

Sept. 17, 1935.

R. C. COUPLAND

2,014,376

MOUNT FOR MACHINE GUNS

Filed Oct. 21, 1932

2 Sheets-Sheet 1

Fig. 1.

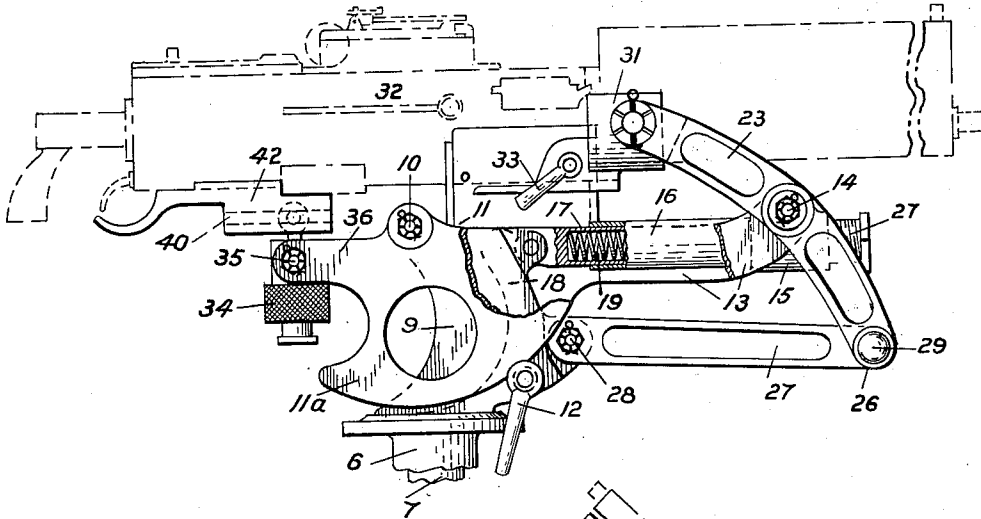
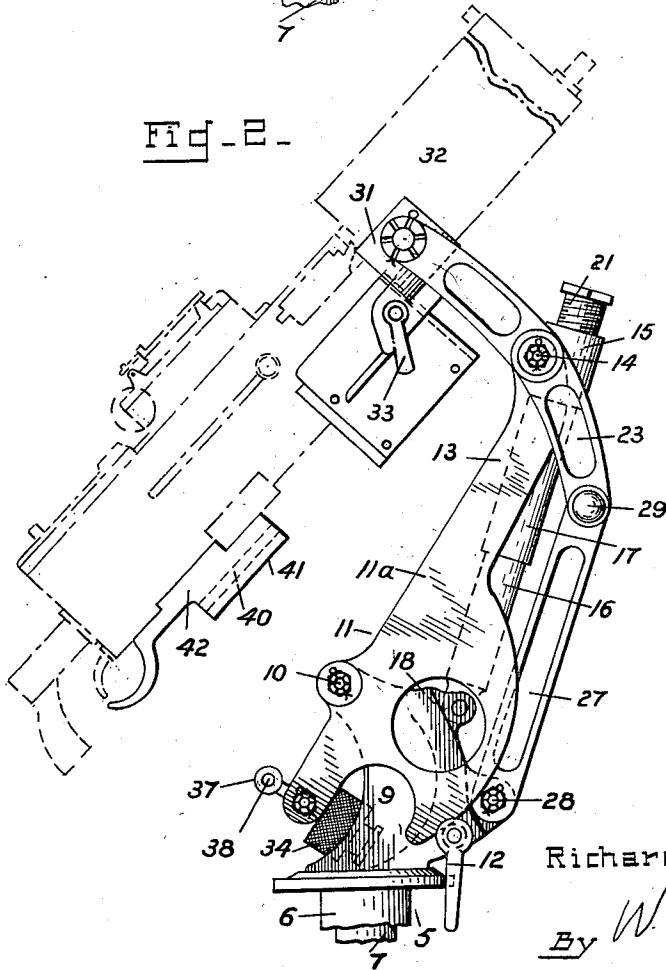


Fig. 2.



