N. CARTUS.

FLYING MACHINE.

APPLICATION FILED APR. 29, 1919.

1,324,996.

Patented Dec. 16, 1919.

2 SHEETS—SHEET 1.

FIG. 1.

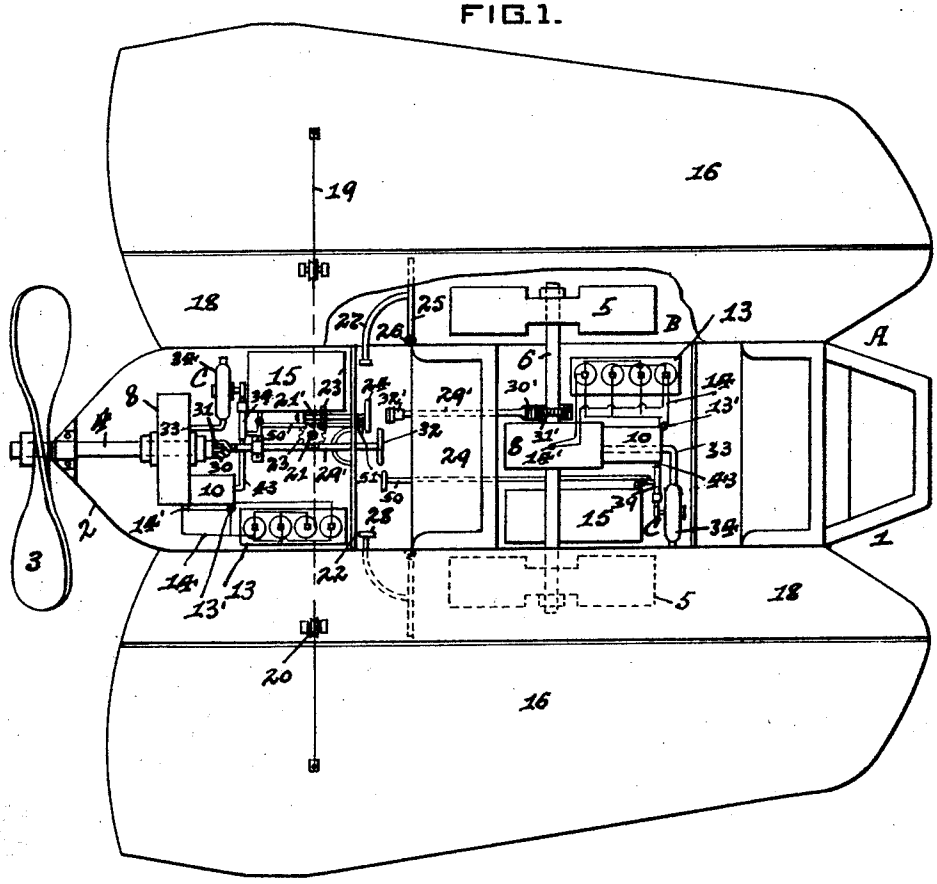
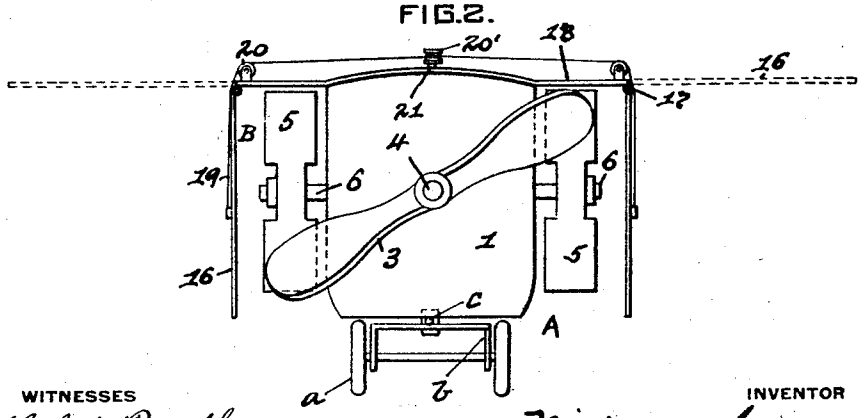


FIG. 2.



WITNESSES

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2 SHEETS—SHEET 2.

FIG.3.

