

Sept. 13, 1932.

F. A. MENG

1,877,003

FLYING MACHINE

Filed Sept. 24, 1931

3 Sheets-Sheet 1

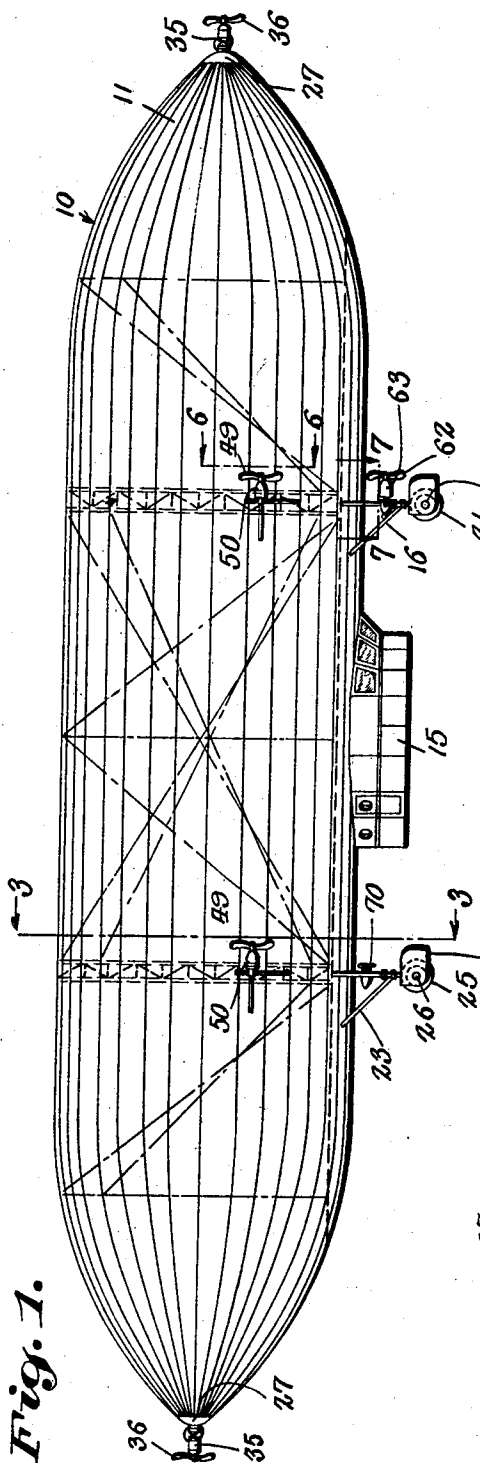


Fig. 1.

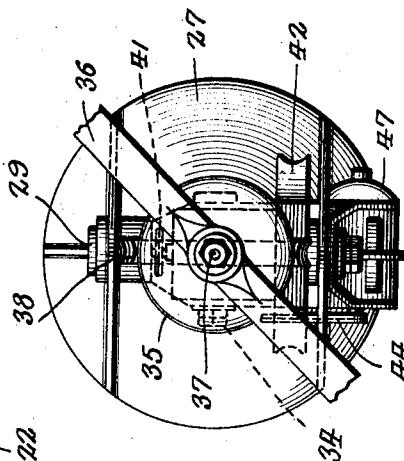


Fig. 3.

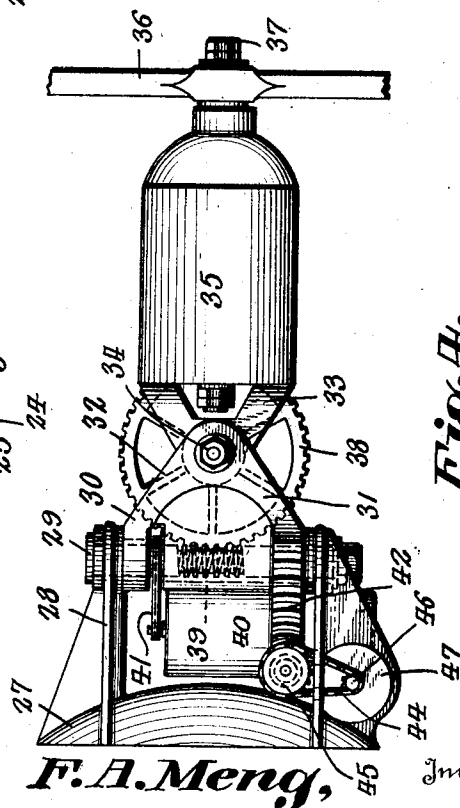


Fig. 4.

