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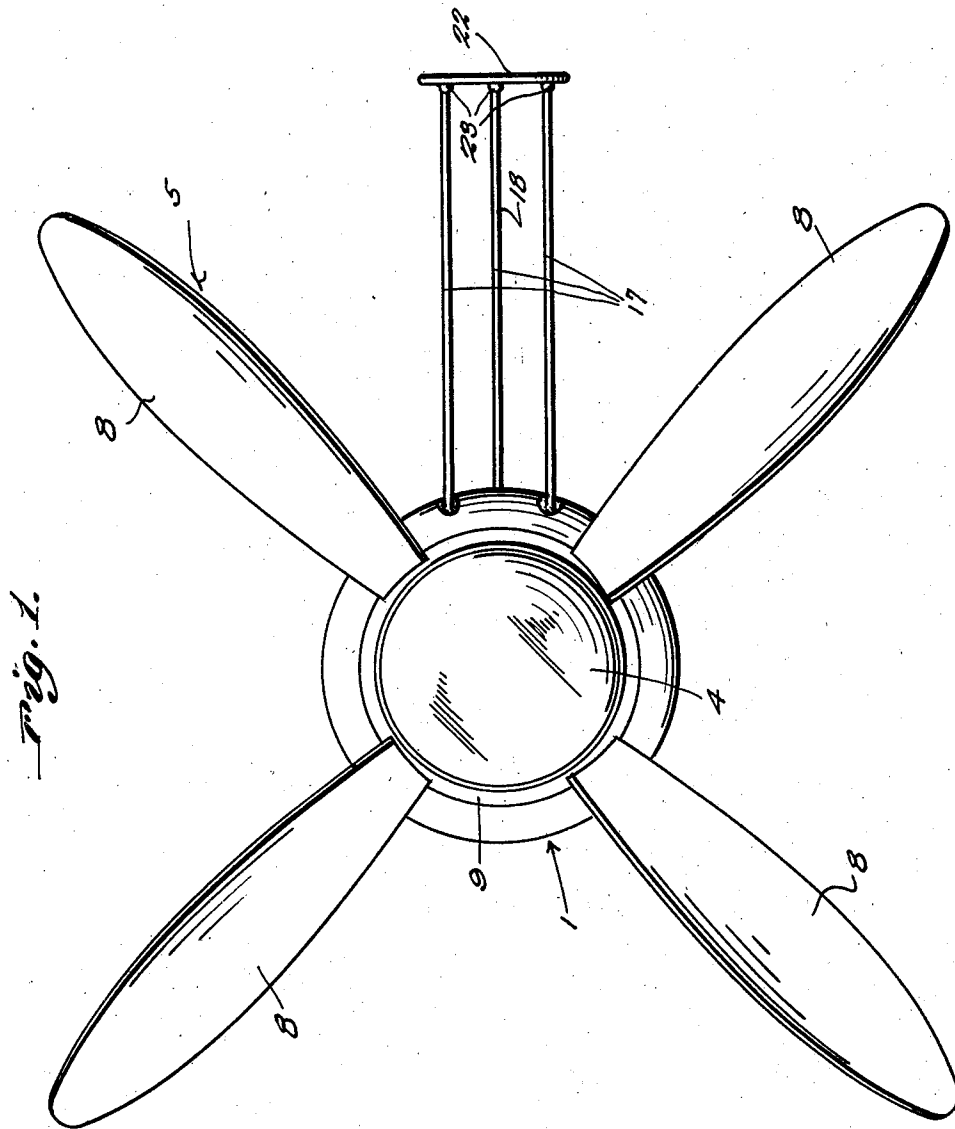
A. J. FIUMEDORO

