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[56] **References Cited**

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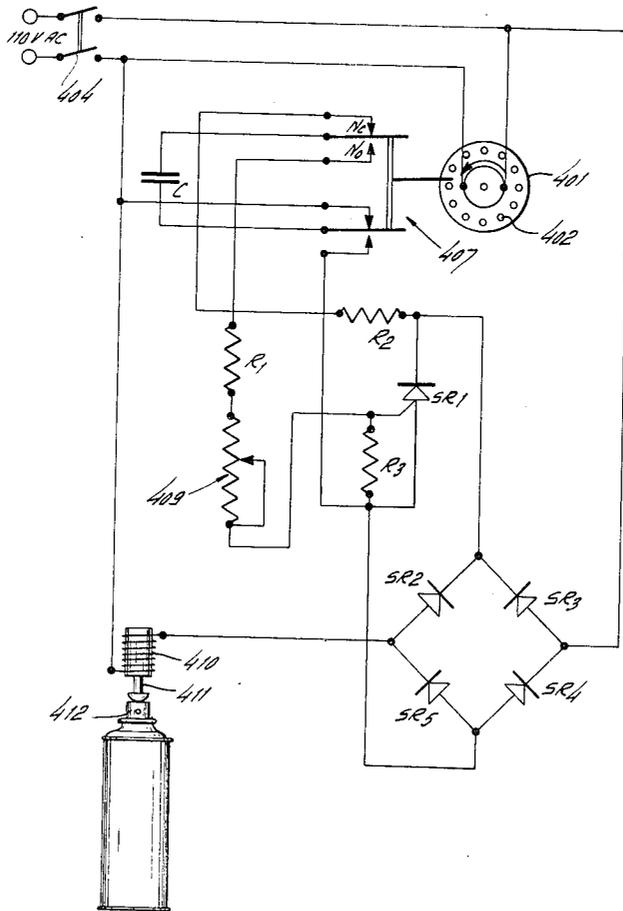
[54] **DISPENSER FOR AEROSOL BOMBS**  
**10 Claims, 6 Drawing Figs.**

[52] U.S. Cl. .... **222/70**

[51] Int. Cl. .... **B67d 5/08**

[50] Field of Search..... **222/70, 76,**  
**3; 194/3**

**ABSTRACT:** Aerosol bombs of the type having a depressing dispensing valve, particularly an electronic circuit including spray interval and length of spray timing components and a reciprocating solenoid plunger which depresses the aerosol bomb.



