

K. ZUGGÓ.
AEROPLANE.

APPLICATION FILED JAN. 6, 1911.

1,014,430.

Patented Jan. 9, 1912.

6 SHEETS—SHEET 1.

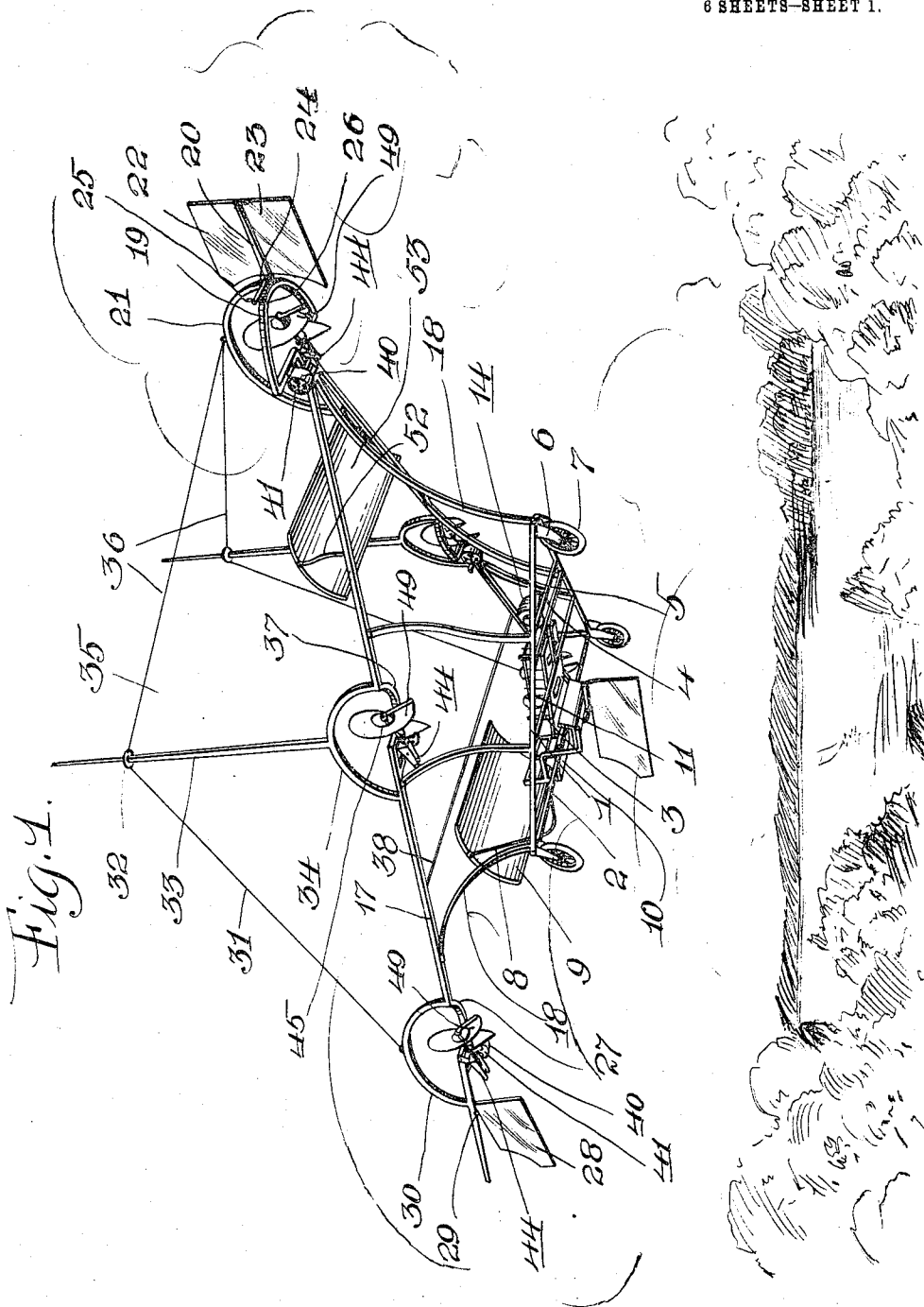


Fig. 1.

