

H. M. COOLEY.
FLYING MACHINE.

APPLICATION FILED JAN. 3, 1911. RENEWED OCT. 8, 1912.

1,056,150.

Patented Mar. 13, 1913.

2 SHEETS—SHEET 1.

Fig 1

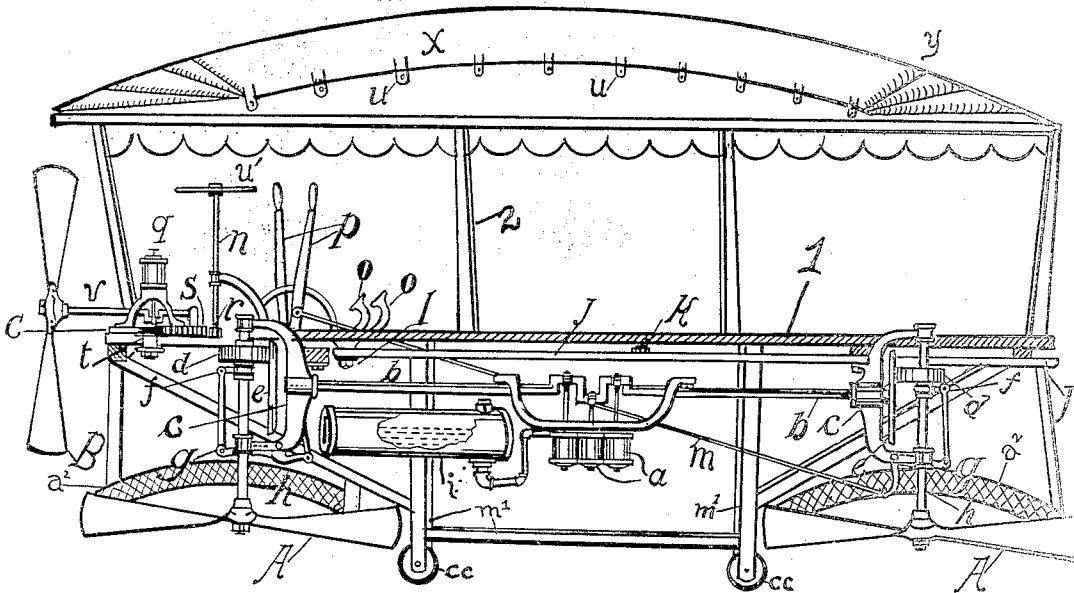
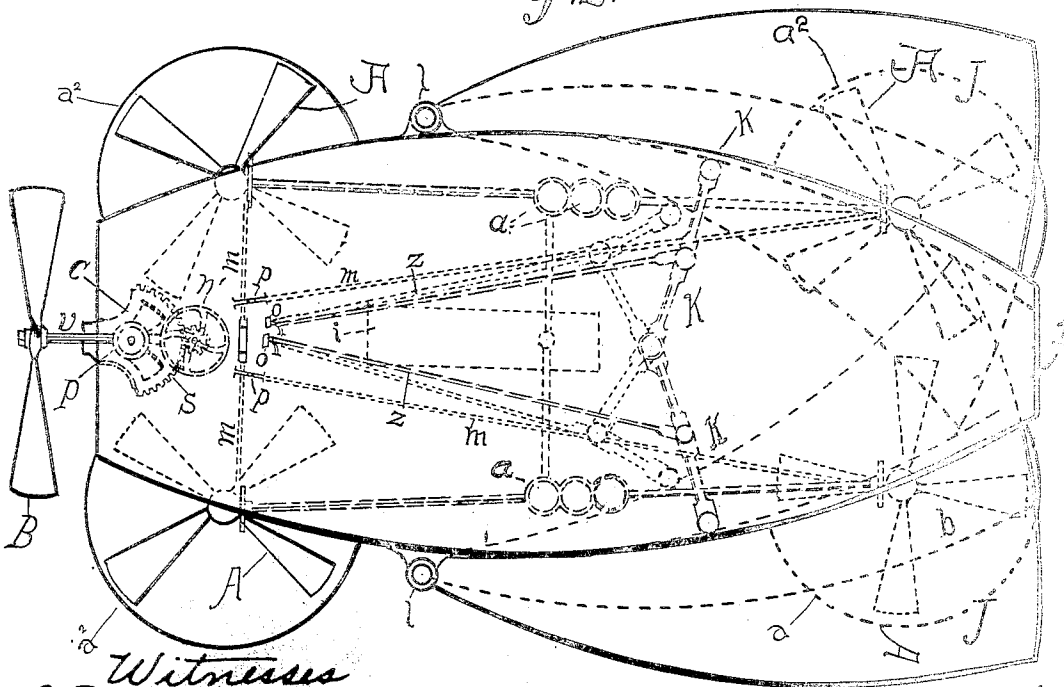


Fig 2



Witnesses
B. D. Christie.
M. Newcomb.