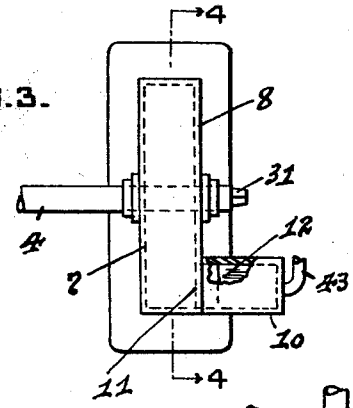
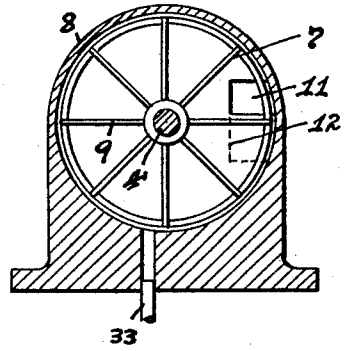


FIG.4.



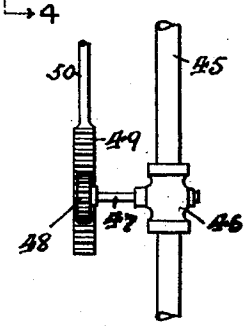


FIG.5.

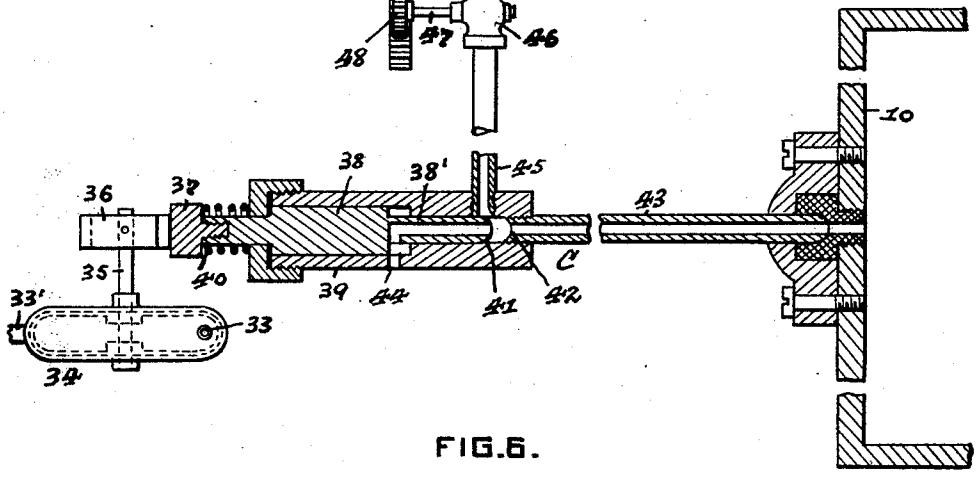
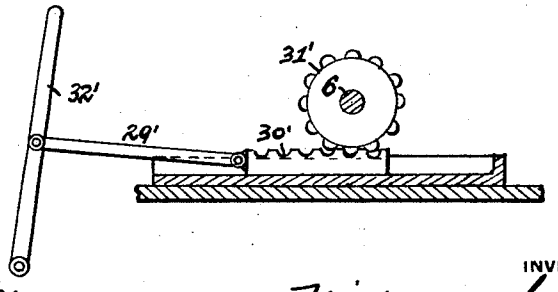


FIG.6.



WITNESSES

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UNITED STATES PATENT OFFICE.

NICHOLAS CARTUS, OF WILKINSBURG, PENNSYLVANIA.

FLYING-MACHINE.

1,324,996. Specification of Letters Patent. Patented Dec. 16, 1919.

Application filed April 29, 1919. Serial No. 293,427.

To all whom it may concern:

Be it known that I, NICHOLAS CARTUS, a citizen of the United States, and a resident of Wilkinsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Flying-Machines; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to flying machines and has special reference to a machine which can be arranged for operation of movement in the air or on the highways, when desired.

The object of my invention is to provide a cheap, simple and efficient flying machine, which will be of small and compact form, will enable a vertical movement of the same into the air for flying purposes from where it is positioned on the ground or other point of location, will enable its planes to be so arranged that they can be easily and quickly placed in position for the vertical raising of the machine for flying purposes, or folded for any purpose, such as for traveling along a highway or other place desired, and will also enable other planes or shields to act in such vertical raising and as rudders for the machine when desired in flying.

To these ends my invention consists, generally stated, in the novel arrangement, construction and combination of parts, as hereinafter more specifically set forth and described and particularly pointed out in the claims.

To enable others skilled in the art to which my invention appertains to construct and use my improved flying machine, I will describe the same more fully referring to the accompanying sheets of drawings, in which:

Figure 1 is a plan view of my improved flying machine, showing the wings or planes in their raised position and with some of the parts broken away;

Fig. 2 is a front end view of the machine, showing the planes in their downward or lowered position;

Fig. 3 is an enlarged detail plan view of the device for operating the propellers;

Fig. 4 is a section of the same on the line 4—4 Fig. 3;

Fig. 5 is a detail view, partly in section, of the fuel feeding means; and

Fig. 6 is a detail view of the starting device for the side propellers.

