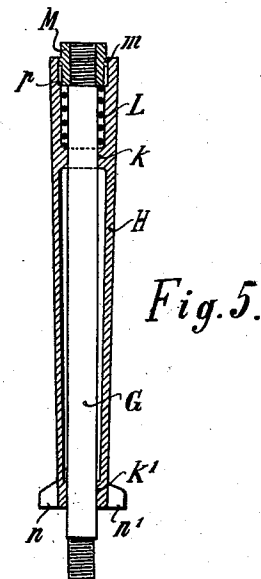
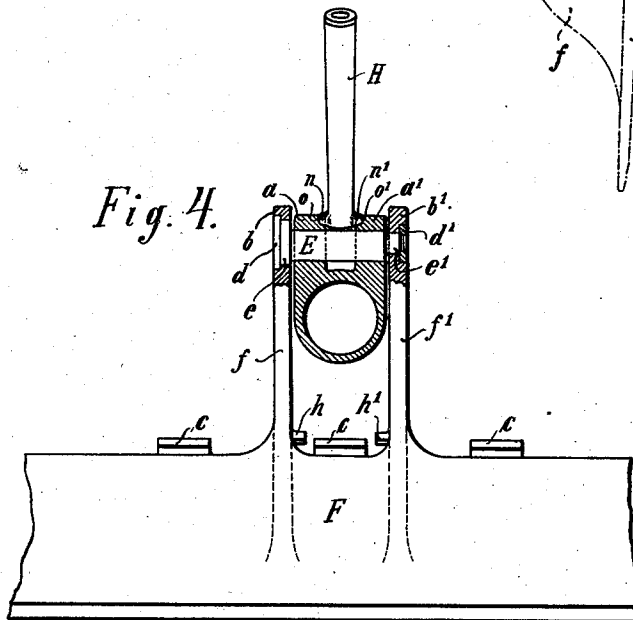
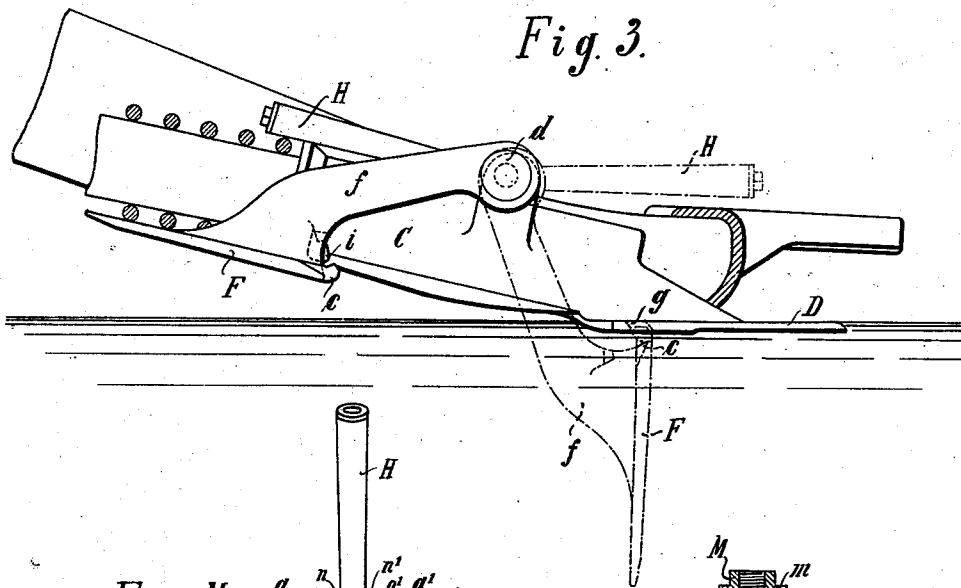


O. BEHNKE.
GUN CARRIAGE.

(Application filed Feb. 18, 1901.)

(No Model.)

3 Sheets—Sheet 2.



WITNESSES:
Fred Hachenberg.
E. P. Hendrickson.

