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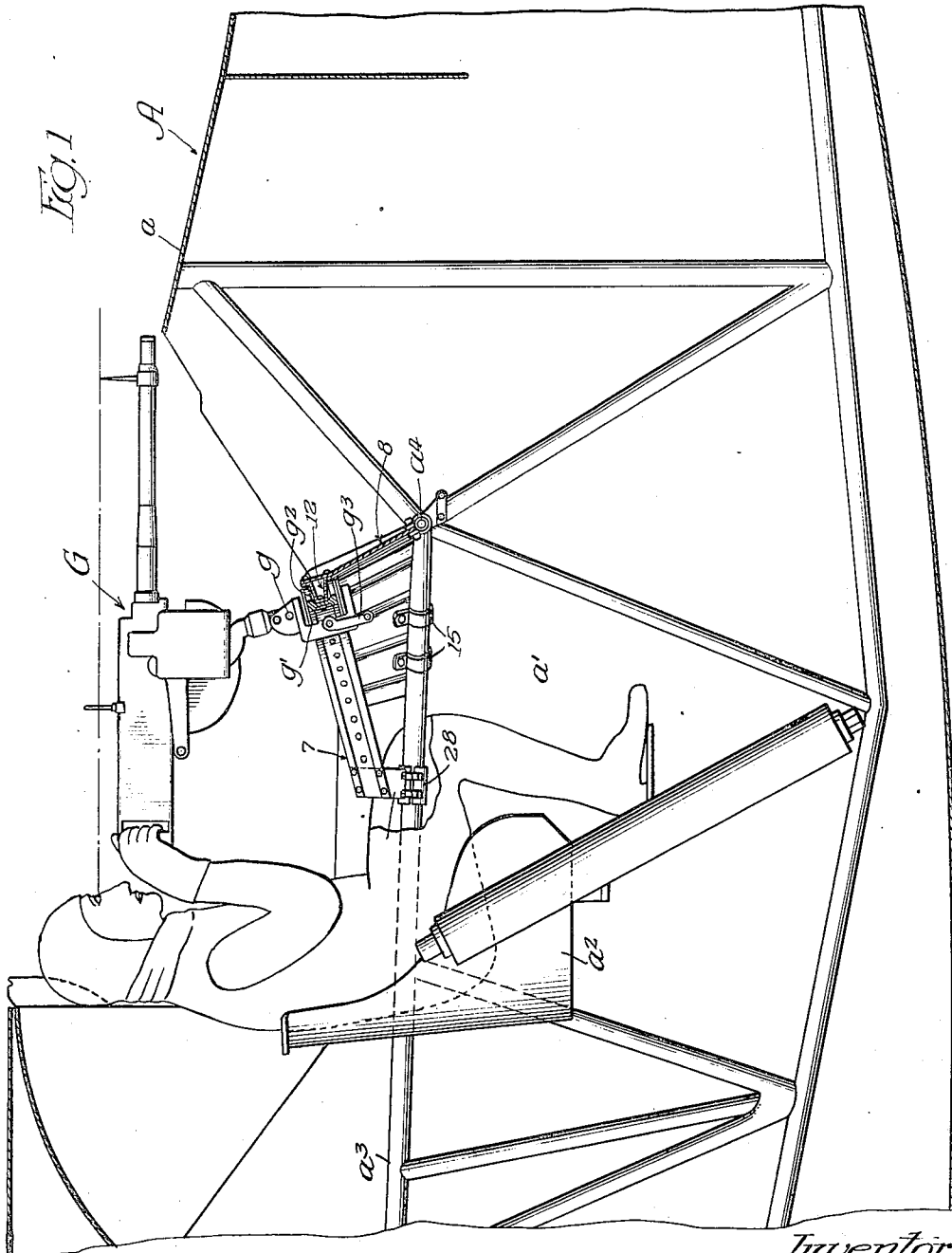
J. S. WEAVER

2,370,896

MACHINE GUN MOUNT

Filed Oct. 2, 1940

3 Sheets-Sheet 1



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March 6, 1945.

