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PEST CONTROL DEVICE

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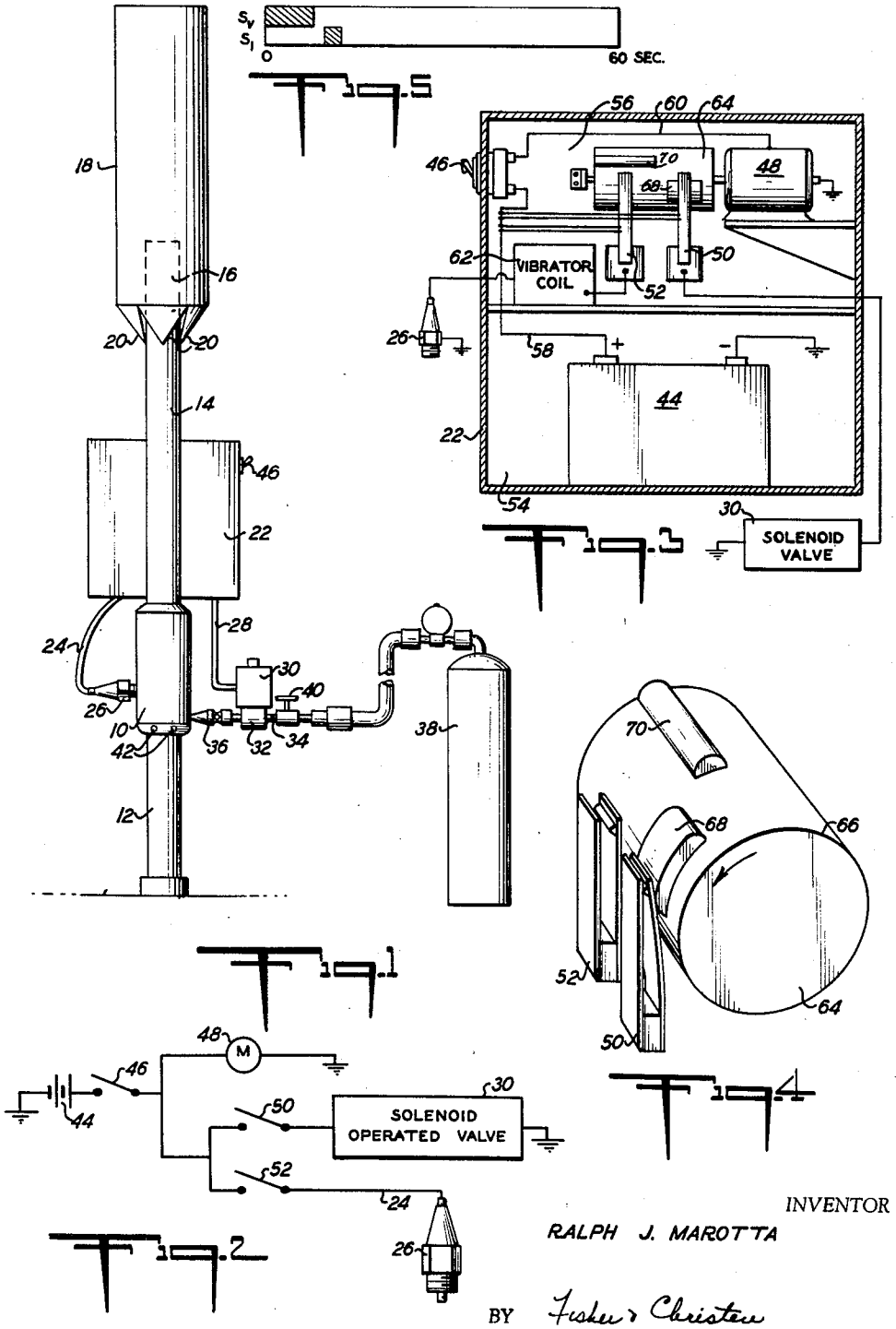


FIG. 5

FIG. 3

FIG. 1

FIG. 4

FIG. 2

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PEST CONTROL DEVICE

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This is a continuation-in-part of application Serial No. 610,808, filed September 19, 1956.

This invention relates to a device for startling pests and more particularly to a device in which an explosive gaseous mixture is ignited at regular intervals for simulating the explosion of shotgun shells or the like.

While the invention is directed particularly to pest control, it is realized that the invention may have other applications where explosions at regular intervals are desired and that such other devices will fall within the scope of the accompanying claims.

In many farming areas, crops suffer from a tremendous number of pests, particularly birds, which strip the soil of the seed practically as soon as it is sown and which eat a large portion of the grain and the like from the plants before they are harvested. It has been the practice in some areas to send unskilled labor out into the fields to fire shotgun shells at regular intervals in order to startle the pests and prevent them from devouring the crops. Obviously the practice described has a serious economic disadvantage in that it is not only costly to pay a laborer a full day's wages merely to fire shotgun shells, but additionally the shotgun shells themselves are quite expensive, since one man must shoot over $50 worth per day to keep the pests under control.

The present invention is designed to eliminate this uneconomical procedure and consists, in its broadest aspects, of a device for exploding a combustible mixture periodically and at regular intervals. The device is practically fully automatic and may be placed in the fields without supervision to remain for a considerable period of time.

The device is completely portable and uses a battery operated timing mechanism mounted on the unit for insuring regular periodic explosions.

It is an object of the invention to provide a portable, self-contained unit which, at regular intervals, fully automatically, will explode a combustible mixture.

