

(16)

Description

The present invention relates to a room spray dispenser with a trigger mechanism, a vessel for or with an atomizable perfumed and/or deodorant fluid being disposed in the room spray dispenser and the neck of the vessel being provided with a valve member which contains a nozzle.

These room spray dispensers comprise a fluid-atomizing appliance which is secured to or in the vicinity of a door and which atomize a predetermined quantity of perfumed and/or deodorant fluid each time the door is used.

The known appliances of this type operate either with aerosol cans and with atomizer valves which are actuated partly mechanically and partly electrically and are integrated in the appliance and which operate on the basis of a pump piston.

The disadvantages of these appliances are either the propellant gas which is detrimental to the environment, the dependence upon electrical current and/or the costly maintenance of the atomizer in the appliance.

The GB-A-411055 (FR-PS 765.386) relates to a spraying apparatus which essentially comprises an appliance component "like an air pump" and a fluid reservoir and in which the spray fluid is supplied by the respective air current.

(11)

The object of the invention is to overcome the disadvantages of the known apparatus and to provide a room spray dispenser of the type described above, which is simple in design, operates reliably and ensures a regular dosing of the deodorant and/or perfumed fluid.

Since the atomizers provided for manual actuation squirt out a drop-free mist only when the atomizer button is actuated suddenly, the invention should contain a lever mechanism which converts a relatively slow door-opening movement into a sudden atomizer actuation.

The object stated above is attained in that the valve member is at the same time constructed as a pump, the operating end of a pressure lever is disposed above the valve member, the said pressure lever being acted upon by at least one spring in the direction of the valve member, and the said pressure lever is provided with a tensioning and locking apparatus.

The advantage of the invention is that a regular dosing of the fluid is ensured in a simple manner, it being possible for the spring-loaded pressure lever to actuate in a simple manner the pump disposed in the valve member. The tensioning and locking apparatus can be constructed in an uncomplicated manner in such a way that the room spray dispenser operates only in one direction of movement of the trigger mechanism. In this connexion, with the aid of the spring-loaded pressure lever, an ad-

equate sudden actuation is made possible, which ensures a regular atomization of the fluid.

According to a further development, a locking lever, with which a trigger element of the trigger mechanism is associated, is tiltably disposed above the pressure lever. The locking lever can bring the pressure lever very simply into the tensioned position. The locking lever is unlocked by the trigger element of the trigger mechanism.

According to the manner of fastening the room spray dispenser and according to the manner of moving the door outwards or inwards, when the room spray dispenser uses the movement of the door as a control means, the trigger element is advantageously constructed as a pivoted lever or a two-armed trigger lever or as a trigger pin.

According to another embodiment, the trigger element is constructed as a lever-like trigger which is rotatably mounted in the lower part and extends in a curved manner in the upper part transversely over the locking lever.

This modification has the advantage that the room spray dispenser can be mounted at a considerable distance from the door, it being possible to control the lever-like trigger by the movement of the door over a predetermined distance.

A cord, which is connected to the upper part of the

(13)

lever-like trigger, is suitable for controlling the lever-like trigger. This cord is either guided directly to a point on the door or advantageously through at least one eyelet secured to the wall and/or to the door.

It is advantageous if one end of the locking lever is provided with sliding surfaces which are associated with cam-like raised portions of a tiltably mounted tension lever. The locking lever can be brought back again into the locked position with the aid of the said sliding surfaces, in which case the spring is tensioned again.

According to an advantageous arrangement, the locking lever above the valve member is formed with a raised upper contact surface which is provided for triggering the operation of the room spray dispenser by pressing the operating end of the trigger element of the trigger mechanism. The trigger element moves over the locking lever, unlocks the locking lever and, when the raised upper contact surface is struck, presses the operating end of the locking lever on account of the raised contact surface being struck.

According to another embodiment, the locking lever is provided with a raised upper contact surface which is disposed in the rear part above a compression spring, so that the front end of the locking lever extends towards the front of the room spray dispenser.

14

It is advantageous if a tension spring is disposed between the lower surface of the pressure lever and a pin secured between the bearing walls, and if a compression spring is mounted above the valve member between the lower surface of the locking lever and the upper surface of the pressure lever.