Inventor
H. M. Cooley
By W. J. Fitzgerald & Co.
Attys.

H. M. COOLEY.
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2 SHEETS—SHEET 2.

Fig 3

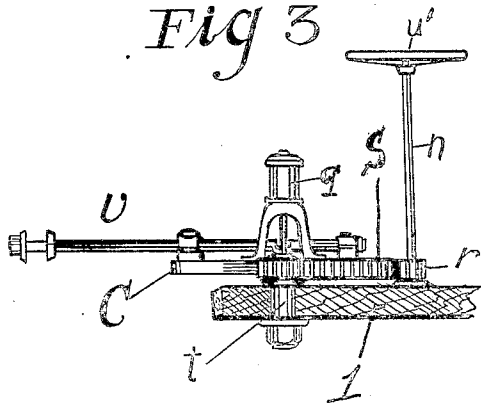


Fig 4

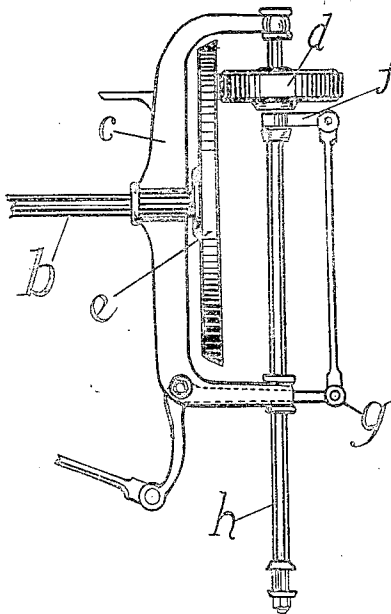
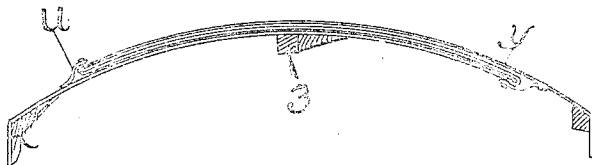


Fig 5



Witnesses
B. D. Christie
M. Harcomb.

Inventor
H. M. Cooley
By W. J. Fitzgerald & Co
Attys.

UNITED STATES PATENT OFFICE.

HERBERT M. COOLEY, OF MEXICO, MEXICO.

FLYING-MACHINE.

1,056,150.

Specification of Letters Patent.

Patented Mar. 18, 1913.

Application filed January 3, 1911, Serial No. 600,471. Renewed October 8, 1912. Serial No. 724,677.

To all whom it may concern:

Be it known that I, HERBERT M. COOLEY, a citizen of the United States, residing at Mexico city, Mexico, have invented certain new and useful Improvements in Flying-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to new and useful improvements in flying machines and more particularly to that class known as heavier-than-air flying machines and my object is to provide fans or blades for supplying buoyancy for the ship.

A further object is to provide means for increasing or decreasing the speed of the blades.

A further object is to provide means for driving the sets of blades in opposition to each other.

A further object is to provide means for reversing the movement of the blades.

A further object is to provide suitable motors for propelling the blades.

A further object is to provide a propeller for the ship and means for shifting the position thereof.

A further object is to provide wings or equilibrium blades and means to operate the same.

A further object is to provide a cover or parachute for the flying machine, and, a

35 further object is to provide means for normally holding the parachute in folded relation with the frame of the flying machine.

Other objects and advantages will be hereinafter set forth and pointed out in the specification.

In the accompanying drawings, which are made a part of this application, Figure 1 is a side elevation, partly in section, of my improved flying machine. Fig. 2 is a top plan view thereof. Fig. 3 is a detail view, partly in section of the propeller shaft and means for operating the same. Fig. 4 is a detail side elevation of the driving gear for the buoyant blades or fans, and, Fig. 5 is a detail view of the cover for the machine showing the canopy top or parachute in folded position.

Referring to the drawings, in which similar reference characters designate corresponding parts throughout the several views, 1 indicates the platform depending

from which is a suitable frame work m' , to parts of which frame are attached wheels or rollers c c to receive the jar or impact when alighting. Mounted in any suitable manner below the platform 1 are engines a , which are supplied with propelling medium from a tank i . Extending over the engines a and longitudinally of the platform 1 are crank shafts b , to the crank portions of which are secured the pistons of the engines. The ends of the shafts b extend through hangers c and have secured to their ends disks e , cooperating with which disks are transmission or friction pulleys d . The pulleys d are slidably mounted upon vertical shafts h , which shafts are rotatably mounted in the hangers c and extend vertically. The pulleys d are caused to rotate with the shafts h by any suitable form of regulating clutches f and the pulleys are moved vertically of the shafts by connecting the same through suitable links to levers g , said levers being connected to hand-levers p through the medium of rods m .

