

April 26, 1932.

K. KOSLOWSKI ET AL

1,855,480

AEROPLANE

Filed June 2, 1931

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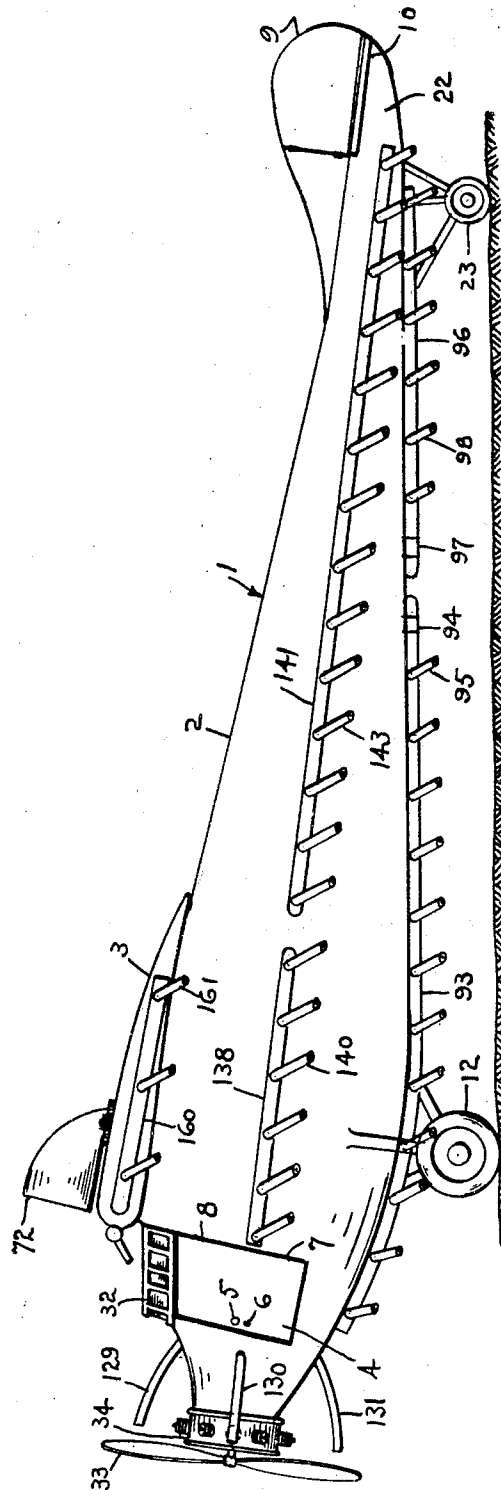


Fig. 1.

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April 26, 1932.

