S. S. BENSON.

AERIAL BOMB DROPPER.

APPLICATION FILED JULY 6, 1917.

1,274,501.

Patented Aug. 6, 1918.

3 SHEETS—SHEET 1.

Fig. 1.

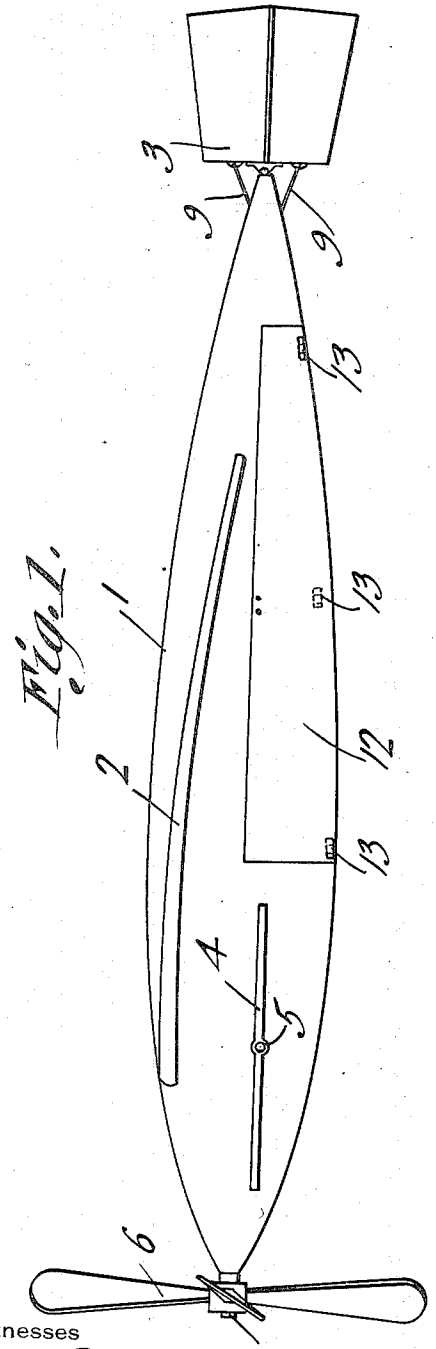
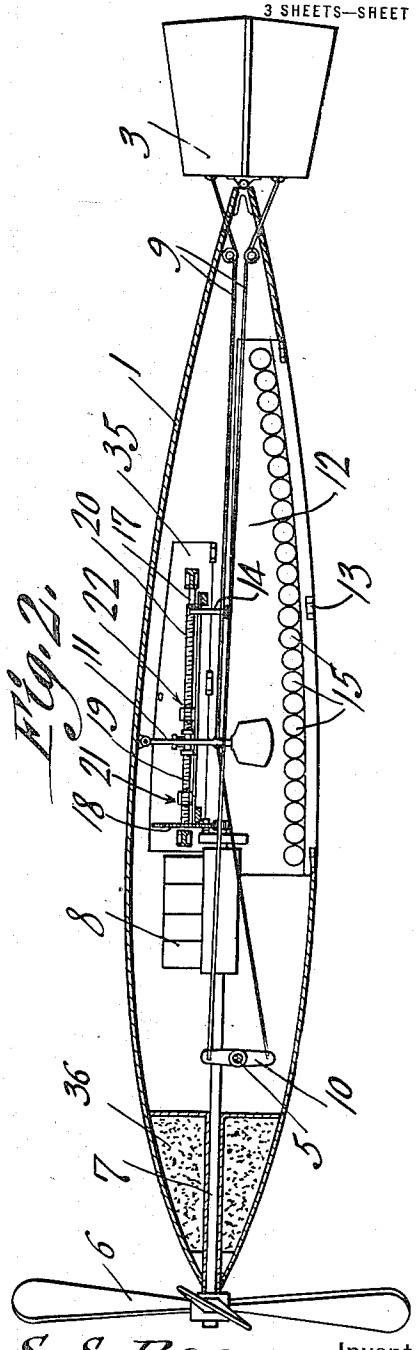


Fig. 2.



Witnesses

J. R. Toomey

H. A. Mitchell

S. S. Benson Inventor

by C. A. Snow & Co.

Attorneys

S. S. BENSON.

AERIAL BOMB DROPPER.

APPLICATION FILED JULY 6, 1917.

1,274,501.

Patented Aug. 6, 1918.

