

Feb. 8, 1966

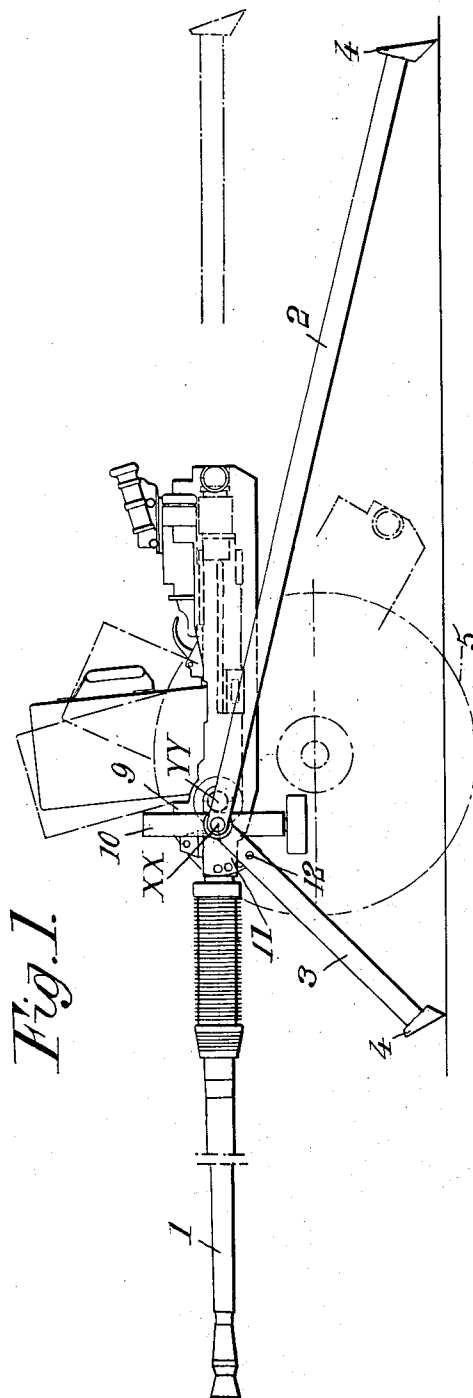
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3,233,516

GUN MOUNTS

Filed July 20, 1964

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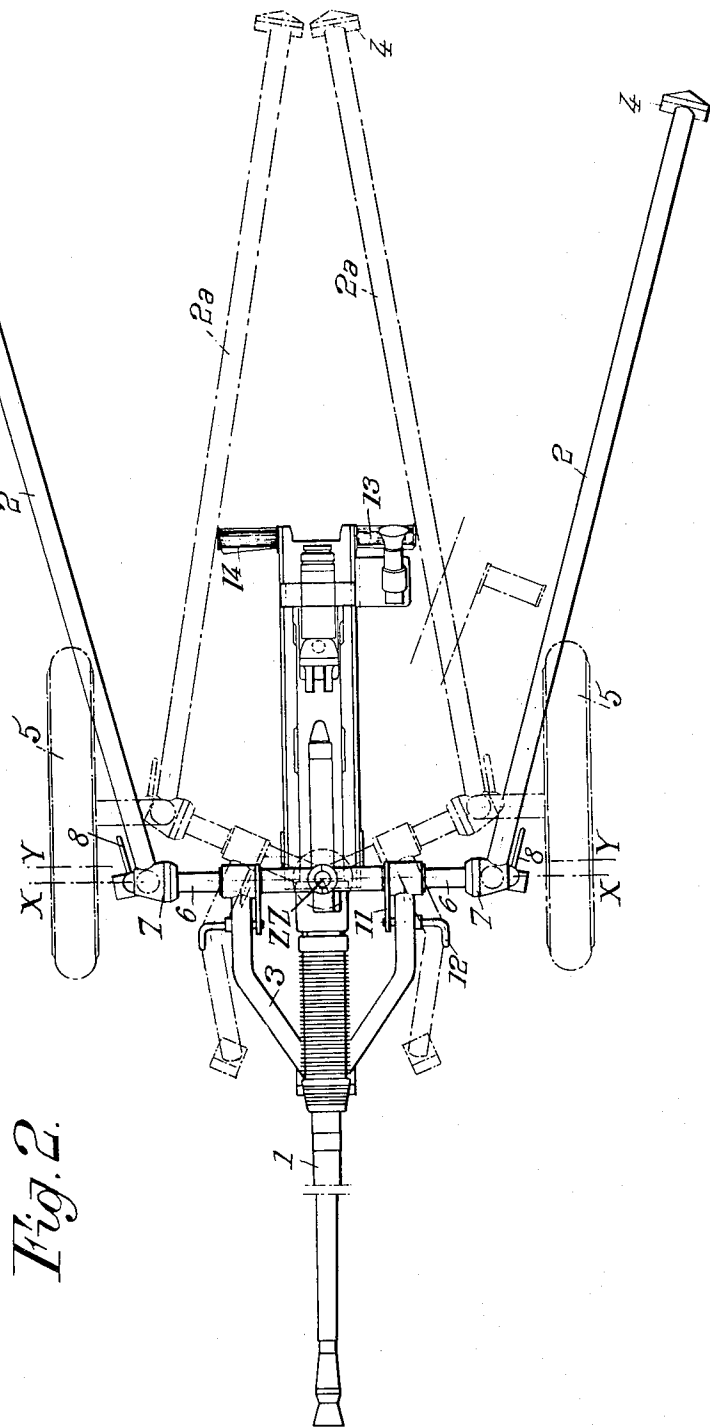
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Fig. 3.