WITNESSES

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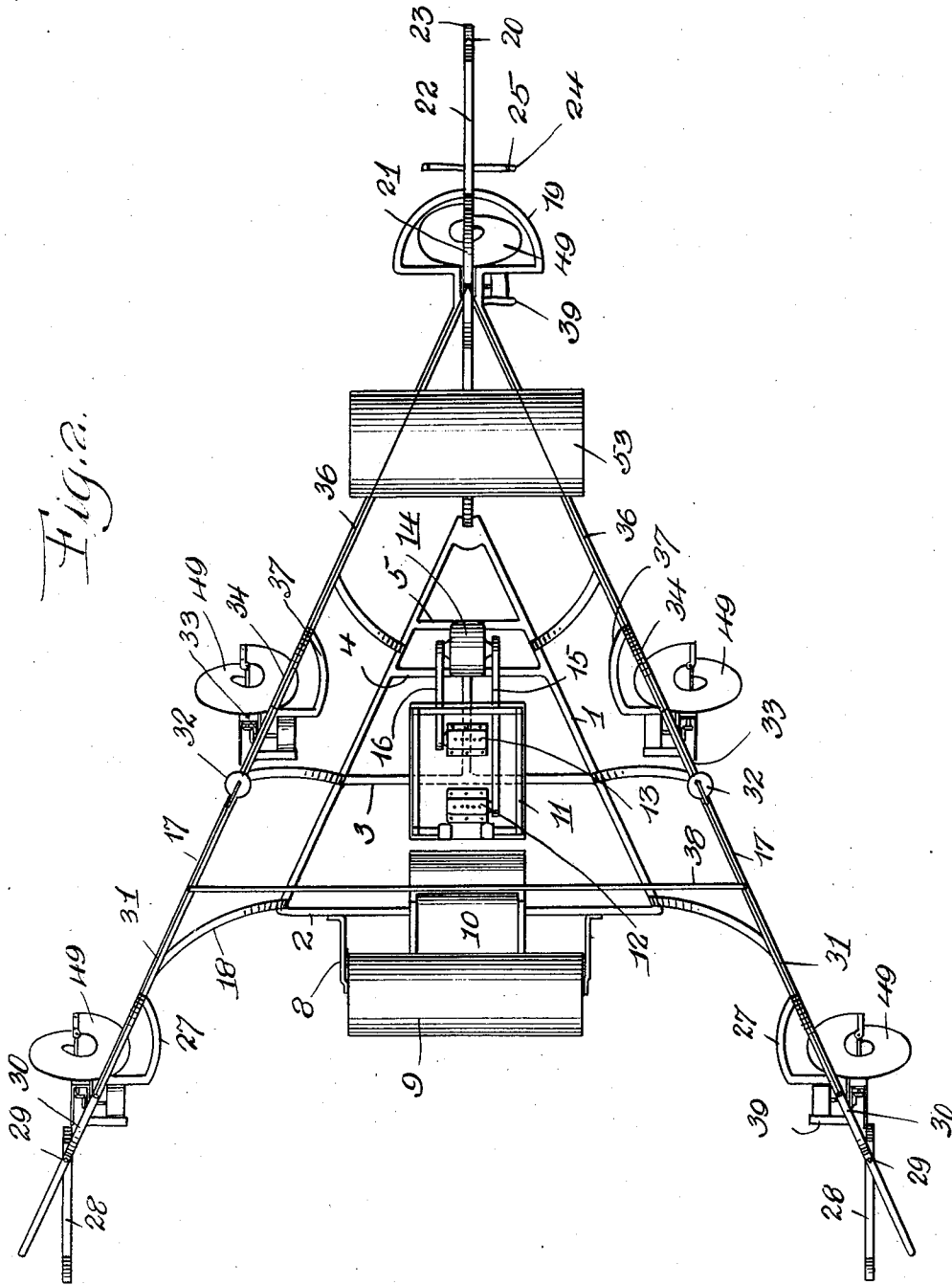
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6 SHEETS—SHEET 2.



