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On the first of September a communication plane crashed in Virginia and 25 passengers were killed. The cause of the catastrophe was attributed to lightning which provoked an explosion of the plane.

The recurrent explosions which happen from time to time in flying or landing planes may suggest that these explosions are caused by unsatisfactory safety devices inside the fuel tank. Having had in this field of research a wide experience I shall endeavor to elucidate the causes of the explosion and suggest preventive measures.

A blast in the fuel tank may be caused by spark discharge between two conductors insufficiently connected. The apparatus showing the amount of gas in the tank is mostly based on the fuel level gage floater system. The floater is connected by several levers with the fuel gage which indicates to the pilot the amount of gasoline in the tank. Although the metallic parts, forming the transmitting mechanism appear to be perfectly connected and apparently are beyond suspicion, nevertheless those connections may be insufficient in the case of electric discharges. Insulations of one-thousandth of millimeter in the joints, caused by oil or gasoline or any type of dirt which makes a bad connection, are a source of danger. Thus, transmitting a current we would notice a heating of the metal at the point of defective contact due to a spark discharge of even the smallest degree. Such a spark contact may produce in the tank an explosion of the mixture of gasoline vapors and air. Atmospheric discharges are not necessary since the landing plane, statically loaded during the flight, can produce a discharge at the grounding. At the moment, at the points of defective contact, the separate metallic parts can discharge a spark which is most dangerous inside a fuel tank.

To be entirely protected against such dangers one should connect all metallic parts in the gas tank with an electric contact excluding any future decrease of efficiency. All metallic parts inside the fuel tank should be securely connected with its walls. For this purpose the most effective would be metal strings, which would not interfere with the working of the joints and be connected with different metallic parts not by means of clips but by solid welding. Such safety device would exclude once and for all any danger of explosion, even with the strongest atmospheric discharges during a thunder storm.

In the case of non-mechanic indicators, as for example of an electric indicator of the condensers volume, there are no mobile metallic parts in the fuel tank, but the metallic rods form the condenser should be insulated from the walls of the tank. This insulation should be sufficient in case of high tension, so that no spark could flash inside the tank. However, the rods leaving the tank should be close to the metal of the exterior wall of the tank so as to facilitate the leap over of the spark to the external wall of the tank at the low tension of 500 volts maz. and therefore prevent any spark inside the tank. One of the rods could eventually be connected permanently with the wall of the tank.

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