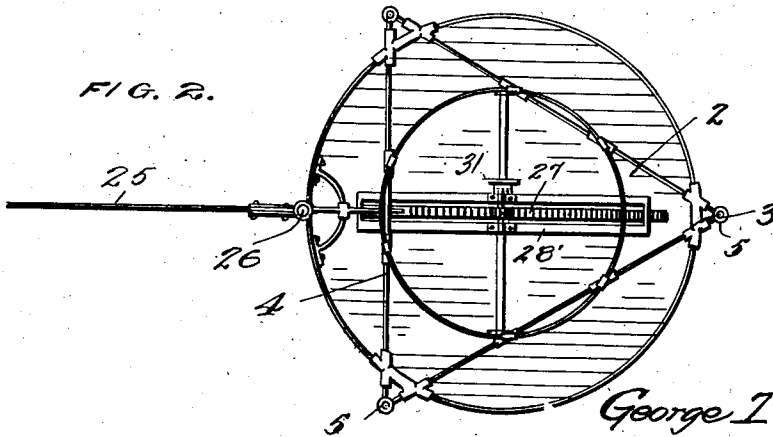
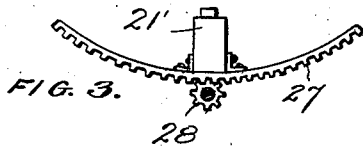
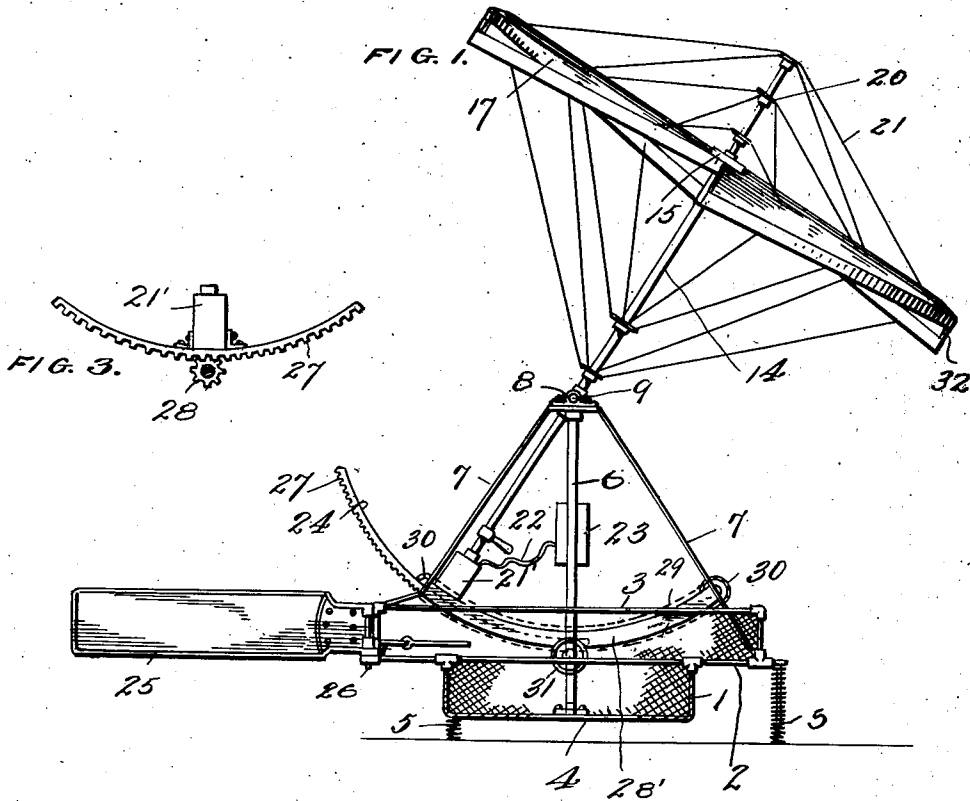


G. T. PEAY, JR.
FLYING MACHINE.
APPLICATION FILED OCT. 25, 1910.

1,033,460.

Patented July 23, 1912.

