April 23, 1957 E. D. FISHER ET AL 2,789,469

ARMING WIRE RELEASE DEVICE

Filed Dec. 9, 1955

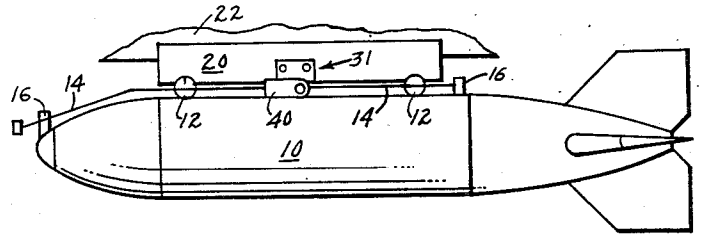


Fig. 1.

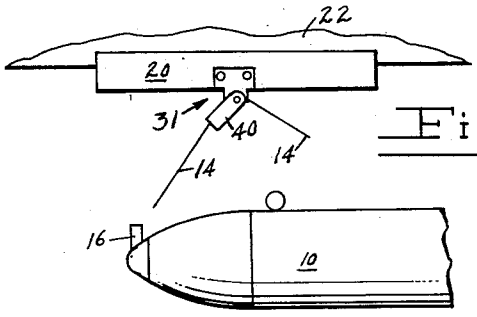


Fig. 2.

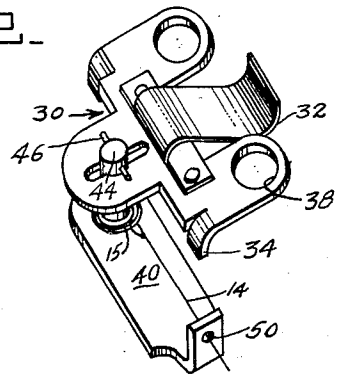


Fig. 3.

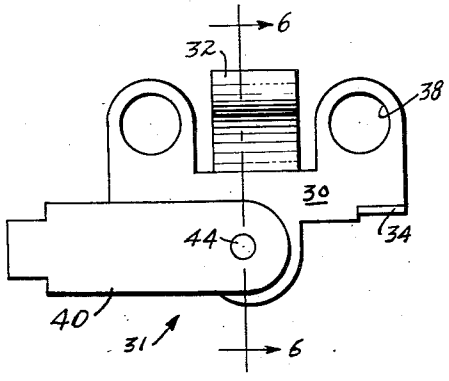


Fig. 5.

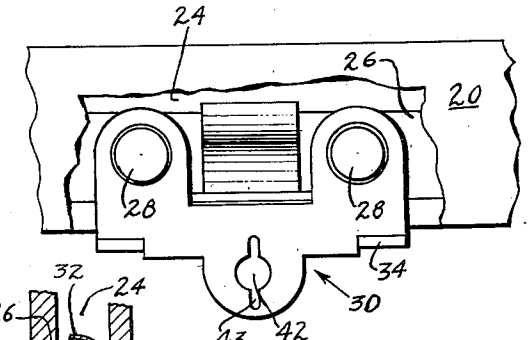


Fig. 4.

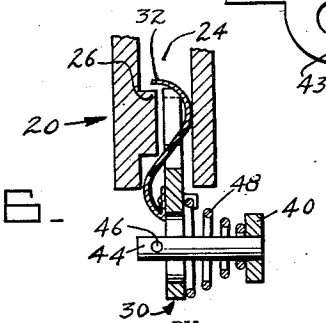


Fig. 6.

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ARMING WIRE RELEASE DEVICE

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Application December 9, 1955, Serial No. 552,241

1 Claim. (Cl. 89—1.5)

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

The invention described herein may be manufactured and used by or for the Government for governmental purposes without the payment to us of any royalty thereon.

This invention relates to arming systems for bombs and particularly to a device for use in removing bomb fuze arming wires, the device adapted to indicate the condition of arming of the bombs which have been dropped.

In the known art, when an externally carried bomb is dropped in non-arming condition, the arming wires are dropped with the bomb. If the bomb is dropped in the condition to arm, the arming wires remain with the airplane. When the arming wires are retained with the aircraft they are subject to considerable whipping from being exposed directly in the slipstream. This whipping action of the wires may do considerable damage to the skin of the aircraft; therefore, the wires are often jettisoned after the bomb has been dropped. Since the presence of an arming wire is the only indication of a live bomb having been dropped, this procedure does not permit the armament officer to ascertain the condition of the bombs which have been dropped.