INVENTOR:
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BY *Alfred Gustafson*
ATTORNEY.

No. 707,376.

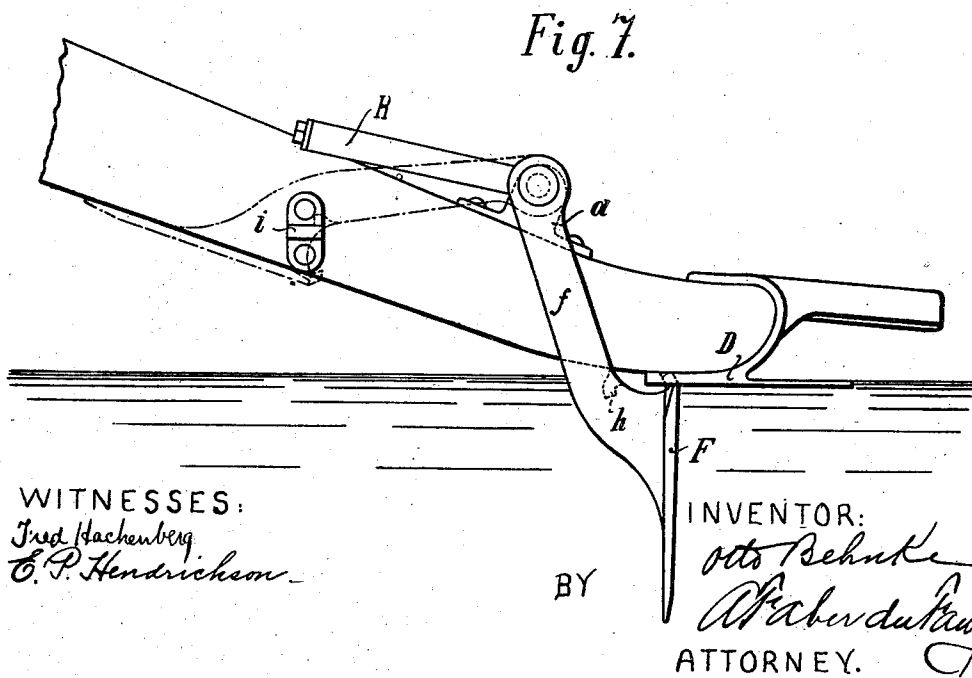
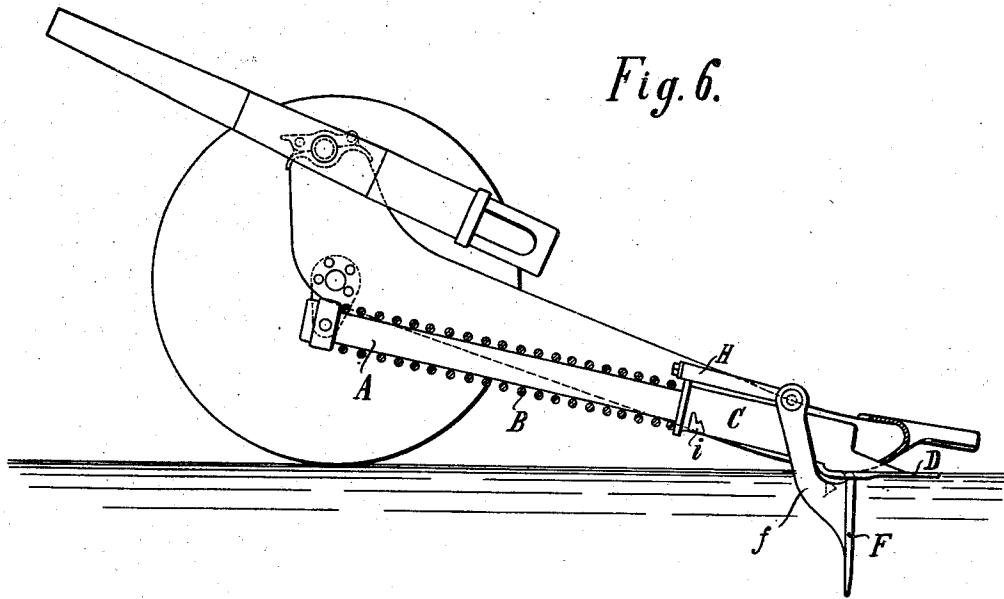
Patented Aug. 19, 1902.

