July 11, 1961 G. L. COTA 2,991,560

HAND DRYER FOR BOWLING LANES

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Fig. 1

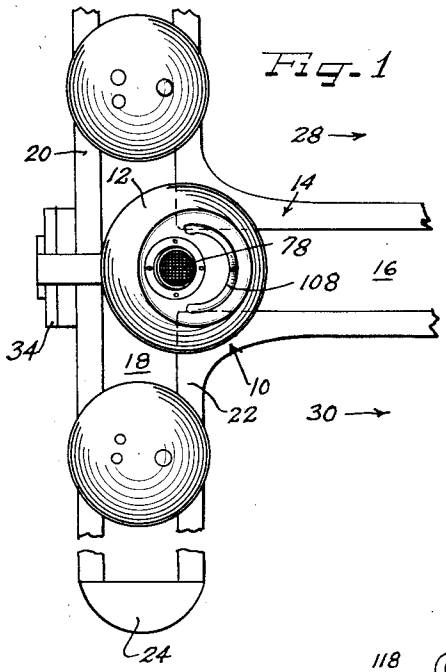


Fig. 2

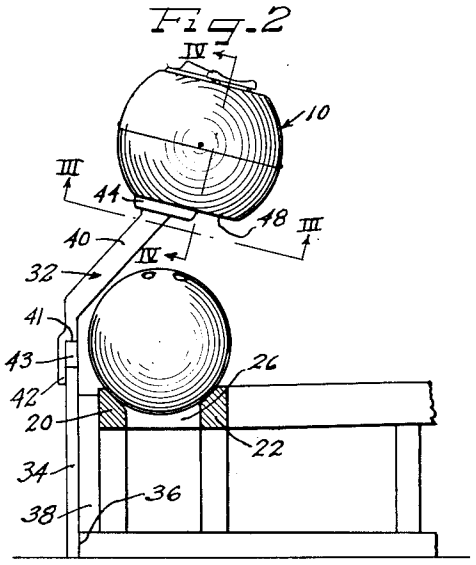
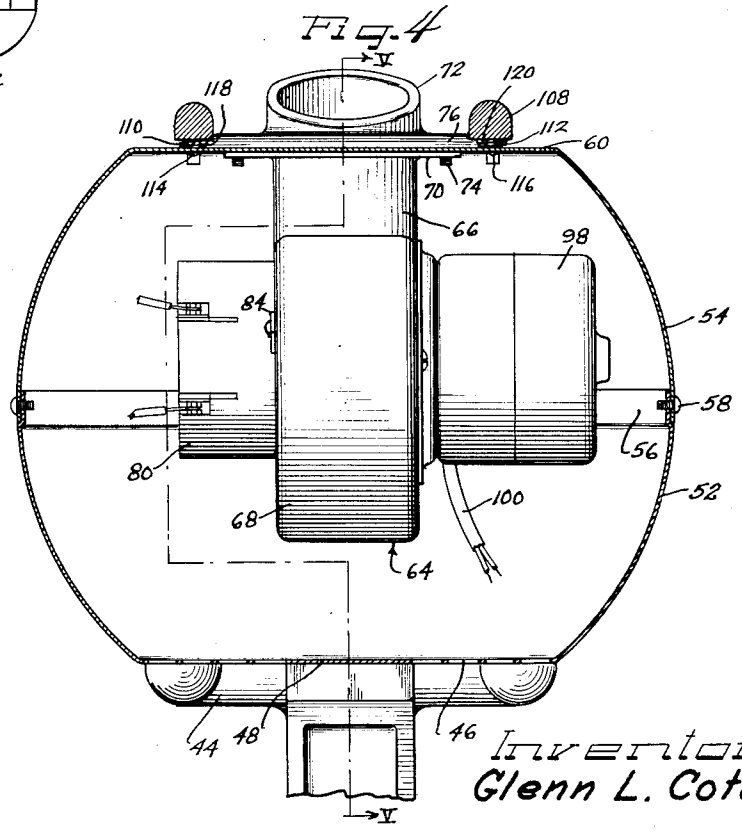


