

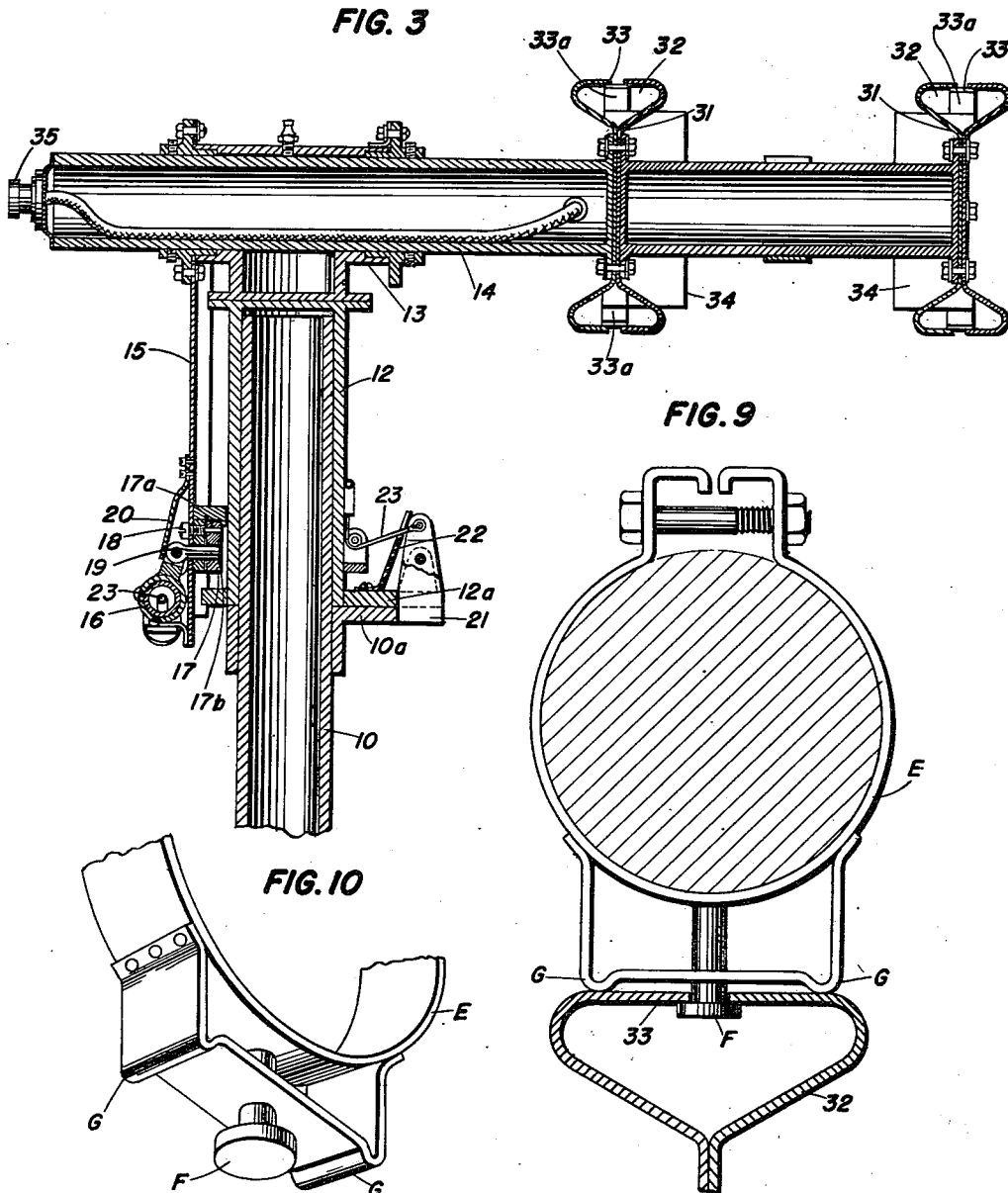
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LAUNCHER

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1

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LAUNCHER

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3 Claims. (Cl. 89—1.7)

This invention relates to rocket launchers, and more particularly to a novel reloadable launcher for firing rockets from a position outboard of a ship.

An object of this invention is to provide a rocket launcher which is adapted to be fired from a position outboard of a vehicle, particularly an amphibious craft, and so arranged that its loading end may be swung inboard for reloading.

Another object of the invention is to provide a rocket launcher for high velocity rockets having large stabilizing fins, the rockets being connected at their forward and rearward ends to the launcher by means of slidable button-like heads riding in suitable slots provided in the launcher, and the rockets being steadied against lateral swinging movement by means of shoulders which bear against the launcher on either side of the rocket supporting heads.

Another object of the invention is to provide a rocket launcher which is quickly adjustable both in train and in elevation.

