Aug. 26, 1952 S. H. PETRY 2,608,319

GAS DISCHARGE DEVICE FOR GAS BOMBS

Filed Jan. 15, 1948 2 SHEETS—SHEET 1

Fig. 1.

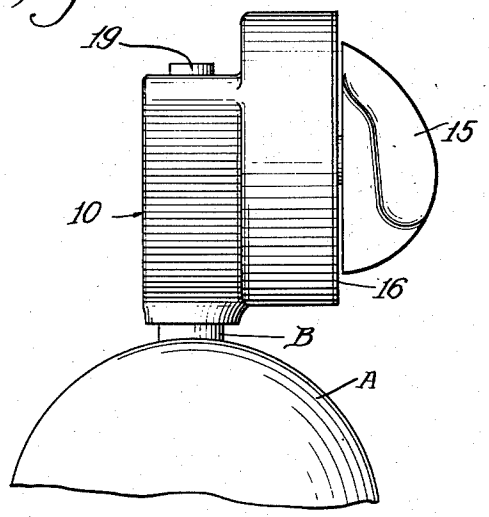


Fig. 3.

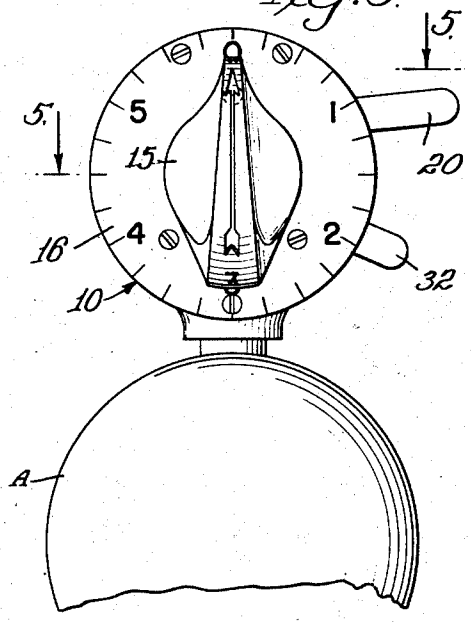
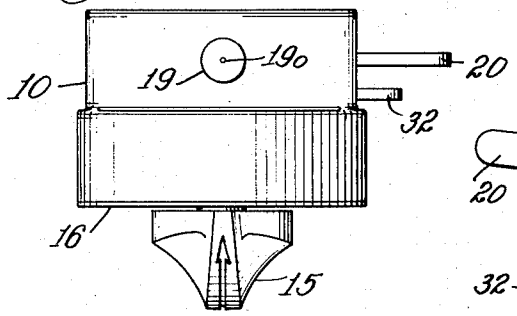


Fig. 2.



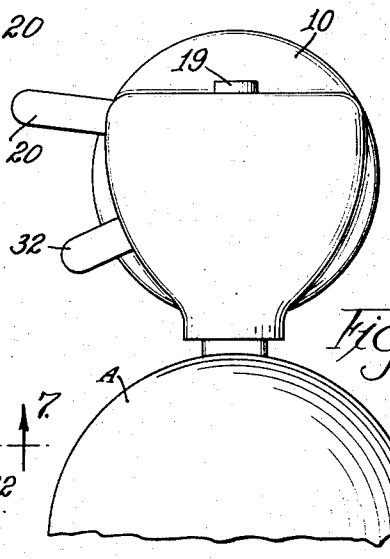


Fig. 5.

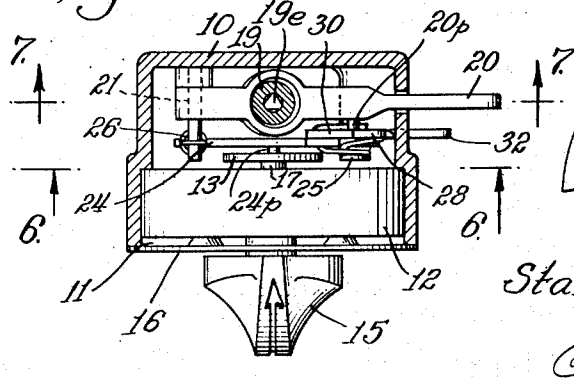


Fig. 4.

