G. F. COFFELT.

AIRSHIP.

APPLICATION FILED MAY 12, 1919.

1,344,486.

Patented June 22, 1920.

4 SHEETS—SHEET 1.

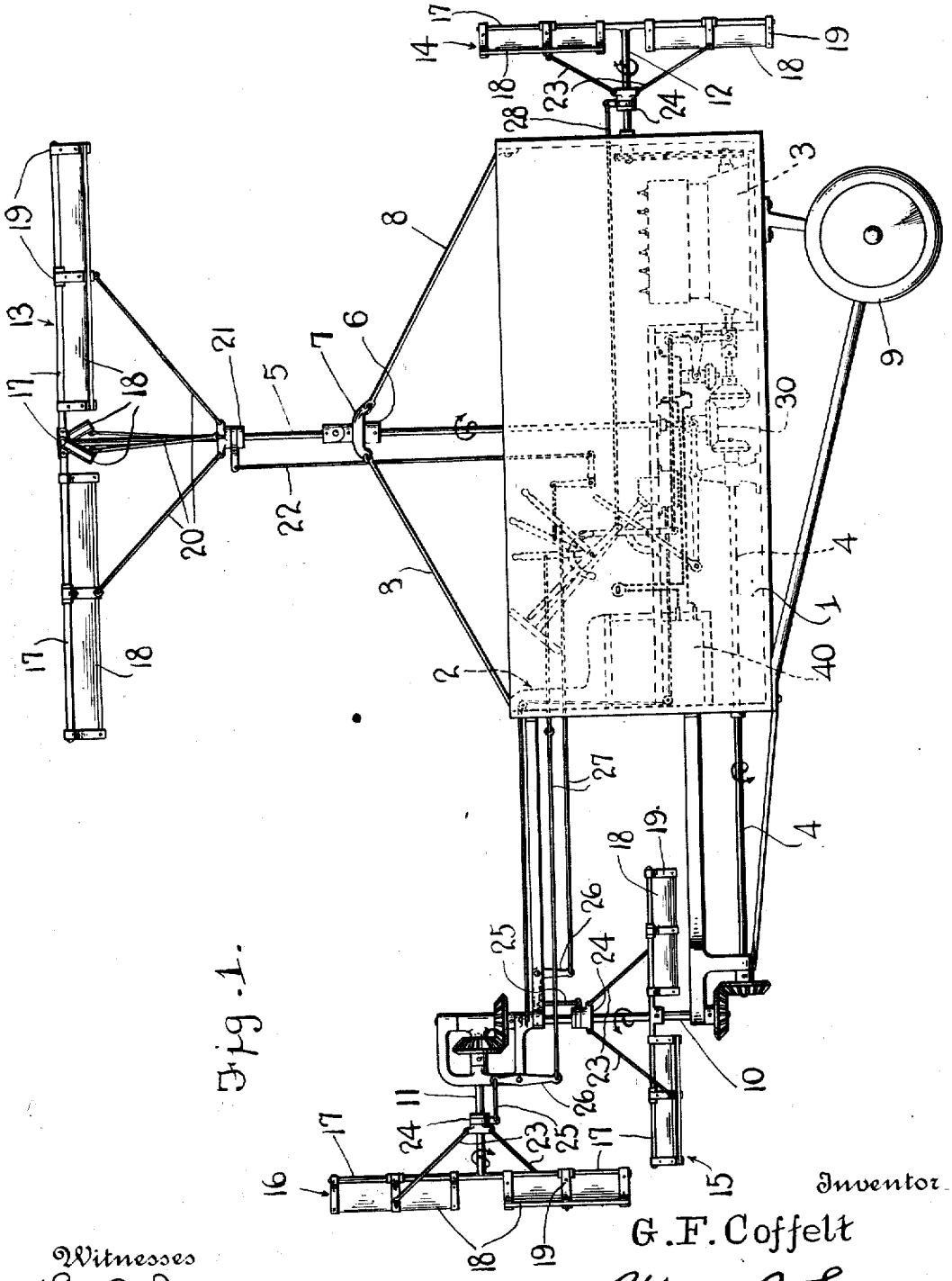

Fig. 1.