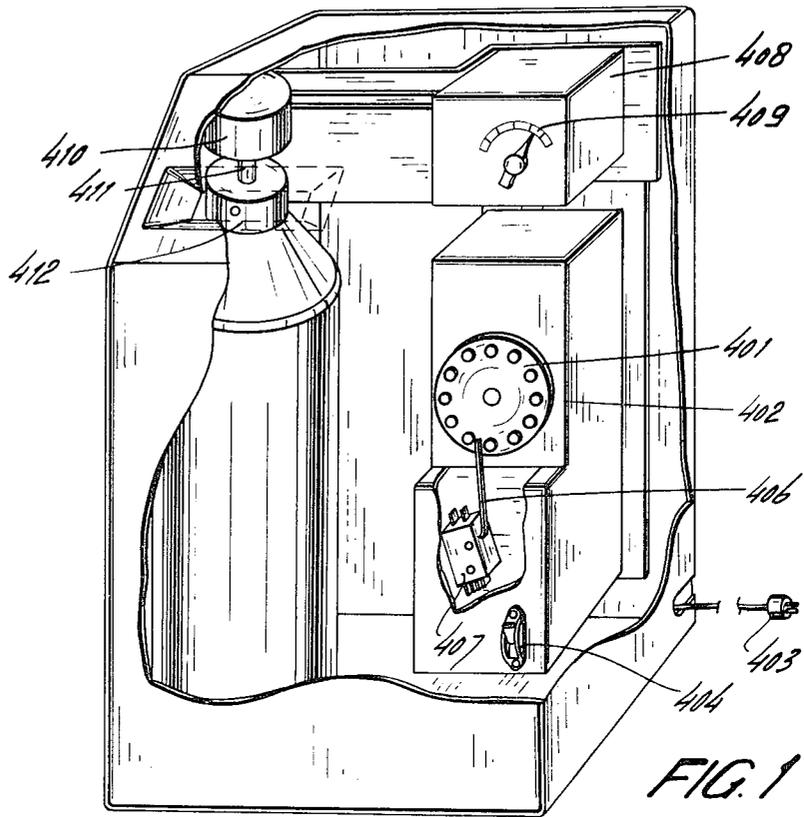


FIG. 1

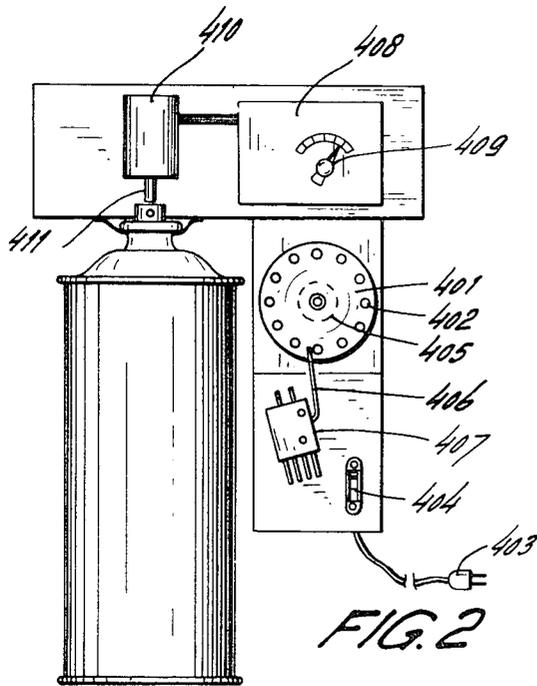


FIG. 2

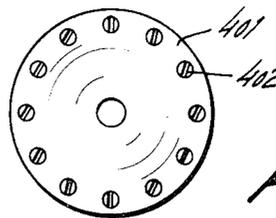


FIG. 4



FIG. 5



FIG. 6

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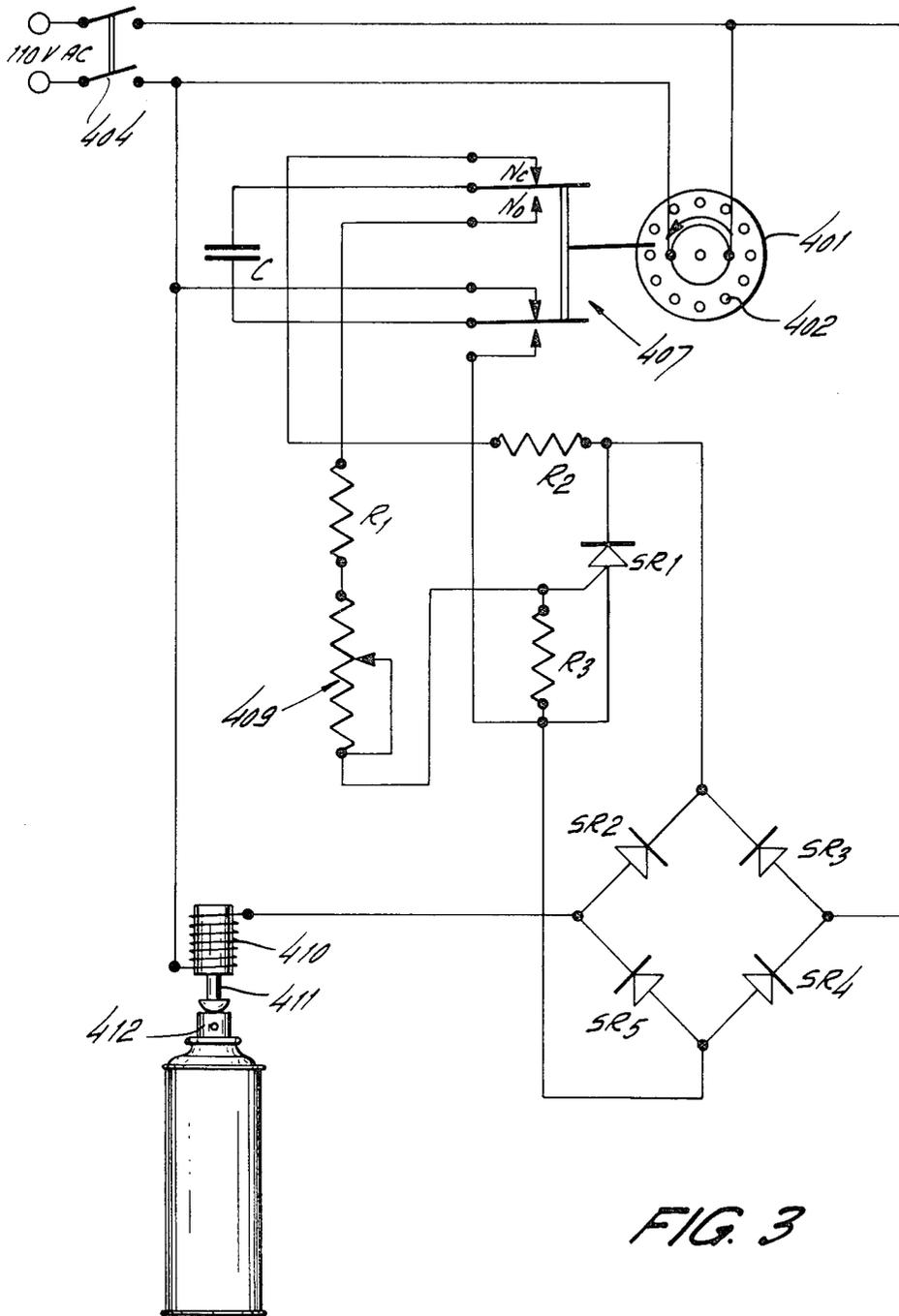


