June 1, 1943. A. J. GUTHRIE 2,320,926

RAPID FIRING MACHINE OR BOMB

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Fig. 1.

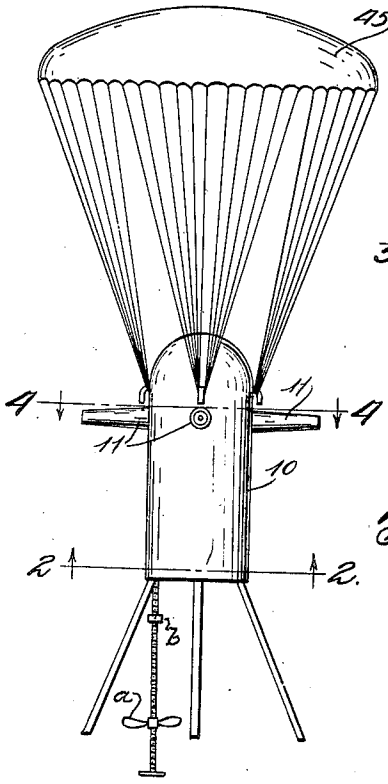


Fig. 2.

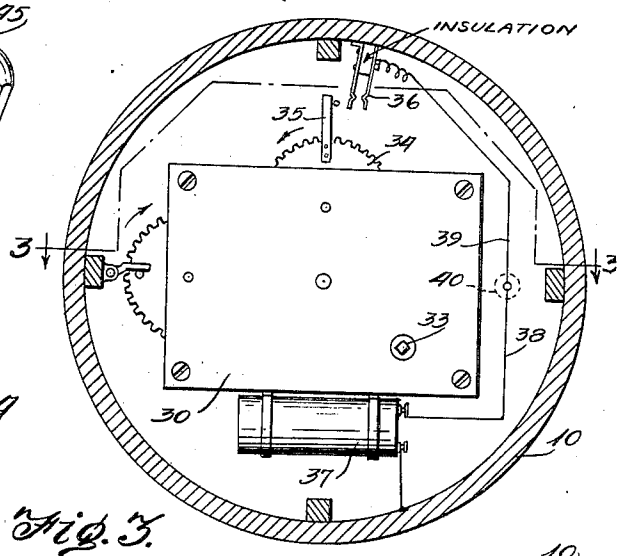


Fig. 3.

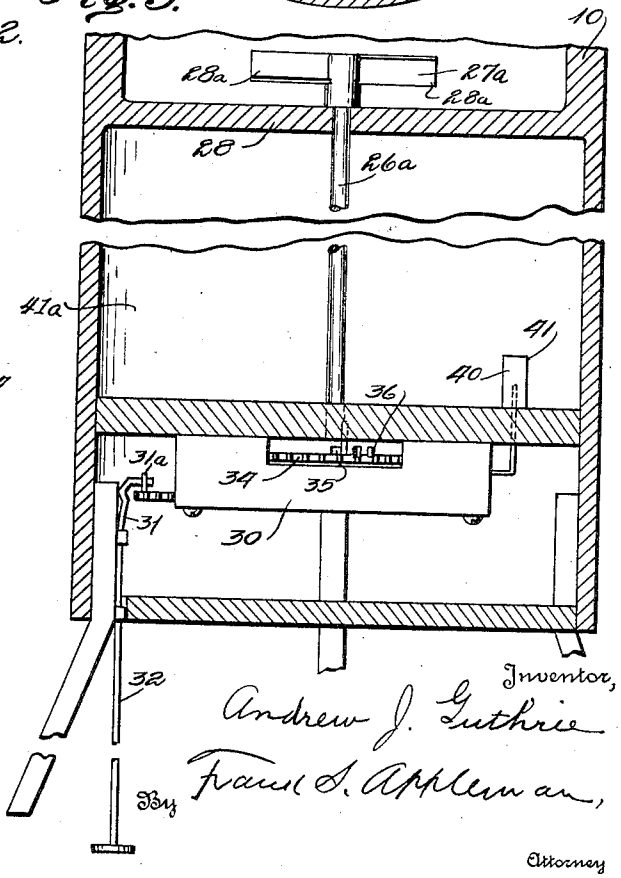
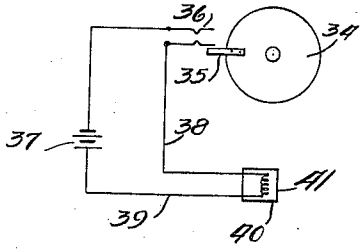


Fig. 6.



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Fig. 4.

