

N. KOCH.
 SPADE FOR PORTABLE RECOIL GUNS.
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962,032.

Patented June 21, 1910.

2 SHEETS—SHEET 1.

Fig. 1.

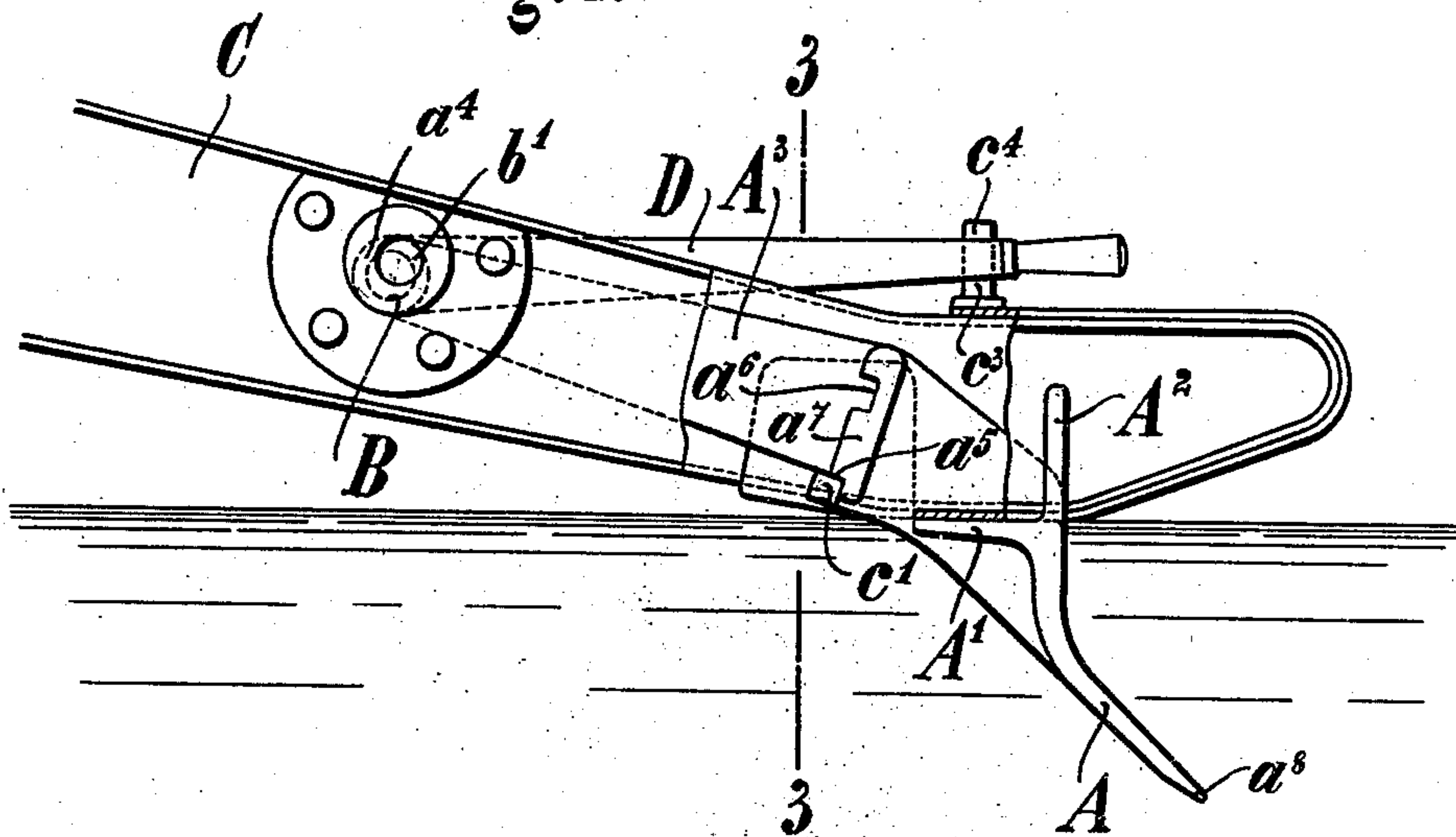
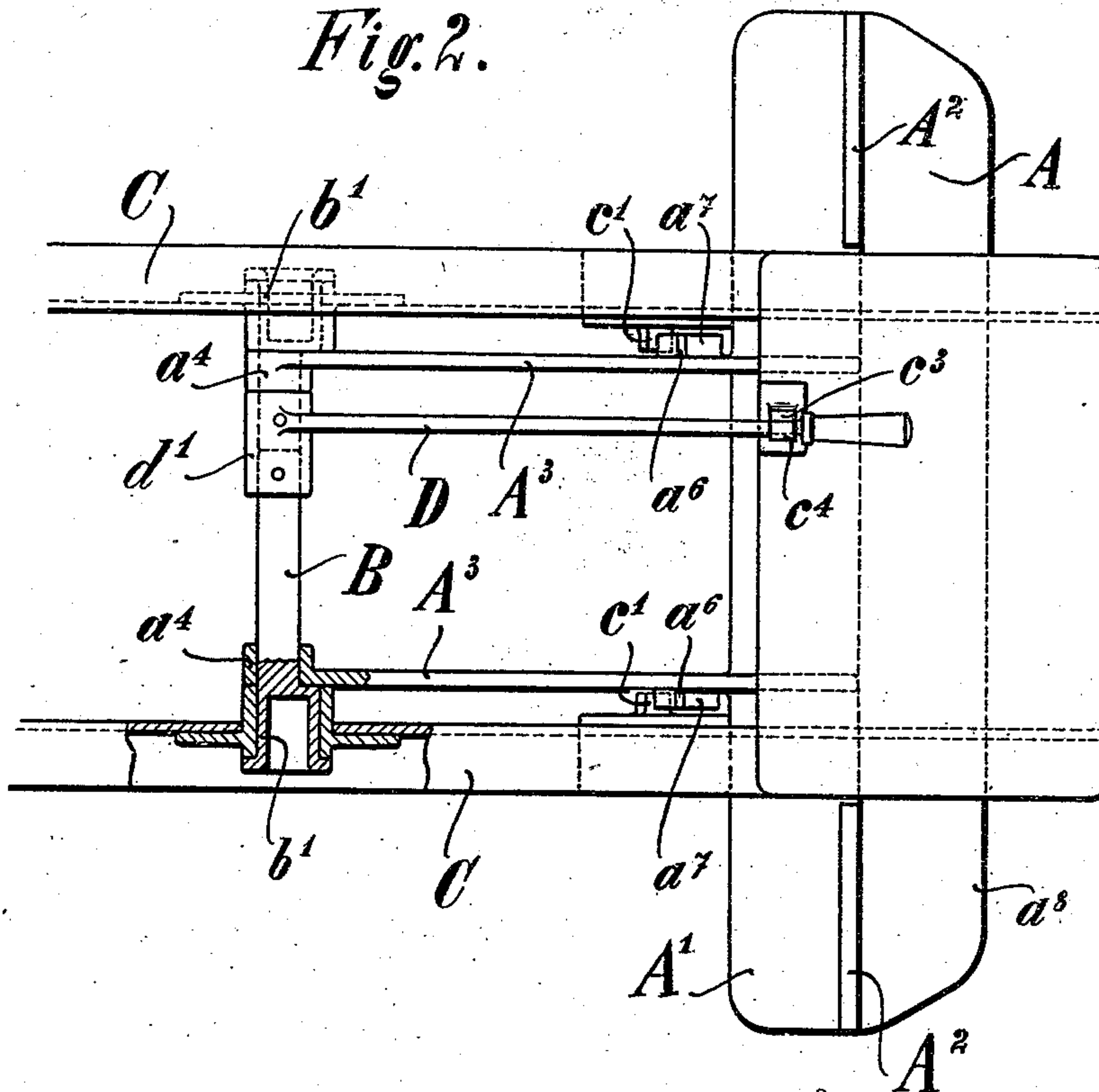