Witnesses

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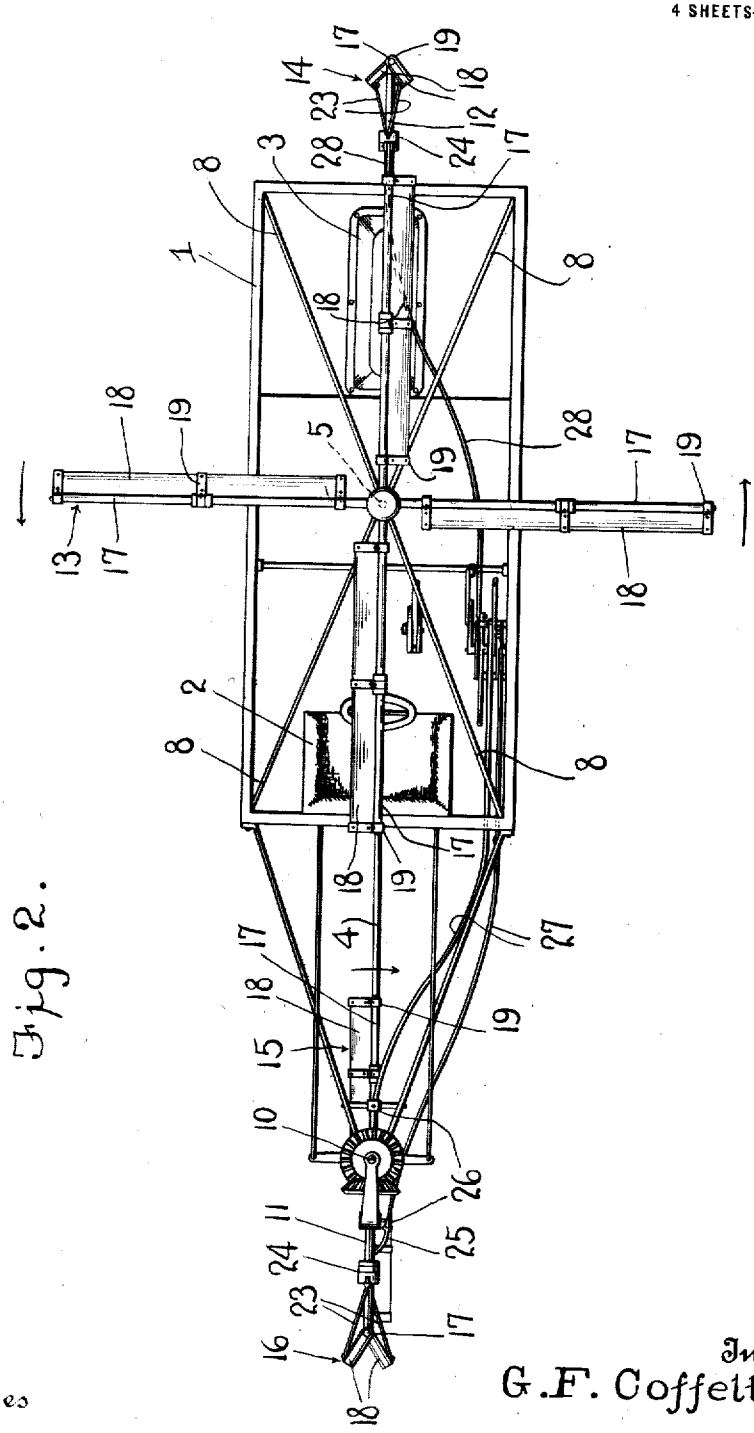

Fig. 2.