Fig. 4



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Fig. 3

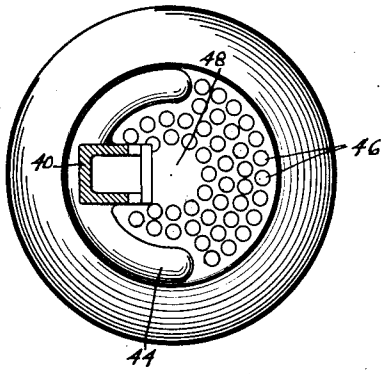


Fig. 5

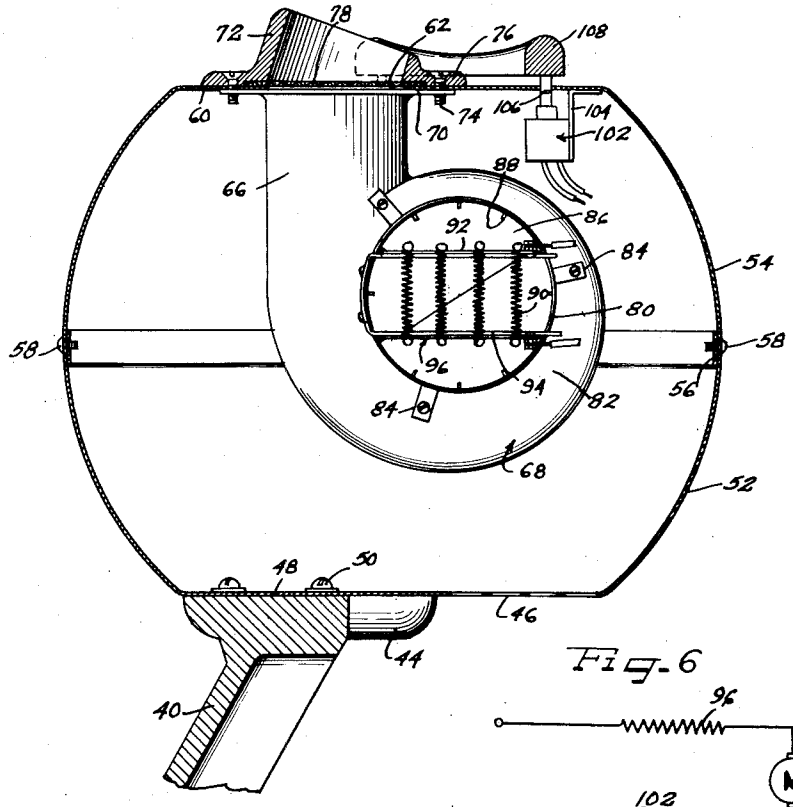


Fig. 6

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HAND DRYER FOR BOWLING LANES

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This invention relates to a hand dryer for bowling lanes and more particularly to a hand dryer disposed in overlying relationship to a ball return unit for access from lanes on either side thereof, and controlled by the pressure from the user's hand as supported in drying position upon a switch means for the dryer.

Heretofore, hand dryers of various types have been available, which have generally been adapted to afford continuous operation, or operation for a predetermined time interval upon closing of a switch therefor, since closing the switch has been a separate operation preliminary to the placing of the hand in position for drying.

