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RECOILING FIELD GUN MOUNTED ON A CARRIAGE
LIFTED OFF WHEELS FOR FIRING

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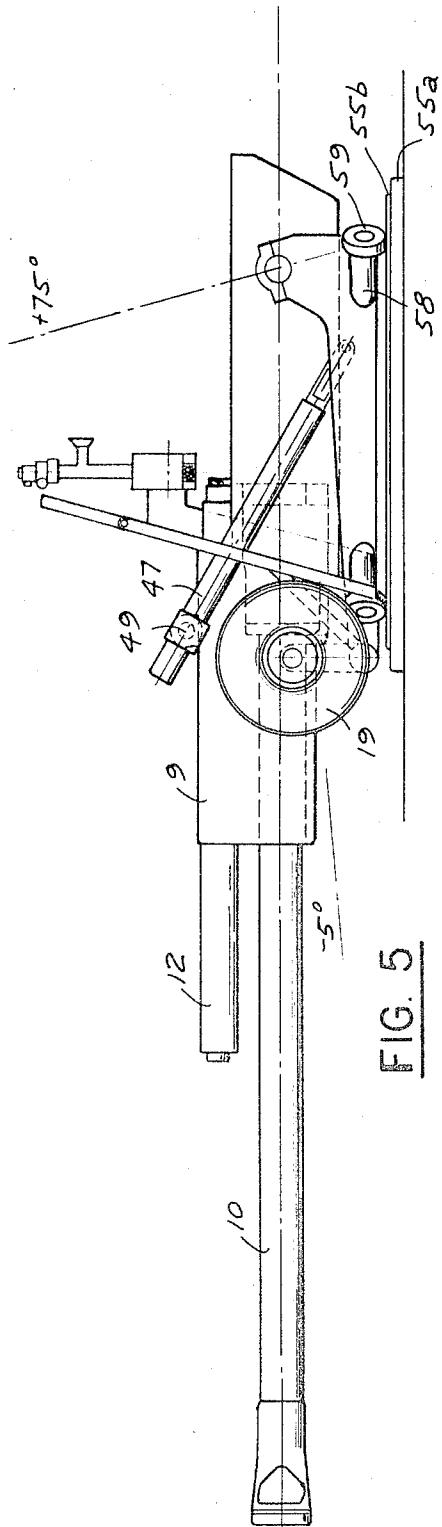


FIG. 5

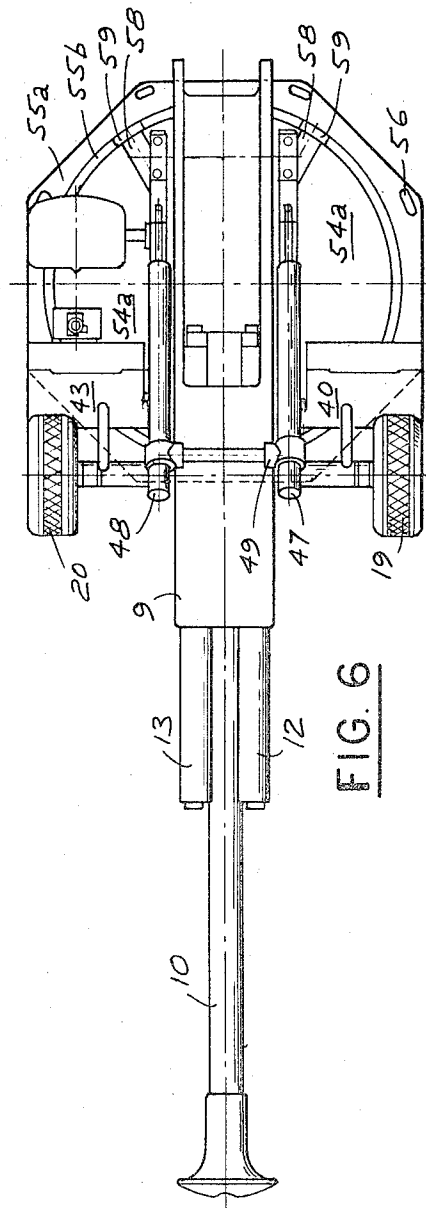


FIG. 6

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RECOILING FIELD GUN MOUNTED ON A CARRIAGE LIFTED OFF WHEELS FOR FIRING

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 3 Claims. (Cl. 89—40)

ABSTRACT OF THE DISCLOSURE

A recoiling field gun mounted on a wheeled cradle, the wheels of which can be moved into a lowered traveling position or a raised firing position. In the firing position the gun rests on the ground by means of a base plate. The gun cradle is supported on the base plate rotatably through 360° about an axis eccentric in reference to the base plate to permit full traversing of the gun.

