

Sept. 28, 1943.

A. VOIGT ET AL

2,330,646

RELEASING DEVICE

Filed May 13, 1940

Fig. 1

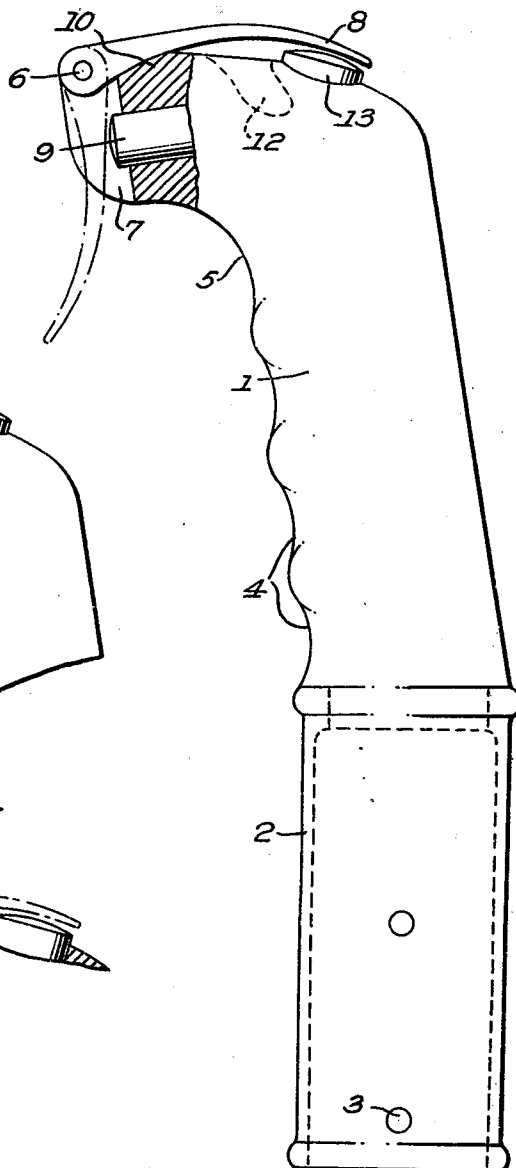


Fig. 2

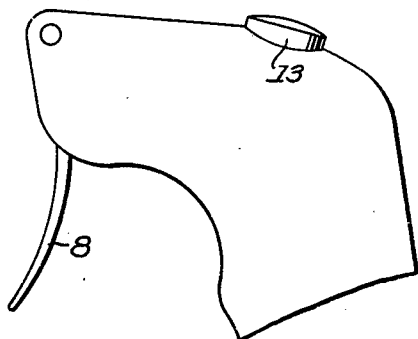
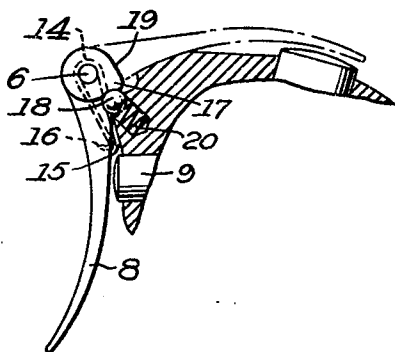


Fig. 3



Inventors.
ALBERT VOIGT
GOTTFRIED MELSTER

By *Alfred A. Melster*
Attorney.

UNITED STATES PATENT OFFICE

2,330,646

RELEASING DEVICE

Albert Voigt, Berlin, and Gottfried Melster, Bernau, near Berlin, Germany; vested in the Alien Property Custodian

Application May 13, 1940, Serial No. 334,754
In Germany August 20, 1936

4 Claims. (Cl. 89—27)

The present invention relates to a releasing device mounted on the control stick of an aircraft and used for selectively actuating arms provided on aircraft, more particularly fire arms and arms to be thrown off. Moreover, the device according to the invention may be used for actuating any other apparatus.