The present invention provides a combination dryer and ball return unit wherein the dryer has an inlet on the bottom portion of a housing thereof and an outlet in the top portion of the housing, as well as blower and heater means adapted to direct a well defined jet stream of heated air upwardly through the outlet. A manually operable switch handle is pivotally mounted on the top portion of the housing in spaced relationship to the outlet such that when the heel of a user's hand is supported upon the switch handle, a switch for the dyrer is closed, while the palm and fingers of the hand are disposed in overlying relationship to the outlet so as to be presented directly in the path of the heated air stream. The operation of the switch is such that upon removal of the hand from the switch, the action of the blower and the heater is terminated. As will be readily apparent, the dryer also effects considerable savings in electrical costs and the like as compared with the usual type of dryer, which, as stated, requires a predetermined time of operation so as to free the hands for drying. The housing of the dryer of the invention is shaped in a preferably substantially spherical configuration such that air entering the inlet is directed by the housing into a substantially cylindrical heater sleeve mounted radially on a blower casing in the housing. The inlet includes a plurality of apertures defined in a preferably segmental bottom surface of the housing, which is disposed in parallel relationship to a corresponding segmental upper surface which defines a preferably circular outlet orifice. The orifice is spaced a predetermined distance from the switch handle on an axis perpendicular to the pivotal axis of the handle such that the ordinary user will be enabled to dry his hands while the switch is simultaneously closed thereby, as stated, and to assist in directing the air stream, a guide sleeve is formed around the orifice having a raised wall portion of the side further from the switch handle. The dryer housing is supported in overlying relationship to the rack of the ball return unit for ready access from either side thereof, the return unit being positioned between adjacent lanes, by means which include a bracket plate secured to a vertical rear wall of the ball return unit and an arm having an arcuate flange preferably secured to a marginal portion of the lower segmental surface of the housing in surrounding relationship to the said inlet orifices. Thus, a stable support for the housing is provided without interference with the air inlet. The invention may be employed with a ball return unit of a T-shaped type adapted to receive balls from beneath the bowling lane upon a transverse rack portion thereof, with the bracket mounted on the rack intermediate the ends thereof. However, the dryer may be used in combination with various other types of ball return units to provide a convenient means of drying the hands after they have been in contact with the customary wet towels used by bowlers.

Accordingly, it is an object of the present invention to provide a hand dryer for use in bowling lanes and the like which is responsive to the pressure of the operator's hand to energize a blower and heater thereof, and responsive to removal of the said pressure to deenergize the blower and heater.

Another object of the invention is to provide a dryer as described having outlet means adapted to direct a well-defined jet stream against the user's hand and around the fingers and palm thereof when the heel of the hand is disposed upon a switch handle for the dryer.

Another object of the invention is to provide a combination dryer and ball return unit as described in which support means are provided for maintaining the dryer as a suitable level such as to permit the hand of the operator to be placed on the switch handle without difficulty and which defines an inlet at the bottom portion of a housing therefor and an outlet at the upper portion thereof.

Another object of the invention is to provide a hand dryer for bowling lanes in combination with a ball return unit, the support means being mounted upon the rack of the ball return unit so as to dispose the housing in overlying relationship to the balls which are stored in the rack and in a position which is readily accessible from lanes on either side of the ball return unit.

Other objects and advantages of the invention will become apparent as the description proceeds in accordance with the drawings, in which:

FIGURE 1 is a top plan view of a ball return unit adapted for use in combination with the dryer of the invention;

FIGURE 2 is a side elevational view of the dryer of the invention;

FIGURE 3 is a bottom plan view of the dryer taken along the lines III—III of FIGURE 2;

FIGURE 4 is a vertical sectional view of the housing and the motor and heater means thereof taken along the lines IV—IV of FIGURE 2;

FIGURE 5 is a vertical sectional view of the blower and heater means taken along the lines V—V of FIGURE 4; and

FIGURE 6 is a schematic representation of the circuit for the dryer of the invention.

Referring now to FIGURE 1, the hand dryer means of the invention includes a hand dryer structure 10 having a housing 12 which is mounted in overlying substantially centrally located relationship to a ball return unit 14 for receiving and storing bowling balls. In the embodiment shown, the ball return unit 14 has a substantially T-shaped configuration and is adapted to receive balls from the opposite end of the alley after use, through a channel means 16 adapted to introduce the balls into the transverse rack 18 thereof, as, for example, from an underground return passage or the like. The rack 18 may be of standard construction with overlying flanges 20 and 22 and end walls 24 and 26 for retaining the balls stored therein and it will be seen that the dryer means 10 of the invention is readily accessible from the alleys on either side of the return unit 14, these alleys being generally indicated by reference numerals 28 and 30. Other varieties of ball return units may be used in combination with the dryer 10, however, as will be understood by those skilled in the art.