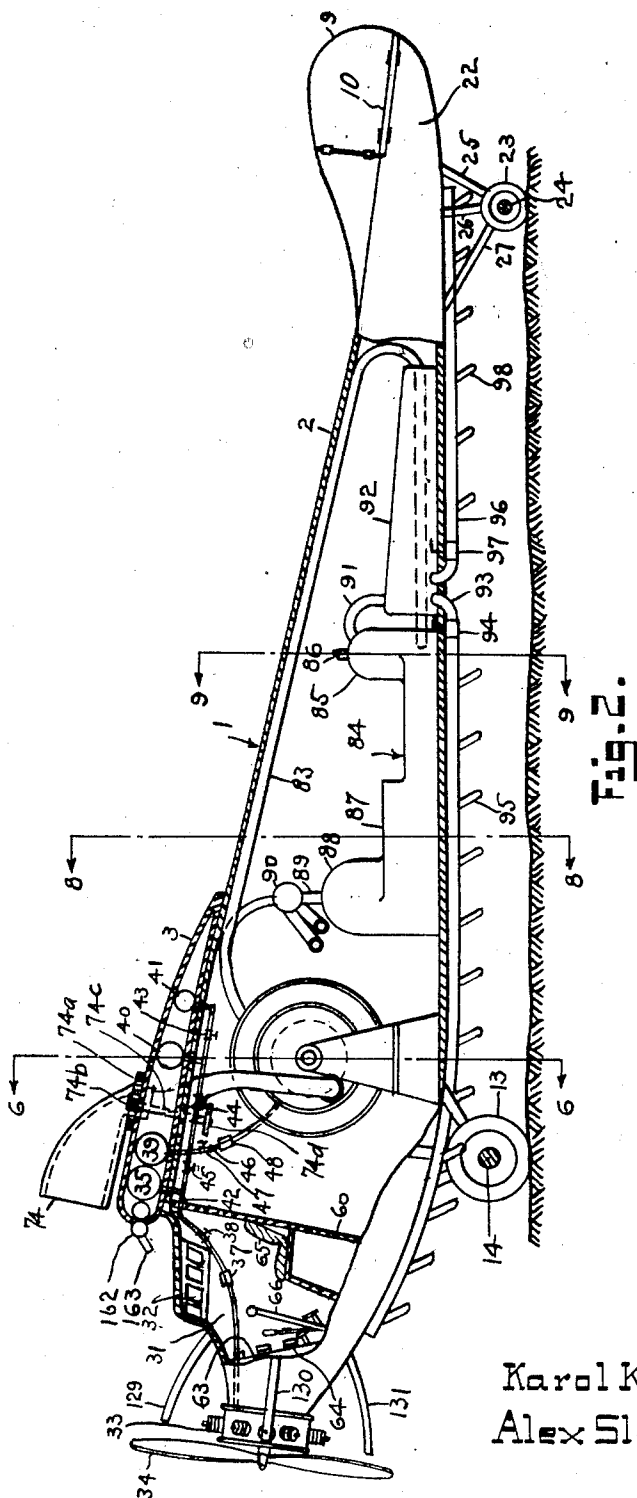
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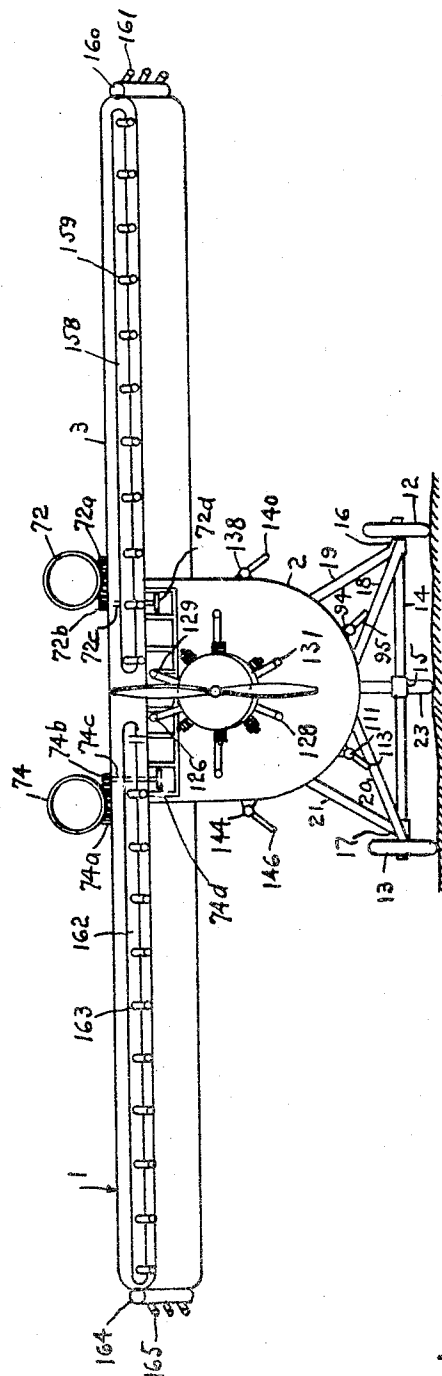


Fig. 3.

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8 Sheets-Sheet 4

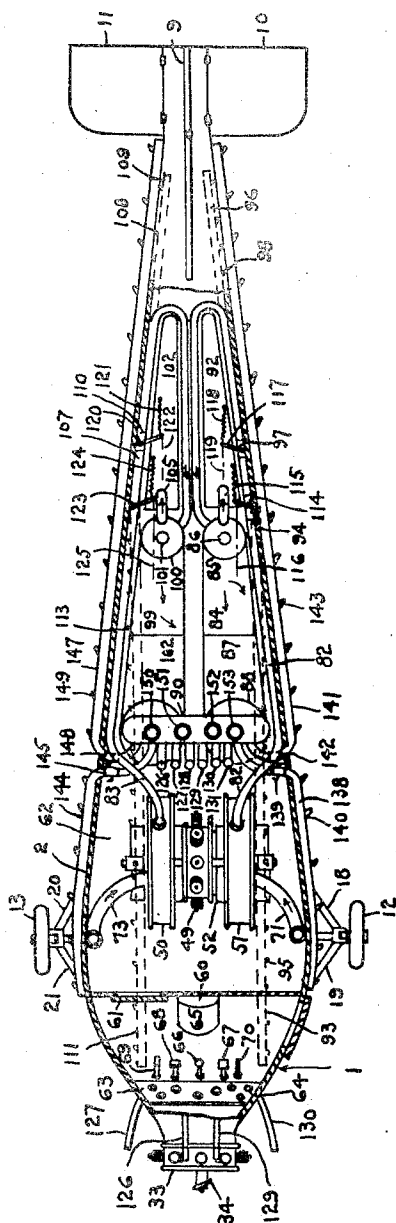


Fig. 4.