A further object of the invention is to provide a rocket launcher which is of relatively light weight and is easily loaded.

Another object of the invention is to provide a rocket launcher which carries a plurality of rockets positioned as compactly as their stabilizing fins permit.

These and other objects of the invention will be apparent from the following specification and the accompanying drawings, in which

Fig. 1 is a perspective view of one form of the new launcher in firing position;

Fig. 2 is a rear elevational view of the loaded launcher in firing position;

Fig. 3 is a transverse sectional view of the launcher taken on the line 3—3 of Fig. 1, looking in the direction of the arrows;

Fig. 4 is an enlarged sectional view of a portion of Fig. 3, particularly detailing the latch elements for positioning the launcher in elevation;

Fig. 5 is a detailed elevational view illustrating in detail the quadrant member;

Fig. 6 is a transverse sectional view taken on line 6—6 of Fig. 2;

Fig. 7 is a perspective view of the latch utilized for positioning the launcher in train;

Fig. 8 is a transverse sectional view taken on line 8—8 of Fig. 2;

Fig. 9 is a cross section taken substantially on line 9—9 of Fig. 1, illustrating the means for mounting the rockets on the guide rails; and

Fig. 10 is a fragmentary perspective view of a portion of the lug band by which the rockets are mounted on the launcher.

In the drawings, the rocket launcher is supported on a vertical post 10 which may be anchored in any suitable manner to the vehicle 11, such as an amphibious craft, on which the launcher is carried. The upper end of the

2

post rotatably supports a sleeve 12 to which is secured a T fitting 13. Rotatably mounted in the cross portion of the T fitting is a hollow lateral rocket guide supporting shaft 14.

A lever arm 15 is secured to the lateral shaft 14 and extends downward along the side of the sleeve 12. Said arm is situated next to one end of the crosswise part of the fitting and so assists in keeping the shaft from sliding outwardly. The lower end of the lever arm has provision for the journaling of a tubular handle 16 which extends rearward at right angles to the lever arm. A quadrant 17 is secured to the side of the sleeve 12 and is provided with an arcuate guide slot 17a and holes 17b which engage, respectively, a guide pin 18 and a latch 19 carried by lever arm 15. Latch 19 is loosely carried by an up-standing arm 19a that is carried by a hub 19b, in turn secured to the handle 16 at 19c. The latch is urged by resilient element 20 into engagement with the holes 17b in the quadrant to latch the launcher rails in various positions of elevation, as will be described presently. By a slight rotation of handle 16, the latches disengage from the quadrant for varying the elevation of the launcher.

The lower end of the sleeve 12 and an adjacent portion of post 10 are provided with mating flanges 12a and 10a, respectively, which are locked together by a pivoted train latch 21 which is resiliently urged toward the latching position by spring 22. The train latch is actuated by a cable 23 which extends through the tubular handle 16 to a suitable pivoted grip 16a located at the end of the handle.

A pair of launcher rails 31 are secured side by side near their centers on the extremity of the lateral shaft 14. Each launcher rail is a built up I beam formed of two similar thin metal members having inwardly flanged longitudinal edges so as to define tubes 32 of triangular section extending along the upper and lower margins of the launcher rail. The flanges do not meet but form slots 33 extending from end to end for a purpose which will be described presently. Resilient tabs 33a are positioned at the rear end of each slot to prevent the rocket from sliding out of the launcher when it is elevated.

The launcher rails are intended for use with rockets A which comprise motors B and heads C. The motors B are provided with radiating tail fins D. Immediately forward of the tail fins D and adjacent the head C, each motor B is provided with a lug band E. Each lug band is provided with a button-like projection F which fits within a tube 32 of the launcher rail and rides along the margins of the slot 33. Shoulders G are provided on the lug bands flanking the button-like projection F. These shoulders ride on the outer, flat faces of the tubes 32, making substantially edge-contact therewith and preventing lateral swaying of the rockets.

The rockets A are provided with electrical leads H which extend from their rear or nozzle ends. These leads are provided with terminals which plug into terminal boxes 34 secured to the sides of the launcher rails at their rear ends. The wiring is brought from the terminal boxes 34 to a central terminal box 34a which is connected by a wire passing through the lateral shaft 14 to a supply terminal 35 mounted at the supported extremity of the shaft 14 and adapted to connect by wiring (not shown) to a firing panel and current source (not shown). By thus reducing exposed wiring to a minimum, the dependability of the launcher is increased.

Suitable cross braces 36 (Fig. 1) are provided between the launcher rails, the weight of which may be reduced by slots cut in the webs of the launcher rails.