WITNESSES

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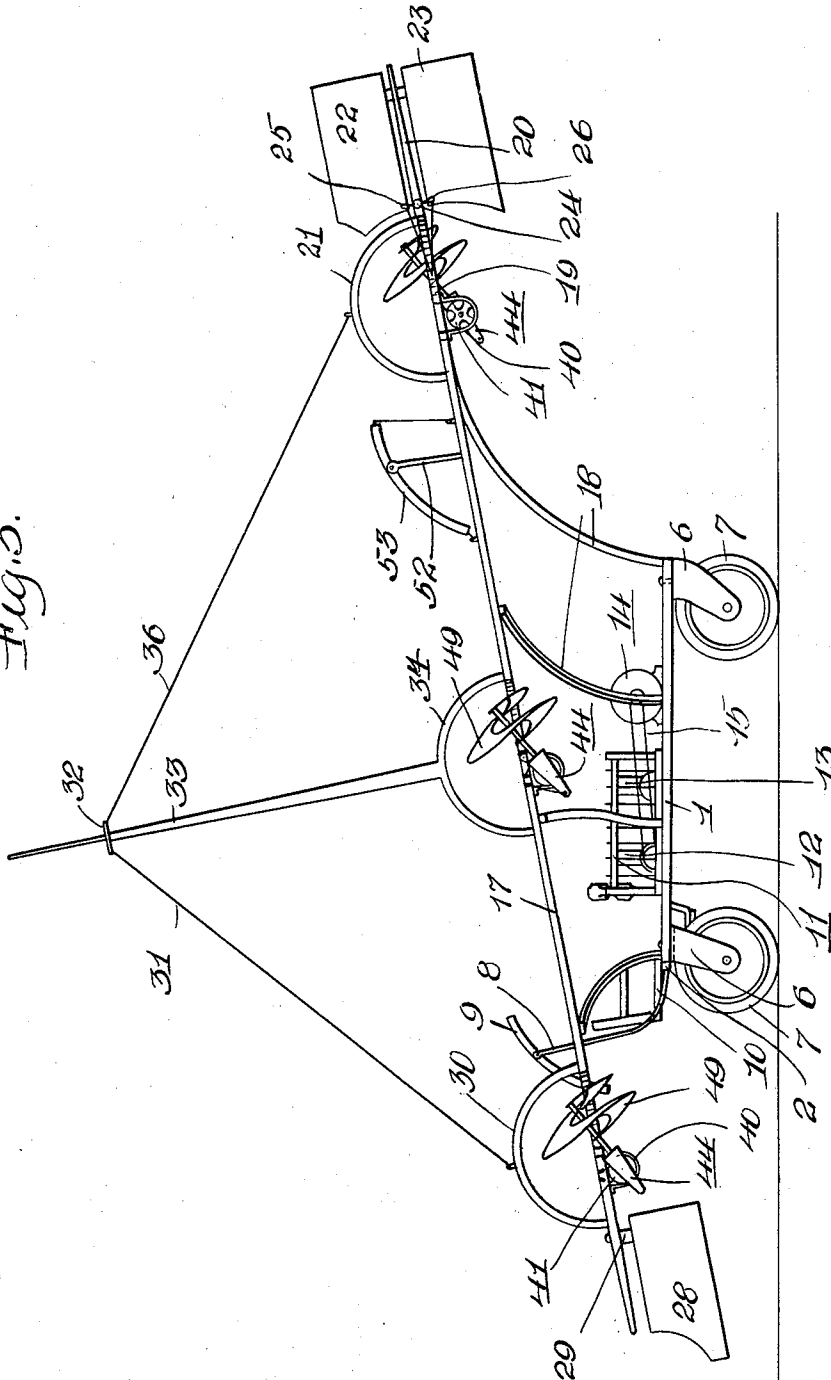
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Fig. 3.



