A. H. BARROWS.

AEROPLANE APPLIANCE.

APPLICATION FILED AUG. 26, 1912.

1,142,134. Patented June 8, 1915.

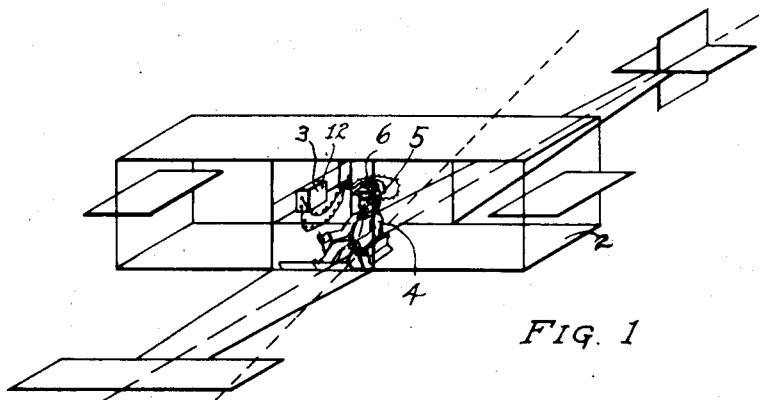


FIG. 1

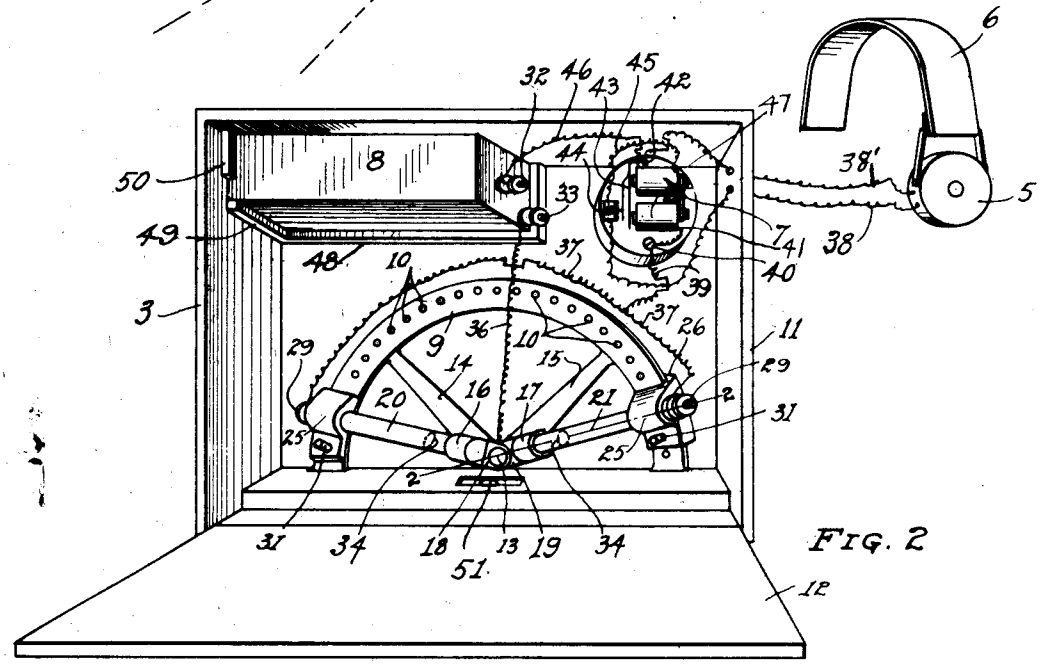


FIG. 2

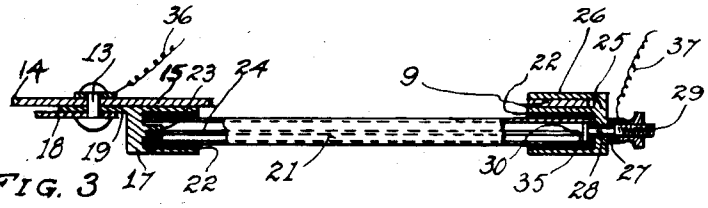


FIG. 3

WITNESSES

Wm. G. Blomstran.

P. McArthur

INVENTOR

Asahel H. Barrows

BY

J. Warren Perkins

ATTORNEY

UNITED STATES PATENT OFFICE.

ASAHEL H. BARROWS, OF CHICAGO, ILLINOIS.

AEROPLANE APPLIANCE.

1,142,134. Specification of Letters Patent. Patented June 8, 1915.

Application filed August 26, 1912. Serial No. 716,948.

To all whom it may concern:

Be it known that I, ASAHEL H. BARROWS, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Aeroplane Appliances, of which the following is a specification.

My invention relates to aeroplane accessories and has particular reference to means for apprising the pilot when his craft is tilted near a dangerous angle.

As is well known an aeroplane pilot has more or less difficulty in determining, especially when at a great altitude, the inclination of his air-ship and many accidents have been due to this. Visual devices have been provided for registering the angles of inclination, but owing to the preoccupation of the pilot's attention with numerous other parts of his mechanism the visual signals have failed to give warning in time to prevent accidents.