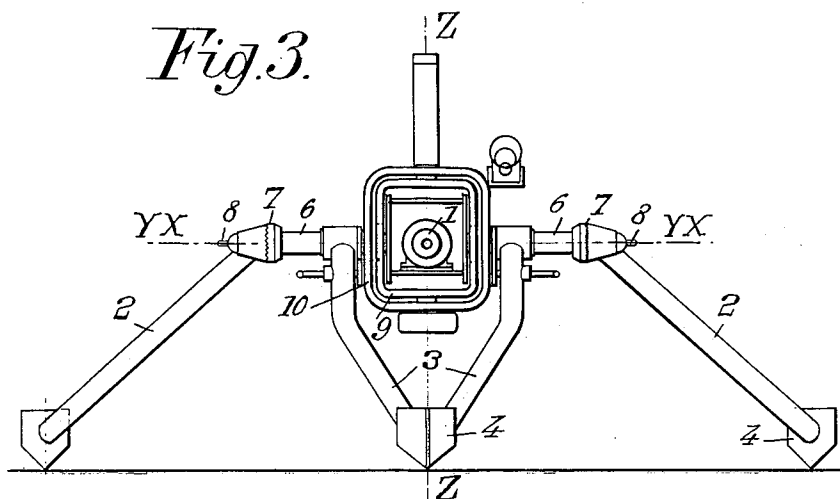
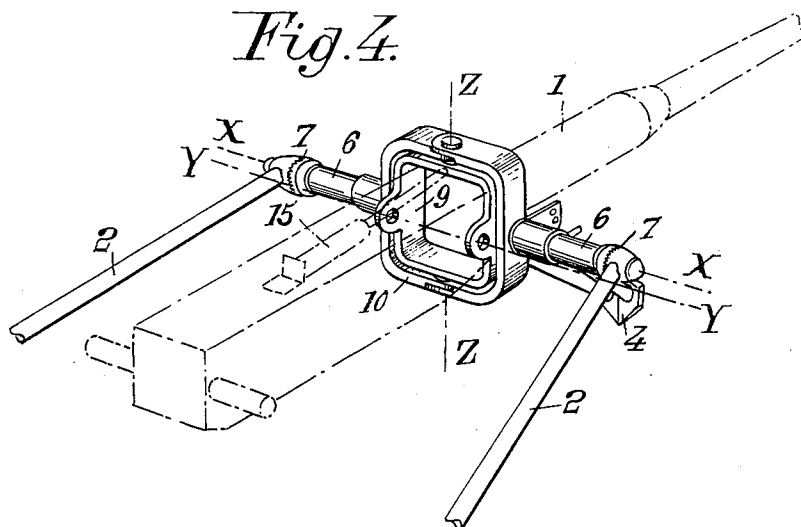


Fig. 4.



