Feb. 23, 1965 G. W. GILBERT 3,170,582

WEAPON TRANSFER DOLLY LATCH MECHANISM

Original Filed Dec. 29, 1960 4 Sheets-Sheet 1

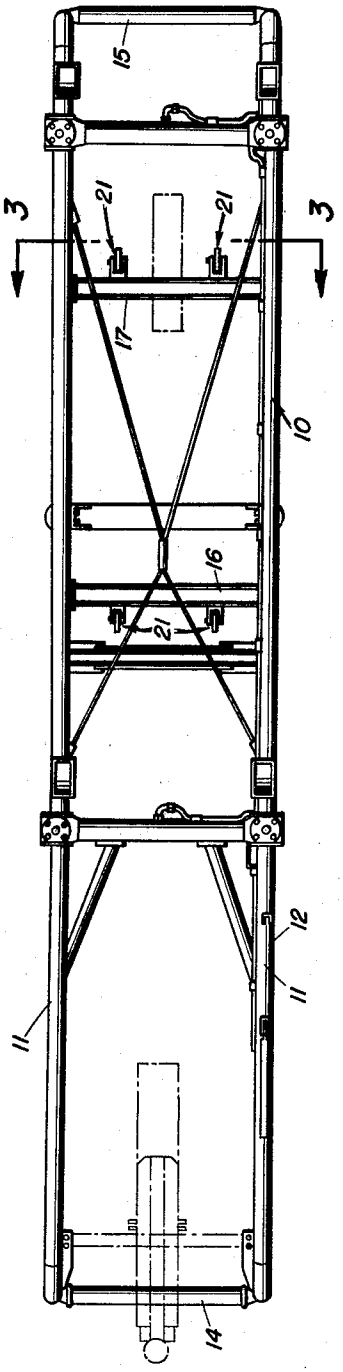


FIG. 1

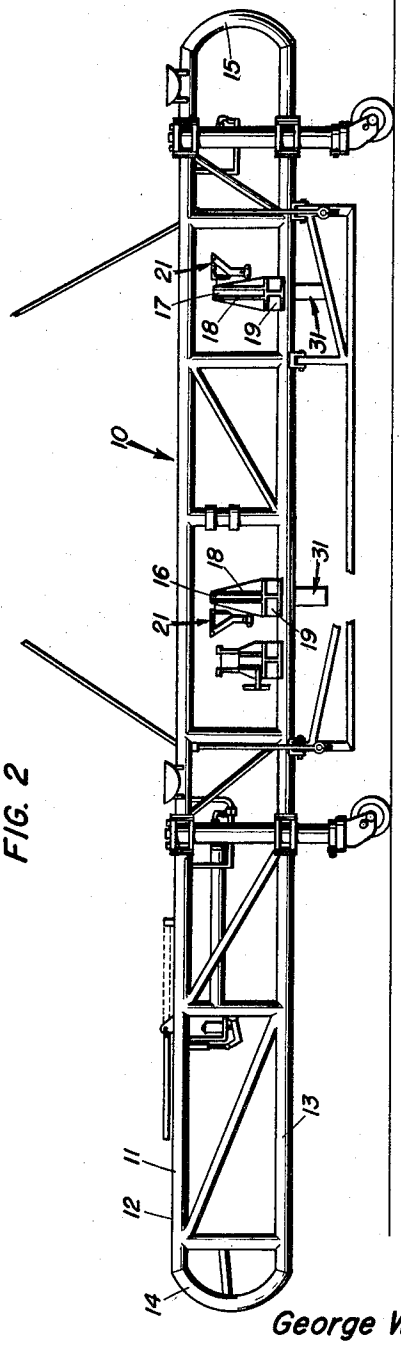


FIG. 2

INVENTOR
George W. Gilbert

