Feb. 17, 1931. J. H. STALEY 1,792,612

AIRPLANE ENGINE STAND

Filed July 13, 1928

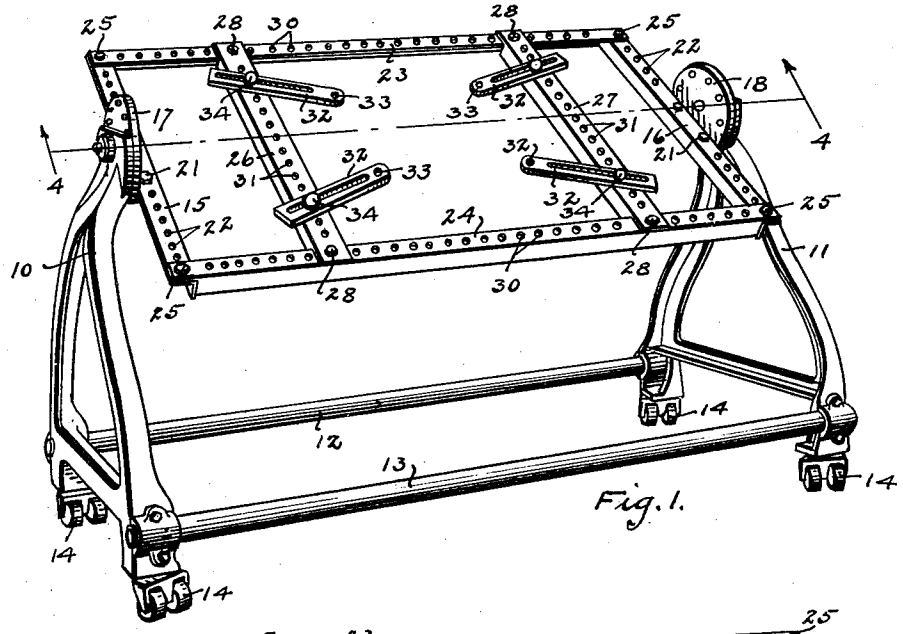


Fig. 1.

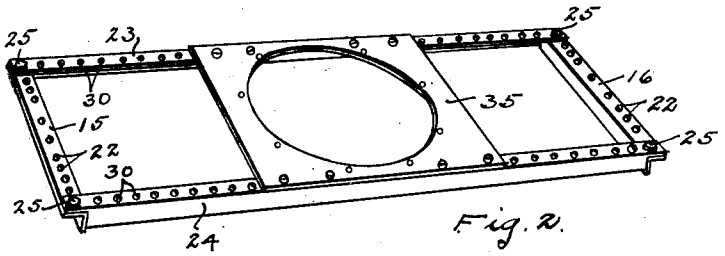


Fig. 2.

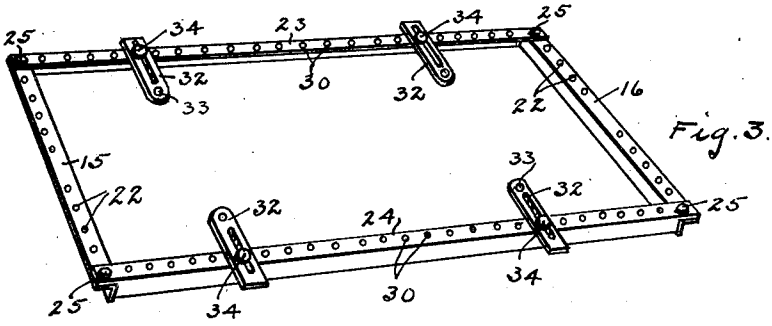


Fig. 3.

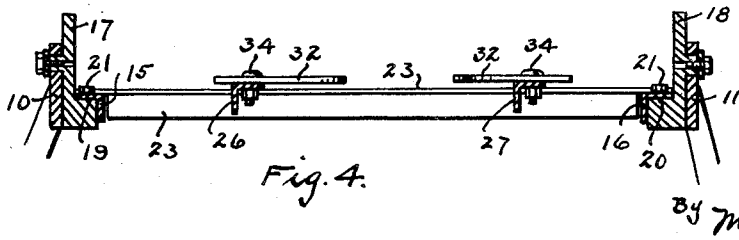


Fig. 4.