Witnesses

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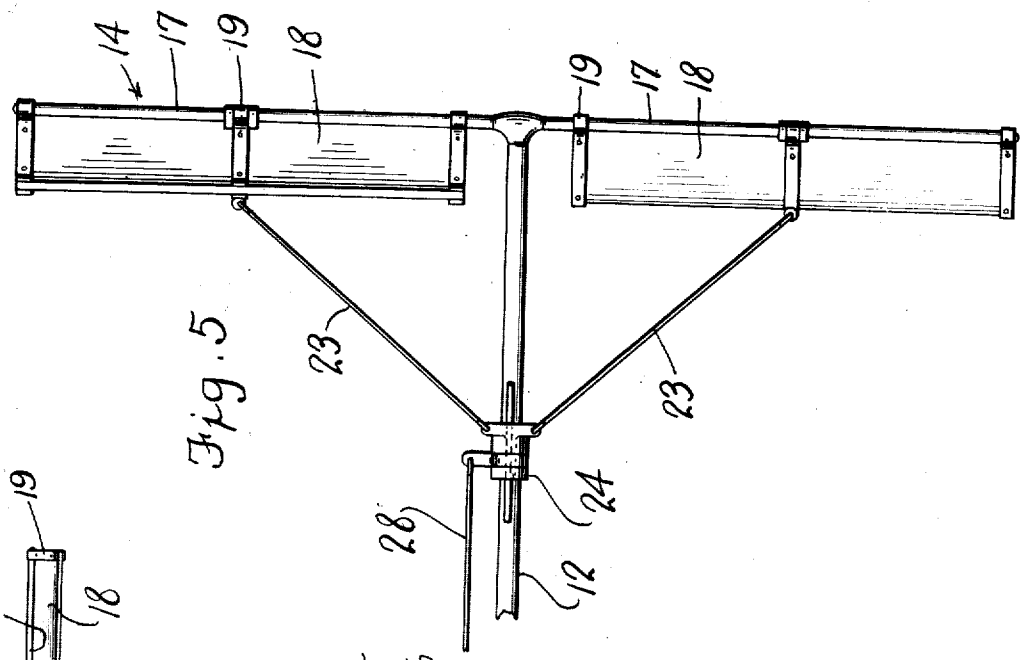

Fig. 5

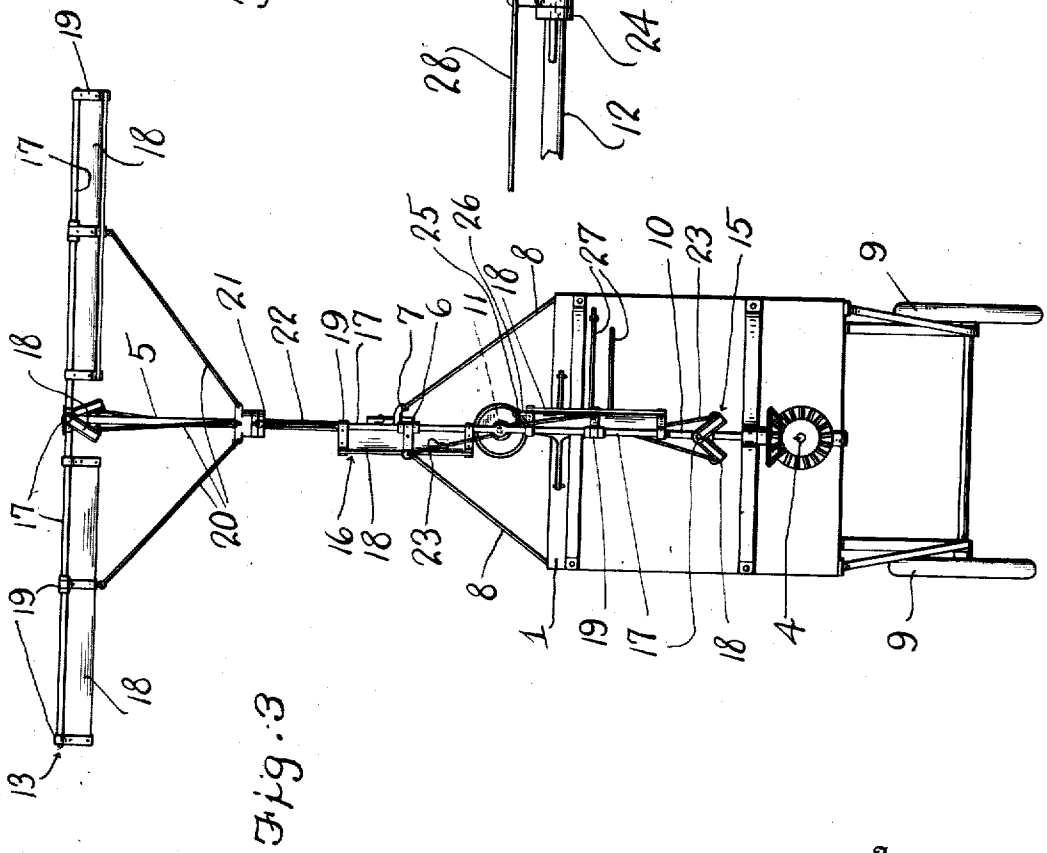

Fig. 3

Witnesses

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4 SHEETS—SHEET 4.

