G. A. EKMAN.

MULTIPLE GUN FIRING APPARATUS OR BOMB.

APPLICATION FILED DEC. 12, 1918.

1,385,120.

Patented July 19, 1921.

2 SHEETS—SHEET 1.

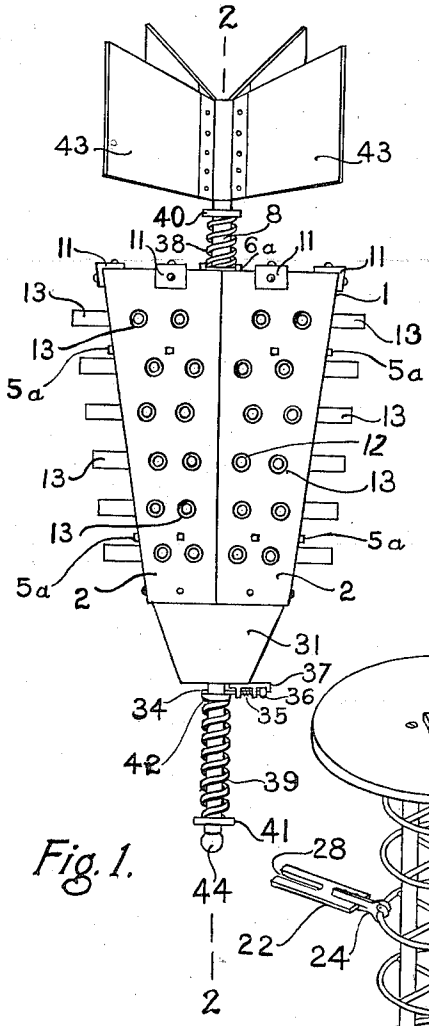


Fig. 1.

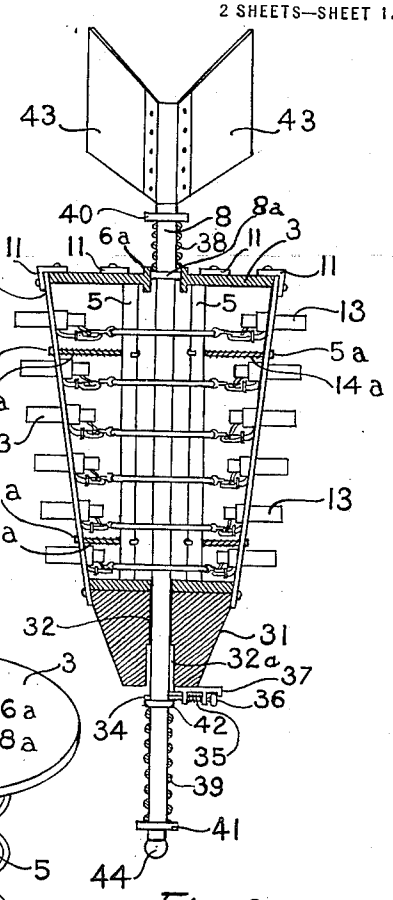


Fig. 2.

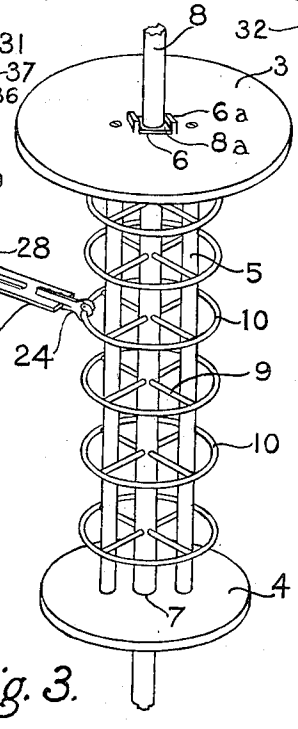


Fig. 3.

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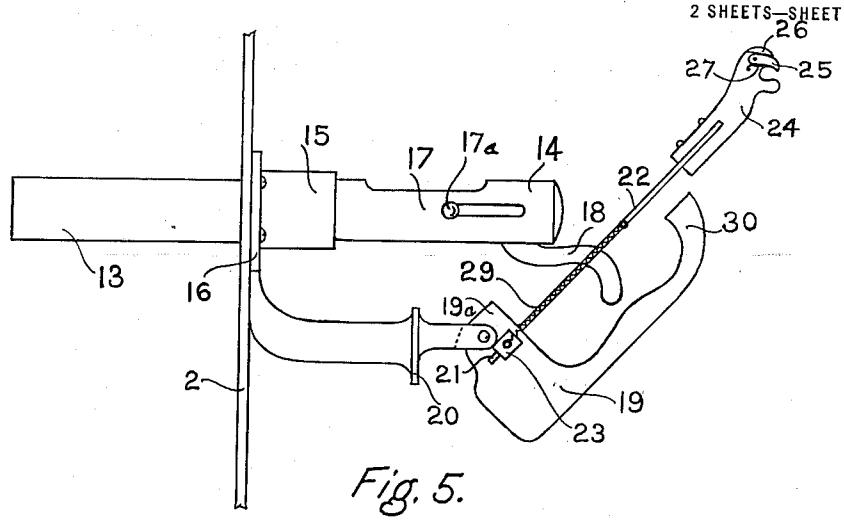


Fig. 5.

