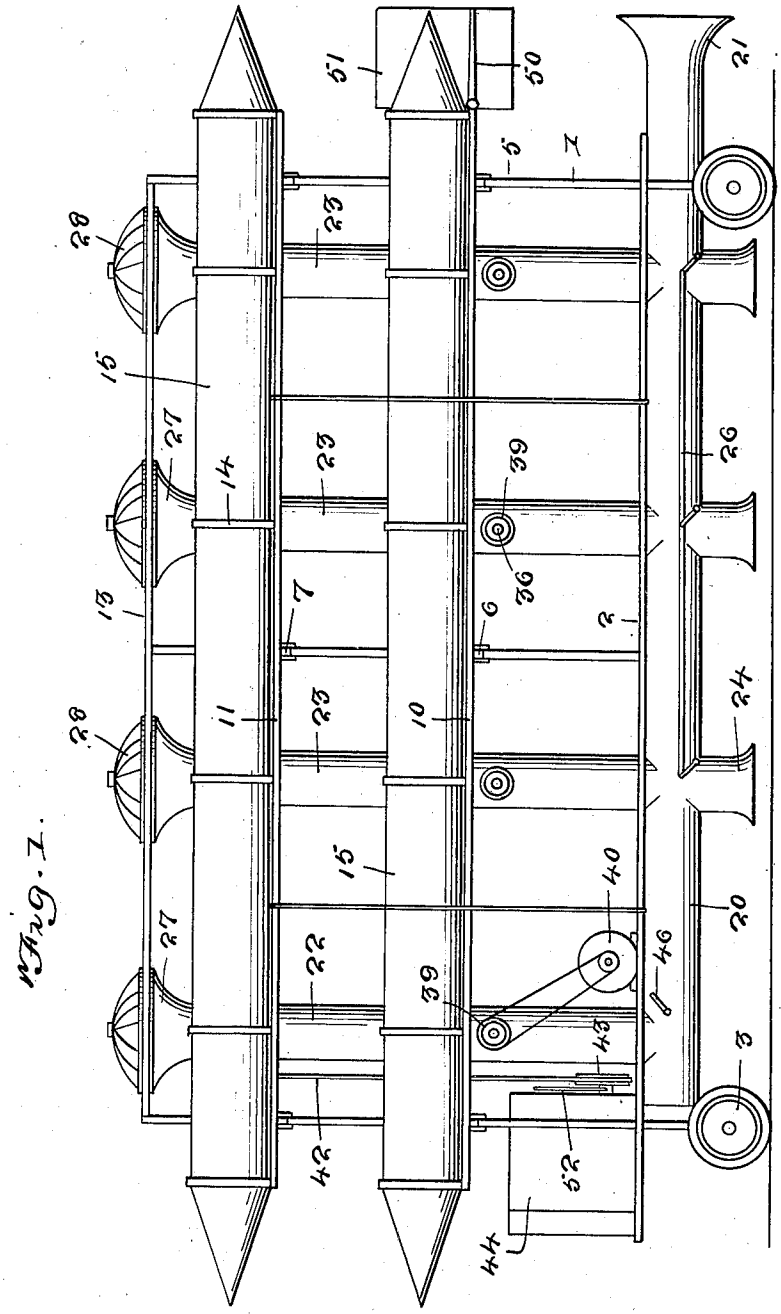
Aug. 31, 1926. 1,598,554

W. T. CAUGHLIN

FLYING MACHINE

Filed Dec. 7, 1925 4 Sheets-Sheet 1



E. R. Rupsput.

WITNESS:

