub 24 mounted in the upper compartment, and drive means mounted in the lower compartment. The drive means includes an electric motor 26 having a drive pulley 28 thereon over which is entrained a drive belt 30. The drive belt 30 is also connected

to a pulley (not shown) mounted on the lower end of a spinner receptacle for clothes, the spinner receptacle being referred to by the reference numeral 32.

It will be noted that the spinner receptacle 32 is rotatably mounted within the top portion 24 and has a plurality of apertures through its side walls for the entrance of water, the apertures being referred to in general by the reference numeral 34. In the normal washing operation, the tub 24 is filled with water and clothes are deposited within the spinner receptacle 32 whereby they are spun within the water and washed in that manner. In order that the washing and rinsing cycles of the washing machine 10 may be automatically controlled, the housing 12 is provided with a control knob 36 on its front side.

When the clothes are washed within the washing machine 10 they are normally spun dry due to the rotation of the spinner receptacle 32 after the water has been emptied from the tub 24. However, since no heat is applied to clothing within the receptacle 32, the clothes removed therefrom are still partially damp and need to be hung up for drying. In order to utilize the washing machine 10 for also drying clothing washed thereby, there is provided on the rear side thereof a heating structure which is referred to in general by the reference numeral 38.

The heating structure 38 includes a housing 38 which is best illustrated in Figures 2 through 5 and includes a back wall 40, curved side walls 42, a top wall 44, a bottom wall 46, and inturned flanges 48 at the sides and 50 at the bottom edge thereof. The housing 38 is secured to the housing 12 of the washing machine by a plurality of common fasteners 52 passing through the flanges 48 and 50 and securing same to the rear wall 54 of the housing 12.

Carried by the housing 38 adjacent the curved upper wall 44 is a transverse supporting plate 56 having downturned flanges 58 and 60 secured to the housing 38 and the housing 12, respectively, by conventional fasteners 62. Secured to the supporting plate 56 are a plurality of curved pipes 64 having flared lower ends 66. The pipes 64 are secured to the pipe supporting plate 56 by a plurality of nuts 68 threadedly engaged thereon. Carried by the washing machine 10 are a plurality of pipes 70 which extend radially from the tub 24 and pass through openings 72 in the rear wall 54 of the housing 12. The individual pipes 64 and 70 are detachably connected together by pipe sleeves 74 disposed within the housing 38. The other ends of the pipes 70 are secured in openings 76 in the tub 24 by nuts 78 threadedly engaged on the pipes 70 and engaging the opposite sides of the tub 24. Each pipe 70 is also provided with a valve 80 at its inner end, the valve 80 being mounted within the tub 24 and is of the automatic closing type so as to prevent entrance of water from the tub into the pipes 70.

Also mounted within the housing 38 are heating coil supporting plates 82 which are in vertical space relation and have vertically depending flanges 84 and 86 for supporting same. The flanges 84 are secured to the housing 38 and the flanges 86 are secured to the housing 12 in order to supply means for supporting the heating coils and at the same time in order to brace the housing 38. Carried by each of the heating coil supporting plates 82 is a plurality of eye bolts 88. The eye bolts 88 are best illustrated in Figure 6 and include an eye portion 90 and a stem 92 which is provided with a nut 94 for securing the eye bolt 88 to its respective supporting plate 82. The eye 90 of each eye bolt 88 is provided with an insulating bushing 96 through which is mounted one end of a heating coil 98.

As is best illustrated in Figure 1, each of the heating coils 98 are mounted in parallel space relation and connected in series. In order that the intermediate portion of each of the heating coils 98 may be supported out of engagement with an adjacent heating coil, the housing 38 is provided with an intermediate wire supporting plate 100 which is secured to both the housing 38 and the housing 12. As is best illustrated in Figure 4, the intermediate wire supporting plate 100 is provided with a plurality of apertures 102 in which are mounted insulating bushings 104 to which the intermediate portion of the heating coils 98 pass.

In order that air may be forced over the heating coils 98, the bottom wall 46 of the housing 38 has secured thereto a supporting bracket 106 which has mounted therein a conventional electric motor 108. Secured to the armature 110 of the electric motor 108 is a fan 112 in order to provide blower means for forcing air past the heating coils 98 and through the pipes 64 and 70. In order that air may pass into the housing 38, the rear wall 40 thereof is provided with an opening 114 adjacent the lower end. The opening 114 is provided with a screen 116 to prevent foreign matter from entering into the housing 38 and striking the fan 112 and the heating coils 98.