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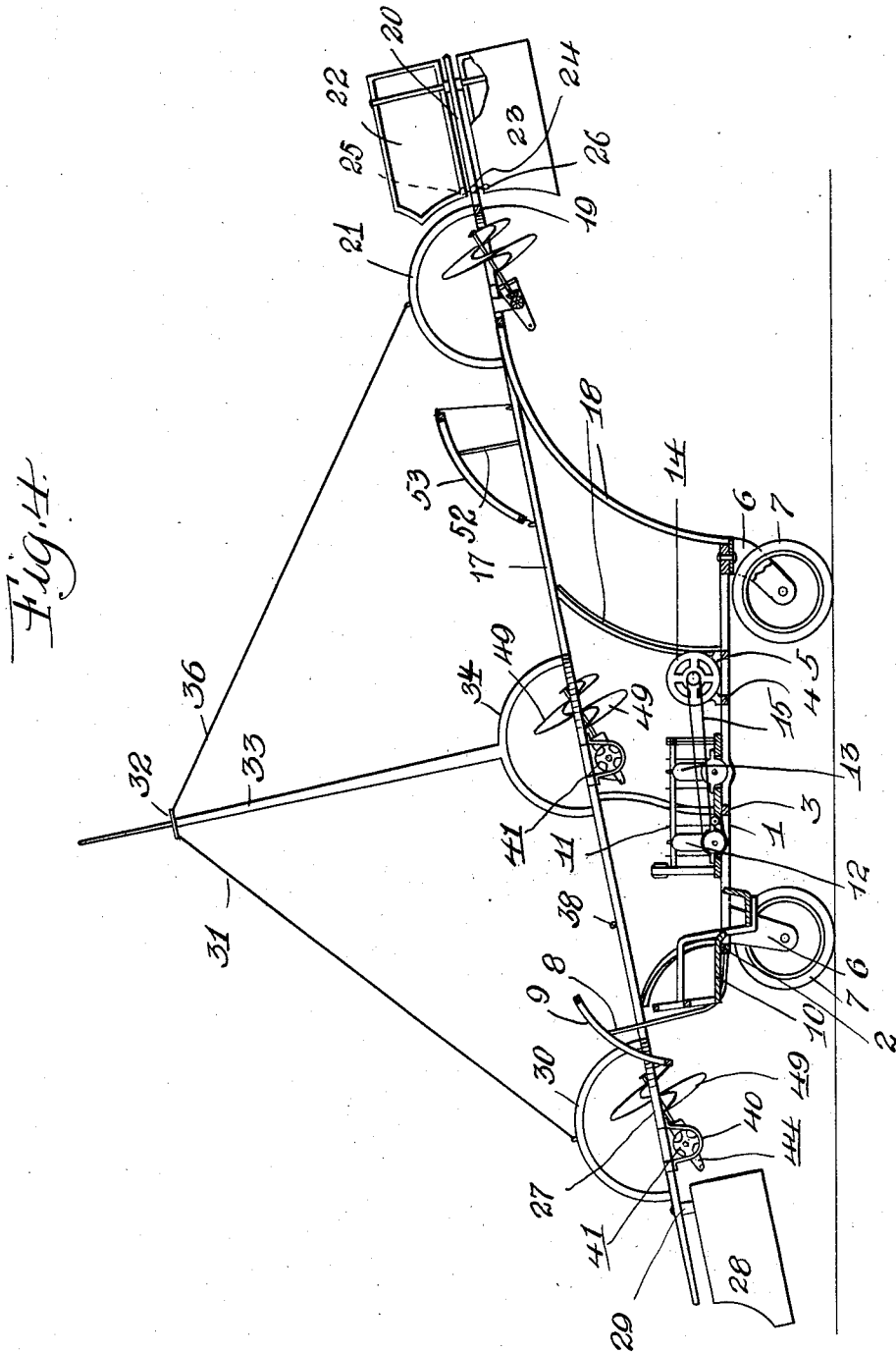
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6 SHEETS—SHEET 4.



WITNESSES

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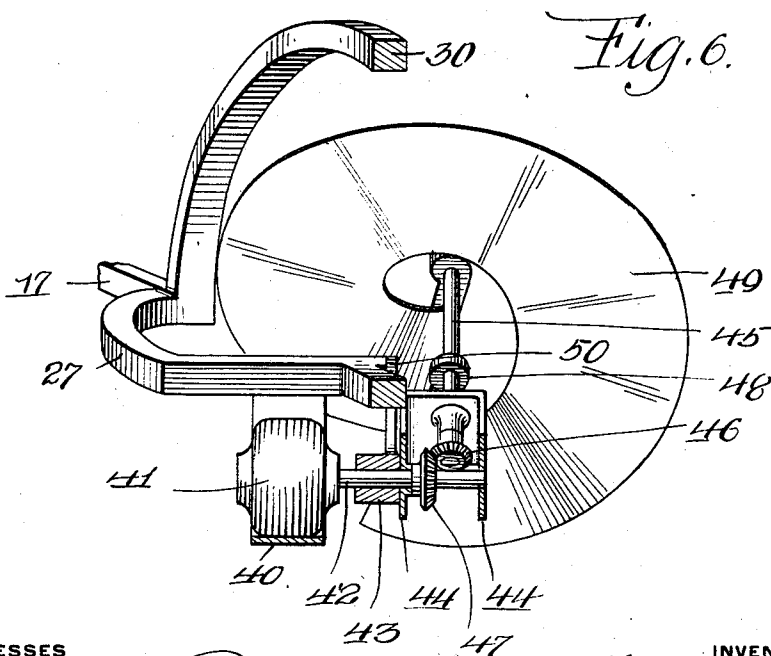
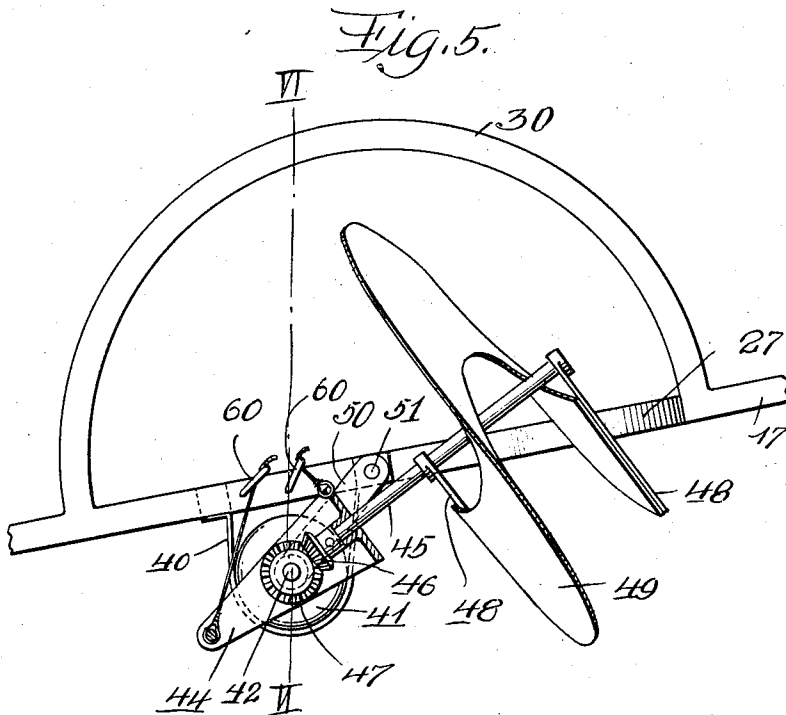
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6 SHEETS—SHEET 5.



