May 14, 1963 M. F. WILSON 3,089,390

LAUNCHING APPARATUS FOR GUIDED MISSILES

Filed March 7, 1961 3 Sheets-Sheet 1

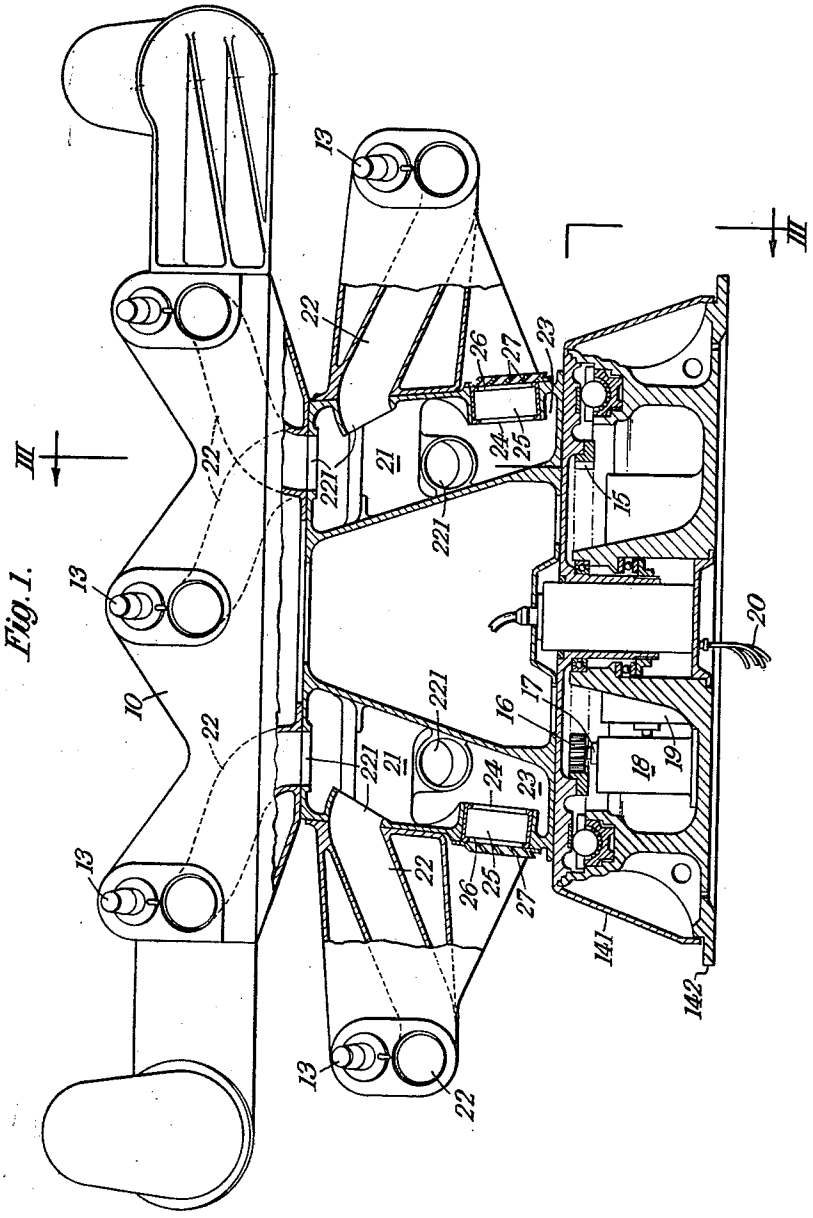

Fig. 1.

Inventor
Mervyn Francis Wilson
By Cushman, Darbyr Cushman
Attorneys

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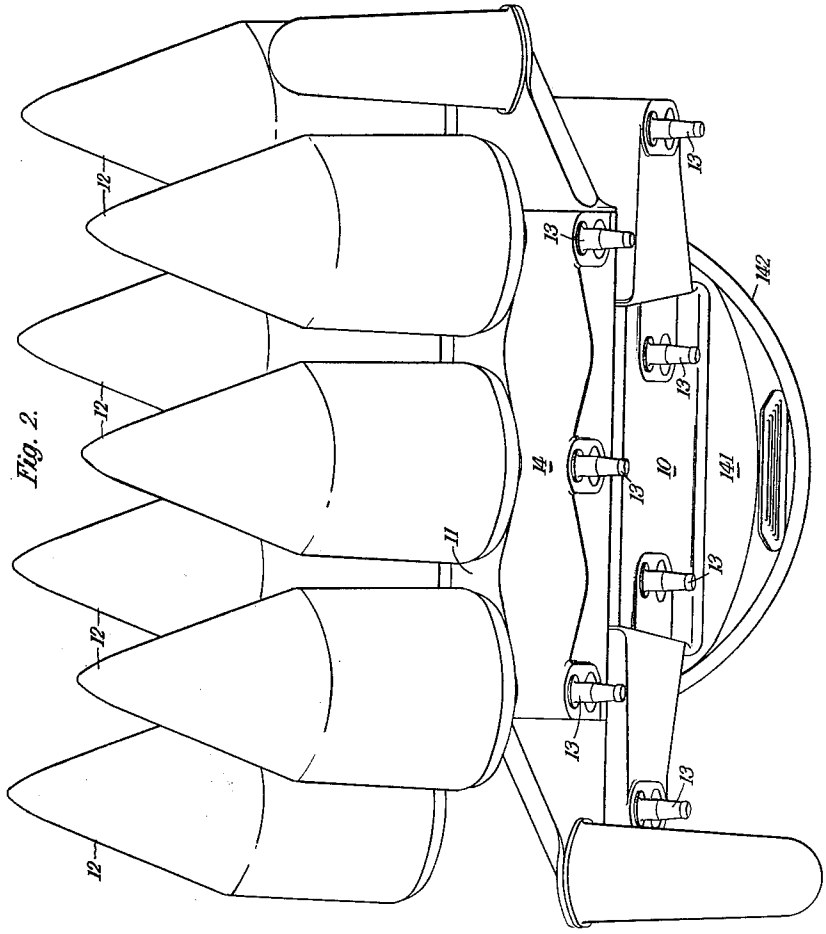