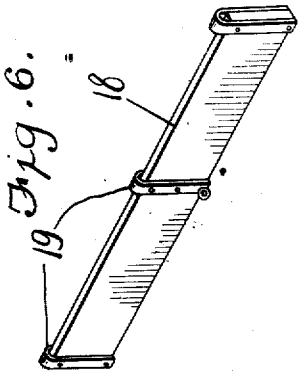

Fig. 6.

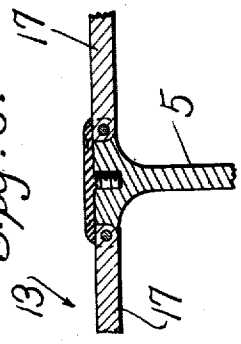

Fig. 8.

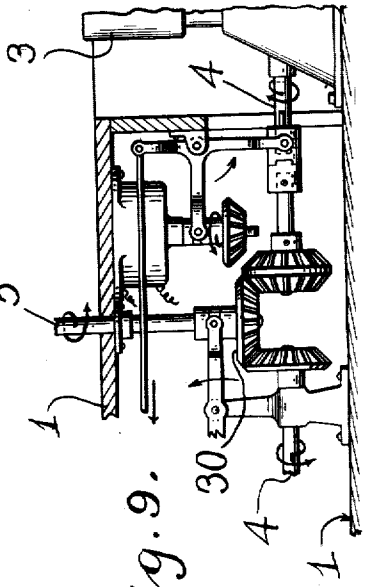

Fig. 9.

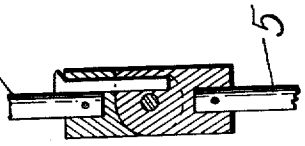

Fig. 7.

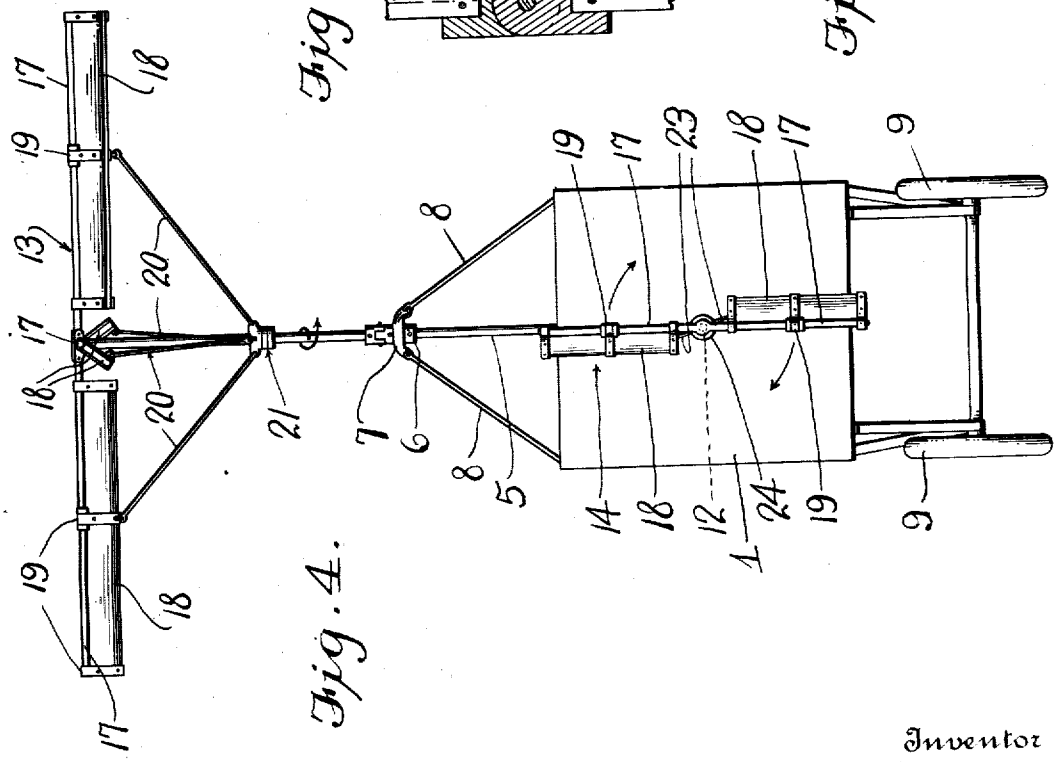

Fig. 4.

