July 12, 1927. 1,635,897

H. J. NELSON

AEROPLANE

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Fig. 1.

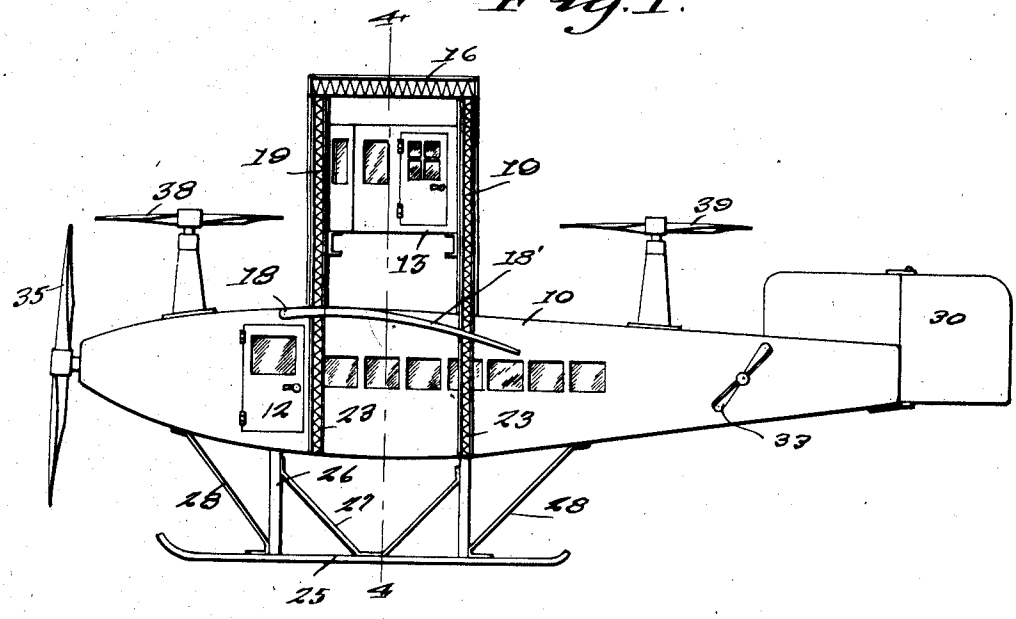
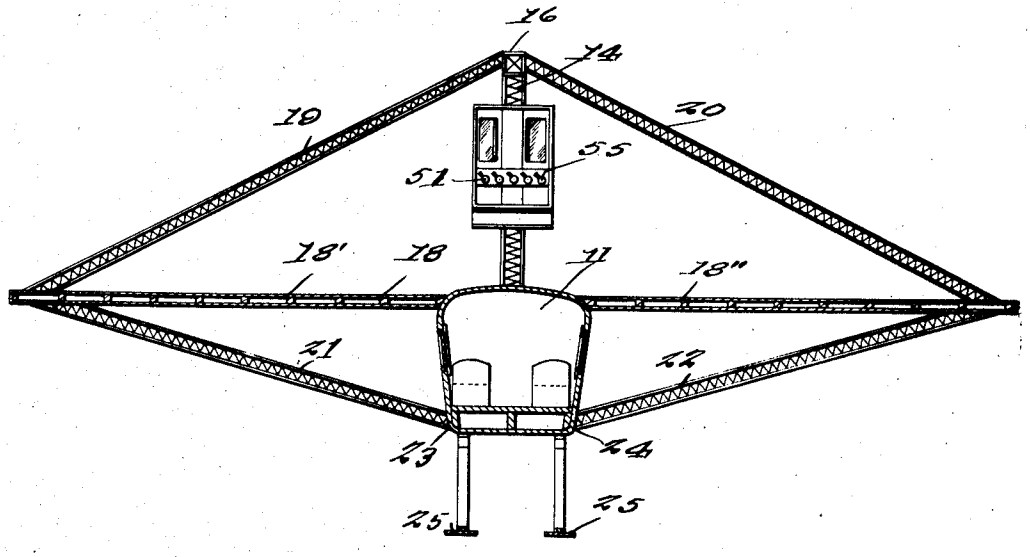


Fig. 4.



