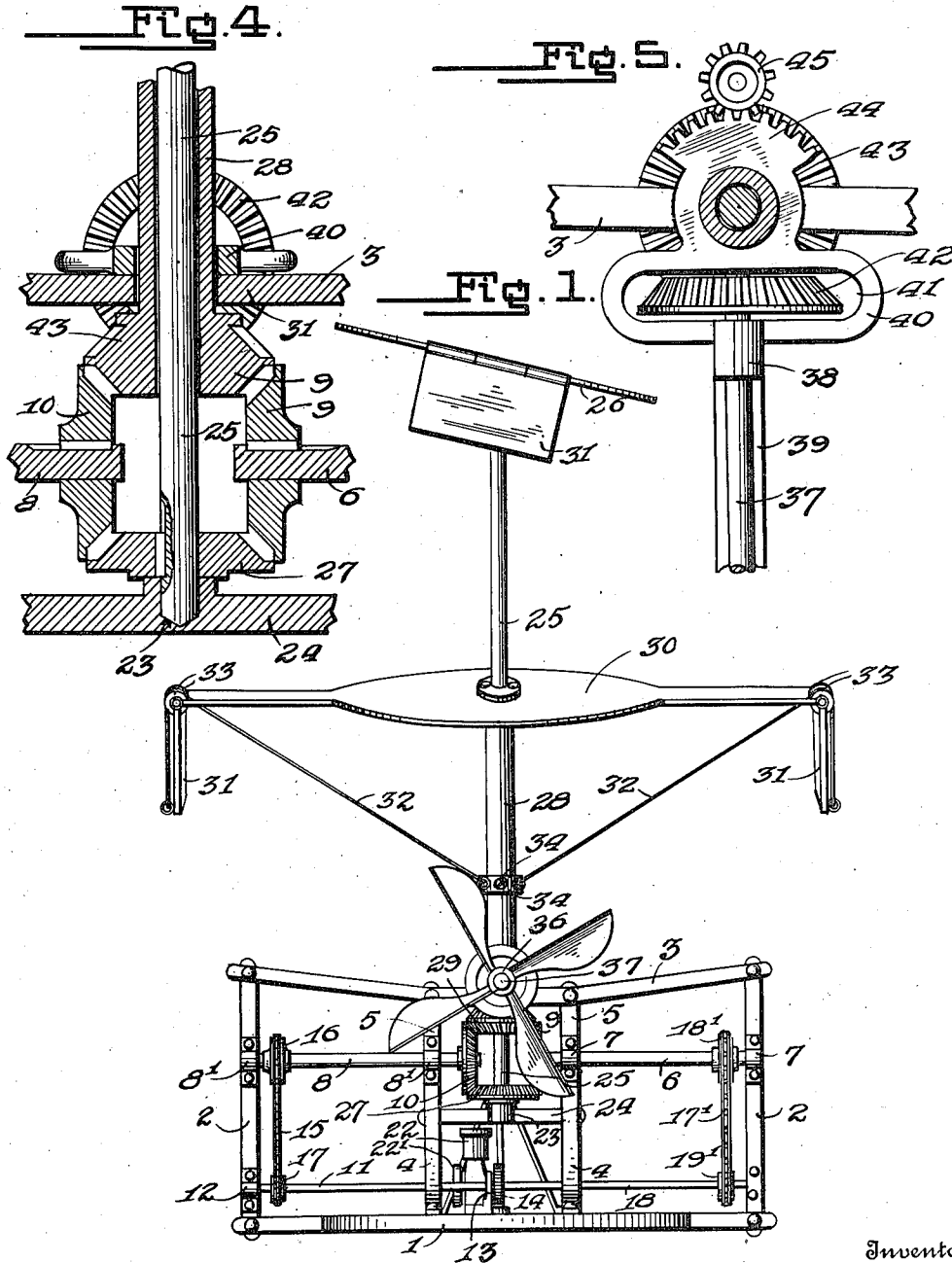


J. PHILLIPS.
FLYING MACHINE.
APPLICATION FILED JUNE 7, 1910.

989,412.

Patented Apr. 11, 1911.

2 SHEETS-SHEET 1.



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Fig. 3.

