

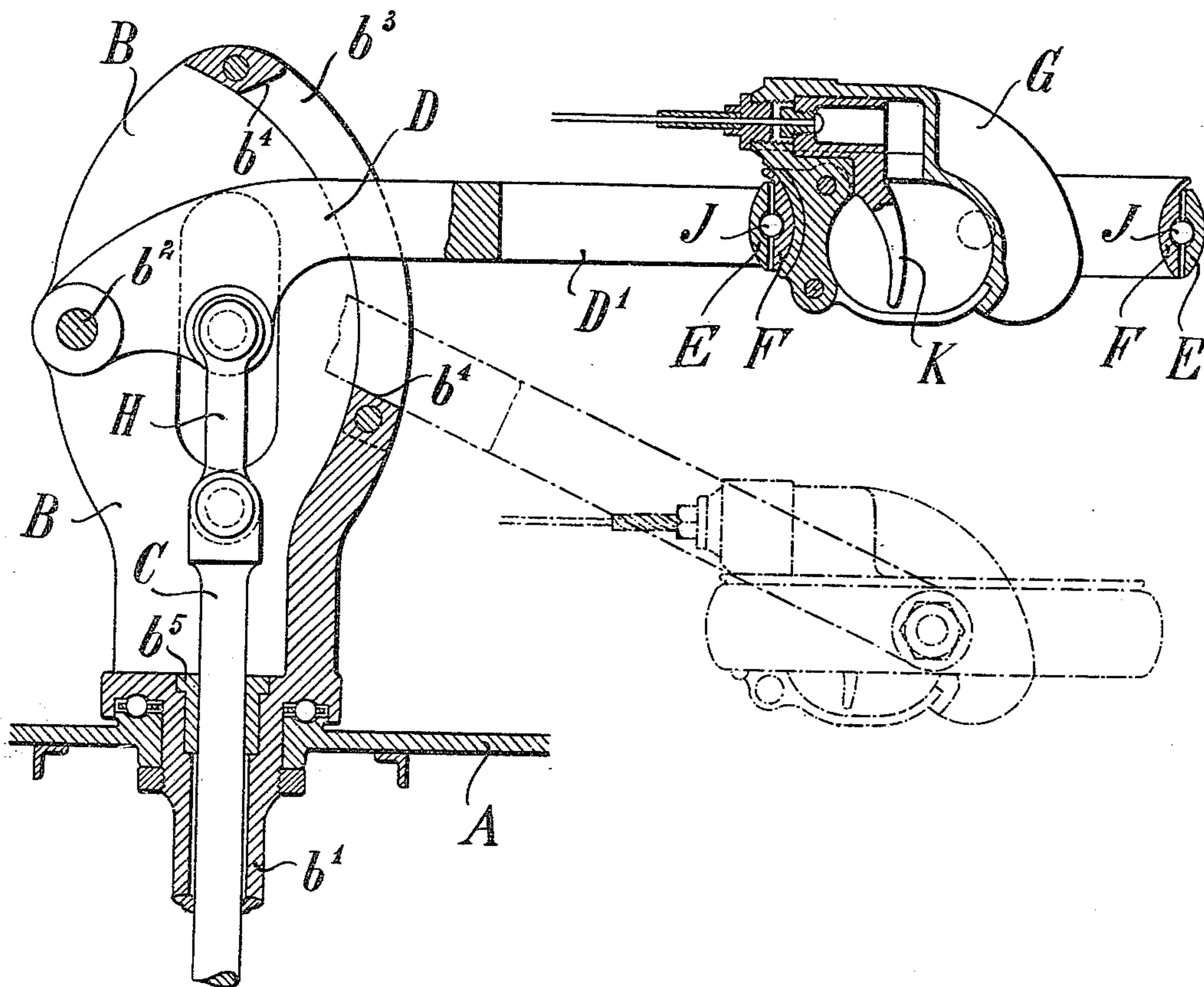
No. 842,563.

PATENTED JAN. 29, 1907.

J. KRONE.
TRAINING LEVER FOR GUNS.
APPLICATION FILED NOV. 3, 1905.

2 SHEETS—SHEET 1.

Fig. 1.



Witnesses
J. M. Hynke
A. O. Knight.

Inventor
Johannes Krone
By Knight Bros
Attorneys

UNITED STATES PATENT OFFICE.

JOHANNES KRONE, OF ESSEN-ON-THE-RUHR, GERMANY, ASSIGNOR TO
FRIED. KRUPP AKTIENGESELLSCHAFT, OF ESSEN-ON-THE-RUHR, GER-
MANY.

TRAINING-LEVER FOR GUNS.

No. 842,563.

Specification of Letters Patent.

Patented Jan. 29, 1907.

Application filed November 3, 1905. Serial No. 285,739.

To all whom it may concern:

Be it known that I, JOHANNES KRONE, a subject of the Emperor of Germany, and a resident of 56 Bismarckstrasse, Essen-on-the-Ruhr, Germany, have invented certain new and useful Improvements in Training-Levers for Guns, of which the following is a specification.

The present invention relates to training-levers for guns.