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Fig. 6

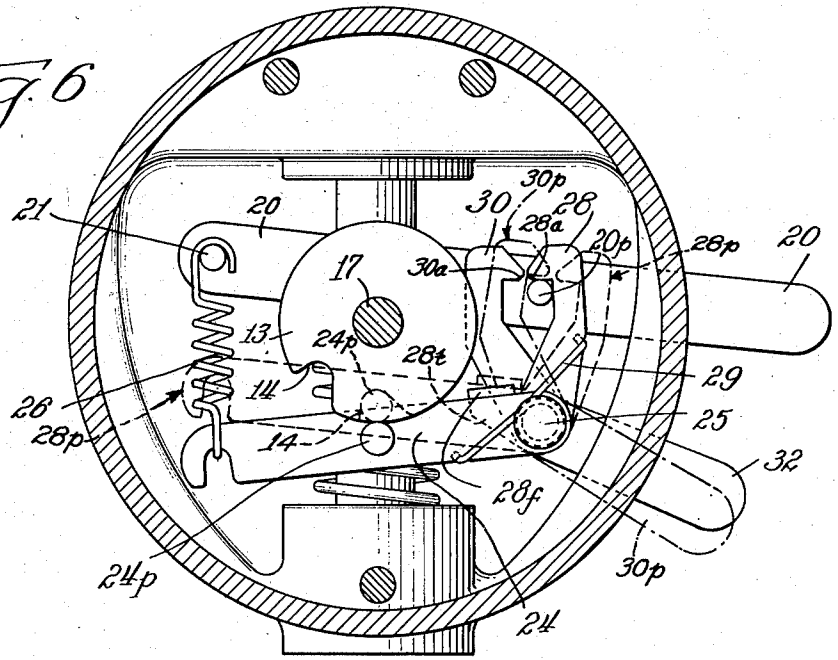
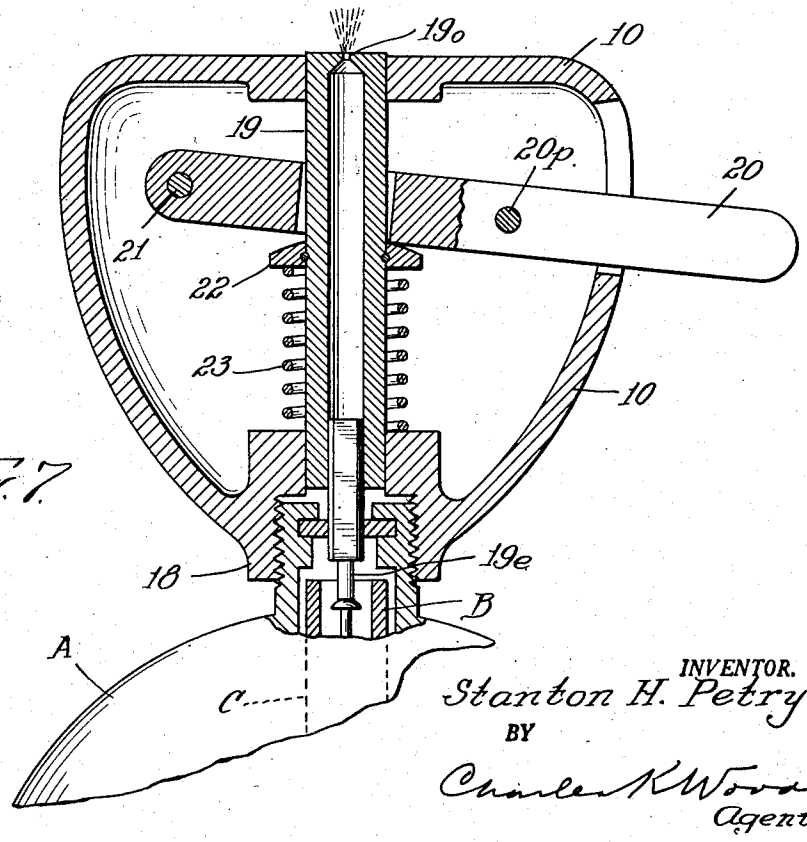


Fig. 7



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GAS DISCHARGE DEVICE FOR GAS BOMBS

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9 Claims. (Cl. 222—3)

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This invention relates to a device for the control of the discharge of gas bombs wherein the gas is discharged into the air for the control of insects and the like. These bombs are made in either large or small sizes, the small size being designed to be exhausted during one application of the gas, while the larger sizes, which are more economical, are intended to be discharged for a sufficient length of time to dispense the proper dosage of gas. The device of the invention is designed for use with the larger, multi-application type of bomb.