Fig. 2.



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UNITED STATES PATENT OFFICE.

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SPADE FOR PORTABLE RECOIL-GUNS.

962,032.

Specification of Letters Patent. Patented June 21, 1910.

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To all whom it may concern:

Be it known that I, NORBERT KOCH, a subject of the Emperor of Germany, and a resident of Essen-on-the-Ruhr, Germany, have invented certain new and useful Improvements in Spades for Portable Recoil-Guns, of which the following is a specification.

The object of the present invention is to provide a spade for portable recoil guns which is suited for anchoring the gun both in hard and in soft ground.

One embodiment of the invention is shown in the accompanying drawings, by way of example.

Figure 1 is a side view, partly in section, of those parts of a mount with the spade to which the invention relates; Fig. 2 is a corresponding top view, partly in section; Fig. 3 is the section on line 3—3, Fig. 1, looking from the left; Fig. 4 is a side view corresponding to Fig. 1, the spade being in another working position, and Fig. 5 is a corresponding side view on a reduced scale, the spade being in the traveling position.

The spade blade A is provided with a press-plate A', two projections A² serving to increase the working face of the spade blade and two arms A³ which extend parallel to each other. Through the medium of eyes a⁴ the arms A³ are swingingly mounted on a bolt B which is journaled in the walls C of the mount. The trunnions b' of the bolt B are eccentric to the axis of the bolt and therefore the turning of the bolt will result in a displacement of the spade in the longitudinal direction of the walls of the mount. The bolt B consists of two parts which are coupled together by a sleeve d' which also serves as a nave for a hand lever D. In order to secure the hand lever D in position and thus hold the bolt B against rotation a hook c³ open at one side is secured on the trail of the mount. The lever D is made from elastic material, such as steel, and the claw c⁴ of the hook c³ projects into the path of the lever D to such an extent that the lever by being bent laterally to a comparatively great extent can be brought into or out of engagement with the hook c³. Each of the two mount walls C has on its inner side a nose c' while the arms A³ of the spade are provided on their outer sides with ribs a' each of which has two notches a⁵ and a⁶ in which the noses c' are

adapted to fit. Furthermore two notches c² (Fig. 5) for the cutting edge a⁸ of the spade blade A are provided in the lower side of the mount-walls C.

