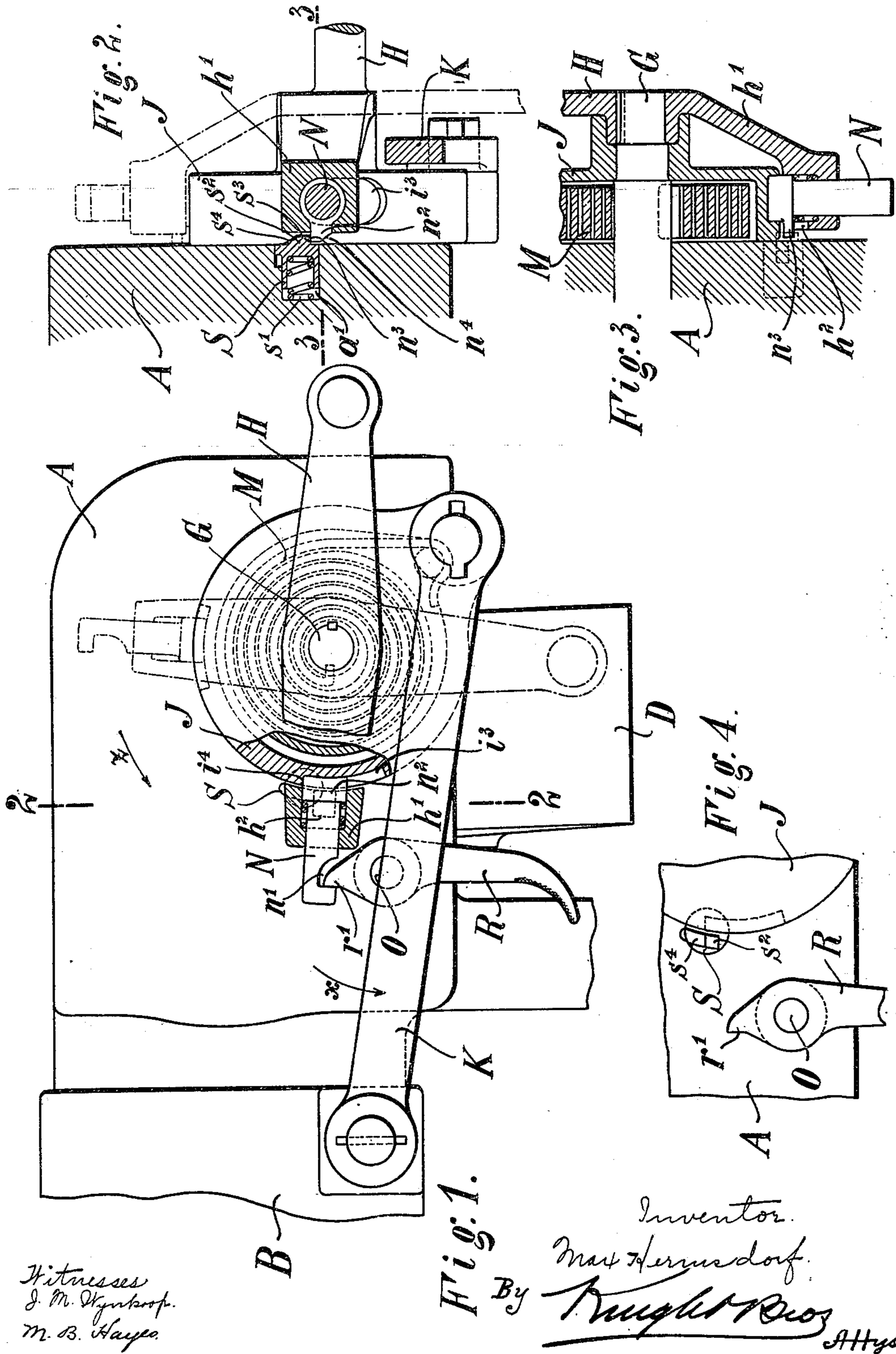


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PATENTED JAN. 29, 1907.

M. HERMSDORF,
BARREL RECOIL GUN WITH WEDGE BREECH BLOCK.

APPLICATION FILED JAN. 15, 1906.



Witnesses
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Fig. 1.

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BARREL-RECOIL GUN WITH WEDGE BREECH-BLOCK.

No. 842,547.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, MAX HERMSDORF, a subject of the Emperor of Germany, and a resident of Essen-on-the-Ruhr, Germany, have invented certain new and useful Improvements in Barrel-Recoil Guns with Wedge Breech-Blocks, of which the following is a specification.