The present invention relates to the type of guns which have carriage trails, the free ends of which are provided with wheels or the like, which wheels function as ground supports during firing of the gun and also as members facilitating the transport of the gun when only said wheels are in contact with the ground.

Known types of such guns, which usually are called howitzers, are most often provided with so-called split trails, which have two trail members which are directed rearwards, and which are joined together at their front ends by means of two wheels. At said ends, the gun barrel is so mounted that it can be elevated. In the firing position, the carriage trails are spread apart, and have their rear ends fastened to the ground. When firing such guns, a so-called tipping moment will arise, which is counteracted by the moment resulting from the weapon's own weight. It has therefore been necessary to make the guns relatively heavy, which is an obvious disadvantage, for instance from the point of view of handling. Owing to the recoil force, heavy bending stresses also arise in the carriage trails, and these have, consequently, had to be heavily dimensioned.

As will be noted from the foregoing, guns of the type herein referred to as now known are both unwieldly and heavy, and it has therefore, for a long time, been a desire to be able to reduce the weight of the guns, thereby obtaining more simple designs. In the French Patent No. 597,110, a device is described according to which the problem of the weight of the firearm has been partly solved. According to this known device, the rear end of a recoil jacket is supported in the two ends of a yoke, the center of which, in turn, is movably supported in an anchor plate. From said yoke, two carriage trails also extend, which are directed forwards, i.e. towards the muzzle of the gun. At the front ends of the carriage trails, a member resembling a tracked vehicle is fastened, by means of which the gun can be traversed round the anchor plate. However, this design has a certain disadvantage, viz. that it cannot always be used, for instance when the ground on which the gun is resting should be too uneven.

The purpose of the present invention is to solve the problem of making usable a gun of the type described in the French Patent No. 597,110 also on uneven ground. According to the present invention, the improvement desired is obtained by the carriage trails with recoil jacket and barrel being rotatably arranged about a generally plane plate.

The present invention will be described in more detail in conjunction with the attached drawings, in which FIGS.

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1-3 show a gun according to the invention in two different positions, viz. a transport position and a firing position, in which FIGS. 2-3 show the device according to the invention from the side and from above, and in which FIGS. 4-6 show a modification of the gun in the same positions as according to FIGS. 1-3.

In FIG. 1, the elevating mass of a howitzer is shown, supported by cradle brackets 6 and carried on carriage trails 14 and 15. Only one of the brackets 6 and the corresponding carriage trail 15 are shown in FIG. 1. At their upper ends, the brackets are formed to receive two trunnions, of which the trunnion 7 is shown in the figure. These trunnions are arranged in the rear end of a recoil jacket 9, in which a barrel 10 with a breech which can recoil, are arranged. The recoil jacket 9 also includes two recoil buffers 12 and 13. From each carriage trail, a rod 39 extends, on which corresponding carriage shields 40 and 43 are fastened, as is shown in FIG. 3. The sights and the aiming gear are fastened to the carriage shields, and in a known manner control two hydraulic lifting bars or hydraulic lifting bars 46 and 47 which can be extended in some suitable manner. The lifting bar 46 has one of its ends supported by a shaft (not shown) in the carriage trail 15, as shown in FIG. 1, while the other end is supported also by a shaft (not shown) at the recoil jacket 9. The hydraulic lifting bar 47 is arranged in the corresponding manner.

The carriage trails and shields are fixed to a circular plate 54 according to FIGS. 1-3. The part of the yoke which connects the shields may be formed by the circular plate. This plate 54, in turn, is rotatably supported on another plate 55. The centers of the two plates coincide, and they are joined to each other in an appropriate, known way. Between the plates 54 and 55 there are control members, which are not shown, which for instance may consist of a gear arc on one of the plates and a gear wheel on the other plate. In the present case, it is envisaged that the plate 55 has a circular gear arc and the plate 54 is provided with a gear wheel, which is in mesh with the gear arc. The crew member in charge of aiming the gun, by means of his aiming gear, can impart movements to the gear wheel so that he can determine the relative position between the two circular plates.

Two wheels 19 and 20 are arranged in such a way that they can only be raised and lowered between an upper and a lower position. When the wheels are in the upper position, the circular plate 55 rests upon the ground, and when the wheels 19 and 20 are in their lower position, the part of the plate 55 which is located near the wheels loses its contact with the ground, as is clearly shown in FIG. 1. The corresponding part of the plate 55 can be raised and connected by a towing hook 58 to a tractor 53, as is indicated in FIG. 1. In this figure, the gun is shown in the transport position. When the gun is to be placed in the firing position, the wheels 19 and 20 are raised to their upper positions and the plate 55 then comes into contact with the ground surface. Thereafter, the plate 55 is detached from the towing hook 58, and placed on the ground. If now, the ground surface should not be entirely plane, it is very easy to place some appropriate filling material between the plate 55 and the ground surface. The plate 55 is also provided with peripheral holes 56. Through these, plugs 57 can be driven, so that the plate 55 will be better anchored. When the gun is in this position, the man aiming the gun can turn his hand-wheel, whereby the plate 54 on which the gun is mounted is caused to turn on the plate 55 to the desired position independently of any unevenness of the ground.

