May 9, 1944. H. T. SPARROW 2,348,426

LATCH MECHANISM

Filed Oct. 2, 1942 2 Sheets-Sheet 1

Fig. 1.

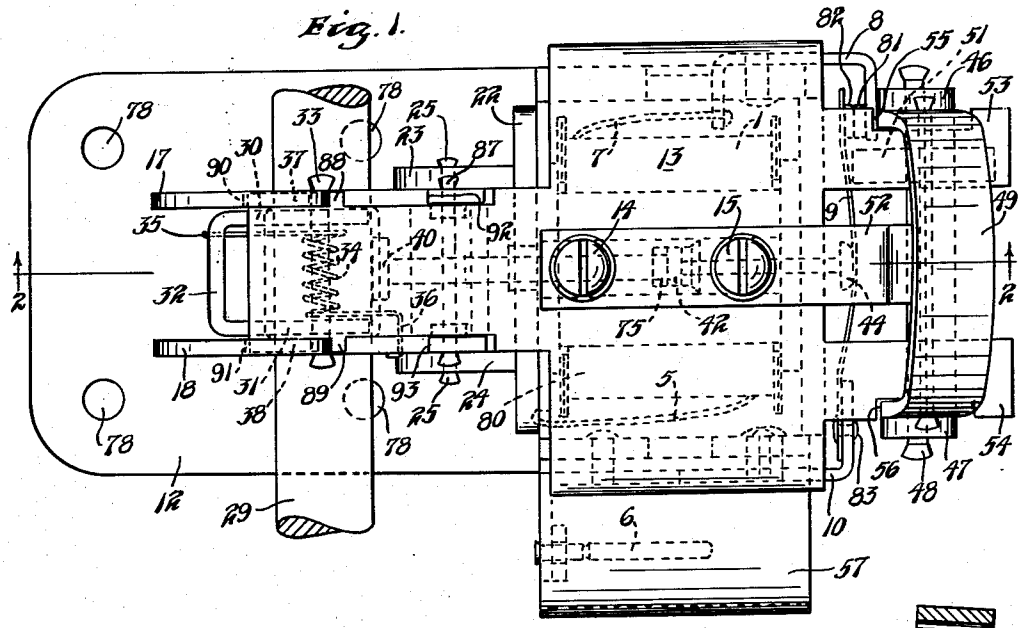
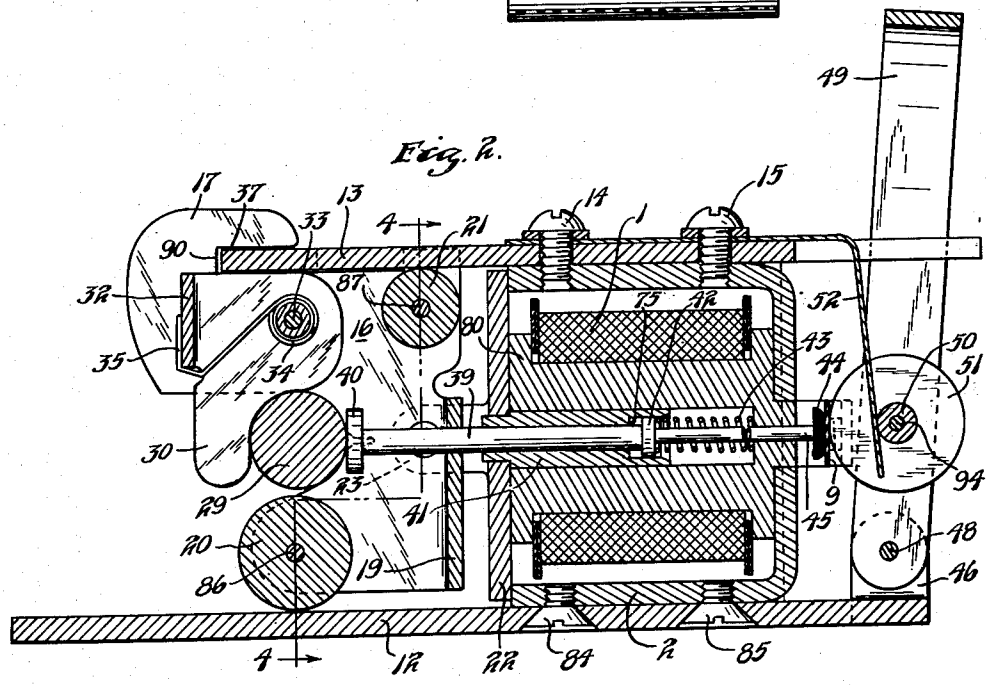


Fig. 2.



INVENTOR.
HUBERT T. SPARROW
BY
George H. Fisher
ATTORNEY

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Fig. 3.