It is well known to provide the control sticks of aircraft with electric press buttons or with a releasing device similar to the trigger of fire arms. In the hitherto known releasing means, however, the danger exists that such devices may unintentionally be operated. This is particularly true for the known releasing devices for fire arms actuated by a trigger, mounted on a control stick in which the trigger is embedded within reach of the forefinger of the hand surrounding the control stick, said trigger projecting beyond said control stick for a distance required for the movement necessary to render the trigger operative. If no special safeguard or locking device is provided the pilot must pay attention to the trigger to prevent accidental operation thereof. The same is true for press buttons used for releasing fire arms or bombs to be thrown off.

According to the present invention all these drawbacks are obviated by the fact that the trigger, preferably used for releasing fire arms of all kinds, is oscillatably arranged so it can be brought into a position ready for operation in case of need only. Otherwise the trigger remains in its rest position in which it has no influence whatever on the ordinary handling of the control stick of the aircraft. The releasing means proper, preferably an electric contact, is embedded in the handle of the control stick in such a manner as to be incapable of being directly released, for instance by contact with the hand, i. e., without using the trigger.

According to a further modification of the invention the trigger turned back for safeguarding or locking the fire arm is used simultaneously to cover a press button arranged on the control stick below said trigger in such a manner that the press button also is safeguarded against unintended use. This is rendered possible by a stop against which the trigger is pressed by means of a spring. The trigger is provided with a spring and a spring notch of any kind to be held on the one hand in a position ready for operation, preferably retaining a pressure or tension point, and on the other hand in the locked position.

In a preferred embodiment of the invention the control lever together with the pivot for the trigger and the locking lever is bent forwardly to

such an extent that on the one hand in its position ready for operation the trigger is arranged in front of the forefinger of the hand surrounding the control stick and on the other hand may easily be reached by the forefinger.

The trigger in its locked position fits as far as possible the form of the head of the control stick, so that, even when the hand of the pilot slides over the stick neither the trigger nor the press button is operated.

A construction according to the invention is shown by way of example in Figures 1 to 3 of the accompanying drawing which illustrates the device of the invention mounted at the end of the control stick of an aircraft.

In this drawing:

Fig. 1 shows an elevation of the releasing device provided at the end of the control stick of an aircraft, partially illustrated in section.

Fig. 2 is a side view of the construction shown in Fig. 1, illustrating the upper end of the control stick with the trigger in the position ready for use, and

Fig. 3 is a diagrammatic view of the end of the releasing device showing details of the construction of the trigger.

Fig. 1 shows the handle 1 which by means of a cylindrical sleeve 2 and bolts inserted in the holes 3 of sleeve 2 is fixed upon the end of the control stick not shown in the drawing. In a well known the handle 1 is provided with depressions 4 adapted to receive the individual fingers. The depression 5 determines the position of the forefinger. The device according to the invention is arranged at the upper end of handle 1. The trigger 8 is oscillatably mounted upon a pivot 6 provided in a notch 7 of the handle. In the bottom of the notch 7 a slidable member 9 in the form of a press button is arranged which on being actuated causes the firing of a gun, preferably by closing an electric contact. The position of the trigger ready to be operated is shown by dashed and dotted lines in Fig. 1.

By means of a device presently to be described the trigger preferably is maintained by the pressure of a light spring in such position that, if the trigger is actuated, it travels a small way only until it engages the button 9 so that the pressure or tension point is noticeable before firing the shot.

To bring the trigger 8 into the locked position it is pushed forwardly by the forefinger of the hand steering the aircraft, whereby, after overcoming a resilient obstacle the trigger is moved rearwardly into engagement with a stop 10 by a

spring (Fig. 3) presently to be described. The trigger is so formed as to easily fit the knob of the handle in its locked position so that the handle may also be grasped from above. As the button 9 is arranged in the notch 7 it is perfectly safeguarded when the trigger 8 is thrown backwardly into the locked position.

