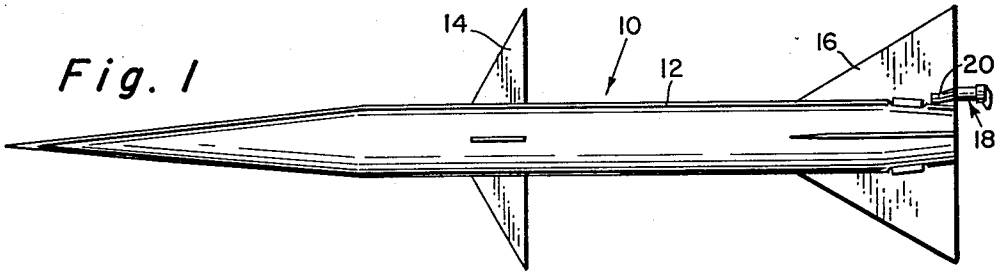
Jan. 10, 1961 J. Q. TABOR, JR., ET AL 2,967,484

FLARE MOUNTING

Filed Nov. 6, 1957 2 Sheets-Sheet 1

Fig. 1



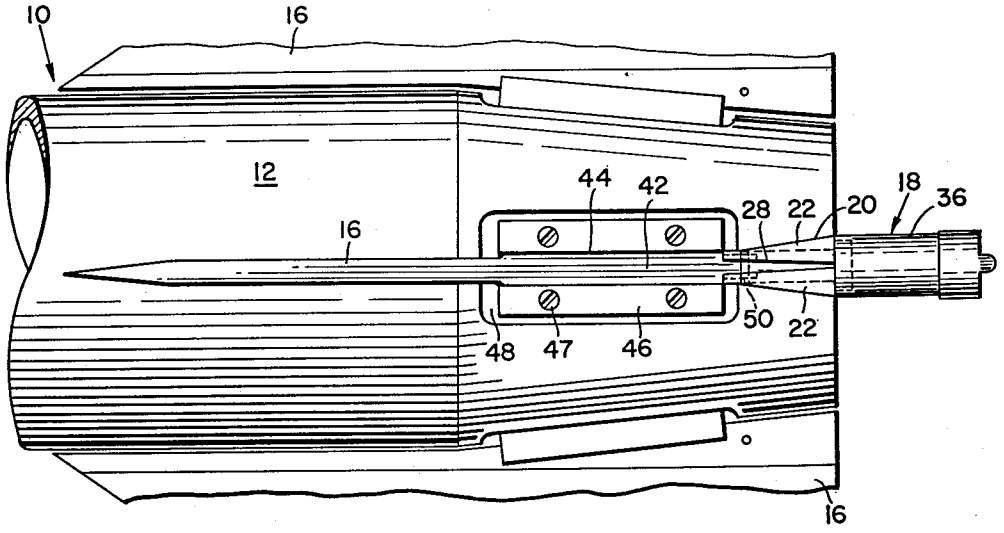


Fig. 2

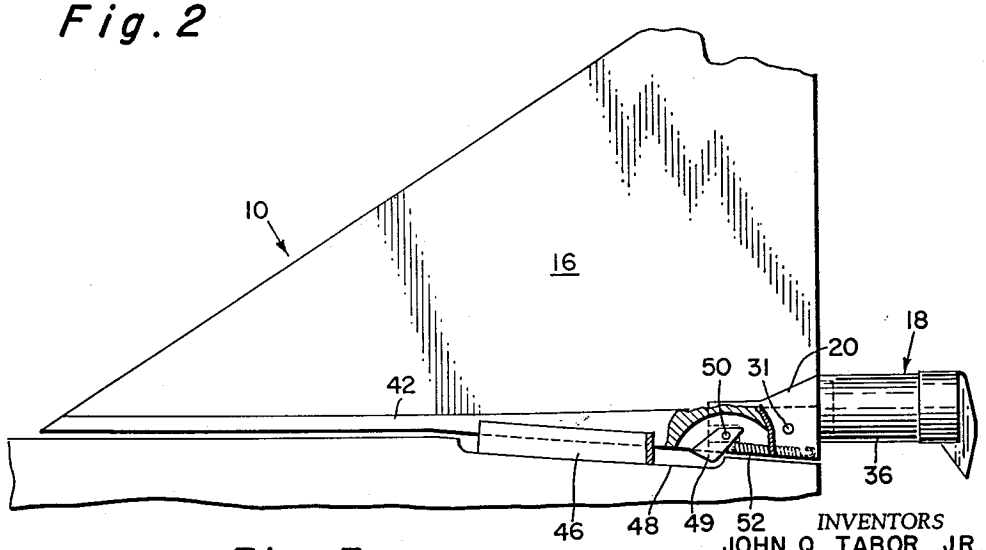


Fig. 3

INVENTORS
JOHN Q. TABOR JR.
FREDERICH L. HAAKE

BY

George J. Rubens
ATTORNEYS

Fig. 4

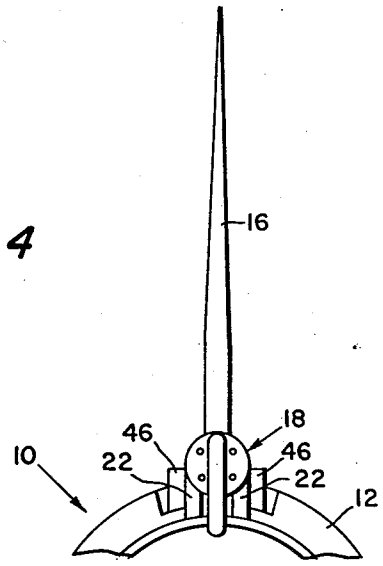


Fig. 5

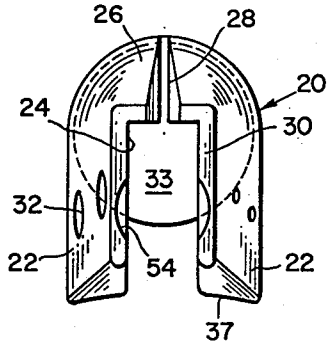
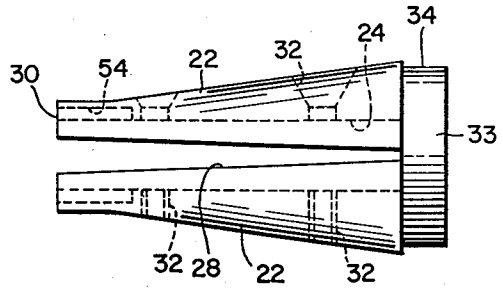


Fig. 6



INVENTORS
JOHN Q. TABOR JR.
FREDERICH L. HAAKE
BY
ATTORNEYS

United States Patent Office 2,967,484 Patented Jan. 10, 1961

2,967,484

FLARE MOUNTING

John Q. Tabor, Jr., Rte. 1, Box 117C, Goleta, Calif., and Frederich L. Haake, 1519 Little Farm Road, Oxnard, Calif.

Filed Nov. 6, 1957, Ser. No. 694,898

3 Claims. (Cl. 102—87)

(Granted under Title 35, U.S. Code (1952), sec. 266)

The invention described herein may be manufactured and used by or for the Government of the United States of America for governmental purposes without the payment of any royalties thereon or therefor.

This invention relates to pyrotechnic flares and more particularly to an improved tracking flare mount for attachment to missiles having stabilizing fins.

In the test and evalution of missiles it is a common expedient to attach flares to the missiles to facilitate visual tracking under flight conditions. Some of the more important requirements of flares is that they be positioned to have a minimum effect on the flight path of the missile, and that they can be installed on the missile quickly and easily at the last moment prior to missile launching without unduly delaying the operation, the latter being an important consideration in test operations due to range conditions and critical adjustments on the missile components. Accordingly, prior flare mounts have not met these needs because they require careful alignment and attaching procedures, and the location of the flare weakened the structural part of the missile to which they are attached and introduced flutter and other vibrational effects.