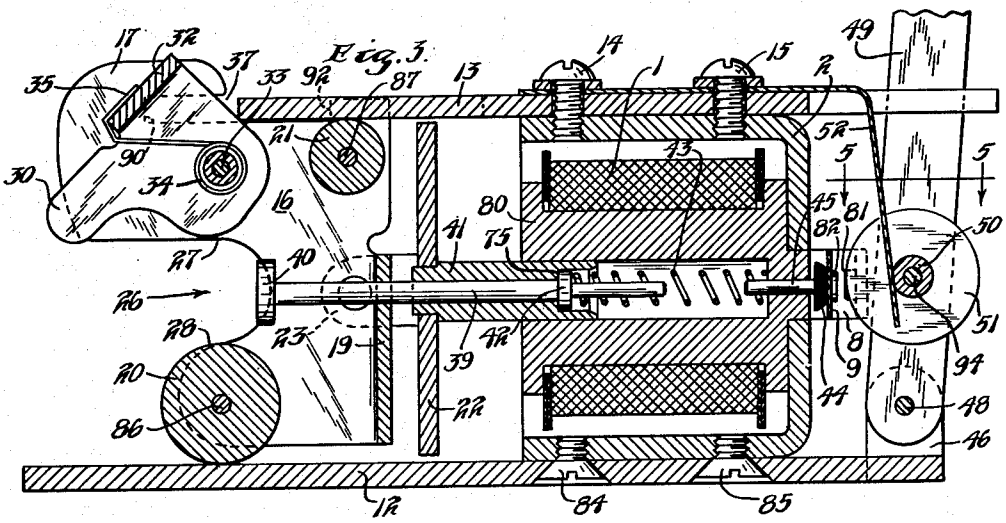


Fig. 6.

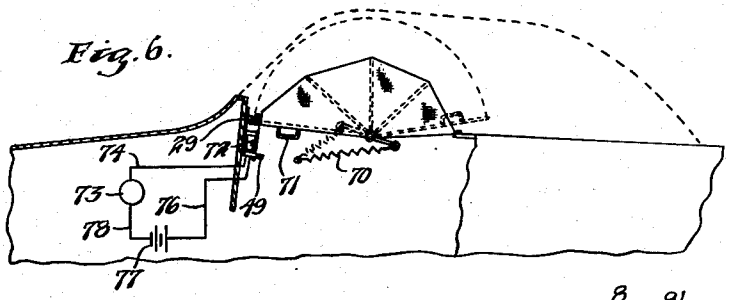


Fig. 4.

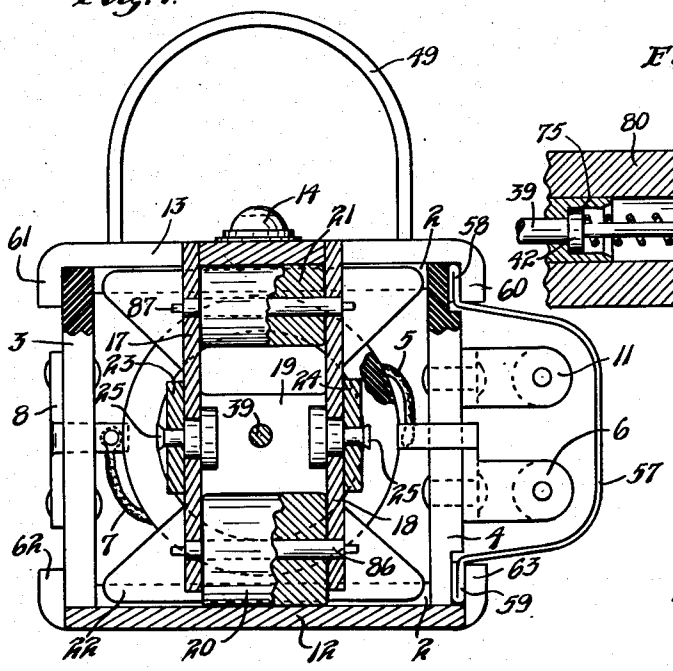
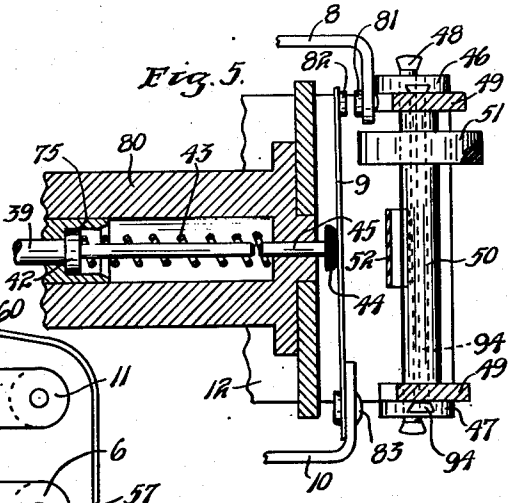


Fig. 5.



INVENTOR.
HUBERT T. SPARROW.