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(Application filed Feb. 18, 1901.)

(No Model.)

3 Sheets—Sheet 3.



WITNESSES:

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UNITED STATES PATENT OFFICE.

OTTO BEHNKE, OF ESSEN, GERMANY, ASSIGNOR TO FRIED. KRUPP, OF
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GUN-CARRIAGE.

SPECIFICATION forming part of Letters Patent No. 707,376, dated August 19, 1902.

Application filed February 18, 1901. Serial No. 47,715. (No model.)

To all whom it may concern:

Be it known that I, OTTO BEHNKE, engineer, a citizen of the German Empire, residing at Bismarckstrasse 36, Essen-on-the-Ruhr, Germany, have invented certain new and useful Improvements in Gun - Carriages Provided with Brake-Spurs, of which the following is a specification.

The present invention has reference to improvements in gun-carriages provided with brake-spurs, and has for its object to provide simple and efficient means for enabling the spur to be readily and quickly turned over when the gun is limbered up in order for marching, so that the spur does not interfere with the transportation of the gun.

The object of the present invention is accomplished, essentially, by connecting the spur to the carriage or to the spur-carrier by means of an eccentric bolt, so that by turning the latter the spur is locked both in its operative and in its transport position.

The nature of this invention will best be understood when described in connection with the accompanying drawings, in which—

Figure 1 represents a sectional side elevation of part of a gun-carriage, showing the spur attached to the recoil-brake, said spur being shown in its operative position. Fig. 2 is a plan or top view of Fig. 1. Fig. 3 is a view similar to Fig. 1, but showing the spur in its position for transportation or marching order. Fig. 4 is a sectional rear view looking in the direction of arrow 4, Fig. 1. Fig. 5 is a horizontal section and a plan of the adjusting-lever, drawn on an enlarged scale. Fig. 6 is a side elevation, partly in section, showing the entire gun and carriage on a smaller scale. Fig. 7 is a view similar to Fig. 1, but showing the spur attached directly to the gun-carriage.

Similar letters of reference designate corresponding parts throughout the several views of the drawings.

Referring at present to Figs. 1 to 6 of the drawings, wherein I have shown the spur in connection with the recoil-brake, although the latter does not constitute any part of the present invention, but will be described for the purpose of clearness, the letter A designates the brake-rod, which is placed between the

walls of the gun-carriage and is linked to the front part of the carriage-body and adapted to slide, as usual, and has also connected therewith the spur F at its rear. The brake-rod A is encompassed by a spring B, the front end of which abuts against the carriage and the rear end of which engages with an abutment secured to the brake-rod. On firing the brake-rod A is prevented from participating in the recoil of the carriage by the spur F, which is buried in the ground, and consequently said rod moves forward relatively to the carriage, so that the recoil-spring B is compressed. After the recoil the carriage is brought back to the firing position by the extension of the spring. When the gun is limbered up, the brake-rod A is connected with the body of the carriage by suitable means, such as chains or the like, so that it lies fast between the walls of the carriage.

The connection between the spur and the brake-rod is accomplished in the following manner: The spade-like blade of the spur F is provided with two parallel arms ff' , having at their ends sockets bb' , which serve for the purpose of hinging the spur to the spur-carrier C. The latter, which is preferably made in the form of a hollow cylinder closed at one end, is placed over the rear end of the brake-rod A and secured to the same in any suitable manner, so that it forms at the same time an abutment for the recoil-spring B. The spur-carrier C is provided with two sockets aa' , arranged in a horizontal line between the walls of the carriage and which are adapted for the reception of the pivotal bolt E, which passes through the same, as well as the sockets bb' of the spur F. The distance between the inner faces of the sockets bb' is somewhat greater than the outside distance between the sockets aa' , so that some play is permitted between these parts. At its rear end the spur-carrier terminates in a horizontal plate D, adapted to engage with the ground and with which the blade of the spur F is adapted to be coupled in the operative position in the manner hereinafter to be described, the object of said plate D being to prevent the spur from penetrating too deeply into the earth and also to prevent the earth from being plowed or thrown up on recoil.