Like symbols of reference herein indicate like parts in each of the figures of the drawings.

As illustrated in the drawings, my improved flying machine is shown at A and is provided with the fuselage or body 1 which is preferably formed of wood or other suitable material, and is of the usual hollow form having a point-nose 2 at the front end of the same. The machine A is provided with the usual wheels *a*, which are mounted under the fuselage 1 and act to support the machine, and which wheels are pivotally mounted in a frame *b* on said fuselage, as at *c*, so that the machine can be guided thereby and by any suitable mechanism connected therewith in case it is desired, such as when the machine is traveling along a highway or other such place.

Extending out through the front end 2 of the fuselage 1 is the propeller 3, which is of the usual form and is secured to a shaft 4 extending through said front end into said fuselage. On each side and exteriorly of the fuselage 1 is a propeller 5, which propellers are mounted on a shaft 6 extending through and across said fuselage, and such shaft and propellers are preferably positioned slightly back of the center of said fuselage. Mounted around each of the shafts 4 and 6 within the fuselage 1, is a turbine or paddle wheel 7, which has a casing 8 around the same, and is provided with a series of shelves or paddles 9. At one side of each of the casings 8 is an explosion box 10, which opens into each casing, as at 11, and is provided with the inclined chute 12 within the same for directing the explosion flame upwardly from said box against the paddles 9. An electric battery 13 is placed within the fuselage 1 for each of said explosion boxes 10, and such batteries connect with said boxes by means of the wires 14 leading therefrom to the spark plugs 13′ on said boxes. The spark is obtained between the batteries 13 and the explosion boxes 10 by means of contact points 14′ on the casing 8 which are connected by the wires 14 and such points are engaged by the ends of the shelves or paddles 9 in said casing. A fuel tank 15 is placed within the fuselage 1 for each of the front and rear explosion boxes 10, and such tanks are adapted to hold gasolene or other such fuel for being supplied to said boxes to operate the wheels 7 and shafts 4 and 6 connected therewith, as hereinafter described.

On each side of the fuselage 1 is a movable wing 16, which is hinged at 17 to a stationary wing 18 extending horizontally from each side of said fuselage, and is adapted to be raised and lowered to a horizontal and vertical position by means of a cable or chain 19 connected to said wings 16 and passing over pulleys 20 mounted on the wings 18. This chain 19 is connected to and passes around a windlass 20′ on a shaft 21 mounted in the fuselage 1, which shaft extends up vertically in front of the dash-board 22, and is provided with a gear wheel 23 meshing with a gear wheel 23′ on a shaft 21′ for operating the chain 19. The shaft 21′ extends through the dash-board 22 and is provided with a wheel 24 on the end of the same in the rear of said dash-board for operating said chain 19 in the raising and lowering of the wings 16.

On each side of the fuselage 1 is a movable wind shield 25, which is pivoted or hinged to said fuselage, as at 26, and said shields are adapted to extend vertically from said fuselage when in their open positions in order to enable the machine A to go up straight into the air from where it stands or ground position, as hereinafter described, and also to act as rudders in guiding the machine when flying. Connected at one end to each of the shields 25 is a curved arm 27, which extends through the sides of the fuselage 1, and into the same adjacent to the dash-board 22, where their inner ends are provided with a handle 28 for moving said shields into the outward position, as above described, and also into an inward or folded position against the sides of the fuselage when not in use.

An operator's seat 29 is placed back of the dash-board 22 in the fuselage 1, and the starter for the front propeller 3 is connected to the inner end of said propeller's shaft 4 by means of a rod 29′ which has a conical shaped socket 30 at its outer end for engagement with a like-shaped portion 31 on said shaft end and such rod passes through said dash-board and has a handle or wheel 32 at its other end adjacent said seat for operating the same. The starter for the rear propellers 5 is operated by the same mechanism, except the rod 29′ has a rack 30′ at the end for engaging with a gear wheel 31′ mounted on the shaft 6 for said propellers and its opposite end extends under the seat 29 and is pivotally connected to a pivoted foot-lever 32′ for being pushed back by the operator in turning said shaft.