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GUN MOUNTS

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5 Claims. (Cl. 89—40)

The present invention relates to field gun mounts and in particular mounts for small caliber automatic guns, for instance 20 mm. caliber guns which are to be handled by a single gunner.

The object of the present invention is to provide a gun mount which is better adapted to meet the requirements of practice than those used up to this time, and in particular which is more stable, that is to say which gives a reduced firing dispersion.

The gun mount according to the present invention comprises two rear legs the free ends of which are intended to bear upon the ground, preferably through spades provided at said ends thereof, these legs being hinged together about axes enabling said free ends on the one hand to be moved away from, or toward, each other (respectively for firing and for transportation) and on the other hand to be moved vertically independently of each other (for adaptation of the gun mount to the form of the ground on which it is resting), and said mount is characterized in that the above mentioned axes intersect each other substantially on the axis of the gun barrel at a point which is at least close to the center of a Cardan device supporting the gun and serving to be aimed thereof both in direction and for elevation.

A preferred embodiment of the present invention will be hereinafter described with reference to the appended drawings, given merely by way of example, and in which:

FIG. 1 is an elevational view of a field mount for a small caliber automatic gun made according to the present invention;

FIG. 2 is a plan view corresponding to FIG. 1;

FIG. 3 is a front view corresponding to FIGS. 1 and 2;

FIG. 4 is a perspective view of the portion of this gun mount serving to hold the gun in position and permitting aiming thereof both in direction and for elevation.

The mount intended to support gun 1 comprises a Cardan suspension device which permits aiming in direction and aiming for elevation, respectively about axes ZZ and YY perpendicular to each other.

In order to keep this Cardan suspension device in position above the ground when the gun mount is disposed for firing (situation shown in solid lines in FIGS. 1 to 3) there is provided a plurality of legs comprising (as shown by FIGS. 1 to 3) two rear legs 2 and at least one front leg 3, the latter being V-shaped with its point turned toward the ground. Advantageously said legs are provided with spades 4 intended to be anchored in the ground.

Advantageously this mount comprises detachable wheels 5.

The two rear legs 2 are pivoted to each other about axes which enable the spades 4 thereof to behave as follows:

(a) On the one hand they may be moved away or toward each other by pivoting about a substantially vertical axis coinciding with the axis ZZ about which the aiming in direction of gun 1 takes place, the spades being away from each other for firing and moved toward each other for displacement of the gun;

(b) On the other hand they may be moved vertically independently of each other by pivoting about substantially horizontal axis XX, for the adaptation of the mount to various inclinations of the ground.

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According to the main feature of the present invention the above mentioned axes ZZ and XX about which the rear legs 2 are pivotable, intersect each other substantially on the axis of the barrel of gun 1 at a point which is at least close to the center of the Cardan suspension device of said gun 1 which permits aiming in direction and aiming for elevation. Possibly said point of intersection of axes ZZ and XX coincides with the center of said Cardan suspension device.

Owing to this arrangement, the bending torques imparted to the rear legs 2 by the reactions due to firing are greatly reduced, which is particularly advantageous both from the point of view of firing accuracy (reduced dispersion) and from that of weight reduction for the rear legs 2, which have to support much smaller bending stresses than in the case of known gun mounts where the points of fixation of the legs were located at a substantial distance below the device for aiming the gun.

In the embodiment shown by the drawings each of the rear legs 2 is mounted on a half shaft 6 having its axis shown at XX and this leg is given an axial freedom, a toothed gearing 7 being provided owing to which an axial locking device 8 is capable of fixing said leg in any of a plurality of possible angular positions with respect to half shaft 6.

Concerning the Cardan suspension device it comprises, as shown by FIG. 4, an internal element 9 and an external element 10 articulated together about an axis constituting one of the aiming axes of gun 1. Said gun is articulated on said internal element about an axis, orthogonal to the preceding one, which constitutes the other aiming axis of said gun.

Preferably the articulation axis of gun 1 on the internal element 9 of the Cardan suspension device is the elevating aiming axis YY of said gun, the axis of articulation of internal element 9 with respect to external element 10 being therefore the traversing aiming axis ZZ of said gun.

