

Sept. 29, 1931.

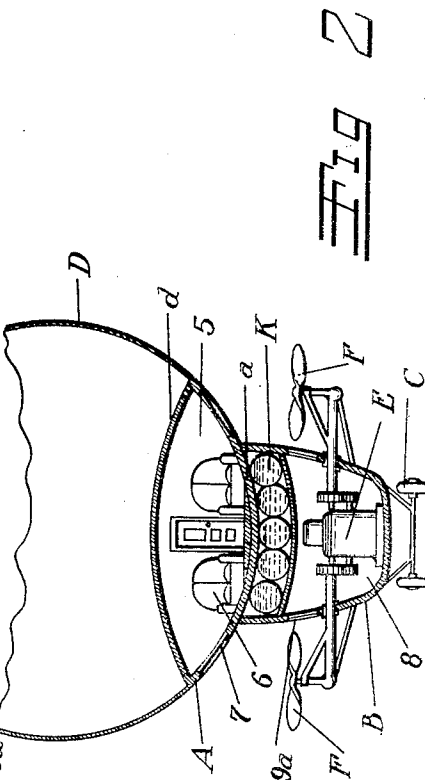
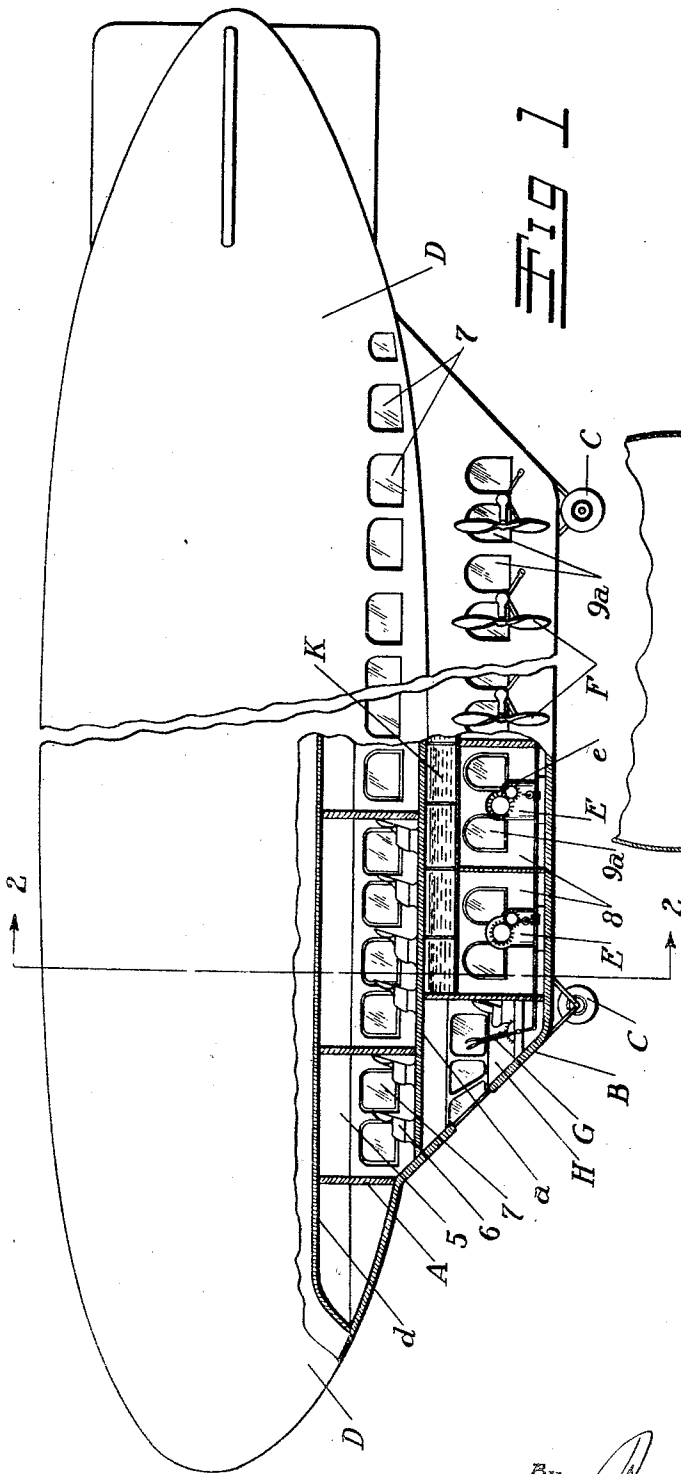
J. J. HICKS