As is best illustrated in Figures 3 and 4, the supporting plates 56, 82 and 100 are provided with a plurality of enlarged openings 118 through which air may pass after being urged upwardly by the fan 112. As the heated air passes through the apertures 118 of the upper heater coil supporting plate 82, it passes into the flared ends 66 of the pipe 64 and thereby passes through the openings 118 in the pipe supporting plate 56. The heated air then passes into the pipe 70 and forces open the valves 80 and enters the tub 24. In order that the cool air within the tub 24 may be removed, the housing 12 is provided with a plurality of vent openings 120 adjacent the upper end thereof. It is readily apparent that damp clothing within the spinner receptacle 32 will be dried by hot air passing in through the pipes 70 and heating same.

Referring now to Figure 7 particularly, it will be seen that the motor and heating coils of the heating unit 38 are controlled by a single switch 122. Furthermore, in order that the temperature of the air passing into the tub 24 may be controlled, there is mounted in series with the heating coils 98 a rheostat 124 for controlling the flow of current thereto.

Although there has not been illustrated means for connecting the electrical circuit of the heating device 38 with the electrical circuit of the electric washing machine 10, it is obvious that the two electrical circuits may be connected so as to automatically control the heating device 38 whereby heat will be produced after the clothing has been spun dry. Also, while the heating device 38 has been illustrated and described as being attached to a generally rectangular housing of a conventional spinner type washing machine, it is not intended to so limit the invention. The housing 38 of the heating device 38 may be modified so that it may be secured directly to a circular tub of a circular washing machine.

The operation of this device will be under-

stood from the foregoing description of the details thereof, taken in connection with the above recited objects and drawings. Further description would appear to be unnecessary.

Minor modifications of the device, varying in minor details from the embodiment of the device illustrated and described here, may be resorted to without departure from the spirit and scope of this invention as defined in the appended claims.

Having described the invention, what is claimed as new is:

1. A drying attachment for a washing machine having a hollow body, a tub within the body, and a clothes basket rotatably mounted within the tub, said drying attachment including a housing secured to a rear wall of said body, said rear wall forming a wall of said housing, a blower disposed in a lower portion of said housing, heating means disposed in said housing above said blower, duct means disposed in an upper portion of said housing communicating the interior of said housing with said tub, said duct means including check valves preventing accidental entrance of water into said housing, said heating means including a plurality of vertically spaced brackets extending between said rear wall and a spaced wall of said housing, a plurality of electrical heating coils extending between and supported by said brackets in insulated relation.

2. A drying attachment for a washing machine having a hollow body, a tub within the body, and a clothes basket rotatably mounted within the tub, said drying attachment including a housing secured to a rear wall of said body, said rear wall forming a wall of said housing, a blower disposed in a lower portion of said housing, heating means disposed in said housing above said blower, duct means disposed in an upper portion of said housing communicating the interior of said housing with said tub, said duct means including a

transverse baffle in the upper portion of said housing, first apertures in said baffle, second apertures in said tubs, pipes extending between said baffle and said tub, opposite ends of said pipes passing through said first and second apertures, check valves disposed within said tub mounted on ends of said pipes for preventing flow of water into said pipes from said tub.

3. A drying attachment for a washing machine having a hollow body, a tub within the body, and a clothes basket rotatably mounted within the tub, said drying attachment including a housing secured to a rear wall of said body, said rear wall forming a wall of said housing, a blower disposed in a lower portion of said housing, heating means disposed in said housing above said blower, duct means disposed in an upper portion of said housing communicating the interior of said housing with said tub, said heating means including a plurality of vertically spaced brackets extending between said rear wall and a spaced wall of said housing, a plurality of electrical heating coils extending between and supported by said brackets in insulated relation, said duct means including a transverse baffle in the upper portion of said housing, first apertures in said baffle, second apertures in said tubs, pipes extending between said baffle and said tub, opposite ends of said pipes passing through said first and second apertures, check valves disposed within said tub mounted on ends of said pipes for preventing flow of water into said pipes from said tub.

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