It is another object of the invention to provide a device as described above which will be timed by a direct current motor operating from an electric battery.

These and other objects will become more readily apparent from a consideration of the following detailed description of the invention taken in conjunction with the accompanying drawings in which:

Fig. 1 is an elevational view showing the invention,

Fig. 2 is a circuit diagram showing the electrical operation of the invention,

Fig. 3 is an elevational view of the casing containing the operating parts, with the cover removed,

Fig. 4 is a perspective view of the program drum, and

Fig. 5 is a time diagram.

Referring to the drawings, the invention consists of a gas explosion chamber 10 mounted on a post 12. An exhaust tube 14 is connected to the combustion chamber 10 and communicates with the interior of the combustion chamber. The upper end 16 of the exhaust tube is inserted into the bottom of an amplifier tube 18 which is connected at 20 to the exhaust tube 14.

The operating parts are mounted in a casing 22 fixed to the exhaust tube 14. A conductor 24 leads from the casing 22 to a spark plug 26 connected to the interior of the combustion chamber 10.

A second conductor 28 leads from the casing 22 to a solenoid 30 which operates a valve 32. The valve 32 is located in a conduit 34 which connects a nozzle 36 extending into the interior of the combustion chamber to a tank 38 of combustible gas. The nozzle 36 has holes of sufficient size to permit aspiration of air to form a combustible mixture. A hand-operated valve 40 is also located in the conduit 34 to control the supply of combustible gas.

Holes 42 are formed in the bottom of the combustion chamber to admit air into the combustion chamber to mix with the combustible gas immediately prior to the ignition of the combustible gas. In operation, after an explosion, air will rush into the combustion chamber through holes 42 thereby partly clearing the chamber of burned gases and filling the chamber with fresh air ready to be mixed with the incoming combustible gas.

The circuit diagram for the operation of the valve and the spark plug is shown in Fig. 2. There is a battery 44 connected through a main switch 46 to a motor 48. When the switch is closed the motor 48 will run continuously driving a programmer to be described below. The programmer alternately operates switches 50 and 52 which are connected to the solenoid 30 and spark plug 26, respectively.

The physical arrangement of the operating members is shown in Fig. 3. The casing is divided into two compartments 54 and 56. The battery 44 is located in lower compartment 50 and is connected to switch 46 through a conductor 58. The switch connects the battery to the motor 48 through a conductor 60. The switch also connects the battery 44 to one side of switch 50 and switch 52. The other side of switch 52 is connected to spark plug 26 through a vibrator coil 62. The other side of switch 50 is connected to the solenoid 30. The switches are closed alternately by a programmer 64 which is rotated by the motor 48 at one r.p.m.

The construction of the programmer is shown in Fig. 4. A drum 66 is provided with a first protuberance 68 which is engageable with switch 50 to operate the solenoid valve 30. Axially and angularly spaced from protuberance 68 is a protuberance 70 which operates with switch 52 to cause the operation of the spark plug 26. The direction of the rotation of the drum is indicated by an arrow. It will be observed that the switch 50 is first closed and, immediately after it is opened, switch 52 will be closed by the engagement with protuberance 70.

The operation of the invention is illustrated partly by referring to Fig. 5. Assuming that it is desired to fire the device once every minute, it is proposed to operate the valve for approximately three seconds to introduce gas into the combustion chamber 10. Approximately one and one-half seconds after the valve closes, shutting off the supply of gas, switch 52 causes an ignition spark firing the mixture. Thereafter, the motor continues to rotate the program drum until switch 50 is once again closed.

The ignited charge of gases expanding in the combustion chamber forces air into the exhaust pipe 14 and from there into the amplifier tube 18 where there occurs a sound quite similar to that of a shotgun. The sound is considerably greater than that of a shotgun, however.

As the expanding gases leave the amplifier tube, fresh air rushes into the combustion chamber through the small

holes 42 clearing the combustion chamber and preparing it for the next cycle of operation.

In a general manner, while there has been disclosed in the above description, what is deemed to be the most practical and efficient embodiment of the invention, it should be well understood that the invention is not limited to such embodiment as there might be changes made in the arrangement, disposition and form of the parts without departing from the principle of the present invention as comprehended within the scope of the accompanying claims.

I claim:

1. A pest control device comprising, a gas explosion chamber, electrical means for creating a spark in said chamber, a conduit for supplying an explosive gas to said chamber, a valve in said conduit, a solenoid operably connected to said valve, and electrical programming means connected to said spark creating means and said solenoid for first admitting to said chamber a charge of gas through said conduit to said chamber and subsequently igniting said gas, said programming means comprising a battery operated D.C. motor, a drum drivably connected to said motor, said drum having two axially and angularly spaced protuberances, a switch associated with each protuberance, the first of said switches operating said solenoid upon engagement with said protuberance, the second of said switches operating said spark creating means, said second protuberance being spaced angularly a few degrees from said first protuberance to permit said valve to open and close whereupon said spark creating means will be operated.

2. A pest control device comprising, a gas explosion chamber, electrical means for creating a spark in said chamber, a conduit for supplying an explosive gas to said chamber, a valve in said conduit, a solenoid operably connected to said valve, and electrical programming means connected to said spark creating means and said solenoid for first admitting to said chamber a charge of gas through said conduit to said chamber and subsequently igniting said gas, said programming means comprising a motor driven drum, and angularly spaced means on said drum operably connected to said solenoid and said spark creating means for operating first said solenoid and immediately thereafter said spark creating means.

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