July 24, 1951 A. L. HELD 2,561,861

AUTOMATIC DEODORIZER

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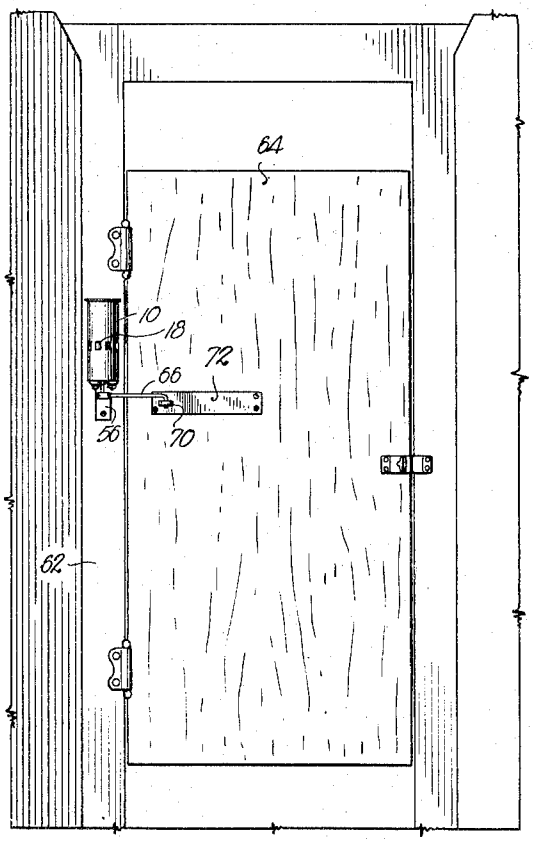


Fig. 1.

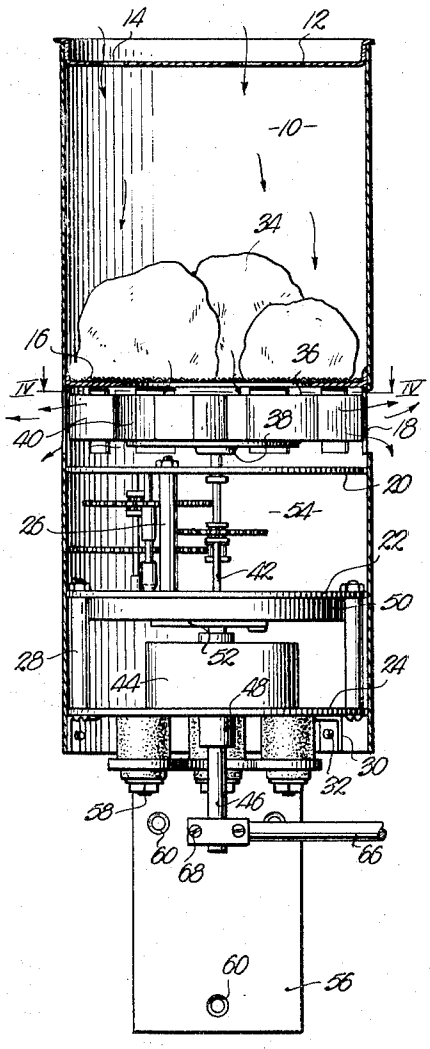


Fig. 3.

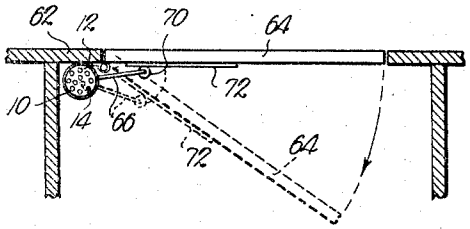


Fig. 2.

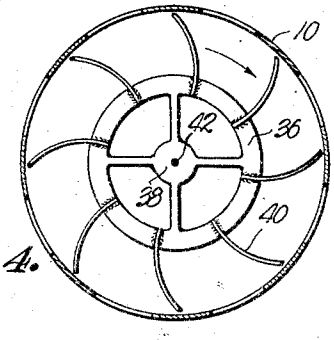


Fig. 4.

INVENTOR.
Arnold L. Held
BY
ATTORNEY

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AUTOMATIC DEODORIZER

Arnold L. Held, Kansas City, Mo.

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2 Claims. (Cl. 21—77)

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This invention has to do with means for automatically deodorizing restrooms, the primary object being to provide automatic apparatus capable of disposition adjacent a swingable door or the like for operation thereby each time the door is opened and closed.