INVENTOR,
Joseph H. Staley,
By Minturn & Minturn,

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UNITED STATES PATENT OFFICE

JOSEPH H. STALEY, OF COLUMBUS, INDIANA

AIRPLANE-ENGINE STAND

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This invention relates to means for holding motors while being built or overhauled. In recent years, the rotary type of motor for airplanes has been rapidly developed, but the factory equipment for assembling such motors had not kept pace with the motor development, and no satisfactory means for holding all the types of motors by one unit was available prior to my invention hereinbelow described, which is a development from my earlier inventions as embodied in the Patent Numbers 1,444,757 and 1,469,734.

Airplane motors have propellers and other parts projecting therefrom as well as peculiarly shaped mounting bases, all of which conditions are not encountered in automobile motor practice, so that a stand that has heretofore accommodated an automobile motor could not be employed in assembling and working on the airplane motor.

My invention provides a motor stand that will receive and hold any type of rotary motor as well as the common V type. The stand will permit bodily turning of the motor being assembled thereon so as to give easy accessibility to all sides of the motor. These and other objects of my invention will be better understood by the following description as illustrated in the accompanying drawing, in which—

Fig. 1 is a side perspective view of a motor stand embodying my invention;

Fig. 2, a perspective view of the motor support frame only with a modified form of motor support;

Fig. 3, a perspective view of the motor support frame only showing a still further modified form of motor support; and

Fig. 4, a central longitudinal, vertical section on the line 4—4 in Fig. 1.

Like characters of reference indicate like parts throughout the several views of the drawing.

I form a stand base having the end standards 10 and 11 adjustably spaced apart by the two bars 12 and 13 and mounted on casters 14, as employed in my earlier motor stand. Between the upper ends of the standards 10 and 11, I rockably swing a frame preferably made of angle iron members.

This frame comprises the two end bars 15 and 16, bolted to the brackets 17 and 18 respectively to have one leg of the angle turned downwardly and the other leg horizontally disposed and resting across the shoulders 19 and 20 on the brackets, the bolts 21 being passed through the horizontal legs vertically into the shoulders. These horizontal legs of the bars 15 and 16 are provided with a plurality of holes 22 therethrough spaced apart substantially throughout their lengths.

Side bars 23 and 24 each having a horizontally disposed leg provided with a plurality of holes 30 therethrough have their ends resting on the top sides of the end bars 15 and 16 with removable bolts 25 passing therethrough so that the bars 23 and 24 may be variably spaced apart one from the other as desired by placing the ends of the side bars over the selected holes 22 in the end bars 15 and 16, the bars 23 and 24 being shown in the drawing as being spaced the maximum distance apart as determined by the lengths of the end bars.

The frame formed as described by the end bars 15 and 16, and side bars 23 and 24 is thus carried by the end brackets 17 and 18. These end brackets are rotatably held between the standards 10 and 11 so that the frame may be revolved about its longitudinal axis.

Referring to Fig. 1, a pair of transverse bars 26 and 27 are provided which may be removably bolted by their ends to and across between the side bars 23 and 24 to have any desired spacing between the bars 26 and 27, by moving the bars along the side bars 23 and 24 and placing the bolts 28 through the bar ends and selected holes 30. The bars 26 and 27 have a plurality of holes 31 through their horizontally disposed legs.

A plurality of brackets 32 are provided, here shown as four in number. These brackets have a hole 33 in the outer end and are slotted throughout the greater part of their lengths. In Fig. 1, two of these brackets 32 are carried on each of the transverse bars 26 and 27 by the bolts 34 passed through the slots of the brackets and through selected holes 31. The ends of the brackets 32 having the holes therethrough are directed inwardly between

the bars 26 and 27 to be adjustably moved to have the holes 33 match the corresponding holes provided in the base of the motor (not shown) to be held on the stand. It is evident, therefore, that the bars 26 and 27 and brackets 32 may be adjustably positioned to meet a very wide range of motor bases.

While I have here shown and described a construction with holes through the bars and bolts through the holes for retaining adjustments, other well known clamping and securing means may be substituted.

Should the bars 26 and 27 interfere with the motor assembly as might be the case in certain V type motors, the bars 26 and 27 may be removed and the brackets 32 adjustably bolted directly to the side bars 23 and 24, as in Fig. 3. Where an assembly plant or repair base handles but one type and size of motor, it is possible in some cases to dispense with the bars 26 and 27, and brackets 32, and employ a plate 35, Fig. 2, which is formed to receive the base of that particular motor only.

