No. 676,345. Patented June 11, 1901.

R. TORRAS.

SEVERING MECHANISM FOR AERIAL TORPEDOES.

(Application filed Mar. 17, 1900.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1.

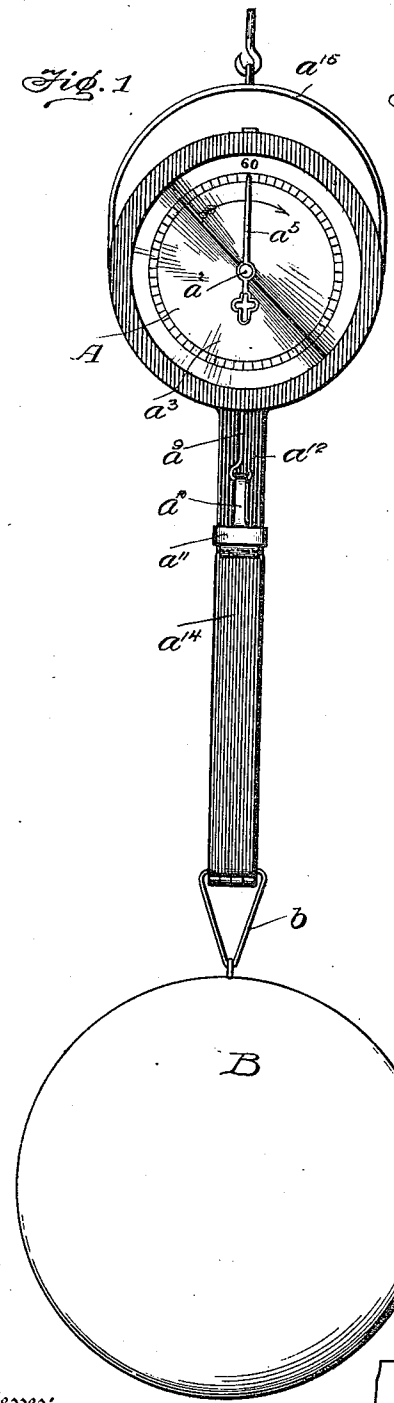


Fig. 2.

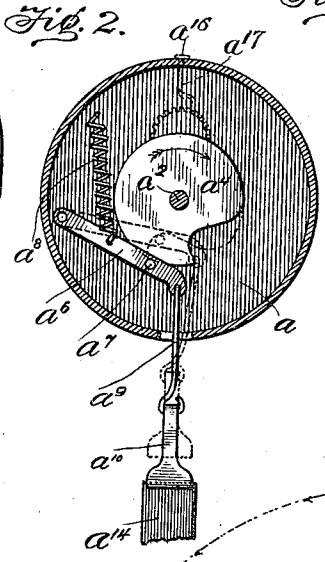


Fig. 3.

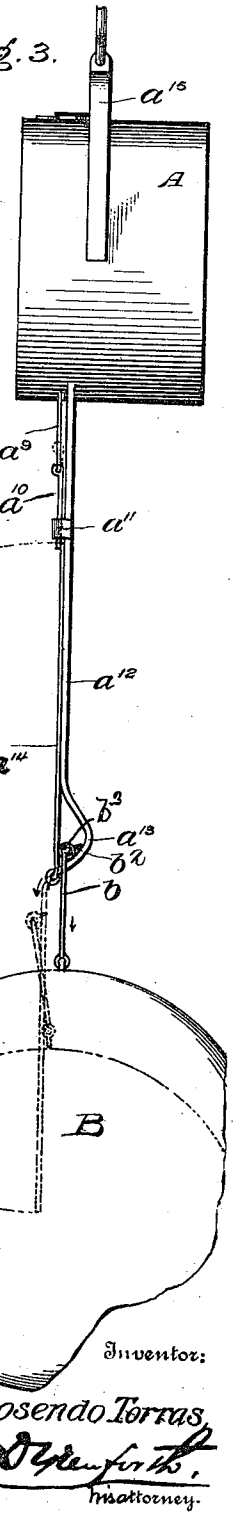
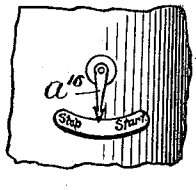


Fig. 3a



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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 676,345. Patented June 11, 1901.

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(No Model.) 2 Sheets—Sheet 2.

Fig. 4.