Fig. 2.

Inventor
Mervyn Francis Wilson
By Cushman, Darby & Cushman
Attorneys

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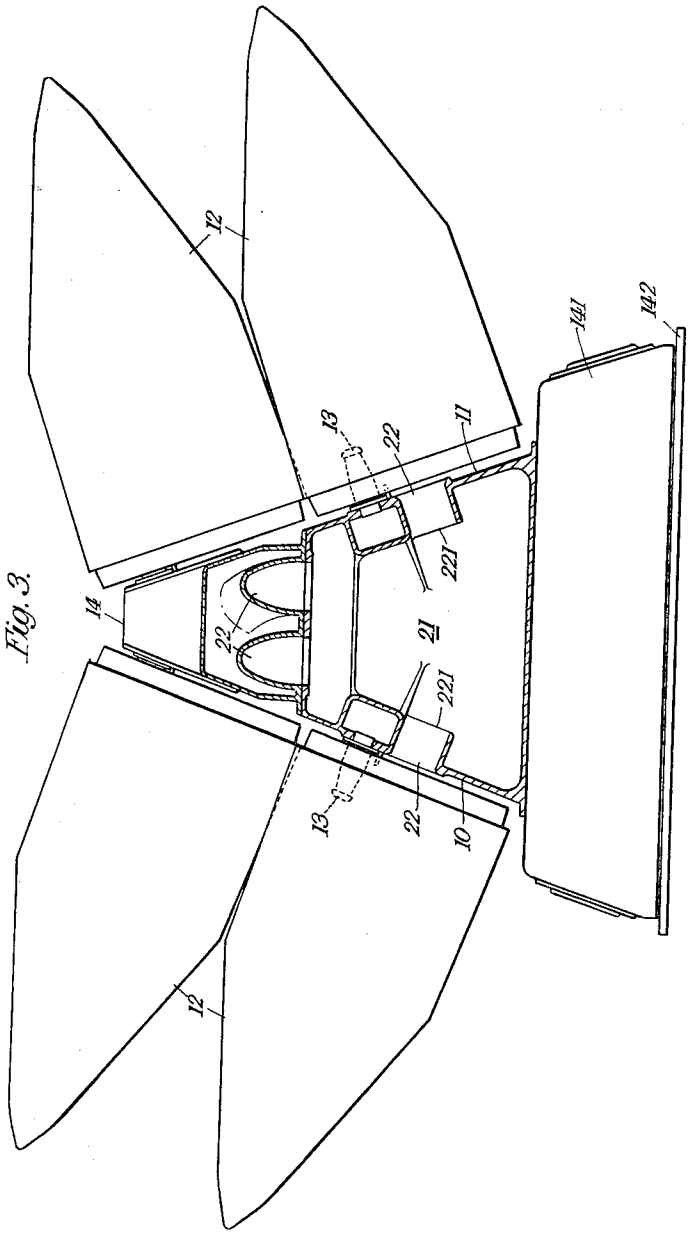

Fig. 3.

Inventor
Mervyn Francis Wilson
By Cushman, Darby & Cushman
Attorneys

United States Patent Office

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LAUNCHING APPARATUS FOR GUIDED MISSILES

Mervyn Francis Wilson, Belfast, Northern Ireland, assignor to Short Brothers & Harland Limited, Belfast, Northern Ireland, a British company

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Claims priority, application Great Britain Mar. 11, 1960
4 Claims. (Cl. 89—1.7)

The invention is concerned with launching apparatus for guided missiles of the type which depend for their propulsion upon the thrust of the efflux gases from a rocket motor incorporated in the after end thereof; such apparatus incorporates a stand or platform on which a missile may be mounted in the attitude appropriate to discharge, and which will be provided with such services and power connections as are necessary for aiming and firing. It is found in practice that where missiles are operated under visual command guidance of an operator situated in an adjacent direction installation and provided with optical and other means for controlling the course of a missile, the operator may be distracted and even temporarily blinded by the flash and smoke produced by the rocket motor at the instant of launching and immediately thereafter. This disadvantage may be more especially evident in operations during hours of darkness, when the eyes have greater difficulty in accommodating a sudden flash of light.

