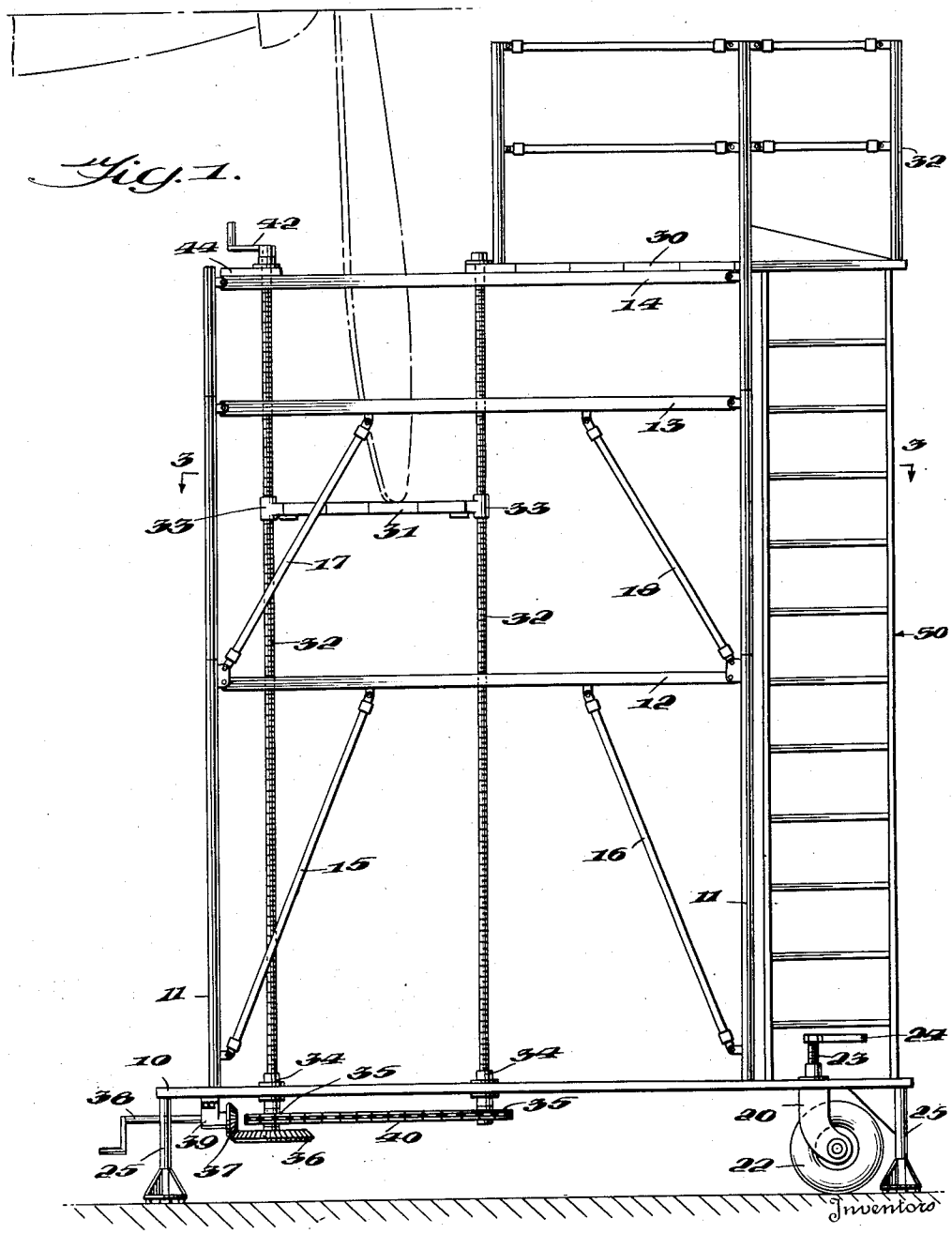
Aug. 1, 1944. R. L. BAILEY ET AL 2,354,905

AIRPLANE SCAFFOLD

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Fig. 1.



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Fig. 2.