The spur is connected with the spur-carrier by means of the bolt E, previously referred to, and which latter is mounted to turn in the sockets $a a'$, formed in the spur-carrier C. The bolt E is provided at both ends with eccentric journals $e e'$, which are coaxial and have the same eccentricity with reference to the bolt E. These journals have bearings in the sockets $b b'$ of the arms $f f'$ of the spur F, so that the spur can be turned about said journals $b b'$ from its operative position to its transport position, and vice versa. To permit the bolt E to be inserted into the four sockets $a a'$ and $b b'$ on one side, the eccentric journal e is made larger and the journal e' smaller than the diameter of the bolt E. After the bolt E has been inserted it is secured by means of a collar d on the journal e and the nut d' , screwed onto the journal e' . In view of the eccentricity of the journals $e e'$ a turning of the bolt E will cause a rising or lowering of the spur relative to the spur-carrier—that is to say, a sliding or eccentric movement relative to the same—which movement is utilized for coupling and uncoupling the spur to and from the spur-carrier. For this purpose the blade of the spur F is provided at its top with a number of hook-formed catches c , and in the plate D are formed corresponding recesses or rests g , with which the catches c engage when the spur is in its working position, so as to form an operative combination of the spur-blade and the spur-carrier. When the bolt E is turned, the catches are thrown out of engagement with the rests. In order that the spur may be rigidly connected with the spur-carrier during transport, there are arranged on the inner surfaces of the arms $f f'$ two catches $h h'$ and at the front of the spur-carrier C two corresponding recesses or rests $i i'$, which catches and rests are adapted for relative engagement in a similar manner as the catches c and the rests g and are similarly operated by the turning of the bolt E in view of its eccentric mounting. The bolt E is turned for the coupling and uncoupling of the spur by means of a crank attached to said bolt and consisting of a rod G, attached vertically to the axis of rotation of the bolt. To prevent an accidental turning of the bolt E, which would cause uncoupling of the spur from the spur-carrier, a sleeve H is slidably arranged upon the rod G, said sleeve being of larger diameter than the rod and guided by internal collars or shoulders $k k'$. The sleeve H is acted upon by a spring L, surrounding the upper part of the rod G and confined between the collar or shoulder k and a nut M, screwed on the end of the rod G. The spring L consequently tends to move the sleeve H toward the horizontal bolt E upon the rod G. The end of the sleeve H adjacent to the bolt E is provided with two diametrically-placed radial noses $n n'$, the central plane of which passes through the axis of the bolt E. These noses rest upon the circumferences of the

sockets $a a'$ and slide upon the same during the turning of the bolt E, and therefore a longitudinal movement of the sleeve H under the pressure of the spring L is not possible. The sockets $a a'$ are, however, provided with rests $o o'$, which are constructed to correspond in form to the noses $n n'$ and are so located that when the hand-lever is in the position to be locked the noses $n n'$ are opposite to and capable of entering the rests. Consequently in this position of the lever the sleeve H can yield under the pressure of the spring L, so that the noses $n n'$ enter the rests $o o'$ and lock the lever, while by drawing back the sleeve on the rod G against the pressure of the spring the noses are again drawn out of engagement with the rests and the lever is released. To limit the drawing-out movement of the sleeve H, a shoulder p is arranged on said sleeve, which is adapted to engage with a collar m on the nut M when the sleeve is withdrawn.

