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3,009,395

FIELD PIECE WITH SWINGABLY MOUNTED WHEELS

Filed June 13, 1957

3 Sheets-Sheet 1

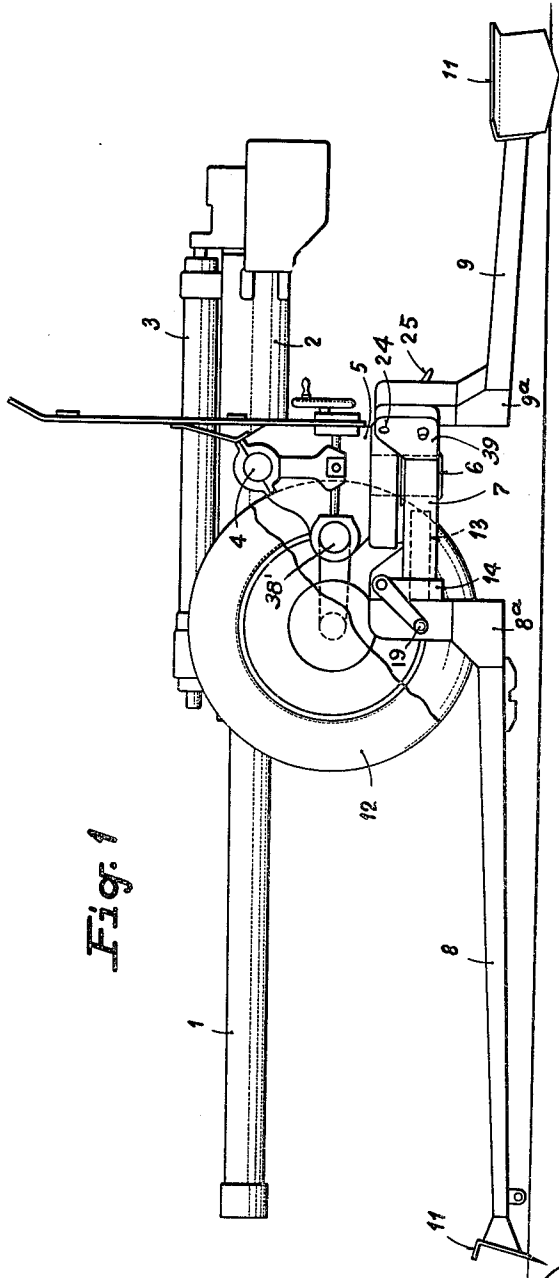


Fig. 1

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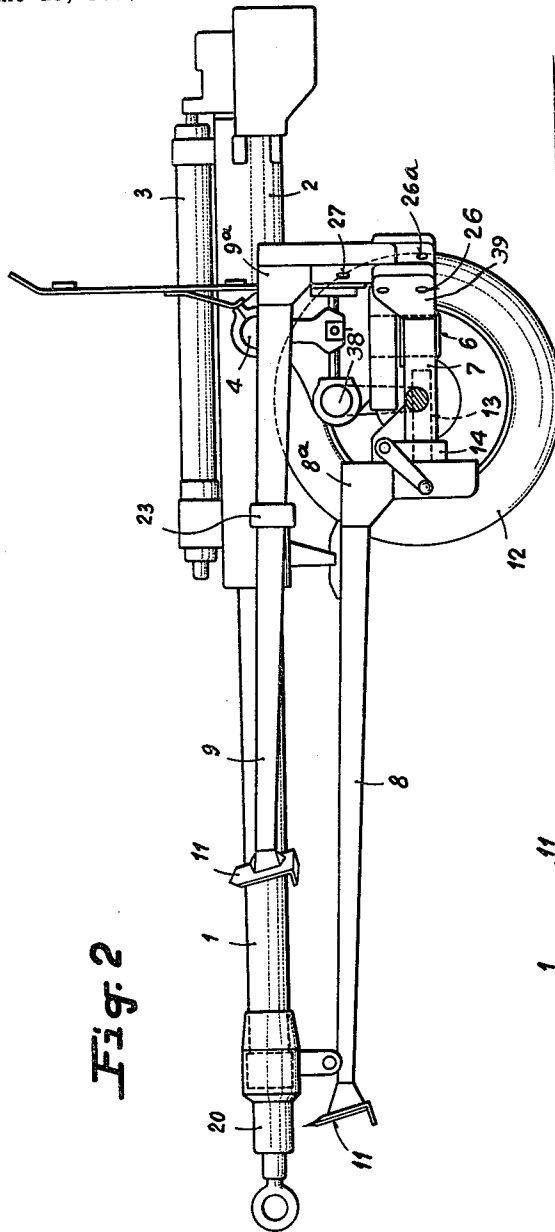


