N. KOCH.

WHEELED GUN CARRIAGE.

APPLICATION FILED JUNE 9, 1915.

1,166,839.

Patented Jan. 4, 1916.

Fig. 1.

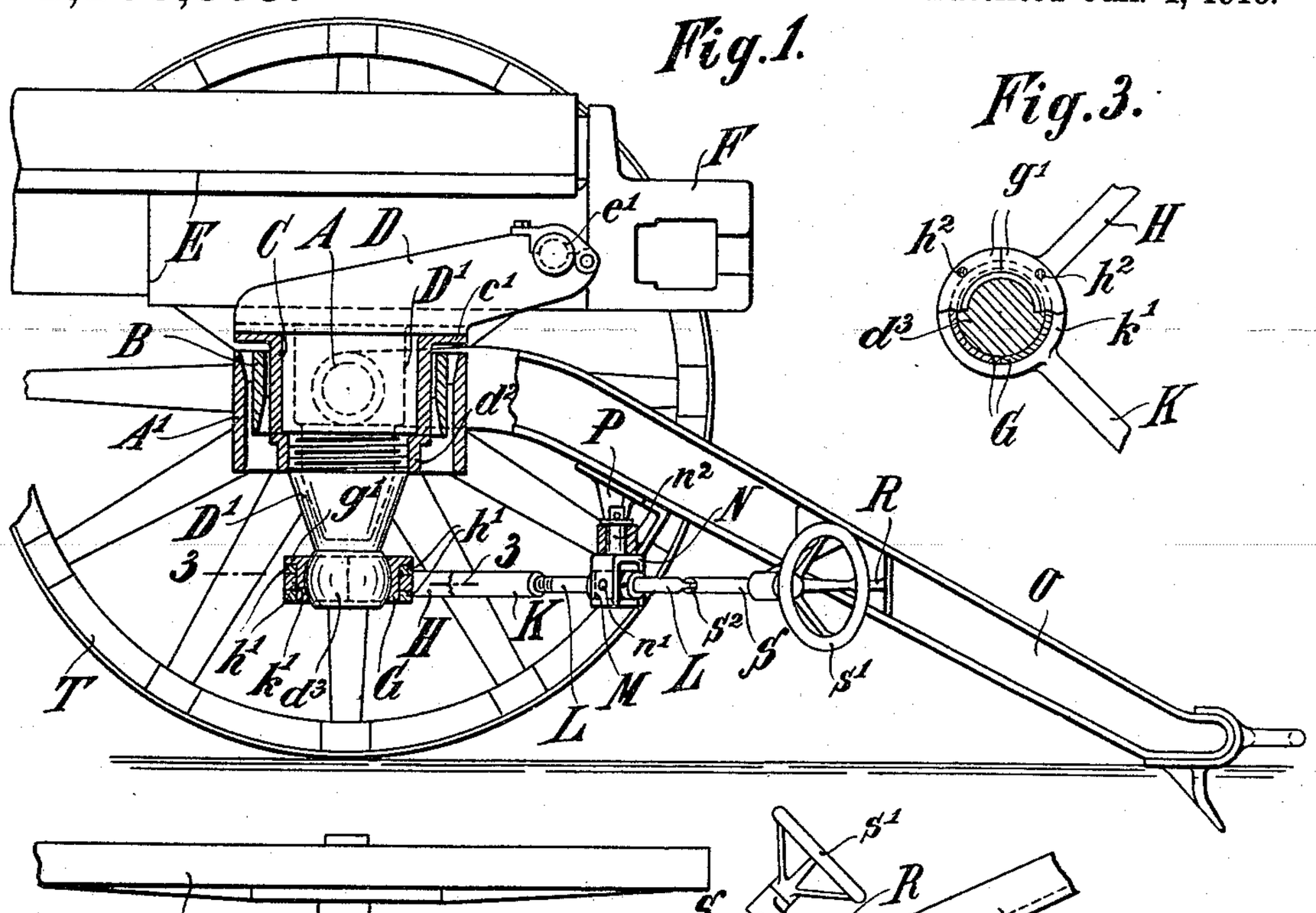


Fig. 3.