According to a further development, the pressure lever is supported by means of a lever rotatably mounted in the lower part of the tension lever. The lowest position of the pressure lever is determined and the mechanical strength of the entire structure is increased by this design.

The invention is explained in greater detail below with reference to several drawings, in which

Fig. 1 is an elevation of a room spray dispenser and a trigger mechanism, the trigger mechanism being shown in section, constructed as a pivoted lever;

Fig. 2 is a plan view of the arrangement according to Fig. 1;

Fig. 3 is a horizontal section III-III through the room spray dispenser according to Figs. 1, 2 and 4, taken above the valve member according to Fig. 4;

Fig. 4 is a vertical section IV-IV corresponding to Fig. 5 through the room spray dispenser at right angles to the rear wall;

- Fig. 5 is a vertical section V-V according to Fig. 4 through the room spray dispenser parallel to the rear wall;
- Fig. 6 shows the upper part of the vertical section according to Fig. 4, two other operating positions being illustrated;
- Fig. 7 shows the upper part of the vertical section according to Fig. 4, the apparatus being illustrated in the phase in which a mixture of air and fluid is sprayed from the nozzle;
- Fig. 8 is a simplified modification in an overall elevation, for example a different modification, in which a two-armed trigger lever is used as the trigger element and the room spray dispenser is secured to a door opening inwards;
- Fig. 9 is a plan view of the two-armed trigger lever according to Fig. 8;
- Fig. 10 is a front elevation with a partial section through the fastening case towards for example the embodiment according to Fig. 8;
- Fig. 11 is a diagrammatic illustration of the mounting of the two-armed trigger lever according to Fig. 8 in the fastening case which is mounted on the door;
- Fig. 12 is a simplified illustration of another

(16)

modification in an overall elevation, in which a trigger pin is used as the trigger element and the room spray dispenser is secured to a door opening outwards;

Fig. 13 is a partial section through the fastening case and the trigger pin according to Fig. 12;

Fig. 14 is a partial section through a modification according to the invention, in which the sliding surface of the locking lever is situated in the rear part of the room spray dispenser and the room spray dispenser is tensioned;

Fig. 15 is a lateral view of a trigger which is suitable for the modification according to Fig. 14;

Fig. 16 shows the same modification according to the invention, which has already been shown in Fig. 14, but in the released state during the spraying;

Fig. 17 shows a further embodiment, in which triggering is effected by means of a cord, and

Fig. 18 is a lateral view of the lever-like trigger according to Fig. 17.

According to Fig. 1 a room spray dispenser 1 is secured to a door frame 6 and a trigger mechanism 2 is secured to a door 5. In the upper part of Fig. 1 a pivoted lever 3 as the trigger element is shown in section, the operating end 3' of the pivoted lever 3 being disposed

17

above the room spray dispenser 1. The pivoted lever 3 is securely connected to a fastening case 4. In this example, fastening is effected with the aid of a cylindrical screw 9. The cover 4' (not visible in this drawing) is held by means of fastenings 4". The bores, into which two wood screws 7 are screwed, are shown in Fig. 1. The fastening case 4 is secured to the door 5 with the aid of wood screws 7, which are guided through the holes 8. A dust cover 10 is inserted in the operating end 3' of the pivoted lever 3. The room spray dispenser 1 is provided with a hood 11, in which an opening 12 is formed. A nozzle 13 is visible through this opening. Part of a locking lever 14, the surface of which is struck by the operating end 3' of the pivoted lever 3, is shown in Fig. 1. Part of a tension lever 15 is visible behind the operating end 3' of the pivoted lever 3. Part of a lock 16 is shown in the lower part of the hood 11. A gap between the door 5 and the door frame 6 has been given the numeral 17.

The same parts have been provided with the same reference numerals in all the drawings.

Fig. 2 is a plan view of the apparatus according to Fig. 1. The said Fig. 2 additionally shows sliding surfaces 14' of the locking lever 14 and an upper contact surface 14" of the locking lever 14. A rear wall 18 is secured to the door frame 6 likewise by wood screws 7. Support walls 19, which extend both vertically and hori-

(15)

zonally at right angles to the rear wall 18, are formed integrally with the rear wall 18. An upper hole 20, through which the tension lever 15 and the locking lever 14 project upwards, is formed in the hood 11. Raised fastening portions 21 are formed integrally with the rear wall 18 and are used for the positioning and fastening of the hood 11.