F. A. Meng,

Inventor

L. F. Randolph, Jr.

Attorney

Sept. 13, 1932.

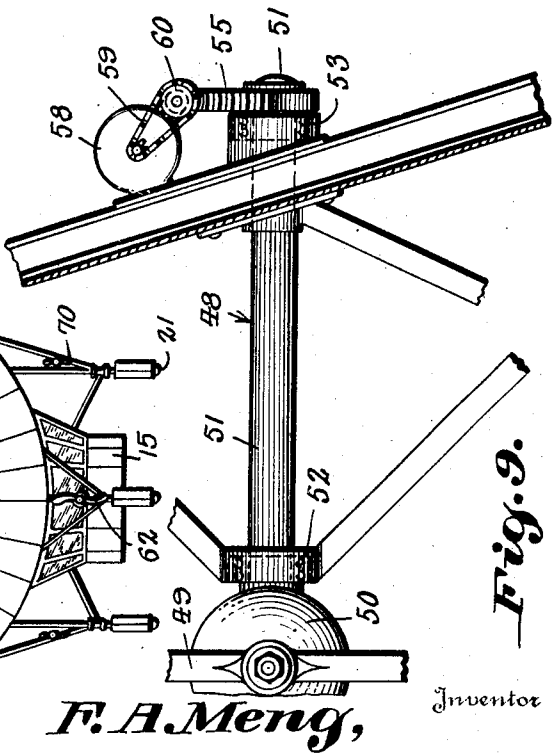
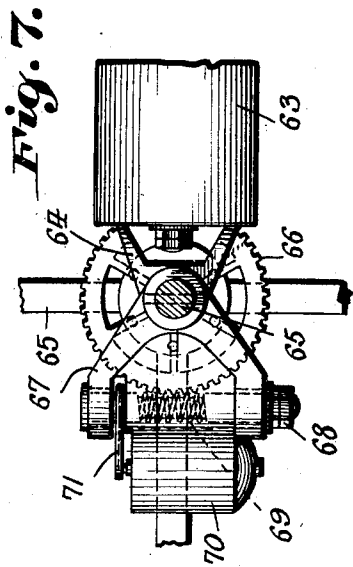
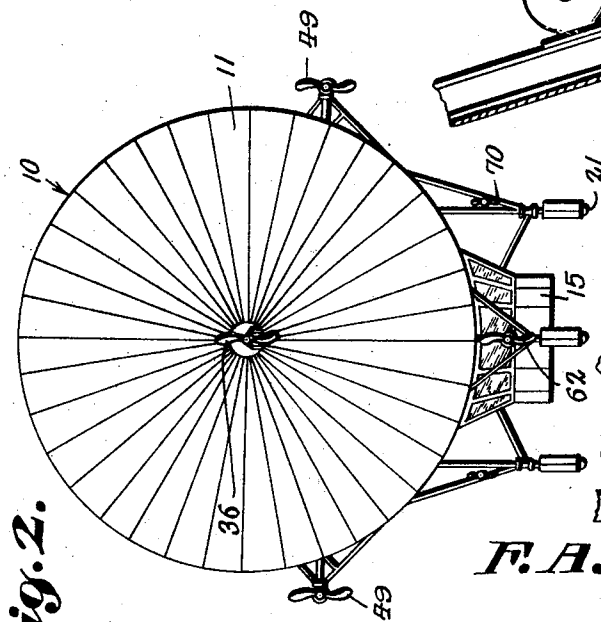
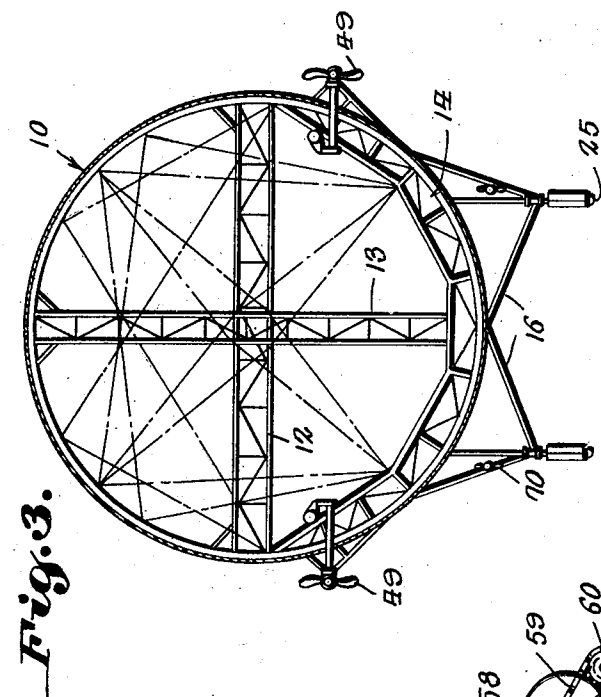
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F. A. Meng,