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Aug. 31, 1926. 1,598,554

W. T. CAUGHLIN

FLYING MACHINE

Filed Dec. 7, 1925 4 Sheets-Sheet 2

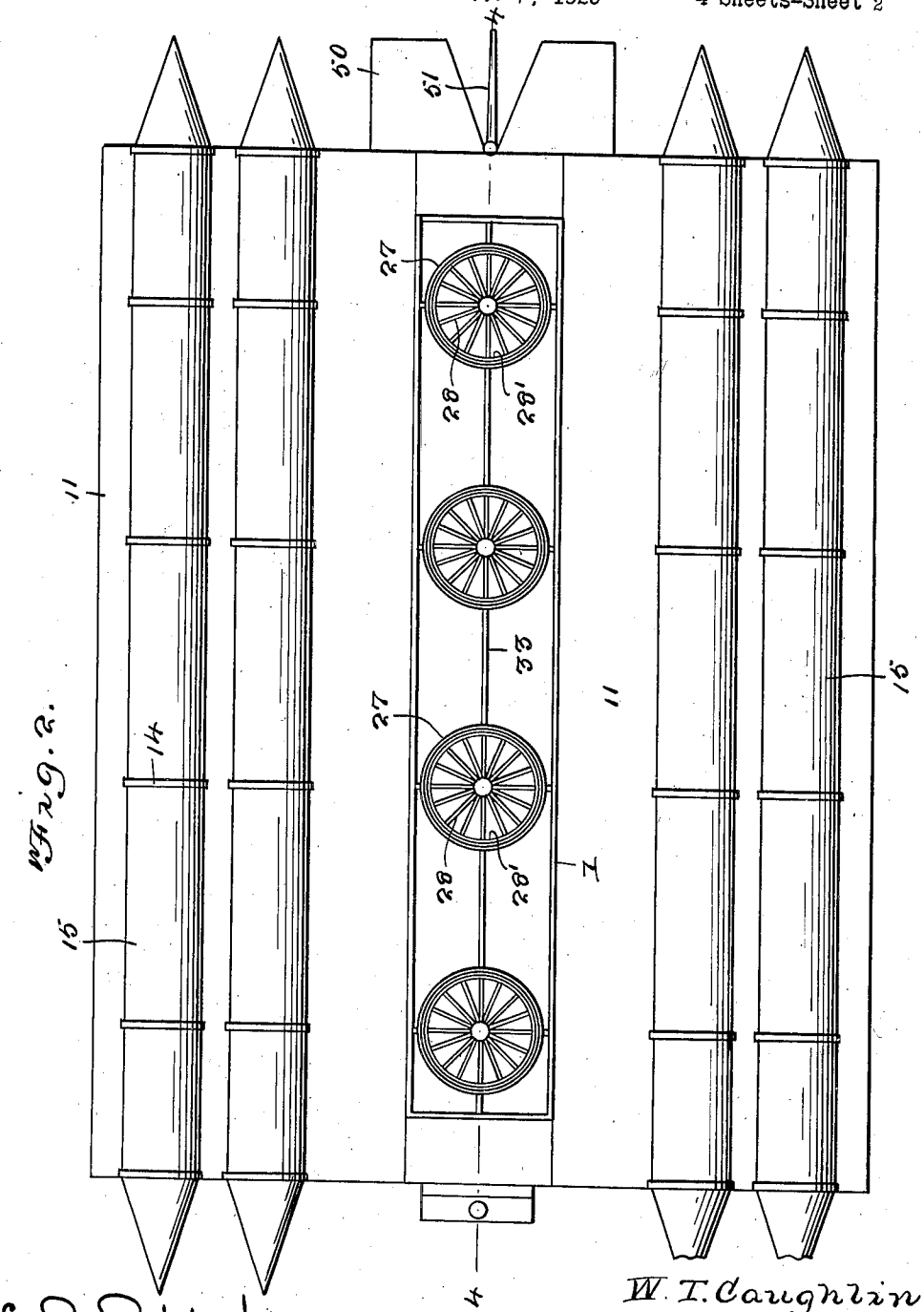


Fig. 2.