The operation and manipulation of the apparatus are as follows: When the spur is in its operative position, the several parts are located as shown in Figs. 1 and 2. The catches c of the spur-blade are in engagement with the rests g of the plate D, and the spur is rigidly coupled to the spur-carrier, while the hand-lever is unlocked by drawing back the sleeve H and then turned toward the trail of the gun-carriage, so as to take the position shown in dotted lines in Fig. 3. In view of the turning of the bolt by this movement the spur is moved obliquely toward the rear of the carriage through a distance equal to twice the eccentricity of the journals $e e'$. The catches c pass out of the rests g , and the spur assumes the position shown by dotted lines in Fig. 3. The spur is then turned toward the front of the gun-carriage until the catches $h h'$ come opposite to the rests $i i'$, and then the hand-lever is returned to its original position. During the latter movement the spur is again moved through double the eccentricity of the journals $e e'$, but forwardly in an oblique direction, and the catches $h h'$ engage with the rests $i i'$ and lock the spur in its transport position, as shown by full lines in Fig. 3. The turning over of the spur from its transport position to its operative position takes place in the same manner, but in reverse order.

In Fig. 7 I have shown the spur in direct connection with the gun-carriage, forming what is generally called "rigid spur." This arrangement is distinguished from that hereinbefore described only by the fact that the bearings $a a'$ for the bolt, the rests $i i'$ for the hooks $h h'$, and the plate D are connected directly to the walls of the carriage instead of to the spur-carrier.

What I claim as new is—

1. In combination with a gun-carriage, a brake-spur swinging upon a pivot to and from its braking position, an eccentric bolt forming said pivot, having a rotation independent

of the swinging movement of the spur, and means through which the spur engages the carriage, for locking the spur in braking and in inoperative positions, moved into and out of both locking engagements by the eccentric bolt.

2. The combination with a gun-carriage, of a pivotal eccentric bolt placed in connection with the carriage, a spur swung on said eccentric bolt, and interlocking parts placed respectively on the spur-carrier and on the spur to hold the spur in braking and in inoperative positions and adapted to be thrown into and out of engagement by the movements of the bolt, substantially as described.

3. In combination with a gun-carriage, a brake-spur swinging upon a pivot to and from its braking position, an eccentric bolt forming said pivot, having a rotation independent of the swinging movement of the spur, means through which the spur engages the carriage for locking the spur in braking and in inoperative positions, moved into and out of both locking engagements by the eccentric of said bolt, and a lever for rotating the eccentric.

4. In combination with a gun-carriage, a braking-spur adjustable to braking position upon a pivot on said carriage, and also having a movement essentially radial to its pivot, and means for positively moving the spur radially and throwing it into engagement with the carriage for locking the spur in braking and in inoperative positions.

5. In combination with a gun, a braking-spur swinging about a pivot on said gun, from transport position to braking position, and having at each end of its swinging movement, a movement essentially radial to its pivot, and locking means at each end of the spur's

path of swinging, by which the spur engages the carriage, engaged and disengaged with the spur by the latter's radial movement.

6. In combination with a gun-carriage; a braking-spur swinging about a pivot on said carriage, and also having a movement essentially radial in relation to its pivot, into and out of locking relation to the gun-carriage, locking means carried by the carriage and spur to lock the spur in braking and in inoperative positions, and brought into and out of engagement by the said radial movement of the spur, and a bolt carrying an eccentric providing the pivot for the spur, and having a rotating movement independent of the swinging movement of the spur.

7. In combination with a gun-carriage; a braking-spur swinging about a pivot on said carriage, and also having a movement essentially radial in relation to its pivot, into and out of locking relation to the gun-carriage, means adapted to lock the spur in braking and in inoperative positions and carried by the carriage and spur consisting of a projection on one part and a recess on the other brought into and out of engagement by the said radial movement of the spur, and a bolt carrying an eccentric providing the pivot for the spur, and having a rotating movement independent of the swinging movement of the spur.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

OTTO BEHNKE.

Witnesses:

E. HERBER,
WM. ESSENWEIN.