The section shown in Fig. 3 shows additional parts of the room spray dispenser 1. A first pin 23 is mounted in a pressure lever 25, a second pin 24 being constructed as a tiltable mounting of the pressure lever 25. The ends of this second pin 24 are secured in the support walls 19. The operating end of the pressure lever 25 has been given the reference numeral 25'. One end of a tension spring 26 is inserted onto the first pin 23. A valve member 27 is also visible in the lower part of Fig. 3.

Fig. 4 is a vertical section through the room spray dispenser 1 at right angles to the rear wall 18. In addition to the parts already described, further pins 28 are shown in this drawing. One of these pins is used for tiltable connecting the locking lever 14 to the pressure lever 25, another for rotatably connecting a lever 22 to the lower part of the tension lever 15 and the next for rotatably mounting the tension lever 15 in the support walls 19. The last pin 28 forms the fastening for the lower end of the tension spring 26. A vessel 29 for the deodorant and/or perfumed fluid is provided with a neck

29', onto which the valve member 27 is screwed. The neck 29' passes through a hole 30 in the horizontally positioned support wall 19. A tube 31, which is of course open at the bottom, passes from the valve member 27 into the interior of the vessel 29 as far as the bottom. An opening 32 for the closure member of the lock 16 is formed in the lower part integrally with the rear wall 18. A compression spring 33 is mounted between the locking lever 14 and the pressure lever 25.

Fig. 5 shows a vertical section through the room spray dispenser 1 parallel to the rear wall 18. The parts illustrated in this Figure have already been described with reference to earlier drawings.

Figs. 6 and 7 correspond to the upper part of Fig. 4 and serve to clarify the mode of operation of the room spray dispenser 1.

The mode of operation of the room spray dispenser 1 is evident from a comparison of Figs. 6 and 7. According to Fig. 6 the position of the apparatus, in which the tension lever 15 is in the rear position where it strikes the locking lever 14 by means of the cam-like raised portions 15', is shown in solid lines. In addition, the position of the operating end 3' of the pivoted lever is the rest position, as is the case when the door 5 is closed. When the door 5 is opened, the operating end 3' moves in the direction of the arrow, until it reaches the



position indicated in dash-dot lines. In this position it begins to touch the upper contact surface 14" of the locking lever 14. The locking lever 14 is unlocked. Fig. 7 already shows the position in which the operating end 3' of the pivoted lever 3 has pressed the upper contact surface 14" downwards. In this phase the tension lever 15 has already sprung forward on account of the force of the compression spring 26. The compression spring 26 also pulls the operating end 25' of the pressure lever 25 downwards, the operating end 25' presses upon the upper button-like part of the valve member 27 and a mixture of air with the fluid flows in the form of a spray jet from the nozzle 13. As already described above, the valve member 27 not only contains a valve, but it also operates like a pump. When the upper part of the valve member 27 is compressed, a predetermined quantity of air is forced into the vessel 29. The pressure of the air cushion acts upon the surface of the fluid, and on account of the tube 31 a predetermined quantity of the deodorant and/or perfumed fluid is forced into the valve member 27, mixed with the air and sprayed through the nozzle 13. During the return movement of the operating end 3' of the pivoted lever 3, i.e. in the direction indicated by the arrows, the tension lever 15 is moved backwards, in which case it raises the locking lever 14 upwards by means of the cam-like raised portions 15' and the sliding surfaces 14' of the said locking lever 14 and locks it in the end position. The locking lever 14 is also followed by the pressure lever 25, and the tension spring 26 is again

21

tensioned. During this return movement of the pivoted lever 3 the locking lever 14 and the pressure lever 25 are not actuated. The spraying procedure thus takes place as the door 5 is opened.