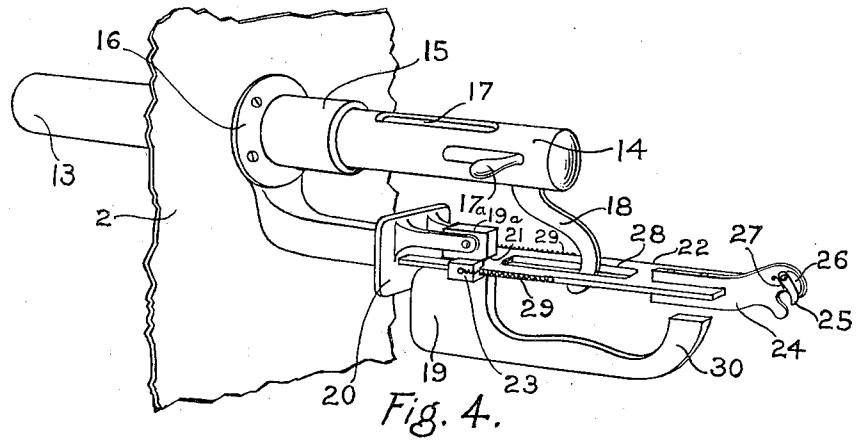


Fig. 4.

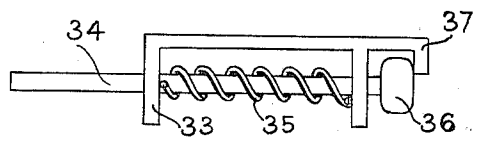


Fig. 7.

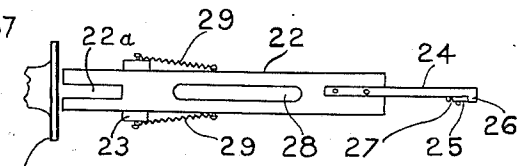


Fig. 6.

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UNITED STATES PATENT OFFICE.

GUNNER A. EKMAN, OF WINCHESTER, MASSACHUSETTS.

MULTIPLE-GUN-FIRING APPARATUS OR BOMB.

1,385,120. Specification of Letters Patent. Patented July 19, 1921.

Application filed December 12, 1918. Serial No. 266,477.

To all whom it may concern:

Be it known that I, GUNNER A. EKMAN, a citizen of the United States, residing at Winchester, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Multiple-Gun-Firing Apparatus or Bombs, of which the following is a specification.

My invention relates to improvements in multiple gun firing apparatus or bombs.

One of the objects of the invention is to provide a gun firing apparatus or bomb having means for firing simultaneously in all directions a number of shots from a plurality of guns radially disposed therein and adapted, therefore, to combine in one compact structure a maximum firing capacity and to effectively reach a wide radius of territory with concentrated gun fire and with a density of fire proportional to the number of guns employed, while the intensity of fire may be increased in a given area by employing automatic repeating guns.

Another object is to provide a universal firing control adapted to control and operate simultaneously the firing mechanism of all the guns, thereby centralizing the firing control in one structure.

Another object is to provide means for automatically, safely and quickly connecting and maintaining constantly in their connected position the firing arms and the universal firing control rings at any angle necessary with relation to each other.

Another object is to provide safety means for preventing the cartridges or shells in the guns from being fired both while the parts are being assembled and until the firing mechanism is actuated at the proper moment.

Another object is to provide safety means for preventing the operation of the universal firing control until the apparatus is ready to be used.

Another object is to provide a simple and efficient firing mechanism, which can be readily and safely adjusted, when the parts of the apparatus are being assembled, and which will easily and effectively coöperate with the universal firing control.

It is obvious that the multiple gun firing apparatus or bomb has a wide range of utility in warfare, since it can be used very effectively on airplanes in reaching places with concentrated gun fire that are not possible to reach easily with machine gun fire, while it is equally effective, when fired from mortars in field operations.

One of the effectual uses of the apparatus is, when inflammable bullets are used, in setting fire to buildings, such as aerodromes and munition plants, since fires may be started in many spots simultaneously. The barrels of the guns may be sighted in all directions or upward so that windows at varying heights may be pierced by inflammable bullets. By this means numerous fires may be started inside of buildings outwardly fireproof, while a number of bombs thus equipped and employed would make it possible to multiply the number of fires greatly and to completely destroy a large number of buildings.

In order that the nature of my invention may be clearly understood, I have illustrated certain embodiments of the invention in the accompanying drawings, in which,—

Figure 1 is a vertical elevation of a multiple gun firing apparatus embodying my invention in the form of a bomb. Fig. 2 is a central, vertical section on the line 2—2, Fig. 1. Fig. 3 is a perspective, partly in section, of the structural frame showing the universal firing control mechanism and cooperating parts. Fig. 4 is a detail view, partly in section, of the firing mechanism cooperating with one of the guns in its inoperative position and showing the safety means to hold the firing arm out of engagement with the trigger in the inoperative position, also the safety arm below the firing arm to prevent the firing arm from sliding out of position and the consequent premature firing of the guns. Fig. 5 is a detail view, partly in section, of the firing mechanism and coöperating parts in operative position. Fig. 6 is a plan of the firing arm. Fig. 7 is a detail view of the safety locking pin and coöperating parts.