It should be obvious that instead of the plate 55, a ring can be used, and that between these two elements appropriate members can be arranged, e.g. a ball bearing, so that easy rotation is obtained. When the device is con-

structed in this manner, the two plates or elements need not be joined together at their centers.

The modification mentioned in the foregoing is described in more detail in FIGS. 4-6. In these figures, the parts which correspond to parts in FIGS. 1-3, have been given the corresponding reference numerals.

The structure according to FIGS. 4-6 differs from the one according to the foregoing FIGS. 1-3 in that instead of the plate 54, four radial legs 58 are provided. The legs extend from the turning center, which in the present case is exactly the same as for the structure according to FIGS. 1-3. Furthermore, a fixed plate 54a may be arranged between the carriage trails, which is rotatably supported in the center of a base plate 55a. At the ends of each leg, wheels 59 coact with a circular track 55b on the plate 55a. By means of said wheels and the central support, the carriage trails, together with the elevating mass, can rotate round the center of the plate 55a. The wheels may have any suitable design, provided only that the carriage trails with the elevating mass can be turned a complete revolution, for fully traversing the gun. It is also possible to provide the track 55a on the lower plate in the form of a gear arc, the wheels then being replaced by gear wheels.

If the free ends on the track 58 have wheels which have a small circumference, the lower plate 55a must be provided with a circular gear arc further in, which coacts with a driving gear wheel which in one way or another is directly or indirectly fastened to the carriage trails so that the gun operator can effect the desired traversing of the firearm.

What is claimed is:

1. A movable mounting assemblage for a recoiling gun, said assemblage comprising in combination:

a support frame;
an upper base plate and a lower base plate, the lower base plate being supported by said support frame in substantially horizontal position and the upper base plate being rotatably mounted upon the lower base plate parallel thereto;

a pair of running wheels on a common shaft supported by said frame adjacent to an edge portion of the base plates movable between a raised position in which said wheels are above the level of said lower base plate whereby said plate can rest upon a supporting surface for the gun assemblage and a lowered position in which the wheels protrude below the level of the lower base plate whereby said plate is lifted above the supporting surface, said raised wheel position constituting the firing position of the gun and said lowered wheel position the transport position of the gun;

lifting means coupled to said wheel shaft for selectively raising and lowering the wheels;

a gun cradle including a pair of parallel spaced-apart trails secured to the top side of said upper base plate and extending across the upper base plate straddling the rotational axis thereof, said trails defining bearings at one of the ends thereof;

a gun barrel;

a recoil jacket mounting the barrel and having near its rear end a pair of trunnions received in said bearings, said barrel being up and down pivotal between an elevated position and a depressed position in reference to the upper base plate, the height of the bearings above the upper base plate being just sufficient to elevate the gun barrel to a predetermined

angle of elevation, traversing of the gun barrel being effected by turning the upper base plate with the cradle secured thereto in reference to the lower base plate.

2. A movable mounting assemblage for a recoiling gun, said assemblage comprising in combination:

a support frame;
a base plate supported by said frame in substantially horizontal position;

a circular guide track secured to the top side of said base plate;

a pair of running wheels on a common shaft supported by said frame adjacent to an edge portion of the base plate movable between a raised position in which said wheels are above the level of said base plate whereby said plate can rest upon a supporting surface for the gun assemblage and a lowered position in which the wheels protrude below the level of the base plate whereby said plate is lifted above the supporting surface, said raised wheel position constituting the firing position of the gun and said lowered wheel position the transport position of the gun;

lifting means coupled to said wheel shaft for selectively raising and lowering the wheels;

a gun cradle including a pair of parallel spaced-apart trails, and legs extending from said trails and engaging said circular track on the base plate for rotating the cradle in reference to the base plate, said trails extending across the diameter of the circular track straddling the center point thereof and defining bearings at one end;

a gun barrel;

a recoil jacket mounting the barrel and having near its rear end a pair of trunnions received in said bearings, said barrel being up and down pivotal between an elevated position and a depressed position in reference to said upper base plate, the height of the bearings above the upper base being just sufficient to permit pivoting of the barrel into a predetermined angular position of elevation, traversing of the gun barrel being effected by turning the cradle in reference to the base plate.

3. The movable mounting assemblage according to claim 2 wherein the free ends of said legs are secured to a support plate (54a) rotatably mounted on the base plate (55a) and rollers (59) secured to said legs are in rollable engagement with said circular track (55b).

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