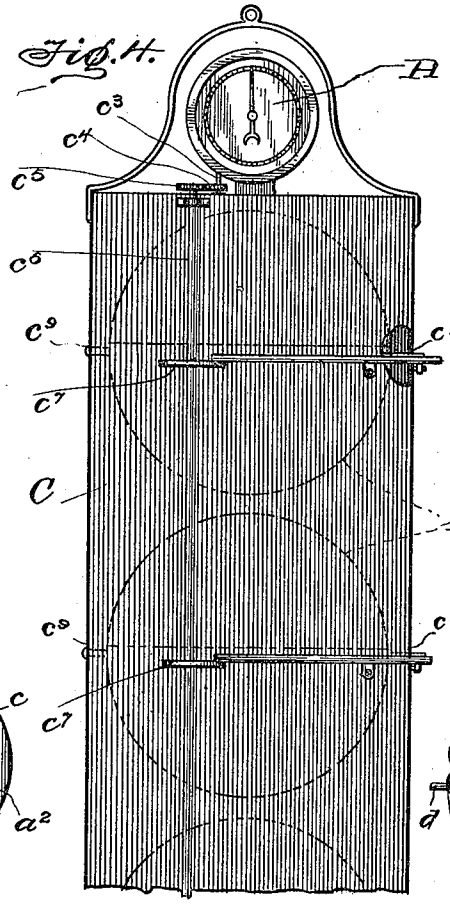


Fig. 6.

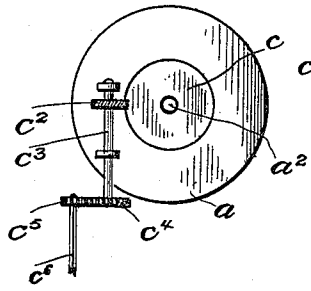


Fig. 7.

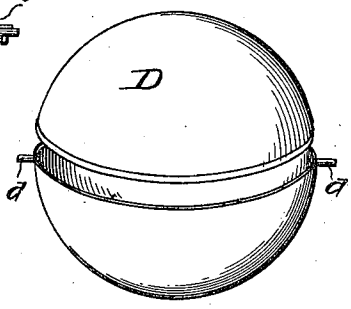


Fig. 5.

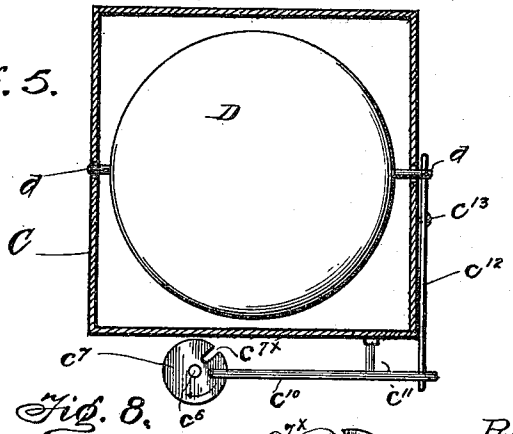
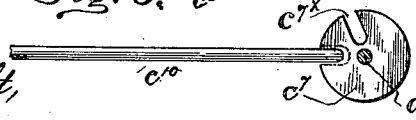


Fig. 8.



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UNITED STATES PATENT OFFICE.

ROSENDO TORRAS, OF BRUNSWICK, GEORGIA.

SEVERING MECHANISM FOR AERIAL TORPEDOES.

SPECIFICATION forming part of Letters Patent No. 676,345, dated June 11, 1901.

Application filed March 17, 1900. Serial No. 9,092. (No model.)

To all whom it may concern:

Be it known that I, ROSENDO TORRAS, a subject of the King of Spain, residing at Brunswick, in the county of Glynn and State of Georgia, have invented certain new and useful Improvements in Implements of Warfare; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The object is in a simple and highly-efficient manner to effect at a predetermined time or times overhead discharge of shells, bombs, or other explosive missiles of warfare.

The device of the present invention is designed to be attached to a balloon which will be set free at the time the shell-releasing mechanism is set, and the direction of the wind, its velocity, and the distance from the point where the balloon is freed to the objective point being known the shells may be released with great accuracy of timing, thus to effect thoroughly practical results from the device.