BY

Yenge H. Fisher
ATTORNEY

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UNITED STATES PATENT OFFICE

2,348,426

LATCH MECHANISM

Hubert T. Sparrow, Minneapolis, Minn., assignor to Minneapolis-Honeywell Regulator Company, Minneapolis, Minn., a corporation of Delaware

Application October 2, 1942, Serial No. 460,493

23 Claims. (Cl. 292—304)

My invention relates to a magnetic control latch means and particularly to a type wherein a protective means is employed to cause release of the latch upon the occurrence of certain conditions in the circuit controlling the magnet.

In the practice maneuvering of an airplane in blind flying a hood has been heretofore used which projects over the cockpit somewhat like the top of a baby buggy so as to close off the pilot's vision and thereby simulate actual conditions existing under so-called blind flying, requiring the pilot to maneuver the plane entirely by the control indicating instrument of the plane. The hood and latch means are so arranged that the hood may be raised upon completion of the blind flying in order that normal flight may be resumed.

An object of my invention is to provide a latch mechanism particularly adapted for locking the hood of an airplane in down position during the practice maneuvering of the plane in blind flying.

Another object of my invention is to provide a latch arrangement and holding electromagnet for the latch adapted to cooperate with a blind flying hood having a tension means for said hood. The latch is arranged so as to release the hood under the tension means upon a break in the circuit of the magnet due to accident or other cause, such as the opening of the circuit by a suitable air speed control switch such as shown in the application of Willis H. Gille, Serial No. 460,522, and dated October 2, 1942.

Another object of my invention is to provide a latch means including a safety feature whereby the latching member will not latch by the mere accidental actuation thereof, but will rather require that the same be actuated by the latch pin or bar of the hood in the specific manner intended.

Another object of my invention is to provide a novel switch control member mounted within a latch member and arranged so as to effect the energization of a magnet for holding the latch in a latched position upon the joint actuation of the latch and switch control member by the latch pin and to embody such perfected feature in a simple and compact form of construction.

Another object of my invention is to provide a slidable latch member and a single spring arrangement for holding the latch member and switch control member simultaneously under spring tension.

Another object of my invention is to provide a novel manually operable means for opening the circuit of a holding magnet so as to cause the release of the blind flying hood under suitable tension means.

A further object of my invention is to provide a slidable latch member having locking fingers actuated upon movement of the latch member so as to pivot the fingers to a locking position and a magnet for holding the latch member and locking fingers in said locked position.

Another object of my invention is to provide a compact latch means of great efficiency in comparison to its size and of such simplicity in construction as to adapt it for manufacture and installation at low cost and a latch mechanism adapted for use wherever a latch means may be employed.

Other objects and advantages of this invention are set forth in the following description, taken with the accompanying drawings, and the novel features thereof are pointed out in the appended claims. The disclosure, however, is illustrative only and I may make changes in details, especially in matters of shape, size and arrangement of parts within the principles of the invention, to the full extent indicated by the broad and general meanings of the terms in which the appended claims are expressed.

In the accompanying drawings, wherein like reference characters indicate corresponding parts in the various figures,

Figure 1 is a top plan view of a latch mechanism embodying my present invention with the latch mechanism in locked position;

Figure 2 is a sectional view taken along the line 2—2 of Figure 1 and looking in the direction of the arrows;

Figure 3 is a similar view to that of Figure 2 illustrating the latch mechanism in an open position;

Figure 4 is a sectional view taken along the lines 4—4 of Figure 2 and looking in the direction of the arrows;

Figure 5 is a fragmentary sectional plan view of the electromagnet control switch actuating mechanism and illustrates the position assumed by the switch operating rod when unactuated by the latch bar, upon the latch mechanism being moved to the locked position such as shown in Figure 2, but without the latch bar being positioned in the said latch mechanism, and

Figure 6 is a diagrammatic view illustrating one application of my invention as applied in locking the flying hood of an airplane in lowered position.

Referring now to the drawings, an electromag-

net 1 having a core 80 is mounted on a U-shaped housing member 2, as shown in Figures 2 and 3. Insulation members 3 and 4 are mounted on opposite sides of the U-shaped housing member 2 as shown in Figure 4. One terminal of the electromagnet 1 is connected by an electrical conductor 5 to an input terminal 6 as shown in Figures 1 and 4. The opposite terminal of the electromagnet 1 is connected by a conductor 7 to an arm 8 having mounted thereon a suitable control switch contact 81. Contact 81 is adapted to be engaged by a contact 82 mounted on a movable spring switch arm 9 which is fastened at one end by a bolt 83 to a bracket 10 connecting the switch arm 9 to an electrical current input terminal 11. Terminals 11 and 6 form for the electromagnet 1 the input terminals of a suitable source of electrical current. The switch arm 9 is formed of suitable spring-like material and normally opens the circuit of the electromagnet 1 at the contacts 81 and 82. The arm 9 is actuated to a closed position in a manner which will be hereinafter explained.

