Dec. 5, 1939. F. A. KIERNAN 2,182,632

COMMUNICATION RECORDING SYSTEM

Filed March 18, 1938

FIG. 1.

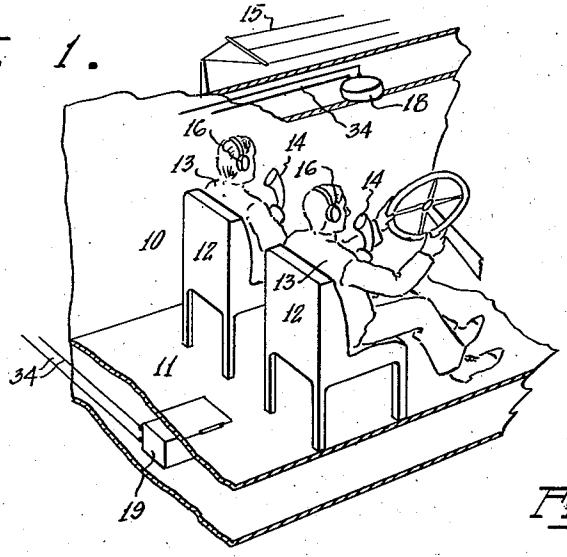



FIG. 3.

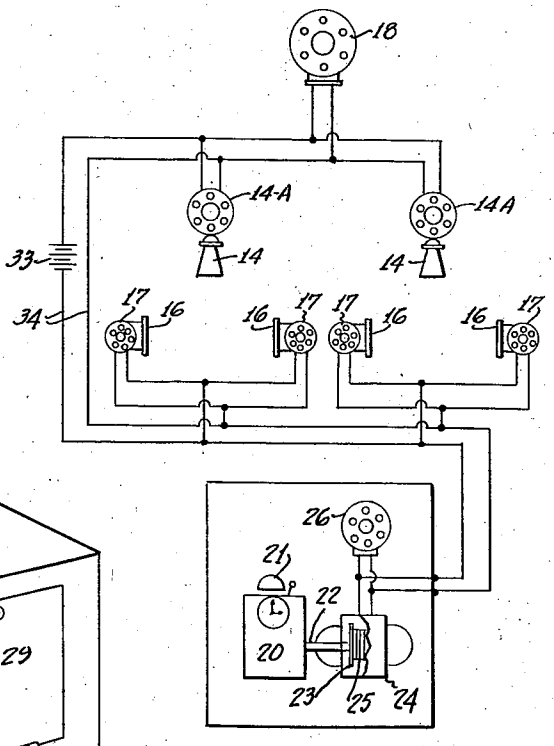
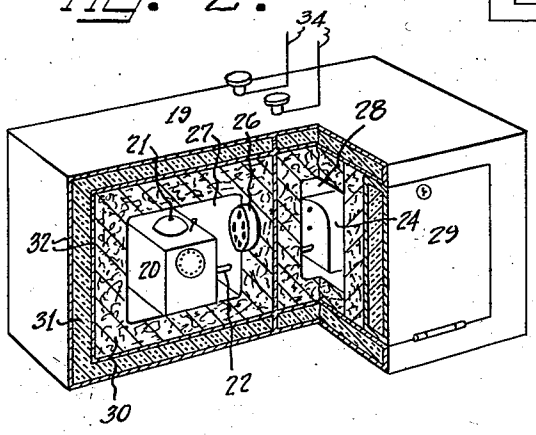



FIG. 2.




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## COMMUNICATION RECORDING SYSTEM

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4 Claims. (Cl. 179—6)

This invention relates generally to aviation, and particularly to communication recording systems.

The main object of this invention is the provision of a recording system whereby signals and messages sent between an airplane and the ground may be recorded in chronological order and sounds from the cockpit and ground control room may be recorded in conjunction with the signals and messages passing between such points.

The second object is to afford a definite and positive check on the communication system between the airplane and the ground making it possible to determine the exact time and conditions under which a ship failed or an accident occurred.

The third object is to afford a means for controlling the conduct of its pilots and attendants.

The fourth object is the construction of the device described which will bear a permanent record of the communication during a given flight and in the manner that such record will not be destroyed even though the plane be burned or wrecked.