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Fig. 3-

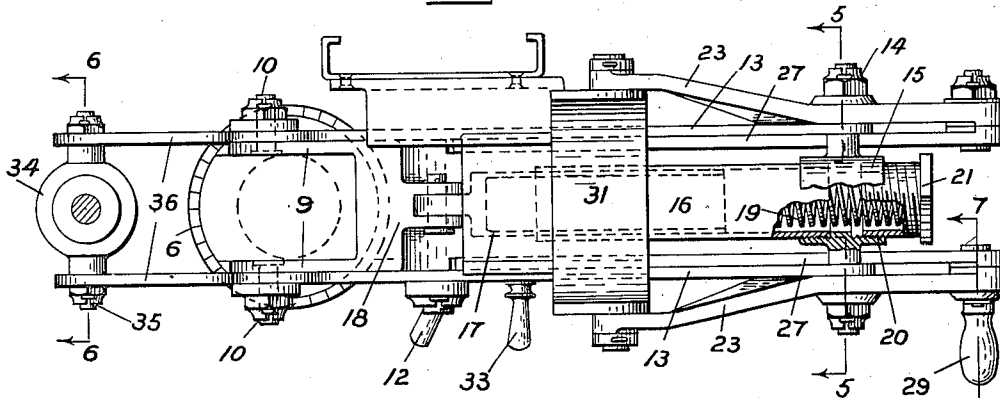


Fig. 4-

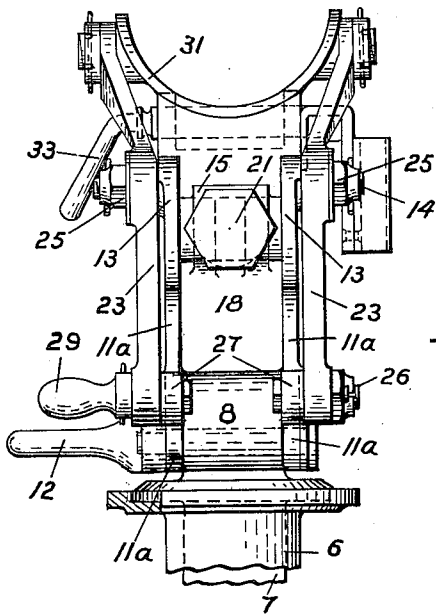


Fig. 5-

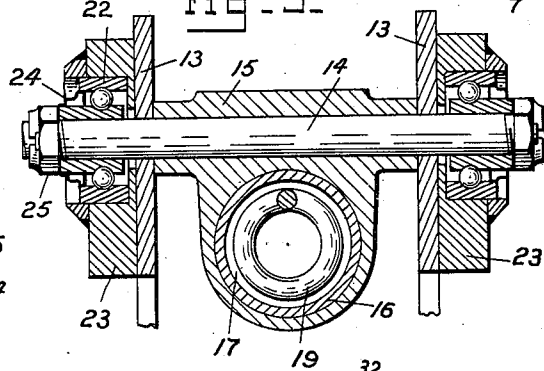


Fig. 6-

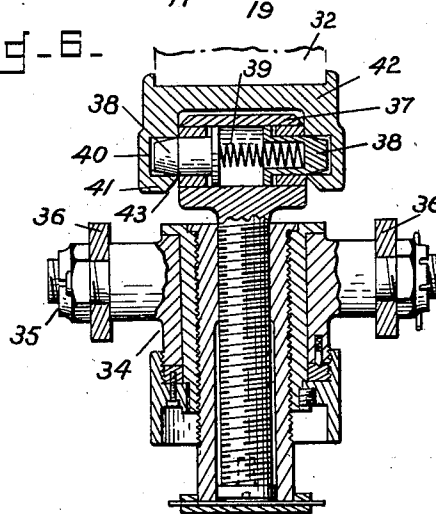
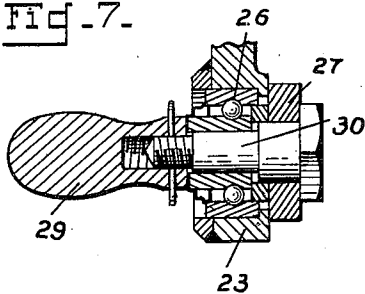


