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AUTOMATIC SPRAY MIST DISPENSER

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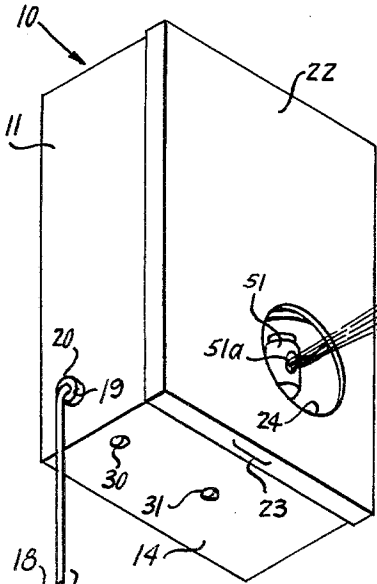


FIG. 1

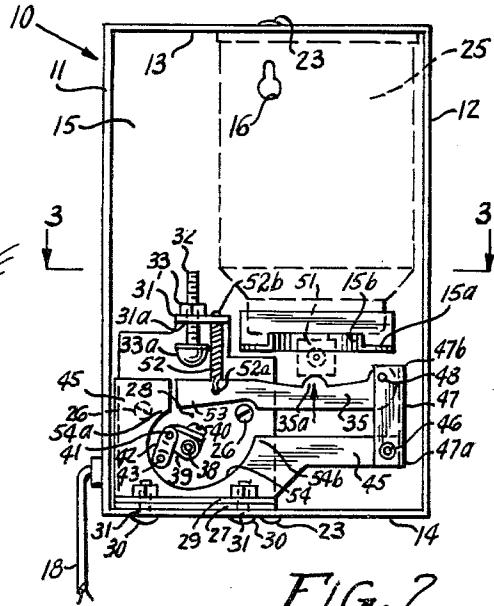


FIG. 2

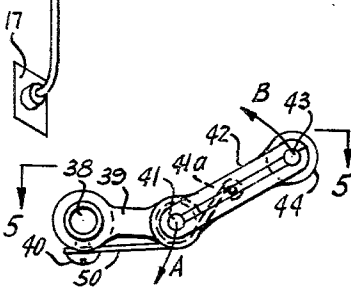


FIG. 4

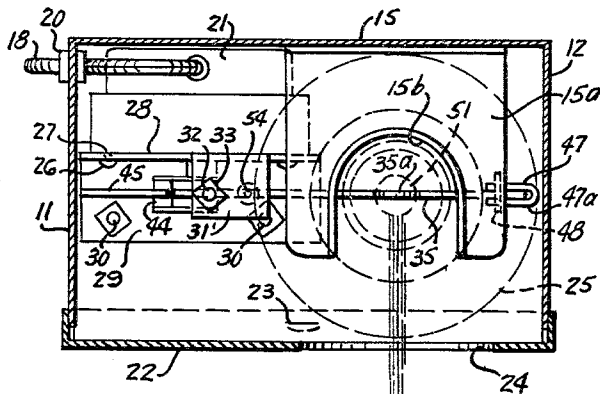


FIG. 3

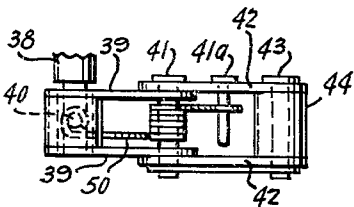


FIG. 5

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AUTOMATIC SPRAY MIST DISPENSER

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2 Claims. (Cl. 222-70)

This invention relates to improvements in spray mist dispensers, and more particularly to an automatic periodic type of pressurized mist dispenser which will operate for long periods of time in an unattended, isolated confined or remote area.

In connection with the use of germicidal and fumigating mists, insect repellent mists and the like, many operating problems arise as to attendance thereof. The requirement of non-exposure of certain operating personnel to a certain concentration of pressurized or aerosol packaged deodorants, germicidal preparations, antiseptic fluids, insecticidal sprays and the like, in the surrounding air for a designated area, present serious problems, as many operating personnel are allergic to, or become easily ill, from the presence of such mist sprays. Also, manual operation is an inconvenience and a manual operator for such sprays due to inaccuracy finds it impossible to maintain a desired concentration of such sprays in the surrounding air of a designated area.

The present invention solves the above problems by providing an economical, safe and efficient periodic dispersal of such mists and sprays from a weatherproof cabinet like enclosure means for a conventional pressurized or aerosol type of packaged mist spray which will operate for long periods of time unattended.

The primary object of this invention is to provide a safe, economical and reliable means of periodically dispensing mist from pressurized containers of a commercial type having therein fluids which may be used as room fresheners, deodorizers, germicides, insecticides, insect repellents, disinfectants, or any other pressurized gas, mist and the like.