Latitude is allowed herein as to details, since they may be varied or changed at will without departing from the spirit or scope of my invention.

Corresponding and like parts are referred to in the following description and indicated in all the figures of the drawings by the same reference characters.

In the drawings 1 designates a multiple gun firing apparatus or bomb, the body of which is preferably conical in form and is composed of a series of side plates 2, each of which adjoins another side plate 2 and

forms a portion or section of the circumference of the conical body of the bomb 1. The body of the bomb is formed on a structural frame comprising a circular top plate 3 and a circular bottom plate 4, which serve as the top and bottom of the body of the bomb 1 and are held in position and relatively to each other by two supporting rods 5, and thus the structural frame being stanchly built gives rigidity to the bomb. In the top plate 3 and the bottom plate 4 are central openings 6 and 7 respectively, the opening 6 being preferably square for the purpose hereinafter described, in which a slidable rod 8 is adapted to freely slide between the supporting rods 5, while extending radially from the slidable rod 8 are a series of arms 9, to which are attached firing control rings 10 of sufficient circumference to encircle clearly the supporting rods 5 and in parallel position to each other.

The side plates 2, which are securely fastened by angle plates 11 to the top plate 3 and the bottom plate 4 and braced with brace rods 5^a extending to the rods 5, are provided with a plurality of openings 12, in which are inserted a plurality of barrels 13 of guns 14 in rows, preferably at certain regular distances from each other, the guns 14 being held securely in position on the inside of the side plate 2 by an annular collar or bushing 15 having a flange 16 secured to the side plate 2. Each of the guns 14 is provided with a loading chamber 17 and a simple firing mechanism, which may be of any standard type desired, employing the usual firing pin or bolt and cocking handle 17^a under spring tension, with bolt catch and provided with a trigger 18 operating the firing mechanism, while a recoil spring 14^a may be mounted on each brace rod 5^a, the inner end of which only partially clasps the coöperating rod 5 in order to permit movement of the brace rod 5^a on recoil, or other suitable recoil means held in supports may be attached to each gun 14, if necessary, but it is believed the recoil of any given gun 14 will be equalized by the recoil of a gun on the opposite side of the bomb, hence the opposing recoil forces would be neutralized.

Below each gun 14 is located the firing mechanism comprising a body portion 19 pivoted at the top 19^a to a bracket 20, which is fastened to a side plate 2, the body portion 19 having a slot 21, in which is adapted to freely slide a firing arm 22, which is mounted in and held in position by slotted guiding lugs 23. The firing arm 22 is provided at its inner end with a slot 22^a coöperating with the slot 21 and at its outer end with a hooked member 24, which coöperates with a pivoted finger 25 actuated and held normally against a shoulder 26 by a spring 27 but adapted to bend inwardly, when the finger 25 engages the firing control ring 10 as it is pushed toward the firing control ring 10, when the side plate 2 is attached, the finger 25 yielding as the ring advances and finally snapping back into its initial position and clasping the ring 10 as shown in Fig. 3, and thus the ring 10 is allowed to pass by and thereby the finger 25 coöperates with the hooked member 24 in automatically clasping the firing control ring 10. In the firing arm 22 is a longitudinal slot 28, in which the trigger 18 of a gun 14 is inserted but out of contact therewith, while springs 29 on each side of the firing arm 22 hold the ends of the slot 28 normally away from the trigger 18 and a safety support or arm 30 extending under the firing arm 22 serves both as a guide for the firing arm 22 and as a safety device to prevent the firing arm 22 from sliding out of position in assembling the parts while the arm 22 is being attached to the ring 10 and thus the premature discharge of the cartridge in the gun 14 will be averted. When the parts of the bomb 1 are assembled, each side plate 2 holding a number of guns 14, loaded just before the side plate 2 is placed in its proper position on the structural frame of the bomb 1, is fastened one after the other to the top and bottom plates 3 and 4 respectively and at the same time the firing arms 22 automatically clasp, as previously described, the firing control rings 10, each of which is in control of all the firing arms 22 clasping it and thus in turn all the firing arms 22 operating the firing mechanism are under the universal and simultaneous control of the firing control rings 10 and the slidable rod 8.

It is obvious that the same firing mechanism and universal firing control may be employed in a multiple gun firing apparatus apart from a bomb to automatically and simultaneously fire a number of guns.

Below the bottom plate 4 is a weighted conical cap 31 attached to the side plates 2 and provided with an opening 32 and an enlarged opening 32^a adjacent to its base, through which the slidable rod 8 passes freely, and adapted because of its form to permit the bomb 1 to cut the air readily in its descent and by its weight to steady and give impetus to the bomb 1. Inserted in a tubular opening in the slidable rod 8 just below the weighted cap 31 and held in a bracket 33 is a safety locking pin 34 having a flat head 36 as shown and having a spiral spring 35 attached thereto and to the bracket 33, adapted normally to be held by the upper edge of its head 36 engaging a lug 37, so as to extend through the slidable rod 8 and to securely lock it in a fixed position, while the spring 35 is at the same time expanded, and adapted to be automatically released by turning the head 36 away from the lug 37 so that the flat side will clear the lug 37 and thereby cause the safety locking pin

34 to be withdrawn by the contraction of the spring 35, by which means the operation of the slidable rod 8 is absolutely controlled and consequently the operation of the firing mechanism coöperating with the slidable rod 8.