The flare mount of the instant invention satisfies the foregoing described requirements. The mount comprises a body member longitudinally slotted for a portion of its length to create two transversely spaced leg portions, the slotted portion adapted to straddle the trailing edge of a missile fin with the foot portions of both legs firmly engaging the missile boat tail. Means are provided for securing the mount to the fin preferably transversely through the leg portions and the fin therebetween. In this position the flare mounting supplements, instead of weakening, the structural characteristics of the fin thereby preventing fin flutter in flight. The mount is also located outside of the shock wave created by the fin edges in supersonic speeds, thus avoiding undesirable drag on the missile.

A principal object of this invention is to provide a flare mount that structurally supports the flare and the missile fin to which it is attached.

Another object of this invention is to provide a flare mounting suitable for attachment to the fin of a missile in an aerodynamically stable environment and in an area of minimum drag.

Other objects and many of the attendant advantages of this invention will be readily appreciated as the same becomes better understood by reference to the following detailed description when considered in connection with the accompanying drawings wherein:

Fig. 1 is a longitudinal elevation view of a typical guided missile having a stabilizing fin to which a flare mount of this invention may be attached;

Fig. 2 is an enlarged top view of the missile boat tail showing the flare and flare mount secured in position to the fin;

Fig. 3 is an elevation view of Fig. 2 partially in section to show the details of the missile fin mounting;

Fig. 4 is a partial rear view of missile with flare mounted in position;

Fig. 5 is an enlarged forward elevation view of the flare mount; and

Fig. 6 is an enlarged top plan view of the flare mounting of Fig. 5.