Another object of the invention is to provide an automatic periodic spray dispenser which will operate unattended for long periods of time.

A further object of this invention is to provide a safe, reliable and automatic periodic type of spray mist dispenser which will efficiently maintain a desired level of concentration of mist in the air of a designated area for an extended period of time.

A still further object of this invention is to provide a safe and reliable automatic periodic type of spray mist dispenser.

Yet another object of this invention is to provide an economical and silent type of automatically timed dispenser mechanism adapted to dispense pressurized mist or gas into an area at predetermined time intervals.

With these and other objects in view, the invention includes certain novel features hereinafter described with reference to the drawing which accompanies and forms a part of this specification.

In the drawings:

FIGURE 1 is a perspective view of the inventive automatic periodic spray mist dispenser as attached to a wall or other support means;

FIGURE 2 is a front elevational view of the new cabinet and spray mechanism having the front cover removed therefrom;

FIGURE 3 is an enlarged transverse cross-sectional view taken on lines 3-3 of FIG. 2 in the direction of the arrows;

FIGURE 4 is an enlarged detailed front elevational view of the inventive spring biased rotary plural link and compressing mechanism for periodically operating the

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pivoted lever means cooperating with the valved means of a conventional pressurized dispenser; and

FIG. 5 is a top view of the mechanism shown in FIGURE 4 taken on lines 5-5 on FIG. 4 in the direction of the arrows.

Referring more specifically to the drawing wherein like reference numerals designate like parts, reference numeral 10 designates, generally, the cabinet enclosure of the invention. Cabinet enclosure 10 is comprised of side means 11 and 12, top means 13, bottom means 14 and back means 15 containing a slotted aperture means 16 and is adapted to be mounted by screw, bolt or other suitable desired means (not shown) to a wall or other type of support in proximity to an energized electrical outlet receptacle 17. Side means 11 contains an aperture 19 and grommet 20 therein adapted to receive a two-wire conductor 18 having a plug means 18a engageable with the receptacle 17 for energizing a time apparatus 21, of a commercial type, as best seen in FIGURE 3. Cabinet means 10 includes a rectangular recessed cover door means 22 having a securing formed metal detent means 23 at its top and bottom edge portions, and an apertured portion 24 for external dispersal therefrom of spray mist and the like from a pressurized mist container 25, of a desired commercial type, as best seen in FIGURES 1 and 2. Back means 15 has a support angle means 15a welded or suitably mounted thereto with a frontal recess 15b therein adapted to fixedly recline the pressurized spray container means 25.

Timing apparatus 21 may be either electrically or spring wound actuated as desired, and is rigidly supported in cabinet means 10 by screw means 26 secured in apertures 27 of angle support means 28 having a lower forwardly extending angle-like foot means 29 secured by bolt means 30 in aperture means 31 of cabinet means 10. Angle means 28 has an upper and forwardly extending angle portion 31' having a tapped aperture means 31a therein to threadably receive screw bolt means 32 secured by lock nut means 33. Screw bolt means 32 has an adjustable locking nut 33 and a lower end terminating in a bumper limiting means 33a of suitable material to periodically contact lever means 35 as will be hereinafter explained.

The reduction gear means (not shown) of timing apparatus 21 is conventional and has a predetermined rate of speed to rotate its take-off shaft means 38 for a desired dispensing cycle. Shaft means 38 carries lever means 39 fixedly secured thereto by screw means 40. The distal end of lever means 39 is pivotally connected by bolt or pin means 41 in tandem relationship to another similar lever means 42 secured by pinion means 43 to compressor roller means 44, as best shown in FIG. 4. Lever means 39 is rotatably biased with respect to lever means 42 by spring means 50 connected to screw means 40.

Angle means 29 has an upstanding longitudinal plate 45 connected by a screw means 46 or other suitable means to a U-shaped support means 47 in which the curved portion 47a bears against angle means 29 and the upper portion 47b is pivotally secured by bolt or pin means 48 to the right end of lever means 35. The intermediate portion of lever means 35 has an upstanding arcuate member 35a which actuates conventional spring biased valve spray means 51 of the pressurized container 25.

Pressure container means 25 includes the spring biased valve means 51 which contacts portion 35a of lever means 35 to downwardly depress the same, the pressure on lever means 35 being balanced by tension spring means 52 attached in aperture means 52a of lever means 35 and aperture 52b of angle means 31 maintaining lever means 35 substantially in the position shown in FIGURE 2. The spray aperture 51a of valve means 51 is aligned with aperture 24 of door means 22.