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6 SHEETS—SHEET 6.

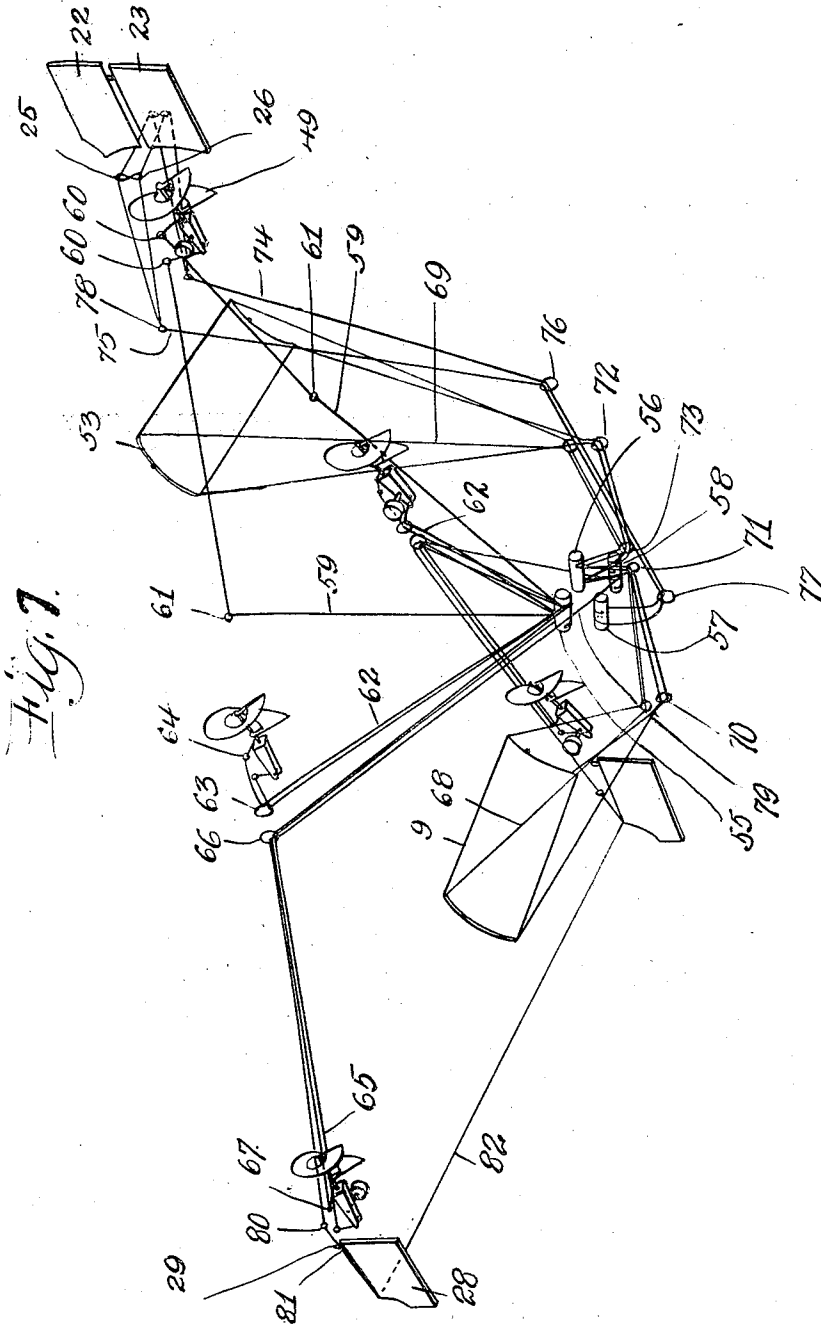


Fig. 7.