2 SHEETS-SHEET 1.



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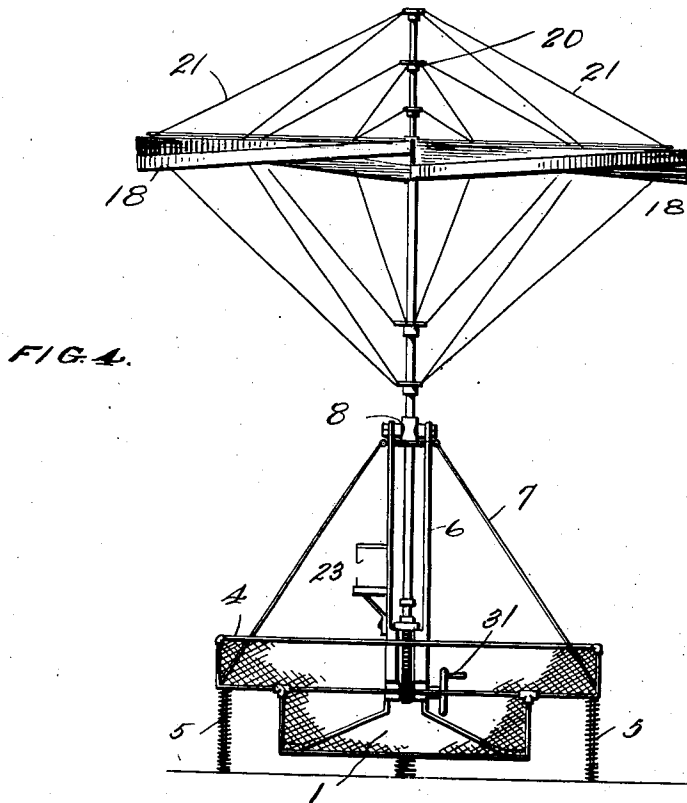


FIG. 4.

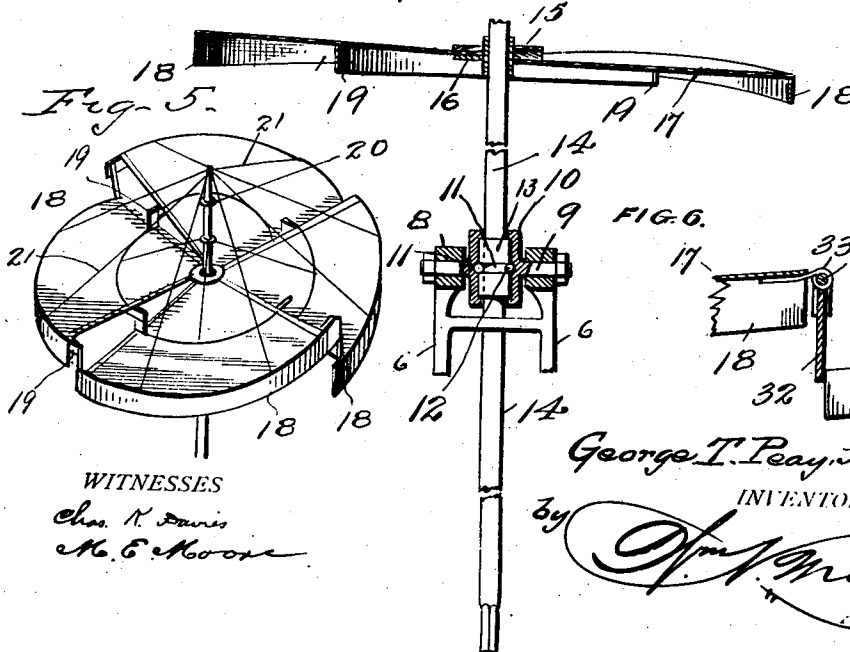


Fig. 5.

FIG. 6.

FIG. 7.

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FLYING-MACHINE.

1,033,460.

Specification of Letters Patent.

Patented July 23, 1912.

Application filed October 25, 1910. Serial No. 588,965.

To all whom it may concern:

Be it known that I, GEORGE T. PEAY, JR., a citizen of the United States, residing at Provo, in the county of Utah and State of Utah, have invented certain new and useful Improvements in Flying-Machines, of which the following is a specification.

My invention relates to improvements in flying machines, and has particular reference to that type of flying machines commonly known as helicopters, and the leading object of my invention is the provision of a machine of this character in which the lifting and sustaining planes shall be provided with means for uniting the same to transform them into a parachute to retard the descent of the machine when the planes are inoperative on account of the failure of the motive power.

A further object of the invention is the provision of a flying machine of the heavier than air type sustained by revolving planes, in which the angle of the axis of said planes may be adjusted to regulate the ascent and descent of the machine.

To attain the objects of my invention, I have provided a flying machine embodying novel features of construction and combination and arrangement of parts for service substantially as described and as illustrated in the accompanying drawings.

Figure 1 represents a side elevation showing the guiding means adjusted to close the machine to rise at an angle of about 60 degrees. Fig. 2 represents a bottom plan view of the machine. Fig. 3 represents a side elevation of a modified form of shaft adjusting or setting means. Fig. 4 represents a front elevation of the machine. Fig. 5 represents a perspective view of the lifting planes, and, Fig. 6 represents a vertical sectional view of the planes and the pivoted bearing for the shaft. Fig. 7 represents a detail of the shutter.