Fig. 2

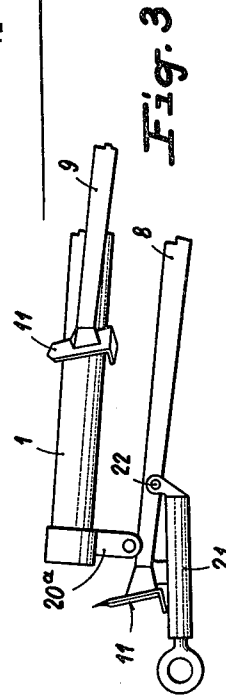


Fig. 3

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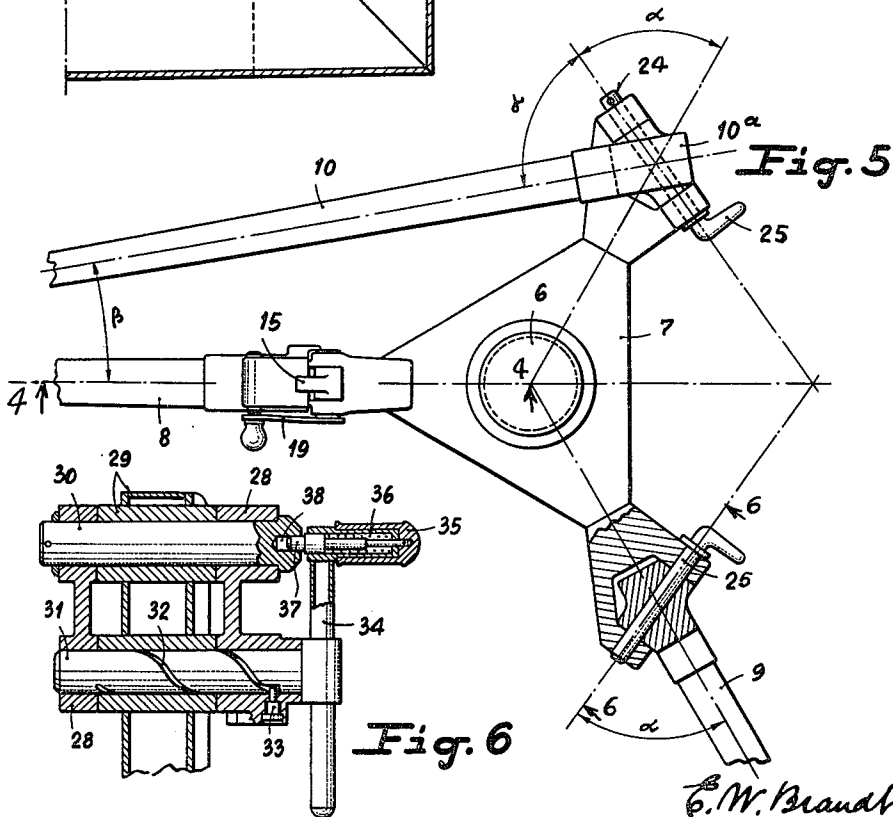
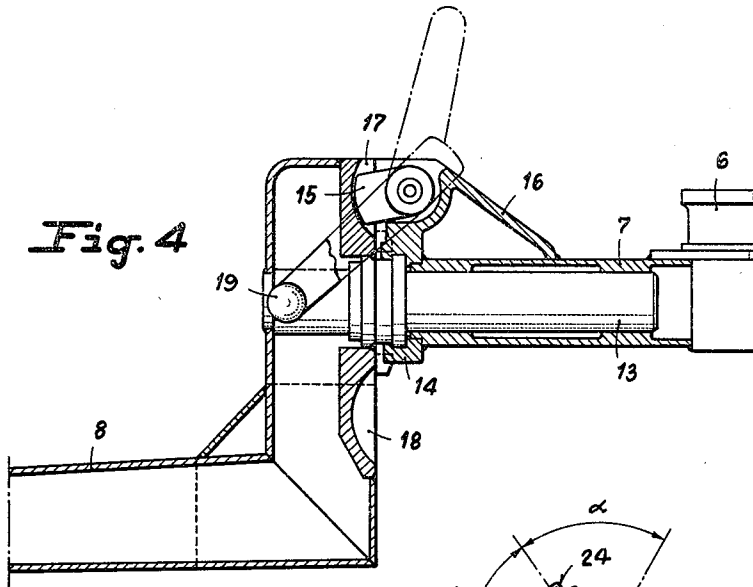
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FIELD PIECE WITH SWINGABLY MOUNTED WHEELS