In order to relieve and absorb the shock, when the slidable rod 8 strikes the ground, and thereby prevent the breaking or disarrangement of the firing control rings 10, firing arms 22 or other parts of the firing mechanism, expanded shock absorbing spiral springs 38 and 39 are mounted on the slidable rod 8, one spiral spring 38 extending from the top plate 3 to a flange 40 on the slidable rod 8 and the other spiral spring 39 extending from a flange 41 near the end of the slidable rod 8 to a flange 42 above it, adapted to freely enter the opening 32^a when the slidable rod 8 is pushed upward, the flange 42 also serving to hold the spiral spring 39 out of engagement with the safety locking pin 34. When the pin 34 has been withdrawn, the spring 39 engages the base of the conical cap 31 and coöperates with the spring 38, in holding the body of the structure yieldingly between them and acting as cushions in absorbing the shock at the moment of impact.

The upper end of the slidable rod 8 is provided with radial planes 43 to direct the bomb in its flight, the radial planes being held stationary by suitable means, as a square key 8^a fastened securely to the slidable rod 8 and adapted to coöperate with and slide in the square opening 6 in the top plate 3 and having guiding flanges 6^a on the top plate 3. On the lower end of the slidable rod 8, which extends sufficiently below the body of the bomb 1 to permit the bomb to be fired high enough above the ground to make the fire of its guns 14 effective, is an impact member 44 adapted to engage the ground or other hard surface which the bomb may strike, while the flange 41 stops the slidable rod 8 from going too far into the ground.

In operation the multiple gun firing apparatus or bomb, when used on an airplane, as shown in Figs. 1 and 2, is held by a suitable hanger having spring holders or arms, from which it may be released readily and instantly by the airman from any desired height, after the safety locking pin 34 has been released either by hand or some suitable mechanical device. In traveling through the air the weighted conical cap 31 allows the bomb to overcome the resistance of the air, as well as giving stability and impetus to the bomb, while the planes 43 direct and keep the bomb true in its flight.

The instant the impact member 44 strikes the ground or other surface the body of the bomb 1 is caused to slide downward a limited distance on the slidable rod 8 by the weight of the conical cap 31, having thereby the same effect as pushing upward the slidable rod 8 in operating the gun firing mechanism, and causing the entire series of firing control rings 10 to simultaneously engage all the firing arms 22 and raise them upward, thereby drawing forward the firing arms 22 and causing the lower end of the slot 28 in each firing arm 22 to engage and press the trigger 18, whereupon all the guns 14 are simultaneously discharged. The force of the recoil of all the guns 14 being equally distributed the bomb 1 will remain in its proper upright position, as in falling, during the simultaneous discharge of the guns 14, since they are distributed all around the conical shaped bomb 1 in rows at equal distances from each other and are sighted or directed at many points in all directions, but preferably are placed horizontally above each other at varying heights from the ground, for example from one to six feet, and when desired for some special purpose, as when using cartridges with inflammable bullets, as previously described, the guns may be sighted or directed at any angle desired. Thus the guns 14 may be placed in oblique and staggered rows, thereby covering a wide range.

Since the bomb is designed preferably to be employed only once or for a single discharge, the guns 14 are very light in weight and are adapted to fire bullets approximately 300 yards or varying distances if desired, and a bomb approximately six feet long and three feet in diameter would carry a number of hundred of guns sighted or directed so as to be equally divided in covering a given circular area.

Therefore, the efficiency of the bomb is clearly apparent, when it is considered that, assuming that its guns 14 would fire bullets approximately 300 yards, the radius of ground within the range of fire in all directions would include a circular area of a number of thousand of square yards, while the number of bullets to reach any area within range of the bomb will be proportionately increased as the area decreases toward the bomb or it varies directly with the radial distance from the bomb, until the maximum density of fire is reached adjacent to the point where the bomb strikes.

Many variations are possible in the number of guns used, as well as in the firing mechanism, while if so desired, the slidable rod 8 may be provided with a device adapted to operate a detonator to fire an explosive charge within the bomb after the guns 14 have all been discharged thus destroying the bomb and preventing it from being used by the enemy.

While the multiple gun firing apparatus or bomb is adapted particularly for use as an aerial bomb, it may be thrown from mortars and used effectively in land operations,

especially when numbers of the bombs are fired and it is evident that in either case it is more efficient than machine gun fire in concentrating a dense fire at a distant point.

It is further obvious that, although adapted preferably for a single discharge, the multiple gun firing apparatus or bomb more solidly constructed may be provided with a plurality of automatic repeating guns under the same universal firing control and firing mechanism as when guns firing a single shot are used.