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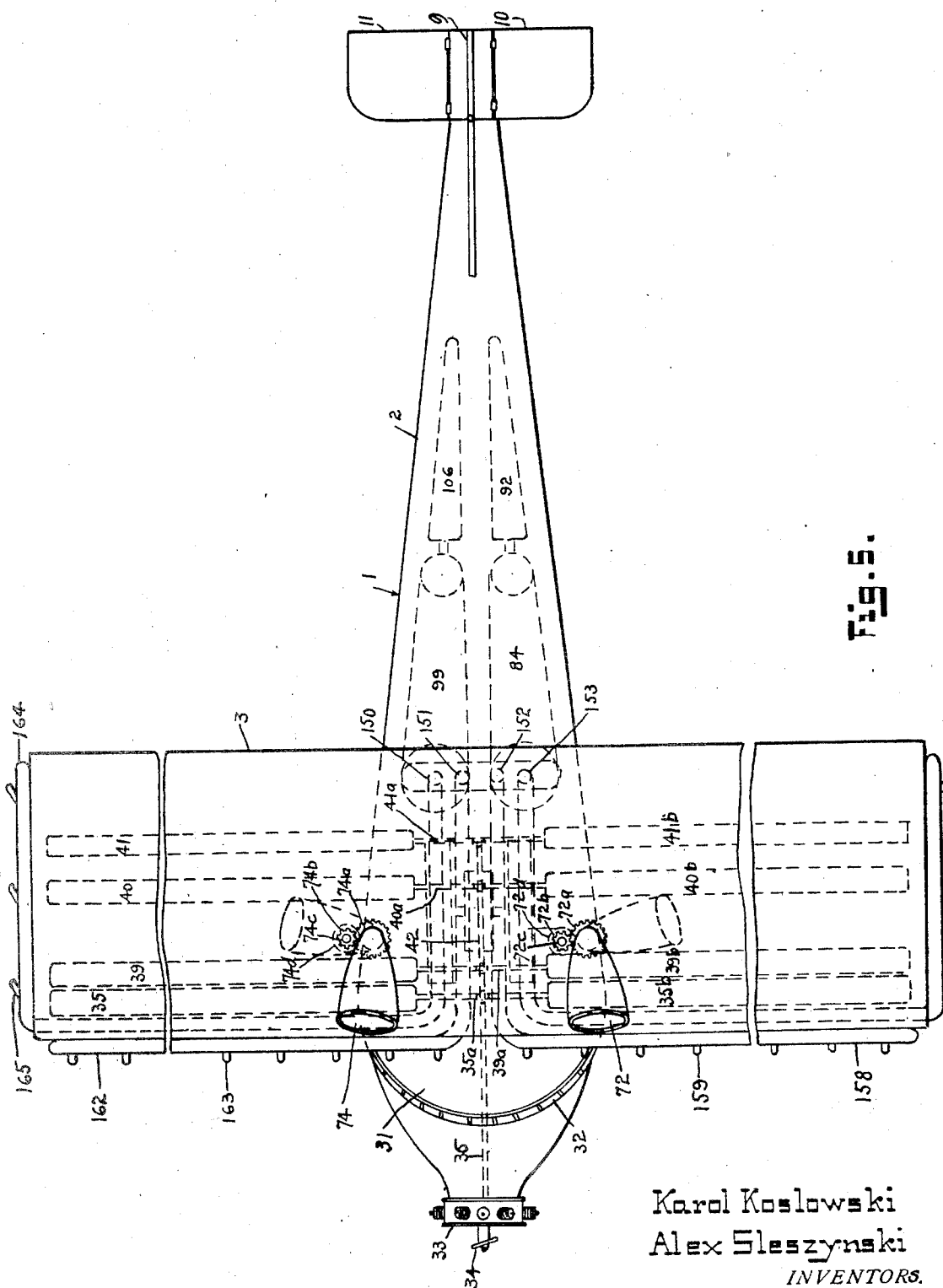


Fig. 5.