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Filed Dec. 7, 1925 4 Sheets-Sheet 3

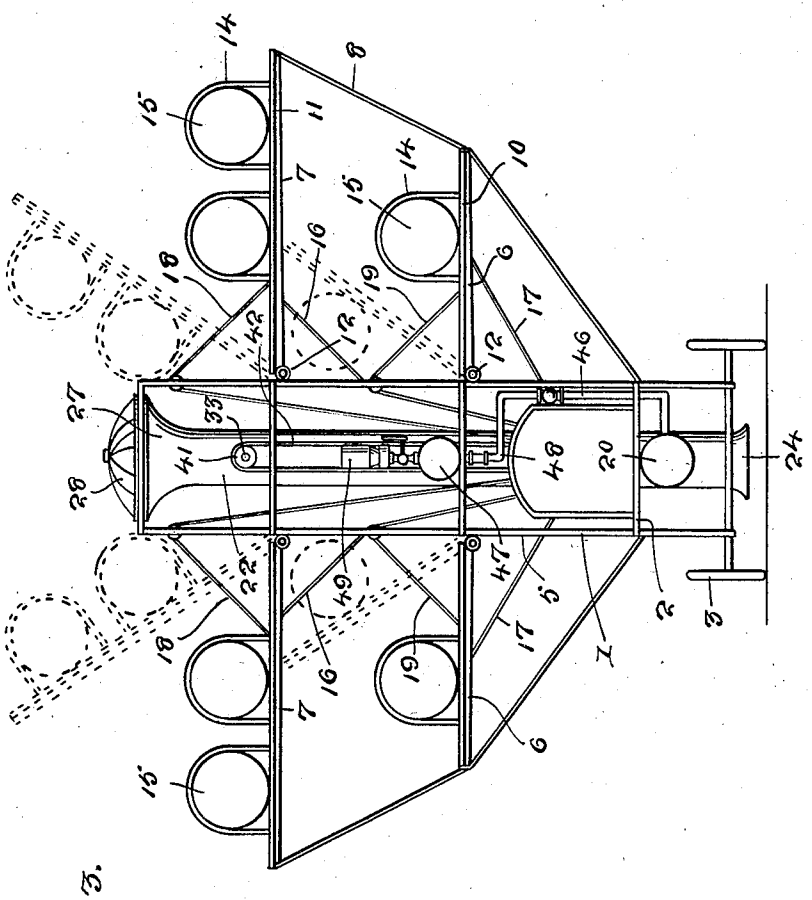


Fig. 3.

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Filed Dec. 7, 1925 4 Sheets-Sheet 4