Moreover, the different parts of the multiple gun firing apparatus or bomb are simple in construction, and adapted to be readily assembled, while many of the parts, especially the parts of the firing mechanism, may be readily stamped from metal.

I claim:—

1. A gun firing apparatus comprising a plurality of radially extending guns provided with triggers, and universal firing control means comprising one or more rings mounted on a slidable rod and adapted to control the simultaneous actuating of all the said triggers and thereby simultaneously firing all the said guns.

2. A gun firing apparatus comprising a plurality of radially extending guns provided with triggers, universal firing control means comprising one or more rings mounted on a slidable rod and adapted to control the simultaneous actuating of all the said triggers, and means for firing the said guns comprising slidable firing arms adapted to coöperate with the said rings and the said triggers and to form the connecting means between them.

3. A gun firing apparatus comprising a plurality of radially extending guns provided with triggers, universal firing control means comprising one or more rings mounted on a slidable rod and adapted to control the simultaneous actuating of all the said triggers, means for firing the said guns comprising slidable firing arms adapted to cooperate with the said rings and the said triggers, and means for connecting and maintaining constantly in their connected position the said rings and the slidable firing arms during the movement of the slidable rod.

4. A gun firing apparatus comprising a plurality of radially extending guns provided with triggers, universal firing control means comprising one or more rings mounted on a slidable rod and adapted to control the simultaneous actuating of all the said triggers, means for firing the said guns comprising slidable firing arms adapted to cooperate with the said rings and the said triggers, and safety means for normally holding the said slidable firing arms out of engagement with the said triggers until actuated by the said rings.

5. A gun firing apparatus comprising a plurality of radially extending guns provided with triggers, universal firing control means comprising one or more rings mounted on a slidable rod and adapted to control the simultaneous actuating of all the said triggers, means for firing the said guns comprising slidable firing arms adapted to cooperate with the said rings and the said triggers, and safety means to prevent the said slidable arms from sliding out of position and thereby preventing the premature actuating of the triggers and the consequent premature firing of the guns.

6. A gun firing apparatus comprising a plurality of radially extending guns provided with triggers, universal firing control means comprising one or more rings mounted on a slidable rod and adapted to control the simultaneous actuating of all the said triggers, means for firing the said guns comprising slidable firing arms adapted to coöperate with the said rings and the said triggers, and a safety locking pin coöperating with the said slidable rod and adapted to control the operation of the said slidable rod.

7. A gun firing apparatus comprising a plurality of radially extending guns provided with triggers, universal firing control means comprising one or more rings mounted on a slidable rod and adapted to control the simultaneous actuating of all the said triggers, and safety means for preventing the premature operation of the universal firing control means comprising a safety locking pin adapted to be inserted in the said slidable rod and provided with means for normally holding the pin in a fixed position therein together with means for releasing the pin when desired.

8. A multiple gun firing apparatus or bomb comprising a plurality of guns provided with triggers and mounted therein, universal firing control means comprising a series of rings for simultaneously controlling the actuating of all the triggers of the said guns and attached to a slidable rod, and means for directing and stabilizing the bomb in its flight comprising a weighted conical cap attached to the base of the bomb.

9. A gun firing apparatus comprising a structural frame, sectional side plates fastened to the said structural frame and adapted to hold securely a plurality of guns provided with triggers and arranged so as to point in all directions and at certain regular distances from each other, and universal firing control means comprising a series of rings mounted on a slidable rod and adapted to control the simultaneous actuating of all the said triggers.

10. A gun firing apparatus comprising a plurality of radially extending guns provided with triggers, universal firing control means comprising one or more rings mount-

ed on a slidable rod and adapted to control the simultaneous actuating of all the said triggers, means for firing the said guns comprising slidable firing arms adapted to cooperate with the said rings and the said triggers, safety means for normally holding the said slidable firing arms out of engagement with the said triggers until actuated by the said rings, and safety means to prevent the said slidable arms from sliding out of position and thereby preventing the premature actuating of the triggers and the consequent premature firing of the guns.

11. A gun firing apparatus comprising a plurality of radially extending guns provided with triggers, universal firing control means comprising one or more rings mounted on a slidable rod and adapted to control the simultaneous actuating of all the said triggers, means for firing the said guns comprising slidable firing arms adapted to cooperate with the said rings and the said triggers, means for connecting and maintaining constantly in their connected position the said rings and the slidable firing arms, safety means for normally holding the said slidable firing arms out of engagement with the said triggers until actuated by the said rings, and safety means to prevent the said slidable arms from sliding out of position and thereby preventing the premature actuating of the triggers and the consequent premature firing of the guns.

12. A gun firing apparatus comprising a plurality of radially extending guns provided with triggers, universal firing control means comprising a series of rings mounted on a slidable rod and adapted to control the simultaneous actuating of all the said triggers, means for firing the said guns comprising slidable firing arms adapted to cooperate with the said rings and the said triggers, safety means for normally holding the said slidable firing arms out of engagement with the said triggers until actuated by the said rings, safety means to prevent the said slidable arms from sliding out of position and thereby preventing the premature actuating of the triggers and the consequent premature firing of the guns, and a safety locking pin coöperating with the said slidable rod and adapted to control the operation of the said slidable rod and consequently the operation of the said rings and firing arms.