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3 Sheets-Sheet 3



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FIELD PIECE WITH SWINGABLY
MOUNTED WHEELS

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The present invention relates to a field piece of the three-leg, full azimuth fire type, that is to say having the characteristic of being pointed in all directions when once in the firing position.

It has in particular the object of producing a field piece of this type which, in the transport position, has the smallest possible dimensions. The leg along which the barrel is directed in the transport position will hereinafter be referred to as the "front leg," the other two legs being the "trail legs."

The field piece according to the invention comprises a barrel and an assembly of horizontally movable parts solid with a turret which is directable around a vertical axis and is mounted on a fixed seat plate to which three offset legs are attached by their ends, the said legs being equidistant in the firing position. It is characterised in that, for the purpose of bringing the gun carriage into the transport position, one of the legs, known as the "front leg" and disposed in the vertical plane of the barrel, is adapted to pivot through an angle of 180° around an axis the extension of which encounters that of the turret, while the other two legs, known as "trail legs," are each pivotable about an oblique axis and by rotation through 180° around said axis are adapted to fold into a position on the front leg side, their free ends coming near the barrel.

It follows that in the transport position the three legs are directed towards the front of the barrel, and that the dimensions of the carriage according to the invention are then not greater than those of the conventional wheel-drawn twin-trail gun of the same calibre. Moreover, in the firing position the offset parts of the three legs are disposed below the level of the seat plate in order to insure good stability of the whole assembly, but in the transport position are folded over the seat plate, which has the effect of considerably increasing the free space below said legs, and hence of facilitating handling over rough ground. It should furthermore be noted that the above-mentioned arrangements do not affect the rigidity of the legs, which are free from articulation at any intermediate part of their length.

In one embodiment of the invention, the front leg is connected to the seat plate by a pivot pin solid with said leg, the bearing for said pivot pin being provided in the body of the seat plate.

More particularly again, the said carriage comprises according to the invention a locking device providing a positive connection between the seat plate and the front leg. This device is preferably provided with a wedge rotatably mounted on a bolt-holder integral or fixed with the seat plate, the said wedge being operated by a handle. The rear part of the front leg also comprises according to the invention two recesses which are diametrically opposite in relation to the said pivot pin, while the wedge of the locking device is adapted to engage successively in each of them in the firing position and in the transport position.

In addition, the front leg may be provided with a fixing means rigidly connecting the said leg to the barrel in the transport position.

It follows that, during transport, the tractive stresses

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are withstood jointly by the leg and the barrel, and traction may be applied either direct to the barrel or to the front leg, depending on the type of construction.

In another embodiment of the invention, each of the trail legs is provided, near its junction with the seat plate, with a locking device intended to render the said leg rigidly solid with the seat plate. This device may be constituted by a removable pin passing through apertures provided respectively in the seat plate and in the corresponding rear leg.