Fig. 7-



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UNITED STATES PATENT OFFICE

2,014,376

MOUNT FOR MACHINE GUNS

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Application October 21, 1932, Serial No. 638,911

7 Claims (Cl. 89-40)

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

The invention described herein may be manufactured and used by or for the Government for governmental purposes, without the payment to me of any royalty thereon.

5 This invention relates to a mount for machine guns and is an improvement on the mount shown in my Patent No. 1,833,339 of October 18, 1932.

10 In the patent a gun mounted on a linkage pivotally secured to a rotatable cradle and a fixed support, automatically elevated to a position for anti-aircraft firing when the cradle is unlocked.

15 The improvements of the present invention are directed mainly to an arrangement of the automatic elevating mechanism whereby it will be neutral when the cradle is in position for low angle or ground firing and whereby it will move the cradle into the raised position without shock.

20 A novel connection is also provided between the rear end of the gun and the cradle and is arranged to be automatically disconnected as the cradle is rotated.

25 With the foregoing and other objects in view, the invention resides in the novel arrangement and combination of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of the invention herein disclosed may be made within the scope of what is claimed without departing from the spirit of the invention.

30 A practical embodiment of the invention is illustrated in the accompanying drawings, wherein:

35 Fig. 1 is a view in side elevation, partly in section, of the improved mount, shown in position for low angle firing.

Fig. 2 is a similar view of the mount in position for high angle firing.

40 Fig. 3 is a plan view, partly in section, of the mount of Fig. 1.

Fig. 4 is a view in front elevation.

Figs. 5, 6, and 7 are sectional views on the respective lines of Fig. 3.

45 Referring to the drawings by characters of reference:

50 The conventional machine gun mount for low angle firing comprises a tripod 5 having a socketed head 6 for receiving the pintle 7 of a standard 8. In the present instance the upper portion of the standard is a yoke formed of arcuate arms 9 whose upper extremities are arranged for the reception of trunnions 10 mounting a cradle 11 consisting of spaced plates 11a. A clamping device 12 of conventional type is carried by the standard and arranged to engage the cradle

to hold it in position of angular adjustment about the cradle trunnions.

5 The cradle plates 11a are identical and each includes a forwardly extending arm 13 the free extremity of which is apertured to receive a trunnion pin 14 (Fig. 5) passing through a cross-head 15. A cylinder 16 fixed to the cross-head has a sliding fit on a cylinder 17 pivotally mounted on a bracket 18 fixed to the standard 8. A spring 19, introduced into the cylinder through 10 an aperture 20 in the cross-head and retained by a screw-plug 21, normally tends to move the cylinders apart. In the normal low-angle firing position of the cradle, the line of application of the spring 19 is close to parallelism with the plane 15 containing the cradle trunnions 10 and the point of application of the force.

25 The trunnion pin 14 carries on each end an antifriction bearing unit 22 (Fig. 5) on which is mounted an angle lever 23. A washer 24 and nut 25 threaded on the pin retains the assembly. The lower extremity of each lever has a ball bearing connection 26 with a link 27 that has a similar connection 28 with the bracket 18 of the standard.

30 A handle 29 is provided on the system of linkage and as shown in Figs. 3 and 7 it is preferably placed at the connection 28 where it serves as a nut for the axis 30 of the bearing.

35 An adapter 31 trunnioned in the upper extremities of the levers 23 receives the gun 32 which is held thereto by a pin 33.

40 An elevating mechanism 34 of more or less conventional type is mounted through trunnions 35 on the projecting arms 36 of the cradle plates 11a. The head 37 of the elevating screw carries a pair of oppositely disposed plungers 38 normally maintained in extruded position by means of a single spring 39. The plungers 38 are adapted to ride in grooves 40 formed in spaced rails 41 on a plate 42 fixed to the under side of the gun at its rear end. The rails are spaced sufficiently to receive the head 37. The plungers and grooves are preferably tapered to provide for automatic adjustment when wear occurs.