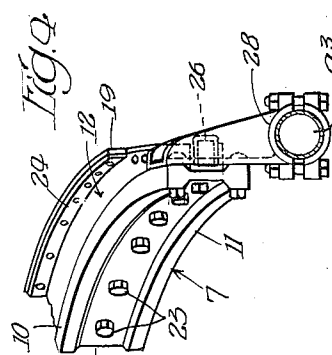
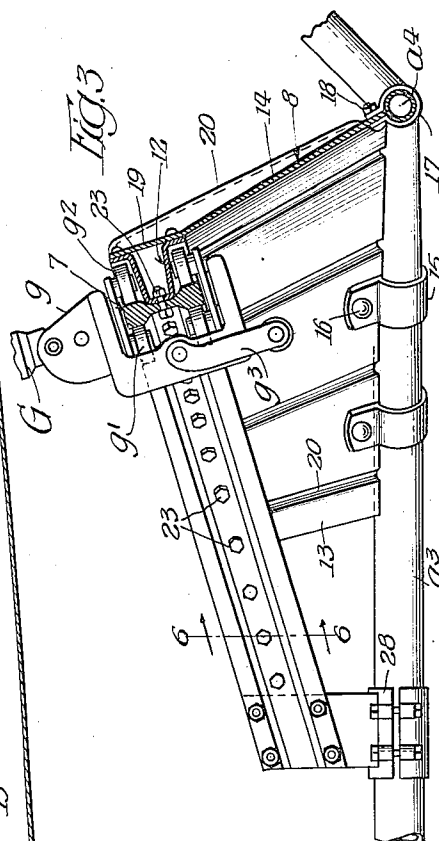
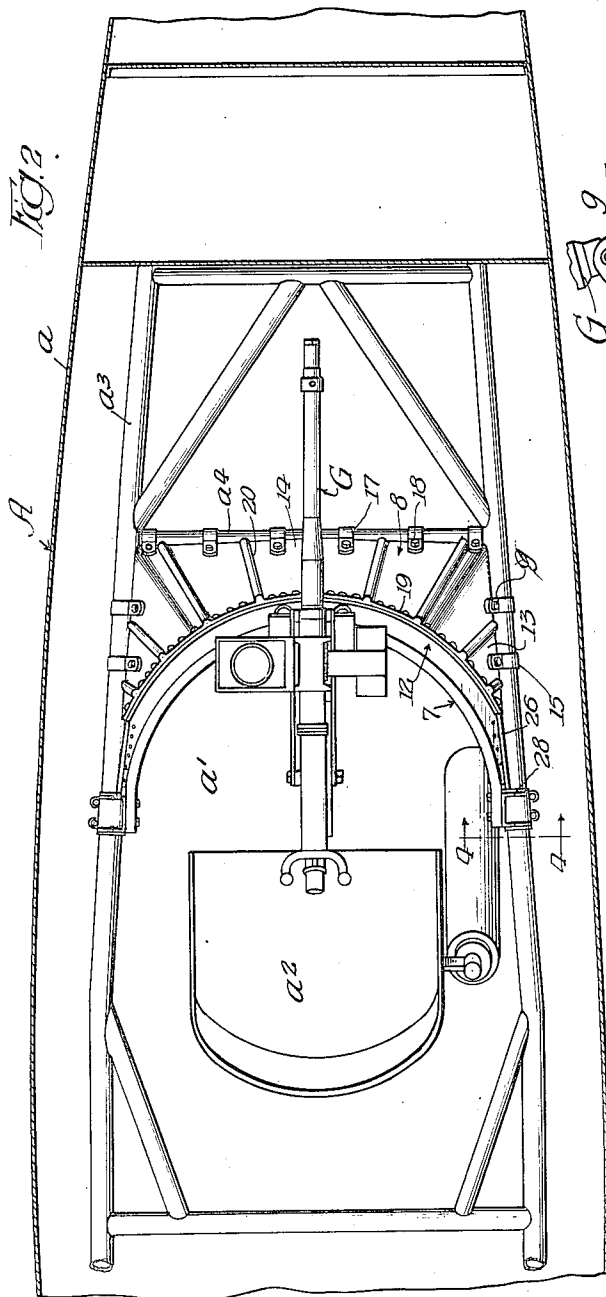
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MACHINE GUN MOUNT

