Feb. 11, 1969 J. D. FOSTER 3,426,475

TOY GUN HAVING ELECTROMAGNETIC RADIATION MEANS

Filed Aug. 17, 1966

FIG. 1

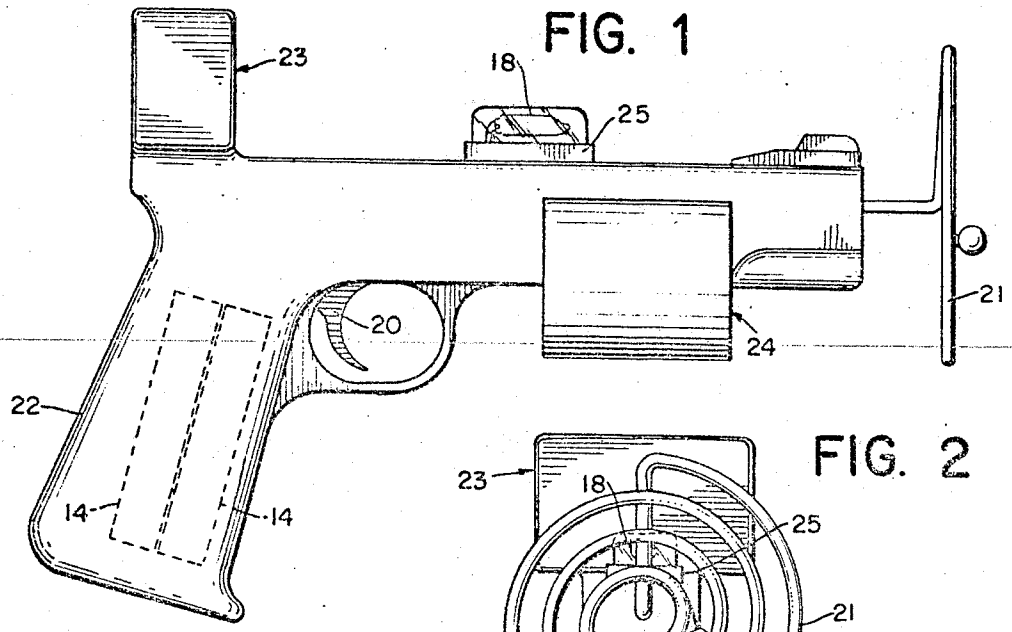


FIG. 2

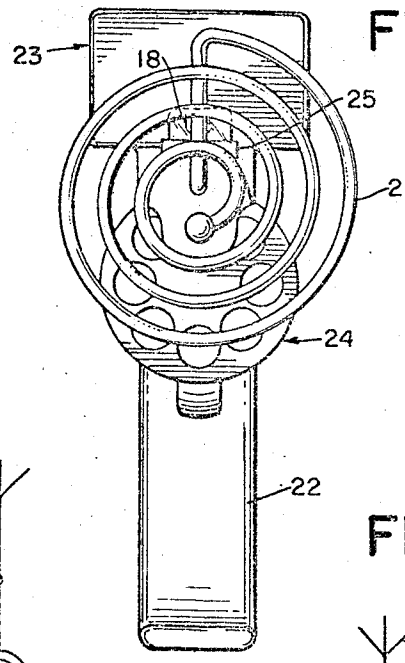


FIG. 3

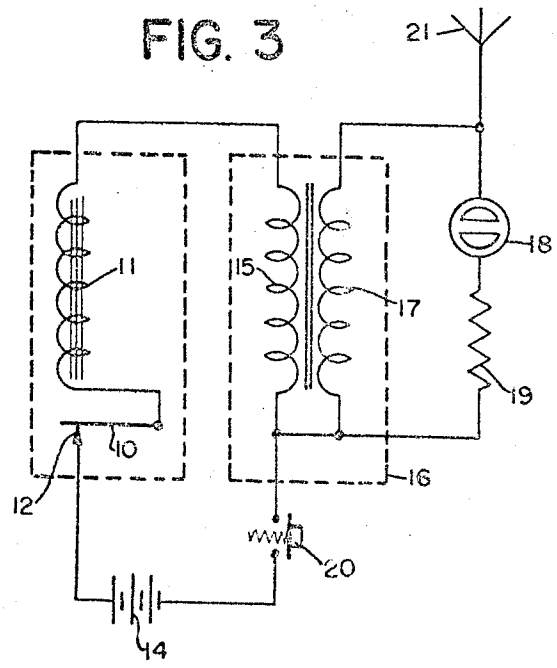
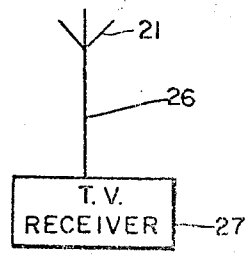