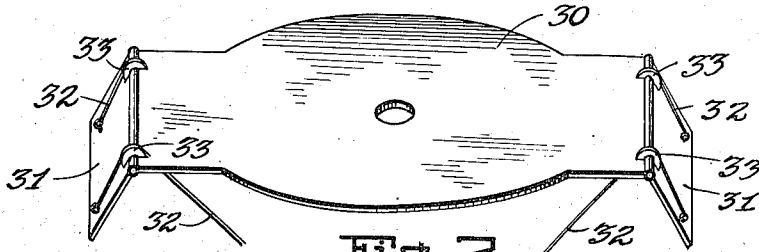
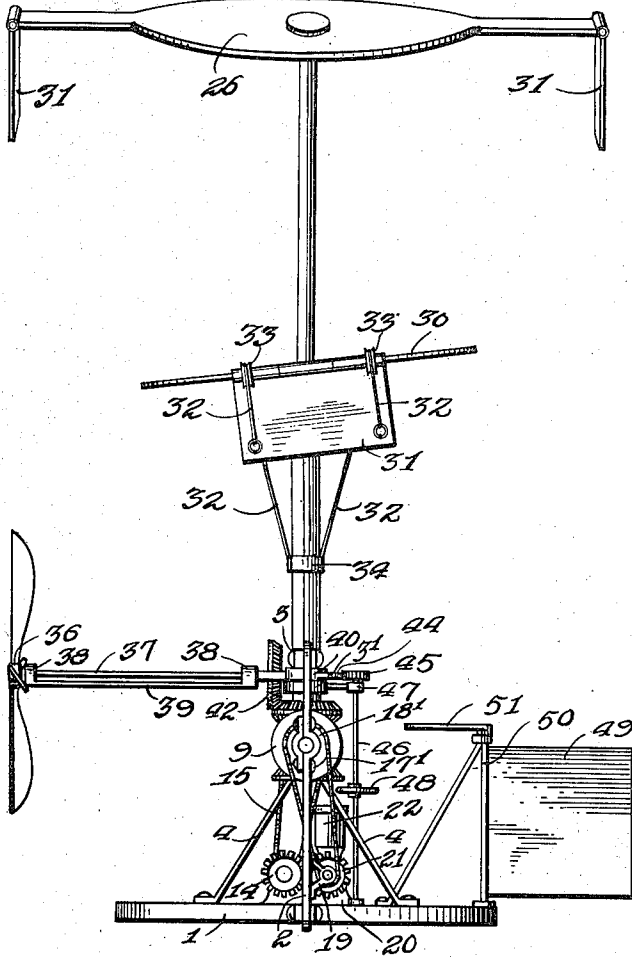


Fig. 2.



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UNITED STATES PATENT OFFICE.

JACOB PHILLIPS, OF WESTFIELD, PENNSYLVANIA.

FLYING-MACHINE.

989,412.

Specification of Letters Patent.

Patented Apr. 11, 1911.

Application filed June 7, 1910. Serial No. 565,471.

To all whom it may concern:

Be it known that I, JACOB PHILLIPS, a citizen of the United States of America, residing at Westfield, in the county of Tioga and State of Pennsylvania, have invented certain new and useful Improvements in Flying-Machines, of which the following is a specification, reference being had therein to the accompanying drawing.

10 This invention relates to flying machines and has for its object to provide an improved flying machine so constructed and arranged that it may be effectively operated and its propelling mechanism regulated so
15 as to increase or decrease the power thereof.

The invention further has for its object to provide an improved flying machine by means of which an increase of motive power is provided.

20 The invention further has for its object to provide an improved flying machine by means of which the speed of the same may be regulated.

25 With these and other objects in view, the invention consists in a flying machine and details thereof constructed and arranged as hereinafter set forth and claimed.

Referring to the accompanying drawing,—Figure 1 is an end view in elevation
30 of a flying machine constructed in accordance with this invention. Fig. 2 is a side view thereof. Fig. 3 is a detail view in perspective of one of the lifting propellers. Fig. 4 is an enlarged detail view in vertical
35 section, showing a portion of the driving mechanism. Fig. 5 is an enlarged detail view showing a portion of the steering mechanism.

In the construction of the invention, a
40 suitable car 1 is provided, and, as here shown, consists of a platform provided with uprights 2 at its sides and connected together at their upper ends by a transverse
45 bar 3. Adjacent to the center of the platform and spaced apart from each other are two pairs of inclined uprights 4, each pair terminating at its upper end in a vertical
portion 5 secured to the cross bar 3; the diagonal uprights 4 being secured at their
50 lower ends to the platform of the car. A shaft 6 is mounted in sleeves 7 on one of the uprights 2 and one of the vertical uprights 5; and a shaft 8 is mounted in sleeves 8' on one of the uprights 2 and one of the upper
55 uprights 5. Each of the shafts 6 and 8 has its inner end projecting through sleeves 7

and 8', respectively. Shaft 6 has mounted on its inner end a beveled gear wheel 9 and the shaft 8 has mounted on its inner end a beveled gear wheel 10. 60

Adjacent to the platform of the car, extending parallel with the shaft 8, is a shaft 11 having one of its ends supported in a sleeve 12 on one of the uprights 2 and its other end projecting through a bracket 13
65 on the platform of the car and having mounted on its projecting end a toothed gear wheel 14. The shaft 8 is connected with the shaft 11 by means of a sprocket chain 15 which extends over a sprocket wheel 16
70 on the shaft 8 and a sprocket wheel 17 on the shaft 11. A shaft 18, adjacent to the platform of the car and parallel with the shaft 6, has one end bearing in a bracket 19
75 on one of the uprights 2 and its other end supported in a bracket 20 on the platform of the car. The shaft 6 is connected with the shaft 18 by a sprocket chain 17' which extends over a sprocket wheel 18' on the shaft
80 6 and a sprocket wheel 19' on the shaft 18.

