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H. DYER

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MOUNTING ARRANGEMENT FOR AEROPLANE ENGINES

Filed Dec. 24, 1925

Fig. 4

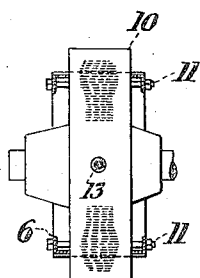


Fig. 5

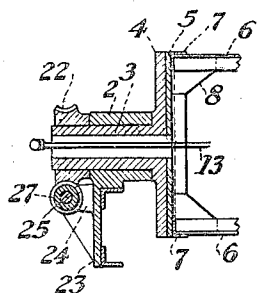


Fig. 3

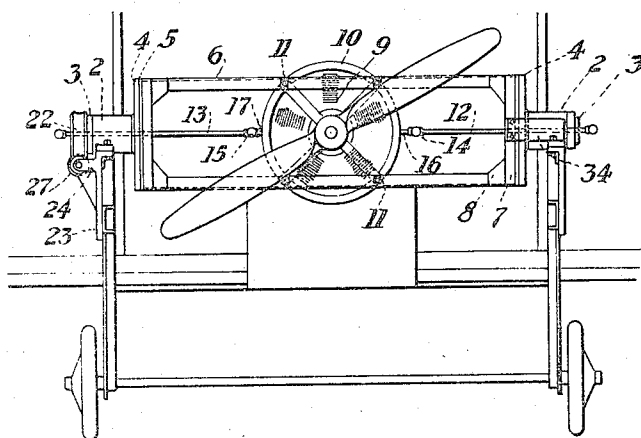


Fig. 1

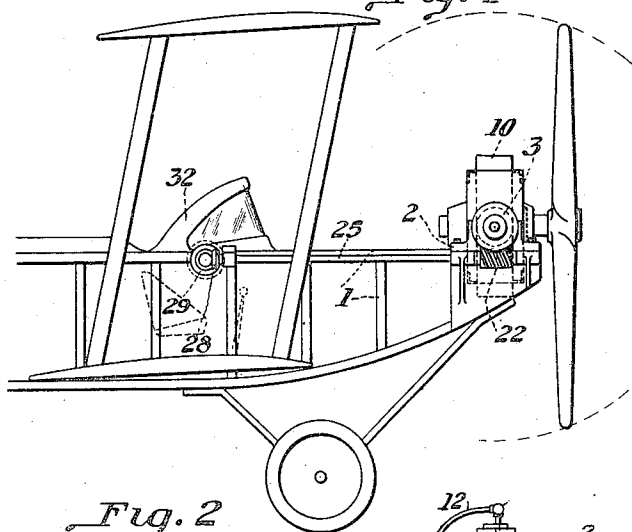
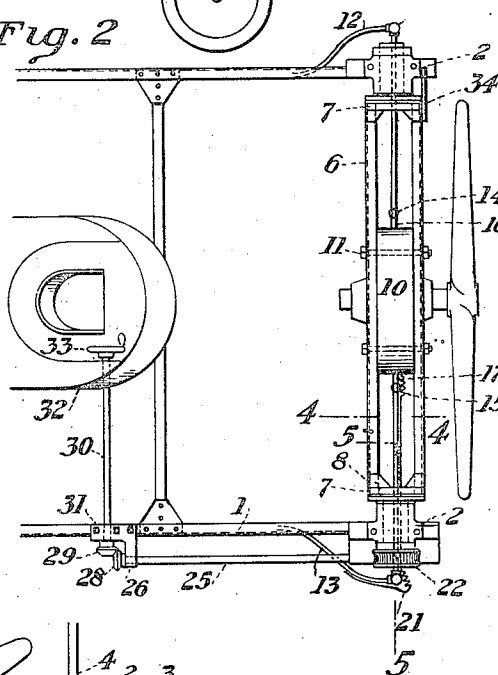


Fig. 2



INVENTOR
Henry Dyer
BY *C. J. Radwin*
ATTORNEY

UNITED STATES PATENT OFFICE.

HENRY DYER, OF DETROIT, MICHIGAN.

MOUNTING ARRANGEMENT FOR AEROPLANE ENGINES.