The fuel supply to the explosion boxes 10 is effected by the device C through the exhaust from the turbines or paddle wheels 7 through a pipe 33 leading from the casing 8 around said wheels and connected to a fan 34 of any suitable construction and such exhaust after operating said fan passes out of the same to the open air through a pipe 33′. The fan 34 is provided with a shaft 35 having a hammer or knocker 36 at one end which is adapted to engage with the outer end 37 of a plunger 38 operating within a casing 39. This plunger 38 has a spiral spring 40 between the end 37 and the end of the casing 39 and the inner hollow end 38′ of said plunger has a valve 41 for engaging with a seat 42 in one end of a tubular or pipe portion 43 connected to the other end of said casing and leading into the explosion box 10. An air port 44 leads into the casing 39 and into the hollow portion 38′ on the plunger 38, and a fuel supply pipe 45 leads from the fuel tank 15 and is provided with a valve 46 in the same which is connected by a shaft 47 with a gear wheel 48 meshing with a rack 49 on a rod 50. This rod 50 extends through the dash-board 22 where it is provided with a lever 51 for operation by the operator from the seat 29.

When it is desired to use and operate my improved flying machine A, from a resting or ground position, the operator seated on the seat 29 will proceed to fold down the wings 16 to a vertical position against the sides of the fuselage 1 by turning the shaft 21 in the proper direction through the handle or wheel 24, which will allow the cord or chain 19 connected to said wings to unwind from around the windlass 20′ by means of the gear wheel 23′ on said shaft engaging with the gear wheel 23 on the vertical shaft 21 carrying said windlass. The hinged wind shields 25 are also forced outward from the sides of the fuselage 1 by means of the operator pushing on the handles 28, and such handles being on the ends of the curved arms 27 and such arms being connected at their other ends to the said shields, such shields will thus act to form pockets B between the same, the fuselage and the folded wings 16 for keeping the air boxed up therein to enable the machine to go up into the air in a straight or vertical line from its resting or ground position. This is accomplished by means of the side propellers 5 in the pockets B which are started by the operator pushing forward on the treadle 32′, thereby pulling forward the rod 29′ and rack 30′ thereon and turning the shaft 6 carrying said propellers through the gear wheel 31 on said shaft engaging with said rack. Before starting the propellers 5, the operator has previously moved the rod 50 in the proper direction through the lever 51, so that the rack 49 on said rod engaging with the gear wheel 48 connecting with the valve 46 through the shaft 47 will open up said valve and allow the fuel from the fuel tank 15 to pass through the pipe 45 into the casing 39, where it will mix with air entering said casing through the port 44 and be intermit-

tently forced into the explosion box 10 through the tubular portion 43 by means of the valve 41 on the plunger 38 engaging with the valve seat 42 on the end of said tubular portion, as hereinafter described. After thus entering the explosion box 10, the explosive mixture will be exploded by the electric battery 13 connecting the plug 13′ on said box and forced through the opening 11 in the casing 8 and upwardly against the paddles 9 of the turbine 7 by means of the inclined chute 12, so that such turbine will be thus revolved in said casing, and the waste gases from such explosions will pass from the said turbine and casing through the pipe 33 to the fan 34, thereby rotating the shaft 35 connected to said fan and the hammer or knocker 36 on the end of said shaft. As such hammer 36 thus turns or rotates it will knock against the end 37 of the spring controlled plunger 38 to move said plunger in the casing 39 and force the valve 41 on said plunger against and away from the seat 42 on the inner end of the pipe 43, so that upon the opening of said valve the fuel and air mixture entering said casing through the fuel pipe 45 and air port 44 will pass through the said pipe into the explosive box 10 and be exploded therein, as hereinbefore described.

After the machine A has thus been raised vertically and it is desired to operate the same to allow it to move through the air in flying the supply of explosive mixture to the explosive box 10 for operating the propellers 5 is shut off by closing the fuel passing through the supply pipe 45 through the operation of moving the rod 50 in the proper direction, which will rotate the gear wheel 48 by reason of it engaging with the rack 49 on said rod and also rotate the shaft 47 connecting said gear wheel with the valve 46 in said pipe 45 and thus close said valve. By thus closing the valve 46 the explosive mixture supplied to the explosive box 10 will be shut off, so that the turbine 7 operated by said mixture will cease to rotate and thus stop the rotation of the propellers 5, while the waste gases from said mixture to the fan 34 from the casing 8 around said turbine for operating the plunger 38 through the hammer 36 on the fan shaft 35 engaging with the said plunger will be also shut off and thereby stop said plunger from supplying the mixture to said box, as above described. The wings 16 are also raised to a horizontal position by the operator turning the shaft 21′ through the wheel 24, which will turn the shaft 21 through the gears 23 and 23′ and thus wind up the chain 19 connecting said wings over the pulleys 20 and around the windlass 20′.