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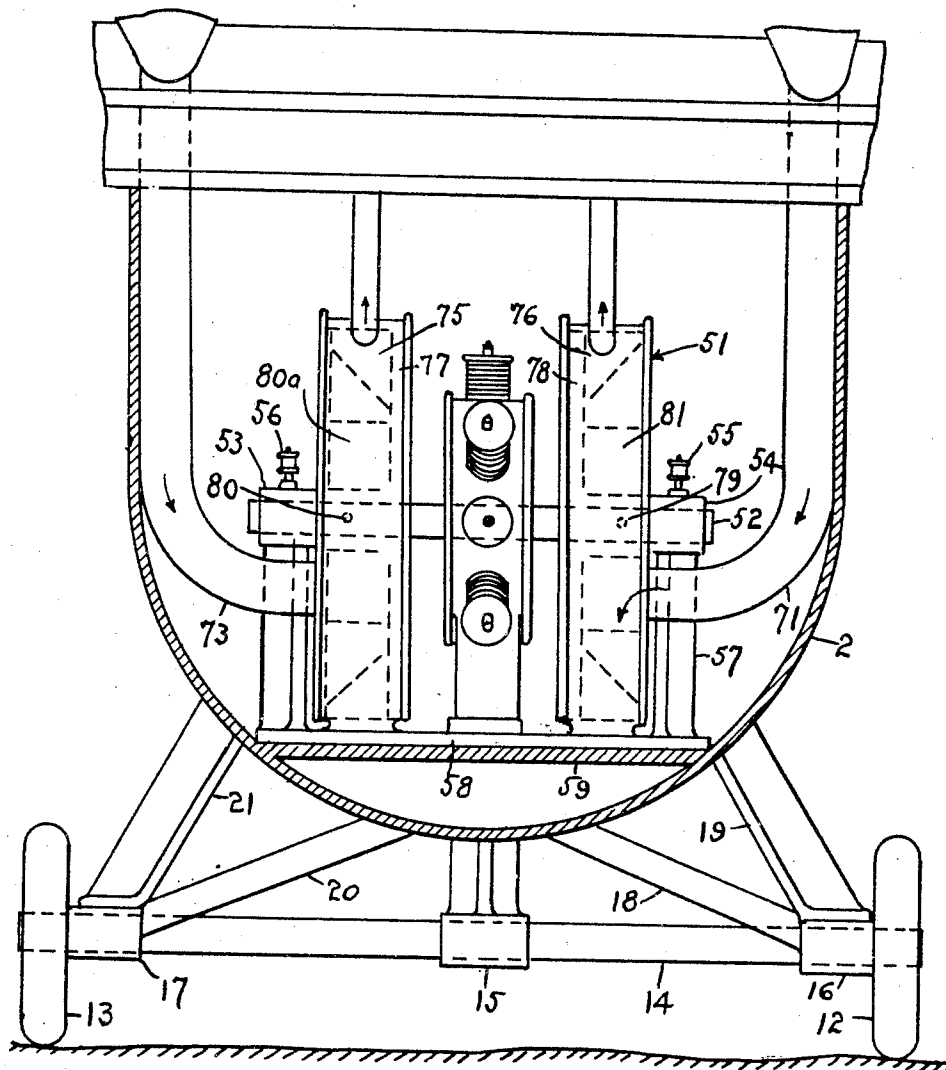


Fig. 6.

