F. E. SCHOLFIELD.

APPARATUS FOR AIRCRAFT.

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1,421,846. Patented July 4, 1922.

Fig. 1.

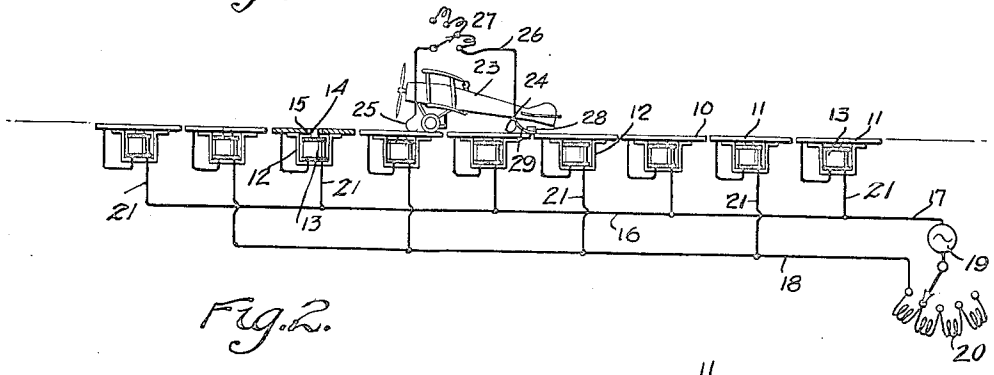


Fig. 2.

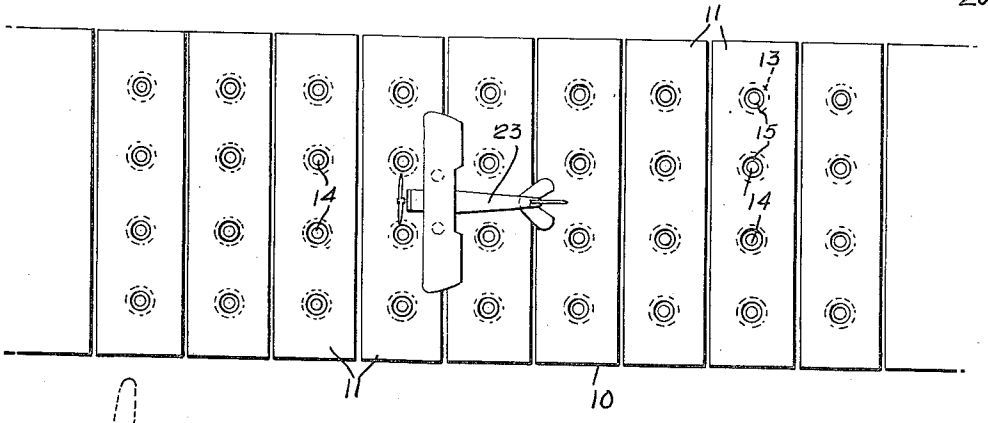
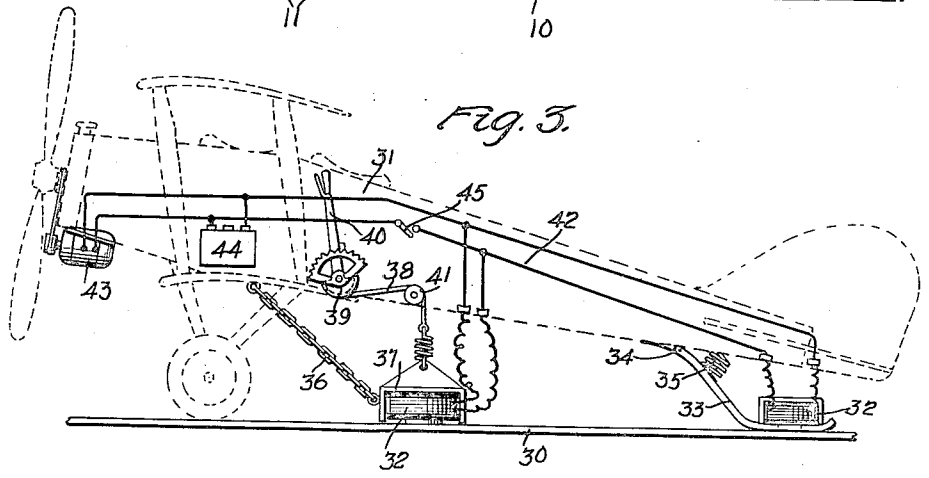


Fig. 3.



WITNESSES

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APPARATUS FOR AIRCRAFT.

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To all whom it may concern:

Be it known that I, FREDERICK E. SCHOLFIELD, a citizen of the United States, and a resident of Waterford, in the county of New London and State of Connecticut, have invented a new and Improved Apparatus for Aircraft, of which the following is a full, clear, and exact description.

This invention relates to an apparatus for aircraft and refers more particularly to an electro-magnetic means for the application of a braking force to an airplane.

The invention contemplates for one of its objects to provide means for stopping or starting an airplane in a very small or limited area such as the deck of a ship, roof of a building or the like.

Another object in view resides in the provision of a device of the character described which may be employed in the capacity of an anchoring device to prevent an airplane, dirigible or the like from being blown away from its moorings or from being shifted from its point of rest on board the deck of a ship by the rolling or pitching of the vessel in a heavy sea.

A further object of the invention resides in the provision of simple, inexpensive and highly efficient means for the purpose specified which can be installed at minimum expenditures and one which will insure the life of the aircraft and the occupants thereof against accident and fatalities.

With the above recited objects and others in view, the invention resides in the novel combination and arrangements of elements set forth in the following specification, and drawing and pointed out in the appended claims, it being of course understood that variations and modifications which properly fall within the scope of the claims may be resorted to when found expedient.