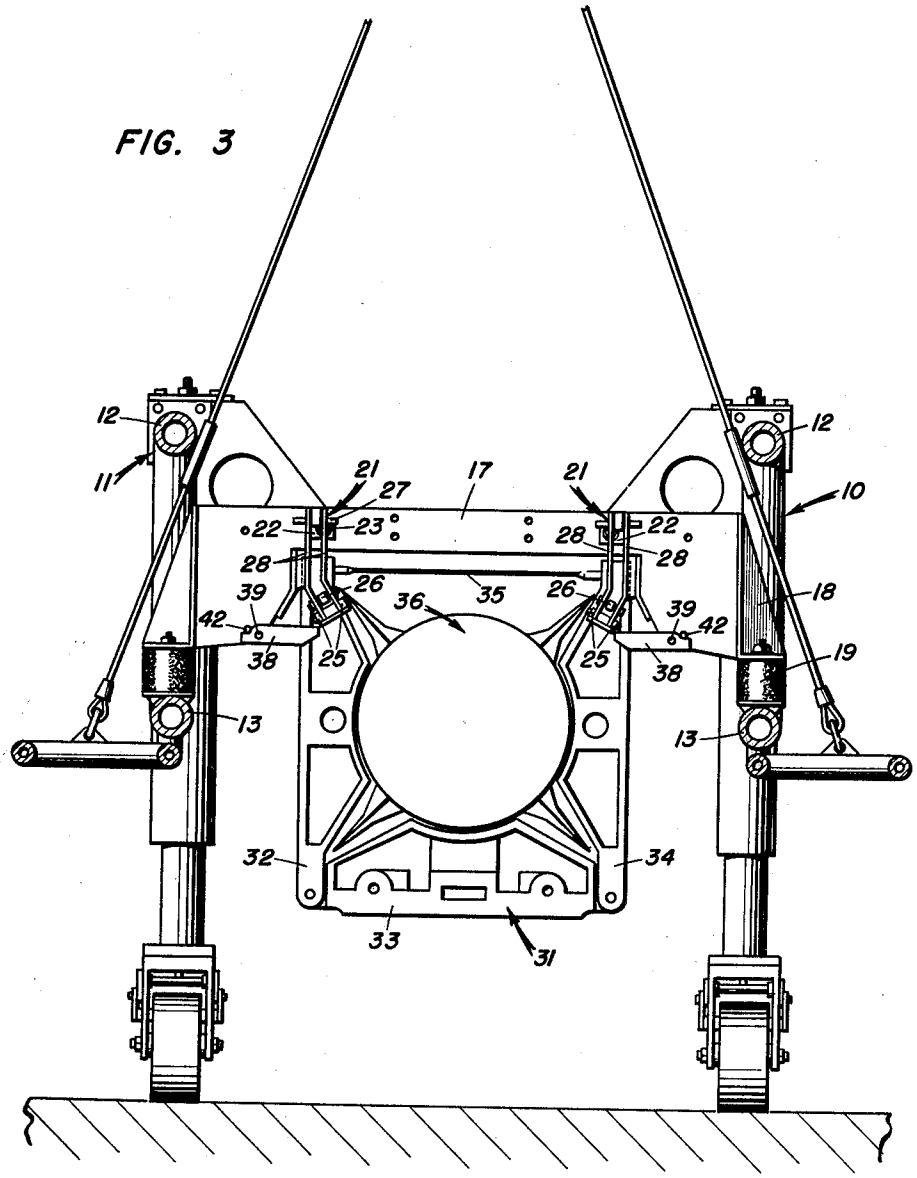
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FIG. 3



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WEAPON TRANSFER DOLLY LATCH MECHANISM

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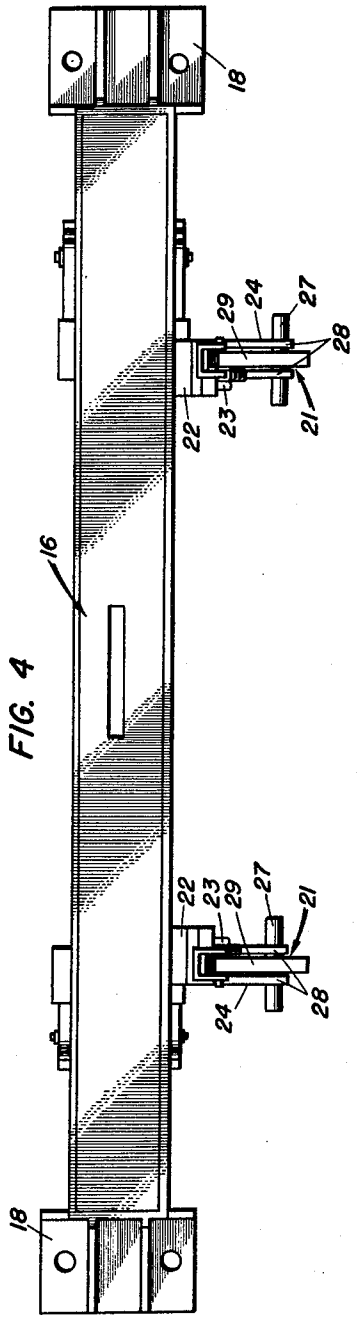