Inventor

By *L. F. Randolph, Jr.*
Attorney

Sept. 13, 1932.

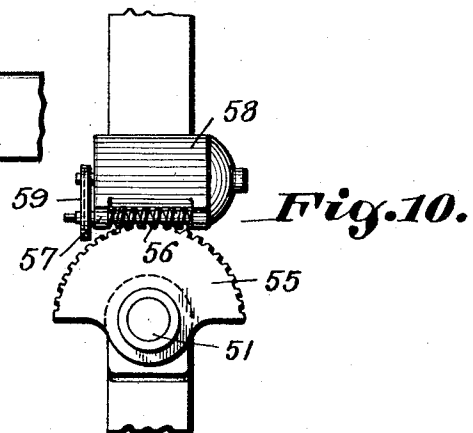
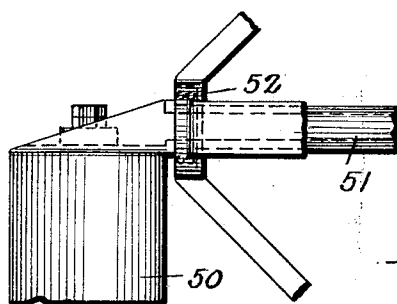
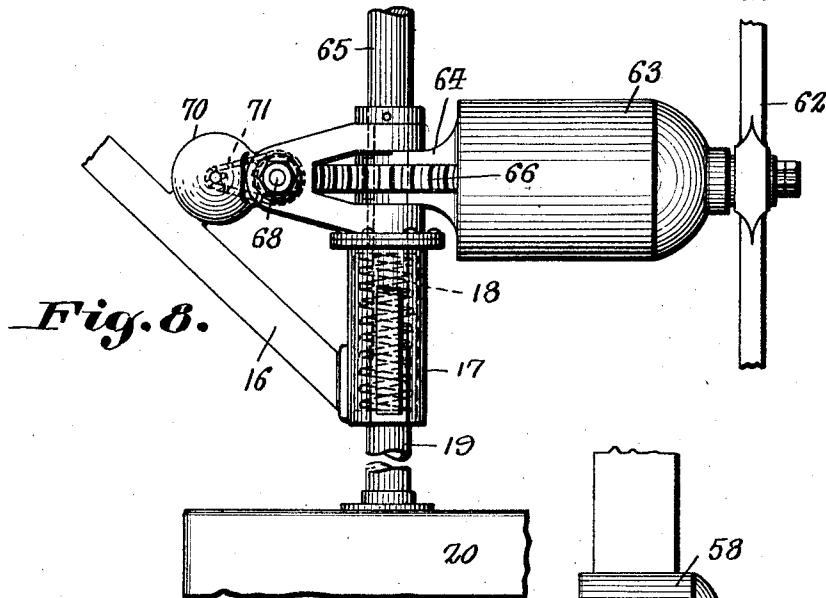
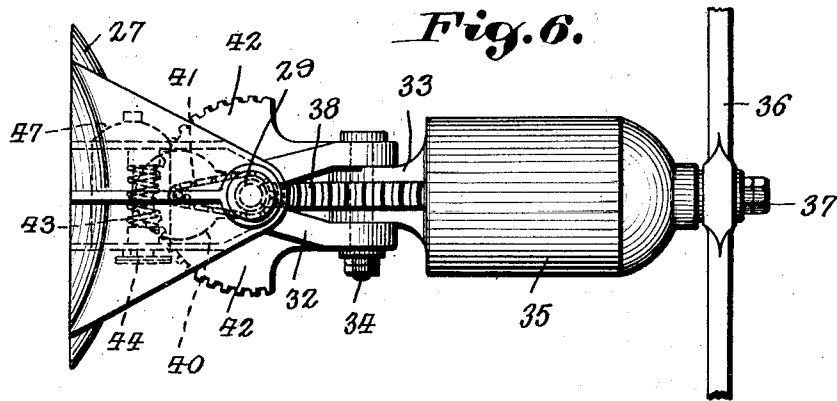
F. A. MENG

