T. NOMOTO.

PROJECTILE.

APPLICATION FILED JUNE 9, 1917.

1,303,713. Patented May 13, 1919.

Fig. 1.

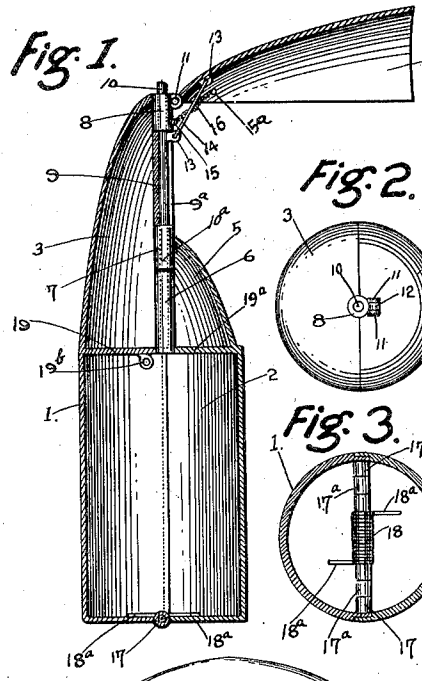


Fig. 2.

Fig. 3.

Fig. 4.

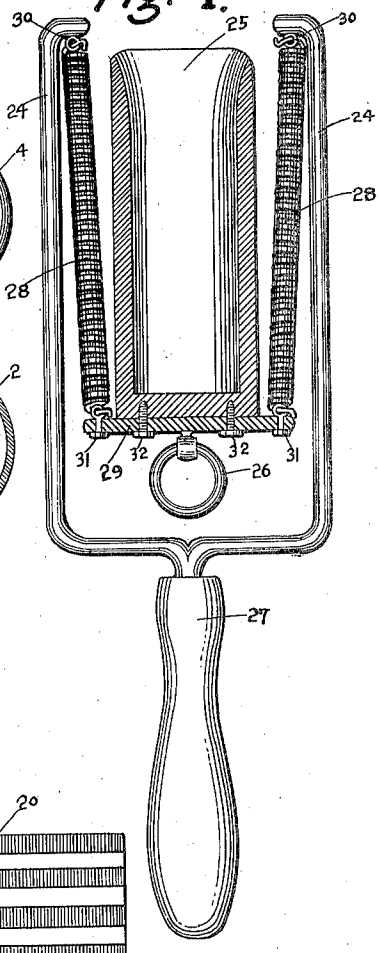
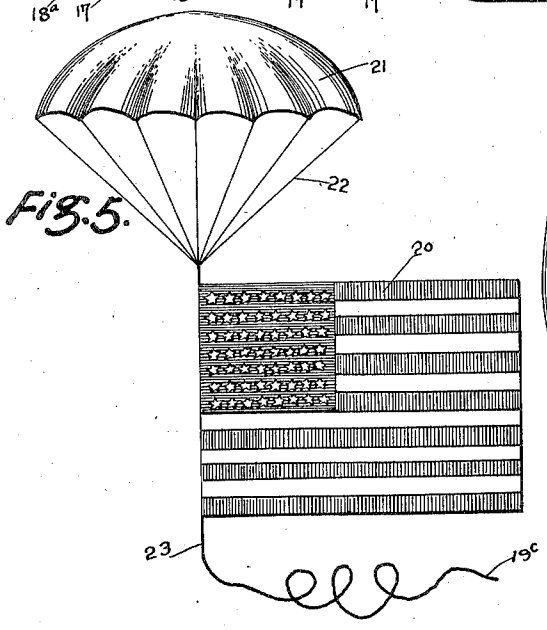


Fig. 5.



WITNESSES:

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PROJECTILE.

1,303,713. Specification of Letters Patent Patented May 13, 1919.

Application filed June 9, 1917. Serial No. 173,883.

To all whom it may concern:

Be it known that I, TSUNEJIRO NOMOTO, a subject of the Emperor of Japan, residing at 415 Maynard Ave., Seattle, in the county of King and State of Washington, have invented certain new and useful Improvements in Projectiles; 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.

This invention relates to aerial projectiles and means for projecting the same to various elevations; and particularly to projectiles arranged to expand and open when at the highest point of their travel and to release or drop out desired devices as flags or forms of signals.

The specific device shown in the drawings is designed for a toy and the projecting means may be operated by manually tensioned springs, and the projectile made as a miniature hollow shell with sides which open automatically by springs. Within the shell is carried a flag which is attached at its upper corner by a cord to a small parachute. A cord extending below the flag is fastened to the metallic shell, and when the shell or projectile has opened the flag and parachute are held expanded in the air as the weight of the shell gradually draws them downward.

Figure 1 is a longitudinal, central section of the projectile, partly expanded.

Fig. 2 is a plan view of the shell closed, and

Fig. 3 is a cross sectional view of it.

Fig. 4 is a side elevation, partly in section, of the projecting means.

Fig. 5 is a view of the flag and parachute expanded.

Like numerals on the different figures represent like parts.