With the object of providing means whereby the aforesaid disadvantages may be obviated, it is proposed by the present invention to provide in or on the launching apparatus a receiver for the efflux gas flame and smoke, including means for cooling and extinguishing the gases, together with means for expelling said gases into the atmosphere in a safe direction. Preferably such apparatus will include means for filtering out any solid particles from the gases before their expulsion.

Where the apparatus is intended to serve a plurality of missiles mounted in ganged formation upon a common stand or support, the mountings for the individual missiles are connected to said receiver by manifold ducts. Alternatively, in the case of a launching apparatus designed to accommodate a large number of missiles, two or more receivers may be provided, each receiver being used for a group of mountings.

In all cases the constructional arrangement of the launching apparatus will preferably be such that reaction torques due to the thrust of the propulsive rocket-motors will be eliminated or balanced until the missile is released from its supports, to avoid disturbance of the aiming control. This can be achieved by ensuring that the thrust vector of the gas which is being exhausted to atmosphere lies in the plane containing the launcher pivot axis.

An embodiment of the invention is hereinafter described with reference to the accompanying drawings, in which:

FIG. 1 is a front elevation partly in section of the launching apparatus,

FIG. 2 is a plan thereof, and

FIG. 3 is a section on the line III—III of FIG. 1.

The launching apparatus shown in the drawings is intended to support fourteen missiles, arranged in two oppositely disposed sets of seven which are respectively carried on opposite inclined platforms 10, 11 in back-to-back relationship. The missiles are indicated by the numerals 12, and in the plan view of FIG. 2 only the missiles of one set are shown, the other set being omitted to show the spigot members 13 upon which the missiles are mounted and through which electrical services to the missiles are connected.

Said two platforms 10, 11 form part of a central structure 14 which is carried by a turn-table 141 upon a base 142. Said structure 14 carries an internal spur ring gear

15 meshing with a pinion 16 on the shaft 17 connected by gearing enclosed in the casing 18 and driven by an electric motor 19 which is governed for aiming purposes by a remote director installation; trailing cables 20 lead from the respective missile spigots 13, and through the hollow axle of the turn-table, and are passed to the director installation.

Within the aforesaid central structure is provided an enclosed receiver chamber 21 which is connected to the rear of each missile mounting on each platform by a duct 22, the mouth 221 of which will receive the gas flame from the rocket motor when the particular missile is fired, and which will conduct the gases into said chamber 21. A sump 23 will receive solid particles filtered out of the gases by passage through a suitable screen 24 situated on the inner side of a heat exchanger 25 by which the gases are cooled and any flame is extinguished before expulsion into the atmosphere through the outlet 26.

The chamber outlet 26 is provided exteriorly with a louvered deflector 27 for taking the gases to atmosphere in a direction such as to avoid damage to the apparatus or inconvenience to the operator.

The constructional arrangement of the apparatus is such that the thrust vector of the gas effluent discharged from outlet 26 lies in the plane containing the launcher pivot axis until the missile is released from its supports on discharge. By these means it is ensured that the rocket-motor thrust reaction torque is eliminated or balanced.

What I claim as my invention and desire to secure by Letters Patent is:

1. In a missile launching apparatus, a stationary base, a receiver for missile efflux gas flame and smoke, means for mounting said receiver upon said base for rotation about a vertical axis, launching means mounted on said receiver offset from said axis, duct means connecting said launching means to said receiver, means in said receiver for cooling and extinguishing the gases, and a receiver outlet which has its axis in a plane containing the said vertical axis so that the said thrust vector of gas as it is exhausted through said outlet lies substantially in said plane.

2. Apparatus as in claim 1 including means in said receiver for separating solid particles from the gases.

3. Missile launching apparatus comprising a stationary base, a structure carrying two oppositely inclined platforms mounted in back-to-back relationship, means for mounting said structure upon said base for rotation about a vertical axis, means on each platform for supporting a gang of missiles in side-by-side disposition, means for controlling the angle of rotation of said structure for purposes of aiming said missiles, a receiving chamber within said structure and ducts therein for connecting said chamber to the mountings of the respective missiles for conduction of the efflux gases therefrom to said chamber, an outlet in said chamber, and a heat exchanger in said outlet for cooling and extinguishing gases expelled from the chamber to said outlet, said outlet having its axis in a plane containing the said vertical axis so that the thrust vector of gas exhausted through said outlet lies substantially in said plane.

4. Apparatus as in claim 3 wherein said receiving chamber includes a solids screen and a sump respectively for filtering gases entering said heat exchanger and for collecting the solid particles separated by said screen.

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