

O. BEHNKE.

MEANS FOR INSTALLING THE RECUPERATING SPRINGS IN GUNS HAVING
RECOIL BARRELS.

(Application filed Feb. 24, 1902.)

(No Model.)

Fig. 1.

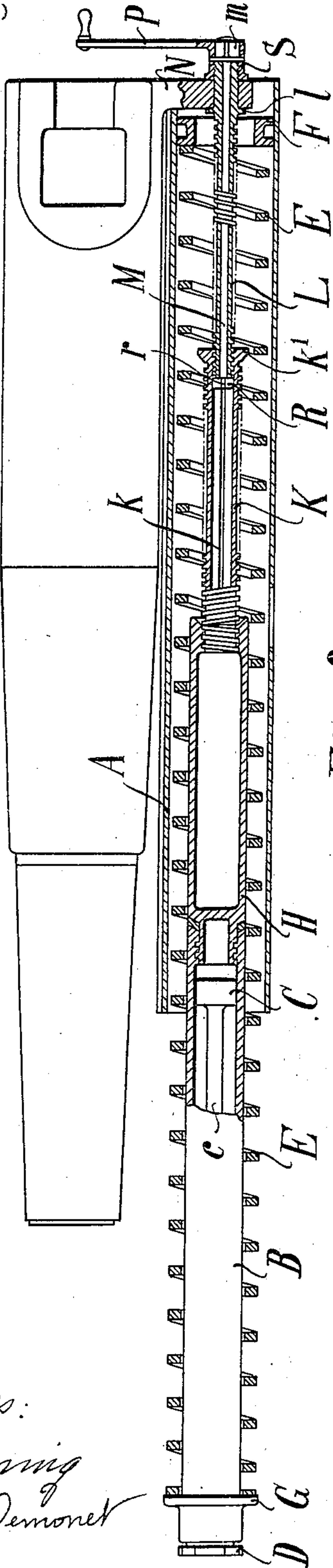


Fig. 2.

