Feb. 8, 1938. L. F. HOLCOMB 2,107,734

SKYROCKET

Filed July 26, 1935 2 Sheets-Sheet 1

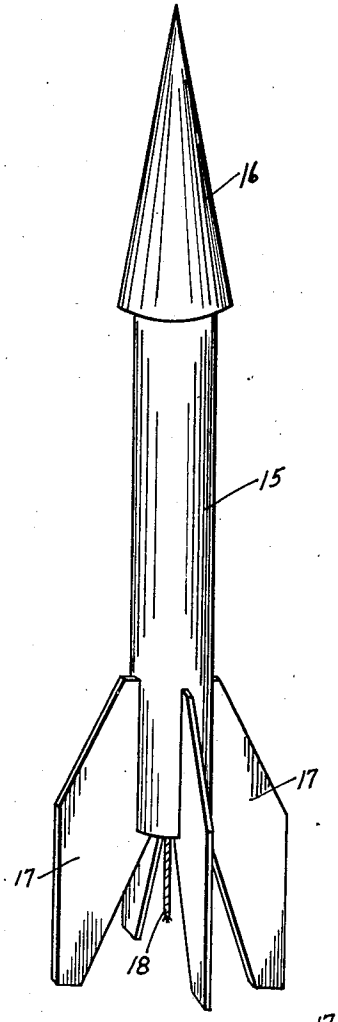


Fig-1

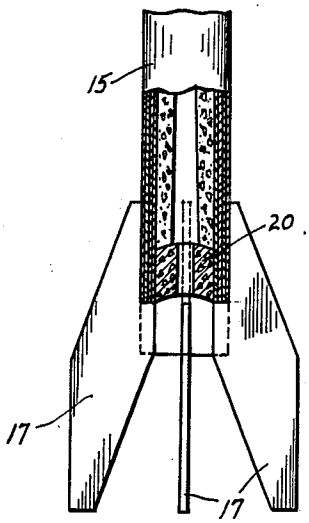


Fig-2

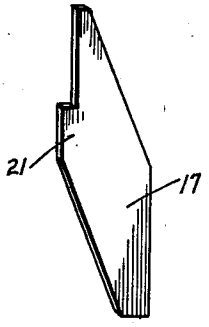


Fig-3

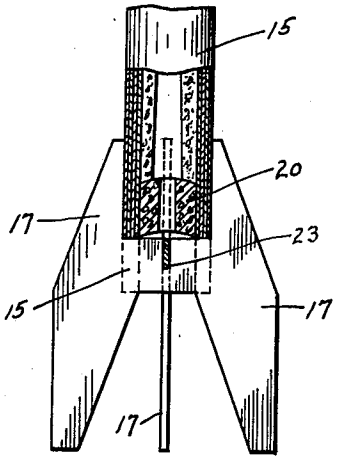


Fig-4

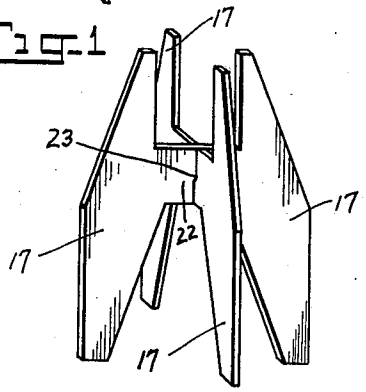


Fig-5

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SKYROCKET

Filed July 26, 1935 2 Sheets-Sheet 2

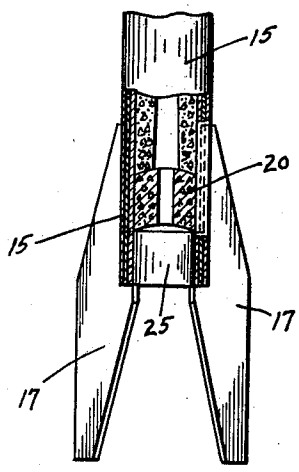


Fig. 6

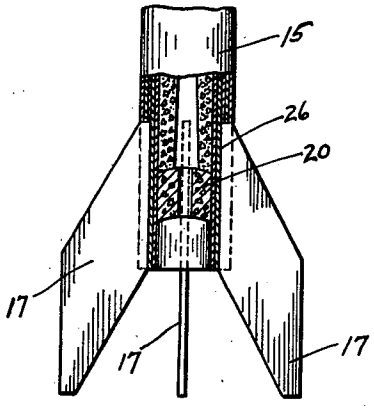


Fig. 9

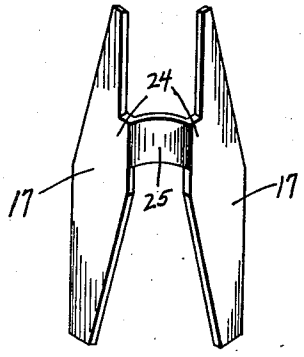


Fig. 7

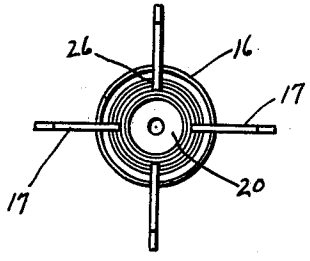


Fig. 10

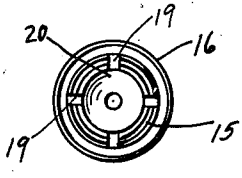


Fig. 8

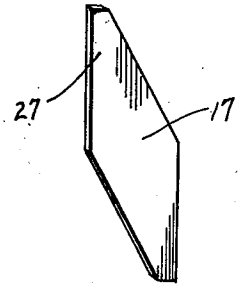


Fig. 11

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UNITED STATES PATENT OFFICE

2,107,734

SKYROCKET

Lester F. Holcomb, Freeport, N. Y., assignor to Paramount Fireworks Company, Inc., New York, N. Y., a corporation of New York

Application July 26, 1935, Serial No. 33,303

1 Claim. (Cl. 102—23)

My present invention relates to improvements in skyrockets. More specifically, the invention pertains to improvements in the construction of wing skyrockets of the type shown and described in my copending application for Letters Patent, Serial #699,113. The improved skyrocket herewith disclosed is also constructed to include tail wings for guiding the same during flight, which wings similarly serve to form a base to maintain the article in a substantially vertical position preparatory to firing.

The primary object of the invention is to construct a skyrocket of the wing type which will include wings that have sufficient rigidity and strength to resist breakage, or bending out of shape with relation to the rocket casing, during the handling of the same in shipment. The material preferably employed in forming the present wings for the skyrocket is a heavy fibre board of approximately $\frac{3}{32}$ of an inch in thickness.

