Oct. 14, 1930. M. DE BOIGNE 1,778,626

TRIPOD MOUNTING FOR FIREARMS

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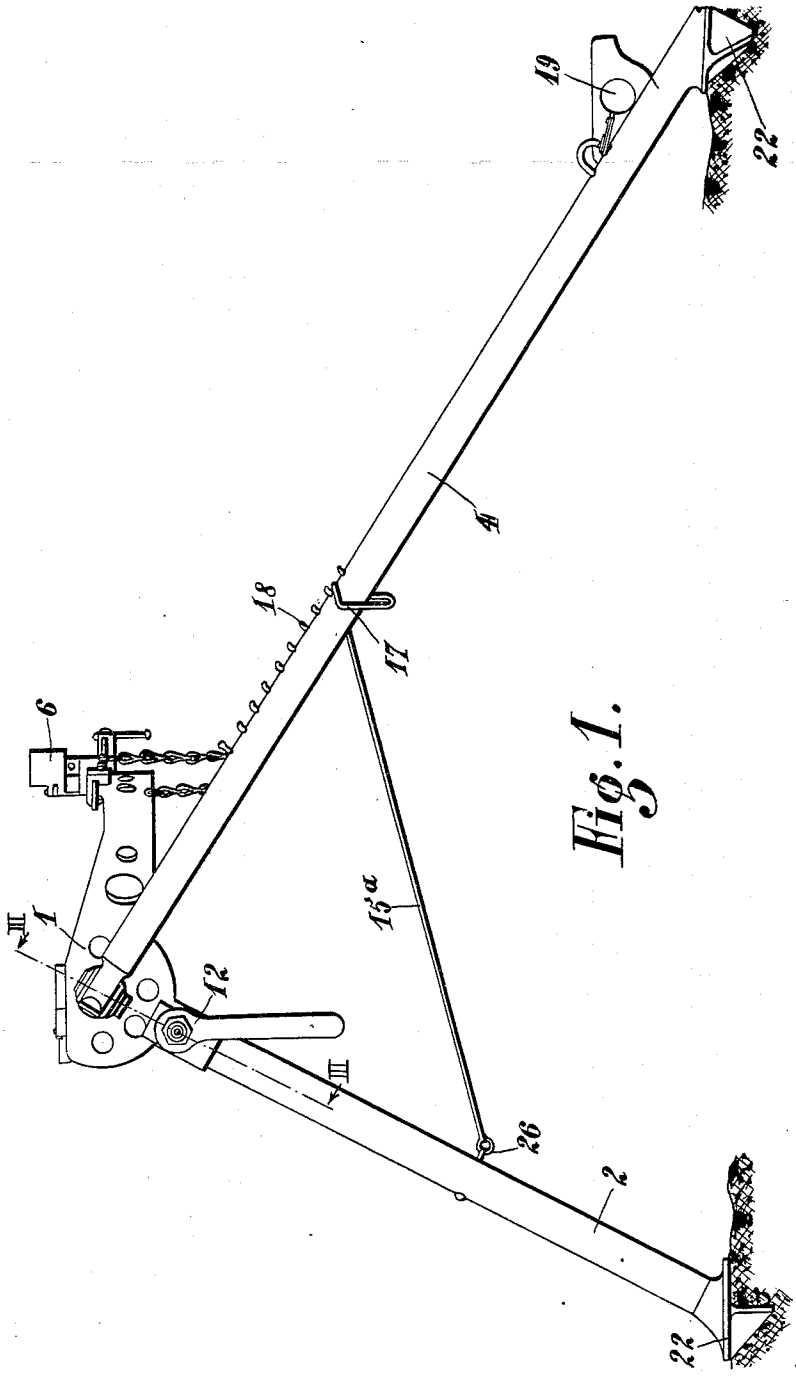

Fig. 1.

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Fig. 2.