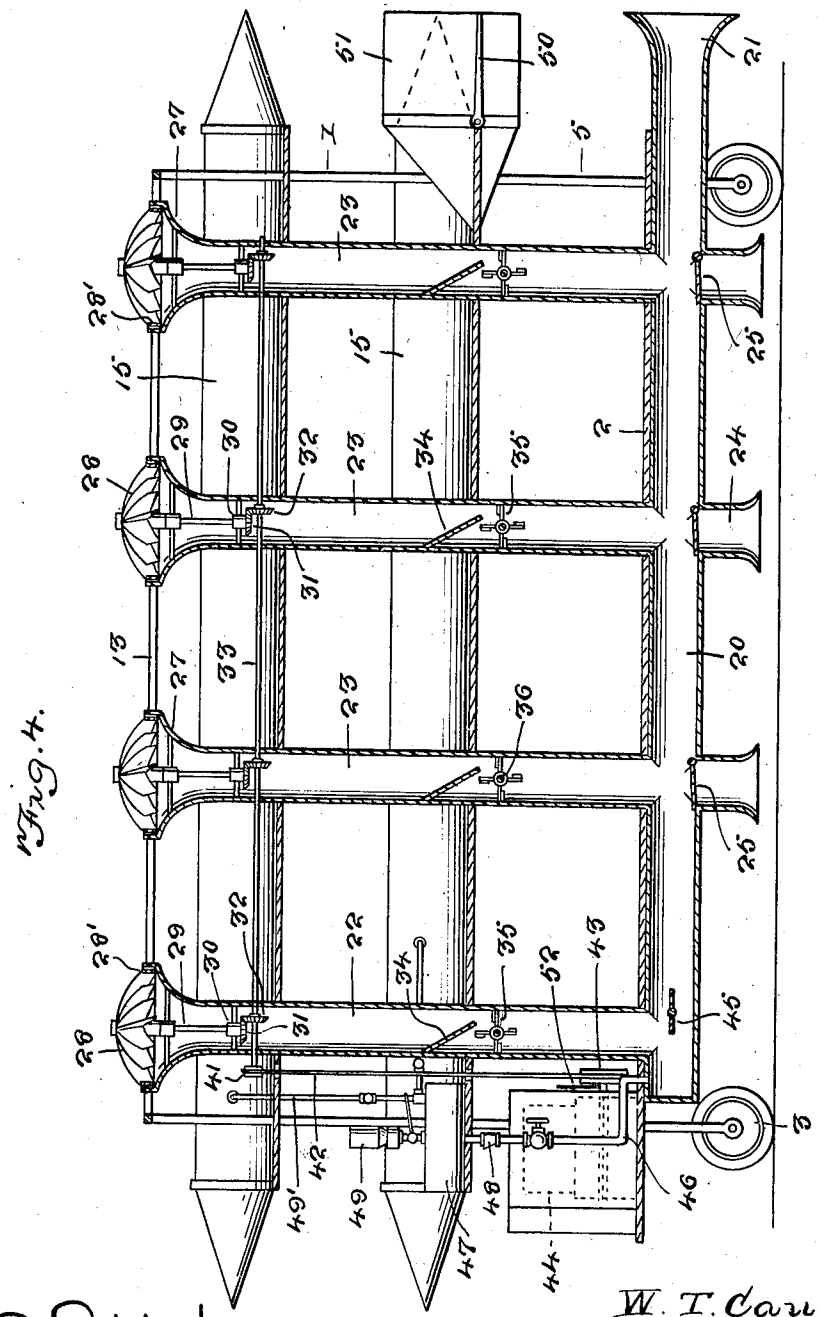


Fig. 4.

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Patented Aug. 31, 1926. 1,598,554

UNITED STATES PATENT OFFICE.

WILLIAM TEMP CAUGHLIN, OF BESSEMER, ALABAMA.

FLYING MACHINE.

Application filed December 7, 1925. Serial No. 73,765.

This invention relates to flying machines of the combined type, said flying machine embodying certain features of the lighter than air flying machine and other features appertaining to the heavier than air flying machine.

The main object of the invention is to provide a flying machine by means of which the machine may be successfully launched in the air from a small field or place and also make a successful and safe landing under the same circumstances.

A further object of the invention is to provide one or more lifting propellers of novel and efficient design combined with means for controlling air compressed and forced downwardly thereby so as to lift the machine in a substantially vertical path and also enable the machine to be driven in actual flight.

Another object in view is to provide an aileron or reservoir adapted to be filled by the air under pressure delivered by the lifting propeller or propellers.

A further object in view is to provide valve controlled means in connection with flexible and expansible reservoirs or bags whereby the necessary supply of air under pressure may be maintained for operating mechanism for generating electricity for illuminating the craft as well as any other devices necessary to the successful flying of the craft as well as for generating electricity for other purposes when the craft is not in flight.

With the above and other objects in view, the invention consists in the novel construction, combination and arrangement herein fully described, illustrated and claimed.

In the accompanying drawings:—

Figure 1 is a side elevation of a flying machine.

Figure 2 is a top plan view thereof.

Figure 3 is a front elevation.

Figure 4 is a sectional view approximately on the line 4—4 of Figure 2.

The fuselage or car of the machine is indicated by the numeral 1, the same being shown as having a base or floor 2. The body of the fuselage may be of any desired size and capacity according to the use for which the flying machine as a whole is designed. The machine is provided with landing wheels 3, and from the floor 2 of the fuselage there arise standards 5 that provide a hollow upstanding frame. From the sides of the frame there are extended supports arranged in opposite pairs and may be indicated by the numerals 6 and 7. At their ends these supports are connected together by brace rods 8, the lower brace rods connecting the lower support 6 to the bottom portion of the frame or to the fuselage. Normally resting on the supports 6 and 7 there are planes or wings 10 and 11 respectively. These planes 10 and 11 are hinged, as at 12, to the sides of the frame that comprises the uprights 5. It should have been stated that the uprights 5 are suitably connected by cross braces 13. Each plane 10 and 11 has supported thereon by means 14, longitudinally extending air containers 15. The ends of the inflated air containers 15 are pointed and suitable means, broadly indicated by the numerals 16 and 17, are connected with the upper and lower planes 10 and 11, respectively and directed to the fuselage whereby the said planes and their air containers 15 are normally sustained on the supports 6 and 7. The means 16 and 17 are releasable to permit of the planes being swung to upward angles with respect to the frame, as discuosed by the dotted lines in Figure 3 of the drawings. The reason for such swinging of the planes will be presently apparent and such planes may be brought to such angle positions through the medium of flexible elements 18 and 19 which are trained over pulleys on the frame and directed to the fuselage.