It is advantageous to offset toward the rear, with respect to the articulation axis ZZ of the internal and external elements of the Cardan suspension device, the axis of articulation YY of gun 1 with respect to the internal element of said device, this in order to facilitate the taking to pieces of the gun and its reassembly on said suspension device.

The internal element 9 and external element 10 of the Cardan suspension device may consist, respectively, of two frames, for instance homothetic frames, the half shafts 6 upon which the rear legs 2 are pivoted being secured to the sides of external frame 10 substantially at mid-height of said sides if it is supposed that gun 1 is centered with respect to the internal frame 9.

On the other hand, the rear legs 2 are adapted to be foldable into positions substantially adjacent to each other for transportation purposes (positions shown at 2a in FIG. 2).

For this purpose the external frame 10 of the Cardan suspension device (on which external frame are fixed two half shafts 6 which carry the rear legs 2) consists of two arc-shaped elements pivoted together about axis ZZ. Such an arrangement is clearly visible in FIG. 4.

In this case, the branches of the V-shaped front leg 3 consist of two distinct pieces respectively carried by the two half shafts 6 and hinged thereto. Advantageously means are provided for adjusting the position of said branches. For instance, as shown, said means consists of an apertured sector 11 and a pin 12 adapted to be engaged in one of the apertures of said sector and in a transverse hole provided in the corresponding branch of front leg 3.

It should be noted that, with a gun mount of this kind, the control means are preferably carried by the gun

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proper, these means being for instance a fire sector (for firing shot by shot or in bursts) 13 and a trigger 14.

Finally, there may be provided a damper of the kind of those used in some motor car steering gears between gun 1 and inner frame 9 and/or between said inner frame 5 and outer frame 10.

The damper in question must then be adjusted (for instance by a suitable dimensioning of its holes in the case of a hydraulic damper) in such manner as not to interfere with the gun aiming movements (which are relatively slow) but on the contrary to damp the vibrations of much greater frequency that might result from firing.

By way of example such a damper, disposed between inner frame 9 and gun 1, has been shown at 15 in FIG. 4.

In a general manner, while the above description discloses what are deemed to be practical and efficient embodiments of the present invention, said invention is not limited thereto as there might be changes made in the arrangement, disposition and form of the parts without departing from the principle of the invention as comprehended within the scope of the appended claims.

What I claim is:

1. The combination of a gun, a first element for pivotally supporting said gun about a horizontal axis, a second ring-shaped element for pivotally supporting said first element about a vertical axis close to said longitudinal axis, said two elements forming together a Cardan suspension for said gun, said Cardan suspension having a center, two trunnions rigid with said second element and extending on opposite sides thereof, respectively, said second element being made of two halves pivoted to each other about an axis passing through said Cardan suspension center, so that said second element is foldable about said last mentioned axis, and a gun mount the rearwardly extending portion of which consists of two legs pivoted respectively to said second element halves about respective

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axes perpendicular to said last mentioned axis and which are in line with each other when said second element has its halves in a common plane.

2. The combination of a gun, a first ring-shaped element for pivotally supporting said gun about a horizontal axis, a second ring-shaped element for pivotally supporting said first ring-shaped element about a vertical axis, two trunnions fixed to said second ring-shaped element and extending on opposite sides thereof, respectively in directions perpendicular to said vertical shaft, said second ring-shaped element being made of two halves pivoted to each other about said vertical axis so as to be foldable about said vertical axis, and a gun mount the rearwardly extending portion of which consists of two legs pivoted to said trunnions respectively about said common axis thereof.

3. The combination according to claim 2 wherein said common axis of said trunnions is parallel to, and slightly at the front of, said first mentioned axis about which said gun is supported by said first ring-shaped element.

4. The combination according to claim 2 wherein said gun mount comprises two front leg elements carried by said trunnions respectively and the lower ends of which are adapted to be juxtaposed to each other when said trunnions are in line with each other.

5. The combination according to claim 2 wherein said gun mount comprises two front leg elements carried by said trunnions respectively and the lower ends of which are adapted to be juxtaposed to each other when said trunnions are in line with each other, each of said front leg elements being adjustable by pivoting about the corresponding trunnion respectively.

No references cited.

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