3 SHEETS—SHEET 2.

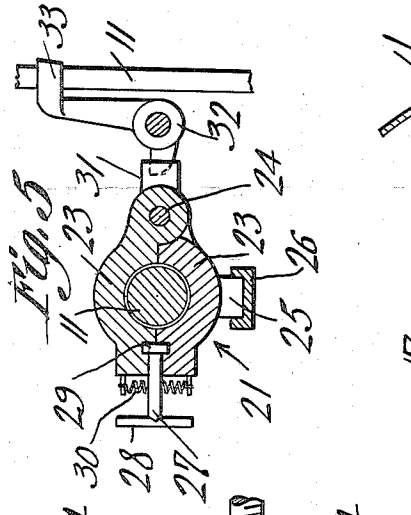


Fig. 5.

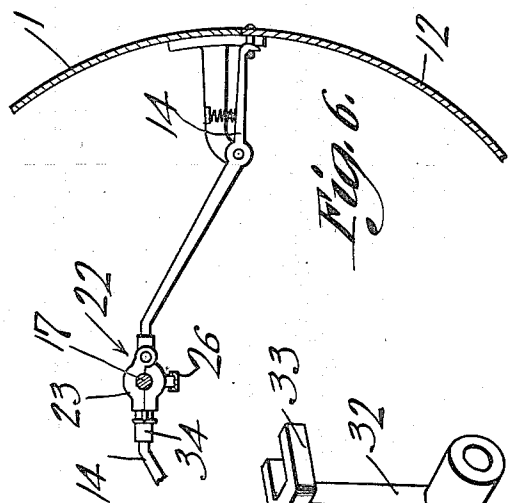


Fig. 6.

Fig. 7.

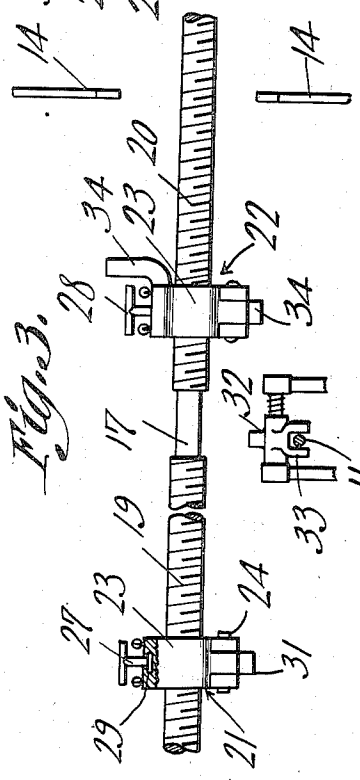


Fig. 3.

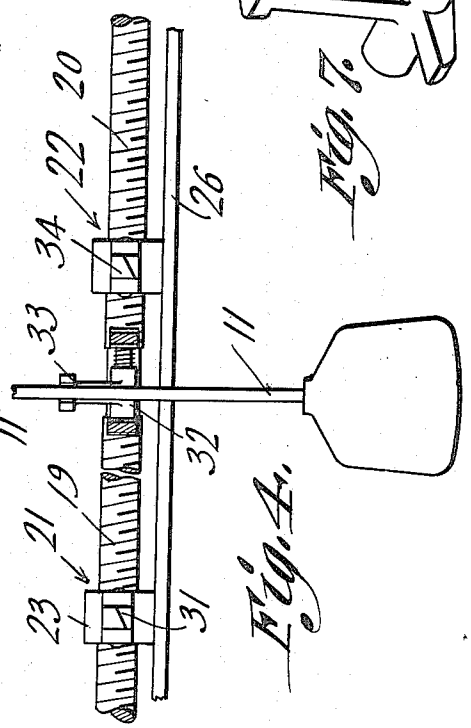


Fig. 4.

Witnesses

J. R. Tomlin

H. A. Mitchell

S. S. Benson

Inventor

by Cushman & Co.

Attorneys

S. S. BENSON.

AERIAL BOMB DROPPER.

APPLICATION FILED JULY 6, 1917.

1,274,501.

Patented Aug. 6, 1918.