Arranged directly below the floor 2 of the fuselage there is a pipe member 20 which has its forward end closed, its rear end projecting beyond the rear of the fuselage and provided with a bell mouth 21. The pipe 20 provides the traction propeller of the machine, as will presently be apparent. From the pipe 20 there arise equidistantly spaced spouts 22 and 23—23, respectively. All of the spouts communicate with the propeller spout or tube 20, and the said propeller pipe or tube 20, in alignment with the spouts 23, has its under face formed with funnel-shaped short pipe extensions 24, respectively. The passages between the funnel-shaped air inlets 24 and the propeller tube 20, are controlled by flap valves 25, and

means, broadly indicated by the numeral 26, is provided for simultaneously actuating all of the valves 25, the said means being operative from the fuselage.

Each of the spouts 22 and 23—23 has a funnel-shaped end or mouth 27. In the mouth of each of the spouts there is arranged a wind wheel 28 in the nature of a lifting propeller. The propellers 28 are dome-shaped and have the edges of their blades connected to a ring 28', and the shafts 29 for the said propellers are journaled in suitable bearings 30 in the respective spouts. On the lower and free end of each shaft 29 there is a gear wheel 31 in mesh with similar gears 32 on a common shaft 33 that is journaled through bearing openings in all of the spouts. In each of the down spouts 22 and 23—23 respectively, there is a downwardly inclined baffle plate 34 arranged directly above a paddle wheel 35. Each wind influenced paddle wheel 35 has its shaft 36 journaled in suitable bearings on the sides of the spouts 22 and 23—23, and on one end of each of said shafts there is a grooved wheel or pulley 39 around which is trained an endless belt that is also trained around the shaft wheel of a dynamo 40. The electricity generated by the dynamos is suitably stored and such electricity is employed for lighting the craft when the latter is in flight, for actuating or assisting in actuating certain of the movable or revoluble parts of the craft or when the craft is not in flight the generated electricity may be used for house lighting purposes, for driving suitable machines, etc.

The forward end of the shaft 33 has arranged thereon a pulley wheel 41 around which is trained an endless belt 42 which is also trained around a grooved wheel on a shaft 43 of an internal combustion engine 44.

In the tubular propeller 20 there is a butterfly valve 45 that has a handle 46 positioned to be operated by the occupant of the fuselage. By closing the valve 45 air directed by the propeller 28 through the down spout 22 will find a passage through a valve controlled pipe 46 which leads to a storage tank 47. In the pipe 46 there is also a safety valve 48, and the storage tank is provided with a blow-off valve as well as a whistle 49. The air from the storage tank 47 may be employed for maintaining the air containers 15 fully inflated, the said air tank having flexible hose connections with the said air containers, and the passages through these connections 49' are controlled by valves. In addition to this the compressed air may be also employed for a number of other purposes, such for instance, as assisting in the operation of any of the parts of the ship. Also the tank 47 may contain therein a suitable chemical which will generate gas when air is mixed therewith, so that the ailerons will have no gas for retaining the same inflated as long as the ship is in motion.

At the rear of the machine there is a horizontal rudder 50 and a vertical rudder 51, both of the rudders being suitably controlled from the fuselage.