2,428,794

FLYING MACHINE

Filed Aug. 25, 1943

3 Sheets-Sheet 1



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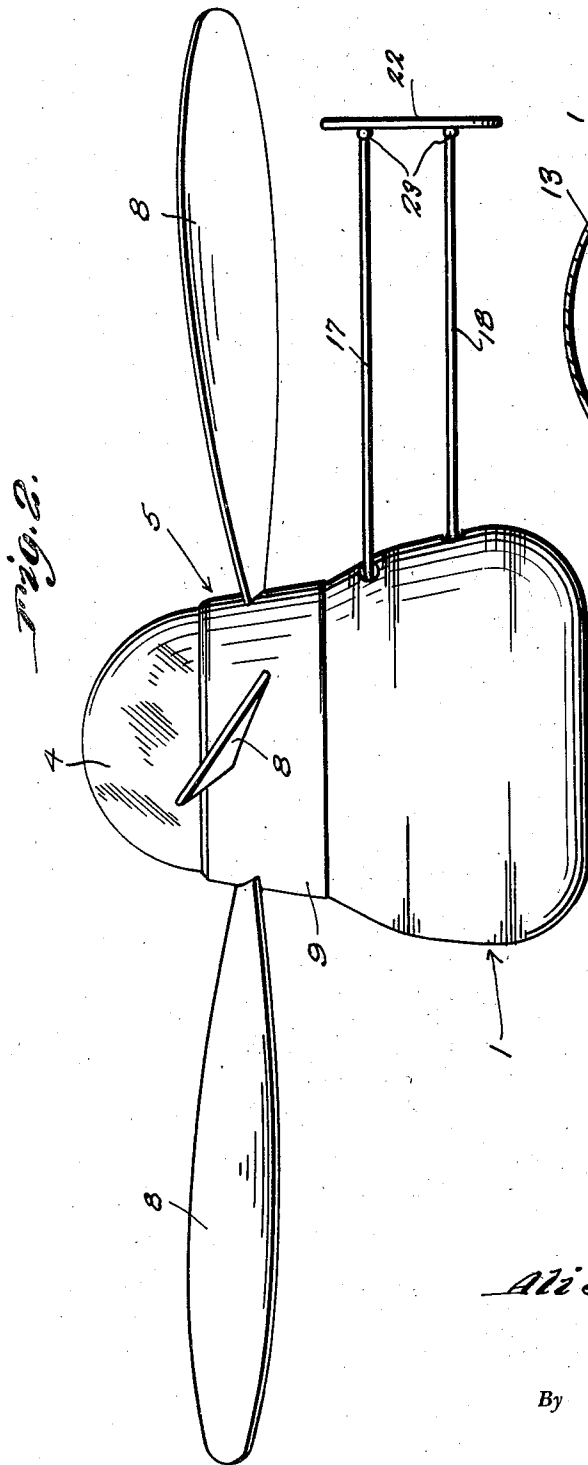
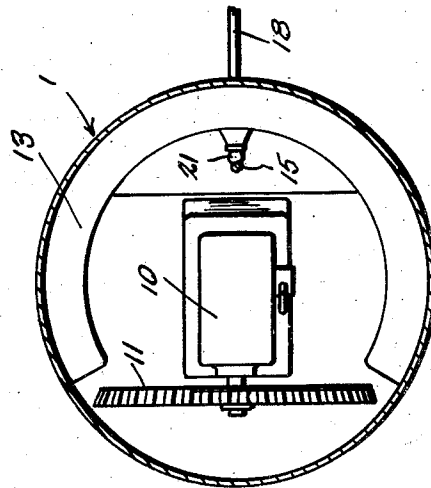
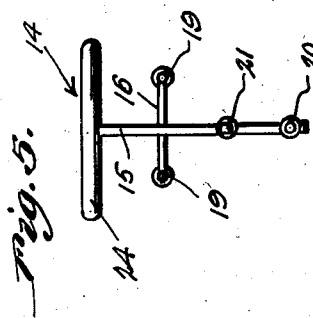
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Fig. 3.