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UNITED STATES PATENT OFFICE.

KÁROLY ZUGGÓ, OF SOUTH LORAIN, OHIO.

AEROPLANE.

1,014,430.

Specification of Letters Patent.

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Application filed January 6, 1911. Serial No. 601,088.

To all whom it may concern:

Be it known that I, KÁROLY ZUGGÓ, a subject of the King of Hungary, residing at South Lorain, in the county of Lorain and State of Ohio, have invented certain new and useful Improvements in Aeroplanes, of which the following is a specification, reference being had therein to the accompanying drawing.

10 This invention relates to aeroplanes, and the objects of the invention are to provide an air craft in which flights can be safely made, and to provide an air craft with a series of propellers, planes and rudders 15 that will permit of the craft being easily steered, controlled and operated.

Other objects of the invention are to provide an air craft with novel adjustable propellers that can be easily adjusted to control 20 the direction of flight, and to centrally locate the operating mechanism of the aeroplane whereby an operator can easily manipulate the controlling mechanisms.

I attain the above objects by a machine 25 that will be hereinafter specifically described and then claimed, and reference will now be had to the drawings, wherein there is illustrated a preferred embodiment of the invention, but it is to be understood that 30 the structural elements thereof are susceptible to such changes as fall within the scope of the appended claims.

In the drawings:—Figure 1 is a perspective view of the aeroplane, Fig. 2 is a plan 35 of the same, Fig. 3 is a side elevation of the aeroplane, Fig. 4 is a longitudinal sectional view of the same, Fig. 5 is an enlarged side elevation of one of the propellers, partly broken away and partly in section, Fig. 6 is 40 a cross sectional view taken on the line VI—VI of Fig. 5, and Fig. 7 is the diagrammatic perspective view showing the controlling mechanisms of the aeroplane.

An aeroplane in accordance with this invention embodies an upper V-shaped frame 45 and a lower V-shaped frame, the upper V-shaped frame being provided with the propellers, rudders and one of the planes, while the lower V-shaped frame supports another 50 plane, and the operating and controlling mechanisms. These frames are suitably connected together and braced to provide a rigid and durable structure.

55 The lower V-shaped frame comprises two angularly disposed bars 1 connected at intervals throughout their length by trans-

verse supports 2, 3, 4 and 5, and said bars at the apex and at the rear ends thereof are provided with depending bearings 6 for wheels 7, whereby the aeroplane can travel 60 upon the ground to obtain sufficient impetus to rise in the air.

The transverse support 2 is provided with rearwardly extending and upwardly curved arms 8 and pivotally mounted between these arms is the rear curved plane 9. 65 This plane can be made of any suitable material and is adapted to assist in the upward and downward flight of the aeroplane. The support 2 is provided with an operator's seat 10 and the support 2 is provided with a suitable cage or housing 11 for acetylene engines 12 and 13 or any other suitable source of power. The supports 4 and 5 are adapted to support an electric generator 14, 75 said generator being operated by the engines 12 and 13 through the medium of belts 15 and 16.

The upper V-shaped frame comprises diverging bars 17 of a greater length than 80 the bars 1 of the lower V-shaped frame, the bars 17 being supported in an elevated position relatively to the bars 1 by a plurality of upwardly and outwardly curved braces 18. At the apex of the bars 17 is a semi-circular horizontal frame 19 provided with 85 a forwardly extending spar 20, and the forward edge of the frame 19 is connected to the central brace 18 by a vertical semi-circular frame 21. Pivotally mounted upon 90 the outer end of the spar 20 are two forward rudders 22 and 23 made of a suitable material, and extending outwardly from the sides of said spar are two oppositely disposed arms 24 provided with upper and 95 lower guides 25 and 26.

The rear ends of the bars 17 are provided with inwardly projecting off-set portions 27, and pivotally connected to the rear ends of said bars are vertical rear rudders 100 28, said rear rudders being held in place by vertical pins 29. The rear ends of the bars 17 are connected by vertical semi-circular frames 30 to the forward ends of the off-set portions 27 of said bars, and these frames 105 are connected by cables 31 to the heads 32 of masts 33, carried by vertical semi-circular frames 34 arranged intermediate the ends of the bars 17. The heads 32 of the masts are connected by transverse cables 35 110 and by cables 36 to the forward semi-circular frame 21.