In the drawings, in which similar characters of reference are employed to denote corresponding parts in the several views, the numeral 1 designates the basket proper of my machine, having the auxiliary floor portion 2 affording a seat and surrounded by the protecting railing 3. Secured on the under side of the basket is a triangular framework 4 having a spring buffer 5 at

each corner thereof to deaden the shock of landing.

Rising from the basket of the machine are the supports 6 suitably braced by the wires 7, while formed on the upper ends of said supports are the bearing blocks 8 in which are journaled the pintles 9 of the collar 10 having a race 11 containing balls 12 therein, while passing through the collar and having a collar or enlargement 13 engaged by the balls 12 is the shaft 14, the balls bearing against both sides of said portion 13 to prevent vertical movement of the shaft in the collar. It will be seen from the foregoing description that the shaft 14 is thus revolubly and pivotally supported between the supports 6.

Secured on the upper end of the shaft 14 between the collars 15 and 16 which retain the same in position are the lifting planes 17 of my machine, four being illustrated, although it will be understood that any desired number may be employed, said planes being set at an angle to the horizontal and having formed at their outer edges the depending bracing flanges 18 which thus form in connection with the planes a dome or cup for engaging the air, the lower edge of the end of one flange being secured to the top of the adjacent plane, as shown in Fig. 5, thus forming an outer rim for the planes to prevent their displacement due to the air pressure. If desired, a second set of ribs or flanges 19 may be formed intermediate the length of the planes and similarly secured to the adjacent plane to form a second bracing ring, as shown in said Fig. 5. To further aid in securely retaining the planes in position I secure upon the shaft 14 a plurality of collars 20 from each of which extend guy wires 21 having their ends secured to the planes and bracing the same.

Secured to the lower end of the shaft 14 is a motor or engine 21', preferably of the gasoline type, said engine being fed by the tube 22 which leads to the tank 23, the engine being mounted on the segmental rack bar 24 which the lower end of the shaft supports. As the shaft revolves, the planes engage the air and ride up thereon, thus carrying upward the basket, in the ordinary manner of a helicopter.

To adjust the direction in which the ma-

chine moves, I secure to one side of the basket the radially extending rudder or tail 25, said tail being pivoted on the bolt 26 and having an inner handle which projects into the basket where it can be readily grasped by the operator to guide the machine.

To control the ascent and descent of the machine, I have, as heretofore described, pivotally mounted the shaft between the supports 6, while loosely secured to the bottom of the shaft to permit of the free rotation thereof is the curved rock bar 24 which is shown in Fig. 3 as provided with teeth 27 engaged by the pinion 28 fast on the shaft of the guide wheel 31 soon to be described for shifting the bar and thus the shaft on its pivot, the bar being contained between the guide-plates 28' which prevent its rotative movement and cause the engine to rotate the shaft. In Fig. 1 I have shown a sprocket chain 29 secured to the bar 24 for shifting the same, the chain passing over the sprockets 30 at each end, while one of said sprockets is arranged to be rotated by the guide-wheel 31 to shift the shaft, when the base of the shaft is swung rearwardly the pull being upward at an angle, while when it is swung forward the pull is exerted to cause the machine to cease forward movement. The chain 29 being attached at one point to the bar 24 and passing over the sprocket wheels 30 which are secured to opposite ends of the guide 28', it will be evident that when motion is imparted to this chain, the rack bar 24 will be moved in one direction or the other according to the direction of movement of the chain. Engagement of the teeth 27 of the bar with the pinion 28 causes the requisite movements hereinbefore described. It will thus be seen that the shaft can be shifted by means of either the rack and pinion or by the sprocket and chain arrangement. These I consider the equivalents of each other.

To exclude the possibility of accident due to the stopping of the engine of my machine, which has hitherto been an ever present danger with machines of this type, I pivotally secure to the front of each of the planes 17 the shutter 32 held in closed position by the heavy spring 33 coiled around its hinge-bolt 34, said spring retaining the shutter in position to close the space between the adjacent edges of the planes, as shown in Fig. 7. The planes and shutters thus serve as a parachute, the pressure of the air on the under side of the shutters pressing them more firmly against the planes. It will be understood that the planes cannot operate when the shutters are closed, but the strength of the spring is such as merely to hold the shutters closed when the planes are stationary or moving but slightly. When the planes are rotating at

a high rate of speed the pressure of the air against the shutters suffices to force back the shutters, when the machine will start and rise from the ground.

