

UNITED STATES PATENT OFFICE.

THOMAS G. HITT, OF SEATTLE, WASHINGTON.

ROTARY-BALANCED ROCKET.

Application filed March 5, 1927. Serial No. 173,047.

This invention relates to rockets, and particularly to self-balancing and guiding rockets, with perpendicular and horizontal rocket bodies combined.

The objects of the invention are to provide a combined set of rocket bodies containing explosive material for revolving and lifting the combined bodies, with additional bodies or chambers containing display or signal matter, and further chambers containing material for destroying the several connected bodies, with suitable fuse connections for igniting the material in the several chambers at a predetermined period.

A further object is to provide a rocket with a plurality of horizontal chambers filled with suitable explosive material, holes in the sides and bottoms of the chambers for the explosive material to exhaust gases on burning to revolve and raise the device; together with perpendicular chambers or rocket bodies also filled with suitable explosive material for causing the bodies to ascend in the usual manner of rockets, together with further chambers or bodies arranged perpendicularly and projecting below the horizontal chambers for balancing the device, and filled with suitable display matter at the lower part, and the upper part filled with an explosive material for destroying the connections between the several chambers and breaking up several parts of the device into small fragments, with further chambers in the tops of the perpendicular rocket chambers also filled with explosive material for assisting in the breaking up of the several parts of the device when the device has reached its limit of ascension.

A further object is to provide a rocket of several combined perpendicular chambers each filled with suitable explosive material for lifting the device, together with other combined horizontal chambers filled with similar material for revolving the combined device and assisting in the raising thereof, with other chambers arranged perpendicularly for balancing the device, and filled with suitable material for display and signals, and other material for destroying the several parts; the combination carrying no sticks or impediment in weight which is not utilized for containing the materials as well as guiding the combined device to provide excessive noise and circular flames.

I have illustrated the device with the accompanying drawings of which:

Fig. 1 is a top plan, and

Fig. 2 is a front elevation with parts in section.

Like numerals on the two figures represent like parts. 1 and 2 show the perpendicular rocket shells or chambers which are filled in the usual way to a point near their tops with explosive material 17 of usual form as saltpetre, sulphur and charcoal, with a clay or other fixed partition 18, above which may be placed a charge of suitable material 19 for exploding and destroying the chambers when the fire has burned through a time fuse 20 connecting the charges 17 and 19, as when the rocket has reached its highest point of ascension.

Horizontal chambers 5 and 5^a and 6 and 6^a are connected horizontally, and connected together by any suitable means to form right angles, as by two short affixed rods, 21 and 22, with a hole 23 therethrough for a guide pin or pivot 24, protruding above a supporting post 25. The horizontal chambers are filled with suitable explosive 26 for forming lifting gases as in lower part of 1 and 2, with clay abutments 27 at each end, with outlet holes 28 on one side near the outer ends, and connected by a quick match 7 and 7^a, for the escape of burning gases and to cause the device to revolve on the pin 24, until the burning explosive 26 has reached the end of quick match 10 entering through hole 29 in bottom of the chamber, the fire is carried by 10 to the charge 26 through another hole 30 in bottom of the chamber, and at same time the fire is carried by quick match 11 from 26 to the lifting charge 17 in the shells 1 and 2, and the rush of the gases from the lower end of the shells 1 and 2 and holes 29 and 30 in the horizontal chambers, caused by the burning charges 17 and 26 force the combined rocket to rise off the pin 24 in a perpendicular direction with great speed and height till the charges 17 and 26 are exhausted.

The device is further balanced and guided in upward flight by additional perpendicular chambers 3 and 4 parallel with 1 and 2 but preferably positioned to extend beneath the lower ends of 1 and 2 and of two compartments as 12 being filled with suitable display matter such as brilliant stars, flags,

parachutes, etc. and the upper portion 13 filled with quick acting explosive similar to 19 for destroying connections of the several chambers and breaking all the parts into 5 small fragments. The chambers 12 and 13 are separated by a partition 14, and connected by a time fuse 15. A quick match 8 connects the upper part of the charge 17 in 1 and 2 with a light charge of explosive in 10 the upper part of chamber 12 the latter explosive being sufficient to break out the lower cap 16 or base of chambers 12 for discharging the display or signal contents of 12 a brief time before the ignition of the explosive and destroying charges 19 in the tops 15 of chamber 2, the latter exploding simultaneously with the destroying charges in chambers 13, the latter ignited by time fuses 15 from the explosions in chambers 12, and 20 the combined charges in chambers 13 and tops of 1 and 2 being sufficient to break all connections between the several chambers and to reduce all the parts to small fragments, and so rendered harmless to persons 25 standing beneath.

These combined rockets may be ignited on a platform close to any assembled body of people, and without danger from falling parts. The chambers 3 and 4 aiding in the 30 guiding and balancing of the upward flight, so that none of the ordinary long and dangerous guide sticks are required. The outpouring of the burning gases from the side holes in the horizontal chambers and bottom 35 holes of both horizontal and perpendicular chambers causes a great roar, and a spiral cloud or trail of flame as the device rises with its revolving motion.

The explosive material in the horizontal 40 chambers may be the same as stated for the perpendicular chambers for causing the rocket to rise, but preferably of faster burning material than in the perpendicular chambers. For the explosive to discharge 45 the display devices I preferably use meal powder of sufficient power to break out the bottom of the container, and for the several destroying chambers I preferably use saltpetre, sulphur and metallic aluminum powder. 50

While I have designated the chambers 3 and 4 as additional balancing chambers, I do not wish it understood that I solely rely 55 thereon as the chief element of balance for the rocket is in the rotary motion given by the exhaust of gases from the side holes in the horizontal chambers, and the chambers 3 and 4 being suspended below all other parts bring down the center of gravity to a low

point and aids in the perpendicular flight of 60 the rocket.

Claims:

1. A balanced rocket with a plurality of perpendicular chambers containing explosive materials for raising the device when 65 ignited, and for destroying the chambers after limit of rise with a plurality of horizontal balance chambers filled with similar materials, with holes in the sides and bottoms of the horizontal chambers for the out- 70 flow of gases when the materials are ignited to cause the rocket to revolve and ascend at the same time, with a plurality of perpendicular chambers suspended from the horizontal chambers containing display materials at their lower ends and destructive explosive materials in their upper portions adjacent the horizontal chambers, these several chambers connected by quick matches and time fuses for igniting the charges in the 80 several chambers at predetermined periods, for causing the rocket to ascend with a rotary movement and for breaking up and destroying the several chambers when the rocket has reached its highest point. 85

2. A balanced rocket, with a plurality of perpendicular chambers affixed to a plurality of horizontal balance chambers, each of said chambers containing explosive material, with outlet holes in the bottoms of all 90 of said chambers, and holes in one side of each of the horizontal chambers for raising and revolving the rocket when the material is ignited, with additional balancing chambers attached to and suspended below the 95 horizontal chambers and containing display material and destructive explosive material to be consecutively ignited for destroying the several chambers and parts, after the display material has been released near the 100 highest point of ascent of the rocket.

3. In combination a rotary balanced rocket, with a plurality of perpendicular rocket chambers, and a plurality of horizontal balance rocket chambers, each containing 105 explosive material for raising the combined device when the materials are ignited; with additional balancing chambers suspended from the other chambers and containing display materials and explosive materials, with 110 outlets in the rocket chambers for the escape of gases for raising and revolving the device simultaneously, and means for consecutively igniting the materials in the several chambers at predetermined periods. 115

In testimony whereof I affix my signature.

THOMAS G. HITT.