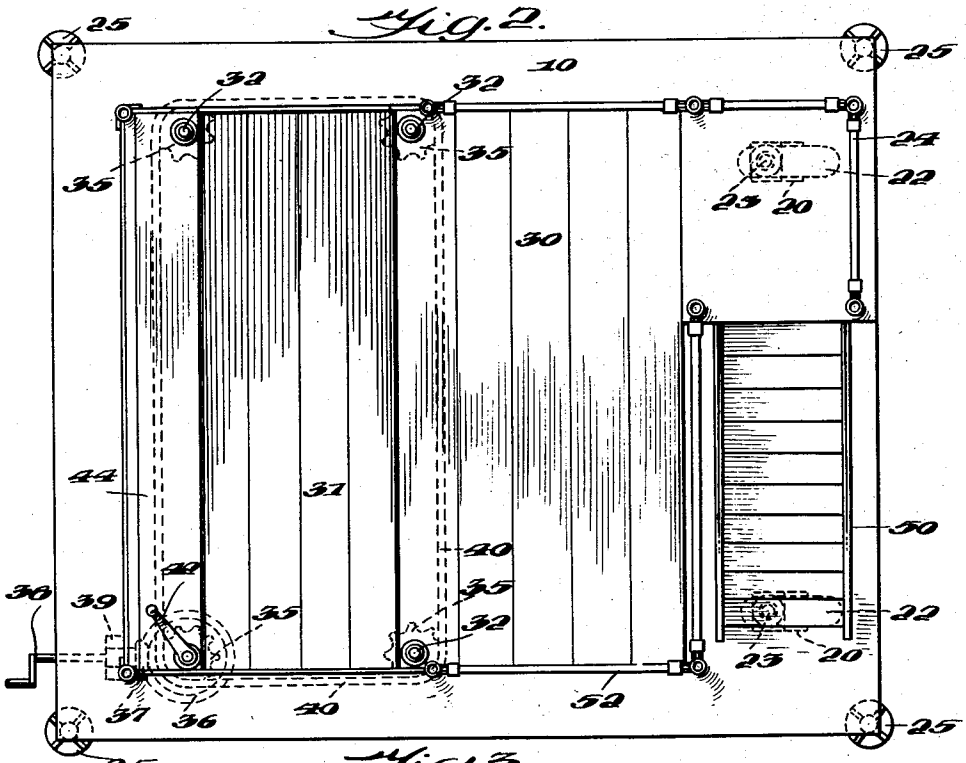
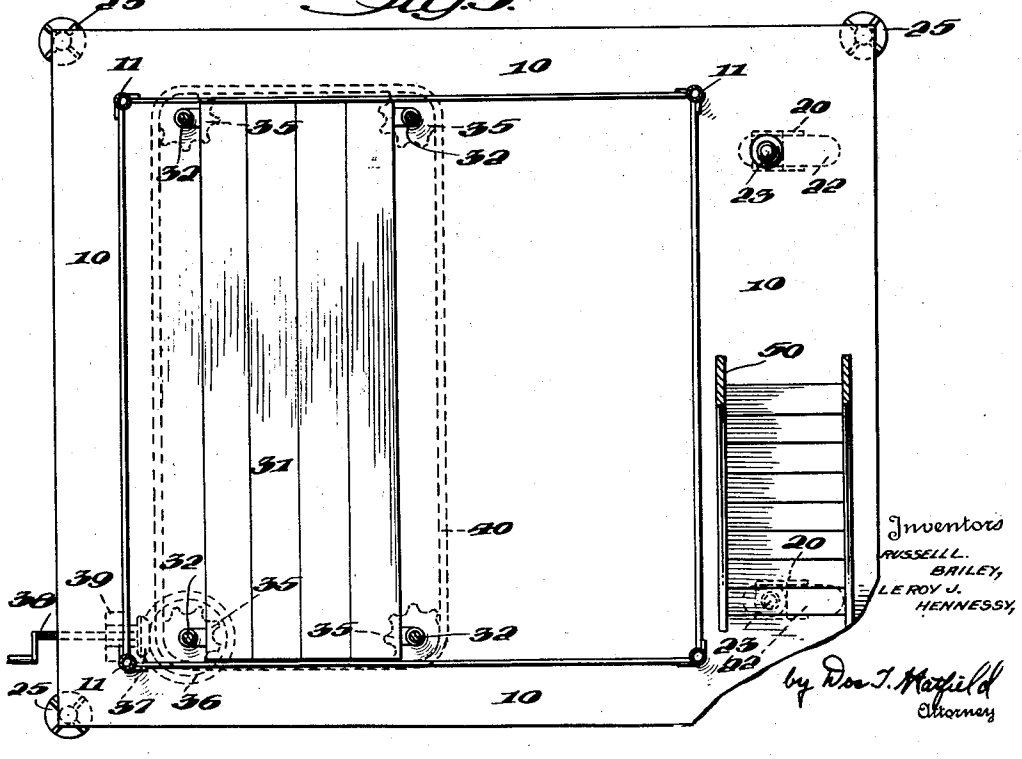


Fig. 3.