From the foregoing description taken in connection with the drawings the construction and operation of my improved flying machine will be readily understood and its advantages be fully apparent, and it will be seen that I have provided a simple machine having few parts which is of the highest efficiency and can be started either directly upward or at an angle, thus permitting it to get under way in a given direction in an extremely short time, and which is safe in the extreme, having parts which operate automatically to transform the planes into a parachute to retard the descent of the machine upon the failure of the motor.

I claim:

1. In a flying machine, the combination with a basket, of a triangular framework secured to the underside thereof, spring buffers at each corner thereof, vertical supports rising from said basket, a shaft revolvably and pivotally mounted between said supports, collars secured upon the upper end of the shaft, lifting planes mounted upon the shaft between said collars, driving means secured to the lower end of the shaft, and means for shifting said shaft, said means comprising a rack bar loosely mounted on the bottom of said shaft, a guide wheel located beneath said bar, a shaft therefor, and a pinion mounted on said shaft and engaging said rack bar to shift same and thus the shaft.
2. In a flying machine, the combination with a basket and supports rising therefrom, of a shaft revolvably and pivotally mounted between said supports, a propeller carried by the upper end of said shaft, a platform carried by the basket, spring buffers for said basket and platform, and means for shifting the shaft, said means comprising a rack bar loosely mounted on the bottom of said shaft, a guide plate for said bar, sprocket wheels secured upon the ends of said guide plate, a chain attached at one point to said bar and passing over said sprocket wheels, and means for imparting motion to said chain and thus the bar and shaft.
3. A flying machine, comprising a basket, a rudder pivotally connected to the basket, a triangular shaped frame provided with spring buffers and carried by the underside of said basket, vertical supports rising from the basket, a bracing frame for the basket, a shaft arranged between the supports and having a combined swinging and rotary movement, ball bearings for said shaft, means for pivotally mounting the support of said ball bearings, a propeller at the upper end of said shaft, means for controlling

the forward movement of the device, and means for imparting said rotary and swinging movement to said chain and thus to said shaft.

- 5 4. A flying machine, consisting of a basket, a rudder pivotally connected to the basket, vertical supports rising from the basket, a bracing frame for the basket, a shaft arranged between the supports and
10 having a combined rotary and swinging movement, ball bearings for said shaft, means for pivotally mounting the support of said ball bearings, a propeller at the upper end of said shaft, driving means, and a
15 rack, and pinion and a sprocket chain connected to said rack for imparting swinging movement to said shaft.

5. In a flying machine, the combination with a basket, of a triangular shaped frame-
20 work secured to the underside thereof, spring buffers at each corner of the frame, vertical supports rising from said basket, bearing blocks formed upon the upper ends of said supports, a collar having a ball race
25 therein, balls in said race, pintles formed upon the collar and journaled in said bearing blocks, a shaft passing through said collar and carrying means contacting with said balls to prevent the vertical movement of
30 the shaft in the collar, said shaft being revolvably and pivotally supported between said vertical supports, a plurality of lifting planes secured upon the upper end of the shaft, a driving means secured direct to the
35 lower end of the shaft, means for controlling the direction of movement of the machine, and means for shifting the shaft.

6. In a flying machine, the combination with a basket, of a triangular shaped frame-
40 work secured to the underside thereof, spring buffers at each corner of the frame, vertical supports rising from said basket, bearing blocks formed upon the upper ends

of said supports, a collar having a ball race therein, balls in said race, pintles formed 45 upon the collar and journaled in said bearing blocks, a shaft passing through said collar and carrying means contacting with said balls to prevent the vertical movement of the shaft in the collar, said shaft being revolvably and pivotally supported between said 50 vertical supports, a plurality of lifting planes secured upon the upper end of the shaft, a driving means secured direct to the lower end of the shaft, means for shifting 55 said shaft upon its pivot, and means for preventing the operation of the lifting planes when desired, said means comprising a spring pressed shutter pivotally secured to the front of each plane to close the space 60 between the adjacent edges of the planes.

7. In a flying machine, the combination with a basket, a triangular shaped frame provided with spring buffers secured upon the underside of the basket, supports rising 65 vertically from the basket, a shaft revolvably and pivotally supported between said supports, a pair of collars secured upon the upper end of the shaft, a plurality of lifting planes secured therebetween, depending 70 bracing flanges secured upon the outer edges thereof, a second series of flanges formed intermediate the length of the planes, the lower edge of each flange being secured to the top of the adjacent plane, retaining 75 means carried by the shaft for maintaining the planes in position, and spring-actuated means carried by each plane for automatically closing the space between the adjacent edges of the planes when desired. 80

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

GEORGE T. PEAY, JR.

Witnesses:

KARL BANDLEY,

L. A. SOUTHWICK.