Dec. 8, 1936. C. H. JOLLY 2,063,040

HOISTING SLING

Filed Oct. 16, 1935

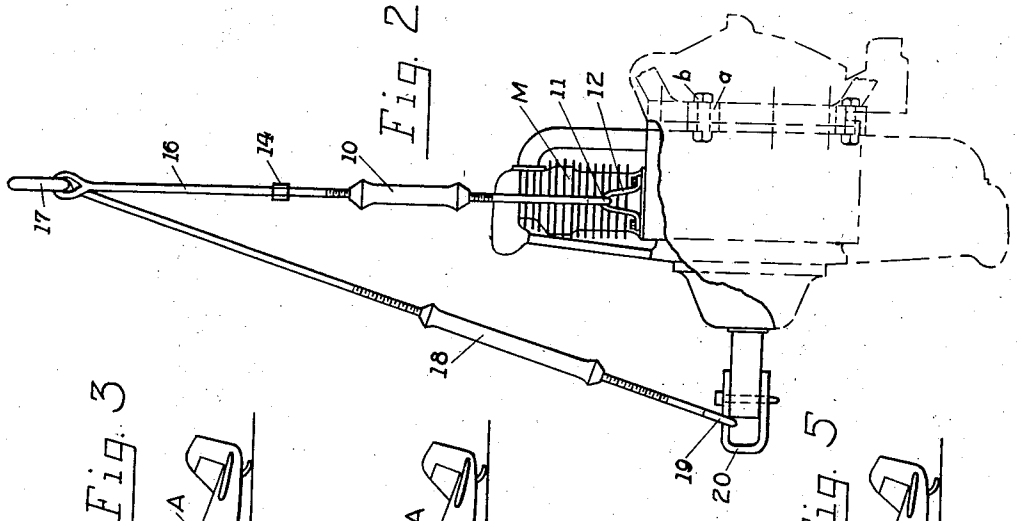


Fig. 2

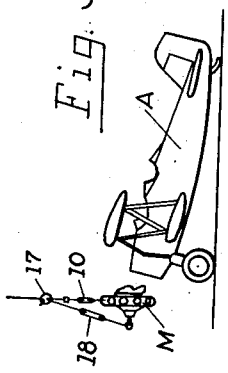


Fig. 3

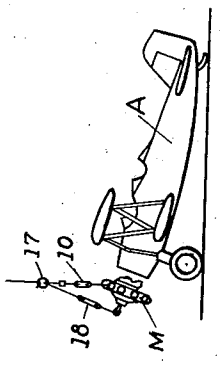


Fig. 4

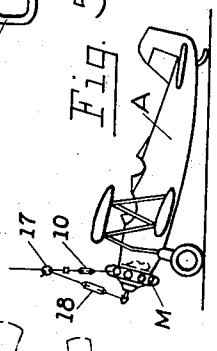


Fig. 5

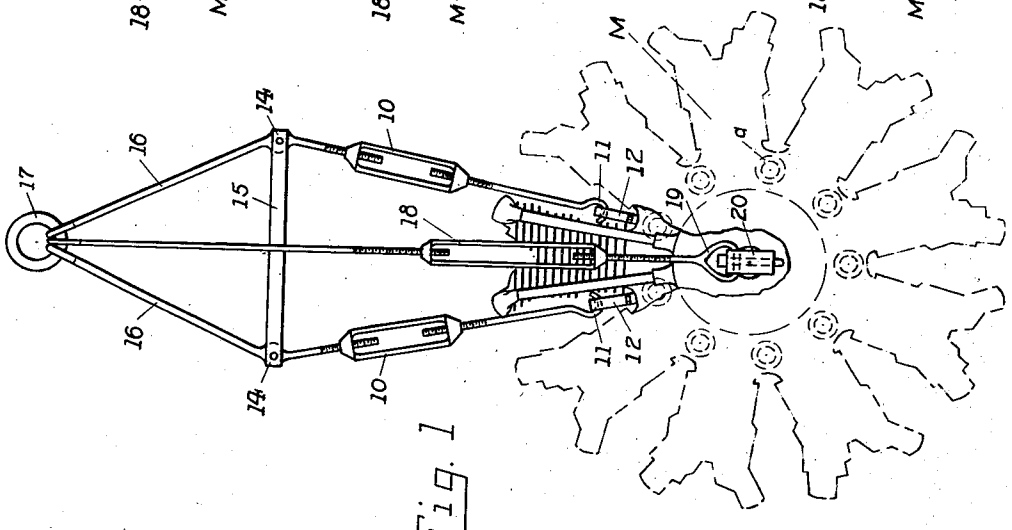


Fig. 1

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Patented Dec. 8, 1936

2,063,040

UNITED STATES PATENT OFFICE

2,063,040

HOISTING SLING

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Application October 16, 1935, Serial No. 45,195

6 Claims. (Cl. 294—78)

(Granted under the act of March 3, 1883, as amended April 30, 1928; 370 O. G. 757)

This invention relates to hoisting slings, and it has a particular relation to slings employed in installing or removing the motors of airplanes or the like.

In installing a motor in an airplane, the longitudinal axis of which is inclined with respect to the horizontal when at rest, difficulty is often encountered in aligning the mounting lugs on the motor frame with the hold-down bolts on the motor bed of the fuselage. The services of several men are usually required to hold the motor at the correct angle in order to register the lugs with the hold-down bolts and it frequently occurs that if the bolts and lugs are not in accurate alignment and the bolts are driven into place, either the threads of the bolts are stripped or the bolt holes in the lugs are cut larger. The result is that the motor is never quite lined up and is usually binding at some point, thereby causing vibration when the motor is running. This vibration not only causes additional wear to the parts but crystalizes the metal in the motor bed, causing it soon to develop a crack or fracture.