45 The connection between the head 37 and the plate 42 is effected by pressing in on the plungers with the fingers of one hand and then lowering the rear end of the gun with the other hand until the head is received between the rails and the plungers enter their respective grooves. The plate is formed with beveled edges 43 at the lower sides of the grooves in order to facilitate the entry of the plungers and enable a camming action to be exerted.

In any position of adjustment of the cradle the gun is attached to the adapter 31 by the pin 33. If the gun is to be employed against ground targets the elevating mechanism 34 is secured to the plate 42 by the plungers 38. Minor adjustments in elevation are obtained by the mechanism while major adjustments are made by moving the cradle to an inclined position. During such adjustment by the cradle the spring 19 will exert only a slight pressure tending to raise the cradle because of its position close to parallelism with the plane containing the cradle trunnion and the point of application of the turning force.

When it is desired to change the character of the mount to facilitate high angle firing at aerial targets the clamping device 12 is released and pressure is exerted manually by depressing the rear end of the gun or pulling on the handle 29. The spring 19 soon comes into action to carry the load and gently moves the cradle to the elevated position shown in Fig. 2. Movement of the cradle is limited by the lever and link which cooperate to establish a truss affording a rigid support for the cradle.

During the elevation of the cradle and the gun the distance between the front gun-attaching pin 33 and the plungers 38 of the rear gun connection is increased with the result that the plate 42 containing the grooves 40 is displaced forwardly and finally moves out of engagement with the plungers.

In restoring the cradle to the lowered position sufficient pressure must be manually applied to overcome the action of the spring 19. The operation of inserting the plungers 38 into their grooves has been previously explained.

I claim:

1. A gun mount embodying a support, a cradle trunnioned on the support and having forwardly extending arms, means for locking the cradle to the support, a pin mounted in the extremities of the arms, a lever mounted on each end of the pin, gun-attaching means on the upper ends of the levers, a link connecting the lower end of each lever to the support, a crosshead on the pin, a cylinder fixed to the crosshead, a cylinder carried by the support and having a sliding fit relative to the crosshead cylinder, a spring within the cylinders, and a plug in the crosshead confining the spring.

2. A gun mount embodying a support, a cradle trunnioned on the support and having forwardly extending arms, means for locking the cradle to the support, a crosshead trunnioned in the extremities of the arms, a cylinder fixed to the crosshead, a cylinder carried by the support and having a sliding fit relative to the crosshead cylinder, a spring within the cylinders and a plug in the crosshead confining the spring.

3. A gun mount embodying a support, a cradle trunnioned on the support and having forwardly extending arms, means for locking the cradle to the support, a pair of interfitting cylinders between the arms, one cylinder attached to the extremities of the arms and the other to the support, and a spring confined by the cylinders.

4. In combination with a gun, a cradle, a front gun-supporting member carried by the cradle and having its relation thereto changed on rotation of the cradle, and a connection between the rear of the gun and cradle automatically separable when the front gun supporting member is moved towards a vertical position.

5. In combination with a gun and a support, a separable connection between said members comprising spaced rails on one of said members having opposed, open-ended grooves on their inner sides and cam surfaces on their inner sides leading to the grooves, a casing on the other member receivable between the rails, opposed plungers carried by the casing and receivable in the grooves, a spring between the plungers and means for limiting extrusion of the plungers.

6. In combination with a gun, a cradle, a front gun supporting member carried by the cradle, an attachment between the gun and said member, and an attachment between the rear of the gun and cradle automatically detached by movement of the cradle to high elevation.

7. In a combination with a gun, a cradle, an attachment between the front of the cradle and the gun adapted to move the gun longitudinally of the cradle as the same is elevated, and an attachment between the rear of the cradle and the gun detached upon high elevation of the cradle, by the aforesaid movement of the gun with respect to the cradle.

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