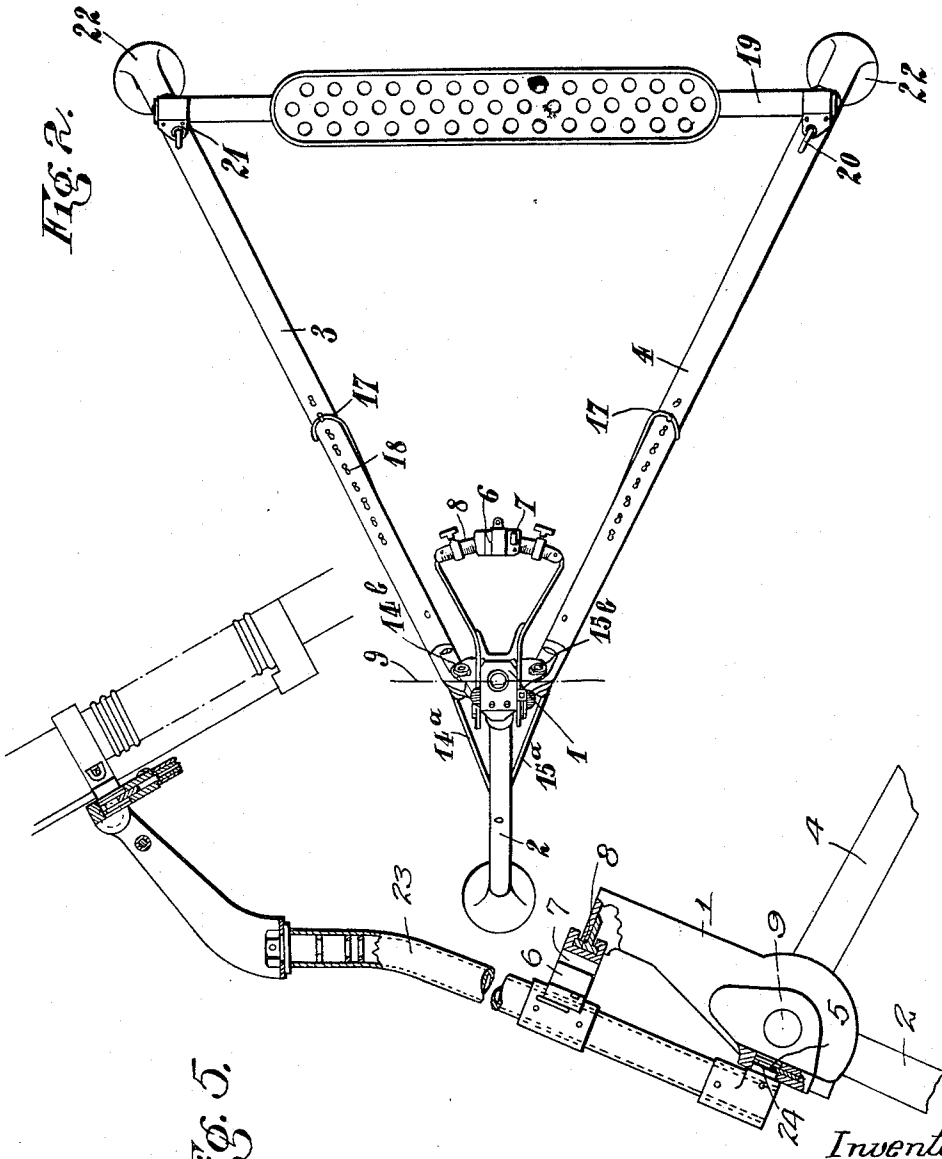

Fig. 5.