Attached to the lower ends of the shafts h are blades or fans A , that portion of the blade projecting beyond the platform being protected by shields a^2 . In order to control the equilibrium of the flying machine, I provide a pair of wings or blades J , which are attached to the platform 1 by pivot bolts l , said wings being so arranged that they can be extended beyond the edges of the platform or housed thereunder. The movement of the wings is controlled through the medium of toggle levers K , the inner ends of which are pivoted below the platform and the opposite ends thereof to the inner edges of the wings. The toggle levers are contracted or extended through the medium of foot levers o , which are connected to the toggle levers by rods z , the operation of the toggle levers and wings being clearly shown by full and dotted lines in Fig. 2.

The machine is guided and propelled through the medium of a propeller B , which is carried upon a propeller shaft v , which is in turn mounted in suitable bearings upon a revolving table C , said table being provided with a journal t carried by the platform 1.

One end of the table C is formed into a segmental rack S , with which cooperates a pinion r carried by a steering post n , the upper end of the steering post having the usual form of hand wheel u' for operating

the post and it will be readily seen that as the table is rotated on its pivot, the propeller will be shifted from side to side, thus employing the propeller for guiding the machine as well as for driving the same forward.

The shaft *x* is provided with a crank portion to which is connected the pitman from a motor *g*, thus driving the propeller independently of the blades *A*.

The machine is provided with an upwardly extending frame work 2, to which is secured a covering *x* made of canvas or other suitable flexible material, said cover being so arranged that it will act as a safety device or parachute should the engines fail to work and the machine start to fall. The cover is made of such size that it will form a balloon-like structure when released, but under normal conditions, the cover is placed in folds, as best shown at *y* in Figs. 1 and 5, and the folds are held in position by means of clamps *u* or similar devices. The clamps are so arranged that they will normally hold the folds in position, but should the machine start to descend rapidly, the force of the wind will release the folds from the clamps and permit the cover to spread out and form a parachute or air bag. Rather than depend upon the clamps working automatically to release the covering, any suitable form of manually operated device may be provided for releasing the clamps.

The frame 2 is provided with a ridgepole 3, which is so curved as to form the covering dome shaped, thus permitting the machine to pass through the air without creating an undue amount of friction on the covering.

In operation should it be desired to ascend, the motors *a* are started and the pulleys *d* moved to a position above the axis of the shaft *b* and the speed of the blades *A* may be readily controlled by the distance at which the pulleys *d* are moved above the axis of the disks *e*. The machine is held against revolving, moving laterally, or lost motion by operating the blades *A* in opposition to each other, thus combining the energy of such power driven blades to the desired purpose of buoyancy or continued rising motion. The movement of the blades *A* may

be readily changed to cause the machine to descend by operating the levers *p* to move the pulleys *d* to a point below the axis of the disks *e*. After the machine has attained the proper height, the speed of the blades *A* is so regulated as to maintain the machine at the proper altitude, when the motor *g* is started to propel the machine and the machine may be placed under perfect control of the operator by arranging the motor *g* to operate the propeller to move the machine forwardly or rearwardly. It will likewise be seen that the machine may be held at the proper equilibrium as when attacked by sudden or violent air currents or when rising or gliding by means of the wings *J*, the moving of said wings inwardly or outwardly as occasion may require keeping the machine at a proper equilibrium. It will likewise be seen that by providing the frictional connection between the motors and the shafts carrying the blades *A*, any jar when starting or stopping the motors will be eliminated and the equilibrium of the machine will not be affected, and, it will likewise be seen that should the motors fail to work so as to hold the machine suspended in the air, any possibility of an accident by the machine suddenly descending will be obviated through the medium of the formation of the cover on the machine, said cover, when expanded, gathering sufficient air to cause the machine to descend gradually.

What I claim is:

A flying machine, comprising a platform and frame, means to cause the machine to ascend or descend, a propeller for said machine, means to shift the position of the propeller to guide the machine, wings pivoted to the platform centrally thereof to maintain the equilibrium of the machine and manually operated toggle levers pivoted centrally of the wings for extending or retracting said wings.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HERBERT M. COOLEY.

Witnesses:

H. J. HOLNESS,
EDWARD J. BELL.