Fig. 2.

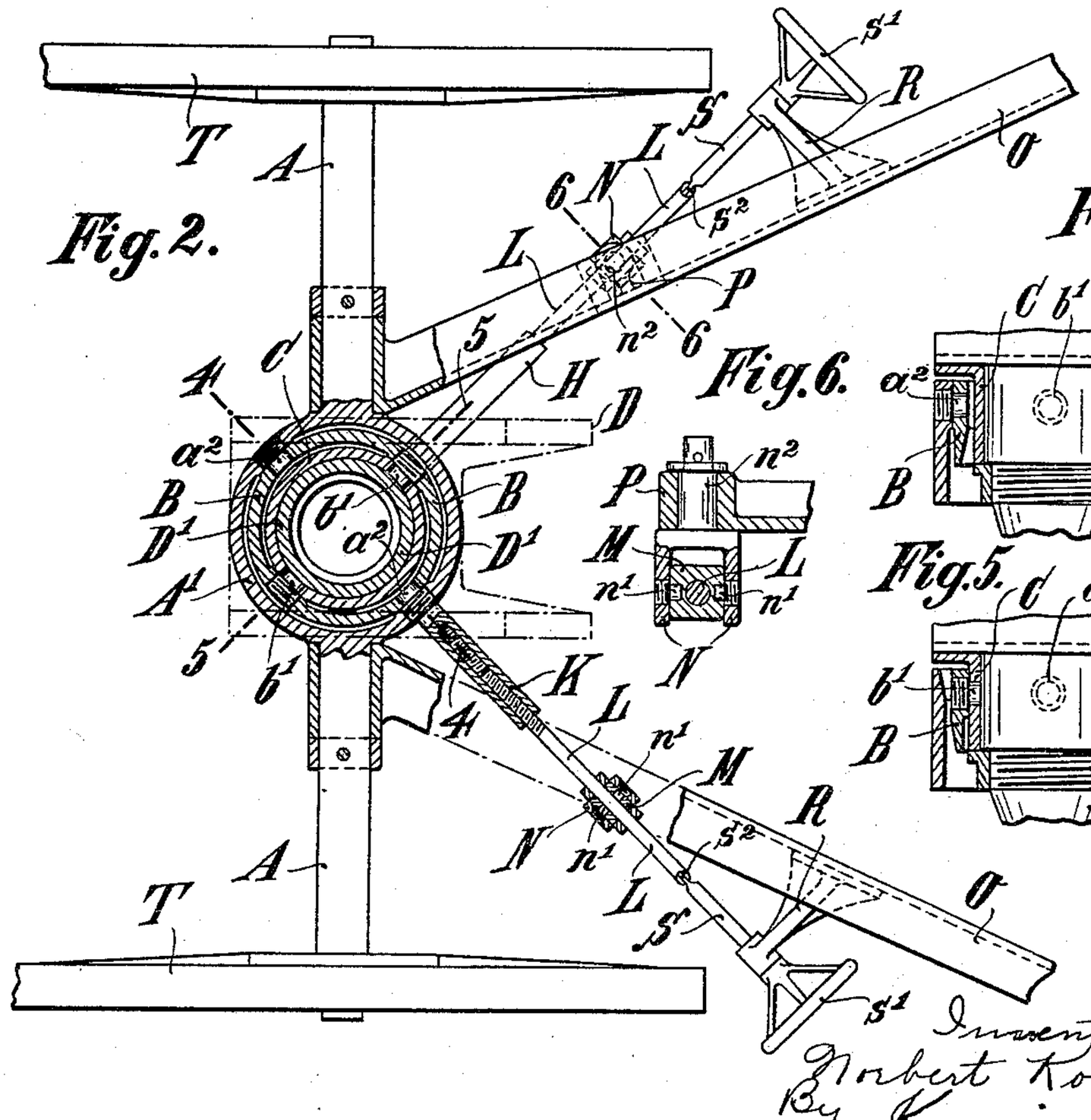


Fig. 4.