A further object of the invention is to provide a skyrocket, which may be fired from the ground without the assistance of the customary guide sticks during the initial period of its flight, so that the possibility of damage due to falling metallic, or wooden parts, such as heretofore employed in skyrocket construction, is eliminated.

Another object of the invention is to provide means for securing the wing sections of the rocket to the lower portion of the casing thereof, so that the wings are securely and irremovably placed in position.

The inventive concepts, herein specifically disclosed, particularly reside in the combination rocket casing and wing structure, as shown in the accompanying drawings, in which:

Fig. 1 is a perspective view of the improved skyrocket;

Fig. 2 is a central sectional elevation of the lower part of the rocket casing showing the preferred form of wing in position therein;

Fig. 3 is a detailed perspective view of a wing, such as employed in connection with the form of the invention illustrated in Fig. 2;

Fig. 4 is a view, similar to Fig. 2, in which a modification of the wing structure is illustrated;

Fig. 5 is a detailed perspective view of the connected wings employed in the form of the invention shown in Fig. 4;

Fig. 6 is a central sectional elevation of the lower part of the casing of the skyrocket illustrating a further modification of wing attachment therewith;

Fig. 7 is a detailed perspective view of the wing attachment shown in Fig. 6 of the drawings;

Fig. 8 is a bottom plan view of the rocket casing illustrating the construction of the same as employed with each of the forms of wings shown in Figs. 3, 5 and 7;

Fig. 9 is a central sectional elevation of a further modified form of rocket casing indicating the wings employed, therewith, in position;

Fig. 10 is a bottom plan view of the skyrocket with wings attached, as shown in Fig. 9, and

Fig. 11 is a detailed perspective view of one of the wings utilized in the form of the invention embodied in Figs. 9 and 10.

