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T. G. HITT

ROCKET

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FIG. 1

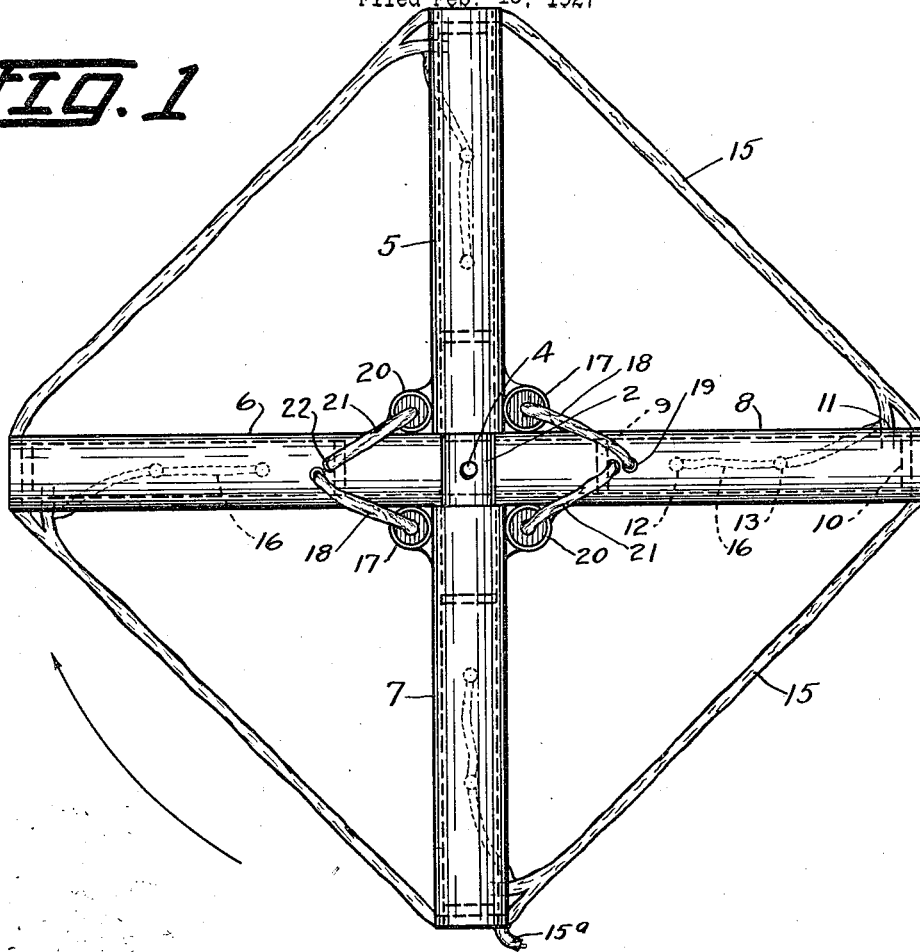


FIG. 2

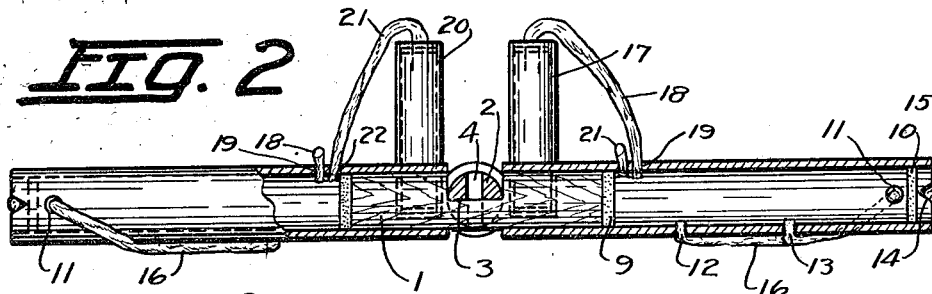
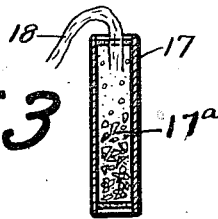


FIG. 3



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ROCKET.

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This invention relates to rockets, and particularly to rockets without guiding sticks.