The most important object of this invention is to provide an automatic deodorizer having a container adapted to support a deodorant and provide with a vaned rotor formed and disposed to direct a current of air through the container and against the deodorant, to the end that the atmosphere is filled with the fumes from the deodorant automatically each time a restroom door is opened.

Another important object of this invention is the provision of a deodorizer having a coiled spring joined to the above-mentioned rotor through the medium of a step-up train of gears, said spring being energized by a swingable arm disposed in the path of travel of a swingable door, all to the end that the restroom is filled with fumes from the deodorant automatically and without operator attention.

Other objects of this invention include the way in which the swingable arm is disposed for movement in one direction when the door is open; the manner of joining the arm to the spring to be compressed; the precise formation of the rotor and its vanes; and the entire assemblage of parts within the container or housing for the deodorant.

Other more minor objects will be made clear or become apparent as the following specification progresses, reference being had to the accompanying drawing, wherein:

Fig. 1 is a fragmentary perspective view of a restroom stall, looking outwardly and showing the automatic deodorizer forming the subject matter of this invention operably mounted adjacent the stall door.

Fig. 2 is a fragmentary, top plan view of the door and the deodorizer.

Fig. 3 is a substantially central, vertical, cross-sectional view taken through the deodorizer; and,

Fig. 4 is a transverse cross-sectional view taken on line IV—IV of Fig. 3, looking in the direction of the arrows.

The deodorizer, per se, embodied in this invention includes an elongated tubular housing broadly designated by the numeral 10. The normally uppermost end of this housing has a removable cover 12, having a plurality of relatively large perforations 14 formed therein. A screen or other foraminous member 16 is securely

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mounted within the housing 10 intermediate the end thereof, said screen having an over-all diameter substantially the same as the inside diameter of housing 10.

Immediately below the screen 16 is a number of spaced-apart slots 18 arranged throughout the circumference of housing 10. A plurality of spaced-apart partition walls 20, 22 and 24 are mounted within the housing 10 immediately below the slots 18 thereof. Partitions 20 and 22 are joined by a number of vertical posts 26 and partitions 22 and 24 are, likewise, connected by a number of posts 28.

The lowermost partition 24 is provided with a number of L-shaped brackets 30 that depend therefrom, and it is to these brackets 30 that the housing 10 is connected by means of screws or the like 32. In other words, by the removal of the screws 32, housing 10 can be lifted bodily from the three partitions 20, 22 and 24, together with the screen 16 and deodorant 34 supported by screen 16. Deodorant 23 may be of any of the conventional types readily obtainable upon the open market and taking the form of individual self-sustaining pellets. Such deodorant 34 is capable of emitting fumes into the air when a current of such air is directed therethrough.

Accordingly, a rotor 36 is mounted within the housing 10 between the screen 16 and the uppermost partition 20. This rotor 36 has a hub 38 provided with a plurality of radial vanes 40, said vanes 40 being curved longitudinally in the manner shown in Fig. 4 of the drawing.

This rotor 36 is rotated in the direction shown by the arrow in Fig. 4 and, accordingly, when so rotated at a relatively fast speed, air will be drawn into the container 10 through perforations 14 formed in cover 12 as indicated by arrows in Fig. 3 of the drawing. Such air will move downwardly, impinge upon the deodorant pellets 35 and thence pass through the screen 16 and outwardly into the atmosphere by way of slots 18. The rotor 36 rotates upon a vertical axis by means of a shaft 42 upon which it is mounted. Shaft 42 projects downwardly through partitions 20 and 22 within which it is journalled, but does not extend below partition 22.

The uppermost face of the partition 24 carries a coil spring 44 of conventional character having the outermost end thereof suitably secured to partition 24 in a manner not herein illustrated. The inner end of the coil spring 44 has connection directly with a vertical rod 46 that extends downwardly through the partition 24 and is journalled in a bearing 48. The upper-

most end of the rod 46 carries a conventional ratchet gear disposed concentrically within a ring gear 50. Ring gear 50 is provided with internal teeth and is loosely mounted on rod 46. A pair of opposed dogs (not shown) are pivotally mounted on ring gear 50 and each yieldably held interlocked with the ratchet gear by means of a leaf spring on ring gear 50. One of the leaf springs is shown in Fig. 3 and designated by the numeral 52.