FIG. 4

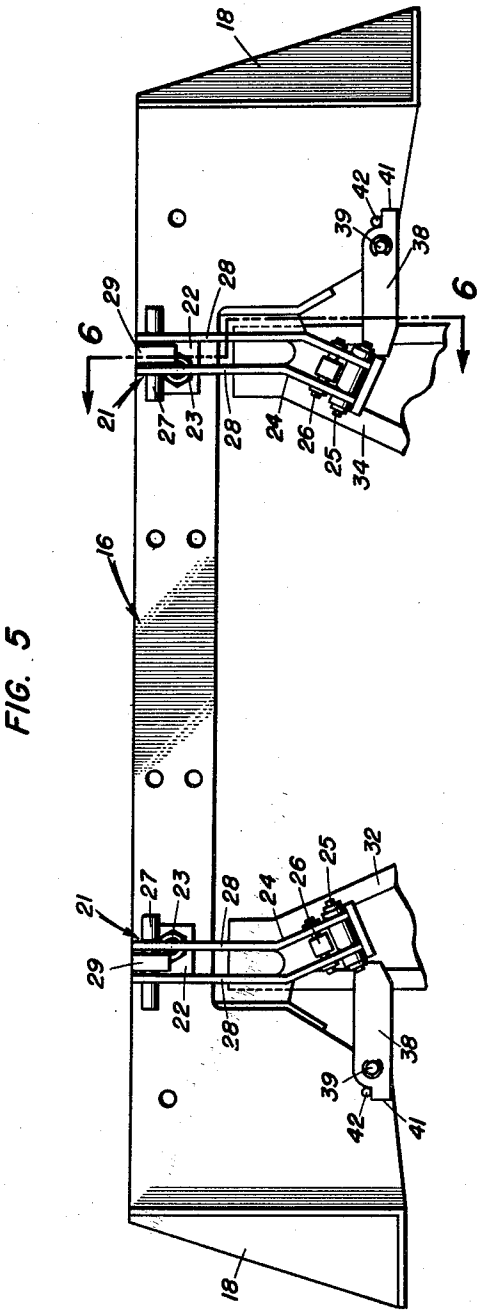


FIG. 5

WEAPON TRANSFER DOLLY LATCH MECHANISM

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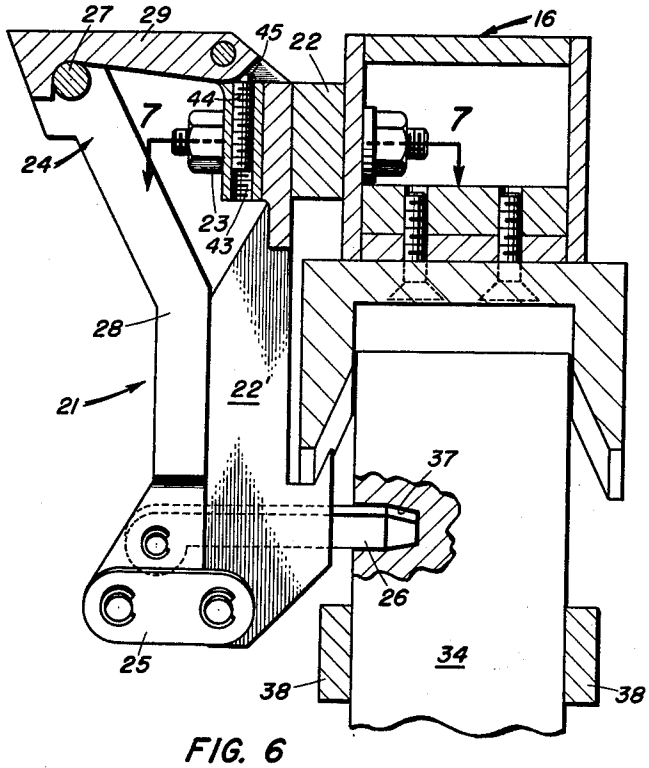


FIG. 6

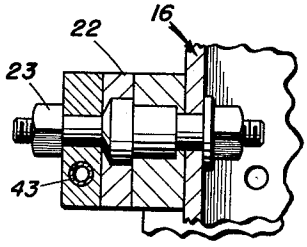


FIG. 7

United States Patent Office 3,170,582 Patented Feb. 23, 1965

3,170,582
WEAPON TRANSFER DOLLY LATCH MECHANISM

George W. Gilbert, Kensington, Md., assignor to the United States of America as represented by the Secretary of the Navy

Original application Dec. 29, 1960, Ser. No. 79,475, now Patent No. 3,095,212, dated June 25, 1963. Divided and this application June 18, 1963, Ser. No. 288,846
5 Claims. (Cl. 214—394)

This application is a division of copending application of George W. Gilbert for a Weapon Transfer Dolly, Serial No. 79,475, filed December 29, 1960, and now Patent No. 3,095,212 issued June 25, 1963.