3 SHEETS—SHEET 3.

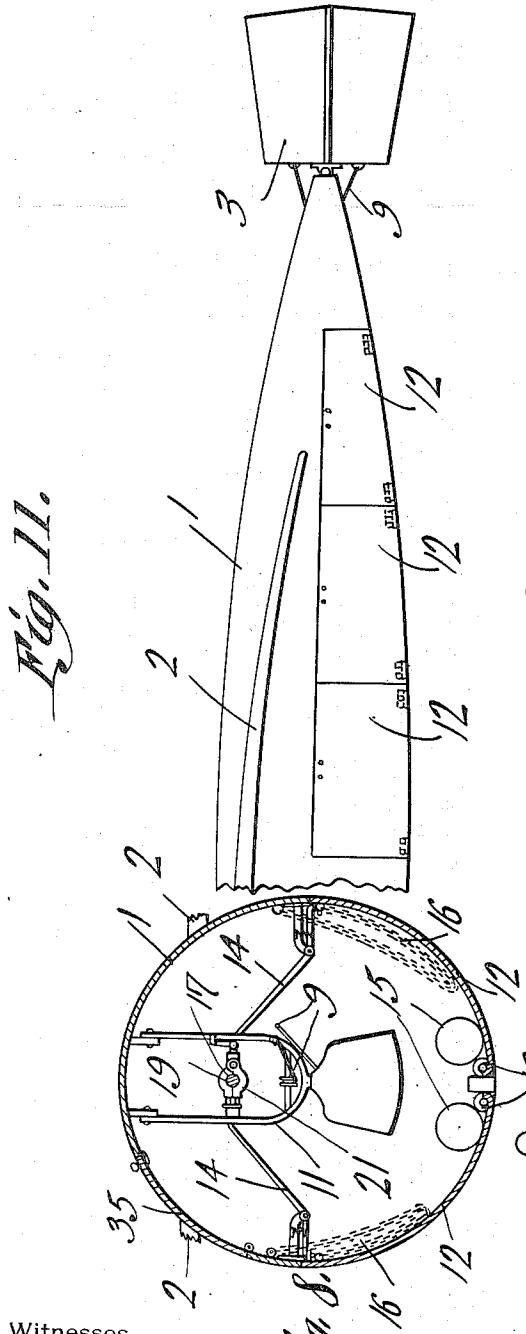


Fig. 11.

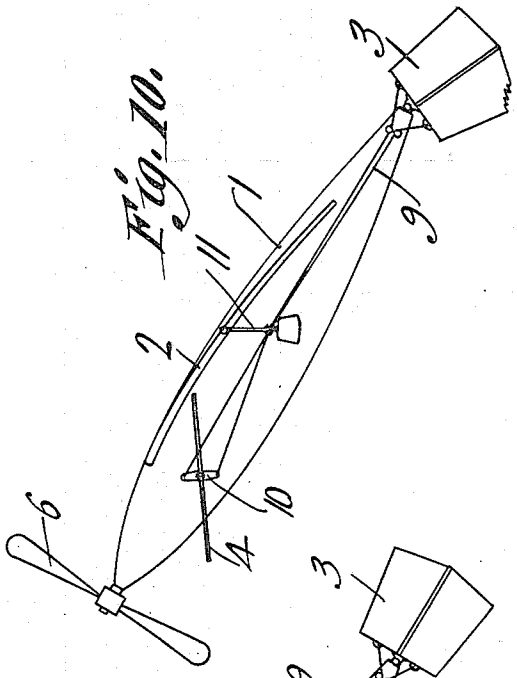


Fig. 10.

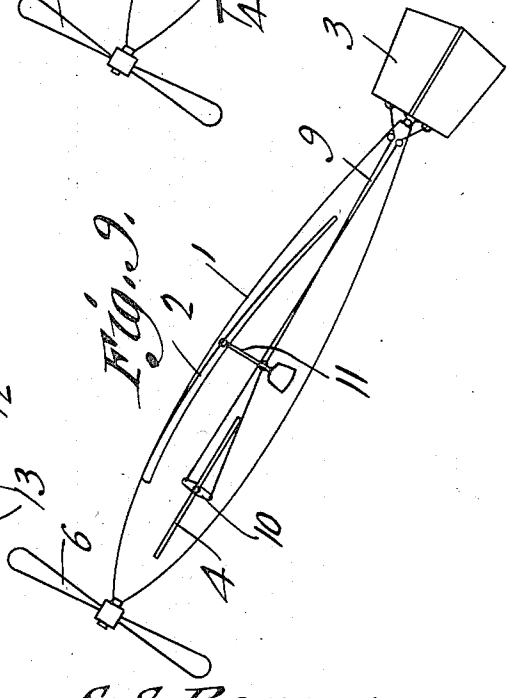


Fig. 9.

Fig. 8.

Witnesses

J. P. Tomes

H. R. Mitchell

S. S. Benson

Inventor

by C. A. Snow & Co.

Attorneys

UNITED STATES PATENT OFFICE.

SHERMAN S. BENSON, OF YORK, NEBRASKA.

AERIAL BOMB-DROPPER.