In a modified embodiment of the invention, the said pin, which ends in a handle, is also provided with a helicoidal groove engaging a guide block solid with the seat plate. This arrangement has the result that the locking and unlocking of the trail leg are affected by turning the handle, whereby the pin is displaced axially. Subsidiarily, the said handle may comprise according to the invention a bolt controlled by its handle, and adapted to be inserted, under the action of an elastic member, into a cavity provided at one end of the pivotal axis of the trail leg.

Other advantages and characteristics of the invention will appear more explicitly in the following description.

In the accompanying drawing, given solely by way of example:

FIGURES 1 and 2 are side views, partly broken away, of the field piece according to the invention, respectively in the firing position and in the transport position;

FIGURE 3 is a modification of a detail in FIGURE 2;

FIGURE 4 shows in vertical section and on a larger scale a detail of FIGURE 1 taken on the line 4—4 of FIG. 5;

FIGURE 5 illustrates in plan, with partial breaking-away, a part of the said equipment, and

FIGURE 6 is a modification of a detail of FIGURE 5 taken in the vertical plane indicated by the line 6—6 on FIG. 5.

The field piece illustrated in FIGURE 1 comprises a barrel 1, carried by a cradle 2 and attached to a hydraulic brake and recuperator 3. The cradle 2 rests in turn, by means of pivot pins 4, on a turret 5 which is rotatable about a pivot 6 having a vertical axis and mounted on a seat plate 7 which is fixed and of general triangular shape (FIGURE 5). A front leg 8 and two trail legs 9 and 10 (the leg 10 is visible only in FIGURE 5), which are angularly equidistant from one another in the firing position, end respectively at the three apices of the seat plate 7. The free ends of the legs 8, 9 and 10 are provided with spades 11, which in the firing position are anchored in the ground.

In FIGURE 1, the pair of parallel wheels 12, 12 swingably mounted from axle 38' in the turret 5, can be moved out of position, the field piece then resting on the ground only through its three spades 11. The legs 8, 9 and 10 have near their points of attachment angular offset portions 8a, 9a (FIGURES 1 and 2), and 10a (FIGURE 5) respectively, which in the firing position are situated below the level of the seat plate 7 (FIGURE 1), and which in the transport position are brought above that level. The offset portion 8a is journaled in seat plate 7 by an integral pivot pin 13 substantially parallel with the leg 8, and extending rearwardly therefrom, the bearing 14 for the said pin being provided in the actual body of the seat plate 7.

The pivot pin 13 is so directed that the extension of its axis intersects the vertical axis of the pivot 6. In the embodiment illustrated in the drawing, the axis of the pivot pin 13 is in addition at a right angle to that of the pivot 6; this is of course only a particular case and a modification can easily be conceived in which the axis of the pivot pin 13 would be oblique in relation to that of the pivot 6.

As shown in FIGURE 2, the front leg 8 is adapted to pivot through 180° around the pivot pin 13 in order to be brought into the transport position. A locking device (FIGURE 4) comprising a wedge 15 mounted to rotate on a bolt-holder 16 fixed on the seat plate 7 enables the front leg 8 to be rigidly fastened to the said seat plate. To this end, the rear part of the leg 8 has two recesses 17 and 18 diametrically opposite one another in relation to the pivot pin 13; in the firing position, the wedge 15 penetrates the recess 17, its movement being controlled by a handle 19 with which it is connected. The unlocked wedge and the corresponding position of the handle are indicated in chain-dotted lines in FIGURE 4. The locking arrangement for the transport position is operated in the same manner, the wedge 15 being then inserted into the recess 18, after rotation of the front leg 8 through 180° around the pivot pin 13. An attaching means constructed in the form of a removable sleeve 20 carried by the muzzle of the barrel is used to retain the free end of the front leg 8 in a fixed position with respect to the barrel. The member 20 may, as illustrated, take the place of a draught sleeve. In order to bring the carriage into the transport position, the gun barrel 1 is rotated around the pivot 6 of the turret 5 to bring it into the vertical plane containing the front leg 8.

In the modification illustrated in FIGURE 3, the leg 8 is held by a fixed member 20a fixed on the barrel, and a draught arm 21 is secured at 22 on the leg 8. In the case illustrated in FIGURE 2, towing is effected by direct traction on the gun barrel, whereas in the embodiment illustrated in FIGURE 3 traction is applied to the leg 8.