In practice the engine 44 is started by a gas or gasoline charge in the usual manner so that motion is imparted to the shaft 33 which in turn imparts motion to the shafts 29 for revolving the propellers 28. The valves 25 are swung to fully open position to cause direct passage through the tubular air propeller 20. In this manner a direct vertical suction is created which raises the propeller to a desired elevation. Thereafter the valves 25 are swung to closed position, causing the direct draft created by the propellers to be forced through the down spouts through the projecting propeller tube 20 and out of the bell mouth 21 thereof, causing the craft to be propelled in a straight-ahead direction. The craft is lowered by opening or partly opening the valves 25. The rudders 50 and 51, of course, serve as guides for the craft and the tilting thereof assists in the raising and permits of the lowering of the craft. When the craft is propelled at such speed that the use of the engine 44 is no longer required, the latter may be shut off and suitable means, such as the clutch means indicated by the numeral 52, may disconnect the engine shaft from the belt pulley. The air containers and the wings or planes, of course, stabilize and assist in the flight of the machine. As previously stated, electricity is generated and stored by the dynamos 40 and by closing the valve 45 air from the spout 22 will be stored in the tank 47.

When the craft is in flight the planes 6 and 7 are swung to the dotted line position in Figure 3, so as to offer the least resistance to the air, and it is believed that the foregoing description when taken in connection with the drawings will fully set forth the simplicity and advantages of my construction to those skilled in the art to which such invention relates. It is, of course, to be understood that the illustration is merely that of a conventional form of my idea and that I am entitled to make such changes therefrom as fairly fall within the scope of my claims without departing from the spirit or sacrificing any of the advantages thereof.

What is claimed is:—

1. An air craft embodying a fuselage, supporting planes projecting from opposite sides thereof, stabilizing means, directional means, a lifting propeller rotatable on a normally vertical axis, a down spout having an enlarged funnel-shaped upper part in which said propeller operates, inflatable air

containers, at opposite sides of the fuselage, air conduits between said down spout and air containers, valve means controlling the supply of air to the air containers and driving means for said propeller.

2. An air craft embodying a fuselage, supporting planes projecting from opposite sides thereof, stabilizing means, directional means, a lifting propeller rotatable on a normally vertical axis, a down spout having an enlarged funnel-shaped upper part in which said propeller operates, resilient and expansible air containers at opposite sides of the fuselage, means for directing air from the down spout to a storage tank, air connections between said storage tank and containers, valve means controlling the supply of air to said containers, and driving means for said propeller.

3. An air craft embodying a fuselage, having an upstanding frame, wings hingedly secured to the sides of the frame, expansible air containers on the wings, lifting propellers on a normally vertical axis, down spouts, each having an enlarged funnel-shaped upper part in which said propellers operate, a driving propeller, comprising an air expelling tubular member extending longitudinally beneath the fuselage and communicating with the down spouts, valve controlled air inlets for the driving propeller in alignment with certain of the down spouts, an engine in the fuselage for imparting initial movement to all of the lifting propellers, means for disconnecting the engine from the drive connection with the propellers, a fan wheel in each of the down spouts, an air tank, valve controlled means for directing air from one of the down spouts to store the same in the tank and valve controlled means for directing air from the storage tank into the expansible containers.

4. An air craft embodying a fuselage having an upstanding frame and a fluid propelled engine on the front of the fuselage, upper and lower supports extending outwardly from the sides of the frame, wings hingedly secured to the frame and normally resting on the supports, inflatable air containers arranged on and extending the full length of the wings, means for swinging and sustaining the wings and air containers angular with respect to the frame, lifting propellers rotatable on a normally vertical axis, down spouts having enlarged ends in which the respective propellers are received, a projecting propeller comprising an air ejecting tube arranged longitudinally beneath the fuselage and communicating with the down spouts and having an inner closed end, said projecting propeller having downwardly directed spouts in alignment with certain of the down spouts, valves swingable over the last mentioned spouts to close the communication between the down spouts and the propeller, means for simultaneously actuating all of the valves, a deflector in each of the down spouts, a wind wheel journaled therebelow, a dynamo operated by the turning of each wind wheel, means between the engine and the lifting propellers for operating said propellers, means for detaching the engine from operative connection with the propellers, an air storage tank, valve controlled means for directing air from one of the down spouts into the storage tank, and valve controlled flexible hose connections between the air containers and the storage tank.

In testimony whereof I affix my signature.

WILLIAM TEMP CAUGHLIN.