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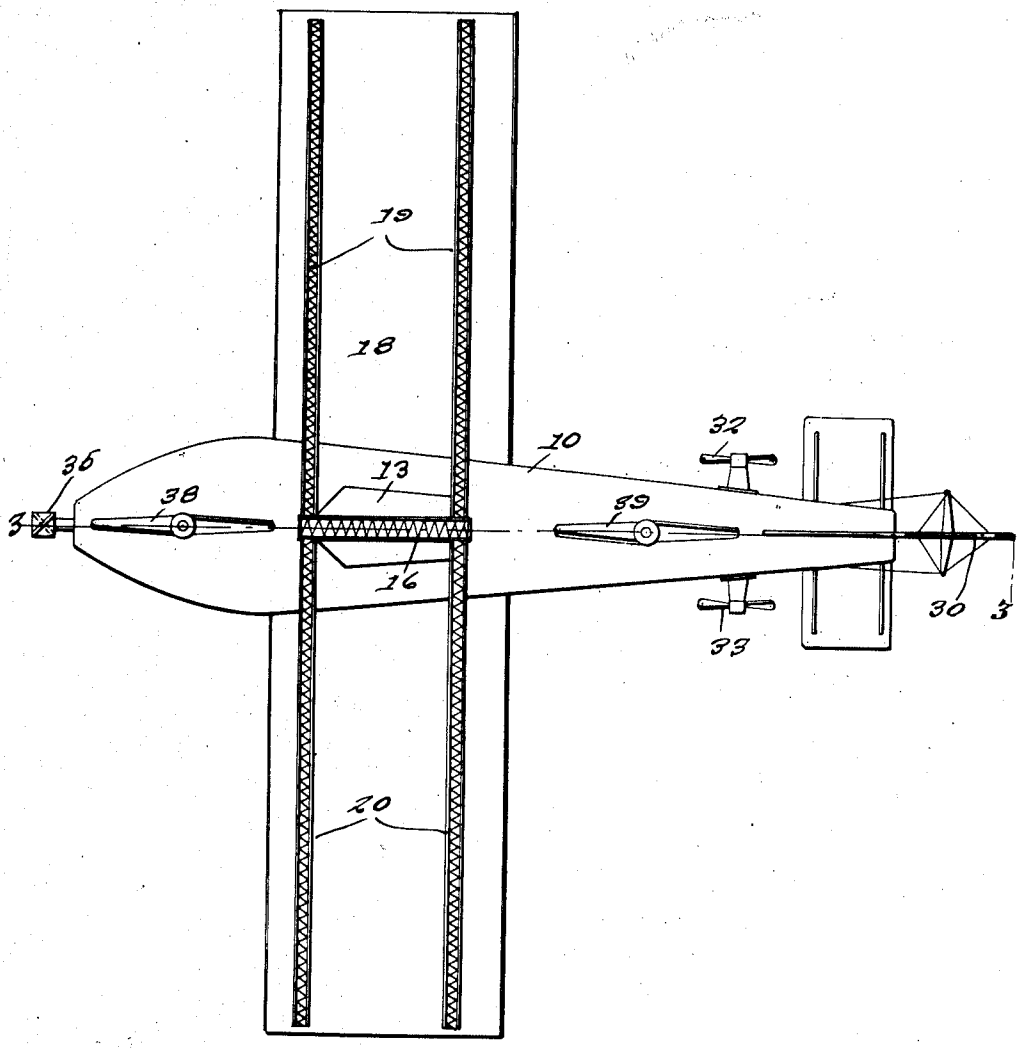
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Fig. 2.



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Fig. 3.

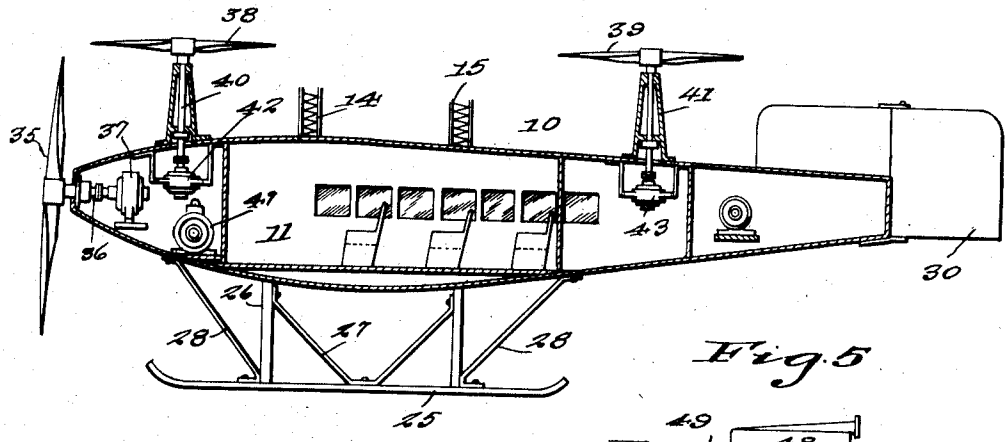


Fig. 5

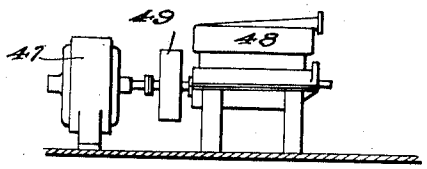
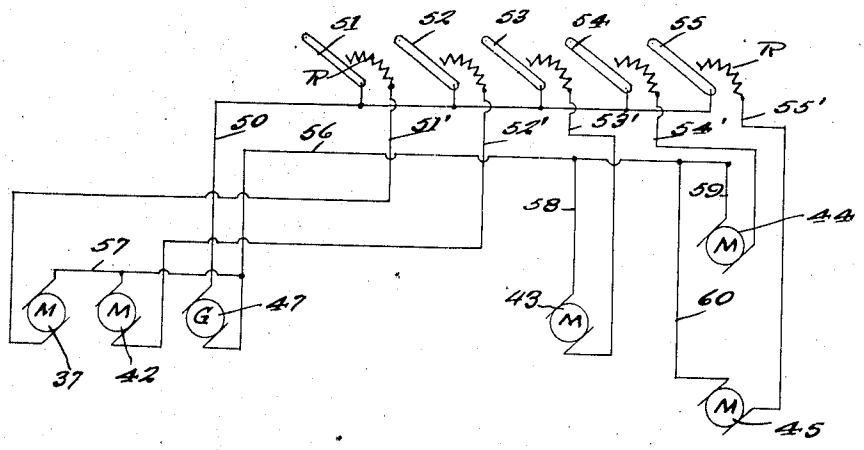


Fig. 6.



