

No. 724,335.

PATENTED MAR. 31, 1903.

E. K. ROTHE.
RECOIL APPARATUS FOR GUNS.

APPLICATION FILED OCT. 1, 1902.

NO MODEL.

Fig. 1.

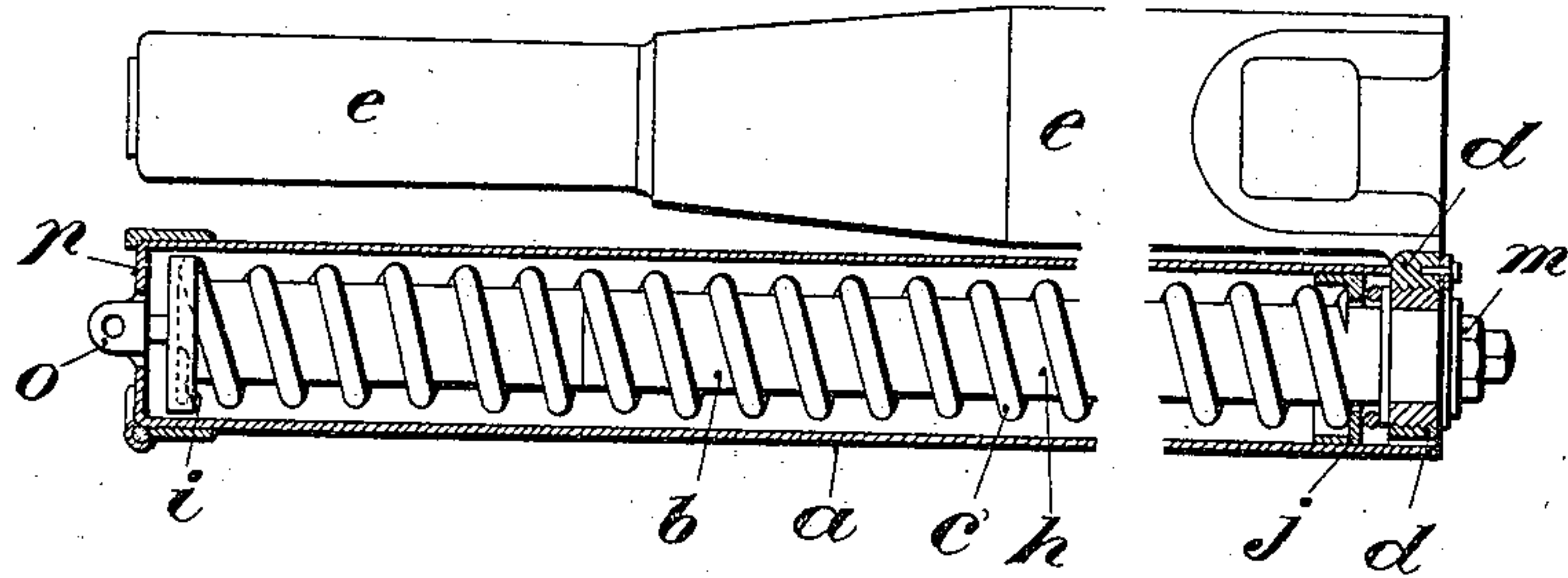


Fig. 2.