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Patented Aug. 1, 1944 2,354,905

UNITED STATES PATENT OFFICE

2,354,905

AIRPLANE SCAFFOLD

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Application December 16, 1941, Serial No. 423,234

3 Claims. (Cl. 304—2)

This invention relates to scaffolds, and is particularly directed to scaffolds for use in repairing airplanes.

Airplanes, depending upon the make, style and size must be serviced after a number of hours in the air. The motor must be tuned, adjusted and repaired ever so often in order to insure safe flying for the pilot, occupants and the airplane. Normally, the repair work is done on the airplane when the airplane is in a hangar, where cranes, pulleys, ropes, etc., are available. When a well equipped hangar is available for the servicing of an airplane, a scaffold is of little importance except to supply fuel thereto, and in the latter instance, any type of scaffold which has sufficient height will suffice for the job. However, as more and more commercial and private planes come into service, experience has shown that hangar space for the maintenance and repair of airplanes has become increasingly scarce. Also, and of more importance, the maintenance and repair of airplanes in modern warfare is a major problem. In regularly established air bases, hangars have been built to accommodate the normal number of airplanes which are to be established at the base. These hangars also are supplied with all necessary equipment so that repairmen may properly service the airplanes. But, in warfare, it often becomes necessary or advisable to set up advance bases for airplanes, and it is a very difficult problem to erect proper hangars to service and repair airplanes within a short time, and in some instances, it is utterly impossible. It is under the latter conditions that the present invention is particularly useful, although it will be recognized by those familiar with the repair problem of airplanes that the invention will be of great value in many other circumstances.

The scaffold which is the subject-matter of this invention is light in weight and easily taken apart and put together, and the same is so arranged that it may be taken apart and carried in the airplane as necessary equipment therefor. If and when the occasion demands, the parts of the scaffold may be removed from the plane and easily assembled so that mechanics may service and/or repair the motors of the airplane. While other types of scaffolds have been devised which may be carried by the airplane in disassembled condition, and assembled when taken from the airplane, nevertheless, the assembled scaffolds have been of little aid in supporting the mechanics in such a manner that they could efficiently service and repair the airplane.

This scaffold is such that workmen repairing an airplane motor may be supported in front of the propeller, in front of the motor, behind the propeller and on each side of the motor. Also, the scaffold is constructed so that the mechanics may turn the propeller while working on the motor to thus turn the motor over for adjustment and repair, and the scaffold will in no way interfere with the propeller. Also, airplane motors and propellers are extremely heavy, and if either are particularly damaged, it may become necessary to remove either or both from the airplane for more extensive repair on the ground, or for substitution. In such event, the scaffold which forms the subject-matter of this invention will function to lower the motor or propeller or parts thereof safely to the ground.

It is, therefore, an object of this invention to provide an airplane work scaffold which may be carried in the airplane in disassembled condition, removed from the airplane and assembled quickly and easily, and wherein the assembled scaffold will enable workmen to efficiently service and repair the motor of the airplane.

Another object of the invention is to provide an airplane work scaffold which will support the workmen in front of the propeller and motor, behind the propeller and on each side of the motor.

Another object of the invention is to support workmen in such a manner that they may work on the motor of the airplane and revolve the propeller without interference from the scaffold.

Another object of the invention is to provide a scaffold wherein the propeller may be supported, so that the propeller may be removed from the airplane, parts of the scaffold functioning as a jack for the propeller in such circumstances.

Still another object of the invention is to provide a scaffold wherein workmen may be properly positioned about the motor, and which also functions to lower heavy parts of the airplane such as the motor, propeller, etc. from the airplane to the ground, and to raise replacement parts from the ground to the proper position relative to the airplane.