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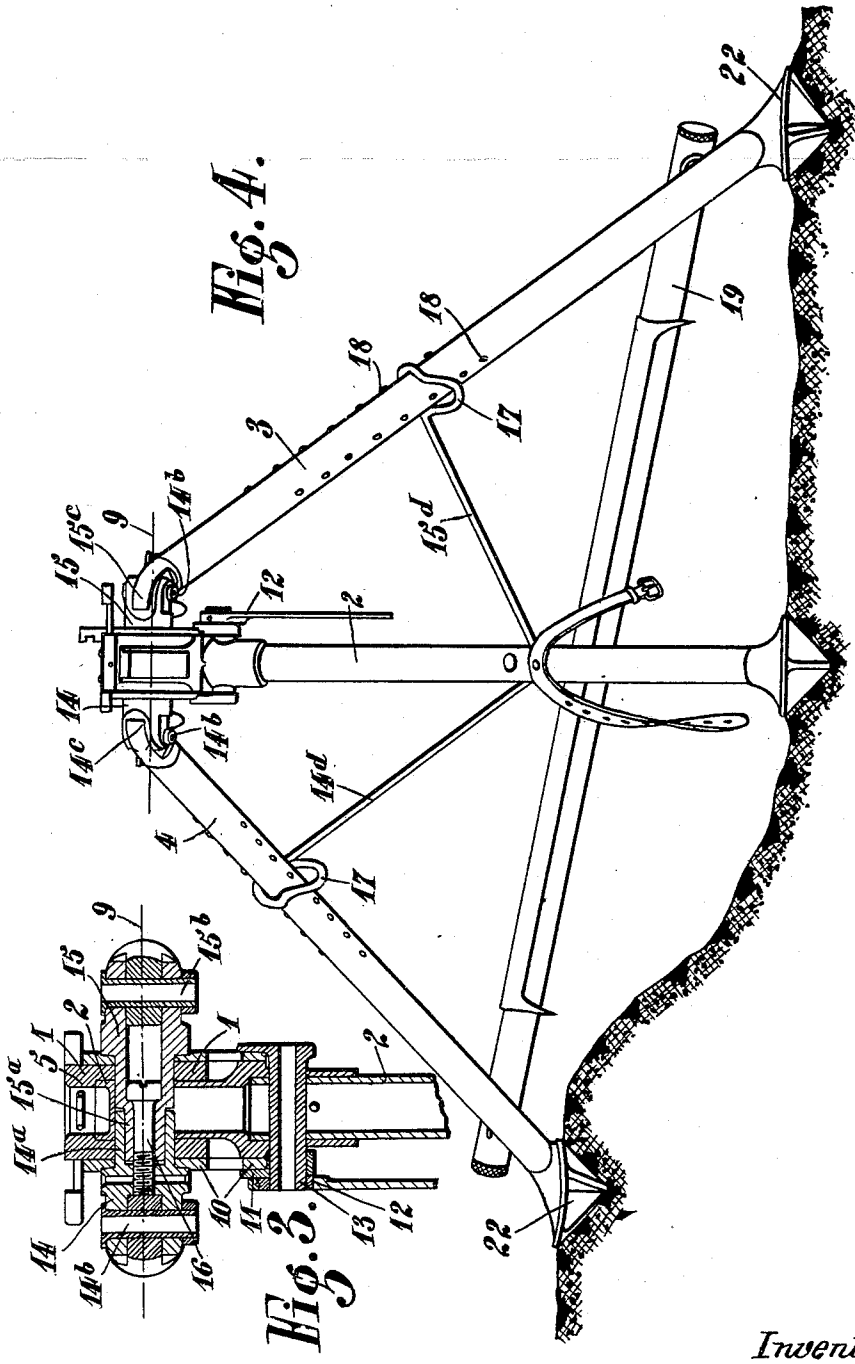

Fig. 4.

Fig. 3.

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UNITED STATES PATENT OFFICE

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TRIPOD MOUNTING FOR FIREARMS

Application filed January 21, 1929, Serial No. 334,005, and in France August 31, 1928.

The present invention relates to a tripod mounting for machine-guns or light guns, possessing great stability and enabling very accurate firing to be achieved.

The mounting comprises, in the usual manner, a head on which the fire-arm can be either directly or indirectly mounted, and a three legged pyramid supporting the head, and it is essentially characterized by the fact that the head and the three legs are pivoted on a common axis whereby the line of fire of the piece, along which the reactions of fire occur, may be brought nearer said axis and, hence, a better stability obtained.

The centre leg and the head are mounted directly on the common axis and can only rotate in a plane perpendicular to said axis whilst cardan joints are used in mounting the side legs whereby said legs can not only be moved in planes perpendicular to the common axis but may also be drawn apart or brought together.