The bars 17 intermediate the ends of the frames 34 are provided with inwardly projecting off-set portions 37 similar to the off-set portions 27, and said bars are connected
5 by a transverse brace or rod 38 intermediate the frames 34 and 30.

Adjacent to the horizontal semi-circular frame 19 and adjacent to the inwardly projecting off-set portions 27 and 37 of the bars
10 17 are supports 39 and suspended from said supports, the frame 19 and the off-set portions 27 and 37 are straps 40 adapted to support electric motors 41. The motors 41 have the armature shafts 42 thereof prolonged
15 and journaled in hangers 43, carried by the frame 19 and the off-set portions 27 and 37. Pivottally mounted upon the outer ends of the armature shafts 42 are yokes 44, and journaled in each yoke is a propeller shaft
20 45, said shaft having the rear end thereof provided with a beveled gear wheel 46 adapted to mesh with a similar wheel 47 mounted upon the armature shaft 42 of each yoke. Each propeller shaft has the forward
25 end thereof provided with radially disposed arms 48 arranged in parallelism, and to these arms are suitably connected the end of the helico-volute propeller 49. Each of the off-set portions 27 is provided with a
30 forwardly-extending lug 50 to which is pivotally connected by a pin 51 a hanger 43 for a shaft 42. The propeller shafts 45 are disposed at an angle to the longitudinal axis of the aeroplane. It is through the medium
35 of the propellers that the aeroplane is operable through the air. The position of the planes, as will hereinafter appear determines the direction of fluid.

The bars 17 adjacent to the apex thereof
40 are provided with outwardly and upwardly extending arms 52 and pivotally mounted between these arms is a forward curved plane 53, constructed similar to the rear curved plane 9.

The motors 49 are adapted to be connected by cables 54 to the electric generator 14, the cables being carried along the bars 17, the braces 18 and to the electric generator 14, and as the operation of the acetylene
50 engines 12 and 13 can be controlled by the operator within the seat 10, it is obvious that the operation of the generator 14 and the motors 41 can be readily controlled by the aviator.

To control the operation of the rear rudders 28, the forward rudders 22 and 23, the planes 9 and 53, and the position of the propellers 49, the cage or housing 11 adjacent to the seat 10 is provided with a plurality of
60 rotatable drums 55, 56, 57 and 58 within easy reach of the aviator. The drum 55 has attached thereto cables connected to the various yokes 44 of the aeroplane, these cables being attached to the drum 55 where-
65 by they can be wound thereon in opposite

directions to shift the yokes thereby moving the propellers to the desired position. As the yokes 44 are pivoted upon the shafts 42 and as the yokes 44 support the shafts 45, these latter can be swung relatively to the
70 shafts 42 through the medium of the cables when shifted as these latter are attached to the yokes 44. The ends of the cables are attached to the propeller shifting devices on opposite sides of their pivots and the cables
75 are also attached to the drums 53 and wind in opposite directions upon the drums so that while one cable is unwinding the other is winding and vice versa. The cables for the forward propeller at the apex of the
80 bars 17 are designated 59, these cables extending upwardly from the drum 55 through eyes 61, carried by the bars 17, forwardly through eyes 60 arranged at the apex of the bars 17, and then downwardly to the
85 forward and rear ends of the yokes 44 of the propeller shaft 45. The cables for the intermediate propellers are designated 62 and these cables extend upwardly through eyes 63, carried by the bars 17, over said bars and
90 through eyes 64 carried by the outer side of said bars, the cables being connected to the forward and rear ends of the yokes 44. The cables for the rear propellers are designated 65 and these cables extend through
95 eyes 66, carried by the bars 17, rearwardly through eyes 67, carried by the inwardly projecting off-set portions 27, said cables having the ends thereof connected to the forward and rear ends of the rear propellers.
100

The drum 56 which controls the planes 9 and 53 has cables 68 and 69 attached thereto for controlling the tilting operation of the planes 9 and 53 respectively, the cables 68 passing through eyes 70 and 71, carried
105 by the support 2 and the rear end of the cage or housing 11. The cables 69 of the forward plane 53 passes through eyes 72 and 73, the former being carried by the support 5 and the latter by the rear end of the cage or housing 11. The planes 9 and 53 are adjustable to control the raising and lowering of the aeroplane and are raised and lowered by the cables 68 and 69. These
110 cables are attached and wind oppositely upon the drums, similar to the cables 62, see Fig. 5.