The present invention has for its object to provide recoil-guns—such, for instance, as the wedge breech-block guns described in the United States patent to Hermsdorf, No. 788,530, of May 2, 1905—with means for securing the breech-block in open position against unintentional closing. In the gun described in the said patent the breech-block is opened and closed by a crank-shaft journaled in the side of the gun-breech and having an internal crank-arm which engages in a cam-groove of the breech-block and an external hand-lever through which motion may be imparted to the crank-shaft, while a drum rotatable on said shaft, but connected therewith through the medium of a convolute spring, has a link or draw-bar connection with a non-recoiling part of the gun in such a manner that the drum is rotated in one direction in the recoil of the gun and in the other direction during the return or forward movement of the gun. An arm carried by the hand-lever is provided with a bolt adapted to drop into a depression in the drum at the end of the rotation of the drum, due to the recoil or rearward movement of the gun, so as to cause the hand-crank to partake of the opposite rotation of the drum, due to the return or forward movement of the gun. During the rotation due to the rearward movement of the gun the breech of course, being closed, holds the crank-shaft against rotation under the influence of the spring, and consequently a tension is put upon this spring. When the bolt snaps into the drum, the relative positions of the crank-shaft and the drum, which result in tension on the spring connecting them, are maintained by the bolt, so that when the drum rotates under the forward movement of the gun not only is this spring tension maintained, but rotation is imparted to the crank-shaft through the bolt in a direction to open the breech-block, which is fully accomplished through the forward movement of the gun. With the breech-

block open and the spring under tension in the direction of rotating the crank-shaft to close the breech-block it is only necessary to release the bolt and permit the crank-shaft to rotate under the action of the spring, while the drum remains stationary. This release of the bolt has heretofore been effected by the act of inserting the cartridge in the chamber of the gun.

It has been found that in guns constructed as above described there is a slight reaction at the end of the forward or return movement of the gun-barrel, which causes a slight rotation of the parts, including the crank-shaft for raising the breech-block, with the result that the breech-block interferes momentarily with the proper extraction of the shell.

The object of my present invention is to overcome this disadvantage by making it impossible for the crank-shaft to receive any rotary movement during this reaction.

In the annexed drawings, which show an example of my invention as used in a gun having a vertical-wedge breech-block and swinging ejector, (though I do not limit the application of my invention to this type of guns,) Figure 1 is a side view, partly in section, of the part of the gun on which my invention is used. The parts are shown in the position in which the breech-block is opened. Fig. 2 is a section on line 2 2, Fig. 1, seen from the left. Fig. 3 is a section on line 3 3, Fig. 2, seen from above; and Fig. 4 is a detail view.

The device for opening and closing the breech-block corresponds in all essential points to that shown in the aforesaid patent, and therefore only a short description will be given thereof in the following: The drum J, which is connected with the cradle B, Fig. 1, by means of the draw-bar K, is rotatably mounted on the shaft G, Figs. 1 and 3, of the hand-lever H and the lifting-crank, (not shown in the drawings,) which engages with the breech-block D, Fig. 1. The spring M, Figs. 1 and 3, for opening and closing the breech-block, connects the drum J with the shaft G in such a manner that tension is imparted to the spring when the drum turns during the recoil. A spring-pressed bolt N is provided in an arm h' of the hand-lever H, which engages the wall i^1 , Fig. 1, of the groove i^2 in drum J for holding the spring M

under tension during the return of the gun-barrel. On the shaft O of the swinging ejector (not shown in the drawings) is secured a lever R, Figs. 1 and 4, of which the sear r' enters into engagement with the notch n' of the bolt N when the breech-block is opened.

Between the shaft G and the breech A a detent is inserted. One part of this detent is formed by a lateral boss n^2 , Figs. 1 and 2, on the bolt N, for which a guide-slot h^2 , Figs. 1 and 3, is provided in the arm h' of the lever H. The boss n^2 is provided with an interlock-face n^3 and an inclined face n^4 . The other part of this detent consists of a stop S, (see also Figs. 1 and 4,) actuated by a spring s' and provided with a head s^2 . It is slidably but non-rotatably arranged in a recess a' , Fig. 2, in the breech A, and its head s^2 is provided with an interlock-face s^3 and an inclined face s^4 . The spring s' tends to hold the stop S in the position shown in the drawings, in which the stop lies against the drum J and the head s^2 projects outwardly from the breech. The engaging boss n^2 is arranged in such a manner that the head s^2 of the stop S is situated in the path of the boss n^2 of the bolt N when the latter engages with the groove i^3 and that the detent S n^2 assumes the arresting position shown in the drawings when the breech-block is wide open.