1,274,501. Specification of Letters Patent. Patented Aug. 6, 1918.

Application filed July 6, 1917. Serial No. 178,991.

To all whom it may concern:

Be it known that I, SHERMAN S. BENSON, a citizen of the United States, residing at York, in the county of York and State of Nebraska, have invented a new and useful Aerial Bomb-Dropper, of which the following is a specification.

The present invention relates to an aerial device for automatically dropping bombs, torpedoes or other explosive missiles at predetermined points over the enemy positions, and it is the object of the invention to provide a novel and improved contrivance of that character which after being launched will rise to a predetermined height, then fly horizontally in the desired direction, to automatically release the bombs or other explosive missiles, which will be scattered over a comparatively wide area, thereby creating a devastating shower of bombs.

The machine is designed to travel at a high rate of speed a considerable distance—much farther than is possible to fire ordinary projectiles—and it is intended that a number of the devices be launched simultaneously, in order that the way can be cleared on a broad front and to a considerable depth for infantry charges.

The device is also so designed that when the bombs are dropped, the equilibrium of the sustaining body will be destroyed, and the body will drop to the earth, the body being provided with an explosive charge, in order that when it strikes the ground it will explode and blow the machine into fragments to create destruction.

The invention has among its several objects, the provision of novel means for controlling the flight thereof, controlling the discharge or dropping of the bombs, and means enabling the device to be set or adjusted to fly at different elevations and to different distances.

With the foregoing and other objects in view, which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of the invention herein disclosed can be made within the scope of what is claimed, without departing from the spirit of the invention.

The invention is illustrated in the accompanying drawings, wherein:

Figure 1 is a side elevation of the bomb dropper as in flight.

Fig. 2 is a longitudinal section thereof, portions being shown in elevation.

Fig. 3 is a fragmental plan view of the releasing mechanism.

Fig. 4 is a fragmental elevation of said mechanism.

Fig. 5 is a sectional detail of said mechanism, showing one of the nuts in section.

Fig. 6 is a fragmental detail view of the means for releasing the bomb doors.

Fig. 7 is a perspective view of the pendulum detent.

Fig. 8 is a cross section of the device through the bomb doors.

Fig. 9 is a side elevation of the device as when ascending after being launched.

Fig. 10 is a similar view showing the device in the act of turning to a horizontal position after reaching the desired altitude.

Fig. 11 is a fragmental elevation of a modified form.

The device embodies a fusiform or cigar-shaped shell 1 of suitable size, provided with the sustaining planes or wings 2 at its sides, and at its rear end with the compound steering rudder 3. At the opposite sides of the shell or body 1 are the elevating planes 4 mounted on a transverse rock shaft 5 extending through the shell, and a propeller 6 is located at the forward end of the shell, being mounted on a longitudinal shaft 7 driven by a compressed air, gasolene or other suitable engine 8 located within the shell. The propeller is rotated at a comparatively high speed, whereby the device will travel at a high velocity, which is desirable, to offset air currents, *i. e.*, to minimize the effect of air currents on the device in flight.

The rudder and elevating planes are connected by cables or other flexible elements 9, connected at their rear ends with the rudder 3 and at their forward ends with a lever 10 mounted on the rock shaft 5. A pendulum 11 hung within the shell is connected to one cable 9 to control the rudder and elevating planes, the pendulum when released hanging vertically whereby to maintain the rudder 3 and elevating planes in position to direct the device in a direct

horizontal line of flight. Should the body tilt longitudinally, the pendulum by remaining in vertical position, will cause the rudder 3 and planes 4 to be tilted relatively to the body, whereby to aright the machine and hold it in the horizontal line of flight.

The shell 1 is provided at its bottom and opposite sides with bomb doors 12 having their lower edges hinged, as at 13, to the bottom portion of the shell, said doors being normally swung upwardly and inwardly to closed positions, and being held by suitable catches 14. The bombs 15 or torpedoes or other explosive missiles are placed on the doors 12 before they are closed, and are supported by said doors, so that when the doors are released they will swing open outwardly and downwardly to let the bombs drop, and said doors will act as deflectors for spreading the bombs toward opposite sides over a considerable area. Suitable means can be provided for limiting the downward movement of the doors 12, such as by providing chains or flexible elements 16 of different lengths connecting the doors 12 with the shell 1. By limiting the downward movement of the doors, this will control the deflection of the bombs as desired.