A base plate 12 is fastened by the screws 84 and 85 to one arm of the U-shaped housing 2. The base plate 12 has formed therein the apertures 78 whereby the latch mechanism may be conveniently mounted by suitable attachment screws or bolts. A guide or actuating plate 13 is fastened by bolts 14 and 15 to the opposite arm of the U-shaped housing 2. Slidably mounted between the base plate 12 and the guide plate 13 is a latch housing or carriage 16, as best shown in Figures 1, 2 and 3.

The latch housing 16 includes opposite side plates 17 and 18 connected by the member 19. Anti-friction bearings 20 and 21 are rotatably mounted on pins 86 and 87, respectively, between the side plates 17 and 18. The anti-friction bearing 20 is positioned so as to move along the base plate 12 while the anti-friction bearing 21 is positioned so as to move along the underside of guide plate 13, thereby assuring the slidable movement of the latch housing 16 with minimum frictional loss.

An armature 22 is pivotally connected by brackets 23 and 24 to the opposite sides 17 and 18 of the latch housing 16 through respective pins 25. The armature 22 cooperates with the electromagnet 1 in a manner which will be explained.

Formed in the side members 17 and 18 of the latch housing 16 is a mouth-like indenture 26 having upper and lower jaws 27 and 28, respectively. The mouth-like indenture 26 is for receiving a latch bar or pin 29, as will hereinafter appear.

Pivotally mounted in the upper jaw 27 of the latch housing 16 are a pair of latch teeth or fingers 30 and 31, which are connected by the connecting plate member 32. The latch teeth 30 and 31 are pivotally connected to the side members 17 and 18 of the latch housing 16 by a pin 33. Surrounding the pin 33 is a spring member 34 having an end 35 connected to the latch teeth at the connecting plate 32 and an opposite end 36 secured in the member 18. The spring 34 tends to rotate the latch teeth or fingers 30 and 31 around the pivot 33 in a clockwise direction as shown in Figures 2 and 3 and thereby tends to hold the latch teeth under spring tension out of the mouth-like indenture 26.

Slots 37 and 38 are formed in the side members 17 and 18, respectively, of the latch housing 16. Further formed on the plate 13 are laterally projecting end portions 88 and 89 which are adapted to be received in the slots 37 and 38, respectively, and are slidably movable therein. Slot defining edges 90 and 91 of the slots 37 and 38, respectively, limit the movement of the side members 17 and 18 on the plate 13 upon movement of the latch housing to a locked position, while the slot defining edges 92 and 93 of the side members 17 and 18 limit the outward movement of the side members 17 and 18 on the plate 13 by engaging the end portions 88 and 89 of the plate 13 upon movement of the latch housing 16 to an open position.

The plate 13 bears upon the latch teeth 30 and 31 in a cam-like manner as shown in Figure 3 so that upon inward movement of the latch housing 16, the teeth 30 and 31 will be projected downwardly into the mouth-like indenture 26. Upon such inward movement of the latch housing 16, as shown by Figure 2, the plate 13 will force the latch teeth 30 and 31 downward and hold the same in a downward pivoted position locking the latch pin 29 in the mouth-like indenture 26 until the latch housing returns to the former outward or open position causing thereby the release of the latch means 30 and 31 by the plate 13 so as to permit the upward pivotal movement of the teeth 30 and 31 under tension of spring 34. The electromagnet 1 previously described is provided for holding through the armature 22 the latch housing 16 in the inward or locked position and thereby locking the latch pin 29 in the mouth-like indenture 26 by the teeth 30 and 31.

The energization of the electromagnet 1 is controlled through the switch arm 9 which in turn is under the control of an operating rod 39. The operating rod 39 has a push button 40 positioned at one end thereof in the latch housing 16 adjacent to the mouth-like indenture 26, as shown in Figures 1, 2 and 3.

Fixedly connected to the armature 22 is a tubular member 41 which is slidably disposed in the core 80 of the electromagnet 1. Slidably disposed in turn within the tubular member 41 is the switch operating rod 39. Disposed intermediate the opposite ends of the operating rod 39 is a projecting part 42. A shoulder 75 is provided in the tubular member 41 adapted to engage the projecting part 42 when the operating rod 39 is moved outwardly in relation to the magnetic core 80. The projecting part 42 however disengages the shoulder 75 of the tubular member 41 when moved in the opposite relative direction, or when the rod 39 is moved inwardly with respect to the magnetic core 80. A spring member 43 is adapted to hold the operating rod 39 in engaging relation with the tubular member 41 so that in normal operation the spring 43 holds the operating rod 39, the armature 22 and the latch housing 16 in an outward position under spring tension, as shown in Figure 3. An actuating button 44 having a stem part 45 normally spaced apart from the actuating rod 39 is adapted to be moved outwardly upon the extreme inward movement of the operating rod 39. Upon such outward actuation of the button 44 the spring switch arm 9 will in turn be actuated so as to close the switch at the contacts 81 and 82 thereby energizing the electromagnet 1. However, the operating rod 39 and the tubular member 41 are so arranged that the mere inward movement of the armature 22 to the extreme position will be insufficient to cause the operating rod 39 to actuate the stem 45 and the button 44 to cause the switch arm 9 to be actuated to a closed position as illustrated in Figure 5. In order therefore to