The objects of the invention are to provide a form of rocket which will rise from the ground in a substantial perpendicular direction, and to a predetermined height without the use of any guide stick, and which in its upper passage will produce a loud noise, and a great amount of fire for pyrotechnic effect and display, and which when having reached its limit of climb will destroy the heavier part of the frame, and so be free of danger to persons beneath the point from which the parts of the rocket would fall.

A further object of the invention is to provide a form of rocket with a plurality of chambers arranged on the same plane, the chambers filled with suitable explosive material for lifting the rocket while burning, with holes in the sides and bottom of the chambers both for lighting and turning the rocket by means of burning gases escaping from the holes while the material is being burned; together with other chambers containing matter for pyrotechnic display as stars, or flags or other signals to be discharged from the chambers when the rocket reaches substantially its highest point, and a third set of chambers for carrying a destructive explosive for destroying the heavier parts of the rocket frame after the liberation of the display contents, with fuse connection between the several lifting chambers, and display chambers and destructive chambers, so arranged that the several contents of the various chambers will be fired, or discharged at predetermined periods as may be desired.

I have illustrated my invention by the accompanying drawings, of which:—

Figure 1 represents a top plan of the rocket;

Figure 2 represents a side elevation partly in section.

Fig. 3 represents a detail of a chamber for carrying display matter.

Like numerals on different figures represent like parts.

Numerals 1 and 2 indicate a short section or round wooden rods with a mortice connection 3 at their centers as they are connected or held together by glue or other simple means to form right angles to each other, with the four ends thereof pointing in opposite directions, and on which ends the lifting

chambers are mounted. A pivot hole 4 is provided through the center or axis of the crossed rod, for holding the rocket on a suitable pivot pin, and above the ground or firing platform while the same is ignited, and to permit the rocket to revolve in horizontal position before its flight is begun.

5, 6, 7, and 8, are cylinders of any desired dimensions for carrying the lifting and revolving charges of explosive, which may be of saltpetre, sulphur and charcoal, or other suitable steadily burning explosives compressed into the chambers of the cylinders or tubes so as to support a steady combustion, but preferably of a faster burning composition than is used in ordinary one chamber straight rockets. One end of each tube is slipped on and over a respective end of the rods 1 and 2 and suitably secured thereto. Adjacent the position of the ends of the rods in the tubes a clay partition 9 is provided for holding the charge in the tubes respectively, and similar clay partitions 10 are provided at the outer ends of the tubes for holding said contents of the tubes after the same have been securely tamped into the respective chambers.

Each tube has a hole 11 near its outer end and on one side thereof, a plurality of holes shown as 12 and 13 opening through their bottoms, and across each end may be cut a notch 14, and a connecting quick match fuse 15 is carried over the notches or otherwise held near the ends of each tube with projections therefrom 15^a for ignition by operation, other suitable branches or sections 16 are extended into each of the holes 11 for igniting the charges in the tubes, and these extensions of the fuse 16 are carried into the holes 12 and 13 and for igniting the charge in the tubes at such new points, all of the contacts from the fuse 15 being ignited at practically the same moment.

17 and 17 represent any size or desired form of containers for carrying display matter; 17^a such as brilliant burning colors of various shades, or flags etc. for signals or for pyrotechnic displays for public celebrations, and are fired by respective fuses 18 and 18 which contact with and are ignited by the burning contents of the tubes 6 and 8 when the fire reaches the points of contact beneath the holes 19 through which the fuses 18 enter; and this ignition and bursting of the containers 17 will take place

near the top of the line of travel of the rocket.

20 and 20 represent any sizes or forms of containers desirable for carrying charges of explosives of sufficient power to shatter their containers and particularly the holding rods 1 and 2 or the other means used for connecting the tubes 5, 6, 7, and 8, which explosive may be also of brilliant burning colors for additional display as well as for shattering the parts of the rocket into small fragments which will not injure the persons beneath and on whom they may fall. Fuses 21 connect the containers 20 with the contents of the tubes 6 and 7 through holes 22 at a point adjacent the inner clay abutments, and will therefore not become ignited until the lifting power from the burning contents of tubes 22 being nearer the abutments than the holes 19 so the parts will not be shattered until after the bursting of the containers 17.