13. A multiple gun firing apparatus or bomb comprising a structural frame, sectional side plates fastened to the said structural frame and adapted to hold securely a plurality of guns provided with triggers and arranged so as to point in all directions and at certain regular distances from each other, and universal firing control means consisting of a slidable rod provided with a series of radially disposed rings coöperating with slidable firing arms actuating the said triggers of the guns, the said universal firing control means being adapted to be operated and the said guns thereby simultaneously discharged when the said slidable rod strikes the ground.

14. A bomb comprising a plurality of guns and provided with braces having coiled springs mounted thereon, and sectional side plates adapted to hold securely the said guns, each side plate being adapted to form a section of the body of the bomb and to cover a portion of the circumference of the said body of the bomb.

15. A gun firing apparatus comprising a plurality of guns provided with triggers, sectional side plates adapted to hold securely the said guns, and a slotted, slidable firing arm adapted to automatically connect the triggers of the said guns with a series of radially disposed rings on a slidable rod, whereby all the said guns are operated and simultaneously discharged.

16. A multiple gun firing apparatus or bomb comprising a plurality of guns provided with triggers, a slidable rod provided with a series of radially disposed rings adapted to actuate slidable firing arms cooperating with the said triggers, whereby all the said guns are simultaneously discharged, and shock absorbing springs adapted to prevent excessive tension on the said rings and firing arms and coöperating parts when the bomb strikes the ground.

17. A multiple gun firing apparatus or bomb comprising a structural frame consisting of a top and bottom plate provided with central openings therein and rods adjacent to the said openings adapted to hold the said top and bottom plates in position, a slidable rod operating in the said central openings and provided with a series of radially disposed rings coöperating with slidable firing arms adapted to actuate the said triggers, and side plates securely attached to the said structural frame and provided with braces having recoil springs mounted thereon, each side plate forming a section of the circumference of the body of the bomb.

18. A multiple gun firing apparatus or bomb comprising a structural frame consisting of a top and bottom plate and supporting rods and having sectional side plates attached thereto, a plurality of guns mounted securely in the said side plates, and a slidable rod operating in the said structural frame and being provided with a series of radially extending firing control rings.

19. A multiple gun firing apparatus or bomb comprising a structural frame consisting of a top and bottom plate and supporting rods and having sectional side plates attached thereto, and a plurality of guns provided with triggers and mounted securely in the said side plates, each of the said guns

having in coöperation with the trigger thereof a firing arm slidably mounted in a pivoted bracket and provided with a slot for the said trigger.

20. A multiple gun firing apparatus or bomb comprising a structural frame having sectional side plates attached thereto, a plurality of guns provided with triggers and mounted securely in the said side plates, each of the said guns having in coöperation with the trigger thereof a firing arm slidably mounted in a pivoted bracket and provided with a slot for the said trigger, and springs adapted to normally hold the ends of the said slot away from the trigger.

21. A multiple gun firing apparatus or bomb comprising a structural frame having sectional side plates attached thereto, a plurality of guns provided with triggers and mounted securely in the said side plates, each of the said guns having in coöperation with the trigger thereof a firing arm slidably mounted in a pivoted bracket, and a spring actuated finger on the said firing arm adapted to coöperate with a hooked member at the free end of the said firing arm in automatically clasping and coöperating with one of a series of radially extending firing control rings connected with a slidable rod operating in the said structural frame.

22. A multiple gun firing apparatus or bomb comprising a structural frame having sectional side plates attached thereto, a plurality of guns provided with triggers and mounted securely in the said side plates, each of the said guns having in coöperation with the trigger thereof a firing arm slidably mounted in a pivoted bracket, and a safety arm below the said firing arm adapted to prevent the said firing arm from sliding out of position and the consequent premature firing of the gun.

23. A multiple gun firing apparatus or bomb comprising a structural frame having sectional side plates attached thereto, a plurality of guns provided with triggers and mounted securely in the said side plates, a slidable rod operating in the said structural frame and provided with a series of radially disposed rings adapted to coöperate with slotted, slidable firing arms actuating the said triggers, and a safety locking pin extending through the said slidable rod and mounted on a spiral spring and adapted to be held in a locked position by engaging a lug and to be automatically withdrawn from the said slidable rod by the contraction of the said spring, thereby being adapted to control the operation of the said slidable rod and consequently the operation of the said rings and firing arms.

24. A multiple gun firing apparatus or bomb comprising a structural frame having sectional side plates attached thereto, a plurality of guns provided with triggers and mounted securely in the said side plates, a slidable rod operating in the said structural frame and provided with a series of radially disposed rings adapted to coöperate with slotted, slidable firing arms actuating the said triggers, and a conical weighted cap at the base of the said structural frame provided with a central opening for the said slidable rod.

25. A multiple gun firing apparatus or bomb comprising a structural frame having sectional side plates attached thereto, a plurality of guns provided with triggers and mounted securely in the said side plates, a slidable rod operating in the said structural frame and provided with a series of radially disposed rings adapted to coöperate with slotted, slidable firing arms actuating the said triggers, a conical weighted cap at the base of the said structural frame, and shock absorbing springs mounted on the upper and lower ends of the said slidable rod and coöperating with flanges thereon and the top of the structural frame and the base of the conical cap respectively.