Witnesses

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UNITED STATES PATENT OFFICE.

GEORGE F. COFFELT, OF CORBIN, KANSAS.

AIRSHIP.

1,344,486. Specification of Letters Patent. Patented June 22, 1920.

Application filed May 12, 1919. Serial No. 296,437.

To all whom it may concern:

Be it known that I, GEORGE F. COFFELT, a citizen of the United States, residing at Corbin, in the county of Sumner and State of Kansas, have invented new and useful Improvements in Airships, of which the following is a specification.

My present invention pertains to airships; and it contemplates the provision of an airship, of heavier than the air type, that is simple and inexpensive in construction, is adapted to rise perpendicularly from the ground and to stand motionless in the air, is not liable to get out of order while in the air, and is possessed of the capacity of landing without material movement on the ground, and this without subjecting the machine to shock or jar.

Other objects and practical advantages of the invention will be fully understood from the following description and claim when the same are read in connection with the drawings, accompanying and forming part of this specification, in which:

Figure 1 is a side elevation of an airship constituting the best practical embodiment of my invention of which I am cognizant.

Fig. 2 is a top plan view of the airship.

Fig. 3 is a rear end elevation thereof.

Fig. 4 is a front end elevation of the machine.

Fig. 5 is an enlarged detail view illustrative of the manner in which the blades are adjusted and adjustably fixed with respect to the arms by which they are carried.

Figs. 6, 7, 8 and 9 are detailed views hereinafter specifically referred to.

Similar numerals of reference designate corresponding parts in all of the views of the drawings.

To the attainment of the objects and advantageous features set forth, I provide a construction which, among other elements, comprises a body 1, equipped at a suitable point with a pilot's seat 2.

Located at the point illustrated, or at any other suitable point, in the body 1 is a motor 3, which may be of the internal combustion type or of any other character compatible with the purpose of my invention without involving departure from the scope of the same as defined in my appended claim.

Connected with the engine 3 is a main drive shaft 4, and connected through intermediate gearings with the said shaft 4 is an auxiliary upright shaft 5. This shaft 5 extends upwardly through the apex of the frame or body 1, and is provided at 6 with a collar upon which the cap 7 which forms the apex of the body or frame 1 rests, so as to sustain the weight of the body and the parts carried thereby. It will be noticed here that rods 8 are interposed between and connected to the cap 7 and the corners of the major portion of the body or frame 1; also, that the body or frame 1 is provided with round wheels 9 to render the same portable and hence to permit of the machine being moved on the ground manually or otherwise, as desired.

A second auxiliary drive shaft 10 is connected through intermediate gearing with the rear end of the main drive shaft 4, and is disposed as shown in rear of the body or frame 1. This shaft 10 is connected in turn through the medium of a coupling with a tail shaft 11.

At the forward end of the body or main frame 1 is provided the fourth auxiliary shaft 12 which is disposed as shown relative to said body or main frame 1.

In conjunction with the parts thus far described, I employ a lifting propeller 13, a pulling propeller 14, a balancing propeller 15 and a guiding propeller 16; the said propellers being arranged as illustrated relative to their respective shafts and the body or main frame 1. The lifting propeller 13 is disposed horizontally and is made up of arms 17, and blades or fans 18, one to each arm 17; the said blades being hingedly connected at 19 to their respective arms 17. Each of the blades 18 is connected to a rod 20, and the several rods 20 are connected to a movable collar 21 on the shaft 5. From the collar 21 a rod 22 extends downwardly into the body or frame 1 to a point within convenient reach of the pilot or driver in the seat 2. Manifestly, by manipulating the rod 22, the pilot or driver is enabled to adjust the blades 18 relative to their respective arms 17, and in that way set the blades 18 in order to meet different conditions and to raise the machine at different speeds as well as regulate in a measure the gravitation or descent thereof.

The front propeller 14, the balancing propeller 15 and the guiding propeller 16 are each made up of arms 17 and blades 18 hinged to said arms in the same manner as hereinbefore described with reference to

the lifting propeller 13. It will also be noticed that each of the propellers 14, 15 and 16 has its blades 18 connected through rods 23 with collars 24 on the shafts complementary to the propellers, and that the collars 24 of the propellers 15 and 16 are connected through rods 25 with bell cranks 26, which bell cranks, in turn, are connected to rods 27 that are carried into the body or main frame 1 to points within convenient reach of the pilot in the seat 2. A rod 28 is connected to the collar 24 complementary to the pulling propeller 14 and is carried directly into the body or frame 1 to a point convenient for operation by the pilot.