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3 Sheets-Sheet 2



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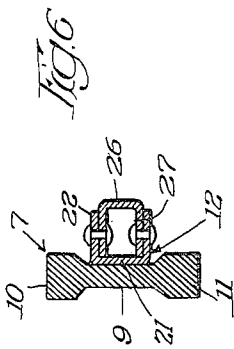
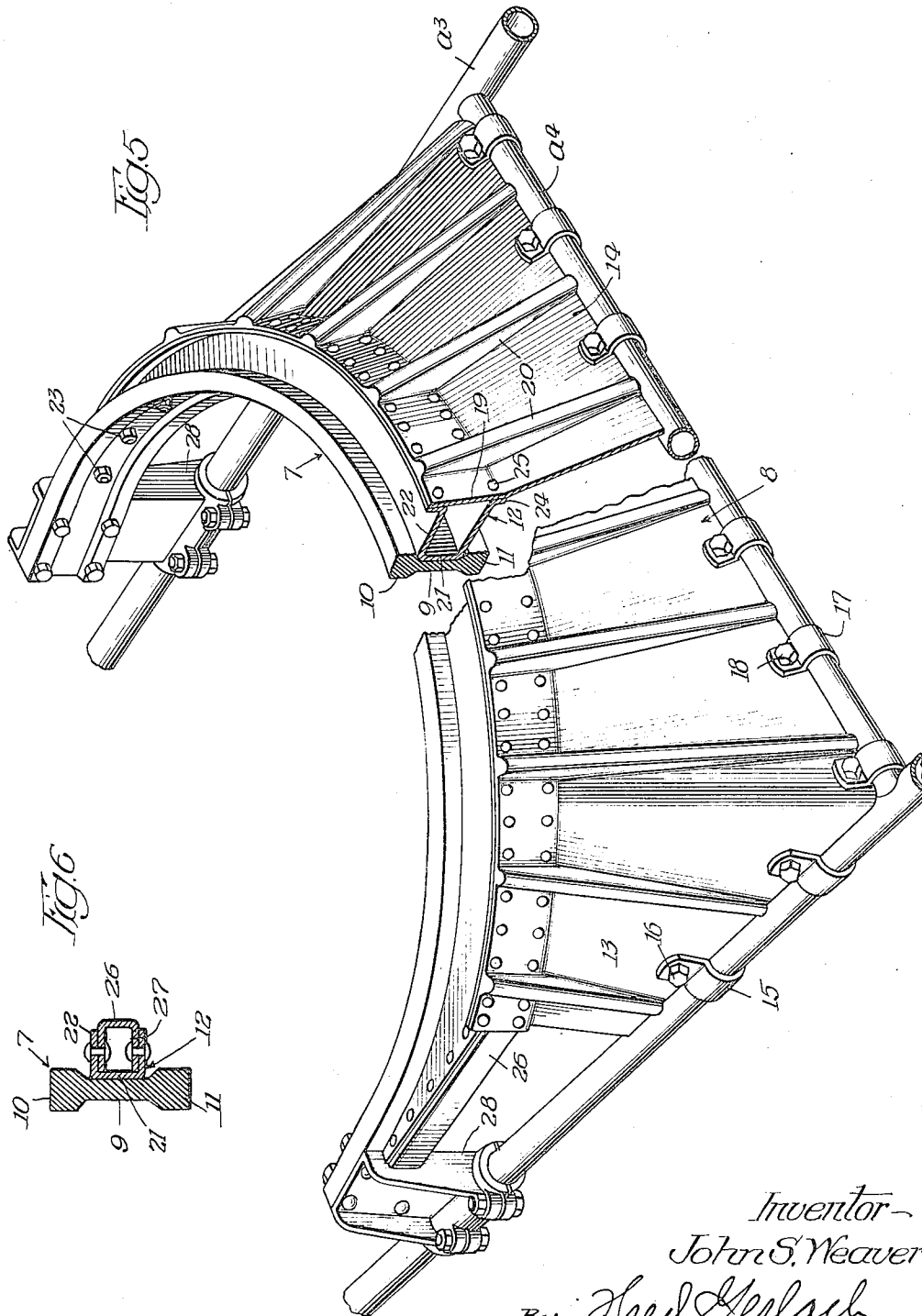
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MACHINE GUN MOUNT