A particular object of the present invention is to provide a discharge control mechanism that may be operated manually for short bursts of gas, or may be manually locked for continuous discharge or automatically timed to govern the time elapse of the emission of gas for a selected period such as may be desired by the operator.

Other objects and benefits will be disclosed in the following description and drawing in which:

Fig. 1 is a side elevation view of my timing device mounted on a gas bomb fragmentarily shown;

Fig. 2 is a plan view of the device shown in Fig. 1;

Fig. 3 is a front elevational view;

Fig. 4 is a rear elevational view;

Fig. 5 is a plan sectional view showing the interior mechanism as it would appear on the section line 5—5 of Fig. 3;

Fig. 6 is a cross sectional view of the mechanism as it would appear on the section line 6—6 of Fig. 5; and

Fig. 7 is a cross sectional view of the mechanism as it would appear on the section line 7—7 of Fig. 5.

Now referring to the drawings, and at the outset to Figs. 3 and 5, the valve body 10 has a shouldered front recess 11 in which is mounted a conventional timer mechanism 12 having a rotating control disc 13 extending to its rear, said control disc having a control notch 14 in its periphery as clearly shown in Fig. 6. The timer 12 is controlled by a timer knob 15 mounted on the outside face of a time indicating dial 16 which is attached to the front of the valve body 10 in a conventional manner by screws as shown in Fig. 3. The knob 15 is mounted on a central control shaft 17 which extends through the timer 12 and supports the control disc 13 having the control notch 14 in its periphery. This timer mechanism is of the conventional spring clock type and will not be described in detail except to explain that when the knob 15 is rotated clockwise as shown in Fig. 3, it may be set for any desired time interval ranging in fractions of a minute up to 6 minutes as the operator desires. The clock mechanism, which is spring actuated, rotates the shaft 17 and when the selected time interval has elapsed the knob 15 will be returned to 0 position and the control disc 13 with the notch 14 will be returned to the initial inoperative position as shown in Fig. 6.

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Now referring to Fig. 7, it will be observed that the valve body 10 has an internally threaded neck 18 which may be screwably attached to the exteriorly threaded neck B of a gas bomb A. In the neck B of the gas bomb is a valve mechanism C similar to the valves used for retaining air in an automobile tire. Slidably mounted in the body 10 is a longitudinally bored valve actuating shaft 19 having fixedly swedged therein a reduced-diameter lower end 19e the extremity of which contacts the stem of the valve C. As best shown in Fig. 5 valve actuating shaft 19e is of triangular cross section thus engaging the cylindrical bore of shaft 19 at only three points, thus establishing channels therepast for the exit of gas through the bore in shaft 19. When the stem of valve C is depressed by the small end of the valve actuating shaft 19e, gas from the bomb A is permitted to escape past the triangular sides of the upper portion of valve actuating shaft 19e (see Fig. 5) into the hollowed out longitudinal bore in shaft 19 and through the opening 19o. The shaft 19 may be depressed into valve-opening position by a lever 20 pivoted at 21 which bears against a washer 22 fixed on shaft 19 and below which is a compression spring 23 which normally urges the shaft 19 upwardly into valve-closed position. From the foregoing description it will be appreciated that when the lever 20 is depressed to the position as shown in Fig. 7, the shaft 19 is urged downwardly and the contact end 19e of shaft 19 depresses the valve stem to release gas from the bomb A. When the lever 20 is released to permit it to move into upward position, then the shaft 19 and its fixed end 19e raise and the valve stem C closes itself.