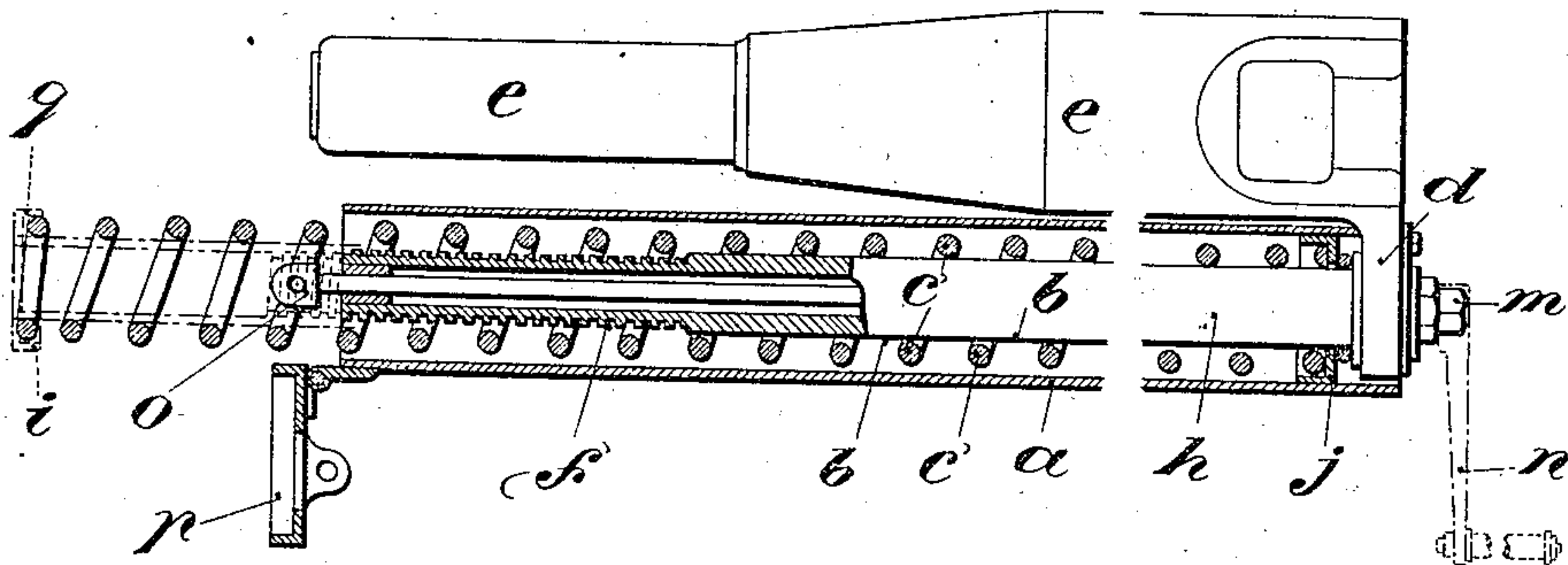
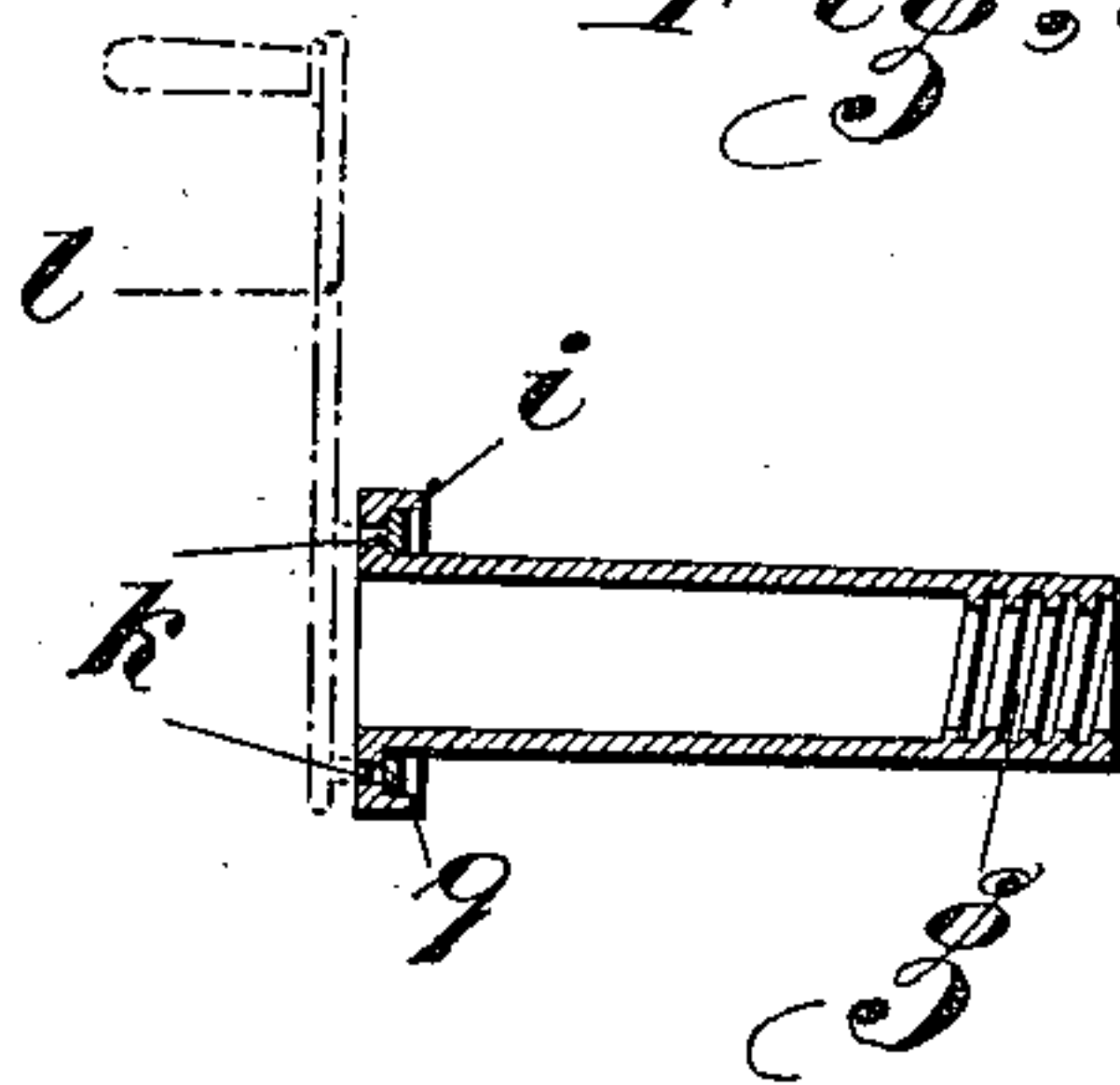