The present invention relates to a transfer dolly and more particularly to means for releasably locking missile handling devices to the transfer dolly during transfer and handling operations. More specifically, the invention pertains to new and improved latches carried by the dolly for releasably locking handling devices to the dolly such, for example, as the type of handling devices disclosed and claimed in the Patent No. 3,069,026, filed January 30, 1962, by R. R. Aluise et al. for Handling Attachment. The latch means further locks and maintains the aforesaid handling devices in locking engagement with the missiles or missile components, as the case may be, during the entire transfer operation, including transfer of the handling devices and missiles or components to the conventional elevator operating in the strikedown hatch, whereupon the missiles or components are moved from a position above deck to a position below deck and into the stowage magazine.

An object of the invention is to provide new and improved latch devices for use with material handling devices.

Another object of the invention is to provide novel latching means for releasably locking missile supporting and receiving means on a mobile dolly.

Still another object of the invention is to provide latching means for releasably attaching a missile handling device to a wheeled structure.

A still further object of the invention is to provide latch devices for quickly attaching and locking a missile support to a mobile dolly.

A still further object of the invention is to provide latch devices for releasably supporting missile handling devices on a dolly and maintaining the handling devices in locking engagement with the missile during transportation.

Other objects, advantages and novel features of the invention will become apparent from the following detailed description of the invention when considered in conjunction with the accompanying drawings wherein:

FIG. 1 is a top plan view of a missile dolly illustrating the latches of the present invention in connection therewith;

FIG. 2 is a view in side elevation of the dolly and the latches of FIG. 1;

FIG. 3 is an enlarged sectional view taken substantially on the line 3—3 of FIG. 1, illustrating the latches and one of the load supporting structures supported thereby;

FIG. 4 is an enlarged top plan view of the latches and the supporting yoke therefor;

FIG. 5 is a view in elevation of the assembly of FIG. 4, illustrating a fragmentary portion of the load supporting structure of FIG. 3;

FIG. 6 is an enlarged sectional view taken substantially on the line 6—6 of FIG. 5; and

FIG. 7 is a sectional view taken substantially on the line 7—7 of FIG. 6.

Referring now to the drawings and more particularly to FIG. 1 and FIG. 2 thereof, the numeral **10** indicates generally a wheeled missile handling dolly comprising spaced side frames **11** having upper and lower rails **12** and **13**, the ends of the rails **12** and **13** being connected by semi-circular end rails **14** and **15**. The dolly further includes a pair of yokes **16** and **17** extending transversely of the dolly and attached to rails **13** by pedestals **18** and shear blocks **19**, as best shown in FIG. 3.

According to the present invention the yokes **16** and **17** each carry a pair of latches indicated generally by the numeral **21**, the latches being identical in structure, and for this reason a description of one will suffice for all the latches. Each latch includes a bracket **22**, as best shown on FIGS. 6 and 7, the bracket being adjustably secured to the yokes **16** and **17** by a bolt **23** provided with a pair of downwardly extending arms **22'**. A latch member **24**, is pivotally connected to the arms **22'** by a link **25**, FIGS. 5 and 6. As best shown on FIG. 5, the latch **24** includes spaced parallel legs or members between the lower ends of which is pivotally mounted the outer end of a pin **26**. An actuating rod or handle **27**, FIGS. 4, 5 and 6, extends through the upper end of the legs **28** of the latch member **24**, and a keeper **29**, pivoted to the body **22**, is engageable with the handle rod **27**, between the legs **28** for normally retaining the same in engaged position. A set screw **44** having a projecting tip **45** at its upper end is provided for threadably engaging the threaded bore **43** in bracket **22** to permit positive locking of keeper **29** when desired.

The latches **21** on yokes **16** and **17** releasably support load supporting structures on the dolly, the structures being adapted to support missile components beneath yokes **16** and **17** and between the dolly side frames **11**, to facilitate transportation of the missiles or transfer thereof from the dolly to the conventional stowage elevator such, for example, as the type shown in the aforesaid patent, No. 3,069,026. The handling devices, as best shown on FIG. 3, are indicated generally by the numeral **31** and include three connected sections **32**, **33** and **34**, that engage and surround the missile and are retained in operative position by a cable **35**.

It will be noted in FIGS. 3, 4 and 5 that the latches are mounted on yokes **16** and **17** in mutually spaced relationship to releasably support the structures **31** and thus the missile component, to the dolly, which component is indicated in outline at **36** in FIG. 3. The devices **31** are attached to the latches by reason of the aforesaid pins **26** disposed in openings **37** formed in the upper end of sections **32** and **34**, this arrangement being more clearly shown in FIG. 6.