Now referring to Fig. 6, I will explain the latching mechanism which may be used to retain the lever 20 and the valve control shaft 19 in valve open position or will optionally or, when timed operation is desired, automatically release these members to permit the valve stem C in the gas bomb E to be closed. It will be observed that a control lever 24 has one of its ends mounted on a pivot 25, the latter being supported on the body 10. Lever 24 has an outwardly pro-

truding pin 24p which is arranged and positioned to contact the periphery of the control disc 13 which, as previously described, has a notch 14 in the periphery thereof. The outer end of control lever 24 is normally urged upwardly for limited movement by a tension spring 26 as shown. The tension spring 26 constantly urges the control lever upwardly to move the pin 24p into the release notch 14 of the control disc 13 when said notch is actuated to the pin location. Counterclockwise rotational movement of the control disc 13 will permit the spring 26 to move the pin 24p upwardly into notch 14 as will be readily understood. Also mounted on the pivot pin 25 is a spring-loaded latch member 28 which is normally urged into counterclockwise movement, as shown, by a torque spring 29 connecting said latch 28 with the lever 24. By this arrangement it will be understood that the latch member 28 may be moved clockwise on the pivot 25 but that it will be returned by the spring 29 to the generally vertical position shown, this vertical position being determined by a horizontal stop or limit flange 28f extending over the top of the lever 24. The flange 28f is carried upon a tail piece 28t connected with the latch 28 to provide an integral structure that is disposed in offset relation with respect to the axis of the pivot 25 whereby to normally keep latch 28 and the lever 24 in their cooperative relationships as indicated in Fig. 6. With this arrangement the latch 28, can, however, be moved clockwise with respect to the lever 24 and against the tension of the spring 29. Also mounted on the pivot 25 is a latch member 30 similar to latch member 28 and having a handle or lever 32 formed integral therewith. Another torque spring (not shown) urges the latch member 30 in a clockwise direction so that the opposed detent points of the latch members are normally held in spring retained contact, the latch member 30 being urged for clockwise rotation and the latch member 28 being urged into counterclockwise rotation. The latch levers 28 and 30 have the lower corners of their hooks bevelled as indicated at 28a and 30a respectively thus allowing the pin 20p on lever 20 to readily snap up between the ends of the hook portions when the latch 28 is moved to unlatching position through the force of spring 26.

It will be apparent from the foregoing description that for short or intermittent manually controlled bursts of gas from the bomb, lever 20 only need be depressed. To secure continuous discharge of the gas, without regard to the time element, lever 20 may be depressed sufficiently to permit the hook of latch member 30 to engage pin 20p as shown by the dot and dash line position 30p in Fig. 6, and the pin 20p will be held by the latch member 30 until released by upwardly pull exerted on lever 32 sufficient to release the pin from the hook. During such intermittent intervals of operation, the latch 28 and its cooperative lever 24 will be disposed in the dotted line position 28p indicated in Fig. 6 which represents the normal inoperative and non-dispensing relationship of the parts.

When discharge of gas is desired for a certain predetermined time interval, dial 15 may be rotated clockwise to a position corresponding to the time interval. Rotation is thus imparted to shaft 17 and to disc 13 attached thereto forcing pin 24p out of disc notch 14 into a position similar to that indicated with respect to those parts in Fig. 6. Latch member 28 is thus permitted to move into such generally vertical position that depression of lever 20 causes pin 20p to be engaged by the hook of such latch member. The pin will remain so engaged and lever 20 remain depressed in valve-opening condition during the entire period that pin 24p is in peripheral engagement with disc 13. However, when disc 13 rotates to a position such that notch or recess 14 registers with pin 24p, the lever 24 will snap upwardly under tension of spring 26. By reason of the contact of lug 28f with the upper portion of lever 24 under tension of torsion spring 29, the latch portion 28 will be actuated clockwise by lever 24 and out of engagement with pin 20p. This action releases the heretofore depressed arm or lever 20 permitting it to return to normal and undepressed valve-closing condition.

Having described my device in considerable detail I do not wish this specific disclosure to be taken in a limiting but rather in an illustrative sense, desiring only to be limited by the scope of the appended claims.

What I claim is:

1. In a device for controlling the discharge of gas from a gas container having a valve, said device comprising a housing arranged for attachment with said container in a position adjacent the container valve, a hollow gas conducting tube slidably mounted in said housing and having a restricted orifice at its outer end, a valve actuating stem projecting from the bottom of said tube adapted upon depression of said tube to open the valve in said container for the escape of gas through said tube, and means for depressing said tube and releasably latching the same in depressed position.