1,825,115

AIRCRAFT

Filed Dec. 9, 1929

2 Sheets-Sheet 1



Inventor,
Joseph J. Hicks,

By *Raymond J. Bledsoe*
Attorney

Sept. 29, 1931.

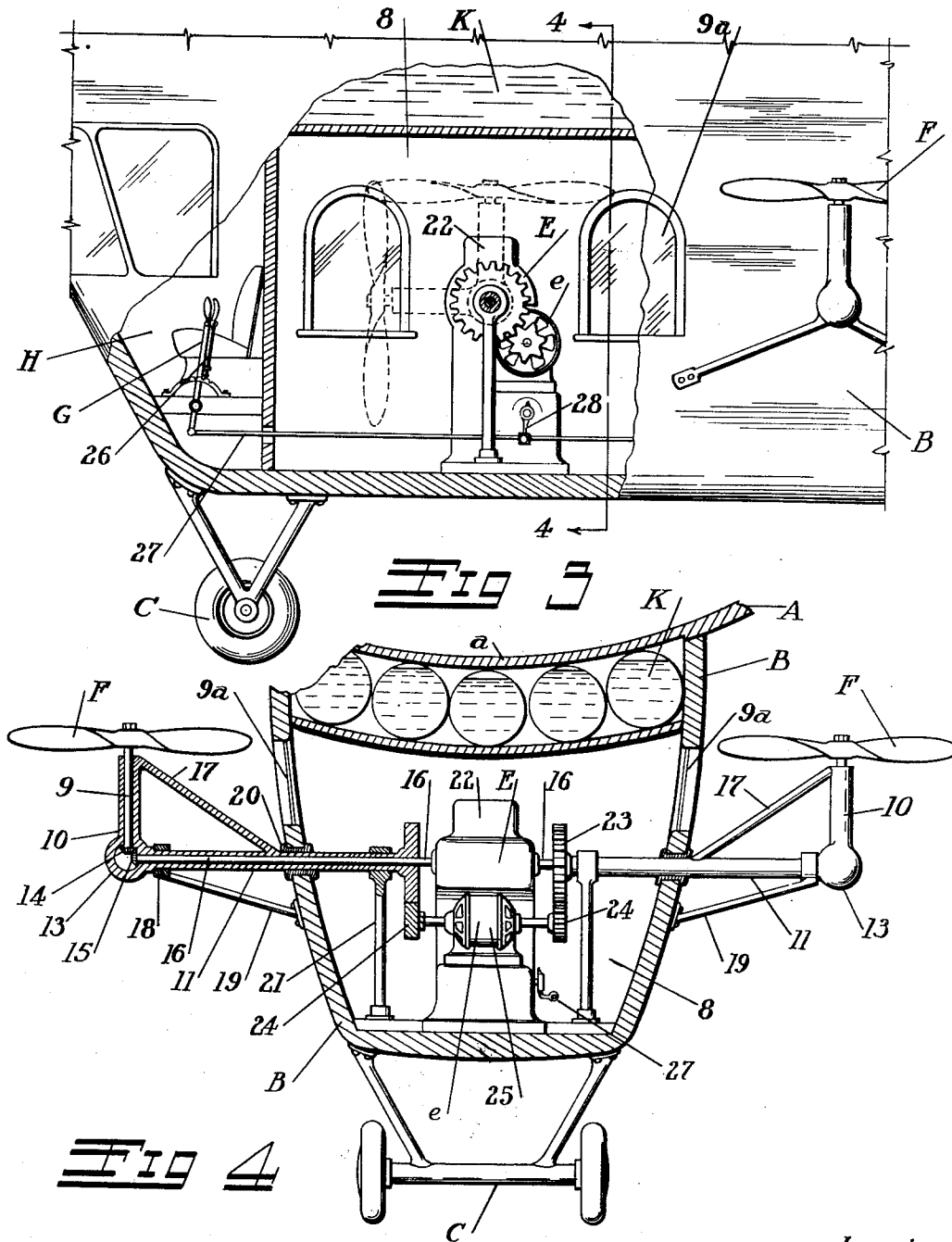
J. J. HICKS

1,825,115

AIRCRAFT

Filed Dec. 9, 1929

2 Sheets-Sheet 2



Inventor,
Joseph J. Hicks;

By *Raymond D. Blake*
Attorney.

UNITED STATES PATENT OFFICE

JOSEPH J. HICKS, OF LOS ANGELES, CALIFORNIA

AIRCRAFT

Application filed December 9, 1929. Serial No. 412,830.

This invention relates to air-craft, including both heavier-than-air and lighter-than-air craft, and more particularly concerns the arrangement and disposition of compartments or chambers or spaces for reception and accommodation of passengers, baggage, culinary service, power plant or plants, controls, etc., and also the means or method of control of the power plant for propellers of the craft, and also for its raising and lowering, under propeller drive. These features, being capable of embodiment in either mentioned type of air-craft, are broadly herein claimed, although specifically disclosed with respect to lighter-than-air craft.

The invention has for its object the provision of improvements of the general character stated, which will be superior in point of relative inexpensiveness of construction taken in conjunction with durability and stability in flight and service, reliability and dependability, compactness in form and economy of space, increased power and efficiency in flight and service and increase of comfort to passengers, and of carrying capacity of both passengers and freight and other load, and which will be generally superior in point of efficiency and serviceability.

With the above and other objects in view, the invention consists in the novel and useful provision, formation, combination, relative arrangement and association of parts, members and features, all as hereinafter described, shown in the drawings, and finally pointed out in claim.

In the drawings:

Fig. 1 is a fragmentary side elevation, partly in longitudinal section and partly broken away, of a lighter-than-air ship, or air craft, constructed and organized and equipped in accordance with the invention;

Fig. 2 is a fragmentary vertical sectional view thereof, partly in elevation, taken upon the line 2—2, Fig. 1, and looking in the direction of the appended arrows;

Fig. 3 is a fragmentary view, partly in elevation and partly broken away and in section, showing the forward lower portion

of construction illustrated in Fig. 1, and upon an enlarged scale; and

Fig. 4 is a vertical section thereof, partly in elevation, taken upon the line 4—4, Fig. 3, and looking in the direction of the appended arrows.

Corresponding parts in all the figures are designated by the same reference characters.

Referring with particularity to the drawings, I have shown at A the load housing and at B the plant housing of an airship, the latter being in superposed relation with housing A, and said housings may be united in a common framework with suitable side, end and bottom and top members, and transverse partitions and bulkheads as desired, indicating a deck for the upper housing A and serving to seal off the space in said housing from the space in lower housing B. C designates both fore- and aft-landing gear and wheels. In the type of air-craft shown in the drawings, D designates an envelope for containing gas, such as helium, to sustain the entire ship in flight, and the housing A may in such lighter-than-air practice be received within the lower portion of said container or bag D, which latter may overlap the former at sides and ends as indicated in Figures 1 and 2, with a transverse fore- and aft- partition *d* between the same. Preferably the housings A and B range longitudinally of and project beneath the gas container D throughout the major portion of the length thereof, but the longitudinal dimensions of such housings may be varied in accordance with preference.