The releasing mechanism embodies a shaft 17 mounted for rotation within the shell and connected by a reduction gearing 18 with the engine 8, whereby the shaft 17 will be rotated at the desired reduced speed. This shaft is provided with the separate threaded portions 19 and 20 for the engagement of the respective nuts 21 and 22. These nuts, one of which is shown in detail in Fig. 5, are of duplicate construction, each embodying the sections 23 hinged together, as at 24, one section having a guide lug 25 working in a guide 26 to prevent the rotation of the nut. A spindle 27 is journaled between the free ends of the sections 23 and has a handle 28 and a cam 29 between the sections for separating the sections when the handle is turned, said sections being moved together into engagement with the screw thread by means of contractile springs 30 connecting the free ends of the sections. By turning the handle 28 to separate sections 23, this enables the nut to be shifted, since it is disengaged from the thread, and in this manner the nuts 21 and 22 can be set the desired distances to control the altitude and distance. The nut 21 has a cam 31 to engage a detent 32 which holds the pendulum 11 fixed when the device is launched, said detent having a forked or bifurcated portion 33 straddling the pendulum 11 when the machine is launched, thus preventing the pendulum from operating until the machine rises to the desired elevation (controlled by the distance the nut 21 is set from the detent 32), and after the machine has been in operation sufficiently to bring the nut 31 adjacent to the detent 32, the cam 31 of said nut swings the detent 32 to releasing position, thus releasing the pendulum, which in swinging to a vertical pendant position will angle the rudder 3 and elevating planes 4, thereby bringing the device to a horizontal position in which line it will be maintained by the action of the pendulum as above described.

The nut 22 is provided with cams 34 to engage the catches 14 after the device has traveled a predetermined distance (controlled by the distance the nut 23 is set from the catches 14), the cams 34 engaging the catches 14 release the doors 12, so that the bombs are dropped. The cams 34 or catches 14 can be offset, so that the doors are opened in succession, or they can be released simultaneously whichever is desired.

Before launching the machine, the nuts 21 and 22 are set according to the elevation and distance desired, the shell 1 having a door 35 permitting access to be had to the releasing mechanism, and the detent 32 is engaged with the pendulum 11 to hold it fixed until released by the nut 21 at the desired altitude. Then when the machine is launched, it will travel upward at an angle, as indicated in Fig. 9, and after the desired altitude is reached, the pendulum in being released, will swing the rudder 3 and elevating planes 4, to bring the machine to a horizontal position. The machine will then continue in its flight in the horizontal line until it has traveled the predetermined distance, at which time the doors 12 are released and the bombs dropped. The bombs ordinarily weight down the rear end of the machine, to maintain the balance, and as soon as the bombs are dropped, this will destroy the equilibrium of the machine, the nose or forward end thereof becoming the heavier, thereby turning the machine downwardly. The shell contains an explosive charge 36, whereby when it strikes the ground, the charge in being detonated will blow the machine into fragments, to prevent its use by the enemy, and to increase the destruction caused.

Fig. 11 illustrates a plurality of pairs of doors 12 for the bombs, which can be opened in succession to drop the bombs over a longer path, it being readily evident that each pair of doors has the catches 14 which will be released in succession by the travel of the nut 22.

Having thus described the invention, what is claimed as new is:

1. An aerial bomb dropper including a body, sustaining means therefor, an explosive element carried by the body for normally maintaining the balance of the body, means for automatically releasing said explosive element to destroy the balance of the body and cause the body to descend, and

an explosive charge in the body for destroying the body when it descends.

2. An aerial bomb dropper embodying a body, sustaining means therefor, a door arranged to open downwardly, means for normally holding the door closed, bombs supported by said door, and means for limiting the downward movement of the doors to deflect the bombs.

3. An aerial bomb dropper embodying a body, sustaining means for the body, a pair of doors hinged to the body at their adjacent portions and swingable downwardly to open position, means for normally holding the doors closed, bombs supported by the doors, and means for limiting the downward movement of the doors to deflect the bombs.

4. An aerial bomb dropper embodying a body, sustaining means for the body, bombs carried by the rear portion of the body, means for supporting and releasing the bombs, the bombs normally maintaining the equilibrium of the body, and an explosive charge in the body for destroying it when it strikes the ground.

5. An aerial bomb dropper embodying a body, sustaining means for the body, propelling and steering means for the body, a pendulum carried by the body and operatively connected with the steering means to control it, a detent for holding the pendulum inoperative when the bomb dropper is launched, bombs, means for supporting the bombs, and adjustable means for releasing the detent and bomb supporting means at predetermined times operatively connected with the propelling means.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

SHERMAN S. BENSON.

Witnesses:

IVY E. SIMPSON,

PHILOMENA A. ROCKELLI.