According to an advantageous form of construction, the common pivot axis is constituted by the forks of the cardan joints of the side legs, said forks being connected together by any suitable means which allow them to rotate one relative to the other and on which the head and the centre leg are mounted.

The head can be locked in any given angular position by clamping to the centre leg sectors which are secured to said head.

The centre leg is connected to each of the side legs by stays fixedly attached at one of their ends (for example by means of a closed ring or loop) to said centre leg whilst the other end may be attached through the agency of suitable clamping or hooking means to the corresponding side leg at a variable height which may be different for each of the side legs and adjustment of which enables the angle between said two legs and, consequently, the inclination to the ground of the common pivot axis to be varied. Under these circumstances, said axis can be maintained horizontal whatever the slope of the ground may be.

According to a particular characteristic of the invention, the above mentioned stays are located at a considerable distance from the common pivot axis in order to obtain enhanced stability.

The extent to which the two side legs can be drawn apart is limited by stops provided in the cardan joints, said two legs being stayed in close proximity to their anchoring ends by the seat supporting tube the length of which is slightly greater than the maximum span between the legs, so that in the firing position it holds the two legs firmly and resiliently against their respective stops, and drawn apart to the maximum extent whereby the stability is still further increased.

Said seat supporting tube is permanently fixed to one of the side legs, whilst it can hook on to the other leg in adjustable manner, so that on closing up the mounting, said tube can be placed parallel to the three legs.

Other characteristics and peculiarities of the invention will become apparent from the description about to be given with reference to the accompanying drawings in which:

Fig. 1 is an elevational view of a tripod mounting in accordance with the invention.

Fig. 2 is a plan view thereof but on a reduced scale.

Fig. 3 is a sectional elevation on the line III—III, Fig. 1 illustrating the pivotal assemblage of the legs and the head of the mounting.

Fig. 4 is an elevational view illustrating the mounting in accordance with the invention in firing position on uneven ground and

Fig. 5 shows a fork adapted to receive a trunnion for supporting the fire-arm, when the latter is used against air-craft.

The mounting in accordance with the invention comprises a head portion 1 and a three-legged pyramid constituted by one front leg 2 and two rear legs 3 and 4.

The head 1 includes a socket 5 accommodating a trunnion for fixing the fire-arm, said trunnion being carried, as is well known, by the fire-arm which engages, through the medium of any suitable projection, in the U-shaped member 6 carried by the traversing slide 7 which can slide over the sector 8 fitted to the head 1 of the mounting in the usual

manner. The fire-arm is thus secured directly to the head 1 of the mounting and therefore follows it in all its displacements.

The head 1 may rotate about an axis 9 which is materialized in a manner to be presently described and it may be locked in any desired angular position by clamping sectors such as 10 secured to said head portion, against the front leg 2, for example through the medium of shoes 11 actuated by means of a lever nut 12 screwing on to a bolt 13. Said arrangement enables the fire-arm to be aimed for elevation.

The axis 9 about which the head 1 may swivel is likewise the pivot axis of the three legs 2, 3, 4. Said axis 9 is materialized by the male and female sockets 14^a, 15^a of the forks 14 and 15 of the two rear legs, said sockets engaging one within the other whilst being maintained by a screw 16, which however leaves them free to rotate one relative to the other. The front leg 2 as also the head 1 are pivotally mounted directly on the sockets 14^a and 15^a. On the other hand, the rear legs 3 and 4 are connected to the corresponding fork 14 or 15 through the medium of a stud 14^b or 15^b, said stud forming with the associated fork a cardan joint enabling not only each side leg to swivel about the axis 9 but likewise enabling said legs to be brought together or drawn apart. Moreover, stops such as 14^c or 15^c limit the extent to which said legs can be drawn apart.

By mounting the head portion and the three legs on a common axis, the latter may be brought considerably nearer the line of fire of the fire-arm, that is to say the line along which the reactions of fire are directed. In this manner the tripod is rendered more stable.