With this form of rocket the danger from falling guide sticks and large parts of rockets is eliminated, and a much greater display is given, not only from the bursting of the plurality of chambers 17 and 20, but from the great amount of fire that flows out from the holes 11, 12, and 13 as the rocket rises, and a greater roar and sound is produced.

It will be understood that when the charges are fired by the ignition from the fuses through the holes 11, 12, and 13 that the expulsion of the gases first from the holes 11 will cause the rocket to revolve, followed almost immediately by the expulsion of the gases and fire from the bottom holes 12 and 13 which cause the rocket to rise, to such height as may be determined by the sizes of the containers and contents thereof. The holes 11, 12, and 13 are preferably equal distances from each other as the charges in the tubes burn in each direction, while the hole 13 is spaced half the distance from the abutment 9 to which the burning is in only one direction.

The number and sizes of holes for escaping gases from sides and bottoms of the chambers as well as the sizes of the chambers may be varied to regulate the speed or height of the rocket, and the height of travel may be further increased by connecting the fuse 15 to the ignition and exhaust holes 11, 12, and 13 only in the tubes 5 and 7 with auxiliary fuses connecting the holes 12 in tubes 5 and 7 with the holes 11, 12 and 13 in the tubes 6 and 8, and in this method of fuse contact the rocket would be raised by the burning of the charges first in tubes 5 and 7 followed by the burning of the contents of tubes 6 and 8, and the rocket thereby carried much higher. Additional tubes may be added to the four shown, with similar fuse connections for simultaneous or alternate

ignition. In either form the rocket rises with a circular motion scattering the exhausted gases in a whirling cloud, or body of fire. The central holding frame may be formed of papier mâché or other light material instead of the rods shown as 1 and 2.

While for purposes of illustration in the drawings I have shown the holes 19 and 22 in line on top of the chambers, in practice, it is advisable to have the holes 19, 19 to enter the chambers from one side thereof, to avoid danger of igniting the fuses 21 by the burning of fuses 18.

For the colors in the signal containers any well known compositions may be used, such as barium nitrate, sulphur and perchlorate of potash for green etc; and for the explosive containers, may be used any well known composition therefor or aluminum, sulphur and saltpetre.

What I claim is:

1. In combination, a rocket with a plurality of combustion chambers, connected on the same plane and at right angles with each other, with a central holding frame to which the chambers are affixed, a hole in one side of each chamber near the outer end thereof, with a plurality of holes in the bottom of the chamber, and a quick match fuse connecting all of the side holes and branches of the fuse connecting the side holes with the bottom holes, the chambers filled with an explosive having slow and regular burning qualities for forming gases to revolve and raise the rocket as they flow from the side and bottom holes.

2. In combination a rocket with the parts described in claim 1, with destroying containers near the axis of the rocket containing an explosive material of quick action for destroying the container and the central frame of the chambers, with a quick match fuse connecting the inner end of the explosive in the chamber with the explosive in the destroying chamber.

3. In combination, a rocket with a plurality of combustion chambers, connected on the same plane and at right angles with each other, with a central holding frame to which the chambers are affixed, a hole in one side of each chamber near the outer end thereof, with a plurality of holes in the bottom of the chamber, and a quick match fuse connecting all of the side holes and branches of the fuse connecting the side holes with the bottom holes, the chambers filled with an explosive having slow and regular burning qualities for forming gases to revolve and raise the rocket as they flow from the side and bottom holes, with destroying containers near the axis of the rocket containing an explosive material of quick action for destroying the container and the central frame of the chambers, with a quick match fuse connecting the inner end of the explosive in

the chamber with the explosive in the destroying chamber, with signal containers near the axis of the rocket containing a quick acting explosive with suitable compositions for producing brilliant colors and signals when the containers burst, with a quick match fuse connecting the signal con-

tainers with the explosive in the chambers at a point to be reached by the burning explosive in the chamber before the burning reaches the connecting fuse for the destroying containers. 10

In testimony whereof I affix my signature.

THOMAS G. HITT.