The principal object of this invention is a device for indicating the condition of arming of bombs which have been dropped, which device is not injurious to the aircraft.

Another object is a device adapted to accomplish the above objective which is compatible with presently available bomb release equipment.

The specific nature of the invention, as well as other objectives and advantages thereof, will clearly appear from the following description and drawings, wherein:

Figure 1 is a side elevational view of a bomb embodying this invention suspended from the underside of an airplane.

Figure 2 is a view similar to Fig. 1 at the moment the arming wire pulls free of the bomb fuze.

Figure 3 is a perspective view of the release device of the invention.

Figure 4 is a fragmentary side elevational view of the bomb release, partially cut-away, a clip member of the invention being attached.

Figure 5 is a side elevational view of the clip of the invention, a pivoting arm being attached thereto and resting in the normal position.

Figure 6 is a cross-sectional view of Fig. 5 taken on line 6—6 of Fig. 5.

The device 31 is designed for use with bomb 10 which has fuzes 16. The fuzes are armed by removal of arming wires 14.

The bomb 10 is conventionally mounted by shackles 12 to release rack 20 which is on the undersurface of the aircraft 22. The release rack 20 is provided with pocket 24, projection 26, and two solenoid operated plungers 28, the purpose of which will be explained later.

Clip 30 is attached in the pocket 24 by the pressure of leaf spring 32 against projection 26 and by plungers 28 passing through holes 38 of the clip if desired. Flanges 34 on the clip help to locate it. Pivoting arm 40 is attached to the clip 30 by a bayonet type fastener which consists of a slotted aperture 42 in the clip 30. This aperture has a central circular portion and two radial slots 43 aligned vertically. The arm 40 has a shaft 44 extending through the slotted aperture 42 with radial protuberances or pins 46 aligned longitudinally with the arm 40 on the end of shaft 44. Compression spring 48 encircles shaft 44 and abuts against the clip 30 and arm 40 to press pins 46 against the clip body. The arming wires 14 extend from the fuzes 16, the forward one passing through opening 50 and attaching to ring 15 around spring 48, the after one attaching directly to ring 15.

To drop the bomb 10 in the armed condition, the solenoid operated plungers 28 are inserted through holes 38 by operation of a switch in a remote point, and then shackles 12 are released. As the bomb 10 falls it pulls the arming wires 14 free of the fuzes 16 before arm 40 has rotated more than about 45° from horizontal. The wind blowing the forward wire 14 continues to rotate arm 40 through 90°—that is, until it is vertical. With arm 40 vertical, pins 46 are aligned with slots 43 and the spring 48 ejects the arm and wires.

To drop the bomb in the non-arming condition, the solenoid operated plungers 28 are withdrawn from holes 38 by a control switch in a remote position and then shackles 12 are released. The frictional contact of the arming wires 14 with the fuzes 16 is greater than the frictional contact between spring 32 and projection 26; therefore the entire clip falls with the bomb indicating the dropping of an unarmed bomb.

It will be understood that the embodiment shown is only exemplary and that various modifications can be made in construction and arrangement within the scope of the invention as defined in the appended claim.

We claim:

In an aircraft bomb release system having a bomb release rack, the rack having a solenoid operated plunger therein, a bomb attached to the rack, and an arming wire extending from a fuze on the bomb to the rack, the improvement for releasing the arming wires comprising: a clip with a leaf spring lightly engaging a projection on the rack thereby releasably holding the clip to the rack; a hole in a portion of the clip extending into the rack and aligned with the solenoid operated plunger whereby the plunger may be extended through the hole thereby holding the clip to the rack; a slotted aperture in the clip; a shaft through the aperture; radial protuberances on one end of the shaft adapted to pass through the slots of the aperture only when aligned therewith; an arm on the other end of the shaft with the arming wire connected thereto; and a spring between the clip and the arm biasing the arm away from the clip and adapted to eject the arm and arming wire when the protuberances are aligned with the slots.

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