FIG. 3

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## DISPENSER FOR AEROSOL BOMBS

### BACKGROUND OF THE INVENTION

#### Field of the Invention

The present inventors have earlier addressed themselves to devices for automatically dispensing aerosol bombs at preselected time intervals. A principal shortcoming of conventional AC and DC timing circuits resides in their failure to provide a "fail-safe" operating characteristic. For example, in the DC units, the aerosol bombs are fully discharged, if the dispensing mechanism becomes jammed or the DC batteries fail. In the AC circuits, the entire bomb contents are frequently discharged, as a result of a power failure during the spraying cycle.

#### SUMMARY OF THE INVENTION

According to the present invention, an electronic circuit provides for: (1) random adjustment of the spray interval and (2) precise adjustment of the length of spray. The circuit activates a reciprocating solenoid which depresses the aerosol valve. The fail-safe characteristic is achieved by the solenoid, which is detracted or reciprocated away from the aerosol bomb, as the desired length of spray time is completed.

#### BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of an aerosol bomb mounted in a dispensing housing and regulated by the present spray dispensing circuit;

FIG. 2 is a schematic view of the circuit spray interval and length of spray timing components;

FIG. 3 is a circuit diagram;

FIG. 4 is a front elevation of a suggested spray interval time disc;

FIG. 5 is a side elevation thereof; and

FIG. 6 is an enlarged elevation of a spray interval timing lug.

#### DESCRIPTION OF THE PREFERRED EMBODIMENTS

The present dispenser will use any type of timing mechanism for activating the spray dispensing circuit at preselected, random time intervals.

A principal difference between the present device and conventional dispensers is that the precise length of spray time may be selected by the user, and may be accomplished by the use of a time-adjustable transistorized electronic circuit. The current output from the circuit in turn activates a solenoid which reciprocates against and depresses the dispensing valve of the aerosol can.

The length of spraying time is selected by adjusting potentiometer 409, and a time span of, say, one-half to 15 seconds can be obtained. The potentiometer 409 has a calibrated index scale, allowing the user to set the exact length of spray time on the scale with the assurance that it will be correct and will have correct repeatability.