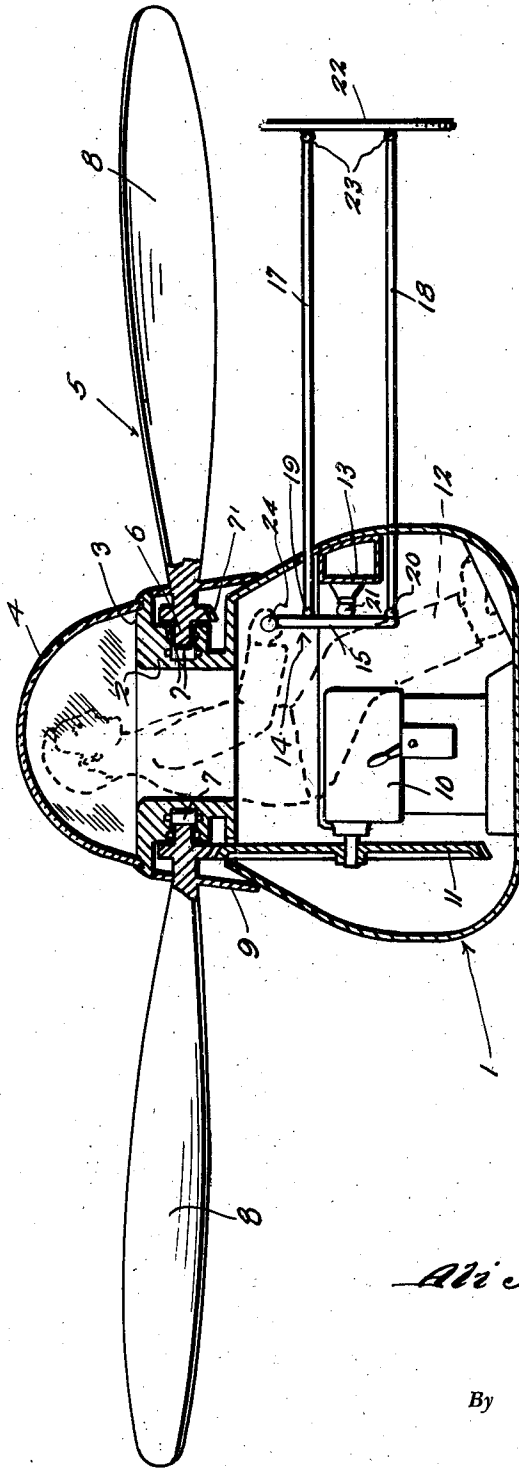
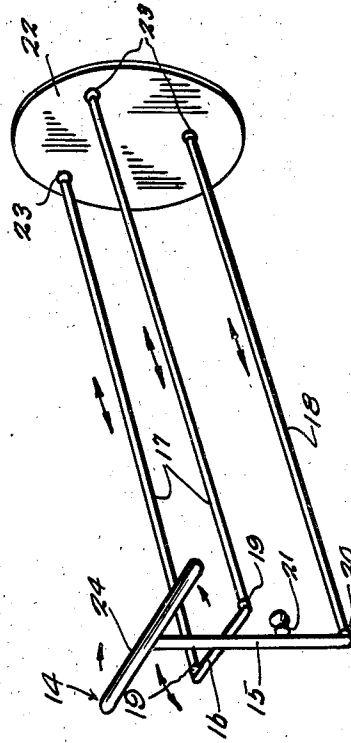


Fig. 4.



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FLYING MACHINE

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Application August 25, 1943, Serial No. 499,953

4 Claims. (Cl. 244-17)

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The present invention relates to new and useful improvements in flying machines of the helicopter type, and has for its primary object to provide a craft of this character comprising unique directional control means.

Another very important object of the invention is to provide a flying machine of the aforementioned character comprising a cabin and a rotor, together with novel means for mounting said rotor on said cabin.

Other objects of the invention are to provide a flying machine of the character described which will be comparatively simple in construction, strong, durable, highly efficient and reliable in operation, light in weight, and which may be manufactured at low cost.

All of the foregoing, and still further objects and advantages of the invention will become apparent from a study of the following specification, taken in connection with the accompanying drawing wherein like characters of reference designate corresponding parts throughout the several views, and wherein:

Figure 1 is a top plan view of a flying machine constructed in accordance with the present invention.

Figure 2 is a view in side elevation thereof.

Figure 3 is a view in vertical longitudinal section through the machine.

Figure 4 is a perspective view of the directional control mechanism.

Figure 5 is an elevational view of the control lever.

Figure 6 is a view in horizontal section through an intermediate portion of the machine.

Referring now to the drawing in detail, it will be seen that the embodiment of the invention which has been illustrated comprises a substantially bulbous fuselage or cabin which is designated generally by reference numeral 1, said cabin being of any suitable material and dimensions. The cabin 1 includes on its top a reduced, upstanding neck 2 which is provided, on its upper end, with an external flange 3. An observation dome 4 of suitable transparent material is mounted on the flange 3.

Mounted for operation in a horizontal plane on the neck portion 2 of the cabin 1 is a rotor which is designated generally by reference numeral 5. The rotor 5 includes a ring 6 which is journaled in bearings 7 which are provided therefor in a circumferential groove or channel in the neck 2. Formed integrally with the ring 6 and depending therefrom is an annular beveled gear 7'. Wings or blades 8 radiate from the ring

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6. A circular housing 9 on the inner portions of the blades 8 encloses the ring 6, the gear 7', et cetera.