Referring to the drawing where like reference numerals refer to similar parts throughout the views there is shown in Fig. 1, a conventional missile 10 having a missile body 12 from which radially project a plurality of intermediately located control surfaces 14 by which the flight path of the missile is controlled, and a plurality of aft fins 16 for stabilizing the missile in flight. Fins 16 are of conventional construction hereinafter described. Shown attached to one of the missile fins is a flare 18, which as illustrated in Figs. 2 and 3, is supported to the missile by a flare mount 20 in a position to be ignited by the jet exhaust. This invention is directed to flare mount 20.

Referring to Figs. 5 and 6, flare mount 20 comprises an inverted U-shaped body member, preferably constructed of metal, bifurcated to form a pair of leg portions 22 spaced apart by a rectangularly-shaped slot 24. A connecting portion 26 between the legs is provided with a relatively narrower tapered longitudinal slot 28 contiguous to slot 24. Slot 28 is tapered to correspond with the tapered trailing edge of fin 16. Slots 24 and 28 are open at a leading edge 30 of the mount to straddle a trailing edge of a fin to which the flare mounting is to be secured, such as by transverse bolts 31 extending through drilled openings 32. Both slots 24 and 28 extend rearwardly for a substantial portion of the mount just short of a trailing edge which terminates in a disk 33 having an annular reduced shoulder 34 for fitting into and supporting a flare casing 36 (see Figs. 2 and 3). The foot portions of legs 22 are concave at 37 for conforming to the curvature of the missile adjacent thereto, namely the boat tail, providing a firm support for the flare as well as the fin preventing flutter during flight.

Some missile fins 16 of this type are provided with releasable locking means enabling the fins to be removed from the missile to conserve space during storage or shipment. The missile fin 16 illustrated in Figs. 2–4 has an enlarged rectangular base portion 42 which can be slidably wedged in a channel 44 formed in a block 46 screwed at 47 to a recessed portion 48 in the boat tail of the missile. Base portion 42 is normally received by slot 24 of the mount when the parts are mated. A catch arm 49 is pivotally mounted within an arcuate slot in the fin base by a pin 50, the catch being loaded by spring 52 to engage recess 48 in the boat tail and prevent removal of the fin in a forwardly direction. It has been found under flight conditions that pin 50 has a tendency to move laterally accidentally resulting in loss of the fin and the mounted flare. The flare mount 20 may be provided with opposed recesses 54 on the inner sides of legs 22 between which pin 50 is positioned when mount 20 is installed preventing such lateral movement.

Flare mount 20 is installed on a selected fin 16 mounted on a missile by setting legs 22 on the boat tail and sliding the mount forward. Fin base 42 is received snugly into corresponding slot 24 while the upper knife edge of the fin is received in tapered slot 28, the respective parts of the fin being firmly supported to the missile through legs 22 engaging the boat tail. As the mount and flare are located adjacent the missile skin and longitudinally aligned in a plane containing the fin, they are in an aeronautically stable location offering the minimum drag. In missiles having a fin not having an enlarged base attaching portion, the fin is adequately supported by tapered slot 28.

The flare mount of this invention is constructed to be universal in supporting a flare to missile fins of different configurations firmly to the missile and in a position offering minimum drag. Although the flare and associated mount are shown attached to only one fin, it is apparent that additional flares may be attached to the remaining fins for purposes of balance and for other operational reasons.

Obviously many modifications and variations of the present invention are possible in the light of the above teachings. It is therefore to be understood that within the scope of the appended claims the invention may be practiced otherwise than as specifically described.

We claim:

1. The combination of a flare mount and a missile having a stabilizing fin mounted on a boat-tail thereof, said mount comprising a longitudinal rigid body having a pair of legs transversely spaced apart by a longitudinal V-shaped slot open at one end of the body to receive a trailing edge of the fin, said legs formed with free base portions conforming to and engaging the cross-sectional configuration of the boat-tail, means extending transversely through said legs and the fin for securing the body to the fin, said body having flare-supporting means at the other end thereof.

2. A flare mount for attachment to a missile having a stabilizing fin with a longitudinally tapered trailing edge mounted on a boat-tail, said flare mount comprising a rigid body member longitudinally bifurcated for a major portion of its length to form a pair of spaced, rigid legs, said body having a longitudinally tapered slot extending for a major portion of the body between said legs, said slot open at one end to receive the trailing edge of the fin, flare supporting means at the other end of the body, said legs formed with free base portions adapted to conform to and engage the missile boat-tail.

3. The flare mount of claim 2 wherein the tapered slot is on the opposite side of the body as the free base portions.

References Cited in the file of this patent

UNITED STATES PATENTS

288,985	Dockum	Nov. 27, 1883
2,050,436	Hyde	Aug. 11, 1936
2,704,321	Orlansky	Mar. 15, 1955
2,829,596	Loedding	Apr. 8, 1958