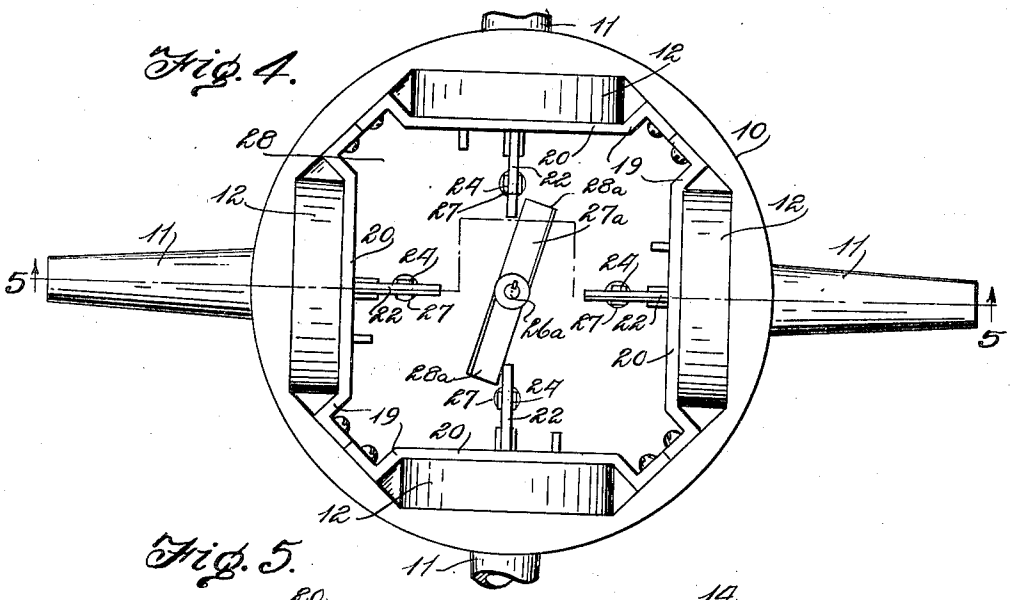
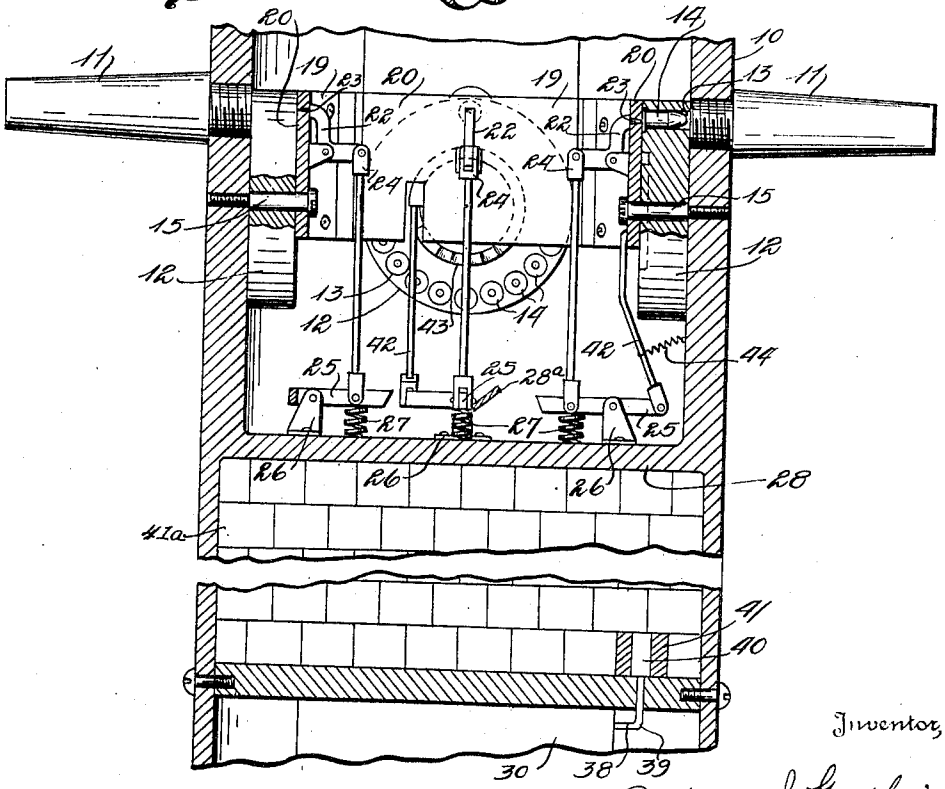


Fig. 5.



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2,320,926

RAPID FIRING MACHINE OR BOMB

Andrew J. Guthrie, St. Albans, W. Va.

Application July 8, 1941, Serial No. 401,510

2 Claims. (Cl. 102—5)

This invention relates to a rapid firing machine or a bomb for firing a multiplicity of projectiles when in flight or when it has come to rest on the ground or support.