Filed Oct. 2, 1940

3 Sheets-Sheet 3



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UNITED STATES PATENT OFFICE

2,370,896

MACHINE GUN MOUNT

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Application October 2, 1940, Serial No. 359,312

14 Claims. (Cl. 89—37.5)

The present invention relates generally to mounts for machine guns. More particularly the invention relates to that type of machine gun mount which is associated with, and forms a part of, the gunner's cockpit of a military or naval airplane and comprises a curved or arcuate track for supporting the machine gun so that it is bodily movable into different angular positions for firing purposes.

It has heretofore been common practice in connection with a mount of this type to support the arcuate track by way of a plurality of laterally spaced upstanding tube type brackets. When such brackets are employed as the track supporting media it is essential or necessary to use an extremely heavy track if accurate firing of the machine gun is to be obtained. It is impossible or impractical to employ a track of light weight because the weight and vibration of the gun, especially when the gun is fired while in a position between the brackets, tend so to distort or deflect the track that the gunner cannot fire accurately. A heavy track is manifestly objectionable because it affects the speed and maneuverability of the airplane.

The primary object of this invention is to provide a machine gun mount in which the support for the arcuate track supports and engages the track throughout substantially its entire periphery and makes it possible to employ a track of light weight while at the same time maintaining accuracy of machine gun fire.

Another object of the invention is to provide a machine gun mount of the type under consideration which is generally of new and improved construction and not only has certain inherent advantages over previously designed mounts of the same general character but also is durable and effectively and efficiently fulfills its intended purpose.

Other objects of the invention and the various advantages and characteristics of the present machine gun mount will be apparent from a consideration of the following detailed description.

The invention consists in the several novel features which are hereinafter set forth and are more particularly defined by claims at the conclusion hereof.

In the drawings which accompany and form a part of this specification or disclosure and in which like letters and numerals of reference denote corresponding parts throughout the several views:

Figure 1 is a fragmentary vertical longitudinal sectional view of an airplane having applied to

the gunner's cockpit thereof a machine gun mount embodying the invention;

Figure 2 is a plan view illustrating in detail the arrangement and design of the main supporting plate and the auxiliary parts for supporting the arcuate track of the mount throughout substantially the entire periphery thereof;

Figure 3 is an enlarged vertical longitudinal section of the improved mount;

Figure 4 is an enlarged vertical transverse section taken on the line 4—4 of Figure 2 and illustrating the manner in which the ends of the track are secured to the longerons at the sides of the gunner's cockpit;

Figure 5 is a fragmentary perspective of the mount; and

Figure 6 is an enlarged vertical transverse section on the line 6—6 of Figure 3.

The mount which is shown in the drawings constitutes the preferred form or embodiment of the invention. It is illustrated in connection with an airplane A and serves as the medium for supporting a machine gun G so that it may be swung from side to side by the gunner in connection with firing thereof. The airplane A is of standard or conventional design and comprises a fuselage *a* having in the aft portion thereof a gunner's cockpit *a*¹. As shown in Figures 1 and 2 of the drawings the cockpit *a*¹ is provided with a seat *a*² for the gunner. This seat is suitably supported so that the gunner may rotate or turn it into different positions in connection with firing of the gun G. The fuselage *a* of the airplane A embodies a pair of laterally spaced longerons *a*³ and these extend across the side portions of the gunner's cockpit *a*¹ and are cross connected at their rear ends by a tubular cross member *a*⁴. The machine gun G is adapted to be aimed and fired by the gunner while the latter is on the seat *a*² in the gunner's cockpit and is pivotally connected at the bottom thereof to a C-shaped bracket *g* so that it may be tilted up and down. The bracket *g* is carried by the improved mount as hereinafter described and embodies a plurality of upper and lower front wheels *g*¹ and a plurality of upper and lower rear wheels *g*². These wheels are substantially horizontally positioned and are carried by the bracket *g* so that they are free to rotate. The longerons *a*³ and the cross member *a*⁴ constitute a frame structure which forms a part of the mount and serves as a supporting medium for the latter.