Referring more specifically to FIGURE 5, spring means 50 is bent at one end to engage screw means 40 and is helically secured around bolt means 41, the other end of spring means 50 being secured around fixed pin means 41a in lever means 42. Lever means 39 and 42 are connected in tandem by bolt or pin means 41. As shaft means 38 is rotated in the direction of arrow A link means 42 folds back against a segmental helical cam surface means 54 in the direction of arrow means B to store potential energy in the bias of spring means 50 to actuate the unpivoted end of lever means 35 upwardly pressing contact means 35a against spring biased valve means 51 as compression roller means 44 leaves point 54a of cam surface means 54 thereby dispensing spray mist periodically.

Lever means 35 has a lower cam surface means 53 which contacts cam roller means 44 after it leaves point 54 of compression surface means 54.

Upstanding plate 45 defines the arcuate concave compression surface means 54 of a predetermined shape, as shown in FIGURE 2, which is contacted by compression roller means 44 during rotation of shaft means 38. During rotation of lever means 39 and 42 and contact of compression roller means 44 past point 54a of compression surface 54, spring means 50 being potentially biased instantaneously releases the stored energy therein by further travel of shaft means 38 to press the compression surface 53 of the left end of lever means 35 upwardly to overcome the normal spring bias in valve dispensing means 51 to actuate the same for a predetermined spray period to dispense a desired concentration of spray mist in the surrounding air through aligned aperture means 24 of door means 22 of cabinet means 10.

A novel feature of the instant invention is that the tandem lever means comprising lever means 39 and 42 and compression roller means 44 cooperates with compression surface means 53 of lever means 35 and stationary concave compression surface means 54 and energy storing spring means 50 to operate dispensing valve means 51 with each rotation of shaft means 38.

In operation, pressurized container means 25 is fixedly placed in recess or aperture means 15b of support angle means 15, as shown in broken lines in FIGURES 2 and 3 and bumper means 32 is properly adjusted to selectively limit the upward movement of lever means 35. Then tension of spring means 52 is properly adjusted by length to balance the normal spring means of the valve means 51 in the container means 25 without actuating dispensing valve means 51. During a designated dispensing period of a spray cycle, shaft means 38 makes one revolution in which compression roller means 44 contacts compression surface means 54 until it contacts point 54a of the same, biasing or storing potential energy in spring means 50, and as shaft means 38 is further rotated spring means 50 releases this potential energy against lever means 35. As compression roller means 44 contacts compression surface means 53 of lever means 35 the normal spring bias means in conventional dispensing valve means 51 is overcome and the container 25 dispenses a desired concentration of spray mist through aligned aperture means 24 of door means 22 into the surrounding air. As the above-mentioned potential energy is spent against lever means 35, lever means 39 and 42 connected in tandem by pivot means 41 elongates in

projected length until compression roller means 44 begins to contact the beginning point 54b of cam surface 54 to begin the biasing or storing of potential energy in spring means 50 for another dispensing cycle of the invention between points 54b and 54a of compression surface means 54.

Each revolution of shaft means 38 represents one spray cycle of the invention, as energized by timing or clock means 21.

Timing means 21 may have different predetermined actuating periods as determined by the gear means of timing means 21 for the operation of each mist spray dispersal or spray cycle of this new spray mechanism of the invention.

From the foregoing it will now be seen that there is here provided an improved cabinet and automatic periodic spray mist dispenser which accomplishes all the objects of this invention, and others, including many advantages of great practical utility and commercial importance.

Many embodiments may be made of this inventive concept as desired by those skilled in the art without departing therefrom. Therefore, it is to be understood that all matter herein is to be interpreted merely as illustrative, and not in a limiting sense.

I claim:

1. An automatic spray mist dispenser of the character described comprising a cabinet having a door, an aperture in said door through which a spray mist is discharged, a recessed support secured to the rear wall of said cabinet supportably receiving an inverted pressure tank of fluid material, having a spring-pressed dispensing valve, motor driven clockwork having an output shaft secured in fixed position in said cabinet, a spring biased tandem lever, an energy storing spring and a compression roller carried by said tandem lever, an elongated vertically disposed plate secured in fixed position in said cabinet, a segmental cam surface formed in said plate adjacent one end thereof, said spring biased tandem lever being connected to the output shaft of said clockwork for rotation therewith in position for said roller to engage said cam surface, an elongated lever having one end thereof pivotally connected to the other end of said plate with the free end thereof disposed in position to be engaged by said roller upon said roller leaving said cam surface during each revolution of said tandem lever by said clockwork, said tandem lever being operative through said roller to actuate said elongated lever, and said elongated lever being adapted to actuate said valve to periodically dispense spray mist therefrom each time said elongated lever is actuated by said tandem lever.

2. An automatic spray mist dispenser as defined by claim 1 in which said cam surface is operative through the engagement thereof with said roller to actuate said tandem lever to periodically store potential energy in said energy storing spring by which said tandem lever is periodically actuated to effect actuation of said dispensing valve.

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LOUIS J. DEMBO, *Primary Examiner.*