close the switch at the contacts 81 and 82, it is necessary not only that the latch housing or armature 22 be moved to the extreme inward position, but that the push button 40 also be actuated sufficiently so as to cause the operating rod 39 to move an additional amount sufficient to move the button 44 so as to cause the switch arm 9 to close the circuit energizing electromagnet 1. As may be seen from Figures 2 and 3, the push button 40 is so arranged with respect to the latch housing 16 and the mouthlike indenture 26 that the same will only be actuated upon the positioning of the latch pin 29 in the mouth-like indenture 26 in the manner intended accompanied by the inward movement of the latch housing 16 causing the joint actuation of the latch fingers or teeth 30 and 31 and the switch arm 9, as previously described. It will thus be seen that I have provided a novel safety feature for preventing the accidental energization of the electromagnet through movement of the latch housing alone.

However, when the latch housing 16 and operating rod 39 are actuated in the specific manner intended, it will be seen that the teeth 30 and 31 will be positioned in locking relation to the latch pin 29 and the electromagnet will in turn be energized so as to hold the armature 22 in the extreme inward position, thereby causing the holding of the teeth 30 and 31 in the locked position through the guide plate 13, as previously described.

In order to cause the deenergization of the electromagnet 1 and the corresponding release of the latch pin 29 by the outward movement of the latch housing 16 under the tension of the spring 43, I have provided a novel means which will now be described. Mounted at the opposite end of the base plate 12 from that of the latch housing 16 are the vertically projecting members 46 and 47, as shown in Figure 1. Pivotally connected to these members by the rod 48 is a U-shaped arm 49. Connected between the opposite arms of the U-shaped member 49 is a rod 50 rotatably mounted on a second rod 94. There is mounted intermediate the ends of the rod 50 a wheel-like actuating member 51 formed of suitable insulating material. The member 51 is adapted to cooperate with the spring pressed switch arm 9 so that upon the switch arm 9 being in circuit closing relation pivotal movement of the U-shaped member 49 in a counter-clockwise direction on the members 46 and 47 as shown in Figures 1, 2 and 3 will cause through the member 51, the actuation of the arm 9 to an open circuit position, thereby deenergizing the electromagnet 1. A suitable spring arm 52 is provided mounted on the guide plate 13 by the screws 14 and 15. The spring arm 52 is mounted so as to engage the rod 50 to bias the U-shaped member 49 and the actuating member 51 out of engagement with the spring arm switch member 9. Projecting from the guide plate 13 are also the arms 53 and 54 having provided the indentures 55 and 56, respectively, as shown in Figure 1 in which are disposed the opposite arms of the U-shaped member 49. The outwardly projecting edges defining the indentures 55 and 56 limit the pivotal movement of the U-shaped member 49. It will thus be seen that in normal operation spring member 52 will bias the U-shaped member 49 to a position whereby the actuating member 51 is out of engagement with the spring pressed switch arm 9.

Through the arrangement of my switch operating rod 39, I have provided novel means whereby the tension exerted by the spring 43 on the latch mechanism may be conveniently released upon the energization of the electromagnetic biasing means for holding the latch mechanism in a closed position. Similarly, though the arrangement of my release mechanism 49 I have provided novel means for deenergizing the electromagnet and permitting the re-application of the force of the spring 43 to the latch mechanism for holding the latch mechanism in an open position.

It will further be seen in Figure 1 and in Figure 4 that a shield 57 is provided for protecting the inlet terminals 11 and 6. The protective shield-like member 57 extends inwardly and has provided the bent-under ends 58 and 59, as best shown in Figure 4. The guide plate 13 is provided with projecting flanges 60 and 31 which fasten securely over the bent-under end 58 of the member 57 and an end of the insulating member 3, respectively. Similarly, the base plate 12 has provided the projecting flanges 62 and 63 which likewise fasten an end of the insulating plate 3 and the bent-under end 59 of the member 57, respectively.