To bring the trigger 8 out of its locked position into the position ready for operation it is turned forwardly by the forefinger of the hand actuating the device. For this purpose the edge of the trigger 8 is so formed as to stand far enough away from the handle. Preferably the handle may also be provided with a depression 12 shown in Fig. 1 in dotted lines into which the forefinger can slide to safely grasp the trigger 8 from below. If the handle is constructed to be operated by the right hand the depression 12 occupies the position shown in dotted lines, i. e., is provided on the side of the drawing turned away from the observer. From Figs. 1 and 2 it is evident that when the trigger 8 is swung downwardly into the position ready for operation, the handle 1 may unimpededly and tightly be grasped without fear of premature firing of the gun. For firing the forefinger must be lifted out of the depression 5 so that the trigger 8 may be grasped by the forefinger and actuated.

In the construction illustrated in Fig. 1 a pressure button 13 for releasing for instance bombs is provided besides the just described releasing device actuated by the trigger. As shown in the drawing the press button 13 is provided at the upper end of the handle and preferably is somewhat inclined towards the right so that the button 13 occupies a position most favorable for actuating by the thumb of the right hand.

Fig. 1 shows the manner in which the press button 13 is prevented from unintended operation by the trigger 8 which is in its locked position, Fig. 2 shows the position of the trigger 8 ready for operation and the unlocked press button 13.

In Fig. 3 a detail of the construction according to the invention is illustrated showing the spring and the spring notch arrangement actuating the trigger 8. The windings of spring 14 surround the pivot 6 of the trigger 8. One end 15 of spring 14 bears against the handle 1. The other end 16 of spring 14 grasps the trigger 8 and tends to swing the latter forwardly until a cam 17 provided upon its hub contacts the ball 18. The ball 18 is resiliently mounted in a guide, the spring 20 being employed for urging the ball outwardly in its guide and toward the handle 8. If the trigger 8 is actuated, first of all only the resistance of the spring 14 is to be overcome until the trigger abuts against the button 9. Striking of the trigger against the slide member 9 results in a pressure or tension point, whereas further movement of the trigger results in firing the gun.

To bring the trigger 8 into its locked position it is rotated in a clockwise direction for a certain amount under the influence of the spring-pressed ball 18. The shape of the outer surface 19 of the

cam 17 causes the automatic throwing over of the trigger 8 into the locked position shown in dashed and dotted lines in which the trigger is resiliently held.

The invention is not limited to the construction shown but may be used in connection with any shape of control stick after being accordingly modified. Also the means shown in Fig. 3, effecting the various positions of the trigger, may be replaced by other well known means. Moreover, the releasing device according to the invention also may be used for operating other apparatus, i. e., for light or sound signals, for taking photographic pictures or the like.

What we claim is:

1. A fire control mechanism for guns comprising a control stick having a handle, a release button and a press button both being slidably arranged in said handle, and a trigger oscillatably mounted on said handle and arranged so that it protects said press button in its inoperative position, while being in a position to actuate said release button when it is swung into its operative position.

2. A fire control mechanism for guns comprising a control stick having a handle thereon, a notch in said handle, a release button slidably arranged in the notch of said handle, a press button slidably arranged in said handle and spaced from said release button, a trigger oscillatably mounted on said handle and being adapted to operate said release button, said trigger being mounted so that it covers said press button in its inoperative position, while being in a position to actuate said release button when it is swung into its operative position.

3. A fire control mechanism for guns comprising a control stick having a handle thereon, a notch in said handle, a release button slidably arranged in said handle and spaced from said release button, a trigger oscillatably mounted on said handle and being adapted to alternatively operate said release button in its operative position and to cover said press button when swung into its inoperative position, and a spring bearing against said handle and cooperating with said trigger for normally spacing said trigger in its operative position from said release button.

4. A fire control mechanism for guns comprising a control stick having a handle, a notch in said handle, a trigger being oscillatably mounted in a pivot situated above said notch, a cam on said trigger and a spring pressed ball cooperating with said cam, a release button slidably arranged in the notch of said handle, a press button being spaced from said release button and slidably arranged in said handle so that it is covered by said trigger when said trigger is rotated into its inoperative position, and a spring bearing against said handle and cooperating with said trigger for normally spacing said trigger from said release button when said trigger is in its operative position.

ALBERT VOIGT.
GOTTFRIED MELSTER.