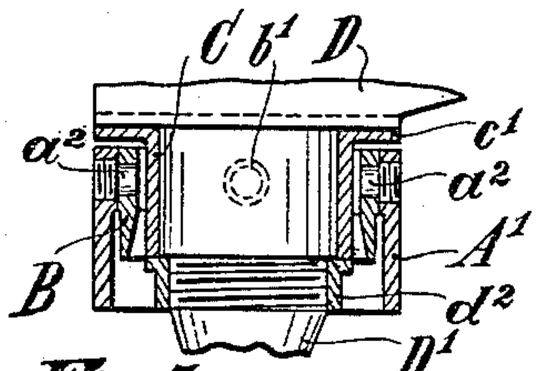
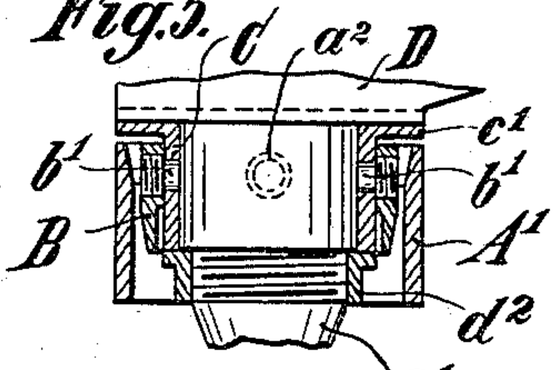


Fig. 6.

Fig. 5.



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WHEELED GUN-CARRIAGE.

1,166,839. Specification of Letters Patent. Patented Jan. 4, 1916.

Application filed June 9, 1915. Serial No. 33,113.

To all whom it may concern:

Be it known that I, NORBERT KOCH, residing at Essen-Rellinghausen, Germany, a citizen of the German Empire, have invented a certain new and useful Improvement in Wheeled Gun-Carriages, of which the following is a specification.

The present invention relates to improvements in the gun-mount described in the application for Letters Patent, Serial Nr. 877186, filed December 14, 1914.

One embodiment of the invention is illustrated in the accompanying drawings for a gun carriage with a spread trail, and Figure 1 shows a side view partly in section of the parts concerned of the gun carriage; Fig. 2 is a top plan view of Fig. 1 partly in section; Fig. 3 is a top view of a detail in part section along line 3—3 of Fig. 1, and Figs. 4 to 6 are sections on lines 4—4, 5—5 and 6—6, respectively, of Fig. 2.

The axle tree A of the trail is provided with an annular enlargement A^1 (see Figs. 1, 2, 4 and 5), which has two diametrically oppositely situated journal pins a^2 (Figs. 2 and 4). The axes of the journal pins a^2 run obliquely to the length direction of the trail. On the journal pins a^2 is mounted to oscillate a ring B, which is also provided with two journal pins b^1, the common axis of which intersects at right angles the axis of the journal pins a^2. On the journal pins b^1 there is still another ring C mounted to oscillate, which serves as a bearing or socket for a perpendicular hollow pivot D^1 of the top carriage D. In the top carriage D are carried the horizontal trunnions e^1 of the cradle E supporting the gun-barrel F (see Fig. 1). The top carriage D rests on a flange c^1 (Figs. 1, 4 and 5) of the ring C, and is secured against lifting from the ring C by means of a nut d^2 threaded on the pivot D^1, and impinging against the edge of the ring C. Between the top carriage D and the cradle E is inserted an elevating gear, while between the top carriage D and the ring C is provided a training gear, by means of which the top carriage can be trained around the axis of the pivot D^1. This training gear is not shown in the drawing, as it may be constructed in any known manner. At its lower end, the pivot D^1 carries a spherical journal d^3 (see Figs. 1 and 3) inclosed by a two-part ring G of corresponding shape. The ring G is gripped by two other rings h^1 (see Fig. 1), which are secured on a rod H (see Figs. 1, 2, 3). This rod is secured in the ring G by means of screws h^2 (Fig. 3), which engage in a flange g^1 of the ring G, and in the upper one of the rings h^1. Between the rings h^1 is revolubly mounted still another ring k^1 attached to a rod K on the ring G. The rods H and K are situated in the direction of the axes of the journal pins b^1 and a^2, respectively, and are provided with internal threads permanently engaging with external threads on each of the rods L. The rods L are revolubly, but non-displaceably carried in sleeves M which are mounted to oscillate in forks N through the intermediary of journal studs n^1 (see particularly Fig. 6).