FIGURE 5 illustrates in plan the seat plate 7 and the legs 8, 9 and 10. The trail leg 10 is in the transport position, while the trail leg 9, on the contrary, is disposed in the firing position. The legs 9 and 10 have the feature of being individually articulated on the seat plate 7 by a hinge member 39 the axis 24 of which is oblique in relation to the direction of the corresponding leg. Thus, the axis 24 forms with the leg 10 an angle α smaller than 90° both in the transport position and in the firing position. Judicious choice of the angle α enables the desired inclination of the legs 9 and 10 on the gun barrel to be obtained in the transport position, this inclination being measured in plan in FIGURE 5 by the angle β of the trail leg 10 in relation to the front leg 8. The angle β is in turn dependent on the length of the leg 10, and it is so determined that in the folded position the free end of the leg 10 comes near the barrel in order to reduce to the minimum the dimensions of the vehicle as a whole. The same remarks apply to the leg 9. FIGURE 2 shows in side elevation the trail legs 9 and 10 in the transport position. These legs then rest by their middle part on supports 23 on the cradle 2; in this position, the spades 11 of these legs are in contact or almost in contact with the front part of the barrel.

The rear legs 9 and 10 each have in the firing position, near their pivots on the seat plate, a locking device in the form of a removable pin 25 housed in the corresponding apertures 26, 26a of the seat plate and in the aperture 27 (FIGURE 2) in the trail leg. In the embodiment illustrated in FIGURES 1 and 5, the pins 25 are each disposed parallel to and below the corresponding axes 24.

FIGURE 6 shows in section and by way of modification, the hinging of one of the trail legs and an improved device for locking the said leg on the seat plate, 7, the hinge member of which is here designated by 28. The

sectional plan of the figure passes respectively through the axis 30 (having the same function as the axis 24 of FIGURES 1 and 5) and through the axis of the pin 31 (corresponding to the pin 25 in FIGURES 1 and 5). In the locked position illustrated in FIGURE 6, the pin 31 passing through the hinge member 28, renders the leg 29 (9 or 10 in FIGURE 5) solid with the seat plate 28. The said pin is provided with a helicoidal groove 32 in which is engaged a guide block 33 integral with the seat plate 28. The device is unlocked by the movement of a handle 34 fixed at one end of the pin 31; the axial displacement of the pin 31 results from the guiding of the latter by the guide block 33, which travels along the groove 32 between its two ends.

This arrangement has the result that the guide block 33, by striking against the end of the groove 32, limits the axial displacement of the pin 31. The said pin therefore remains mounted on the hinge member 28 of the seat plate, whatever its position; it is thereby prevented from leaving its housing and being lost during transport and handling of the equipment. The handle 3 may in addition be provided with a bolt 37 which in the operative position engages in a recess 38 in the axis 30; the bolt 37 is held in position by a resilient means 36. The disengagement of the bolt 37 is effected against the action of the resilient means 36 by axial displacement of the crank handle 35, with which the bolt 37 is integral.

It is obvious that the present invention has been described only by way of example and that, without departing from its scope, various modifications could be made thereto.

I claim:

1. A field piece having in combination a seat plate, a vertical pivot thereon, a turret revolvably mounted on the pivot, a gun on the turret, a horizontal axle on the turret, a pair of parallel wheels swingably mounted on said axle, a front leg having an offset portion, a pivot pin on the offset portion extending rearwardly parallel to the front leg, a bearing in the seat plate for said pivot pin, means for locking the leg in the bearing in either lowered or elevated position, two hinge members on the seat plate equidistantly spaced from each other and from the front bearing and two trail legs each having a lateral offset with a diagonally disposed hinge member in engagement with the hinge members on the seat plate.

2. A field piece as defined in claim 1, in which each pivoted trail leg is locked in operative position by a retractable pin passing transversely through the leg and through a hinge member of the seat plate, said hinge member having opposite bearings, said pin having a helical groove and a guide block in the bearings of the hinge member and fitted within said groove.

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