Mounted on the shaft 18 is a toothed wheel 21 which meshes with the toothed wheel 14 on the shaft 11. The shaft 18 is driven by a gasoline motor 22 provided with a fly
85 wheel 22'. Mounted in a socket 23 on the cross bar 24 and secured at its end to the uprights 4 is a vertical shaft 25 having mounted on its upper end a propeller 26. Located above said socket 23 and secured to the shaft 25 is a beveled gear wheel 27 which
90 meshes with the beveled gear wheels 9 and 10.

It will be seen that by means of this construction the power transmitted from the motor will be conveyed through the shafts
95 and gears as heretofore described to the beveled gear wheels 9 and 10 so as to cause them to move in opposite directions, at the same time rotating the shaft 25 in one direction.

The shaft 25 extends up through a tubular
100 shaft 28, which extends through a sleeve 3' on the cross bar 3 and is connected to a beveled gear wheel 29 which meshes with the beveled gear wheels 9 and 10. On the upper end of the tubular shaft 28 is a propeller 30.
105 Each of the propellers 26 and 30 revolves in opposite directions owing to the arrangement of the beveled gear wheel and the transmission mechanism from the motor, the beveled gear wheel 27 being rotated by the
110 beveled gear wheels 9 and 10 to rotate the shaft 25 in one directed, while the beveled

gear wheel 29 is rotated by the beveled gear wheels 9 and 10 to rotate the tubular shaft 28 in the opposite direction.

In order to provide means whereby the propellers 26 and 30 may have their driving surface increased or decreased, each of said propellers is provided at its ends with wings 31 hinged thereto and connected by means of cords 32 passing over pulleys 33 on the hinged ends of the propeller, and connected at their lower ends to a suitable adjusting device, as for example, the sleeve 34 slidably adjustable on the shaft 25 and held in adjusted position by means of a set screw 35.

The propellers, as shown, are located in oppositely inclined positions on their shafts and the wings 31 at the ends of the propellers serve as extensions of the annular propellers so that by raising and lowering said sleeve, the driving surface of the propellers is increased or decreased. A driving propeller 26 is provided, mounted on a shaft 37 which is supported in sleeves 38 of a base bar 39, said bar 39 having a head 40 at its inner end provided with a slotted portion 41 in which is located a bevel gear wheel 42 mounted on the end of the propeller shaft 37, said beveled gear wheel 42 meshing with a beveled gear wheel 43 mounted on a tubular shaft 28. The head 40 rests on the sleeve 3' of the cross bar 3. The head 40 is provided with a toothed segment 44 which meshes with a small toothed wheel 45 on the upper end of the vertical shaft 46 having its upper end supported in a bracket 47 projecting from the sleeve 3' and its lower end supported on the platform of the car, said shaft being operated by means of the end wheel 48 whereby the shaft 37 and its support, together with the propeller 36, may be swung to any horizontal angle desired to change the course of the machine.

It will be seen that by means of this inven-

tion the driving gear is suitably distributed to drive the propellers in opposite directions; also that by means of this invention, the lifting propellers may be adjusted as desired in order to increase or decrease their lifting surface.

What I claim as my invention is:—

1. A flying machine comprising a car, a pair of vertical shafts rotatable in opposite directions, a lifting propeller on each shaft and each provided with adjustable wings hinged to and projecting from its ends, means for adjusting said wings to different angles, a motor, a beveled gear mechanism for driving said shafts in opposite directions, and a reversely operating gear mechanism connecting said beveled gear mechanism with said motor.

2. In an air ship of the character described, a car, a vertical shaft with a horizontal beveled gear thereon, a lifting propeller at its upper end, a vertical tubular shaft extending over said vertical shaft and having a lifting propeller at its upper end and a horizontal beveled gear wheel at its lower end, vertical beveled gear wheels meshing with a horizontal beveled wheel on said shaft, rotary shafts projecting from said vertical beveled gear wheels, horizontal shafts parallel with said rotary shafts, sprocket chains and sprocket wheels connecting said shafts, a motor connected with one of said shafts, and a toothed wheel on said shaft meshing with the toothed wheel on the other shaft whereby a reverse movement is transmitted to the two shafts to cause them to rotate in opposite directions.

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

JACOB PHILLIPS.

Witnesses:

E. L. JOHNSON,
I. F. HENDRICKSON.