The following arrangement has been adopted for maintaining the three-legged pyramid in any selected position. The front leg 2 is connected to each of the rear legs 3 or 4 by a stay 14^d or 15^d. Each of the latter is attached to the front leg 2 by a closed ring 26 whereas its other end may slide over the corresponding rear leg and be fixed on said leg at a suitable height by any suitable means, for example, by means of a ring 17 which is always constrained to slide to the front under the action of the weight of the mounting and of the firer as well as under the action of the reactions of fire whose tendency is to cause the front leg to swing upwards about the axis 9, said ring being maintained at the desired position by any one of the pegs 18 which prevent it from sliding forwardly.

To obtain even greater stability, the two rear legs are themselves stayed by the seat supporting tube 19 which is hooked to the rear leg 4 by means of a closed ring 20 and to the rear leg 3 by means of a hook 21. Said two rear legs being opened out in the same plane and being in their position of maximum stretch limited by the stops 14^c and 15^c provided on the forks 14 and 15, the tube 19 which is of slightly greater length than the distance between the hooks 20 and 21 exerts a thrust on said legs and by the effect of resilience, maintains them firmly against the aforementioned stops. It will be observed besides, that in the firing position, the seat supporting tube 19 is forward of the anchoring ends 22 of the rear legs so that the weight of the firer shall always tend to maintain the front leg on the ground.

The mounting in accordance with the invention is used as follows: When the mounting is closed up, the three legs are laid parallel one alongside the other as also the seat supporting tube 19, the hook 21 of which has been unhooked from the leg 3. For mounting in firing position it is only necessary to place the three legs on the ground. The rings 17 slide over the rear legs and stop at the first peg 18 (reckoning from the top). The hook 21 of the tube 19 is next hooked on the rear leg 3. The mounting is then in the raised position with the two rear legs 3 and 4 lying in the same plane.

If the lower part of each ring 17 be pulled rearwards and upwards simultaneously, the rings are released from the first pegs 18 and can then be hooked on to the following pegs.

As the rings are brought nearer the lower ends of the rear legs, the unit is brought into a lower and lower position. Obviously, between the two extreme positions (upper position, firer sitting on the seat and lower position, firer lying down) any intermediate position may be selected.

The great distance of the hooking points of the stays 14^d and 15^d and of the seat supporting tube 19 from the common pivot axis 9, the satisfactory support always afforded by the stops 14^c and 15^c due to the stretching apart action exerted by the tube 19 and, finally, the fact that the reactions of fire tend, on the one hand, to increase the support afforded by the aforesaid stops and, on the other hand, to exert a pull on the stays through the medium of the front leg, render the mounting exceptionally undeformable during firing so that the accuracy is considerably increased.

If the rings 17 are both hooked on to corresponding pegs 18 on the legs 3 and 4, the latter are evidently in the same plane and if the ground is horizontal, the common pivot axis 9 is likewise horizontal. Such is the case in Fig. 1. On the other hand, when the ground slopes and it is necessary to bring the pivot axis back to the horizontal, it is only necessary to pass the rings 17 over non-corresponding pegs of the legs 3 and 4. Said rear legs then assume different inclinations with respect to the front leg and

by suitably choosing the inclination, that is to say, by selecting the hooking peg, the axis 9 may be brought into the horizontal as desired. This has been illustrated in Fig. 4. As a result, the front leg 2 which is perpendicular to the axis 9 is brought back into a vertical plane which promotes stability.

This levelling of the axis 9 furthermore enables a sweeping fire to be made along a horizontal plane; besides, this axis may be given any desired lateral inclination thus enabling a sweeping fire to be carried out along a plane at a definite angle with the ground.

A modified form of use of the mounting according to the invention is shown in Fig. 5, in which the fire-arm is not directly mounted on the head 1, said mounting being obtained, for example, for anti-aircraft fire, through the medium of a trunnion receiving fork 23 of a well-known type. This fork comprises a trunnion 24 similar to the trunnion carried by the fire-arm and which engages, in the same manner, in the socket 5 of the head 1. Likewise, this fork is engaged in and maintained by the U-shaped member 6 of the traversing slide 7. The fire-arm proper is mounted at the end of the fork by means of a trunnion carrying support in a well-known manner. The gun-mounting, in this case, as previously, permits the common axis 9 to be horizontal.