It has hitherto been customary to connect the grip rigidly to the training-lever. With such arrangements, however, the manipulation of the training-lever is impeded by the grasping hand having to adapt itself to the different positions of the lever in cases where the operator is confined to a certain place and has to do the sighting during the training. This disadvantage is particularly felt when the trigger for the firing mechanism of the gun is arranged on the grip of the training-lever—that is to say, when the trigger and the training-lever must be operated by the same hand.

The object of the invention is to do away with the disadvantages above set forth.

In the accompanying drawings I have shown the invention applied to a training-lever for controlling the two motors which effect the training and angular elevation of a gun.

Figure 1 is a side view, partly in section, of the lever and some parts of the controlling mechanism. Fig. 2 is a top view partly in section. Fig. 3 is a detail view showing a modified construction, and Fig. 4 is a sectional view on line 4 4, Fig. 3.

A housing B is connected with a table A, Fig. 1, on the mount, so as to be capable of turning about a vertical axis, but incapable of movement in the direction of said axis. The housing B is provided with a tubular extension b' , which projects through the table A and is connected with the controlling mechanism for the motor that drives the horizontal training mechanism. The training-lever D D' is swingingly mounted in the housing B through the medium of a horizontal bolt b^2 . The vertical walls b^3 of a slot, Fig. 1, in the housing B serves as guides for the training-lever, while the walls b^4 of the slot limit the movement of the lever. Within the housing B the training-lever is connected by

a link H to a rod C, which projects into the tubular extension b' of the housing B. The rod C is guided in a box b^5 in the housing B and is connected with the controlling mechanism for the motor that drives the elevating mechanism of the gun.

The part of the training-lever which is outside of the housing B is bifurcated and in its two arms D' a ring E is swingingly suspended through the medium of two coaxial horizontal trunnions d^2 . A second ring F is arranged in the ring E through the medium of balls J, so as to be capable of turning about its axis relatively to the ring E. The grip G for the training-lever carries the trigger K, Fig. 1, for the firing mechanism of the gun and is secured to the ring F.

The above-described connection between the grip G and the training-lever D D' corresponds to a gimbal-joint. When the training-lever, in order to control the motors driving the training mechanism, is swung about the axis of the bolt b^2 and is swung with the housing B about the axis of the housing, the connection between the grip G and the training-lever permits of the grip assuming any position relatively to the training-lever, that is most convenient for the hand operating the training-lever and the trigger K—such, for instance, as that shown in dotted lines in the drawings. In order to further increase the mobility of the grip, an additional connection, such as that shown in Figs. 3 and 4, may be introduced between the bifurcated part of the training-lever and the part D to permit a limited turning movement of the bifurcated part of the lever on an axis substantially longitudinal to the training-lever.

Having thus described the invention, what is claimed as new therein is—

1. A training-lever for guns provided with a grip angularly movable thereon and a trigger carried by the grip.

2. A training-lever for guns provided with a grip angularly adjustable on said lever, about a plurality of axes and a trigger carried by the grip.

3. A training-lever for guns provided with a grip, a trigger carried by the grip and a connection between the grip and lever, constructed with two turning bearings with axes at right angles to each other.

4. A training-lever for guns provided with

a grip, a trigger carried by the grip and three turning connections interposed between said grip and the training-lever.

5 A training-lever for guns provided with
 5 a grip and three turning connections interposed between said grip and the training-lever; two of said turning connections having their axes at right angles to each other and in a plane substantially transverse to the length
 10 of the training-lever, and the axis of the third turning connection being substantially longitudinal with the training-lever.

6. An aiming-lever for guns, having vertical and horizontal movements, and constructed with a bifurcated end, a ring trunnioned in said bifurcated end, a second ring having a turning-bearing on the ring first named, and a grip mounted on said second ring.

20 7. An aiming-lever for guns, having vertical and horizontal movements, and constructed with a bifurcated end, a ring trunnioned in said bifurcated end, a second ring mounted coaxially with and having a turning-bearing on the ring first named, through
 25 the medium of opposed grooves with interposed balls, and a grip mounted on said second ring.

8. The combination with a rotatable member
 30 for controlling one of the controlling mechanisms of a gun, of an axially-movable rod controlling another mechanism of a gun,

a lever connected to the rotatable member and to the axially-movable rod, and a grip carried by said lever and angularly movable
 35 thereon.

9. The combination with a rotatable member for controlling one of the controlling mechanisms of a gun, of an axially-movable rod controlling another mechanism of a gun,
 40 a lever connected to the rotatable member and to the axially-movable rod and a grip angularly adjustable about a plurality of axes.

10. The combination with a rotatable member for controlling one of the controlling
 45 mechanisms of a gun, of an axially-movable rod controlling another mechanism of a gun, a lever connected to the rotatable member and to the axially-movable rod, and a grip angularly adjustable about two axes at right
 50 angles to each other.

11. A training-lever mounted to move in two directions at right angles to each other, a grip carried by the lever, and connection between the grip and the lever permitting the
 55 grip to move relatively to the lever in two directions at right angles to each other.

The foregoing specification signed at Düsseldorf this 23d day of October, 1905.

JOHANNES KRONE.

In presence of—

MARIA ESSENWEIN,
 WILLIAM ESSENWEIN