Fig. 8 shows a simplified overall view of another embodiment of the trigger mechanism 2 by way of example with the room spray dispenser 1. In this case both the room spray dispenser 1 and the fastening case 39 for the trigger element are secured to the door in the manner already described. In this example the door is opened inwards. The trigger element is constructed as a two-armed trigger lever 34. The right-hand support end 37 of the trigger lever 34 is supported on the door frame 6. The left-hand operating end 36 of the trigger lever 34 is used for actuating the room spray dispenser 1, only the upper part of the tension lever 15 being shown simplified for the sake of simplicity. The axis of rotation of the trigger lever 34 is designated symbolically by the numeral 35. The room spray dispenser 1 with its lever corresponds to the room spray dispenser according to Figs. 1 to 5. Its mode of operation is likewise the same as described in connexion with Figs. 6 and 7.

Fig. 9 is a plan view of the trigger lever 34. In this drawing both the operating end 36 and the support end 37 are shown once again. The circle 35 shows the position of the axis of rotation of the trigger lever 34.

22

The mode of operation of the trigger lever 34 is shown in Fig. 10. Both ends of the trigger lever 34 are provided at the bottom with raised portions 36'. In this example only the left-hand raised portion 36' of the operating end 36 has a specific function, namely actuating the previously described levers of the room spray dispenser 1. The trigger lever 34 comprises a spring (not shown). The object of this spring is to turn the trigger lever 34 as the door 5 is opened and to press the locking lever 14 downwards with the raised operating end 36 of the trigger lever 34 by way of the contact surface 14". The trigger lever 34 is made symmetrical, in order to allow it to be used with doors which open either inwards to the left or inwards to the right. The end referred to in this example as the support end 37 can thus be used in the opposite way as the operating end 36. The fastening case 39 is shown in section in Fig. 10. It is provided with a round, vertical bearing 40 in which a pivot pin 38 of the trigger lever 34 is inserted. The bearing 40 can either embrace the pivot pin 38 without play so that it acts as a slight brake, or be provided with a spring known per se acting as a brake.

The mounting of the pivot pin 38 is shown diagrammatically in Fig. 11. This pivot pin 38 is provided with a stop 41 which moves in an extension 42 of the bearing 40 during the actuation of the trigger lever 34. This stop 41 is to prevent the trigger lever 34 from moving out of the correct operating zone.

23

The third variation of the trigger mechanism 2 and the arrangement of the room spray dispenser 1 is shown diagrammatically in Fig. 12. This variation is intended for the case in which the door 5 moves outwards. The room spray dispenser 1 again corresponds to the embodiment described with reference to the first drawings. A trigger pin 44, which in this example is constructed integrally with part of the fastening case 43, is used as the trigger element. The fastening case 43 with the trigger pin 44 is secured to the door frame 6, the room spray dispenser 1 being disposed on the door 5. When this door 5 is opened outwards and closed again, the trigger pin 44 strikes the lever system of the room spray dispenser 1 in the manner described above and meters the deodorant and/or perfumed fluid into the room.

Fig. 13 is a partial section through the embodiment of the fastening case 43 in Fig. 12. A recess 8 for fastening by means of a wood screw 7 is also shown in the left-hand part. The trigger pin 44 is made hollow and the fastening case 43 with the trigger pin 44 is produced from plastics material in the injection-moulding process.

The embodiment according to Figs. 14 to 16 corresponds to that according to Figs. 2 to 7, the trigger element 3 (pivoted lever) being replaced, however, by the trigger 54 according to Fig. 15 and the upper contact surface 14" of the locking lever 14 being disposed in the rear part. In this way the design is simplified in part.

In addition to the parts already described above, a pin 45, which permits the reciprocal movement of the locking lever 14 and the pressure lever 25, is disposed between the said levers. A pin 46, about which the tension lever 15 can move in a pivoting manner, is disposed between the vertical support walls 19 and the tension lever 15. The tension lever 15 is provided with two locking cams 15", one locking cam 15" in each case being disposed on each side on the inside of the two-armed tension lever 15. In Fig. 14, which illustrates the tensioned state of the room spray dispenser, only one locking cam 15" is illustrated. In this position it blocks the locking lever 14, by engaging in a recess of the said locking lever 14. During release, this locking cam 15" slides over the lower surface (or surfaces) of the locking lever 14, so that the tension lever 15 also moves into the released position according to Fig. 16. During renewed tensioning, this locking cam 15" presses the locking lever 14 back into the tensioned position according to Fig. 14. In this case the spring 26 is tensioned and the spring 33 is pressure loaded. A pin 47 is disposed in the interior of the tension lever 15 and is used for the movable mounting of the lever 22, a further pin 48 being mounted in the interior of the pressure lever 25 and guiding the upper end of the lever 22. A pin 49 for holding the tension spring 26 is also disposed in the interior of the pressure lever 25. The lower end of the tension spring 26 is secured in or around a pin 50, this pin 50 being secured in the vertical support walls 19. A holding means 51 for