Incidental to the operation of the airship and with particular reference to the lifting propeller 13, it will be manifest that with the blades 18 held level with the arms 17 no wind will be caught in the said blades. When, however, the blades are pulled downwardly through the medium of their complementary rods they operate to catch the wind and to draw the machine upwardly. It will also be observed that by manipulating the rod 22 the machine may be forced either upwardly or downwardly at the will of the operator. I prefer to employ but one lifting propeller 13, but I would have it distinctly understood that without involving departure from the scope of my claimed invention a multiplicity of lifting propellers may be employed. Said additional propellers are not illustrated, but it will be readily understood that they may be driven from the shaft 5 through the medium of horizontal and upright shafts connected through gearing with said shaft 5.

In the control of the propeller 14, the operator pulls rearwardly on the control rod complementary to said propeller when he desires to move the machine forwardly. It will also be noticed that the blades of the propeller 14 may be pushed outwardly to reverse the propeller and enable the same to serve as a brake for bringing the machine to a stop.

The propellers 15 and 16 in combination form a tail or vane for the machine, and when the machine is in flight and has a tendency to tip forwardly the operator is enabled to bring the machine back to a substantially horizontal position by manipulating the blades of the propeller 15, and in the event of the machine tipping backwardly the blades of the propeller 15 are reversed.

To guide the machine the pilot or driver manipulates the blades of the propeller 16 and by such operation is enabled to turn the machine in any direction desired. It will also be appreciated that by virtue of the propeller 16 the machine is effectually controlled by the operator irrespective of the speed of the machine or the force of the wind to which the same is subjected.

I prefer, in practice, to connect the upright shaft 5 with the main drive shaft 4 through the medium of a movable gear 30, capable of being lifted out of gear when on the road. I also prefer to have the shaft that extends to the tail propellers connected by this gear so that the same will be also disconnected when the gear is raised. This renders it feasible to set the machine upon the chassis of an automobile so that by folding the top propeller down the hold will run on the ground or a roadway after the manner of an automobile.

When deemed expedient and with a view to increasing the factor of safety, a storage battery 40 may be carried in the body or frame 1 and equipped with means whereby it may be expeditiously and easily connected with the shaft 5 so as to avert falling of the machine in the event of the motor 3 failing from any cause to operate. In this connection, it will be apparent that all of the elements that enter into my novel airship are strong in construction and there is, therefore, little liability of the machine suffering an accident because of one or more of the working parts breaking.

But little experience is necessary to enable a person of ordinary intelligence to operate the machine to advantage. This will be readily appreciated when it is stated that in starting the machine all propellers are maintained in neutral. Then after the engine is sufficiently heated, the operator draws the rod 22 down slowly with the result that the blades 18 of the propellers 13 are depressed and the machine is lifted or caused to rise in the air. When the machine is in the air the propeller 14 may be put into use at any time by pulling rearwardly on the control rod complementary to said propeller, and manifestly by adjusting the blades of the propeller 14 the speed of the machine may be nicely regulated. Again, by manipulation of the blades of the propeller 16 the machine may be accurately guided by the pilot.

The construction herein shown and described constitutes the best practical embodiment of my invention of which I am aware, but it is to be understood that in the future practice of the invention various changes in the construction and arrangement of the several parts may be made without involving departure from the principle of my invention or the scope of my appended claim.

Having described my invention, what I claim and desire to secure by Letters Patent, is:

An airship comprising a body or main frame, a horizontally disposed lifting propeller arranged above said body, a pull propeller disposed in front of the body, a horizontally disposed balancing propeller located in the rear of the body, an upright

guiding propeller arranged above the balancing propeller and in rear of the body; each of said propellers including arms and hinged blades on said arms, a motor carried by the body, driving connections intermediate said motor and the several propellers, and independently adjustable means complementary to each propeller and connected with the blades thereof for enabling an operator in the body to adjust the blades of each propeller independently of the blades of the other propellers.

In testimony whereof I affix my signature.

GEORGE F. COFFELT.