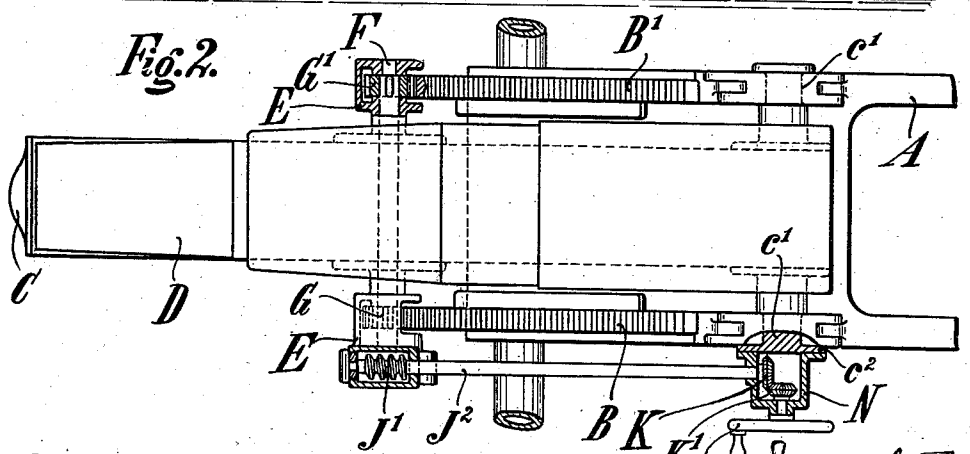
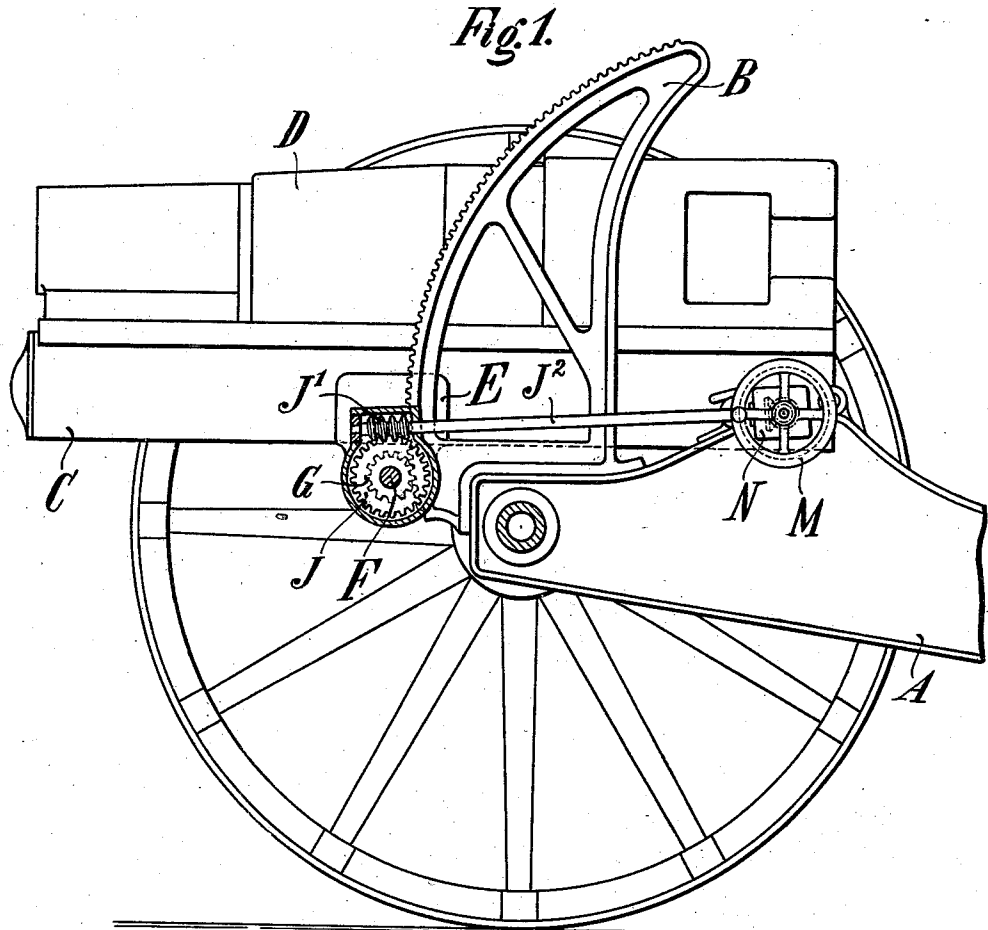


N. KOCH.
ELEVATING MECHANISM FOR GUNS.
APPLICATION FILED MAY 3, 1909.

988,641.