The operator can now move the machine A along through the air by means of the propeller 3, which is rotated on its shaft 4 by the turbine 7 connected thereto and with the explosive mixture supplied to its explosion box through the front fuel supply device C and which is operated in the same manner as hereinbefore described for the rear propellers 5, and through the front rod 50 connected thereto. The starting of the front propeller 3 is effected by the operator turning or rotating on the wheel or handle 32, which being attached to the rod 29′ will cause the socket 30 on the front end of said rod engaging the portion 31 on the front propeller shaft 4 to turn said shaft and with it the propeller 3 to start such propeller. During such flying of the machine through the air the wings 16 when horizontal will act as the usual planes for the machine, and the shields 25 can act as rudders to guide the machine, and they can easily be operated as such by the operator through the curved arms 27 attached to such shields being close at hand.

When it is desired to move the machine A along a highway through the medium of the wheels *a*, either the front propeller 3 or the side propeller 5 can be operated to move the machine and the wings 16 can be folded down against the sides of the fuselage 1 in order that such machine will take up less space in its width.

Various modifications and changes in the design, construction and operation of my improved flying machine may be resorted to, without departing from the spirit of the invention or sacrificing any of its advantages.

It will thus be seen that my improved flying machine is capable of easy and convenient operation at all times and all operating parts are so arranged as to be within easy and convenient handling by the operator when desired. The machine is also capable of being arranged so as to provide seating capacity for a number of passengers and away from the operator and operating parts, and the machine is also capable of developing great horse power and speed in the raising of the same or flying with great wing space.

What I claim as my invention and desire to secure by Letters Patent is:

1. A flying machine, comprising a body or fuselage, stationary wings extending horizontally from each side of said fuselage, movable wings connected to said stationary wings, pulleys on said stationary wings, a windlass mounted on a shaft, a chain connected to said movable wings and passing over said pulleys and around said windlass, an operating shaft in said fuselage, and gearing between said shafts for moving said first named shaft and said chain over said pulleys and around said windlass to raise

said movable wings to a line with said stationary wings and lower the same to a vertical position therefrom.

2. A flying machine, comprising a body or fuselage, power operated propellers on each side of said fuselage, movable wings above said propellers adapted to extend horizontally from the sides of said fuselage and to a folded vertical position, and means for forming an air pocket between said fuselage and said wings when folded for the operation of said propellers therein.

3. A flying machine comprising a body or fuselage, power operated propellers on each side of said fuselage, stationary wings above said propellers and extending horizontally from the sides of said fuselage, movable wings connected to said stationary wings and adapted to extend out in line with said stationary wings and to a folded vertical position, and means for forming an air pocket between said fuselage and said stationary and movable wings when folded for the operation of said propellers therein.

4. A flying machine, comprising a body or fuselage, power operated propellers on each side of said fuselage, stationary wings above said propellers and extending horizontally from the sides of said fuselage, movable wings connected to said stationary wings and adapted to extend out in line with said stationary wings and to a folded vertical position, and a movable wind shield under said stationary wings and adapted to extend vertically in front of said propellers for forming an air pocket between said fuselage and said stationary and movable wings when folded for the operation of said propellers therein.

5. A flying machine, comprising a body or fuselage, power operated propellers on each side of said fuselage, stationary wings above said propellers and extending horizontally from the sides of said fuselage, movable wings connected to said stationary wings and adapted to extend out in line with said stationary wings and to a folded vertical position, a movable wind shield hinged to the sides of said fuselage and under said stationary wings, said shield being adapted to extend vertically in front of said propellers for forming an air pocket between said fuselage and said stationary and movable wings when folded for the operation of said propellers therein, and means for moving said shield outward to form said pocket and inward to a folded position against said fuselage.

6. A flying machine, comprising a body or fuselage, power operated propellers on each side of said fuselage, stationary wings above said propellers and extending horizontally from the sides of said fuselage, movable wings connected to said stationary wings and adapted to extend out in line with said stationary wings and to a folded vertical position, a movable wind shield hinged to the sides of said fuselage and under said stationary wings, said shield being adapted to extend vertically in front of said propellers for forming an air pocket between said fuselage and said stationary and movable wings when folded for the operation of said propellers therein, and a curved arm connected to said shield and extending into said fuselage for moving said shield outward to form said pocket and inward to a folded position against said fuselage.

In testimony whereof I, the said NICHOLAS CARTUS, have hereunto set my hand.

NICHOLAS CARTUS.

Witnesses:
J. M. GEOGHEGAN,
J. N. COOKE.