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FLYING MACHINE

Filed Sept. 24, 1931

3 Sheets-Sheet 3



F. A. Meng,

Inventor

By *L. F. Randolph, Jr.*
Attorney

UNITED STATES PATENT OFFICE

FREDERICK A. MENG, OF DEARBORN, MICHIGAN

FLYING MACHINE

Application filed September 24, 1931. Serial No. 564,868.

This invention relates to a flying machine and generally aims to provide a construction of flying machine disclosed in Letters Patent 1,229,114 issued to Frederick A. Meng, et al., June 5, 1917.

It is particularly aimed to provide a novel construction wherein the various controls are replaced for electric rather than manual operation.

It is also aimed to provide a novel ground gear enabling the machine to land without the usual landing crew and such a gear as will permit the machine to travel on the ground.

The more specific objects and advantages will become apparent from a consideration of the description following taken in connection with accompanying drawings illustrating an operative embodiment.

In said drawings:—

Figure 1 is a view of the airship in side elevation,

Figure 2 is a front end view of the airship,

Figure 3 is a cross section taken on the line 3—3 of Figure 1,

Figure 4 is an enlarged plan view of one of the end propeller units,

Figure 5 is a front elevation of the unit of Figure 4,

Figure 6 is an enlarged side elevation of said end unit of Figure 4,

Figure 7 is a sectional detail taken on the line 7—7 of Figure 1,

Figure 8 is an enlarged side elevation of a portion of the front landing gear,

Figure 9 is an enlarged transverse sectional detail illustrating the mounting and driving of the side or lifting propellers,

Figure 10 is an end elevation of the drive used in connection with the side propellers, and

Figure 11 is a detail in plan of part of the mounting of one of the side motors.

Referring specifically to the drawings, 10 generally designates the airship, which preferably has a gas bag at 11 whereby it is of the balloon or lighter than air type. The bag 11 may be of any suitable construction, shape and details but preferably has lateral passages at 12, a vertical passage at 13, and

a transverse passage at 14, enabling communication between the various portions of the airship and access to the various controls. The cabin carried by the bag 11 is shown at 15.

A plurality of front framework are provided as at 16, fastened in any suitable manner to the structure of the bag and carrying vertical cylinders 17 having cushioning springs 18 therein. Movable against the action of the springs 18, are rods or pistons 19, telescoped in the casings 17, and carrying hoods or the like at 20, having ground wheels 21 pivoted thereto as at 22. Preferably three of the ground wheels 21 and coaxing supports are used as shown in Figure 2.

Adjacent the rear of the bag 11, two framework 23 are preferably provided which rigidly support hoods 24, having ground wheels 25 secured to shafts 26 fastened to the hoods. The wheels enable the airship to travel over the land and also to alight without the necessity of employing a landing crew as is necessary at the present time.

To enable the last mentioned result to be realized the bag or ship is equipped with a novel system of propellers which are operable to maintain the wheels 21 and 25 in contact with the ground and not in flight.

At the front and rear of the bag 11, nose or cap mountings 27 are suitably secured to the framework of such bag. Vertically journaled in arms 28 of the nose mountings, is a rotatable shaft 29 on which is journaled, the spaced arms 30 and 31, of a bracket 32. Bracket 32 has a bracket 33, pivotally bolted thereto as at 34 and it extends from a driving motor 35, for an adjacent end propeller 36, the latter being fastened in any suitable manner on the shaft 37 of such motor. Rigid with the motor 35 and bracket 33, is a gear segment 38, being a worm wheel, and in mesh with a worm portion 39 of the shaft 29. The bracket 32 also carries unitarily therewith, an electric motor 40, whose shaft has a sprocket wheel thereon driving a sprocket chain 41, geared to the shaft 29. Thus when the motor 40 is in operation, worm 39 and worm wheel 38 effect swinging movement of the motor 35 and end propeller from a horizontal axis 34.