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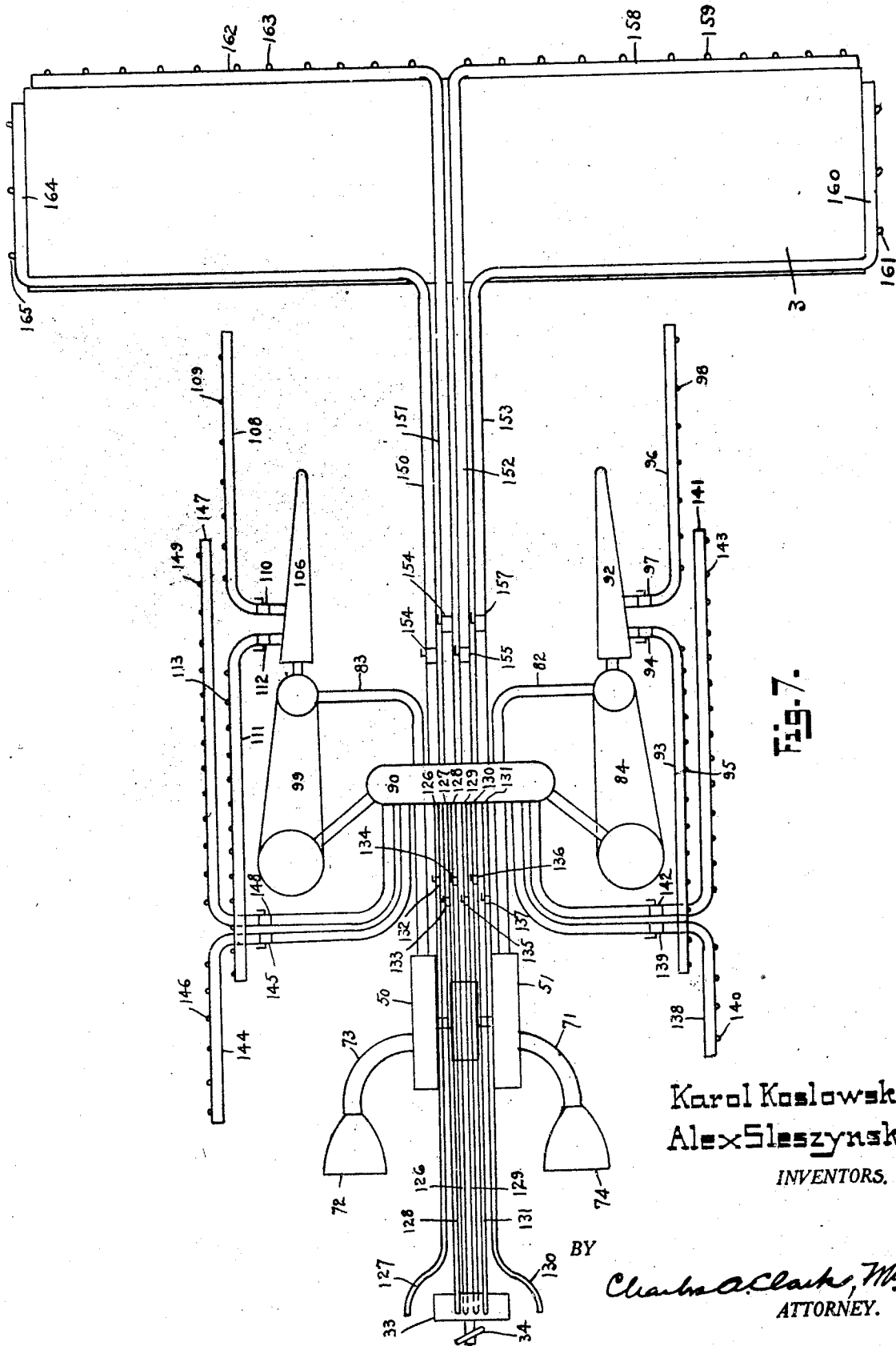
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AEROPLANE

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8 Sheets-Sheet 7



April 26, 1932.

K. KOSLOWSKI ET AL

1,855,480

AEROPLANE

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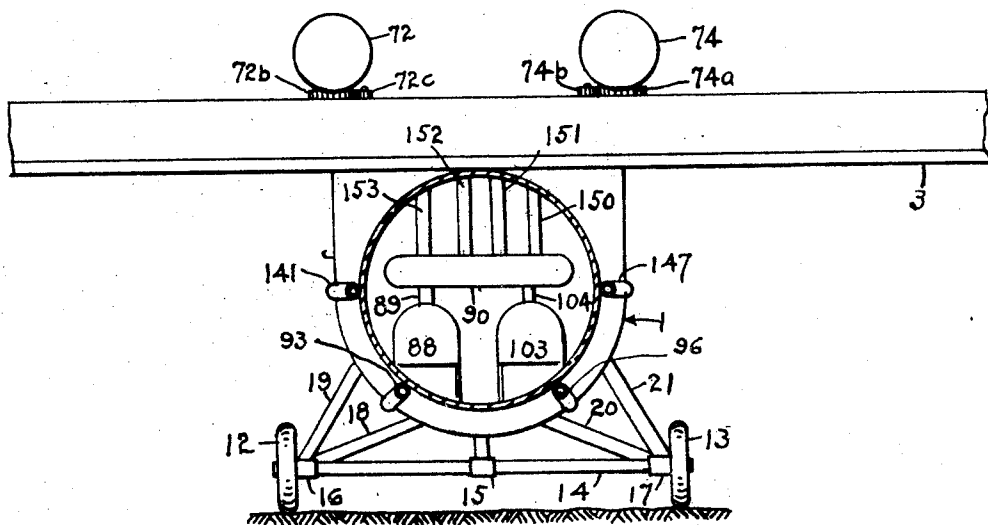


Fig. 8.

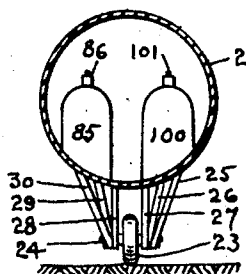


Fig. 9.

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UNITED STATES PATENT OFFICE

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AEROPLANE

Application filed June 2, 1931. Serial No. 541,678.

Our invention relates to aeroplanes and refers more particularly to monoplanes.