From the foregoing, it will be readily seen that a very sturdy, economical and compact latch means has been provided. Further, as shown in Figure 6, there is illustrated diagrammatically the manner in which this latch means may be used as a flying hood release latch. In the structure illustrated, the flying hood would operate under a tension spring 70 which would tend to pull the hood upwardly under spring tension. A handle 71 is provided whereby the operator may manually pull the hood down in closed position causing the latch bar or pin 29 to engage in the mouth-like indenture 26 of my latch mechanism indicated generally by numeral 72. The latch housing 16 is thus moved downward whereupon the armature 22 is actuated by the magnet 1 so as to hold the latch mechanism in locked position. As shown in Figure 6, there is provided in circuit with the electromagnet 1 a suitable air speed switch indicated generally by the numeral 73 of a type such as disclosed in the application of Willis H. Gille, Serial No. 460,522, filed October 2, 1942.

The air speed switch 73 has one terminal thereof electrically connected through a conductor 74 to one of the input terminals 6 or 11 of the electromagnet 1. The remaining input terminal of electromagnet 1 is connected through a conductor 76 to a suitable source of electrical energy indicated by the numeral 77. A conductor 78 leads from the opposite terminal of the source of electrical energy 77 to the remaining terminal of the air speed switch 73, as shown diagrammatically in Figure 6.

The air speed switch indicated generally by numeral 73 is of a type adapted to open the circuit upon a predetermined maximum and minimum air speed so as to eliminate insofar as possible the dangers resulting from the plane going into a dive or stalling while the hood is in the blind flying position, speed in excess of the safe maximum indicating a dive and speed below the safe minimum speed indicating a stall.

Thus upon the opening of the circuit for the electromagnet 1 upon the minimum or maximum air speed, it will be readily seen that the electromagnet 1 will be deenergized and the latch housing 16 moved upward under spring tension to an open position, whereupon the latch pin 29 will be released and the flying hood under tension of spring 70 returned to an open position and

normal flying resumed. Also, it will be seen that should the circuit be broken through accident or from other cause or upon power failure, the electromagnet 1 will similarly be deenergized causing the return of the latch member to open position, whereupon the difficulty may be easily located by the pilot. Such operation will thus assure the safe operation of the plane during the flying maneuver and prevent failure of operation due to causes out of the control of the pilot.

In the normal operation of the plane upon completion of the blind flying maneuver, the flying hood may be released to open position by merely pivoting upwardly with the finger the U-shaped member 49 so as to position the member 51 in such a manner as to actuate the spring arm 9 so as to break the electrical contact at the contacts 81 and 82, thereby opening the electromagnetic circuit and deenergizing the magnet 1 to release the flying hood under tension of the spring 70. The spring 43 will on engagement of the projecting part 42 of the rod 39 with the shoulder 75 of the tubular member 41, upon release of the bar 29, then bias the latch mechanism 16 in an open position. While the use of my latch mechanism is illustrated in Figure 6 as applied to a flying hood having an independent biasing means or to a hood biased downwardly by apparent that my latch mechanism may be applied to an evenly balanced hood without such a biazing means or to a hood biased downwardly by a force greater than spring 43, in which case upon the independent actuation of the rod 39 by the latch bar 29 the biasing spring 43 will be disengaged from the latch means 16. Further, it will be obvious the latch mechanism is readily adaptable for use with or without the air speed switch indicated by numeral 73. Moreover, my latch mechanism is readily applicable for use wherever a latch means may be employed.

Further, it will be readily understood that minor changes in the size, form and construction of the various parts of my invention may be made and substituted for those herein shown and described, without departing from the spirit of my invention, the scope of which is set forth in the appended claims.

I claim as my invention:

1. A device of the character described, comprising, in combination, a latch means, an electromagnet for holding the latch means in locked position, control means mounted within the latch means for controlling the energization of the electromagnet and a latch bar for simultaneously actuating the latch means and the control means in such a manner as to cause the energization of the electromagnet for holding the latch means in locked position.

2. A device of the character described, comprising in combination, a latch means, independent means for holding the latch means in locked position, means mounted within the latch means for controlling the actuation of the independent holding means, and means for simultaneously actuating the latch means and the independent holding means in such a manner as to hold the latch means in locked position.

3. A device of the character described, comprising in combination, a latch housing movable from a first to a second position, the latch housing having formed therein a mouth-like indenture, teeth-like members pivotally mounted in the said latch housing, a guide plate for pivotally projecting the teeth-like members into the mouth-like indenture upon movement of the latch housing from the first to the second position, a control rod slidably mounted within the latch housing and one end of the control rod positioned adjacent to the said mouth-like indenture, a spring tension switch, a push button for actuating the switch, the control rod adapted to actuate the push button upon the control rod being moved from a first position to a second position, an electromagnet controlled by the said switch, an armature mounted on the latch housing for cooperation with the electromagnet, a projecting member mounted on the control rod and adapted to engage the said armature upon the control rod being moved to the said first position, a spring member biasing the said control rod to the first position in such a manner as to hold the latch housing and the control rod under spring tension in the said first position, a latch bar for engagement in the said mouth-like indenture of the latch housing and the latch bar adapted to move the latch housing and the control rod from a first position to a second position whereupon the latch bar is locked in the said mouth-like indenture of the latch housing by the teeth-like members and the electromagnet is energized for holding the armature and the latch housing in the said second position.