In the drawings—

Figure 1 is a diagrammatic side view partly in section illustrating one form of the invention.

Figure 2 is a plan view thereof.

Figure 3 is a side elevation illustrating another adaptation of the invention.

Referring more particularly to Figures 1 and 2 of the drawings, a landing or mooring platform 10 is provided which consists of a plurality of insulated or spaced sections 11 having secured to the under sides thereof, the brackets 12. An electromagnet 13 is mounted in each bracket with its pole 14 extending through the openings 15 in the landing sections. An electric circuit 16 is provided and includes the positive and negative wires 17 and 18 which lead from a generator 19, a suitable means such as a rheostat 20 being included in said circuit for controlling the current. The first section adjacent the generator is directly connected by a conduit wire 21 to the positive wire 17 and the remaining sections are alternately connected to the positive and negative wires by the conduit wires 21 which wires constitute the windings for the magnets of the said sections. It will thus be seen that when adjacent sections are bridged the current will flow from the generator through the positive wire 17, the wire 21, from one section 11 to the adjacent section, through the wire 21 of said adjacent section, to the negative wire 18 and thence back to the generator. This will energize the magnets 13 of the sections to create a magnetic field over the whole of the said sections. In practice the airplane 23 or other aircraft which is designed to land on the platform will be equipped with a pair of contacts 24 and 25 depending from the fuselage or carriage in spaced relation substantially equal to the length of the platform sections 11. The contacts 24 and 25 are connected by a conductor wire 26 in which a rheostat 27 is arranged for the purpose of respectively establishing or breaking communication therebetween, or controlling the current to increase or decrease the braking force at the will of the operator of the machine.

A metallic shoe 28 is provided on the tail skid 29 or said shoe may be attached in any other suitable manner to the fuselage whereby it will be acted on by the magnetic field set up.

In use of the apparatus, when a plane is to make a landing on the platform 10, the operator of the machine will close the rheostat 27 and when the machine alights and the contacts 24 and 25 respectively engage a pair of adjacent platform sections the circuit will be completed to energize the magnets of the sections, to create a magnetic field which will co-act with the metallic shoe 28 on the tail skid of the machine. This will set up a braking force which will gradually bring the machine to standstill within comparatively short space. The apparatus is also

useful in starting a machine in which instance the magnetic force will be employed to hold the machine against movement until the propeller has obtained a sufficient speed to effect an almost immediate ascent. The apparatus will be found to be of especial advantage in starting a flight from the deck of a vessel as the magnetic force will hold the same in place in spite of the rolling or pitching of a vessel in a high sea. The platform may be used with the magnets arranged as illustrated in Fig. 1 so as to have all of the magnetic poles in the same section, or if desired the whole platform of one polarity on the upper surface. It is also possible when starting the aircraft to change the polarity of the magnets after the engine has reached the desired speed whereby the magnetic force instead of attracting will repel, thereby reducing the friction to assist in the ascent of the machine.

In the modification illustrated particularly in Fig. 3 of the drawings, a landing or mooring platform 30 of solid metallic construction is employed. In this instance the plane or other aircraft 31 is provided with a plurality of electromagnetic shoes 32 one of which is arranged on the tail skid 33 which is preferably pivoted as at 34 to the fuselage and is normally forced downward by a compression spring 35. The other shoe or shoes are connected to the fuselage by a chain or other suitable flexible element 36. This shoe is mounted in a hoisting frame 37 connected by a cable 38 to a quadrant 39 actuated by a lever 40 within convenient reach of the operator, the cable being trained over a pulley 41. By this arrangement the said shoes may be lifted up against the under side of the fuselage or dropped below the plane of a line extending from the point of contact of the skids and wheels with the landing surface. An electric circuit 42 including a generator 43 actuated from the propeller shaft is provided and the shoes 32 are arranged in parallel in said circuit. Preferably the generator feeds a storage battery 44 from which the current is supplied to the circuit. A suitable switch 45 is included in the circuit within convenient reach of the operator for the purpose of breaking the circuit to the electromagnets 32.

In use and operation of this form, when the plane is to make a landing the operator drops the front shoe or shoes and closes the switch 45. When the plane alights on the platform 30, the magnetic shoes 32 will contact with the same to set up a braking force to bring the plane to a stop. In starting the magnetic force will hold the plane until the propeller has reached a sufficient speed to effect an immediate ascent.

I claim:

1. An apparatus for facilitating the launching, mooring or landing of aircraft, comprising a metallic platform, metallic shoes on the aircraft and electromagnetic means for setting up a braking force therebetween when said metallic members are brought in close contact, in combination with means located on the aircraft for rendering said means respectively active or inactive.

2. An apparatus for facilitating the launching and landing of aircraft comprising a metallic platform consisting of a plurality of insulated sections arranged transversely of the path of travel of the aircraft thereover, electromagnets carried by each section, and means on the aircraft adapted to bridge the adjacent sections for energizing the magnets, in combination with a metallic shoe carried by the aircraft and adapted to coact with the magnets when energized to set up a braking force therebetween.

3. An apparatus for facilitating the launching and landing of aircraft, comprising a metallic platform consisting of a plurality of insulated sections arranged transversely of the path of travel of the aircraft thereover, electromagnets carried by each section, means for changing the polarity of said electromagnets, and means on the aircraft adapted to bridge the adjacent sections for energizing the magnets, in combination with a magnetic shoe carried by the aircraft and adapted to coact with the magnets when energized to respectively set up a braking force therebetween or to cause the electromagnets to repel the magnetic shoe.

FREDERICK ERNEST SCHOLFIELD.