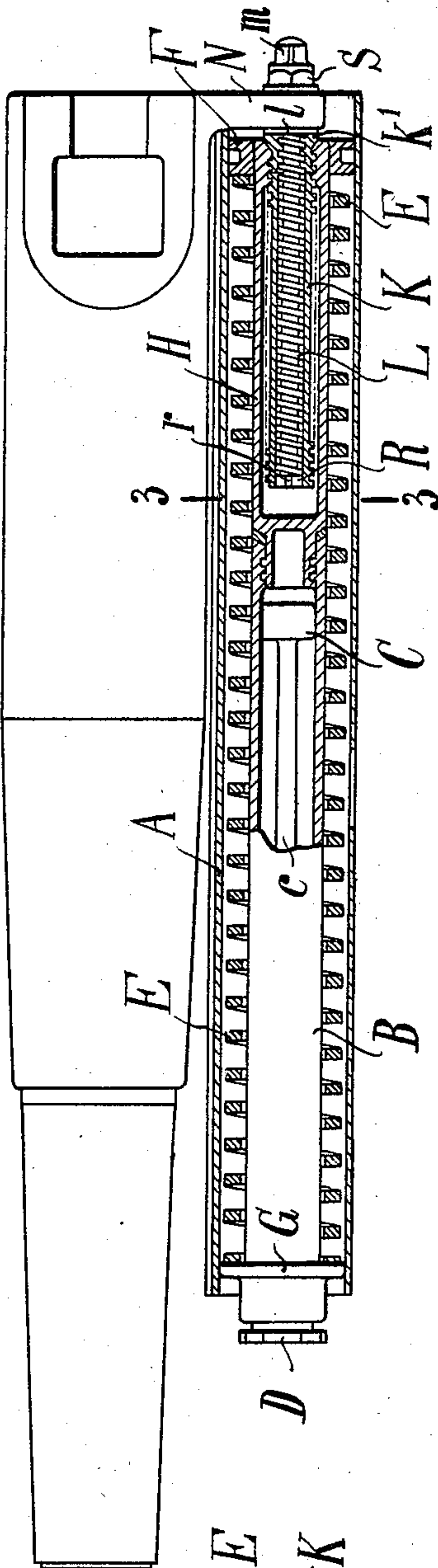
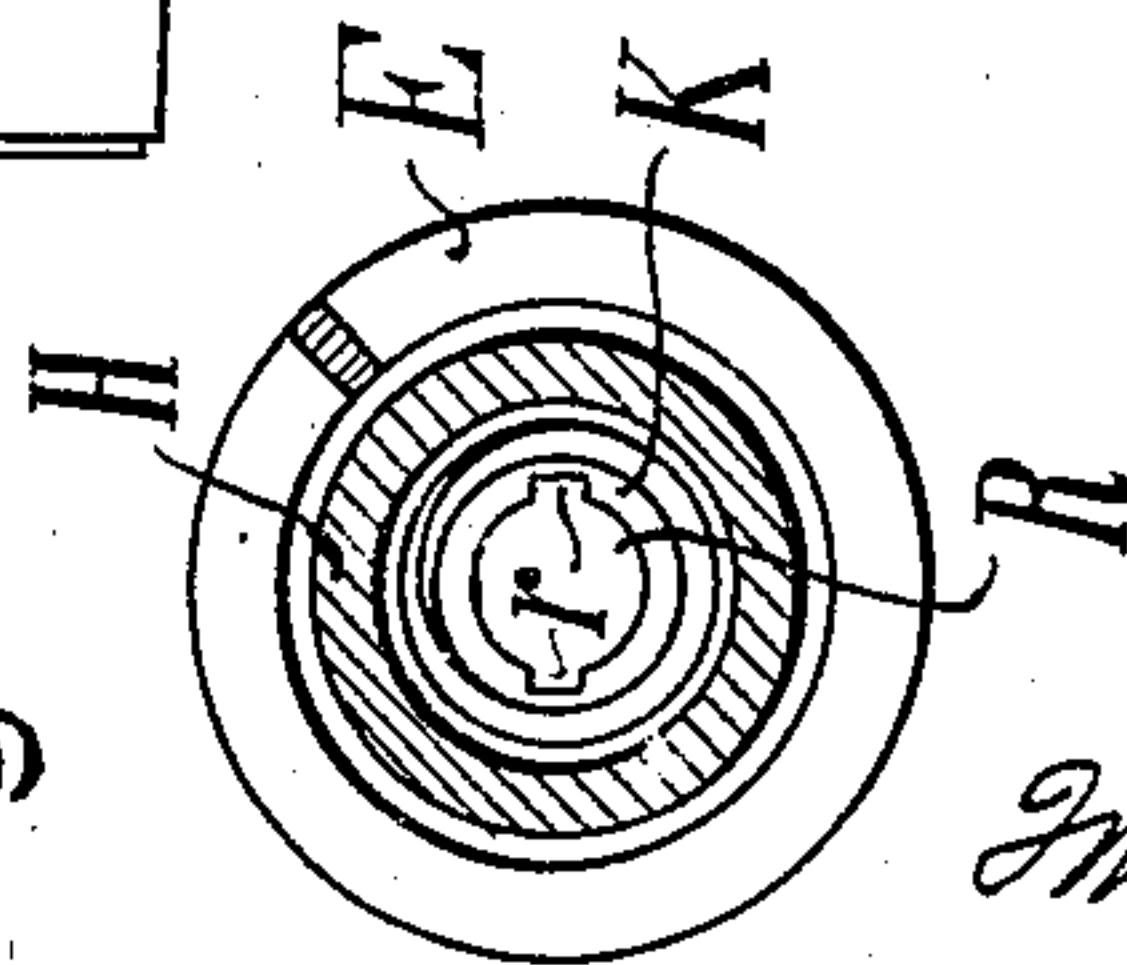


Fig. 3.



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UNITED STATES PATENT OFFICE.

OTTO BEHNKE, OF ESSEN, GERMANY, ASSIGNOR TO FRIED. KRUPP, OF ESSEN, GERMANY.

MEANS FOR INSTALLING THE RECUPERATING-SPRINGS IN GUNS HAVING RECOIL-BARRELS.

SPECIFICATION forming part of Letters Patent No. 711,814, dated October 21, 1902.

Application filed February 24, 1902. Serial No. 95,370. (No model.)

To all whom it may concern:

Be it known that I, OTTO BEHNKE, engineer, residing at 36 Bismarckstrasse, Essen-on-the-Ruhr, Germany, have invented certain new and useful Improvements in Means for Installing the Recuperating-Springs in Guns Having Recoil-Barrels, of which the following is a specification.

The subject of the present invention consists of a means for installing the recuperating-springs in guns having recoil-barrels.

Heretofore recuperator-springs have been installed either by means of a tension device which has been withdrawn from the gun after the spring was in place, thus necessitating its separate transportation, or else a single continuous tension-screw was employed, which remained in position in the gun; but the employment of the latter means is obviously impracticable in those cases in which the recuperator-spring has great expansive scope, owing to the necessity of having the compressing-screw proportionally long, and the consequent difficulty of inclosing it.

The invention has for its object to avoid the last-named difficulty and to afford a means for installing the spring which shall possess but a short length after the location of the spring is effected and which at the same time admits of employing a recuperator-spring of proportionally large expansion. This object is attained through the introduction of a collapsible device, preferably a telescoping screw, between the gun-barrel and the movable abutment of the recuperator-spring.