Obviously, various constructional forms can be given to the device which has first been described. For instance, the stays 14^d and 15^d could be fixed to the rear legs by any device differing from the one shown, for example, by means of teeth or of clamping sleeves sliding on the said rear legs. Likewise, the modifications in height of the head relatively to the ground and the direction given to the pivot of the fire-arm can be effected concomitantly or separately. Finally, according to uses, the above described device can be constructed either with one front leg and two rear legs, as shown, or with two front legs and one rear leg.

What I claim is:

1. Tripod mounting for fire arms comprising, in combination, a head and three legs supporting said head, the said head and legs being pivoted on a common axis.

2. Tripod mounting for fire arms comprising, in combination, a head, a central leg and two side legs supporting said head, a pin on which the head and the central leg are directly pivoted and pivotal joints between said pin and said side legs.

3. Tripod mounting for fire arms comprising, in combination, a head, a central leg and two side legs supporting said head, a pin on which the head and the central leg are directly pivoted, and forked pivotal joints between said pin and said side legs, said pin being constituted by extensions of the forks forming the said pivotal joints.

4. Tripod mounting for fire-arms, comprising in combination, a head, a central leg and two side legs supporting said head, two forked pivotal joints on the two side legs, a pin formed by the forks of each pivotal joint, one fork member of one joint being rotatable in a fork member of the other joint, said head and said central leg being directly pivoted on said pin.

5. Tripod mounting for fire-arms, comprising in combination, a head, a central leg and two side legs supporting said head, the said head and legs being pivoted on a common axis, and means for adjustably clamping the head relatively to the central leg.

6. Tripod mounting for fire arms, comprising, in combination, a head, a central leg and two side legs supporting said head, the said head and legs being pivoted on a common axis, and clamping sectors on said head adapted to be clamped against the central leg.

7. Tripod mounting for fire arms comprising, in combination, a head, a central leg and two side legs supporting said head, the said head and said legs being pivoted on a common axis, stays connecting the central leg to both side legs, each stay being secured to the central leg at a fixed point, and means for securing each stay on the respective legs at variable heights.

8. Tripod mounting for fire arms comprising in combination, a head, a central leg and two side legs supporting said head, two forked pivotal joints on the two side legs, a pin formed by the forks of each pivotal joint, said head and said central leg being directly pivoted on said pin, and a lug on each of said side legs for limiting the outward movement of said side legs.

9. Tripod mounting for fire arms comprising, in combination, a head, a central leg and two side legs supporting said head, two forked pivotal joints on the two side legs, a pin formed by the forks of each pivotal joint, said head and said central leg being directly pivoted on said pin, a lug on each of said side legs for limiting the outward movement of said side legs, and a seat supporting tube interconnecting the two side legs in close proximity to their anchoring ends.

10. Tripod mounting for fire arms comprising, in combination, a head, a central leg and two side legs supporting said head, two forked pivotal joints on the two side legs, a pin formed by the forks of each pivotal joint, said head and said central leg being directly pivoted on said pin, a lug on each of said side legs for limiting the outward movement of said side legs, stays connecting the central leg to both side legs, each

stay being secured to the central leg at a fixed point, means for securing each stay on the respective side leg at variable heights, and a seat supporting tube interconnecting the two side legs in close proximity to their anchoring ends, said tube being slightly longer than the maximum stretching distance of the side legs and being permanently fixed to one of the side legs whilst it is removably fixed to the other side leg.

11. Tripod mounting for fire arms, comprising in combination, a head, a central leg and two side legs supporting said head, a common pin for said head and legs, said pin consisting in two members rotatably mounted one within the other and including forked extensions, and pins carried by said forked extensions and on which said side legs are pivotally mounted, the head and central leg being directly pivoted on said common pin.

12. Tripod mounting for fire-arms, comprising in combination, a head, three legs supporting said head, a common pin on which said legs and head are mounted, and pivotal joints between two of said legs and said common pin for permitting, in cooperation with said common pin, rotation of each of said two legs about two different axes.

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