An engine 10 is mounted in the lower portion of the cabin 1. The engine 10 actuates a beveled gear 11 which drives the gear 7' for turning the rotor 5. It will be observed that the operator 12 sits on the engine 10. A suitable seat for the operator may be provided on the engine 10. Also, the engine 10 may, if necessary, be insulated to permit sitting thereon. A substantially C-shaped fuel tank 13 for the engine 10 is mounted horizontally in the cabin 1 at an intermediate point.

Mounted for universal swinging movement in the front portion of the cabin 1 is a substantially T-shaped lever 14. Fixed transversely on the stem 15 of the lever 14 at an intermediate point is a cross member 16. A pair of upper rods 17 and a single lower rod 18 extend slidably through the front of the cabin 1. The rods 17 are connected, at their rear ends, to the cross member 16 by universal joints 19. The corresponding end of the lower rod 18 is connected to the lower end portion of the lever stem 15 by a similar universal joint 20. In the embodiment shown, the lever stem 15 is mounted, at an intermediate point, on an intermediate portion of the fuel tank 13 through the medium of a ball and socket connection 21. Mounted on the outer or forward ends of the rods 17 and 18 is a control surface 22 in the form of a disk of suitable material. Universal joints 23 connect the control surface 22 to the members 17 and 18. Any suitable means may be provided to reduce motor torque on the fuselage, such as a second rotor driven in a direction opposite that in which rotor 5 is driven.

It is thought that the operation of the craft will be readily apparent from a consideration of the foregoing. Briefly, the power plant 10 actuates the rotor 5 for causing the craft to ascend or descend. As seen in Figure 3 of the drawing, the operator 12 sits on the power plant 10 with the upper portion of his body in the neck portion 2 and his head projecting upwardly into the transparent dome 4. With the control surface 22 in the position shown in Figures 1, 2 and 3 of the drawing, the craft will ascend and descend vertically. The operator grips the handle 24 of the lever 14 for adjusting the control surface 22. When forward or reverse travel is desired, the stem 15 of the lever 14 is swung forwardly or rearwardly for tilting the control surface 22 in a vertical plane to the desired inclination. The air blast or "wash" from the rotor 5, striking the inclined control surface 22, propels the craft for-

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wardly or rearwardly. For causing the machine to travel to the right or to the left, the handle 24 of the lever 14 is also swung in a horizontal plane for swinging the control surface 22 laterally through the medium of the members 16 and 17. The control surface 22 is capable of compound movement, whereby the craft may be caused to travel in any direction.

It is believed that the many advantages of a flying machine constructed in accordance with the present invention will be readily understood, and although a preferred embodiment of said machine is as illustrated and described, it is to be understood that changes in the details of construction and in the combination and arrangement of parts may be resorted to which will fall within the scope of the invention as claimed.

What is claimed is:

1. A flying machine comprising a cabin, a rotor operable on the cabin, a plurality of horizontal rods longitudinally slidable through one side of the cabin, a vertical control surface mounted on the outer ends of the rods to shift about horizontal and vertical axes and positioned beneath the rotor for receiving the wash therefrom, and a lever in the cabin connected to the rods for shifting the control surface about horizontal and vertical axes.

2. A flying machine of the character described comprising a substantially bulbous cabin including a reduced vertical neck on its upper portion, a transparent dome mounted on said neck, a rotor including a horizontal ring journaled on the neck and horizontal blades radiating from said ring, and a power plant in the cabin operatively connected to the ring for actuating the rotor.

3. A flying machine of the character described comprising a substantially bulbous cabin including a reduced vertical neck on its upper end, said

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neck having a circumferential groove therein, bearings in the groove, a flange on the upper end of the neck, a transparent dome on said flange, a rotor including a horizontal ring operable on the bearings in the groove, horizontal blades radiating from said ring, an annular gear depending from the ring, a power plant in the cabin, a gear on the power plant engaged with the first-named gear for actuating the rotor, and a circular housing on the inner portions of the blades enclosing the ring and the first-named gear.

4. A flying machine comprising a cabin, a rotor operable on the cabin, a plurality of horizontal rods longitudinally slidable through one side of the cabin so as to provide a pair of upper rods and a single lower rod, a vertical control surface, universal joints between the outer ends of said rods and said control surface, a vertical lever mounted in the cabin for turning about its longitudinal axis and tilting about a horizontal axis, a cross bar carried by the lever above its point of mounting and having its opposite ends universally connected to the inner ends of the respective upper rods, and a universal joint between the lower rod and the lower end of said lever.

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