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Patented July 12, 1927. 1,635,897

UNITED STATES PATENT OFFICE.

HANS JULIUS NELSON, OF PALO ALTO, CALIFORNIA.

AEROPLANE.

Application filed December 23, 1925. Serial No. 77,302.

The object of this invention is to provide for the special control of an aeroplane, by means of lifting propellers mounted on a vertical axis, or on vertical axes, and a propeller or propellers mounted on horizontal axes, for imparting forward movement to the machine.

A further object is to avoid the use of planes or of gas receptacles of sufficient size for raising a heavy load, and to restrict the size of the machine to the dimension required for carrying the driving mechanism and the quantity of freight or the number of passengers to be transported, reliance being placed for lifting purposes largely on the speed of the lifting propellers, rather than upon extent of wing surface, or upon the buoyancy of gas filled containers.

A further object is to provide for the control of individual motors for the several propellers, so that the speed thereof may be entirely within the control of the pilot, thus permitting him to handle the machine in the manner desired, the compact construction reducing the effect which dangerous air currents have upon the machine having a greater extent of surface exposed.

With the foregoing and other objects in view, the invention consists in the novel construction and arrangement of elements described, illustrated and claimed, it being understood that modifications may be made within the scope of the claim, without departing from the spirit of the invention.

In the drawings forming part of this application,

Figure 1 shows the machine in side elevation.

Figure 2 is a top plan view.

Figure 3 is a view in longitudinal section, on the line 3—3 of Figure 2.

Figure 4 is a vertical transverse section on the line 4—4 of Figure 1.

Figure 5 is a conventional showing of a portion of the driving means.

Figure 6 is a diagrammatic view showing the switches for controlling the individual motors, and the circuit connected with said switches.

The main portion of the machine, designated 10, includes a cabin 11, accessible through door 12, and a pilot house 13 is supported by a structure including vertical members 14 and 15 and an upper transverse member or truss 16.

A plane 18 includes laterally extending members 18′ and 18″, braced by trusses 19 and 20. Other trusses 21 and 22 extend from the outer portions of the plane to the main structure at the points 23 and 24.

The runners 25 are mounted by means of vertical elements such as 26 and middle braces 27, other braces, such as 28 serving an obvious purpose.

A rudder 30 is provided, and may be controlled by any suitable means, but the propellers 32 and 33 may be controlled, individually, in such manner that the use of the vertical rudder 30 will not be required, or will not usually be required.

The driving and elevating mechanism, and the control thereof includes some of the most important features of the construction, and a forward propeller 35 is carried by a shaft 36 driven by a motor, shown conventionally at 37, this being an electric motor, as are also the motors for the several other propellers to be described.

Lifting propellers are designated 38 and 39, and are mounted respectively on shafts 40 and 41 coupled directly to the armature shafts of motors 42 and 43. Figure 3 shows one of the motors for the propellers shown in Figure 2 as being mounted in advance of the rudder. Figure 6 shows both of these motors conventionally, and they are designated in that view, by reference characters 44 and 45.

A generator for supplying electric current to the motors is designated 47, and may be driven by motor 48, a fly wheel of the direct coupled shaft, being designated 49.

One of the leads from the generator 47, is designated 50 and leads to the pivotal points of switch blades 51, 52, 53, 54, 55, the other lead being designated 56 and having connection with a wire 57 leading to corresponding terminals motors 37 and 42. Leads 56 also have connection with corresponding terminals of motors 43 and 44, by means of wires 58 and 59, and with motor 45 by means of wire 60.

A starting resistance R is associated with each switch blade, and each of these resistances is connected with that terminal of the respective motor, opposite to that above mentioned—this connection is effected by means of wires 51′, 52′, 53′, 54′, 55′.

It will be understood therefore, that the motors, and the speed thereof, may be con-

trolled separately, and at will, by the pilot, through the operation of the aforesaid switches.

What is claimed is:

In an aeroplane, a body portion, landing devices mounted below said portion, a driving propeller, lifting propellers mounted on vertical axes, a plane extending transversely of the body portion, a pilot house above the plane and body portion, vertical elements supporting the pilot house, guiding propellers independently controlled and having their axes of rotation in alinement, transversely of the body portion and on opposite sides thereof, and braces extending from the upper portion of the pilot house to the surface of the plane, at the end portions thereof.

HANS JULIUS NELSON.