Fig. 3.



Witnesses:

J. B. Keefe

Benjamin S. Elliott

Inventor

Ernst K. Rothe

By

James L. Norris

Atty.

UNITED STATES PATENT OFFICE.

ERNST KARL ROTHE, OF EISENACH, GERMANY.

RECOIL APPARATUS FOR GUNS.

SPECIFICATION forming part of Letters Patent No. 724,335, dated March 31, 1903.

Application filed October 1, 1902. Serial No. 125,553. (No model.)

To all whom it may concern:

Be it known that I, ERNST KARL ROTHE, engineer, a subject of the Grand Duke of Saxe-Weimar, residing at Eisenach, in the Grand Duchy of Saxe-Weimar, German Empire, have invented certain new and useful Improvements in or Relating to Recoil Apparatus for Guns, of which the following is a specification.

My present invention relates to recoil apparatus for guns in which the gun-barrel recoils and is returned to its normal position by a spring.

The invention has for its object to so arrange the recoil-spring as to enable the same to be fitted in or removed without necessitating the removal or displacement of the brake-cylinder.

A further advantage of the construction consists in the tension device, which serves also as the front abutment for the spring, remaining on the brake-cylinder after fitting in the spring and surrounding the cylinder, so as to avoid any reduction of the length of stroke.

In the accompanying drawings one form of carrying out the invention is illustrated by way of example.

Figure 1 shows the gun-barrel in firing position resting upon the upper part of the carriage or the recoil-spring casing, the spring being fitted in and held under the required preliminary tension by the tension-screw. Fig. 2 shows the same parts, the spring being released. Fig. 3 shows the tension-screw in detail.

The device is especially destined for use with guns having a closed spring-casing or upper part of the carriage, which makes it necessary to fix the brake-cylinder to a projection or cross-head of the bottom part of the gun-barrel and prevents the spring from being removed backward.