With reference particularly to Fig. 1 of the drawings, the skyrocket constructed in accordance with the present invention includes the customary tubular rocket casing 15 and conically shaped head member 16. The propelling and pyrotechnic charges are situated in the usual manner within the rocket casing 15. Tail wings 17 are provided to stand the rocket casing in a substantially vertical position upon the ground, or some other level surface preparatory to firing. These wings, which also serve the purpose of guiding the rocket during flight, extend radially from the lower portion of the rocket casing and are spaced equidistantly about the periphery of the same. The fuse for the skyrocket is indicated at 18 in the drawings.

The preferred embodiment of the invention, as illustrated in detail in Figs. 2, 3 and 8 of the drawings indicates the improved skyrocket construction to include a number of slots 19 in the lower body portion of the rocket casing 15. The slots 19 are cut through the thickness of the cylindrical casing and extend in a longitudinal direction to a position directly below the customary internal choke of the skyrocket indicated at 20 in the drawings. The slots in the casing are spaced equidistantly about its periphery, being preferably four in number, so that the same are situated 90° apart. Individual wing sections, as indicated in detail in Fig. 3, are secured to the rocket casing in each of the slotted openings 19. The wings are provided with an internally extending portion, designated at 21, which is engaged in the slots in the casing adapted to receive the same. The respective wings are secured by gluing or otherwise fastening the same to the adjoining slotted sides of the casing. The width of the slots substantially corresponds to the thicknes of the material forming the wings, so that the same make a very close fit. The wings in the assembled rocket, as shown in Fig. 1, extend radially from the rocket casing, and are securely maintained in this position due to the

thickness of the wing itself and the joined portion of the same fitting within the rocket casing.

In the form of the invention indicated in Figs. 4 and 5, the casing construction, heretofore set forth, is also employed. In this instance, the wings 17 are joined in pairs, as shown in detail in Fig. 4. Oppositely disposed wing sections have integral joining pieces 22. The joining pieces for pairs of the wings are notched as indicated at 22, so that the same form male and female connections for spacing the wings at right angles to one another. The respective joined pieces 22 are placed in position within the slotted end of the rocket casing, the same firmly securing the wings in position therein.

With reference particularly to Figs. 6 and 7, a further modification of the internal portion of wing structure, as herein employed, is illustrated. In this form of the invention, the wings 17 are in pairs arranged at right angles to one another. Each wing section 17 is provided with an internal slot engaging portion 24 corresponding to the part 21 employed in the individual wing construction referred to in connection with Figs. 2 and 3. An arcuately shaped joining piece integrally connects the respective wings, said joining piece being designated at 25. The wing sections are secured in the slotted openings 19 in the bottom of the rocket casing, the joining piece 25 fitting against the curved inner surface of the case situated between respective slotted openings therein. The wings in this form of the invention, as well as that described in connection with Figs. 4 and 5, are also secured to the rocket casing preferably by gluing the same at their respective joining portions so as to further insure a permanent fit. The interior face of the wings abutting the casing in a position above the longitudinal extension of the slots 19 may also be secured thereto by gluing or otherwise in each of the above forms of construction.

In connection with the form of the invention illustrated in Figs. 9, 10, and 11, the rocket casing 15, is exteriorly grooved or slotted to accommodate the length of the wing 17 as indicated at 26. The slots 26 are spaced equidistantly from one another about the periphery of the rocket casing and extend approximately to a depth of half the thickness of the casing. The wings 17 have an interiorly extending portion 27 of a thickness closely fitting the groove or slot 26 along the side of the casing, the wings being secured in position therein by means of glue or otherwise. The slots, in this form of the invention, extend longitudinally to a position on the casing above the internal choke 20, the same receiving the entire length of wing adjacent the side of the rocket.

While I have shown and described the preferred embodiments of my invention, I do not desire to limit myself to the specific forms illustrated, but, may alter the construction and arrangement of parts as occasion requires without enlarging the scope of my invention or departing from the spirit thereof as contained in the appended claim.

I claim as my invention:

A skyrocket comprising an open end pasteboard tubular casing, a choke element located in the lower portion of the casing, a plurality of slots in the casing in a position below the choke element, said slots extending through the thickness of the casing wall and being equidistantly spaced about its periphery, wings extending radially from the casing being formed by groups of two integrally joined sections, the joining portion of each of the groups of wings being arcuate in shape to conform to the interior surface of the rocket casing, and means for securing each of the wing sections in adjoining slots of the casing.

LESTER F. HOLCOMB.