One object of our invention is to provide an aeroplane, which in addition to the tractive motor, is provided with an additional motor adapted to drive a plurality of air compressors, and to utilize the air for accelerating the motion of the aeroplane.

Another object of our invention is to provide an aeroplane with an auxiliary jet propelling means.

A further object of our invention is to provide an aeroplane with an auxiliary air compressing means arranged to project a multiplicity of air jets in such a manner as to accelerate the motion of and sustain the apparatus in the air, without the aid of the tractive motor.

A still further object of our invention is to provide an aeroplane with an auxiliary air compressing equipment directly connected to a series of compressed air receptacles that are suitably connected to a multiplicity of air jets arranged to lift the aeroplane into the air and accelerate its forward movement.

One of the most valuable features of our invention consists in supplying an aeroplane with an air compressing equipment adapted to compress air into a container that is connected to a manifold, said manifold provided with a multiplicity of conduits with controlling valves therein, and an auxiliary compressed air receptacle connected to the main air receptacle, having a multiple of pipes connected thereto, provided with cut-off valves and a multiplicity of air jet pipes.

Another of the most valuable features of our invention consists in providing an aeroplane with duplicate air compressors connected together and driven by a single motor, each air compressor suitably connected to separate compressed air reservoirs, each of which is connected to an auxiliary reservoir, the said main reservoirs connected into a single manifold that is provided with a multiplicity of conduits provided with cut-off means and terminating in suitably arranged air jets.

A further of the most valuable features of our invention consists in providing an

aeroplane with a plurality of air pockets on the top of and adjacent the front edge of the wing, each of said pockets tapering backwardly into a pipe, which terminates in the inlet of an air compressor, which air compressors are adapted to eject the compressed air from a multiplicity of compressed air jets, suitably arranged about the aeroplane.

We attain these objects preferably by the means illustrated in the accompanying drawings, wherein similar numerals refer to like parts throughout the several views, in which:—

Figure 1 is a side elevation of the aeroplane, provided with the improved apparatus.

Figure 2 is a partial longitudinal section and elevation of the aeroplane, illustrating a portion of the mechanism therein.

Figure 3 is a front elevation of the aeroplane.

Figure 4 is a partial longitudinal section of the aeroplane, illustrating the arrangement of some of the mechanism.

Figure 5 is a plan of the aeroplane.

Figure 6 is a partial, enlarged, detailed section taken on line 6—6 of Figure 2, illustrating the air compressing means.

Figure 7 is a diagrammatic view of the mechanism utilized in the device.

Figure 8 is a section taken on line 8—8 of Figure 2.

Figure 9 is a section taken on line 9—9 of Figure 2.

The aeroplane 1, illustrated in Figure 1, is comprised of a fuselage 2, to which is attached the wing 3, said fuselage provided with a door 4, having a handle 5, and a lock 6, and hinges 7 and 8, and rudders 9, 10 and 11.

When on the ground, this aeroplane is supported by means of the front wheels 12 and 13, which are connected together by the shaft 14, which is provided with a central support 15, connected to the fuselage 2, and supports 16 and 17, adjacent the wheels 12 and 13, respectively, which supports are connected to the fuselage 2 by means of the braces 18, 19, 20 and 21.

These wheels 12 and 13, support the front portion of the aeroplane, and the back or tail

portion 22, is supported by means of the wheel 23, mounted on the shaft 24 and supported by means of the braces 25, 26, 27, 28, 29 and 30.

5 The forward portion of the aeroplane is formed to provide a cabin 31, provided with a multiple of observation windows 32, and the aeroplane is normally driven by means of the motor 33, and the propeller 34, which
10 motor may be connected in any suitable manner to the fuel tank 35, by means of a pipe line 36, which is provided with a fuel gauge 37, and a valve 38, and there are also provided the auxiliary tanks 39, 40 and 41, that
15 are connected to the pipe 35 by means of the pipe 42, that is provided with valves 43, 44 and 45.

The tank 35, as shown in Figure 5, is connected by the pipe 35a, to the tank 35b, on
20 the right hand side of the wing, and the tank 39 on the left portion of the wing, is connected by the pipe 39a, to the tank 39b, on the left side of the wing. The auxiliary tank 40 is connected by the pipe 40a, to the tank
25 40b, on the left side of the wing, and the tank 41 is connected by the pipe 41a to the tank 41b, on the left side of the wing.

This pipe 42, is also connected to a pipe 46 carrying a valve 47 and a motor 48, which
30 pipe is connected to the motor 49, driving the right air compressor 50, and the left air compressor 51, which are connected to the motor by means of the shaft 52, and this shaft is
35 provided with bearings 53 and 54, and oiled by the oil cups 55 and 56, said bearings being supported in the frame 57 attached to the base 58, and this base is suitably attached to the raised floor 59, within the fuselage 2.