Patented Apr. 4, 1911.



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ELEVATING MECHANISM FOR GUNS.

988,641.

Specification of Letters Patent.

Patented Apr. 4, 1911.

Application filed May 3, 1909. Serial No. 493,699.

To all whom it may concern:

Be it known that I, NORBERT KOCH, a subject of the Emperor of Germany, and a resident of 24 Augustastrasse, Essen-on-the Ruhr, Germany, have invented certain new and useful Improvements in Elevating Mechanism for Guns, of which the following is a specification.

The present invention relates to elevating mechanism for guns and resides in a special arrangement of the drive for the elevating mechanism.

In many cases, as for example, in guns with a toothed arc directing means, wherein the toothed arc remains stationary during the elevation of the gun barrel, the hand wheel serving for driving the elevating mechanism is arranged upon a part of the gun which partakes of the elevation of the gun barrel (for example, the slide track carrier). With this latter arrangement, the driving wheel changes its position relatively to the mount, in aiming, and this, particularly with guns having great firing angles, is very inconvenient for the serving crew.

The present invention has for its purpose to avoid this difficulty. This purpose is attained according to the invention by such an arrangement of the drive for the elevating mechanism, as will bring the hand wheel upon a portion of the mount which does not vary its elevation in the elevation of the gun barrel, and has its axis of rotation coinciding with the axis of the horizontal trunnions.

In the accompanying drawing which shows one embodiment of the present invention by way of illustration, Figure 1 is a side elevation partly in section of those parts of a barrel recoil gun which are concerned with the present invention. Fig. 2 is a corresponding top plan view, also partly in section.

A represents the under mount with which the two toothed arcs B and B' are rigidly connected. Mounted upon the mount A through the medium of two horizontal trunnions c^1 is the slide track carrier C, upon which the gun barrel D is guided. Upon the slide track carrier C is secured a bearing member E in which is journaled a shaft F. Upon the shaft F are mounted two toothed wheels G and G¹, which intermesh with the toothed arcs B and B', and a worm wheel J that coöperates with a worm J¹.

The worm J¹ can be driven by a hand wheel M through the medium of a shaft J² and a right angle cone drive K, K¹. A housing N receiving the cone drive K, K¹, and the bearings of the shaft J² and the hand wheel M, is mounted on one of the trunnions c^1 , which, for this purpose, is provided with a broad flange c^2 ; the arrangement being so designed that the axis of rotation of the hand wheel M coincides with the axis of the trunnions c^1 . In consequence of this arrangement, the hand wheel M retains its position during aiming. The operation of the elevating mechanism requires no explanation.

Having thus described my invention, the following is what I claim as new therein and desire to secure by Letters Patent:

1. The combination with a gun having horizontal trunnions, of an elevating mechanism therefor comprising a rack, means co-operating therewith for imparting movement to the gun barrel and partaking of said movement, and a driving means therefor which does not partake of the elevating movement of the gun barrel, said driving means being mounted with its axis of rotation coinciding with the axis of the horizontal trunnions of the gun.

2. The combination with a gun having horizontal trunnions, of an elevating mechanism therefor comprising arcuate racks having their axes coincident with the axes of the horizontal trunnions of the gun barrel, means coöperating therewith for imparting movement to the gun barrel and partaking of said movement, and a driving means therefor which does not partake of the elevating movement of the gun barrel, said driving means being mounted with its axis of rotation coinciding with the axis of the horizontal trunnions of the gun.

3. A toothed arc elevating mechanism for guns mounted upon horizontal trunnions comprising, a toothed arc which remains fixed during the elevation of the gun, a drive gear for the elevating mechanism including a hand-wheel located upon a member which does not change its height during the elevation of the gun barrel and also including a member having an axis of rotation which coincides with the axis of the horizontal trunnions.

4. A toothed arc elevating mechanism for guns mounted upon horizontal trunnions

comprising, a toothed arc which remains fixed during the elevation of the gun and a drive gear including a hand-wheel mounted upon a member which does not change its height during the elevation of the gun barrel and which has its axis of rotation coincident with the axis of the horizontal trunnions.

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10 5. A toothed arc elevating mechanism for guns mounted upon horizontal trunnions comprising, a toothed arc which remains fixed during the elevation of the gun barrel, a housing mounted upon one of the horizontal trunnions, a drive gear mounted in

said housing, including the hand-wheel M 15 having its axis of rotation coincident with the axis of the horizontal trunnions, and a transmitting connection also mounted in said housing and extending from the hand-wheel shaft to the driven part of the elevating mechanism. 20

The foregoing specification signed at Bar-men, Germany, this 3d day of April, 1909.

NORBERT KOCH. [L. s.]

In presence of—

OTTO KÖNIG,

C. J. WRIGHT.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."