The object of the present invention is to provide an audible signal or alarm transmitted through a telephone receiver constantly held against the operator's ear, and the invention consists in the novel construction of signal, its combination with an aeroplane and arrangement of parts all as hereinafter described in detail, illustrated in the accompanying drawing and incorporated in the appended claim.

In the drawing Figure 1 is a perspective view of an aeroplane with a pilot thereon and my invention applied thereto. Fig. 2 is a perspective view of what I term my improved "inclinometer," an outside view of which is shown on a small scale in Fig. 1. Fig. 3 is an enlarged section taken substantially on line 2—2 of Fig. 2 and partly broken away.

In the several views 2 represents an aeroplane, 3 the inclinometer as a whole, 4 the pilot, 5 a telephone receiver, and 6 a clamp or strap by means of which the receiver is supported on the operator's head and against his ear.

7 is a buzzer or electric bell of the usual construction, supplied with current from a battery 8, and 9 is a semicircular arch or sector having therein a series of perforations 10 which may be spaced apart as desired, say, five degrees.

The above named parts are mounted in a box or case 11 provided with a door or closer 12 suitably hinged, but the details of its construction are immaterial and may be modified in any suitable way.

The sector is provided with radial webs 14 and 15 which converge at a pivot or axis 13 of the sector. On the pivot are mounted sockets or fittings 16 and 17 which have lugs or flanges 18 and 19 through which the pivot 13 passes. The sockets and rivet are preferably made of brass, copper or other material suitable for conducting the current from the battery. In the sockets or fittings are secured glass tubes 20 and 21 in the manner shown in Fig. 3, where 22 represents a packing or insulation between the tube and the fitting. From the inner side of the bottom of each of these sockets extends a hub or hollow lug 23 in which is fastened a conducting wire 24 which extends to a point near the opposite end of the tube. On said opposite end is mounted a fitting 25 which lies against one side of the protractor or sector 9 and has a lip or flange 26 which engages the opposite side of said protractor. Fastened into and insulated from the fitting 25 by insulation 27 is a short wire 28 which has an outwardly projecting binding post portion 29 and projects into the tube or pivoted arm and is spaced from the contact wire 24 by an open space 35. The swinging end of the pivoted arm is held against movement by a pin 31 which passes through a hole in the fitting onto one of the perforations 10. The binding posts for the two poles of the battery are labeled 32 and 33. Within each of the glass tubes is a small quantity of mercury 34 or other suitable substance adapted to be flowed or moved into the upper end of the tube to close a gap 35 between the ends of the terminal wires 24 and 28. From the binding post 33 of the battery a wire 36 leads to the pivot pin 13, and the binding posts on the fittings 25 are connected by a wire 37, and from this wire the circuit continues to the receiver 5 through a wire 38. A wire 39 branches from the wire 38 to one of the binding posts 40 of the magnet coils. The post 40 is, in turn connected with one end of the magnet coils, which end is represented as 41. The other wire for the receiver is labeled 38′ and this leads to a binding post 42 which is the usual insulated support or axis of the vibrator 43. From the post 42 the return is made to the binding post 32 of

the battery through a wire 46. The circuit for the buzzer or bell is continued from the opposite end 47 of the magnet coils through a wire 45 to the post 44 of the buzzer or bell, and from this post the circuit is completed through the vibrator, its supporting post 42 and the wire 46.

The circuit is normally open as in the case of electric bells. In the present invention this circuit is closed by flowing the mercury into the outer end of one of the glass tubes which is accomplished when the plane is tipped. The angle at which it may be permitted to incline before alarm is sounded is determined by the adjustment of the glass tubes on the protractor or sector 9 about the axis 13. The invention is, of course, not confined to the use of the mercury fluid for this purpose. In Fig. 1 the inclinator is shown arranged lengthwise on transverse lines of the machine, but by arranging it, or a duplicate thereof, at right angles to the position in which it is shown, the inclinometer will register in like manner side tipping. The latter is not, however, so difficult for the pilot to gage as the forward or rearward tipping. The battery is shown supported in the casing on a pair of strips or ledges 48 and 49 on which it is held against accidental displacement by a pin 50 inserted in a hole made therefor in the top side of the box 11. A level 51 is placed on the bottom side of the box as a guide in mounting it on the plane, so as to get the inclinator parallel with said plane.

From the foregoing description the operation of the invention will be readily understood, namely, that when the plane tips in the direction to flow the mercury between the terminals 28 and 24 in either tube, the buzzer or bell will be sounded and the sound will be transmitted to the operator's ear through the telephone transmitter wires. No attention need therefore be paid to any visual indicator for this purpose and the operator or pilot is relieved of this important detail requiring watchfulness.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

The combination with an aeroplane, of an inclinometer comprising a pivoted member having electric terminals, an electric sounding device, an electric circuit normally open at said terminals, means for adjusting the angle of inclination of said pivotal member, and means operable by the movements of said aeroplane for closing the circuit or electrically connecting said terminals.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

ASAHEL H. BARROWS.

Witnesses:
WM. G. BLOMSTRAN,
J. E. HAGBORG.