FIG. 4



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TOY GUN HAVING ELECTROMAGNETIC RADIATION MEANS

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Int. Cl. A63h *33/26;* H05b *41/14*

ABSTRACT OF THE DISCLOSURE

A toy gun which incorporates an electric buzzer, a battery, and an antenna. When a trigger is pressed, the buzzer and antenna transmit electromagnetic waves, receivable by a television receiver and producing an effect or disturbance on the receiver screen.

This invention relates to toy guns.

My invention comprises a toy gun which includes a trigger and is controlled thereby to radiate electromagnetic waves of a frequency suitable for television reception. More specifically, it includes an oscillator in the form of a conventional electric buzzer, a battery, and a transmitting system including an antenna. All these elements except the antenna may be more or less concealed within the body of the gun if desired.

The toy gun will be used in conjunction with the viewing of a television program. Thus, the viewer can "aim" at the villain on the screen and will then press the trigger. The radiation will be intercepted by the television receiver antenna or input so that a noise will be generated at the loudspeaker thereof. This may well be interpreted by the viewer as the sound of a gunshot, although it is not precisely so, nor need it be since a child viewer is most imaginative. In any event, the trigger action produces a "gunshot" and the viewer imagines himself to be shooting the villain. Moreover, the illusion is heightened by the radiation process. Thus, the electromagnetic radiation from the toy gun does not, of course, include synchronizing pulses, as does the radiation from the transmitting station broadcasting the program. As a result, the picture tends to "tear" and a distinct visual disturbance attributable to the shooting action of the toy gun is produced. Accordingly, both a visual and an auditory effect is produced by the toy gun.

My invention will be further understood from the following description and the drawings wherein:

FIGURE 1 is a side view in elevation of a toy gun embodying my invention;

FIGURE 2 is a front view thereof; and

FIGURE 3 is a circuit diagram thereof;

FIGURE 4 is a modification.

Referring first to the circuit diagram, the device comprises a conventional form of electric buzzer having a spring loaded armature **10**, an electromagnetic coil **11**, and contact **12**, the armature, of course, breaking the circuit when attracted by the coil **11**. The device is powered by battery **14**, which may be six volts for example. Specifically I employ four 1½ volt "Penlite" batteries in the handle of the gun as hereinafter described.

Coil **11** is connected in series to the primary **15** of a step-up transformer **16**, so as to produce the circuit-breaking action. Transformer **16** is a conventional ignition coil as found in model airplane or other small internal combustion engine sets. As is well known, the output voltage from secondary **17** is hundreds of volts, or even thousands of volts like in the ordinary ignition system of an automobile, although much lower voltage is required in my toy gun as shown hereinafter.

Across secondary **17** I connect neon gas tube **18**. This is a small gas discharge tube, for example, an NE41 the two electrodes of which flash over at about 90 volts. I also employ resistor **19** which may be about 100,000 ohms for limiting the current.

The circuit operation is as follows:

When trigger **20** is pressed, the buzzer circuit is closed and the resulting current is passed through transformer **16** and stepped up to flash-over voltage. Neon tube **18** flashes over at 90 volts or so and it continues to flash at the repetition rate or vibration period of the buzzer.

Neon tube **18** actually comprises a spark gap which radiates electromagnetic waves. Inasmuch as the terminals of the neon tube flash over at the breakdown voltage of the tube, while the buzzer action periodically interrupts the voltage, steep waves are generated which include high frequency components as will be understood by those skilled in the art.