At the same time, each of said end propellers 36 may be moved laterally to either side. To this end, bracket arm 31 has a worm wheel 42 formed thereon, with which a worm 43, suitably journaled on the nose mounting 27, meshes, such worm being in turn driven by a sprocket chain 44 meshing with a sprocket wheel 45, such chain being driven by a sprocket wheel 46, on the shaft of an electric motor 47. It will be realized that the motors 40 and 47 are operated at different times, either when the motor 35 is in operation or idle, as the case may be.

It will be realized that while one of the propellers 36 is being operated to push the aeroplane, the other is operated to pull the same. Motors 35 for such propellers may be operated jointly or separately by suitable switch control.

Any suitable number of side propeller units 48 such as is detailed in Figure 9, may be employed, depending on the size of the ship, and of such capacity as to enable steady and efficient raising and lowering of the airship, substantially in a straight vertical path or at a right angle to the ground. The propellers of such units 48 are designated 49 and driven by electric motors 50. The electric motors 50 are rigidly carried by shafts 51, journaled in suitable bearings at 52 and 53, provided on the framework of the machine. Through the movement of shafts 51, the angle of the motors 50 and accordingly of the propellers 49 may be shifted according to the desires of the pilot. Rigid on shafts 51 are worm wheel segments 55, in mesh with worms 56 journaled in bearings 57 of the casings of electric motors 58. Such motors 58 drive sprocket chains 59 which are trained over sprockets 60 keyed to the worms 56. The electric motors 58 are operated of course only when desired, under suitable switch control, either individually, those of each side of the airship in groups, or all of them simultaneously, as preferred. The operation of the motors 58, cause the rotation of the shafts 51 and variation of the angle of motors 50 and of the propellers 49.

The machine is driven and steered over the ground independently of the propellers described and when the same are not in operation. To accomplish this result, a propeller is shown at 62 driven by an electric motor 63 having a bracket 64 whereby it is journaled on an upstanding shaft 65 of the central frame 16. Also rigid with the motor casing 63 and journaled on the shaft 65 is a worm wheel 66. A bracket 67, rigid on shaft 65 has a shaft 68 journaled therein provided with a worm portion at 69 in mesh with the wheel 66. Worm shaft 69 is driven from an electric motor 70, through the medium of chain and sprocket gearing at 71, suitably mounted on the adjacent framework 16. As a result, the motor 63 and propeller 62 may be

moved laterally to either side when desired, the motor 70 being operated independently of the motor 63 and while it is in operation or idle as the case may be.

Suitable electricity generating units may be provided at 70, being mounted for instance on the framework 23, such generators serving to generate sufficient electricity for the purpose of operating the various motors of the airship or apparatus used in connection therewith. Obviously the electric energy may be supplied from batteries or in any desired manner.

Various changes may be resorted to provided they fall within the spirit and scope of the invention.

I claim as my invention:—

1. An airship comprising a bag, propellers at front and rear thereof, side propellers, frameworks depending from the bag, wheels carried by the frameworks, a propelling unit carried by one of the frameworks adapted for operation when the wheel means are engaged with the ground, the last mentioned framework having an upright, the propelling means being journaled thereon, a casing carried by the upright, a cushioning spring in the casing, and the ground wheel means having a portion in cushioning engagement with the spring.

2. In an airship, a propeller unit comprising a mounting body, a worm shaft journaled on said body, a bracket journaled on said shaft, a gear on said bracket, a motor on said bracket, a propeller-driving motor pivoted to the bracket and having a gear in mesh with said worm, a driving connection from the first mentioned motor to the worm, and means carried by the body operable to drive the first mentioned gear.

3. In an airship, a driving unit comprising a mounting body attachable to the nose of a bag, said body having spaced arms, a shaft journaled in said arms, a bracket journaled on said shaft said bracket having a gear thereon and a motor, a driving connection from the motor to said shaft, a motor carried by the bracket having a driving connection with the said gear, a propeller-driving motor pivoted to the bracket, and driving gear means between the last mentioned motor and said shaft.

4. In an airship, a frame having members disposed in diverging relation, a motor secured on one of said members, a bracket connected to the other of said members, a shaft journaled on said bracket and driven by said motor, a propeller-driving motor journaled on the other of said members, and a driving connection between said shaft and said motor, operable to vary the position of the latter.

In testimony whereof I affix my signature.

FREDERICK A. MENG.