The drum 57 which controls the operation of the forward rudders 22 and 23 has the cables 74 and 75 thereof passing through
120 eyes 76, 77, 78 and the guides 25, the eye 77 being carried by the rear end of the cage or housing 11, the eye 76 by the support 5, the eye 78 by the frame 19, and the guides 25 by the arms 24, said cables being attached
125 to the lower and upper edges of the rudders 22 and 23 respectively.

The drum 58 is employed for controlling the operation of the rear rudders, and the cables attached to said drums are designated
130

79. These cables pass through the eyes 66, rearwardly through eyes 80, carried by the off-set portions 27, the cables having the ends thereof attached, as at 81 to the rear
 5 rudders, while the forward ends of the rudders 28 are connected by a transverse cable 82, whereby said cables can be moved in unison. Since the cables of each set oppositely wind upon their drum, it is obvious
 10 that by a movement of the drum the element controlled thereby can be shifted in a direction within the scope of its movement. The drums 55 to 58 inclusive serve functionally as starting wheels somewhat
 15 similar to the starting wheels of a vessel, and it is through the manipulation of these drums that the flight of the aeroplane in a desired direction is easily controlled.

The rudder 28 is employed for starting
 20 the aeroplane to the right or left,—the rudders 22 and 23 are employed for the same purpose. The rudders 22 and 23 are made of separate pieces of material to simplify the construction, but they work together to assist the rudder 28 in starting
 25 the machine. They operate in a single plane.

The masts 33 and the cables 31 and 36 connecting the forward and rear ends of
 30 the upper frame are employed to add rigidity to the aeroplane and prevent accidental collapse of the various parts thereof.

The aeroplane in its entirety can be constructed of light and durable material, and
 35 the planes thereof, together with the rudders arranged to insure perfect guidance of the aeroplane when in flight, the lifting power of the aeroplane depending principally upon the propellers thereof, which
 40 are disposed to provide an air area or field for each propeller that is independent of the other propellers, thereby increasing the efficiency of the propellers as a lifting or propelling medium for the aeroplane.

45 What I claim is:—

1. An aeroplane embodying an upper V-shaped frame, a lower V-shaped frame connected to said upper V-shaped frame, rear
 50 rudders carried by the upper frame, front rudders supported by said upper frame, a plane carried by said upper frame, a plurality of propellers carried by said frame, motors carried by said upper frame and adapted to operate said propellers, a suitable
 55 source of electrical energy carried by said lower frame, and means carried by said lower frame and including drums adapted to control the operation of said rudders.

2. An aeroplane embodying a lower V-shaped frame, an upper V-shaped frame of larger size than said lower frame and connected thereto, adjustable rudders carried
 60 by said upper frame, adjustable propellers

carried by said upper frame, motors carried by said upper frame and adapted to
 65 operate said propellers, an adjustable plane carried by said upper frame, an adjustable plane carried by said lower frame, means carried by said lower frame and including drums adapted to adjust said planes, said
 70 rudders and said propellers, and a suitable source of electrical energy carried by said lower frame adapted to operate said motors.

3. An aeroplane embodying a lower V-shaped frame, an upper V-shaped frame, a plurality of adjustable propellers carried by said upper frame, motors carried by said
 75 upper frame and adapted to operate said propellers, an adjustable plane carried by said upper frame, an adjustable plane carried by said lower frame, a suitable source of electrical energy carried by said lower
 80 frame and adapted to operate said motors, and means including drums carried by said lower frame and adapted to adjust said planes.

4. An aeroplane embodying an upper V-shaped frame, a lower V-shaped frame, braces connecting said frames, a plurality
 90 of adjustable propellers carried by said upper frame, a plurality of motors carried by said upper frame and adapted to operate said propellers, a plurality of adjustable rudders carried by said upper frame, an
 95 adjustable plane carried by said upper frame, an adjustable plane carried by said lower frame, a generator carried by said lower frame and adapted to operate said motors, and means carried by said lower
 100 frame and adapted to operate said generator.

5. An aeroplane embodying an upper V-shaped frame, a lower V-shaped frame, braces connecting said frames, a plurality
 105 of adjustable propellers carried by said upper frame, a plurality of motors carried by said upper frame and adapted to operate said propellers, a plurality of adjustable rudders carried by said upper frame, an adjustable plane carried by said upper
 110 frame, an adjustable plane carried by said lower frame, a generator carried by said lower frame and adapted to operate said motors, means carried by said lower frame and adapted to operate said generators, and
 115 means carried by said lower frame and including drums adapted to adjust said propellers, said planes and said rudders, substantially as described.

In testimony whereof I affix my signature
 120 in the presence of two witnesses.

KÁROLY ZUGGÓ.

Witnesses:

MARY KRETOVICS,
 KÉDI KRETOVICS.