The mount for the machine gun G comprises a semicircular track 7 and a plate 8 for supporting the track. The track 7 is located in the upper

rear portion of the gunner's cockpit a^1 of the airplane and is arranged so that the ends extend forwards and overlie the longerons a^2 of the airplane fuselage. It is of I-beam cross section and comprises a central web 9, an upper head 10 and a lower head 11. The C-shaped bracket g at the bottom of the machine gun G straddles the track 7, as shown in Figure 3, and is connected to the track by the wheels g^1 and g^2 . The front wheels g^1 of the bracket fit against, and ride on, the front faces of the upper and lower heads 10 and 11 of the track and the rear wheels g^2 fit against and ride on the rear faces of the two heads. The wheels so connect the bracket to the track that the bracket together with the machine gun G is free to swing around the track throughout substantially the entire length of the track. The bracket embodies a handle controlled locking device g^3 whereby it may be locked at any point or position on the track 7. The track is preferably forwardly and downwardly inclined at a small acute angle with respect to the horizontal. The bracket g and the track 7 so support the machine gun that the latter may be swung bodily to either side of the gunner's cockpit for firing purposes and the pivot between the machine gun and the bracket g permits the gun to be tilted vertically as hereinbefore pointed out.

The plate 8 together with an arcuate channel member 12 serves to hold the track 7 in fixed relation with the fuselage a of the airplane. It is in the form of a one piece metal stamping and consists of a pair of side pieces 13 and a back piece 14. The bottom marginal portions of the side pieces are straight and rest upon the longerons a^3 of the fuselage, as shown in Figure 5. They are U-shaped in horizontal section and are releasably secured in fixed relation with the longerons by way of C-shaped clamps 15 which extend around the longerons and are anchored to the side pieces by bolts 16. The lower marginal portion of the back piece 14 of the plate 8 is also straight and it rests upon the cross member a^4 of the fuselage and is releasably secured to such member by means of C-shaped clamps 17. The latter extend around the cross member a^4 and are connected to the back piece 14 by way of bolts 18. The front ends of the side pieces 13 of the plate 8 terminate rearwards of the ends of the track 7. The upper portion of the plate 8 is shaped to form an arcuate band-like piece 19 and this is disposed rearwards of the track 7. The plate 8 is reinforced against bending or flexure by way of upwardly extending outstruck ribs 20. The latter are spaced equidistantly apart and extend from the band-like piece 19 to the bottom edge of the plate 8.

The arcuate channel member 12 extends between and serves to connect together the band-like piece 19 of the plate 8 and the web 9 of the track 7. It is formed of suitable metal stock and consists of an upstanding intermediate web 21 and vertically spaced substantially horizontally extending side legs 22. The intermediate web 21 of the member 12 fits against the rear face of the web 9 of the track 7 and is rigidly connected to the track by way of bolts 23. The latter extend through aligned holes in the webs 9 and 21. The side legs 22 of the member 12 extend rearwards and are provided with out-turned flanges 24. The latter, as shown in Figure 5, fit against the band-like piece 19 of the plate 8 and are secured to said plate by way of rivets 25. The bolts 23 are spaced closely together and extend throughout the entire length of the intermediate web 21.

The upper and lower marginal portions of the web 21 engage the heads 10 and 11 of the track with the result that the track is so interlocked with the member 12 that it is supported throughout substantially the entire outer periphery thereof. The ends of the member 12 project beyond the ends of the band-like piece 19 of the plate 8 but terminate however slightly rearwards of the end extremities of the track 7. The end portions of the side legs 22 of the channel member 12 are reinforced by short channel pieces 26. The latter fit between the end portions of the side legs 22 of the member 12 and embody inwardly extending side legs 27 which fit within and are riveted to the ends of the side legs 22. The flanges 24 of the member 12 terminate at the ends of the band-like piece 19 of the plate 8 with the result that the ends of the side legs 22 are flangeless. Such ends are cut so that the outer edges thereof are straight and extend parallel to the longerons a^3 . The ends of the track 7 are fixedly or rigidly connected to said longerons by a pair of upstanding brackets 28. These brackets are bolted to the longerons a^3 and are also bolted to the web 9 of the track. The upper ends of the brackets project above the upper side leg of the channel member 12 and serve as stops for limiting travel of the gun bracket g around the track. The brackets 28, the channel member 12 and the plate 8 serve to support the track throughout the entire length thereof. By reason of the fact that the track is supported throughout its entire length it is possible to make the track exceptionally light and there is no likelihood of the track bending or distorting under the weight and vibration of the gun G and interfering with accurate marksmanship on the part of the gunner.