Adjustment of the latches **22** has been provided for by the mounting afforded by the bolts **23**. More particularly, it has been found that the openings **37** in sections **32** and **34** of the devices **31** do not always align with the pins **26** of the latches, because of differences in adjustment cable **35**. Such differences in adjustment can be accomplished by loosening the bolts **23**, swinging the latches to align the pins **26** thereof with the openings in the aforesaid sections **32** and **34** of the devices **31** and thereafter tightening the bolts.

It will be noted more clearly in FIG. 5 that to prevent excess swinging movement of the devices **31**, stops **38** are provided. These stops comprise spaced, parallel, connected, flat strips that straddle the lower corners of yokes **16** and **17** and which are pivotally connected thereto, as by pins **39**. The stops are provided with detents **41** engageable with projections **42** carried at the lowermost portions of yokes **16** and **17**, as best shown on FIG. 5.

When it is desired to release the latch, the keeper **29** is lifted out of engagement with the rod **27**, whereupon the rod is pulled in an outward direction and thus the pin

26 is disengaged from opening 37 in device 31, it being understood that release of both of the latches on each of the yokes 16 and 17 will permit disengagement of the structures and the missile components supported thereby from the yokes for attachment to the aforementioned elevator and delivery to a stowage magazine.

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.

What is claimed is:

1. A device for securing a load to a transporting vehicle comprising, in combination,
- a vehicle frame,
- supports carried by said frame,
- load supporting structures releasably supported on said supports,
- bracket means secured to said supports,
- bolt means for adjustably securing said bracket means to said support,
- normally locked latches pivotally mounted on said bracket means,
- link means connected to said bracket means and said latches for pivotally mounting the latches,
- keeper means pivotally mounted on the bracket means in engagement with said latches for maintaining the latches in a normally locked condition,
- pin means carried by the latches in engagement with said load supporting structures for releasably supporting the structures on said supports, and
- actuating rods carried by said latches for actuating the latches to disengage the pin means from the load supporting structures.

2. A device for securing a load to a transporting vehicle comprising in combination
- a vehicle frame,
- supports carried by said frame,
- load supporting structures releasably mounted on said supports and having aperture means formed therein,
- bracket means adjustably mounted on said supports,
- bolt means cooperating with the supports and the bracket means for adjustably mounting the bracket means to said supports,
- normally locked latch means pivotally mounted on said bracket means,
- link means pivotally connected to said bracket means and to said latch means for pivotally mounting said latch means on the bracket means,
- pin means carried and pivotally connected to the latches and normally disposed in the aperture in the load supporting structures for releasably supporting the entire weight of the structures on the supports,
- handle rods carried by said latches for actuating the latches to disengage the pin means from said apertures means thereby to release the load supporting structures,
- a locking arm pivotally mounted at one end to said bracket means and having the other end thereof in locking engagement with the handle rods for maintaining the latch means normally locked,
- detent locked stop means pivotally mounted on the supports in engagement with said load supporting structure for preventing excess movement of the structures during transportation,
- and set screw locking means carried by said bracket means for normally engaging said locking arm to thereby maintain said arm in locked engagement with said handle rods.

3. A device for securing a load to a transportation vehicle, as recited in claim 1, and further including:
- stop means pivotally mounted to said suports adjacent said load supporting structures for preventing excess swinging thereof, said stop means being provided with detent locked release means whereby said stop means can be pivoted to a position wherein it does not interfere with the release of said load supporting structures.

4. A device for securing a load to a transportation vehicle, as recited in claim 1, and further including:
- set screw locking means disposed within a threaded bore in said bracket means for normally engaging said keeper means, thereby maintaining said keeper means in locked engagement wtih said latches.

5. A bracket mounted latch mechanism for releasably supporting a structure adapted to be latched thereto comprising:
- a pair of downwardly extending arms secured at their upper ends to said bracket;
- link means pivotally mounted on the lower ends of said arms;
- latch means pivotally mounted to said link means for pivotal movement against said arms;
- keeper means pivotally mounted to said bracket for maintaining said latch means in a normally latched position;
- set screw locking means disposed in said bracket for normally locking said keeper means against said latch means; and
- pin means pivotally mounted on said link means for engaging an opening in said structure thereby to support the entire weight thereof;
- whereby, upon release of said keeper means and actuation of said latch means to an unlatched position, said pin means is disengaged from said opening to permit separation of said structure from said bracket.

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