These, and other objects, will become more apparent from the specification following as illustrated in the accompanying drawing, in which:

Fig. 1 is a fragmentary view of the cockpit showing the relative positions of the various elements.

Fig. 2 is a perspective view of the recording unit showing a portion thereof broken away in section to disclose the elements therein.

Fig. 3 is a diagrammatic view of a representative form of the system with the antenna and other details omitted for the purpose of simplifying the drawing.

Similar numerals refer to similar parts throughout the several views.

Referring in detail to the drawing, there is shown a cockpit 10 on whose floor 11 are mounted the chairs 12 for the pilots 13. Each pilot 13 is equipped with a microphone mouthpiece 14 by means of which he can send messages to the ground station over the antenna 15 through the usual broadcasting system not shown. Each mouthpiece 14 has attached thereto a microphone 14—A. Each pilot 13 is provided with a set of earphones 16 to which is also attached a microphone 17. A larger microphone 18 is mounted overhead in the cockpit 10.

In some convenient position, preferably under the floor 11, is disposed the recording unit 19 in which is disposed a time controlled motor 20 including an alarm bell 21 which will be sounded by the mechanism thereof at fixed intervals of time, in other words, a striking clock mechanism having a power take-off shaft 22 which operates a drum 23 contained within the casing 24. The drum 23 has wound thereon a suitable sound recording wire 25, and the usual mechanism for magnetising the wire 25 for the purpose of impressing a sound record thereon is contained within the casing 24. A microphone 26 is also mounted within the unit 19.

The motor 20 is preferably of the spring wound type, although obviously any other means for driving same may be employed. It is desirable, however, to mount the motor 20 in a separate compartment 27, whereas the casing 24 is mounted in the compartment 28.

A suitable closure 29 is provided for the recording unit 19. Suitable insulations 30 and 31 are used in conjunction with the casing walls 32 of the recording unit 19.

A source of power 33 and communicating wires 34 connect the various earphones 16 and microphones 14, 17, 18 and 26 with the recording unit 19.

The operation of the device is as follows:

When a signal or message is sent from a ground station to an airplane and received over the antenna 15 through the usual form of receiving apparatus, not shown, the message is delivered through the earphones 16 to the pilots 13. Not only does the pilot 13 hear this message, but it is picked up by the microphone 17 and impressed on the recording wire 25, the commonly accepted method being the type employing magnetism.

If a pilot 13 speaks to the ground station through his microphone 14, the message is also recorded on the wire 25 by reason of the fact his voice is picked up by the microphone 14—A.

It will be noted that the motor 20 is continuous in its operation and that it intermittenly sounds the bell 21. The sound of the bell 21 is picked up by the microphone 26 and impressed on the wire 25. Therefore, there is provided by means of the various microphones a continuous record of sounds in the cockpit 10, including those originating from and delivered thereto and also the time intervals are indicated by the intermittent sounding of the alarm bell 21 so that at any time thereafter a complete record is obtainable of messages sent between the plane and the ground, the time of sending, the sound of the operating motors and the exact time at which an accident may have occurred due to the fact that the microphones will cease to operate immediately upon crashing, and although the motor 20 may

continue to operate, no sound will be impressed upon the wire 25. It will be seen that the microphone 18 will pick up any voice in the cockpit 10 whether or not the speaker is equipped with a mouthpiece.

It must be understood that the mechanism shown is only representative since any type of sound recording means may be employed and any type of motor may also be used without departing from the spirit of this invention.

I claim:

1. In a device of the class described, the combination of a head-set with a microphone attached to the head-set whereby sounds produced by said head-set will be picked up by said microphone.

2. In a device of the class described, the combination of a head-set, a microphone attached to said head-set and a sound recording instrument connected to said microphone in a manner that a message delivered over said head-set will be recorded on said sound recording instrument.

3. In a device of the class described, the combination of a head-set adapted to be worn by an aviator, a microphone mounted on said head-set in a manner to pick up sounds delivered by said head-set, a sound recording instrument associated with said microphone and means for protecting said recording instrument against destruction by fire.

4. In a device of the class described, the combination of a telephone head-set with a microphone associated with said head-set adapted to pick up messages delivered over said head-set or sounds produced within hearing range of said head-set and a recording instrument associated with said microphone adapted to record sounds occurring within range of said head-set.

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