2. In a device for controlling the discharge of gas from a gas bomb having a valve, said device comprising a housing arranged for attachment with the bomb adjacent the bomb valve, a tubular gas conducting member slidably mounted in said housing and having a nozzle for the ejection of gas at its outer end, a valve actuating element secured in the inner end of said tubular member with provision for the entrance of gas into said tubular member, a lever having its inner end pivoted in the housing and its outer end projecting through said housing, means on said tubular member for engagement by said lever for depressing said tubular member for opening said valve, and latching means for latching said lever in valve open position.

3. In a device for controlling the discharge of gas from a gas container having a valve, said device comprising a housing attachable with the container and in a given position with respect to the container valve, a hollow plunger slidably mounted in said housing and having a nozzle at its outer end, a valve actuating element secured in the inner end of said plunger with provision for the entrance of gas into said plunger, means including a lever for depressing said plunger for opening the valve of the container, means for latching said lever in depressed position, a timing device adapted for automatically unlatching said lever at the end of a predetermined time interval, and yielding means for elevating said plunger when said lever is unlatched.

4. In a device for controlling the discharge of gas from a gas bomb having a valve, said device comprising a housing arranged for connection with the bomb in a given relation with the valve thereof, a hollow plunger slidably mounted in said housing and having a gas discharge orifice at its outer end and a valve actuating element at

its inner end with provision for the entrance of gas into said plunger from said bomb, an abutment on said plunger within said housing, a lever pivoted within the housing for engaging said abutment for depressing said plunger for opening the bomb valve, yielding means between the abutment and said housing for normally elevating said plunger, means including a latch for latching said lever in depressed position, and a timing mechanism including a lever having a connection with said latch for unlatching the same at a predetermined time.

5. In a device for controlling the discharge of gas from a gas bomb having a valve, said device comprising a housing having means to secure same to the bomb in predetermined relation with respect to the bomb valve, a hollow plunger slidably mounted in said housing and having a gas discharge orifice at its outer end, a valve actuating element at the inner end of said plunger having provision for the entrance of gas from said bomb, means including a lever for depressing said plunger, and manually actuated means for latching said lever in depressed position.

6. In a device for controlling the discharge of gas from a gas bomb having a valve, said device comprising a housing having means for securement to said bomb in a predetermined relation with respect to the valve thereof, a hollow plunger slidably mounted in said housing and having a gas discharge orifice at its outer end, a valve actuating element at its inner end with provision for the entrance of gas into said plunger, means including a lever for depressing said plunger, a latch for latching said lever in depressed position, and timing mechanism for releasing said latch at a predetermined lapse of time.

7. A gas bomb comprising a valve for the release of gas from said bomb, and discharge control means connected with said bomb at said valve, said control means comprising a housing, a tube slidably mounted in said housing with one end projecting therefrom and vented to the atmosphere, a valve operating member connected with the other end of said tube and adapted upon depression of said tube to open said bomb valve for escape of gas through said tube, and operative means for depressing said tube to open said valve.

8. A gas bomb comprising a valve for the release of gas from said bomb, and discharge control means connected with said bomb at said valve, said control means comprising a housing, a tube slidably mounted in said housing with one end projecting therefrom and vented to the atmosphere, a valve operating member connected with the other end of said tube and adapted upon depression of said tube to open said bomb valve for escape of gas through said tube, and operative means for depressing said tube to open said valve, said operative means having releasable latching mechanism to hold said valve operating lever depressed.

9. A gas bomb comprising a valve for the release of gas from said bomb, and discharge control means connected with said bomb at said valve, said control means comprising a housing, a tube slidably mounted in said housing with one end projecting therefrom and vented to the atmosphere, a valve operating member connected with the other end of said tube and adapted upon depression of said tube to open said bomb valve for escape of gas through said tube, and operative means for depressing said tube to open said valve, said operative means having releasable latching mechanism to hold said valve operating lever depressed, and timing mechanism arranged for cooperative connection with said latching mechanism to automatically release the operative means to close said bomb valve after the elapse of a predetermined time interval.

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