4. In a latching mechanism for latching a device, comprising, in combination, latch means movable from an open to a closed position, electromagnetic means for holding the latch means in a closed position, the latch means actuated from an open to a closed position by the device to be latched, switch means for controlling the energization of the electromagnetic means, and control means for closing the said switch means, the control means arranged in such a manner as to be actuated by the device to be latched upon said device actuating the latch means from an open to a closed position and thereby causing the energization of the electromagnetic means so as to hold the latch means in closed position locking the device to be latched in the latch means.

5. A device of the character described, comprising, in combination, latch means movable from an open to a closed position, electromagnetic means for holding the latch means in a closed position, an electric circuit for energizing the electromagnetic means, push button means mounted within the latch means for closing the circuit to energize the electromagnetic means and the said push button means so arranged in the said latch means as to close the circuit upon simultaneous actuation of the push button means and the latch means to a closed position.

6. In a latching mechanism for latching a device, in combination, a supporting structure, latching means carried thereby and movable to a latching position, and means for holding said latching means in its latched position including a member freely movable in reverse directions and which must be moved to and held in a predetermined position to render said holding means effective, said member being spaced from said latching means, when the latching means is in latching position, by an amount which requires that the device to be latched actually be in place and latched thereby in order for said holding means to be moved to and held in its latch holding position.

7. In a latching mechanism for latching a device, latching means movable to latching position, and holding means for holding said latching means in latching position and including a mem-

ber which must be moved to a new position in a direction commensurate with the movement of said latching means in latching direction and held in said new position to maintain said latching means in latching position, said member being spaced from said latching means when the latching device is in its latching position whereby said member is not moved to and held in its new position by said latching means unless the device to be latched is in place.

8. In a latching mechanism for latching a device having a given configuration, in combination, latching means movable to latching position, and means to hold said latching means in latching position including a member which must be moved to and held in a new position to render said holding means effective, said member being spaced from said latching means at all times but at a smaller distance when said latching means is in latched position than when it is in unlatched position whereby said member will be moved to and held in said new position upon movement of said latching means to latching position only if the device to be latched is in place.

9. A device of the character described, comprising, in combination, a latch member, a support, a tubular member attached to the latch member and slidably mounted within the support, a push rod slidably mounted within the tubular member and positioned within the latch member, a projecting member mounted on the push rod, a shoulder portion provided on the tubular member to releasably engage the projecting member, spring means acting upon the push rod so as to hold the push rod and tubular member in releasable engaging relation for biasing the latch member to an open position, and means for actuating the push rod in such a manner as to disengage the push rod from the tubular member so as to release the tension of the spring means from the latch member.

10. A device of the character described, comprising, in combination, latch means, first biasing means for forcing the latch means to an open position, second biasing means for holding the latch means in a closed position, and control means for alternatively applying the forces of the aforesaid biasing means to the latch means.

11. A device of the character described, comprising, in combination, latch means, spring means for holding the latch means in an open position, electromagnetic means for holding the latch means in a closed position, and manually operable control means for disengaging the spring means and energizing the electromagnetic means.

12. A device of the character described comprising, in combination, latch means, spring means for holding the latch means in an open position, electromagnetic means for holding the latch means in a closed position, and manually operable control means for deenergizing the electromagnetic means and engaging the spring means with the said latch means.

13. A device of the character described, comprising, in combination, latch means, first biasing means for forcing the latch means to an open position, second biasing means for forcing the latch means to a closed position, first control means for applying to the latch means the force of the second biasing means and releasing the force of the first biasing means, and second control means for applying to the latch means the force of the first biasing means and releasing the force of the second biasing means.

14. In a latching mechanism for latching a device, comprising, in combination, latch means, an electromagnet for holding the latch means in a closed position, a tubular member attached to the latch means and slidably mounted within the electromagnet, a push rod slidably mounted within the tubular member and having one end positioned within the latch means, a projecting part mounted on the push rod, a shoulder portion provided on the tubular member to releasably engage the projecting part, spring means acting upon the push rod so as to hold the push rod and tubular member in releasable engaging relation for biasing the latch member to an open position, switch means for controlling the energization of the electromagnet, the said latch means actuated by the device to be latched to a closed position and the said push rod simultaneously actuated by the device to be latched in such a manner as to cause the push rod to disengage the tubular member causing the actuation of the said switch means so as to energize the electromagnet for holding the latch means in a closed position.