The principal object of the present invention is to avoid the difficulties hereinabove described, through the provision of an improved hoisting sling, by means of which a motor may be adjusted accurately to and maintained at the proper inclination and angular position with with respect to the motor bed on the fuselage during an installing or removing operation.

With these and other objects in view, as well as other advantages which may be incident to the use of the improvements, the invention consists of the parts and combinations thereof hereinafter set forth and claimed, with the understanding that the several necessary elements constituting the same may be varied in proportion and arrangement without departing from the nature and scope of the invention, as defined in the appended claims.

In order to make the invention more clearly understood, there are shown in the accompanying drawing means for carrying the invention into practical effect, without limiting the improvements in their useful application to the particular construction, which, for purpose of explanation, have been made the subject of illustration.

In the accompanying drawing:

Fig. 1 is a front elevational view of a hoisting sling embodying the present invention, the motor being partly indicated by broken lines;

Fig. 2 is a side elevational view of the structure shown in Fig. 1, and

Figs. 3 to 5, inclusive, are diagrammatic views illustrating the use of the improved hoisting sling during the installation of a motor in an airplane.

Referring to the drawing, a hoisting sling construction in accordance with the invention is shown in connection with a motor M having lugs *a* for engagement by hold-down bolts *b* on the bed or supporting ring of an airplane A, both illustrated diagrammatically in the drawing. The sling comprises primary suspending means in the form of a pair of turn buckles 10, having hooks 11 at their lower ends for detachable engagement with straps 12 secured to the crank case of the motor on opposite sides of the upper cylinder thereof. The upper ends of the turn buckles 10 are pivotally connected, as at 14, to opposite ends of a cross bar 15, which is suspended by means of links 16 from a ring 17 which is in turn suspended from the hoisting tackle. The sling also comprises secondary suspending means in the form of a turn buckle 18 connected at its upper end with the ring 17 and provided with an eye 19 at its lower end for engagement with a strap 20, detachably pinned to the crank shaft of the motor.

In operation, the sling is connected with the motor M in the manner shown and described, and is elevated to a position substantially that illustrated in Fig. 3. The turn buckle 18 is then manipulated, in the usual way, so as to tilt the motor longitudinally until the axis of its crank shaft is in parallelism with the longitudinal line of thrust of the airplane. The turn buckles 10 are then manipulated so as to bring the lugs *a* on the motor frame in accurate registering relation with the hold-down bolts *b* on the engine bed or ring, after which the engine is moved into place axially and bolted down. This installing operation requires the services of very few men and can be performed by one only, if necessary. An engine mounted in the manner described is very accurately seated on its bed, thus minimizing vibration and completely eliminating injuries to the lugs and hold-down bolts.

The construction, as herein described, is used as an example only and may be modified in proportions and arrangement of the parts by those skilled in the art, without departing from the nature and scope of the invention, as defined in the appended claims.

The invention described herein may be manufactured and used by or for the Government of the United States of America for governmental purposes without the payment of any royalties thereon or therefor.

What is claimed is:

1. A hoisting sling for airplane motors having fastening means engageable with fastening means on fuselages, comprising primary suspending means for attachment with the motor at laterally spaced points, and secondary suspending means for attachment with the motor at a point longitudinally offset with respect to said primary suspending means, said secondary suspending means being adjustable to tilt the motor longitudinally to align the fastening means on the motor longitudinally with respect to the fastening means on the fuselage.

2. A hoisting sling for airplane motors having fastening means engageable with fastening means on fuselages, comprising primary suspending means for attachment with the motor at laterally spaced points, and secondary suspending means for attachment with the motor at a point longitudinally offset with respect to said primary suspending means, said primary suspending means being adjustable to tilt the motor laterally to align the fastening means on the motor laterally with respect to the fastening means on the fuselage.

3. A hoisting sling for airplane motors having fastening means on fuselages, comprising primary suspending means for attachment with the motor at laterally spaced points, and secondary suspending means for attachment with the motor at a point longitudinally offset with respect to the said primary suspending means, said primary and secondary suspending means being adjustable to tilt the motor both longitudinally and laterally to align the fastening means on the motor longitudinally and laterally with respect to the fastening means on the fuselage.

4. A hoisting sling for airplane motors having fastening means engageable with fastening means on fuselages, comprising primary suspending means for attachment with the motor at laterally spaced points, and secondary suspending means including a turn buckle for attachment with the motor at a point longitudinally offset with respect to said primary suspending means, said secondary suspending means being adjustable by means of its turn buckle to tilt the motor longitudinally to align the fastening means on the motor longitudinally with respect to the fastening means on the fuselage.

5. A hoisting sling for airplane motors having fastening means engageable with fastening means on fuselages, comprising primary suspending means including turn buckles for attachment with the motor at laterally spaced points, and secondary suspending means for attachment with the motor at a point longitudinally offset with respect to said primary suspending means, said primary suspending means being adjustable by means of its turn buckles to tilt the motor laterally to align the fastening means on the motor laterally with respect to the fastening means on the fuselage.

6. A hoisting sling for airplane motors having fastening means engageable with fastening means on fuselages, comprising primary suspending means including turn buckles for attachment with the motor at laterally spaced points, and secondary suspending means including a turn buckle for attachment with the motor at a point longitudinally offset with respect to said primary suspending means, said primary and secondary suspending means being adjustable by means of their turn buckles to tilt the motor both longitudinally and laterally to align the fastening means on the motor longitudinally and laterally with respect to the fastening means on the fuselage.

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