the insertion of the compression spring 33 is formed in the upper surface of the locking lever 14. This holding means 51 is shaped like a cylinder, so that the compression spring 33 can be either pushed in, as shown, or pushed on around the holding means 51. The lower end of the compression spring 33 is set on a holding means 52. This holding means 52 forms a constituent part of the pressure lever 25. The direction of the pressure of the trigger 54 according to Fig. 15 is shown by the arrow 53. The trigger 54 comprises a holder 55 and a slide 56. These parts are fixed to one another by screws (not shown). The operating part of the trigger 54 is designated 57. During tensioning, this operating part presses in the direction of the arrow 53 on the tension lever 15, and during the movement in the opposite direction to the arrow 53 it slides over the upper contact surface 14" of the locking lever 14 and thus triggers the spraying procedure. In order to be able to set the correct length of the trigger 54, it is made in two parts. The reference numeral 57' designates the inserted part of the slide 56.

Figs. 17 and 18 show a solution according to the invention in which a lever-like trigger 58 is used, which can be pulled with a cord 62. Fig. 16 is a plan view of the room spray dispenser 1 and Fig. 17 is a lateral view of the lever-like trigger 58. One tensioning surface of the lever-like trigger 58 is designated 59. This tensioning surface 59 has the same function as the operating end 3' of the pivoted lever 3 as shown in Figs. 1, 2, 4

and 6, the remaining parts of the solution according to Figs. 17 and 18 (with the exception of the lever-like trigger 58) being the same as in the said Figures. In this example the trigger 58 is thus a structural component of the room spray dispenser 1. The tensioning surface 59 is therefore used to entrain the lever 15 during the tensioning procedure. A trigger member 60 of the lever-like trigger 58 is intended for contacting with the tension lever 15. Lateral portions 61 of the lever-like trigger 58 are rotatably mounted with a pin 65 between the vertical carrier walls 19. The cord 62 is fixed in the fastening part 63 of the lever-like trigger 58 by means of a fastening means 64 consisting for example of metal. The cord 62 is expediently produced from a smooth and resilient plastics material and provided for tensioning the room spray dispenser 1. The lateral portions 61 of the lever-like trigger 58 are pretensioned in the forward direction in each case with a tension spring 66, so that a pull on the cord 62 tensions the tension spring 66 and prepares it for the next spraying procedure. When the cord 62 is released, however, the two tension springs 66 move the lateral portions 61 of the lever-like trigger 58 forward, so that the lever-like trigger 58 triggers the next spraying procedure. The operating end 25' of the pressure lever 25 is provided with a push button, the underside of which is adapted to the shape of the upper surface of the valve member 27.

If a straight guidance of the cord 62 cannot be used,

27

use is advantageously made of at least one lug 67, which is shown in section above the room spray dispenser 1 in the upper part of Fig. 17. This design of the lug 67 by way of example is shaped like a prism and comprises intersecting holes 68, so that the lug 67 can be used for any change in direction of the cord 62. With this solution the room spray dispenser 1 can be disposed relatively far from the door 5 on a wall 69 and can nevertheless be actuated in a simple manner, for example by means of the said cord 62. Both the room spray dispenser and the trigger mechanism can be produced in a rational manner in plastics technology known per se. The design is particularly advantageous, since the spray jet achieved has a substantial range, fine distribution and uniform thickness on account of the pulse-like actuation of the pump, without a propellant gas charge having to be used. The apparatus is intended chiefly for lavatory cubicles and can reliably ensure the elimination or suppression of odours.

As is evident from the examples described, the room spray dispenser can be secured on the door, on the door frame and even relatively far from the door, in which case the appropriate type of trigger element 3, 34, 44, 54, 58 is used. These variants of the trigger mechanism 2 permit use with any existing structural components, the actuation of which is to actuate the room spray dispenser 1.