15. In a latching mechanism for latching a device, comprising, in combination, latch means, an electromagnet for holding the latch means in a closed position, a tubular member attached to the latch means and slidably mounted within the electromagnet, a push rod slidably mounted within the tubular member and having one end positioned within the latch means, a projecting part mounted on the push rod, a shoulder portion provided on the tubular member to releasably engage the projecting part, spring means acting upon the push rod so as to hold the push rod and tubular member in releasable engaging relation for biasing the latch member to an open position, switch means for controlling the energization of the electromagnet, the said latch means actuated by the device to be latched to a closed position together with said push rod in such a manner as to disengage the tubular member causing the actuation of the said switch means so as to energize the electromagnet for holding the latch means in a closed position, a pivotally mounted lever, a roller mounted on the said lever for actuating the switch means so as to deenergize the said electromagnet whereupon the push rod is returned to engaging relation with the tubular member aforesaid under tension of the spring means whereby the latch means is biased to an open position.

16. A device of the character described, comprising, in combination, a supporting member, a guide member, a latch carriage slidably mounted between the supporting member and the guide member, the said latch carriage movable from a first position to a second position, the latch carriage having formed therein a mouth-like indenture, a locking finger pivotally connected to the latch carriage, the said locking finger slidably actuated by the guide member whereby upon movement of the latch carriage from the first to the second position movement is imparted by the guide member to the locking finger moving the said finger into the mouth-like indenture in a locking position, magnetic means for holding the latch carriage in the said second position whereupon the guide member is adapted to secure the locking finger in the aforesaid locking position.

17. A device of the character described, comprising, in combination, a supporting member, an actuating member, a latch housing slidably mounted between the supporting member and the actuating member, the said latch housing

movable from a first position to a second position, the latch housing having formed therein a mouth-like indenture, locking fingers pivotally connected to the latch housing and movable in and out of the said mouth-like indenture, spring means biasing the locking fingers out of the said mouth-like indenture, the actuating member forcing the locking fingers into the said mouth-like indenture upon movement of the latch housing from the first position to the second position, electromagnetic means for holding the latch housing in the said second position, means for controlling the energization of the said electromagnetic means, and guard means for permitting in normal operation the actuation of the said control means to energize the said electromagnetic means only upon movement of the latch housing to the second position.

18. A latching mechanism for latching a device, comprising, in combination, a latch member, an electromagnet for releasably holding the latch member in a locked relationship to the device to be latched, control means for causing the energization of the electromagnet, the control means arranged so as to be actuated by the device to be latched upon movement of said device in the latch member.

19. A latching mechanism for latching a device, comprising, in combination a latch member slidably movable from an open to a closed position, an electromagnet for holding the latch member in the closed position, control means for energizing the electromagnet and adapted to be actuated by the device to be latched upon movement of the latch member to a closed position, and manually operable means for actuating the control means to deenergizing the electromagnet.

20. In a latching mechanism for latching a device having a given configuration, in combination, a latching means movable to latching position, a switch means, a circuit, electromagnet means to hold said latching means in latching position, and means for operating the switch means including a member which must be moved to and held in a new position to actuate the switch means to close its circuit to render said holding means effective, said member being spaced from said latching means at all times but at a smaller distance when said latching means is in latching position than when said latching means is in unlatched position whereby said member will be moved to and held in said new position upon movement of said latching means to latching position only if the device to be latched is in place.

21. In a latching mechanism for latching a device having a given configuration, in combination, latching means movable to latching position, electromagnet means to hold said latching means in latching position including a member which must be moved to and held in a new position to render said electromagnet holding means effective, said member being spaced from said latching means at all times but at a smaller distance when said latching means is in latched position than when it is in unlatched position whereby said member will be moved to and held in said new position upon movement of said latching means to latching position only if the device to be latched is in place.

22. In a latching mechanism for latching a device, in combination, a supporting structure, latching means carried thereby and movable to a latching position, electromagnet means for holding said latching means in its latched position including a member freely movable in reverse direction and which must be moved to and held in a predetermined position to render said electromagnet holding means effective, said member being spaced from said latching means, when the latching means is in latching position, by an amount which requires that the device to be latched actually be in place and latched thereby in order for said holding means to be moved to and held in its latch holding position.

23. In a latching mechanism for latching a device, in combination, a supporting structure, latching means carried thereby and movable to a latching position, a switch means, a circuit, and electromagnet means for holding said latching means in its latching position, and means for actuating said switch means including a member freely movable in reverse direction and which must be moved to and held in a predetermined position to actuate the switch means to close the circuit to render said electromagnet holding means effective, said member being spaced from the latching means, when the latching means is in latching position, by an amount which requires that the device to be latched actually be in place and latched in order for said holding means to be moved to and held in its latch holding position.

HUBERT T. SPARROW.

CERTIFICATE OF CORRECTION.

Patent No. 2,348,426. May 9, 1944.

HUBERT T. SPARROW.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 4, first column, line 28, for "or to a hood biased downwardly by" read --, the spring 70, it will be readily--; line 31, for "biazing" read --biasing--; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 12th day of September, A. D. 1944.

Leslie Frazer

Acting Commissioner of Patents.