Within the housing A one or more compartments 5 is or are provided within which passenger seats 6 are disposed, the compartments having side windows 7; and within certain of said compartments provision may be made for accommodating and storing baggage, mail, freight and the like, and one or more of such compartments may be devoted to culinary service, and certain of same equipped for sleeping purposes. Similarly, a number of compartments 8 are provided in the housing B, having windows 9a if desired, and within these compartments may be provided separate power plants E

for driving propellers F, each such power plant preferably driving two propellers, one at each side of the housing B. Each power plant E may be provided with a subsidiary unit *e* governed by a suitable control G, and whereby the propellers operated by the power plant in the respective compartments may be adjusted or shifted to direct their thrust upon the air, either horizontally or vertically, as the case may be, and for the purposes hereinafter mentioned.

The control G, as well as any desired type of control for the main power unit E, may be disposed within a pilot room H in the forward end of the housing B, where the navigator or pilot or both have suitable accommodations for controlling and directing and navigating the craft. Within the housing B and at the upper portion of the several compartments 8 may be provided fuel tanks K to supply the power plants E, which power plants may be utilized for generating electrical energy as well as for driving the propellers.

Preferably the propellers F are fixed to short shafts 9 rotatably mounted in sleeves 10 disposed in vertical planes and each fixed to the outer end of a sleeve 11 mounted in a horizontal plane, by means of hollow spherical unions or joints 13 within which are disposed a gear 14 upon the shaft 9, meshing with a gear 15 upon a shaft 16 rotatably mounted within the sleeve 11, whereby the shaft 9 is driven by the shaft 16 in rectangular relation thereto, a fixed brace 17 extending between the sleeves 10 and 11, and the sleeve 11 being rotatably mounted in a collar 18 at the outer end of a bracket 19 extending to the wall of the housing B, and also rotatably mounted in a suitable bearing 20 in the wall of said housing B and in a standard 21 within the respective compartment 8, the shaft 16 extending to the main power unit E which preferably comprises an internal combustion motor 22. Opposite shafts 16 for the two opposite propellers F of a given compartment are thus joined to the motor 22, at the crank shaft or power shaft of said motor, whereby the operation of the motor drives both propellers of such pair. Gears 23 loosely surrounding the opposite shafts 16 and fixed upon the opposed sleeves 11, mesh with gears or pinions 24 of the subsidiary power unit *e* of the respective compartment 8, such gears 24 being preferably mounted upon the armature or power shaft of an electrical motor 25, served by fluid generated by the power plants E, as above mentioned, whereby operation of such motor will turn the sleeves 11 and adjust or transfer the propellers F from either horizontal or vertical disposition of their blades, so as to be used, when in horizontal position, to create thrust upon the air for either ele-

vation or depression of the ship, and to be used when in vertical disposition to drive the ship. Such electric motor 25 may be energized through the agency of the control G, which includes a control lever 26 disposed in the pilot's compartment H and a long link rod 27 extending through the several compartments 8 to the several subsidiary units *e*, and to switch arms 28 thereon, so that all of the pairs of propellers may be simultaneously and similarly shifted into either vertical or horizontal positions as stated, it being understood that each of the compartments 8 is provided with similar power plants E and subsidiary members *e*, for driving and controlling similarly disposed propellers F at opposite sides of the craft.

It will be understood that all of the controls for the ship, including the steering of the same, are located in the pilot room H.

The operation and method of use and control of the ship or craft will be readily understood from the foregoing description taken in connection with the accompanying drawings, the propellers F being susceptible of action either to drive the ship or to raise or lower it, by thrust upon the air, all the navigation and operation of the ship being controlled and effected through the means in and associated with the housing B, and the passenger and material loads and other features of service of the ship being confined to the upper compartment A.

It is obvious that various modifications and changes and substitutions and re-arrangements, with respect to the specific showing of the drawings and disclosure of the foregoing description, may be made, in adapting the invention to varying conditions and uses and without departing from the true spirit of the invention.

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

An aircraft inclusive of a plurality of propellers each mounted for movement to vary the direction of thrust thereof, an electric motor individual to each propeller for so moving the same, a controlling switch individual to each motor, and a single mechanical operating device connected with each of said switches for simultaneously actuating the same.

In testimony whereof, I have signed my name to this specification at Los Angeles, Calif., this 3d day of December, 1929.

JOSEPH J. HICKS.