The herein described machine gun mount may be manufactured at a low and reasonable cost and is exceptionally light while at the same time it is rigid and durable. Due to the shape and design of the plate 8 it serves as a protective shield and affords the gunner a certain amount of protection against projectiles. The mount may be quickly and readily installed and may be removed for replacement or repair simply by removing the brackets 15, 17 and 28. Because of the design of the track and the manner in which the track is supported the gun G is rigidly held in place when it is locked in place at any predetermined point on the track.

The invention is not to be understood as restricted to the details set forth since these may be modified within the scope of the appended claims without departing from the spirit and scope of the invention.

Having thus described the invention what I claim as new and desire to secure by Letters Patent is:

1. A machine gun mount comprising a frame structure, a track of I-beam cross section for supporting the gun for movement therealong disposed above the frame structure and consisting of upper and lower heads and a web between the heads, and an upstanding substantially rigid plate between the frame structure and the track, arranged and designed to form a protective shield for the user of the gun, having the lower portion thereof attached to said frame structure, and provided at its upper portion with fixed means engaging and secured to the web of the track and interlocked with the track heads throughout substantially the entire length of the track.

2. A machine gun mount comprising a frame

structure, an arcuate track of I-beam cross section and comparatively light metallic stock, adapted to support the gun for movement therearound disposed above the frame structure and consisting of upper and lower heads and a web between the heads, and an upstanding substantially rigid plate between the frame structure and the track, designed and arranged to form a protective shield for the user of the gun, having the lower portion thereof attached to said frame structure and provided at its upper portion with a fixed part curved conformably to the track engaging and secured to the outer periphery of the web of the track and interlocked with the track heads throughout substantially the entire length of the track, and serving to reenforce and impart rigidity to said track.

3. A machine gun mount comprising a frame structure, an arcuate track disposed above the frame structure and adapted to support the gun for movement therearound, a substantially rigid plate attached to and extending upwardly from the frame structure and having an arcuate upper portion, and an arcuate channel member fixed to said arcuate upper portion of the plate and engaging and secured to the track throughout substantially the entire length thereof.

4. A machine gun mount comprising a frame structure, an arcuate track disposed above the frame structure and adapted to support the gun for movement therearound, a substantially rigid plate attached to and extending upwardly from the frame structure and having an arcuate upper portion, and an arcuate channel member fixed to said arcuate upper portion of the plate and having the web thereof engaging and secured to the track throughout substantially the entire length thereof.

5. A machine gun mount comprising a frame structure, an arcuate track of I-beam cross section disposed above the frame structure and adapted to support the gun for movement therearound, a substantially rigid plate attached to, and extending upwardly from, the frame structure and having an arcuate upper portion extending around, and spaced outwardly from, the track, and an arcuate channel member fixed to said arcuate upper portion of the plate and having the web thereof engaging and secured to the web of the track.

6. A machine gun mount comprising a frame structure, an arcuate track disposed above the frame structure and adapted to support the gun for movement therearound, a substantially rigid plate attached to, and extending upwardly from, the frame structure and having an arcuate upper portion of less length than the track extending around, and spaced outwardly from, the central portion of said track, an arcuate channel member fixed to said arcuate upper portion of the plate and having the web thereof engaging and secured to the track throughout substantially the entire length thereof, and its ends projecting beyond said arcuate upper portion, and reinforcing elements disposed in, and secured to, said ends of the arcuate channel member.