Referring now to FIGURES 2 through 6, the housing 12 is maintained in predetermined spaced relationship above the rack 18 by means of a support structure 32 which includes a base bracket 34 secured to the rear wall 36 of the rack by suitable fastening means 38 and an angularly offset arm 40. The base 34 is preferably of a relatively wide dimension to maintain a secure rela-

tionship with the wall 36 and means 38 and the arm 40 may define a shoulder 41 and depending flange 42 adapted to engage an extension 43 of the base 34 as shown.

The arm 40 extends at a predetermined angle relative to the vertically aligned base 34 such as to dispose the housing 12 in predetermined spaced relationship above the rack 18, and in order to secure the housing upon the arm, a substantially arcuate flange 44 is formed integrally at the upper end of the arm substantially in a horizontal position as hereinafter further described.

In accordance with the invention, the housing 12 has a preferably spherical configuration and defines a plurality of inlet apertures 46 in a segmentally formed bottom wall or surface 48 thereof, as best seen in FIGURE 3. Thus, the flange 44 is adapted to be secured around the marginal edge of the bottom surface 48 in surrounding relationship to the apertures 46 by means of a plurality of screws or the like 50, so that the housing is supported in a very stable manner without interference with ingress of air through the apertures.

In the embodiment shown, the housing 12 is formed from hemispherical sections 52 and 54, as indicated in FIGURE 4, which are fitted together by means of a recessed flange 56 in the lower portion 52, although any suitable means for engaging the upper and lower sections may be employed. A plurality of bolts 58, or other suitable fastening means are also provided to insure a tight connection between the hemispherical sections 52 and 54.

The upper hemispherical portion 54 defines a top segmental surface 60 which is preferably disposed in substantially parallel relationship to the bottom segmental surface 48, and which in turn defines an outlet orifice 62 of preferably circular configuration in offset relationship to the center of the surface 60.

Also in accordance with the invention, a blower 64 is secured within the housing 12 in depending relationship to the upper surface 60, by means of a funnel or conduit 66 extending tangentially of the substantially cylindrical casing 68 of the blower 64. Thus, the upper end of the funnel 66 may be formed with a horizontally extending flange 70. In order to direct a controlled air stream over the user's hand, a guide sleeve 72 is mounted on the segmental upper wall 60 in surrounding relationship to the outlet 62 with its axis preferably offset relative to the axis of the funnel 66, and a plurality of bolts 74 simultaneously secure the sleeve 72 and the funnel 66 by means of a flange 76 on the sleeve 72 and the flange 70 on the funnel 66. Also, a protective screen 78 is preferably interposed between the sleeve 72 and the wall 60. The sleeve 72 may have a portion thereof adjacent the outer edge of the surface 60 extending relatively higher than the portion opposite thereto, to further provide a directional air control.

In order to heat the air in the blower, a cylindrical sleeve 80 is mounted in substantially radial alignment with the housing 12 on a side wall 82 of the casing 68, as by fastening means 84, the side wall 82 defining an inlet opening 86 within the confines of the sleeve 80, an impeller 88 being suitably journalled in the casing in accordance with the understanding of those skilled in the art. A plurality of resistance elements 90 are connected between bus bars 92 and 94 within the sleeve 82, the heater thus provided being indicated generally by reference numeral 96, and the impeller 88 is actuated by a motor 98 at the other side of the casing providing a suitable drive shaft (not shown) for the impeller 88. The heater 96 and motor 98 are adapted to be energized by current from the extension line 100, the series connection between the heater and motor being selectively opened or closed in accordance with a switch means 102, as shown schematically in FIGURE 6. The switch 102 is mounted beneath the top segmental wall 60 by a bracket or the like 104 and is provided with plunger means 106 extending vertically above the top wall 60 and biased to circuit breaking position by spring means (not shown) within the switch.