Operation is shown using 115 V.A.C. synchronous motor and speed reducer 405, using timing disc 401 and a selection of time interval lugs 402. For example, lugs 402 as illustrated in FIGS. 4-6 may have a slotted head and threaded shaft, so as to be readily set or screwed into the periphery of timing disc 401 at random intervals. Alternatively, a DC clockworks and timing disc or a timing drum, may be used to select the time interval between sprays.

In order to operate the circuit, select the desired time interval on time disc 401 by the use of lugs 402. Insert plug 403 into any 110 v. AC convenience outlet. Turn on "Off-On" switch 404. This action will start the synchronous motor and speed reducer 405, thus turning the spray interval time disc 401. As time progresses, lug 402 will contact switch lever 406 and activate double pole double throw (DPDT) switch 407. Switch 407 will then be thrown from the "Reset" position to the "Time" position, thereby allowing the capacitor in the time delay circuit 408 to discharge through the gate of the sil-

icon-controlled rectifier SR-1. The length of spray time for the discharge of the capacitor is controlled by an adjustable potentiometer 409. The output of the time delay circuit 408 is fed to and energizes the solenoid 410 which causes plunger 411 of the solenoid 410 to depress valve 412 of aerosol can, thereby spraying the aerosol. When the capacitor of the time delay circuit 408 completely discharges, solenoid 410 will be deenergized and plunger 412 will retract, which causes the spray to cease.

As time progresses, time disc 401 will continue to rotate, causing lug 402 to release switch lever 406 and return switch 407 to its normal position. This action will cause the capacitor in the time delay circuit 408 to recharge and to be ready for the next complete cycle.

Turning "on" switch 404 also allows the capacitor in time delay circuit 408 to become fully charged through the full-wave bridge circuit: SR2, SR3, SR4 and SR5. At this time, the full-wave bridge circuit will not allow current to pass to the solenoid 410 and so it is not energized. As time progresses and lug 402 on the time disc engages the lever of DPDT switch 407, the normally open contacts are closed, current then passes through potentiometer 409 to the gate lead of the silicon rectifier SR1, causing it to be in a current conducting state and thereby allowing current to pass to the solenoid 410. The current will flow and energize the solenoid—until the discharge of the capacitor becomes too low for the SR1 to remain in a current conducting state, at which time solenoid 410 will become deenergized and its plunger 412 will retract from contact with the aerosol valve button 412. The length of time required for the capacitor to discharge depends upon the value of potentiometer 409, which is adjustable to allow the operator to select the length of time that it is desired to actuate the solenoid 410 and, in turn, the aerosol valve button 412.

We claim:

1. A dispenser circuit for aerosol bombs of the type having a depressible dispensing valve comprising:

A. a source of power;

B. a rotatably driven timing disc, having a plurality of adjustable time interval increments;

C. a switch mechanism supported in said circuit and contacting said time interval increments;

D. a capacitor chargeable through said source of power, except as said switch is thrown by contacting said time interval increments;

E. a potentiometer linked to said capacitor, so as to control rate of discharge from said capacitor;

F. a silicon rectifier gated to said potentiometer, so as to be in a current conducting state, as current passes through said potentiometer; and

G. a solenoid actuable by discharge through said silicon rectifier to depress the dispensing valve of said aerosol bomb.

2. A dispenser circuit as in claim 1, wherein said timing disc has a plurality of axially extending time interval lugs randomly positioned in its periphery.

3. A dispenser circuit as in claim 2, said solenoid having a spring return so as to reciprocate said plunger away from said dispensing valve, as said current is cut off.

4. A dispenser circuit as in claim 3, including a full-wave bridging circuit supported intermediate said silicon rectifier and said solenoid.

5. A dispenser circuit as in claim 4, said time interval lugs being of the type having a slotted head and threaded shaft engageable with corresponding female increments in the face of said timing disc.

6. A dispenser circuit as in claim 4, said switch being of the double pole double throw type.

7. A dispenser circuit as in claim 2, said timing disc being connected independently to said source of power.

8. A dispenser circuit as in claim 4, said potentiometer being calibrated to the length of time desired for spraying said aerosol bomb.

9. A dispenser circuit as in claim 1, said source of power being AC

10. A dispenser circuit as in claim 1, said source of power being DC.

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