The pilot's compartment 31, is preferably
40 provided with a partition 60, having a door 61, communicating with the interior 62 of that portion of the fuselage 2 which contains the auxiliary driving equipment of the aeroplane.

45 Within this pilot's compartment there is a panel board 63, containing a multiplicity of gauges, etc., like 64, being within reach of the pilot's seat 65.

There is also arranged within the pilot's
50 seat, the control stick 66, for operating the rudders 9, 10 and 11, and the accelerators 67 and 68, for controlling the gas engines 33 and 49, and there is also provided a braking means 69 and 70, that is suitably connected
55 in any desirable manner to these gas engines, respectively.

The air compressor 51 is connected by the
60 pipe 71 to a tapered cowl-shaped air inlet 72, which is pivoted thereon, and carries a gear 72a, meshing with the pinion 72b, on the shaft 72c, which is provided with a hand wheel 72d, arranged within the pilot's compartment 31, arranged adjacent the front
65 edge of the wing 3 and on the top thereof, so that the cowl may be positioned so that

air may be drawn through this opening 72 into the inlet side of the compressor 51, regardless of the direction of the wind.

The compressor 50 is provided with a pipe 73, that is connected to a similar cowl-shaped
70 inlet 74, which is pivoted thereon, and carries a gear 74a, meshing with the pinion 74b, on the shaft 74c, that is provided with a hand wheel 74d, arranged within the pilot's compartment 31, in the same relative position as
75 the aforesaid air inlet 72, and the air is directed into the inlet side of the fan 50, as clearly shown in Figures 2, 3 and 4.

Both of the fans 51 and 52 are preferably provided with conoidal impellers 75 and 76,
80 respectively, which impellers are mounted upon a suitable framework like 77 and 78, respectively, that are fixed to the shaft 52a, by means of the pins 79 and 80, respectively, and each one of these frames 77 and 78 are
85 provided with a multiple of air impeller blades 80a and 81, respectively, which are adapted to start the air moving from the inlets 71 and 73, toward the impellers 75 and 76, and the compressed air is rejected from
90 these air compressors 51 and 52, through the pipes 82 and 83, respectively.

The pipe 82, as shown in Figure 4, terminates in the compressed air chamber 84,
95 which is provided with a dome 85, on the small end, having a whistle 86 therein, and is extended forming a larger end 87, with a larger dome 88, this larger dome being connected by means of the connection 89, to the manifold 90.
100

This chamber 84 is connected by means of the pipe 91 to an auxiliary chamber 92.

This auxiliary chamber is provided with a pipe 93, having a shut-off valve 94 therein, and this pipe passing underneath the fuselage 2, as shown in Figure 3, is provided
105 with a multiple of jet pipes like 95.

The pipe 93, as shown in Figure 2, runs toward the front of the aeroplane, but the pipe 96, which is connected to the same tank,
110 and provided with a cut-off valve 97, runs toward the rear of the aeroplane, maintaining the same relative position, as the pipe 93, and has a multiple of air jet pipes like 98 therein.
115

It is preferable to have these air jet pipes arranged at an angle, as shown in Figures 2 and 3, or at any other suitable angle that may produce the best results.

The pipe 83 from the outlet of the air compressor 50, enters into the air chamber 99,
120 the small end of which is provided with a door 100, having a whistle 101 therein, and the large end 102 is provided with a door 103, that is connected by the pipe 104, to the manifold 90.
125

This compressed air chamber 99 is connected by the pipe 105, to the chamber 106, which chamber is connected by the pipe 107,
130 to the pipe 108, which passes toward the

rear end of the aeroplane, and carries a multiple of air jet pipes 109, and has a valve 110 therein.

This chamber 106 is also connected by the pipe 111, having a valve 112 therein, which pipe carries a multiple of air jet pipes 113, as shown in Figure 3.

The valve 94 is provided with an arm 114, to which is attached a spring 115, for maintaining the valve in the closed position, when the operator desires to utilize the effect of the jets in this pipe 93, he may do so by opening the valve 94, by means of the rod, or chain, or the like 116.

The valve 97, which is connected to the pipe 96, is provided with an arm 117, having a spring 118, to maintain the valve in the closed position, and when it is desired to open this valve, a rope or chain 119, may be utilized to do so.

The valve 110, connected to the pipe 108, is provided with a lever 120, and the valve 110 is maintained in the closed position by means of the spring 121, attached to this lever, and when it is desirable to open the valve, the chain or rope 122 may be used for that purpose.