Having described my invention in the form as now best known to me, it is obvious that structural changes may be made without departing from the spirit of the invention, and I therefore do not desire to be limited to the precise form as described and shown, nor any more than may be required by the following claims.

I claim:

1. In a motor stand, a pair of standards, an end angle bar rotatably carried by one of said standards, an end angle bar rotatably carried by the other of said standards, a pair of side angle bars carried by and between said end bars, said side bars being spaced apart one from the other along said end bars, each of said side bars having a horizontally disposed longitudinal member and motor support means substantially in the same plane as the frame carried by the side bars adjustably secured thereto.

2. In a motor stand, a pair of standards, an end angle bar rotatably carried by one of said standards, an end angle bar rotatably carried by the other of said standards, a pair of side angle bars carried by and between said end bars, said side bars being spaced apart one from the other along said end bars, each of said bars having a horizontally disposed longitudinal member and motor support means carried by the side bars adjustably secured thereto, said support means comprising a plurality of adjustable brackets capable of being swung and extended in planes parallel with and approximately that of the frame but resisting transverse displacement.

3. In a motor stand, a pair of spaced apart side angle bars each having a horizontally disposed member with a plurality of holes therethrough, a pair of end angle bars spaced apart and receiving the ends of said side bars, said end bars each having a plurality of holes through a horizontally disposed member, a bracket for each end bar having a shoulder supporting and secured to its end bar, a pair of standards rotatably engaging said brackets therebetween, and motor support means parallel with and substantially in the same plane as the frame carried by and adapted to be selectively positioned along and secured to said bars by bolts entering said holes therein.

4. A new article of manufacture for airplane motor assembly work comprising an adjustable frame formed by two end angle bars and two side angle bars, a member of each of said bars having means whereby the said bars may be selectively secured one to the other to define openings therebetween of varying areas, and having a plurality of brackets adapted to be adjustably extended in and out over said openings in substantially the same plane as the frame.

5. A new article of manufacture for airplane motor assembly work comprising an adjustable frame formed by two end angle bars and two side angle bars, a member of each of said bars having one or more holes therethrough whereby the said bars may be selectively bolted onto the other to define openings therebetween of varying areas, and having a transverse member between said side bars intermediate said end bars adapted to be selectively held along said side bars as determined by the holes therein.

6. A new article of manufacture for airplane motor assembly work comprising an adjustable frame formed by two end angle bars and two side angle bars, a member of each of said bars having a plurality of holes therethrough whereby the said bars may be selectively bolted one to the other to define openings therebetween of varying areas, and having transverse bars between said side bars intermediate said end bars adapted to be selectively held along said side bars as determined by the holes therein, and brackets rotatably and extendably carried by and at selected points along said transverse bars in a plane parallel with and approximately the same as said frame.

7. In a stand for airplane engines, a pair of standards, brackets supported by the standards, said brackets having shoulders, a frame rockably supported between the standards on the shoulders of the brackets to be capable of being revolved between the standards, and engine engaging means carried by the frame comprising an engine support confined substantially to the engine contacting plane of the frame and formed to permit complete assembly of all component parts and accessories into a complete engine before its removal therefrom, said engine being carried entirely by said support.

8. In a stand for airplane engines, a pair of standards, a frame rockably supported between the standards to be capable of being

revolved therebetween, and engine engaging means carried by the frame comprising an engine support confined to the plane of the frame and formed to permit complete assembly of all component parts and accessories into a complete engine before its removal therefrom, said engine being carried entirely by said support, and said support being composed of members adjustable angularly and toward and away one from the other all in the plane of the carrying frame.

9. In a stand for airplane engines, a pair of standards, a frame rockably supported between the standards to be capable of being revolved therebetween, and engine engaging means carried by the frame comprising an engine support confined to the plane of the frame and formed to permit complete assembly of all component parts and accessories into a complete engine before its removal therefrom, said engine being carried entirely by said support, and said support comprising a plurality of relatively narrow arms having longitudinal slots, and bolts removably passed through said slots at selected positions over and engaging said frame, said arms being adjustably retained by said bolts within the frame plane whereby the arms may be shifted about angularly and in and out toward the engine to be supported thereby to engage said engine at points permitting complete assembly of parts and accessories without interference from said arms.

In testimony whereof I affix my signature.

JOSEPH H. STALEY.