In the accompanying drawings, forming a part of this specification, and in which like letters of reference indicate corresponding parts, I have illustrated two forms of embodiment of my invention, it being understood that other forms of embodiment thereof may be employed without departing from the spirit of the same, and in these drawings—

Figure 1 is a view in elevation, exhibiting a form of device for transporting and effecting release of a single shell. Fig. 2 is a detached detail view of the clock, the face being removed to display the mechanism for effecting release of the shell. Fig. 3 is a view in side elevation exhibiting a portion of the releasing mechanism, the position of the parts of the shell-releasing mechanism when holding a shell being shown in full lines and their released position being indicated by dotted lines. Fig. 3^a is a detached detail view showing more clearly the stop and start hand shown in Figs. 1, 2, and 3. Fig. 4 is also a view in elevation exhibiting a form of device for transporting a plurality of shells and the means for effecting release thereof. Fig. 5 is a transverse sectional view of the device illustrated in Fig. 4. Fig. 6 is a detached detail view displaying the mechanism for effecting release of the shells. Fig. 7 is a detached view in perspective showing the holder for the shells. Fig. 8 is a detail view in plan exhibiting the locked position of the mechanism which controls the discharge of the shell-containing holders.

Referring to the drawings and to Figs. 1, 2, and 3 thereof, A designates an ordinary clock of the patent-lever type. As all the mechanism back of the plate a is of the usual construction, it is not deemed necessary to illustrate it. Upon the center or hour arbor a^2, back of the dial a^3, is firmly secured a snail a^4, which makes a complete revolution in one hour, the dial being laid off into sixty divisions of one minute each, a single hand or pointer a^5 being secured to the arbor a^2 to indicate the time. The hand may be set from the back of the clock, as usual in clocks of this character. Pivoted to one side of the snail is a trigger-releasing lever a^6, carrying a pallet or stud a^7 to bear upon the periphery of the snail, a spring a^8 (attached at one end to the plate and at the other end to the said lever) operating to keep the stud in constant contact with the periphery of the snail. Connected with the free end of the lever is one end of a wire or rod a^9, the other end of which is attached to a trigger a^{10}, working under a plate or guide a^{11}, which latter is carried by a support a^{12}, secured to the clock-casing. The lower portion of this support is preferably curved to form an offset, as shown at a^{13}, and at its lower end has hinged to it a plate a^{14}, constituting a sear, the upper end of the latter to be engaged by the trigger when the apparatus is set, as shown in Fig. 2. The offset is designed to be engaged by a bail b, carrying the shell B. The clock-case is also provided with a bail a^{15}, by which the device may be suspended from a balloon. (Not shown.) The operation of this form of device is as follows: Suppose it be desired to drop a shell in the camp of an enemy and by measuring the distance and knowing the velocity and direction of the wind it is found that it will take one minute for the balloon to reach the objective point. In this event the bail of the bomb will be hooked onto the offset a^{13} and the sear will be folded back against the sup-

port, as shown in Fig. 3, and in the act of setting the hand to bring it to "59" on the dial the trigger will be projected over the upper end of the sear and will thus hold the sear from dropping downward. The balloon is now released, care being observed to see that the hand or pointer is exactly at "59," and as soon as the snail is moved a sufficient distance to release the pallet from the toe of the snail the lever a^6 will by the spring a^8 be drawn upward, thereby withdrawing the trigger from contact with the sear and allowing the latter to drop downward, and thus release the bomb.

It is to be understood that the balloon employed may be a captive balloon, so that after the bomb has been released it may be returned to the place of starting and again employed.