During the travel of the gun the spade assumes the position shown in Fig. 5 relatively to the trail of the mount. The lever D then engages the hook c³ and the cutting edge a⁸ of the spade blade A engages in the notches c². In order to shift the spade into the working position, the lever is first bent laterally to pass out of engagement with the hook c³ and is then turned in the direction of the arrow x (Fig. 5) until it assumes the position shown in dotted lines in Fig. 4. During this proceeding the cutting edge a⁸ of the spade blade passes out of the notches c² due to the eccentric mounting of the bolt B. The spade is thereupon swung about the bolt B until the pair of notches a⁵ or a⁶ is opposite the noses c'. If thereupon the lever D is swung back to its original position that pair of notches (a⁵ or a⁶) which is opposite the noses c' slides over the noses c'. The spade is then rigidly connected with the mount, either in the position shown in Fig. 1 or in the position shown in full lines in Fig. 4. The spade is used in the former position when the gun stands on hard ground and in this instance the press plate A' also serves as a support for the trail of the mount, and it is used in the latter position when the gun stands on soft ground. As the spade in the last named position on the one hand can penetrate farther into the ground and on the other hand the working surface of the spade blade is increased by the projections A² of the spade blade, in soft ground there is also presented to the spade sufficient resistance to prevent rearward movement of the mount on firing.

Instead of two pairs of notches a⁵ a⁶ other pairs of notches might be provided in the arms A³ of the spade. The spade could then be secured in other working positions. It will be noted that I have provided a means for securing the blade in a plurality of working positions.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

1. In a portable barrel recoil gun, the combination with the mount and its trail; of a pivot shiftably mounted on said trail; a spade swinging about said pivot; and means

interengaging between the trail and the spade whereby said spade may be secured in any one of a plurality of working positions.

5 2. In a portable recoil gun, the combination with the mount, of a spade having a supporting arm integral therewith and pivoted eccentrically at one end to the mount, means for moving the pivoted end of
10 said arm eccentrically, and means interacting between the spade arm and the mount, whereby it is held rigid in any one of a plurality of working positions.

3. In a portable barrel recoil gun, the
15 combination with the mount and its trail, of a pivot eccentrically mounted in the rear end of the trail, a spade mounted to swing about said pivot, means for moving said pivot on the trail, and means acting co-
20 operatively with said moving pivot, for securing the spade in any one of a plurality of working positions to which it may be moved.

4. In a portable barrel-recoil gun, the
25 combination with the mount and its trail, of a spade having a supporting arm pivotally connected to the mount and projecting rearwardly from its pivot when in the position for use, and means for securing the arm and
30 the spade in a plurality of working positions; said arm being capable of being swung about its pivot to a forwardly projecting position of transport.

5. In a portable barrel-recoil gun, the
35 combination with the mount, of a spade capable of vertical adjustment relatively to the mount, means for locking the spade in a plurality of working positions, and means whereby the spade may be shifted longitudinally of the mount to cause said locking
40 means to become effective.

6. In a portable barrel-recoil gun, a spade capable of adjustment to a plurality of working positions and having projections
45 extending upwardly from the spade with their faces presented substantially in the direction of recoil, and means for securing

said spade in said plurality of working positions; said projections being adapted to enter the ground to increase the effective
50 area of the spade when the spade is in one of its working positions.

7. In a portable barrel recoil gun, the combination with the mount and its trail, of an eccentrically mounted bolt, a spade hav-
55 ing a supporting arm integral therewith and pivotally mounted on said bolt, means for rigidly securing the spade with its arm to the gun trail in a plurality of working positions, said means being adapted to revolve
60 said bolt about the center of the eccentric.

8. In a portable barrel-recoil gun, the combination with the mount and its trail, of a spade adjustable to several working positions and having a press plate and an ex-
65 tension located above the press plate and with its working face presented substantially in the direction of recoil when the spade is in a working position, means for securing the spade in said plurality of work-
70 ing positions, and means preventing relative movement between the trail and the spade when the spade is in a working position; said press-plate and said extension being adapted to enter the ground when the spade is in
75 one of its working positions.

9. In a portable recoil gun, the combination with the mount and its trail; of a spade arranged thereon and adapted to be rigidly connected therewith in at least two working
80 positions, said spade being provided with a press plate which serves as a support for the trail of the mount in that working position of the spade in which the same is capable of penetrating to the least extent into the
85 ground.

The foregoing specification signed at Düsseldorf, Germany, this third day of August, 1907.

NORBERT KOCH.

In presence of—

ALFRED POHLMÉYER,
M. ENGELS.