The outer casing 1—2 of the shell or missile is formed substantially tubular and cylindrical in body portion, with a conical upper section or point, and is divided longitudinally and hinged at 17. A divided partition or diaphragm 19 extends transversely across the middle of the shell, one half of which is fixed to the side of the shell marked 1, and the other half, 19^a, to the opposite side 2. The latter has a socket section 6 into the upper end of which a pintle 10 slides freely, and the pintle carries a lug 13 with an eye into which is hooked a connecting rod 14. The upper portion of cone 3 has upper and lower hub portions 7 and 8 sectioned at 9 to better show a groove 9^a on one side of the joint, the groove being provided for free passage of the lug 13 as the pintle is moved up and down through the socket sections.

The upper end of part 2 carries also a conical section 5 for a reinforcing support to the socket section 6. To a support or hinge portion 11 is connected the cone 4 or wing, shown in the drawing, Fig. 1, as expanded, but which may be closed down upon the base 5, and will then resemble the opposite section 3. An expansion spring 16 holds the wing 4 normally expanded as shown by Fig. 1, the spring being attached to a lug 15 on hub 8 and 15^a on wing 4, but the rod 14 prevents the wing 4 opening to a greater extent than as illustrated.

When the operator presses down the wing 4, the rod 14 presses down the lug 13 through the groove 9^a and the pintle point 10^a is driven down into the section of lower socket 6 and thereby the wing 4 and lower portion 2 of the shell are locked by the pintle 10.

The lower section 2 is hinged in the center of its base by knuckle sections 17 and 17^a, Fig. 3, and a coiled spring 18 is wrapped about the hinge pin with its two ends 18^a so placed that the lower section 2 is thereby normally pressed outward at the top, but Fig. 1 for illustration shows the top closed with the section 6 in position for insertion of pintle 10 when the operator shall press down the wing 4 to its closed position on base 5. A parachute 21 is shown with a number of cords 22, centering at a point adjoining a flag 20, which carries a cord 23, the end of which, 19^c, is adapted to be fastened to a lug 19^b within the shell.

In operation the flag and parachute are folded and placed within the walls 1 and 2 of the shell, and the side 2 is then closed in the position shown in Fig. 1, then the wing 4 is pressed down against its base 5, and the whole held closed by the pintle 10, until the wing 4 is permitted to expand. The projectile is then placed in any desired mortar or other projecting means and discharged to any height desired. The spring 16 being barely sufficient to expand the wing 4 and withdraw the pintle, the pressure of the air against the wing as the shell is driven upward holds the wing 4 down till the shell has

reached its highest point in upward flight, the spring then forces up the wing 4 and pintle 10 releasing the hinge section 6, when the lower portion 2 of the shell is opened by the base spring 18, and as the shell so expanded falls, the expanded portions turn upward, and the parachute catches the air holding the flag expanded as the weight of the connected empty shell draws downward. The flag is preferably connected closely to the parachute and the rush of air from the sides of the parachute holds the flag expanded. The weight of the shell is only enough to carry the flag, etc., to the height desired.

Instead of a flag, other signals may be connected to the parachute, or suitable camera or devices for taking pictures may be used in practical maneuvers for war or peace.

For amusement purposes and to project the missile to low elevations, the shell or missile may be sufficiently projected by hand with the device shown in Fig. 4, which is provided with two bifurcated arms 24, 24 and handle 27. Springs 28 are fastened to ends of arms 24 at 30 and to base block 29 by eyes 31. The block 29 carries a cup or holding receptacle 25, also a ring 26. In use the shell is closed, and deposited in the receptacle 25, the walls whereof hold the wing 4 closed till the shell is discharged violently by the operator expanding the springs 28 by means of the handle 27 and ring 26 and releasing the tension in the manner generally understood.

I claim—

1. A projectile having a casing with hingedly connected wall sections forming a chamber, means for automatically opening said sections, and means for locking the sections closed and adapted to automatically release said sections when the resistance of air upon the flying projectile is overcome.

2. A projectile having hinged sections forming a chamber, means for automatically opening the sections, and locking means, controlled by air pressure during flight, for latching the sections closed.

3. A projectile having articulated side sections forming a chamber in the body of the projectile, a wing attached to the point of the projectile and having means for locking said sections closed during upward flight and adapted to release the sections when air resistance is overcome.

4. Aerial apparatus comprising a sectional projectile having a chamber, a display member arranged in said chamber and connected to one section of said projectile, means for opening said sections to release the member and air-pressure control means therefor, and a parachute connected to said member for supporting the whole for slow descent in the air.

5. A tubular projectile, with one conical end, and the other end provided with a hinge joint connecting the side walls of the tube, the conical end provided with a hinge joint connecting the two sides of the walls of the cone, a spring normally holding one side of the cone open and a rod to prevent the movable cone portion opening greater than at right angles, with a pintle connected with the movable cone portion and socket sections affixed to the fixed cone portion and the movable portion of the tubular lower section, a receptacle in said projectile for holding a detachable emblem, with means for holding the emblem to the projectile and means for displaying the emblem.

In testimony whereof I affix my signature.

TSUNEJIRO NOMOTO.