Where it is desired to discharge a plurality of bombs at intervals, the form of device shown in Figs. 4 and 5 is employed. The clockwork of this form is the same as that shown in connection with Fig. 1, except that instead of the snail a^4 a worm c is secured to the center arbor, the worm to engage with a worm-wheel c^2, carried by an arbor c^3, working in suitable bearings secured to the plate a. The lower end of the arbor c^3 carries a gear-wheel c^4, which meshes with a similar gear c^5, carried by a rod c^6, whereon are arranged a plurality of disks c^7, each having a recess $c^{7\times}$ in its periphery, as shown in Figs. 5 and 8. The timing of the worm and worm-wheel and the proportion between the gears c^4 and c^5 are such as to cause the rod c^6 to make, say, one complete revolution in a minute, or the time may be increased or diminished at will. The clock is carried by a frame C, preferably a rectangular structure, provided on one side with a plurality of openings c^8, (shown in Fig. 4,) corresponding in number to that of the bomb or shell holders that will be carried, and on the opposite side with a slot c^9, by which to permit insertion of the bomb-holders within the frame C, as will presently appear. The shell or bomb holders D referred to consist each of two semispherical sections, one of which is provided on opposite sides with projections d, and within this holder are placed the shells or bombs, which may be of any size and of any number desired, preferably a small explosive capped bomb. When the holders are in position within the frame, as indicated by dotted lines in Fig. 4, one of the projections d will engage with one of the openings c^8 in the side of the frame and the other projection will extend through the slot c^9. As a means for supporting the holders in position I employ for each bomb a lever c^{10}, pivoted to the outside of the casing at c^{11}, as shown in Fig. 5, the long arm of this lever being in engagement with the upper surface of one of the disks c^7. The short arm of the lever projects beyond the side of the frame and is engaged by the long arm of a second lever c^{12}, Figs. 4 and 5, pivoted to the frame, as shown at c^{13}, the short arm of this lever being in engagement with one of the projections d of the bomb-holder, as shown in Fig. 4. By the employment of these two levers the bulk of the weight is supported by the lever c^{12}, so that but slight pressure is imparted from the lever c^{10} to the disk. This same arrangement is adopted throughout the device no matter how many shell-holders may be arranged within the frame. The disks c^7 are so timed with relation to each other that the lowest shell-holder will be first discharged, then the next succeeding one above it, and so on. The frame C is suitably secured to the balloon and is adapted for reuse should the latter be a captive balloon, as before stated. The operation of this form of device is as follows: The frame being filled with bomb-holders and the balloon ready to be set free, the distance of the objective point from the balloon being known, the hand of the clock is set so as to bring the lowest disk c^7 of the series in position to be released at the predetermined time, this movement automatically effecting setting of the remaining disks, so that if it is desired that the bomb-holders be released at a minute apart after the first bomb has been discharged this result will be effected. When the recess in the lowest disk c^7 comes over the lever c^{10}, the latter, from the weight of the bomb, will be released, and the holder will thus be free to drop, the same result occurring in the successive discharges of the holders.

It will be observed that in the result effected the recessed disks of the device shown in Fig. 4 are the exact counterpart in operation of the snail, (shown in Fig. 1,) as in both cases the release of the bomb is effected thereby.

As a means for preventing the clock mechanism from running when not necessary a stop mechanism is provided, (shown in Fig 3ª,) consisting of a hand or pointer a^{16}, arranged on top of the clock-casing and adapted to be moved over a plate bearing the words "Stop" and "Start," and an arm a^{17}, carried by the hand and to be moved into engagement with one of the gear-wheels of the clock mechanism, as shown in Fig. 2.

The bail b is by preference provided with arms b^2, (one only being shown,) which operate to hold the bail from swinging or, in other words, to cause it to hang steady. To facilitate detachment of the bail from the hanger, the bail may be provided with rollers b^3, which will slide upon the hanger when the trigger is released, and thus insure proper release of the bomb.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. A device of the character specified, comprising a clock mechanism, a support depending from the casing thereof, a plate hinged at its lower end to the support and constituting a sear, a trigger to be engaged by the sear, and a lever connected with the trigger, the

lever coacting with releasing mechanism in the clock, whereby, at predetermined times, its trigger will be released, substantially as described.

2. A device of the character specified, comprising a clock mechanism, a plate depending from the casing thereof and operating to support a shell or bomb, a sear, and a trigger adapted, at a predetermined time, or at predetermined times, through clock mechanism, to release the sear, whereby to permit attachment to the shell, substantially as described.

3. A device of the character specified, comprising a clock mechanism, a support for an explosive shell or bomb, locking devices upon the support for securing the shell thereto, and means connecting the locking devices and the clock mechanism for positively actuating the former from the latter at a predetermined time, instantly to release the shell, substantially as described.

4. A device of the character specified, comprising a clock mechanism, a frame connected therewith to support a plurality of bomb-holders, compound levers for supporting the holders within the frame, releasing mechanism actuated by the clock and operating, at predetermined times, successively to release the holder, and means by which the release of the bombs may be retarded or accelerated, substantially as described.

In testimony whereof I affix my signature in the presence of two subscribing witnesses.

ROSENDO TORRAS.

Witnesses:
EUGENE BROOKS,
BOLLING WHITFIELD.