7. A machine gun mount comprising a frame structure, an arcuate track disposed above the frame structure and adapted to support the gun for movement therearound, a substantially rigid plate attached to, and extending upwardly from, the frame structure and having an arcuate upper portion of less strength than the track extending around, and spaced upwardly from, the cen-

tral portion of said track, an arcuate channel member fixed to said arcuate upper portion of the plate and having the web thereof engaging and secured to the track throughout substantially the entire length thereof, and its ends projecting beyond said arcuate upper portion, and short channel shaped elements fitting within and secured to said ends of the channel member.

8. A machine gun mount comprising a frame structure, an arcuate track disposed above the frame structure and adapted to support the gun for movement therearound, a substantially rigid plate attached to, and extending upwardly from, the frame structure and having an arcuate upper portion extending around that portion of the track which is between the latter's ends, an arcuate channel member fixed to said arcuate upper portion of the plate, and having the web thereof engaging and secured to the track and its ends terminating short of the ends of the track, and brackets extending between, and secured to, the frame structure and the ends of the track.

9. A machine gun mount comprising a frame structure, a substantially semi-circular track of I-beam cross section for supporting the gun for movement therearound disposed above the frame structure and consisting of upper and lower heads and a web between the heads, a substantially rigid plate attached to, and extending upwardly from, the frame structure and having an arcuate upper portion extending around that portion of the track which is between the latter's ends, an arcuate channel member fixed to said arcuate upper portion of the plate and having the web thereof engaging and secured to the web of the track and interlocked with the track heads throughout substantially the entire length of the track and its ends terminating short of the track ends, and brackets connected to, and extending between, the frame structure and said track ends.

10. In combination with an airplane having a gunner's cockpit together with longerons at the sides of the cockpit and a cross member between the longerons, a machine gun mount comprising an arcuate track at the top of the cockpit, and an upstanding substantially rigid plate arranged and designed to form a protective shield for the gunner, having the lower margin thereof U-shaped in horizontal section and attached to the longerons and cross member, and provided at its upper portion with an arcuate part curved conformably to the track and engaging and secured to the latter throughout substantially the entire length thereof.

11. In combination with an airplane having a gunner's cockpit together with longerons at the sides of the cockpit and a cross member between the longerons, a machine gun mount comprising an arcuate track of comparatively light weight at the top of the cockpit, and an upstanding substantially rigid and imperforate plate arranged and designed to form a protective shield for the gunner, having the lower margin thereof U-shaped in horizontal section and attached to the longerons and cross member, and provided at its upper portion with a fixed arcuate part curved conformably to the track and engaging and secured to the latter throughout substantially the entire length thereof and serving to strengthen and impart rigidity to said track.

12. In combination with an airplane having

a gunner's cockpit together with longerons at the sides of the cockpit and a cross member between the longerons, a machine gun mount comprising an arcuate track at the top of the cockpit, an upstanding one-piece substantially rigid plate arranged and so designed to form a protective shield for the gunner and having the lower margin thereof of U-shaped contour in longitudinal section and attached to the longerons and cross member, and provided with an arcuate upper portion extending around the track, and a separately formed arcuate attaching element extending between, and fixedly connected to, the track and said arcuate upper portion of the plate.

13. In combination with an airplane having a gunner's cockpit together with longerons at the sides of the cockpit and a cross member between the longerons, a machine gun mount comprising an arcuate track at the top of the cockpit, a substantially rigid plate attached to, and extending upwardly from, the longerons and cross member and having an arcuate upper por-

tion extending around the track, and an arcuate channel member fixed to said arcuate upper portion of the plate and having the web thereof engaging, and secured to, the track throughout substantially the entire length thereof.

14. In combination with an airplane having a gunner's cockpit together with longerons at the sides of the cockpit and a cross member between the longerons, a machine gun mount comprising an arcuate track at the top of the cockpit, an upstanding one-piece substantially rigid and imperforate plate arranged and designed to form a protective shield for the gunner and having the lower margin thereof of U-shaped contour in longitudinal section and releasably attached to the longerons and cross member, and provided with an arcuate upper portion extending around and connected to that portion of the track which is between its ends, and a pair of brackets releasably connected to, and extending upwardly from, the longerons and having the upper ends thereof fixed to the ends of said track.

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