An antenna **21** is connected to an electrode of the gas tube. Neither the length of the antenna nor its form is critical. I have found that a length of about 3 or 4 inches is satisfactory, although this may obviously be increased, except that a longer, and more efficient antenna may be objectionable as being too powerful a radiator and disturbing the reception of other sets. Of course, the toy gun antenna **21** may be if desired directly connected to to an input antenna terminal of the receiver, although in general this is unnecessary. The antenna **21** is oriented as to radiate forwardly (and backwardly although this direction is unnecessary), so that the gun may be aimed by the user and the radiation will be directed principally along the longitudinal axis of the gun and toward the receiver. This not only increases the useful signal, but avoids interference with neighboring sets.

Referring now to FIGURE 1, the body of the toy gun comprises a handle **22** wherein battery or batteries **14** are housed. Trigger **20** may be spring loaded and is disposed in conventional position. Chamber **23** encloses the buzzer circuit. Forward chamber **24** encloses the transformer or ignition coil **16** while the cover portion **25** houses the neon tube **18**. Cover portion or cap **25** is preferably transparent plastic so that the flashing of the neon tube may be observed, adding to the entertainment value. Chamber **24** as well as portion **25**, may be considered to be the barrel of the gun.

I also provide antenna **21** in coil or spiral form in a vertical plane, although this is not essential. Antenna **21** will, of course, radiate the generated electromagnetic waves. In this connection, somewhat better results are achieved if handle **22** is of metal since it, through the intermediary of the person's body, serves to provide a ground, the other portions of the gun body also being principally of metal, or at least enough to provide electromagnetic conductivity between the antenna and the handle.

As described above, when the gun is pointed at a character on the television receiver tube, and the trigger **20** depressed, a noise will emanate from the loudspeaker of the television receiver, while the picture itself will be disturbed, and the user will imagine himself to be shooting the character.

It will be recognized that the gas tube transmission system is particularly suitable for radiating electromagnetic waves suitable for television reception since sharp or steep wave forms are generated so that high frequencies are components thereof and are radiated. Of course, such high frequencies are in the television range, i.e. over 50 megacycles. The buzzer vibration rate is of no particular importance, a conventional doorbell buzzer being satisfactory. My system inherently produces frequency varying radiation by virtue of lack of precision

in the inexpensive components and this adds to the desired response of the television receiver.

I have shown a preferred embodiment of the invention, but it is obvious that numerous changes including omissions may be made without departing from its spirit. For example, should it be desired to confine the radiation to one television receiver, while of course strengthening the signal, a wire 26 may directly connect the antenna 21 to the antenna or an input antenna terminal of a television receiver 27.

What is claimed is:

1. A toy gun having a body, a handle for said body, a manually operable trigger adjacent said handle, a barrel on said body, a radiating means on said body, and generating means in said body for generating electromagnetic waves when said trigger is operated, said radiating means comprises an antenna, said generated electromagnetic waves being of such steep wave form as to include high frequency components which fall within the television frequency range of 50 megacycles and over.

2. A toy gun according to claim 1 and wherein said generating means comprises a buzzer within said body, electric power operating means for said buzzer, a step-up transformer connected to said buzzer, a pair of flashing electrodes connected to said transformer, and said antenna being connected to one of said electrodes.

3. A toy gun according to claim 1 and wherein said body is elongated, said antenna being oriented thereon so as to radiate principally along the longitudinal axis of said body.

4. A toy gun according to claim 1 and wherein said a portion of said barrel is transparent, said flashing electrodes being disposed at said transparent portion.

5. A toy gun according to claim 2 and wherein said flashing electrodes comprise a gas discharge tube.

6. A toy gun according to claim 5 and wherein said electric power operating means comprises at least one battery disposed in said handle, said transformer and gas discharge tube comprising said barrel, and said handle being fabricated of metal.

References Cited

UNITED STATES PATENTS

3,094,401 12/1966 Nicholas et al. ----- 46—227 X

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U.S. Cl. X.R.

46—232; 315—242