It is an object of this invention to provide a multiple gun firing apparatus which can be dropped from an airplane and it may be caused to operate and fire the gun during its descent from the airplane or after after it has come to rest on the ground.

It is a further object of the invention to provide a casing or body with internal mechanism for operating hammers which are automatically retracted or cocked and released, and to provide means, such as springs, which are retracted during the cocking operation and become effective to force the hammer into contact with the caps of the cartridges or projectiles so as to detonate the same. Usually projectiles of the type used in this apparatus are termed "cartridges" having an explosive cap and a charge which the explosive cap fires from the shell, which shell carries a projectile so that operating the hammer causes an explosion of a cap with the resultant firing operation.

It is a still further object of this invention to provide a plurality of rotatably mounted and driven cylinders which may carry a number of projectiles, and preferably these cylinders are mounted so that the successive chambers having the projectiles register with a gun or rifle barrel stationed on the sides of the body member; and novel means are provided for rotating an instrumentality which retracts or cocks the hammers and releases them so that they operate under the influence of a retracted spring, one for each hammer, as the operation progresses.

It is furthermore an object of the invention to provide novel means for actuating or rotating the said hammer cocking means and to provide means for tripping or releasing the actuating means under predetermined conditions, that is to say the actuating means may be set in action during the descent of the bomb or after it has struck the ground; and it is also the purpose of the inventor to provide an explosive charge housed in the bomb which, upon completion of a cycle of operation, will be ignited, and it is the purpose of the inventor that this charge shall be of sufficient intensity as to completely wreck the bomb so that it cannot be used by an enemy force.

With the foregoing and other objects in view, the invention consists in the details of construction, and in the arrangement and combination of parts to be hereinafter more fully set forth and claimed.

In describing the invention in detail, reference will be had to the accompanying drawings forming part of this application, wherein like characters denote corresponding parts in the several views, and in which:

Figure 1 illustrates a view in elevation of a bomb embodying the invention and its parachute;

Figure 2 illustrates a sectional view on the line 2—2 of Fig. 1;

Figure 3 illustrates a vertical sectional view of the bomb with parts omitted;

Figure 4 illustrates a sectional view on the line 4—4 of Fig. 1;

Figure 5 illustrates a vertical sectional view of the operating mechanism of the bomb; and

Figure 6 illustrates a wiring diagram of the circuits including the switch, battery and resistance coil.

In constructing the bomb, the parts are duplicated for furnishing ammunition or cartridges in chambers of a cylinder successively into registry with a rifle or gun. The instrumentalities may be increased or diminished, according to requirements, but in the present illustration a casing 10 is shown as having a plurality of rifles 11 radiating from the sides thereof. These rifles may be secured in the wall of the casing, in any appropriate manner, or attached thereto by mechanical fastenings. Devices of this kind are known in the art and one such embodiment for mounting the barrels or rifles on the casing being shown in Patent 1,385,120, but obviously other expedients may be resorted to for mounting the barrels on the casing.

As the firing mechanism for each of the rifles is duplicated within the casing, a description of one such assembly will suffice as a disclosure of the construction and operation. Cylinders 12 are rotatably mounted on the inner wall of the casing and each cylinder has a plurality of chambers 13 for holding the cartridges or projectiles 14. Each of said cylinders is rotatably mounted on a shaft or trunnion 15 anchored to the wall of the casing. The exact manner of mounting these elements may be varied to suit particular requirements, but the mounting should be such that the chambers of each cylinder are successively positioned in alinement with the chamber of the rifle barrel. A bracket 19 is anchored to the inner surface of the wall of the casing and it has a portion 20 which is parallel with the inner face of the cylinder and in such relation thereto that the inner end of the shell or cartridge shall engage the surface of the portion 20 and so prevent back firing of the shell or cartridge. The portion 20 has an aperture 21 which alines with the barrel or rifle and when a cartridge in the cylinder has reached the position in alinement with the barrel, the cartridge is detonated by the action of a hammer 22 having a pin 23 which projects through the opening in the portion 20 and contacts the cap of the

cartridge. The hammer is shown as in the nature of a bell crank. The inner end of the bell crank of the hammer is pivotally connected to a link **24** and the lower end of said link is pivotally connected to a lever **25** mounted on a bracket **26**. A spring **27** is interposed between the inner end of the lever and the support **28** which may be a partition or floor of the casing, and the said spring is of sufficient strength to operate the hammer after said spring has been depressed by the operation of the lever **25**.