The upper part of the carriage or spring-casing *a* receives the brake-cylinder *b*, fixed to a projection of the gun-barrel *e* and surrounded by the well-known recoil spring or springs *c*. The connection is as may be seen from Fig. 1, of such kind as to enable the cylinder to be removed from the front or rear. The free end of the brake-cylinder—that is, the end which is nearer to the mouth of the

gun—is reduced in diameter and is provided with an external screw-thread *f*, the length of the reduced screw-threaded portion corresponding with the amount of compression to be given preliminarily to the spring by means of the cylindrical tension-nut or screwed tube *g*, provided internally with a screw-thread adapted to cooperate with the thread *f*. The external diameter of the tension device *g* is equal to the diameter of the rear (smooth) portion of the brake-cylinder, so that after the tension device has been screwed home on the cylinder the latter has a quite even uninterrupted surface of the same diameter. The tension device *g*, as may be seen from Fig. 3, is formed at one end with a spring-collar *i*, against the inner side of which rests a second loose collar *q*, against which the spring presses. The other abutting surface for the spring is constituted by a disk *j* or equivalent, fixed to the upper part of the carriage or spring-casing *a*. The collar *i* is provided with holes *k* to receive pins or projections of a handle or crank *l*, by means of which the screw device is turned or kept in position. The rear part of the brake-cylinder is squared at *m* to receive another handle or crank *n*. When the spring is to be removed, first the piston-rod *o* is disconnected from the front plate *p* of the casing. The plate *p* is represented in Fig. 2 as hinged to the casing. The connection may, however, be of any desired kind. After turning down the plate *p* the crank-handle *l* is applied to the collar *i* and a second handle *n* is fitted upon the squared end *m*. Now either of the two handles may be turned while the other is maintained stationary or both handles may be turned simultaneously in opposite directions. This causes the spring to be relieved, Fig. 2. After the screw-nut has been entirely screwed out the spring can be removed from the cylinder. It is an important feature of the invention that the spring can be removed without disturbing the brake-cylinder, while in the constructions hitherto used the cylinder had generally to be removed previously. In fitting in the spring receives again the required preliminary tension by screwing the collar *i* to its end position, Fig. 1. The end of the brake-cylinder *b* is flush with the fore end of the casing, or it may project slightly beyond the

latter, so as to enable the cylinder to be lifted a little upon fitting in the screw should the front end of the cylinder have sunk slightly. The increased thickness of the walls of the cylinder, a consequence of the above-described formation of the same, may be compensated by means of longitudinal grooves.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is—

1. In a recoil apparatus for guns means for facilitating the fitting and removal of the recoil-spring comprising a cylindrical tension nut or tube such as *g* preferably provided at its outer end with a collar and adapted to be screwed upon the fore part of the brake-cylinder provided for this purpose with screw-threads over a length corresponding with the amount of compression to be given to the spring, the external diameter of the screw-nut being equal to that of the diameter of the smooth portion of brake-cylinder so that the cylinder is completed by the screw, when the latter is in its normal end position.

2. In recoil apparatus for guns; the combination of a gun-carriage; a gun having a pro-

jection thereon; a brake-cylinder attached to said projection, the forward end of said brake-cylinder being of decreased diameter and provided with screw-threads; a tension device arranged to screw upon the screw-threads of said cylinder, said tension device being of the same diameter as the large portion of said brake-cylinder; an external collar on said tension device; a spring surrounding said brake-cylinder, bearing at one end against the collar of said tension device; a spring-casing, surrounding said spring, attached to the gun-carriage; a collar arranged within said spring-casing, against which the other end of said spring bears; a stationary piston-rod extending through said brake-cylinder; a hinged door or cap upon one end of said spring-casing; and means for locking said door or cap to said piston-rod.

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

ERNST KARL ROTHE.

Witnesses:

MAXIMILIAN BLUHM,

ERNST HAMMLER.