26. A multiple gun firing apparatus or bomb comprising a structural frame having sectional side plates attached thereto, a plurality of guns provided with triggers and mounted securely in the said side plates, a slidable rod operating in the said structural frame and provided with a series of radially disposed rings adapted to coöperate with slotted, slidable firing arms adapted to actuate the said triggers and braces having coiled springs mounted thereon for the said side plates.

27. A multiple gun firing apparatus or bomb comprising a structural frame having sectional side plates attached thereto, a plurality of guns provided with triggers and mounted securely in the said side plates, a slidable rod operating in the said structural frame and provided with a series of radially disposed rings adapted to coöperate with slotted, slidable firing arms actuating the said triggers, and an impact member mounted on the lower end of the said slidable rod.

28. A multiple gun firing apparatus or bomb comprising a structural frame having sectional side plates attached thereto, a plurality of guns provided with triggers and mounted securely in the said side plates, a slidable rod operating in the said structural frame and provided with a series of radially disposed rings adapted to coöperate with slotted, slidable firing arms actuating the said triggers, and radial planes on the upper end of the said slidable rod.

29. A multiple gun firing apparatus or bomb comprising a structural frame having sectional side plates attached thereto, a plurality of guns provided with triggers and mounted securely in the said side plates, each

of the said guns having in coöperation with the trigger thereof a firing arm slidably mounted in a pivoted bracket and provided with a slot for the said trigger, a safety arm below the said firing arm adapted to prevent the said firing arm from sliding out of position and the consequent premature firing of the gun, and springs adapted to normally hold the ends of the said slot away from the trigger.

30. A multiple gun firing apparatus or bomb comprising a structural frame having sectional side plates attached thereto, a plurality of guns provided with triggers and mounted securely in the said side plates, each of the said guns having in coöperation with the trigger thereof a firing arm slidably mounted in a pivoted bracket and provided with a slot for the said trigger, springs adapted to normally hold the ends of the said slot away from the trigger, and a spring actuated finger on the said firing arm adapted to coöperate with a hooked member at the free end of the said firing arm in automatically clasping and coöperating with one of a series of radially extending firing control rings connected with a slidable rod operating in the said structural frame.

31. A multiple gun firing apparatus or bomb comprising a structural frame having sectional side plates attached thereto, a plurality of guns provided with triggers and mounted securely in the said side plates, each of the said guns having in coöperation with the trigger thereof a firing arm slidably mounted in a pivoted bracket and provided with a slot for the said trigger, springs adapted to normally hold the ends of the said slot away from the trigger, a spring actuated finger on the said firing arm adapted to coöperate with a hooked member at the free end of the said firing arm in automatically clasping and coöperating with one of a series of radially extending firing control rings connected to a slidable rod operating in the said structural frame, a safety arm below the said firing arm adapted to prevent the said firing arm from sliding out of position and the consequent premature firing of the gun, and a safety locking pin extending through the said slidable rod and mounted on a spiral spring and adapted to be held in a locked position by engaging a lug and to be automatically withdrawn from the said slidable rod by the contraction of the said spring, thereby being adapted to control the operation of the said slidable rod and consequently the operation of the said rings and firing arms.

32. A multiple gun firing apparatus or bomb comprising a structural frame having sectional side plates attached thereto, a plurality of guns provided with triggers and mounted securely in the said side plates, each of the said guns having in coöperation with the trigger thereof a firing arm slidably mounted in a pivoted bracket and provided with a slot for the said trigger, springs adapted to normally hold the ends of the said slot away from the trigger, a spring actuated finger on the said firing arm adapted to coöperate with a hooked member at the free end of the said firing arm in automatically clasping and coöperating with one of a series of radially extending firing control rings connected to a slidable rod operating in the said structural frame, a safety arm below the said firing arm adapted to prevent the said firing arm from sliding out of position and the consequent premature firing of the gun, a safety locking pin extending through the said slidable rod and mounted on a spiral spring and adapted to be held in a locked position by engaging a lug and to be automatically withdrawn from the said slidable rod by the contraction of the said spring, thereby being adapted to control the operation of the said slidable rod and consequently the operation of the said rings and firing arms, a conical weighted cap at the base of the said structural frame provided with a central opening for the said slidable rod, shock absorbing springs mounted on the upper and lower ends of the said slidable rod and coöperating with flanges thereon and the top of the structural frame and the base of the conical cap respectively, braces for the said side plates, radial planes on the upper end of the said slidable rod, and an impact member mounted on the lower end of the said slidable rod.

33. A gun firing apparatus comprising a structural frame having sectional side plates attached thereto, a plurality of guns provided with triggers and mounted securely in the said side plates, each of the said guns having in coöperation with the trigger thereof a firing arm slidably mounted in a pivoted bracket, and guiding lugs coöperating with the sides of the said firing arm and adapted to hold the firing arm in its proper operative position.