With the foregoing and other objects in view this invention embodies the feature of construction, combination and arrangement of parts as will hereinafter be described in detail, illustrated in the accompanying drawings which disclose the preferred embodiment of the invention, and set out in the claims appended hereto.

In the drawings:

Fig. 1 is a side view of the scaffold;

Fig. 2 is a top plan view of the scaffold; and

Fig. 3 is a sectional view taken on line 3—3 of Fig. 1.

In Fig. 1 a base frame 10 has upright members 11 secured in any suitable manner thereto. Cross bars 12, 13 and 14 are secured to the upright members 11, preferably by means of nuts and bolts. Bracing rods 15, 16, 17 and 18 are secured to the upright members 11 and cross bars 12 and 13, also by means of nuts and bolts. The upright members 11 are preferably formed in sections so that additional sections may be added thereto to obtain the desired height. This may be done in any suitable known manner.

Secured to the underside of the base 10, wheel supports 20 are provided preferably at each corner of the scaffold. These wheel supports have the usual axle extending therethrough at the lowermost portion thereof and suitable wheels 22 are mounted on the axle. Screw threaded shanks 23 extend through suitable interiorly screw threaded sockets. Suitable handles 24 are mounted adjacent the top of the screw threaded shanks 23 for rotating said shanks. Spurs 25 are also mounted on the underside of the base 10, preferably at each corner thereof. When the scaffold is to be moved about on the ground rotation of each of the handles 24 will rotate the screw threaded shanks 23 thus lowering the wheels 22 relative to the base 10 of the scaffold, so that the spurs 25 will be raised from the ground a suitable distance to provide clearance between the spurs and the ground. When the scaffold is in the desired position, the handles 24 may be rotated in the opposite direction, thus raising the wheels 22 and permitting the spurs 25 to sink in the ground so as to provide a rigid support for the scaffold.

The main platform 30 extends from side to side of the scaffold, but does not extend all the way across the uppermost cross bar 14 so that workmen or mechanics may be supported thereon. It will be noted, however, that this main platform 30, while extending from side to side, does not extend all the way across the upright support, the same only extending from one end midway across the upright support. A second auxiliary platform 31 extends parallel to the main platform 30, but in a different vertical plane than the main platform. Any suitable means may be provided for vertically raising and lowering the auxiliary platform 31, although in our preferred form, we accomplish the vertical adjustment of the auxiliary platform by screw threaded shanks. This auxiliary platform 31 is supported on four screw threaded shanks 32 by means of suitable internally threaded members 33. The screw threaded shanks 32 are supported through suitable bearings 34, the bearings 34 in turn being supported on the base 10. Sprocket wheels 35 are fixed to the lowermost portion of the screw threaded shanks 32, so that rotation of either will rotate the other. A beveled gear 36 is secured to one of the screw threaded shanks 32 for rotation therewith, and a second beveled gear 37 is secured to a handle 38, the handle being supported on the underside of the base 10 by means of a bearing 39. Upon rotation of the handle 38, the beveled gear 37 will rotate, thus causing rotation of the beveled gear 36, the beveled gear 36 in turn causing rotation of one of the screw threaded shanks 32. A suitable sprocket chain 40 extends around all of the sprocket wheels 35, so that upon rotation of one of the screw threaded shanks 32, the sprocket wheels 35 secured to said shank will rotate, thus causing each of the other sprocket wheels 35 to be rotated by means of the sprocket chain 40. As the other sprocket wheels 35 are rotated the screw threaded shanks 32 will also be rotated. Upon rotation of the screw threaded shanks the internally threaded members 33 will rise or fall in accordance with the direction of rotation, thus vertically moving the auxiliary platform 31.

We have also provided a suitable handle 42 located at the top of one of the screw threaded shanks 32, the handle being fixed to said shank. Upon rotation of handle 42, one of said shanks 32 will be rotated, thus causing rotation of each of the other shanks through the sprocket wheels 35 and sprocket chain 40, as above mentioned. It will thus be seen from an inspection of Fig. 1 of the drawings that a workman or mechanic may vertically adjust the auxiliary platform while standing either on the platform or on the ground. It will also be noted that the auxiliary platform 31 may be raised to the same height as the main platform 30 so as to be in the same horizontal plane, or the auxiliary platform 31 may be lowered substantially to the ground.