The forks N are revoluble in bearing brackets P by means of journals n^2, the axes of which are perpendicular to the common axis of the journal studs n^1, these bearing brackets being attached to the trail sides O which are mounted to oscillate independent of each other around the axle tree A and are spread apart. On each trail side O is furthermore provided a bearing bracket R (Figs. 1 and 2) in which a shaft S carrying a hand wheel s^1 is revolubly, but non-displaceably mounted. Each of the shafts S is connected with the corresponding rod L through a universal joint s^2.

If the gun carriage has been unlimbered on horizontal ground and the gearings L H and L K are in their middle position, the pivot D^1 will then be perpendicular. On the other hand should the gun carriage be unlimbered on ground which is plane but inclined with regard to the muzzle horizon of the gun, the pivot D^1 may then be inclined both to the vertical plane running through the bore axis when the gun is in its middle position (inclined position of the wheels) and the pivot may also be inclined against the vertical plane running through the axis of revolution of the wheels T ("hang-position" of the gun carriage), but it can only have an inclination to one of these two planes. In such a case the pivot D^1 will be placed perpendicularly before the firing, by turning one or both of the hand wheels s^1. As the rods L are non-displaceably mounted in the sleeve M, the rods H and K will experience an axial displacement upon the hand wheels s^1 being turned, which will cause an adjustment of the pivot D^1.

The adjustment of the pivot is carried out with the assistance of water-levels, or the like. If, on the other hand, the gun carriage is unlimbered on ground that is so constituted that the four supporting points of the gun carriage, namely the wheels and the two trail sides O, are not situated in one and the same plane, the following movement will occur. After one of the trail sides has reached the ground, the other trail side actuated by the preponderance of the trail ends of the gun carriage, will lower itself relative to the first trail side which already rests on the ground. As a consequence, the pivot D^1, not taking into account inclined carriage wheels and hang-position will be obliquely positioned through the intermediary of the rods L H or L K attached to that trail side which at the time is oscillating. The pivot D^1 will thereupon be turned out of this position into a perpendicular position through the turning of the hand-wheels s^1 before the firing takes place.

On unlimbering the gun carriage upon uneven ground and by adjusting the pivot by means of the hand wheels s^1, movement will occur in parts G d^3, G k^1, M n^1, P n^2 and s^2.

The recoil shock appearing on firing will be transmitted in the device described above, through the top carriage D, the pivot and socket D^1 C, etc., to the rods H L S, K L S, and through the rods and their bearings to the trail sides O.

I claim:—

1. A wheeled gun carriage having a trail, a pivot member carrying the gun-barrel and enabling training thereof, means for oscillating said pivot member around either of two intersecting axes, running at oblique angles relative to the axis of revolution of the carriage wheels, whereby said pivot may always be adjusted into vertical position irrespective of the condition of the ground, said means comprising systems of rods forming force-closing connections between said pivot and said trail.

2. In a wheeled gun carriage having spread-apart trail sides mounted to oscillate independently of each other on the wheel axle, a top carriage mounted in universal bearings on the wheel axle, said universal bearings having journals the axes of which intersect at right angles relatively to each other and at oblique angles relative to the axis of revolution of said trail sides, and means for oscillating the top carriage relatively to the trail sides, said means comprising a ball joint on the top carriage, two independent rings in said ball joint, one of said rings having threaded telescopic connection with one of the trail sides, and the other of said rings having similar connection with the other trail side, whereby said top carriage may be adjusted by said connections around one or the other of the intersecting axes of said journal pins, and the recoil shock transmittetd through said connections to the trail sides.

The foregoing specification signed at Barmen, Germany, this 8th day of May, 1915.

NORBERT KOCH. [L. S.]

In presence of—
HELEN NUFER,
ALBERT NUFER.