34. A gun firing apparatus comprising, a plurality of guns provided with triggers, and means for automatically, safely and quickly connecting a universal firing control, comprising one or more radially disposed rings attached to a slidable rod, to a firing means, comprising slidable firing arms adapted to actuate the said triggers and provided with spring actuated, automatic clasps engaging and clasping the said rings, together with safety means to normally hold the firing arms out of engagement with the triggers as well as safety means to prevent the said slidable arms from sliding out of position, thereby preventing the firing arms from prematurely operating

both during and after the assembling of the parts.

35. Gun firing mechanism comprising a body portion, a firing arm having a slotted end coöperating with the said body portion, being thereby slidably mounted therein, and provided with means adapted to engage and coöperate with the trigger of a gun.

36. Gun firing mechanism comprising a body portion pivotally mounted, a firing arm having a slotted end coöperating with the said body portion, being thereby slidably mounted therein, and provided with means adapted to engage and coöperate with the trigger of a gun.

37. A gun firing apparatus comprising a body portion, a firing arm having a slotted end coöperating with the said body portion, being thereby slidably mounted therein, and provided with a slot adapted to engage and coöperate with the trigger of a gun, and means adapted to normally hold the ends of the said slot away from the said trigger.

38. A gun firing apparatus comprising a body portion, a firing arm mounted in guiding lugs and having a slotted end coöperating with a slot in the said body portion, being thereby slidably mounted therein, and provided with a slot adapted to engage and coöperate with the trigger of a gun, and means adapted to normally hold the ends of the said slot away from the said trigger.

39. A gun firing apparatus comprising a body portion, a firing arm having a slotted end coöperating with the said body portion, being thereby slidably mounted therein, and provided with a slot adapted to engage and coöperate with the trigger of a gun, and springs adapted to normally hold the ends of the said slot away from the said trigger.

40. A gun firing apparatus comprising a body portion pivotally mounted, a firing arm having a slotted end coöperating with the said body portion, being thereby slidably mounted therein, and provided with a slot adapted to engage and coöperate with the trigger of a gun, and springs adapted to normally hold the ends of the said slot away from the said trigger.

41. A gun firing apparatus comprising a firing arm slidably mounted, and a spring actuated finger on the said firing arm adapted to coöperate with a hooked member at the free end of the said firing arm in automatically clasping and coöperating with a firing control ring.

42. A gun firing apparatus comprising a firing arm slidably and pivotally mounted, and a spring actuated finger on the said firing arm adapted to coöperate with a hooked member at the free end of the said firing arm in automatically clasping and coöperating with a firing control ring.

43. A gun firing apparatus comprising a firing arm slidably mounted and provided with means adapted to engage and coöperate with the trigger of a gun, and a safety arm below the said firing arm adapted to prevent the firing arm from sliding out of position and the consequent premature firing of the gun.

44. A gun firing apparatus comprising a firing arm slidably and pivotally mounted and provided with means adapted to engage and coöperate with the trigger of a gun, and a safety arm below the said firing arm adapted to prevent the firing arm from sliding out of position and the consequent premature firing of the gun.

45. A gun firing apparatus comprising a firing arm slidably mounted and provided with a slot adapted to engage and coöperate with the trigger of a gun, means adapted to normally hold the ends of the said slot away from the said trigger, and a safety arm below the said firing arm adapted to prevent the firing arm from sliding out of position and the consequent premature firing of the gun.

46. A gun firing apparatus comprising a firing arm slidably and pivotally mounted and provided with a slot adapted to engage and coöperate with the trigger of a gun, means adapted to normally hold the ends of the said slot away from the said trigger, and a safety arm below the said firing arm adapted to prevent the firing arm from sliding out of position and the consequent premature firing of the gun.

47. A gun firing apparatus comprising a body portion, a firing arm having a slotted end coöperating with the said body portion, being thereby slidably mounted therein, and provided with means adapted to engage and coöperate with the trigger of a gun, and means for controlling and actuating the said firing arm.

48. A gun firing apparatus comprising a body portion pivotally mounted, a firing arm having a slotted end coöperating with the said body portion, being thereby slidably mounted therein, and provided with means adapted to engage and coöperate with the trigger of a gun, and means for controlling and actuating the said firing arm.

49. A gun firing apparatus comprising a body portion, a firing arm having a slotted end coöperating with the said body portion, being thereby slidably mounted therein, and provided with a slot adapted to engage and coöperate with the trigger of a gun, means adapted to normally hold the ends of the said slot away from the said trigger, and means for controlling and actuating the said firing arm.

50. A gun firing apparatus comprising a firing arm slidably mounted and provided with means adapted to engage and coöperate with the trigger of a gun, a safety arm below the said firing arm adapted to prevent the firing arm from sliding out of position and the consequent premature firing of the gun, and means for controlling and actuating the said firing arm.

51. A gun firing apparatus comprising a firing arm slidably and pivotally mounted and provided with means adapted to engage and coöperate with the trigger of a gun, a safety arm below the said firing arm adapted to prevent the firing arm from sliding out of position and the consequent premature firing of the gun, and means for controlling and actuating the said firing arm.

In testimony whereof I have affixed my signature, in the presence of two witnesses.

GUNNER A. EKMAN.

Witnesses:
MARY BOUSE,
E. RENÉ RICHARD.