A third platform 44 is secured and supported by the cross bar 14, and this platform also extends from one side to the other side of the scaffold. This platform 44 is rigidly supported on the cross bar 14 as is the main platform 30, and the platforms 30 and 44 extend in the same horizontal plane.

A suitable ladder, generally indicated at 50, extends from the base member 10 upwardly to the main platform 30, so that workmen may ascend from the ground to the top of the scaffold. Suitable handrails generally indicated at 52 are also provided for the protection of the workmen. The handrails, as shown, extend only on the sides of the main platform 30, but it will be understood that they may extend from end to end of the platform if desired, and that suitable hinged sections of handrail may be provided at the sides of the auxiliary platform 31, which sections may be swung out of position when an airplane propeller extends into the well provided when said auxiliary platform is lowered from the horizontal plane of the platforms 30 and 44.

It will be seen from the detailed description given above that the frame work of the scaffold may be easily assembled and knocked down so that the entire scaffold may be carried in the airplane and quickly put in operative condition after an airplane has reached an advanced base or at any other time when the scaffold is needed. In use, the scaffold is wheeled into position adjacent the nose of an airplane, through the medium of the wheels 22. When the scaffold is properly positioned the wheels 22 are retracted so that the scaffold will rest upon the spurs 25, thus providing a rigid support for the scaffold. As the auxiliary platform 31 is vertically adjustable, the same may be lowered a sufficient distance so as to accommodate the lower ends of the propeller. In this manner, the scaffold surrounds the nose of the airship so that workmen may repair and adjust the motor. It will readily be seen by an inspection of Fig. 1 of the drawings that the workmen may stand on the main platform 30 and work on the front of the motor, or they may stand on the platform 44 and work on the motor from the rear. In either instance, the auxiliary platform 31 will be lowered so that the propeller may be rotated without any interference from or con-

tact with any position of the scaffold, while repairing and adjusting the motor.

Also, in case of severe damage to either the motor or parts thereof, or to the propeller, the auxiliary platform 31 may act as an elevator to lower the damaged part from the airplane to the ground for replacement, and to raise the replacement part from the ground to the nose of the airplane. As an airplane motor, parts thereof, and/or the propeller often weighs several tons, it is necessary to provide some mechanical hoisting device for raising and lowering these parts. Therefore, the scaffold which forms the subject-matter of this invention performs the triple function of enabling workmen to work on both sides of the propeller, and further enables the propeller to be rotated without interference from the scaffold, and still further enables the heavy parts of an airplane to be raised and lowered without additional hoisting devices. Also, the auxiliary platform may function as a jack for the propeller when it is desired to remove the same from the airship before lowering the propeller to the ground.

We claim:

1. An airplane scaffold comprising a substantially rectangular horizontal base frame; upright supports adjacent the corners of said base frame; cross bars connecting the upper ends of said upright supports and forming an upper, substantially rectangular horizontal supporting structure; a main platform mounted on said supporting structure and extending from side to side thereof with its inner end terminating short of the forward end of said supporting structure; a horizontally extending auxiliary platform mounted on said scaffold and below the upper supporting structure and the main platform thereon, said auxiliary platform being disposed entirely within the space defined by said upright supports, and said auxiliary platform extending from side to side of the supporting structure from a position below the inner end of the main platform to a position below the forward end of the supporting structure; and a third platform mounted on the supporting structure at the front end thereof and extending from side to side of said supporting structure, with the inner end of said third platform terminating at a distance from the inner end of said main platform to provide an unobstructed space above said auxiliary platform and between said main and third platforms, said third platform being in substantially the same horizontal plane as said main platform and above said auxiliary platform, whereby the scaffold may be moved into a position beneath the front end of an airplane with the third platform behind the motor and propeller, the auxiliary platform below the ends of the propeller, and the main platform in front of the propeller and motor to permit workmen to work at the rear and front of the motor and propeller and to permit the propeller to be revolved without interference from the scaffold.

2. An airplane scaffold as defined in claim 1, including means for adjusting the auxiliary platform to various heights between the levels of the base frame and main platform to permit rotation above the auxiliary platform of propellers of various lengths without interference with the scaffold.

3. An airplane scaffold as defined in claim 1, including means for adjusting the auxiliary platform to various heights between the levels of the main and third platforms and the level of the base to permit rotation above said auxiliary platform and between the main and third platforms of propellers of various lengths without interference from the scaffold.

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