A vertically disposed shaft **26***a* is suitably journalled and projects upwardly between the levers **25** and it is provided with an arm **27***a* which rotates with the shaft, and the said arm has cams **28***a*, preferably at the ends thereof which, when the shaft is rotated, engage the levers **25**, and the cams are of such depth that they swing the levers down and operate the hammers inwardly on their pivots to such a degree or extent that on being swung under the influence of a spring **27** provided for each hammer, the force of the blow of the hammer is sufficient to detonate the cap of the cartridge. The shaft **26***a* is rotated by a spring motor **30** of any appropriate construction stationed under the floor or partition of the casing, and the said motor has means for holding it against operation and the means comprise a latch having a detent **31** which engages a pin **31***a* on the motor to hold it against operation, but the latch furthermore includes a depending arm **32** that moves the latch out of engagement with the portion of the motor which it holds against action normally, so that the motor is started immediately upon the arm being thrust axially, and that occurs when the arm comes in contact with the ground as the bomb settles to earth. Therefore, when the detent releases the pin, the spring motor starts the mechanism and operates it to discharge the projectiles successively from the cylinders. The motor has a winding shaft **33** for tensioning the spring of the motor to cause the operation of the said motor. A wheel **34** of the motor is so geared that it rotates in an anti-clockwise direction as shown by the arrow, Fig. 2, when it is operating to rotate the cylinder, and it is provided with an arm **35** which, upon the completion of the operation of firing, contacts an arm of an electric switch **36** which closes the circuit from a battery **37** and through conductors **38** and **39** to a resistance coil **40** results in the heating of the coil and the firing of an explosive charge **41**, and in the chamber **41***a* contained within the casing, so that after the firing operation the explosive charge is detonated and the bomb is destroyed.

Means are provided for rotating the cylinders to bring the chambers thereof successively into registry with the rifles and as these means are duplicated for each of the chambers, a description of one of the installations will suffice for an understanding of the operation. To accomplish the foregoing result, a ratchet **42** is pivoted to the end of the lever opposite the end to which the link **24** is pivoted, and this ratchet successively engages teeth of a ratchet wheel **43** on the cylinder. The ratchet is held in engagement with the ratchet wheel by a spring **44** and therefore as the lever **25** is operated according to the methods heretofore described, the cylinder will be given a step-by-step rotation alternately actuated with the hammer of the cylinder with which it is associated.

It is obvious from the foregoing description that the bomb can be provided with two firing zones, one above the other, by duplicating the parts on different levels and connecting the actuating mechanism from the hammer links to duplicated parts thereabove.

It is the intention of the inventor that this bomb shall be used preferably by dropping it from airplanes and in order to retard the descent and prevent its becoming damaged when lighting or reaching the ground, the bomb shall be suspended from a parachute of suitable size, according to the weight of the bomb, so as to ease its landing.

It is furthermore intended that timing means be employed in association with the motor so that the motor will be set in operation at a predetermined time as the bomb descends in order that it may begin to operate and shoot at a proper distance from the ground, so that it would shoot during its decent as well as when it lights. The parachute is identified by the numeral **45** and appropriate connections from it to the casing will serve to support the bomb, for the purpose stated.

Since the mechanism of this bomb is intended to operate but a short time, it can be made of inexpensive materials, and the guns or rifles can likewise be of inexpensive construction.

It has been stated that provision may be made for starting the operation of the bomb while it is in the air and such means may comprise a fan *a* threaded on the depending arm **32**, the said arm being provided with an abutment *b* to be struck by the fan as it ascends the arm, and further rotation of the fan will cause a lifting of the arm and the operation of the latch.

I claim:

1. In a rapid firing machine or bomb, a casing having rifles radiating therefrom, a cylinder mounted for rotation within the casing having chambers adapted to aline with the rifles, a hammer operative to fire a cartridge in the cylinder, a pivotally mounted lever, a connection from the lever to the hammer whereby movement of the lever is communicated to the hammer, a spring operative to urge the lever for operating the hammer, a rotatably mounted element for engaging the lever for compressing the spring, and a motor for operating said element.

2. In a rapid firing machine or bomb, a casing having rifles radiating therefrom, a cylinder rearwardly of each rifle having chambers adapted to successively aline with the rifle, means for rotatably mounting the cylinder, a bracket rearwardly of the cylinder having an opening for a firing pin alining with the rifle, a hammer oscillatively mounted in operative relation to the cylinder, a link connected to the hammer for oscillating it, a pivoted lever to which the end of the link opposite the hammer is connected, a spring located under the lever and operative to force the lever upwardly, means for forcing the lever downwardly against the action of the spring and the releasing it whereby the spring urges the hammer into action for firing a charge, an explosive charge for destroying the bomb, and means for detonating the explosive charge when projectiles in the cylinders have been fired.

ANDREW J. GUTHRIE.