Accordingly, when the rod 46 is rotated in one direction, spring 44 will be compressed and held compressed by the dogs on ring gear 50. When the rod 46 is permitted to return to its original position, spring 44 will cause rotation of ring gear 50 and, also, rotation of a pinion within the ring gear and enmesh therewith. Such pinion (also, not shown) has connection with a train of step-up gearing broadly designated by the numeral 54 which, in turn, joins with the shaft 42 that mounts rotor 36.

An L-shaped bracket 56 has one leg thereof underlying the partition wall 24 and secured thereto by means of a number of bolts or the like 58. Openings 60 within the other leg of bracket 56 permit mounting of the same together with housing 10 and all of the aforesaid parts disposed therein upon framework 62 surrounding a door 64, in the manner clearly illustrated in Fig. 1 of the drawing.

The lowermost end of rod 46 that projects downwardly below partition 24 and exteriorally of housing 10 has secured thereto one end of an L-shaped arm 66. This said one end of arm 66 is bifurcated and circumscribes rod 46, and is clamped thereto by means of screws or the like 68. The other end of arm 66 has a down-turned leg rotatably receiving a small roller 70. This roller 70 bears against an elongated plate 72 formed on the innermost face of door 64.

In operation, inward swinging movement of door 64 causes swinging of the arm 66 in the manner illustrated in Fig. 2 of the drawing. As this action takes place, the roller 70 will rotate as it bears against and travels along the elongated plate 72. Such swinging movement of arm 66 rotates the rod 46 in one direction, compressing spring 44.

The above-mentioned spring-loaded dogs on ring gear 50 will hold spring 44 so compressed and, as door 64 is returned to the closed position, gear 50 will commence rotating and arm 62 will slowly return to the starting position where roller 70 re-engages plate 72.

The step-up gearing 54 will cause rotor 36 to rotate at a much greater speed than the rotation of gear 50, pulling air inwardly into the uppermost end of housing 10 past the deodorant 34. Since the partition 20 has substantially the same diameter as the inside diameter of housing 10, such current of air as passes downwardly through screen 16 will be forced outwardly and radially from rotor 36 through slots 18.

Accordingly, the deodorizer will be placed in operation each time the door 64 is opened, not only when a restroom user goes into the stall having door 64 as a part thereof, but again as he leaves. The air will be automatically deodorized without any action on the part of the restroom user and will continue such automatic and intermittent operation for a long period of time without any attention whatsoever other than replenishing the supply of deodorant 34.

The entire device is simple in operation and inexpensive to manufacture. More important, however, it is positive in its operation and sure to perform its functions without necessitating periodic attention.

While only one embodiment of the invention has been illustrated and described, it is desired to be limited only by such changes and modifications as fairly come within the scope of the appended claims.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. In an automatic deodorizer having mechanism including a rotatable fan shaft, a rotatable winding shaft, means holding said winding shaft against reciprocation on its axis of rotation and parts interconnecting the shafts for driving the fan shaft as the winding shaft is rotated in one direction and released for return to a normal position; a container for said mechanism adapted for mounting adjacent a swingable door or the like and having an air inlet opening; a fan on said fan shaft in the container adapted when rotating to direct air radially therefrom; outlet openings formed in the container and disposed to receive said directed air; a foraminous deodorant support between said fan and said inlet opening; and an arm on said winding shaft and extending laterally therefrom, said arm being swingable relative to said container and disposed within the path of travel of said door for rotating the winding shaft in said one direction as the door is swung toward one end of its path of travel.

2. In an automatic deodorizer having mechanism including a rotatable fan shaft, a rotatable winding shaft, means holding said winding shaft against reciprocation on its axis of rotation and parts interconnecting the shafts for driving the fan shaft as the winding shaft is rotated in one direction and released for return to a normal position; a container for said mechanism adapted for mounting adjacent a swingable door or the like and having an air inlet opening; a fan on said fan shaft in the container adapted when rotating to direct air radially therefrom; outlet openings formed in the container and disposed to receive said directed air; a foraminous deodorant support between said fan and said inlet opening; and an arm on said winding shaft disposed within the path of travel of said door for rotating the winding shaft in said one direction as the door is swung toward one end of its path of travel, said arm extending radially from said winding shaft and being swingable relative to the container, said arm having a roller on the outermost end thereof, said roller being engageable by the door as the latter is swung to rotate the winding shaft.

ARNOLD L. HELD.

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