The invention is illustrated by the embodiment shown in the accompanying drawings, in which—

Figure 1 is a side view, partly in vertical longitudinal section, of the parts of a gun which are taken into consideration, showing the means for installing the recuperator-spring in position as it commences to put the spring under tension. Fig. 2 is a similar view showing the operation of installing the spring completed. Fig. 3 is a section, on an enlarged scale, taken on the line 3 3, Fig. 2, looking from the left.

The gun-barrel is guided upon a slide or cradle in a well-known manner, which slide or cradle likewise carries a hydraulic brake,

as well as the recuperator-spring E and telescoping screw K L for reducing said spring. The hydraulic brake is likewise of well-known construction. The rod c of its piston C carries a head D, which serves to secure the piston to the end of the cradle A lying toward the muzzle of the gun. The recuperator-spring E is passed over the brake-cylinder B and is sustained at one end by an arresting-stop F, rigidly connected with the cradle, and at the other end against a stop G on the brake-cylinder, which latter carries on its end toward the breech a tubular extension H. The telescoping screw for instalment of the recuperating-spring consists of two spindles K and L, formed with two oppositely-pitched external screw-threads of approximately equal length. The outer spindle K is adapted to engage in a female thread of the extension H of the brake-cylinder. At its end next the breech of the gun it has a conical portion k', for which a corresponding conical depression is formed in the extension of the brake-cylinder H. In the inner wall of spindle K are cut two diametrically opposite longitudinal grooves k. The spindle L engages in a female thread in the spindle K and is by suitable means fixedly attached to the horn N of the gun-barrel.

Within the spindle L is a rotatable rod M, which carries on its head R, lying toward the gun-muzzle, two lateral projections r. These projections engage in the longitudinal grooves k of the outer spindle K. The other end, m, of rod M, which projects beyond the nut S, is formed angular and carries a removable hand-crank P.

The instalment of the recuperating-spring is accomplished as follows: After the spring E is passed over the brake-cylinder B and its extension H these parts are shoved into the cradle from the muzzle end of the gun until the spring seats against the arresting-stop F and the outer spindle can enter into engagement with the female thread of the extension H of the brake-cylinder. Then the crank P, and through it the rod M, is turned in such a direction that the outer spindle K, which is turned by the engagement in its grooves k of the projections r on rod-head R, is screwed into the extension H on the brake-cylinder.

By this rotation the spindle K simultaneously screws itself upon the inner spindle L. The turning of the crank is continued until the enlargement *k'* impinges the shoulder *l* on the one hand and comes to rest against the end of the brake-cylinder extension on the other hand. The outer spindle is then fully screwed up upon the inner spindle and within the brake-cylinder extension, so that the telescoped assembling-screw is only about one-half its previous length, which corresponded to the expansion of the spring. At the same time it will be observed that the connection between the gun-barrel and the brake-cylinder or its extension is established by the telescoping screw. Finally it is to be noted that the head D of the piston-rod *c* is secured to the cradle, so that the brake-piston remains stationary during the recoil and running out of the gun-barrel, and the abutting stop G for the recuperating-spring follows the movements of the gun.

It is self-evident that without altering the intent and essence of the invention the telescopic screw could be built up of two rotatable spindles with similar external threads.

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

1. A means for installing recuperating-springs of recoil-guns, comprising a telescoping screw interposed between the gun-barrel and the movable stop of the recuperating-spring.

2. A means for installing recuperating-springs of recoil-guns, comprising a fluid-pressure brake, having a cylinder carrying an abutting stop G, and an extension H, a recuperating-spring surrounding said cylinder, and a telescoping screw interposed between

the gun-barrel and the movable stop of the recuperating-spring and screwing into said extension.

3. In a recoil-gun, the combination with the gun-barrel, the cradle having a fixed stop, and the hydraulic brake having a stop movable with the brake-cylinder; of the recuperating-spring surrounding the cylinder of said hydraulic brake and abutting between said fixed and movable stops, and a telescoping screw interposed between the gun-barrel and the brake-cylinder, the inner portion screwing into the outer portion, and said outer portion screwing into the brake-cylinder.

4. In a means for installing recuperating-springs in recoil-guns, the combination with a hydraulic brake having an extension on the brake-cylinder, and an abutment; and a return-spring; of a telescoping screw having oppositely-pitched threads, one of which parts is rotatable on the other and is in threaded engagement with the cylinder extension, and the other fixedly attached to the gun; and a crank-rod extending through said telescoping screw and having connection through which it turns the rotating part of the screw.

5. In a collapsible means for installing recuperating-springs in recoil-guns, a telescoping screw formed of a plurality of parts threaded together and with a part at one end threaded to an abutment of the spring.

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

OTTO BEHNKE.

Witnesses:

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