In operation, the rockets in the loaded rocket launcher (Fig. 1) are fired in any desired sequence from a remote firing panel (not shown). In order to reload the launcher, the handle 16 is rotated clockwise (from the operator's

3

position) to remove the latch 19 from a hole 17b and by pushing upwardly on the handle 16, the launcher rails are rotated to a near horizontal position and latched in the new position. The pivoted handle 16a is then actuated to disengage the train latch 21 permitting the operator to rotate the launcher about the stand 10 to move the rear or loading end of the launcher to an inboard loading position.

With the launcher in the loading position, the rockets are loaded onto the launcher rails from the rear by sliding the button-like projections F into the rear end of the slot 33 past the resilient tabs 33a which retain the rockets in the launcher. After the rockets are positioned in the rocket guiding slots, the plugs on the ends of electrical leads H carried by each rocket are plugged into terminal box 34. The pivoted grip 16a is then operated, the launcher is swung to its outboard firing position, handle 16 is rotated and the proper angle of elevation for the launcher is selected, whereupon the launcher is locked in that position and is ready for firing.

I claim:

1. A rocket launcher comprising a supporting post, a sleeve rotatably mounted upon the upper end portion of said post, a T fitting secured to the upper end portion of said sleeve, a hollow and laterally extending launching rail supporting shaft rotatably carried within said T fitting, a depending lever arm secured to said supporting shaft, a rearwardly extending handle, means for journaling said handle to said lever arm, a quadrant secured to the side of said sleeve and having portions thereof defining an arcuate guide slot and arcuately arranged apertures, a guide pin and a latch member carried by said lever arm and respectively engageable with said guide slot and apertures, resilient means for urging said latch member into said apertures to latch the launcher rails in various positions of elevation, mating and serrated flanges respectively secured to the upper end portion and lower end portion of said sleeve, a pivotally mounted train latch member, resilient means for urging said train latch member into mating serrations of said mating flanges, a cable operatively connected at one end thereof to said train latch member and carried within said handle, a grip member pivotally mounted on the outer end portion of said handle and operatively connected to the other end of said cable, and a pair of substantially I-shaped launching rails, the upper and lower flange portions of each of said rails defining tubular portions of triangular cross sections, and each of said tubular portions defining a slot in the outermost tubular wall thereof for the accommodation of a launching lug of each rocket to be launched.

2. A rocket launcher comprising a post having means with which it is affixed to a support in a rigid and generally upright position, a sleeve having a swivel mount on the post, said sleeve having a laterally extending rotatably mounted shaft capable of reaching out laterally beyond the confines of the support, at least one launcher rail attached to the shaft outwardly of the post and constructed and arranged for carrying and guiding a rocket before and at launching, a quadrant defining a plurality of arcuately arranged apertures and secured to said post, and a handle rigidly connected to the shaft and mounted for rotation about the longitudinal axis thereof, said handle extending to a position accessible from the support, a latch pin connected to said handle and insertable in a selected aperture in response to rotation of said handle about the longitudinal axis thereof to thereby lock said rail in a selected position of elevation, said sleeve and said post respectively having mating serrated flanges, a grip member pivotally mounted at the outer end of said handle, a latching member insertable into and removable from vertically registering serrations on said

4

flanges in response to actuation of said grip member, said handle being operable to revolve the sleeve on its swivel to swing the rail into the confines of the support for loading and to revolve the shaft to depress and elevate the rail, a launcher rail of I beam cross section having hollow flanges of triangular cross section, said flanges defining longitudinal slots for receiving lug members on the rockets to be launched whereby the initial travel of the rockets is guided by the travel of the lug members in said slot and the margins of said flanges coact with laterally extending shoulders on the rocket and in flanking relationship with the lug members to restrain lateral swaying of the rocket during launching.

3. A rocket launcher comprising a post having means through which it is affixed to a support in a rigid and generally upright position, a sleeve having a swivel mount on the post, said sleeve having a laterally extending rotatably mounted shaft capable of reaching out beyond the confines of the support, at least one launcher rail attached to the shaft laterally outwardly of the post and constructed and arranged for carrying and guiding a rocket before and at launching, a quadrant defining a plurality of arcuately arranged apertures and secured to said post, a handle rigidly connected to the shaft and mounted for rotation about the longitudinal axis thereof and extending to a position accessible from the support, a latch pin connected to said handle and insertable in a selected aperture in response to rotation of said handle about the longitudinal axis thereof to thereby lock said rail in a selected position of elevation, said sleeve and said post respectively having mating serrated flanges, a grip member pivotally mounted at the outer end of said handle, a latching member insertable into and removable from vertically registering serrations on said flanges in response to actuation of said grip member, said handle being operable to revolve the sleeve on its swivel to swing the rail into the confines of the support for loading and to revolve the shaft to depress and elevate the rail, and a launcher rail having an exterior flat surface for engagement with side sway restraining shoulders on the rocket to be launched and having a slot intermediately flat surfaces for receiving a launching lug on the rocket for guiding the latter during the launching operation.

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