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This invention relates to improvements in mounting arrangements for aeroplane engines, and consists essentially in pivotal mounting means so arranged that the axis of the engine shaft may be turned to varying angles by the operator while flying. In this manner the propeller is inclined at different angles instead of remaining constantly in line with the horizontal longitudinal framework of the plane. Moreover positive adjusting means are provided so that once the angle of the propeller has been set it cannot change until readjusted by the operator.

At the present time it is necessary for an aeroplane to travel along the ground for a considerable distance before rising or in landing. This invention aims to provide means by which this distance can be considerably reduced, so that spaces which are now considered too small can be utilized either for starting or landing. Broadly speaking this is accomplished by inclining the propeller in a somewhat upwardly position before starting so that its rotation will immediately give a greater lifting action; and when landing the propeller is first moved into such a position that the axis of its shaft is more or less vertical, the rotation of the propeller will then sufficiently retard the downward movement of the plane to permit of its diving almost directly downwards; and once the plane has arrived on the ground the engine and propeller are swung through 90 degrees into such a position that the propeller will rotate behind the engine thereby exerting a retarding action, and considerably reducing the distance travelled before the plane is brought to a stop.

Having thus briefly outlined the major purposes of the invention I will now proceed to describe an embodiment thereof with the aid of the accompanying drawings, wherein:

Figure 1 illustrates a side elevation of part of an aeroplane showing the engine mounting arrangement.

Figure 2 is a plan view and

Figure 3 a front elevation of Figure 1, and

Figures 4 and 5 are sections on the lines 4-4 and 5-5 of Figure 2.

Referring now to the drawings, 1 designates the fuselage of an aeroplane on which bearings 2 are mounted. These bearings

support trunnions 3 which are hollow, and integral with the latter are flanges 4 to which end plates 5 are secured. Angle members 6 are attached to the end plates by angle irons 7 and gusset plates 8, or in any other desired manner. No connecting means is shown between the angles and plates as they are usually welded to one another.

9 indicates a known type of rotary motor which is mounted within its annular frame 10. The latter is fastened to the angle members 6 as by the bolts 11, though the means of attaching the engine to the angle members must of course be varied to suit the make of engine it is intended to install. 12 and 13 indicate gasoline and oil lines from the usual tanks (not shown); these lines are provided with ball joints 14 and 15 by which they are connected to the pipes 16 and 17 leading to the gasoline and oil connections respectively on the engine. The electric wires 21 from the source of energy to the engine I also frequently introduce through the hollow trunnions. Neither the source of energy nor the electrical connections on the engine are shown since they do not form part of this invention.

On one of the trunnions a worm wheel 22 is fixed, and integral with the plate 23 is a bearing 24. The latter supports one end of the shaft 25 the opposite end of which rests in a bearing 26 secured to the side of the fuselage. The worm 27 towards one end of the shaft 25 cooperates with the worm wheel 22, and the bevel gear 28 towards the opposite end of the shaft meshes with a second bevel gear 29 on the cross shaft 30. The latter is mounted at one end in a bearing 31 generally integral with the bearing 26 and at the other end in the side of the cab 32 through which it passes, so that the handwheel 33 secured on the cross shaft is located within reach of the operator.

On one side of the pivotal member I attach a projecting member 34 so shaped as to engage the upper surface of the bearing 2 when the propeller is in its normal position shown in Figure 1. This member 34 is also adapted to strike the opposite flange of the bearing when the pivotal member has been turned through approximately 180 degrees. The object of this is to provide means to prevent the propeller being downwardly inclined by accident, for,

should that occur the aeroplane might crash in consequence.

While in the foregoing the pivotal member has been shown and described as being made of angle iron and plate it may of course consist of any other desired construction. The advantage of employing a worm drive for the rotation of the pivotal member is of course so that no change will occur after the propeller has been once set to any desired angle. Moreover it is understood that the construction herein described and shown is subject to such alterations and modifications as fall within the scope of the appended claims.

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

1. A mounting arrangement for aeroplane

engines comprising aeroplane side frame members, bearings on said frame members, 20 trunnions in said bearings, a worm wheel on one of said trunnions, a worm cooperating with said worm wheel, means for rotating said worm, a flange integral with each of said trunnions, angle members between and supported by said trunnion 25 flanges, an engine fastened between said angle members, and a stop to limit the turning movement of said trunnions in both directions. 30

2. A mounting arrangement for aeroplane engines as described in claim 1 wherein the trunnions are hollow to permit the oil and gasoline lines passing therethrough.

HENRY DYER.