The valve 112 in the pipe 111, is provided with a lever 123, that is connected to a spring 124, adapted to hold the valve in the closed position, and when it is desirable to open the valve, the chain or rope 125 may be used for that purpose.

The manifold 90 is provided with six pipes 126, 127, 128, 129, 130 and 131, which pipes are provided with valves 132, 133, 134, 135, 136 and 137, respectively, and these pipes 126 to 131, inclusive, are extended and positioned back of the propeller 34, as clearly shown in Figures 1, 2, 3 and 4.

Referring to Figures 1, 3, 4 and 7, this manifold 90, is provided with a pipe 138, having a valve 139 therein, which pipe projects through the central portion of the fuselage on the left side and passes forward toward the propeller and contains a multiple of air jet pipes 140.

There is another pipe 141, provided with a valve 142, that is also connected to this manifold 90, which pipe passes through the central portion of the fuselage on the left side of the machine, and runs backward toward the rear of the machine, and carries a multiple of air jet pipes like 143.

This manifold 90 is provided with a pipe 144, having a valve 145, therein, which pipe passes through the right side of the fuselage, and is carried forward towards the propeller and contains a multiple of air jet pipes 146.

The pipe 147, carrying a valve 148, and having a multiple of air jets 149 therein, is also connected to the manifold 90, and passes through the right side of the fuselage 2 in approximately the central position, and this

pipe passes toward the rear of the machine.

There are four pipes connected on the top of the manifold 90, numbered 150, 151, 152, and 153, which are provided with cut-off valves 154, 155, 156, 157, respectively, the pipe 152 leading the pipe 158, on the left side of the front edge of the aeroplane wing 3, and this pipe carries a multiple of air jet pipes 159, as clearly shown in Figures 3 and 5.

The pipe 153 is connected to the pipe 160, carrying a multiple of jet pipes 161, which pipe is located on the left end edge of the wing 3.

The pipe 151 is connected to the pipe 162, provided with a multiple of air jet pipes 163, connected to the right front forward edge of the wing 3, as shown in Figures 2 and 3.

The pipe 150 is connected to the pipe 164, having a multiple of air jet pipes 165 therein, which is connected as shown in Figure 3, to the right side end of the wing 3.

It is obvious that the valves 154 to 157, inclusive, could be controlled by any suitable means from the pilot's compartment, if desirable, although this is not shown in the drawings.

In operation, the tractive motor 33 is started, and the aeroplane is brought into the air, whereupon the air compressing motor 49 is started up, and the compressors 50 and 51 compress the air, which is taken in through the openings 72 and 74, and this air is transported into the air compressing receptacles 84 and 99, which are connected to the auxiliary air receptacles 92, and 106, respectively, and it is possible by operating the valves 94, 97, 110, 112, 132, 133, 134, 135, 136, 137, 139, 142, 145, 148, 154, 155, 156, 157, to force jets of air in the directions indicated by the positions of the jet pipes, which are controlled by these valves respectively, so that the aeroplane will be lifted into the air and the forward motion of the same accelerated.

Having thus illustrated and described the preferred embodiment of our invention, we do not wish to limit ourselves to the exact construction or arrangement of parts shown, since it is evident that modifications may be made therein, without departing from the spirit of the invention or scope of the claims.

We claim:—

1. The combination with an aeroplane provided with a tractive propeller and means propelling the same, of an auxiliary air compressing apparatus connected to a series of separately controlled pipes each pipe containing a multiple of jets attached to the outside of the fuselage, and to two separate pipes on the front of the wings, each containing a multiple of jet pipes.

2. The combination with an aeroplane provided with a tractive propeller and means propelling the same, of an auxiliary air com-

pressing apparatus connected to a series of separately controlled pipes attached to the outside of the fuselage, and two pipes to the front and one on each end of the wings, each pipe containing a multiple of jet pipes.

3. The combination with an aeroplane, provided with a tractive propeller and means propelling the same, of an auxiliary air compressing apparatus connected to a series of separately controlled pipes attached to the outside and underneath the fuselage, and to the front and ends of the wings, each pipe containing a multiple of jet pipes.

4. The combination with an aeroplane, provided with a tractive propeller and means propelling the same, of an auxiliary air compressing apparatus, connected to a series of separately controlled pipes attached to the outside and underneath the fuselage, and to the front and ends of the wings, each pipe containing a multiple of jet pipes, and a multiple of radially arranged pipes each containing an air jet arranged behind the tractive propeller terminating adjacent the tips of said propeller blades.

Signed at New York, county of New York, State of New York, this 8th day of December, 1930.

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