In accordance with the invention, and in order to afford selective energization and deenergization of the blower and heater, the plunger 106 forms one leg of a support tripod for a switch handle 108 for the switch, the handle 108 having a preferably arcuate configuration and extending around the marginal portions of the upper surface 60 in predetermined spaced relationship to the outlet 62 and the sleeve 72 as hereinafter further described. The handle 108 is pivotally supported at its extremities by posts 110 and 112 fixedly secured thereto and extending beneath the surface 60 so that their lower ends may be retained by suitable cotter pins 114 and 116, springs 118 and 120 being provided in surrounding relationship to the posts 110 and 112 so as to bias the ends of the handle 108 into somewhat elevated position above the surface 60 so that the handle extends substantially parallel to the surface in the normal position thereof, as supported at its center by the plunger 106.

The handle is given a configuration such as to readily accommodate the heel of a user's hand in supporting relationship thereto above the plunger 106 for the switch and is dimensioned and spaced from the outlet 62 as stated so that the palm and fingers of the user are disposed in the path of the warm air stream emanating from the outlet when the heel of the user's hand is thus supported on the switch handle 108. Obviously, however, some variation in the dimensions and position of the handle may be accommodated within the scope of the invention.

In operation, therefore, when a bowler in either of the lanes 28 or 30 desires to dry his hands, he may rest one of his hands on the handle 108, which is disposed at a level which is preferably approximately waist high for this purpose but in any event such as to permit the hands to be held easily face down in drying position. The heater 96 and the motor 98 will thus be energized and the hands may be dried successively, or by maintaining one adjacent hand on the dryer with the other hand above it. The air will be inducted through the inlet produced by the orifices 46 in the bottom segmental surface 48 of the housing and guided by the spherical wall of the housing into the cylindrical sleeve 80 of the heater 96, the heated air then proceeding upwardly through the funnel 66 and the sleeve 72 in a continuous path from the bottom of the housing to the top thereof. There will thus be no chance of accidental occlusion of the inlet, and the operation of the device is exactly timed to the user's requirements so that when the predetermined pressure required to close the switch 102 is removed by the removal of the user's hand, the heater 96 and the motor 98 will be deenergized until the handle 108 is again pivoted downwardly.

Although I have herein set forth and described my invention with respect to certain principles and details thereof, it will be understood by those skilled in the art that these may be varied according to the spirit and scope of the invention as set forth in the hereunto appended claims.

I claim as my invention:

1. A hand dryer comprising a blower having an inlet and an outlet, means supporting said blower including a flat upper surface receiving the outlet therethrough, a heater for said blower, a switch connected to said support means including a plunger extending through said flat surface in spaced relation to said outlet, a handle secured to said plunger, said handle having an arcuate configuration, spring means supporting each outer end of said handle, said plunger being connected to said handle intermediate the ends thereof and co-operating with said spring means to bias the handle upwardly, said handle being spaced from said outlet and said plunger being spaced from said outlet sufficiently to permit said spacing of said handle from said outlet, and circuit means connecting said switch to said motor and said heater whereby a hand placed in

rest position on said handle will move said plunger vertically downwardly to circuit closing position without the need for other effort to actuate the switch.

2. A dryer comprising a blower having a casing with a tangentially extending funnel, a substantially spherical housing for said blower having a flattened upper surface connected to said funnel in supporting relationship and an inlet means in register beneath said flattened surface, a sleeve on said casing forming an inlet on said blower and extending substantially radially outwardly toward the housing in predetermined spaced relation thereto, a heating structure secured to said sleeve across said inlet formed thereby, a heating structure in said sleeve and a switch mounted in said housing and having actuating means extending above said upper surface for selectively energizing said blower and said heating structure, said housing guiding air into said sleeve when said blower is energized and protecting said blower and said heating structure.

References Cited in the file of this patent

UNITED STATES PATENTS

1,455,034	Small	May 15, 1923
2,090,371	Marks	Aug. 17, 1937
2,184,858	Goodman	Dec. 26, 1939
2,438,762	McLeckie	Mar. 30, 1948
2,837,835	Hewitt et al.	June 10, 1958