When the recoil of the gun-barrel has come to an end, the hand-lever H and the locking device N i^4 are in the position indicated in dotted lines in the drawings, and the bolt engages with the groove i^3 . Upon the return of the gun-barrel the drum J is rotated in the direction of the arrow z , Fig. 1, by means of the draw-bar K, and the drum carries the hand-lever H along with it through the medium of the interlocking device N i^4 . While the hand-lever moves the breech-block D downwardly through the medium of the shaft G and the lifting-crank, the ejector ejects the empty cartridge-case, so that the notch n' of the bolt N, as described in the Patent No. 788,530, can enter into engagement with the sear r' of the lever R when the hand-lever H reaches the position shown in full lines. Shortly before the turning movement of the hand-lever H and the downward movement of the breech-block are completed the inclined face n on the boss n^2 of the bolt N comes into engagement with the inclined face s^4 on the head s^2 of the bolt S, and while the lever H makes the last part of its rotation the stop S is forced into the recess a' against the action of the spring s' . At the moment the lever H has completed its rotation and opened the breech-block fully the boss n^2 releases the detent S and the spring s' causes the head s^2 to move forwardly over the cam n^2 . The device S n^2 is then in the interlocked position and prevents upward movement of the breech-block,

which movement would disturb the ejection of the cartridge-case. If the interlocking device S n^2 were dispensed with, upward movement of the breech-block would take place when the gun-barrel recoils a short distance, due to the reaction of a shock at the end of the return movement. In such case the draw-bar K turns the drum J in the opposite direction to the arrow z , Fig. 1, thereby imparting additional tension to the spring M, which strives to turn the shaft G in the direction of closing the breech-block.

When the gun is loaded, the lever R is turned through the medium of the ejector and the shaft O, and the sear r' of the lever R withdraws the bolt N from the groove i^3 of the drum J. The bolt N consequently becomes disengaged from the shoulder i^4 , and the boss n^2 becomes disengaged from the head s^2 of the stop S, whereby the hand-lever H and the shaft G are released so as to turn in the direction of the arrow z , Fig. 1, under the action of the spring M. The lifting-crank then effects the closing of the breech-block.

Having thus described my invention, what I claim as new therein is as follows:

1. In a gun of the character described, the combination with the gun-barrel and the breech-closing mechanism, of means located on the gun-barrel and cooperating with the breech-closing mechanism for positively locking the breech-closing mechanism against recoil due to the arrest of the gun-barrel at the limit of its forward movement.

2. In a gun of the character described, the combination with the gun-barrel and the means for automatically closing the breech, of a stop located on the gun-barrel and cooperating with said means for positively locking the breech-closing means against recoil due to the arrest of the gun-barrel at the limit of its forward movement.

3. In a gun of the character described, the combination with the gun-barrel and the means for automatically closing the breech, of a stop located on the gun-barrel and cooperating with said means for positively locking the breech-closing means against recoil due to the arrest of the gun-barrel at the limit of its forward movement, and means for releasing said stop at will.

4. In combination with a gun having a barrel, a breech-block, a rotating part through which the breech-block is closed and means through which rotation of said part is induced during movement incident to recoil, of means located on the gun-barrel and cooperating with said rotating part for positively locking said part against recoil due to the arrest of the gun-barrel at the limit of its forward movement, and means for releasing the rotating part from said locking means.

5. In a gun of the character described, the combination of the crank-shaft for closing the breech, the drum connected with said crank-

shaft through the medium of a spring and receiving movement from the recoil of the gun to impart tension to the spring in the direction of closing the breech-block, a crank-arm 5 carrying a bolt for locking the crank-shaft and drum against relative movement during the return of the gun-barrel, and imparting opening movement to the breech-block in consequence of the interlock between the 10 crank-shaft and drum, and a stop intercepting the closing movement of the crank-shaft through the medium of the bolt; said bolt being released from said stop by the act of withdrawing the bolt from its engagement with 15 the drum.

6. In a gun having barrel-recoil, the combination of the breech-block, the crank-shaft through which the breech-block is opened and closed, a drum rotatably mounted upon 20 said crank-shaft, a spring having its respective ends connected with the drum and the crank-shaft and through which rotary movement of the drum may be imparted to the crank-shaft, a draw-bar connecting the drum 25 to a non-recoiling part of the gun and through which rotation is imparted to the drum, during recoil and putting tension on the spring

which tends to rotate the crank-shaft in the direction of closing the breech-block, an arm carried by the crank-shaft having a bolt 30 which engages with the drum at the end of the rotary movement due to the recoil of the gun-barrel and causing the crank-shaft to rotate with the drum in the direction of opening the breech-block during the return or forward 35 movement of the gun-barrel, a stop past which the bolt snaps at the end of the opening movement of the crank-shaft, which prevents movement of the crank-shaft in the direction of closing under the reaction of the 40 gun-barrel at the end of its forward movement and a sear located in position to engage the bolt at the end of the opening movement of the breech-block and adapted to withdraw 45 the bolt from engagement both with the stop and the drum to permit the crank-shaft to rotate under the tension of the spring and close the breech-block.

The foregoing specification signed at Düsseldorf this 30th day of December, 1905.

MAX HERMSDORF.

In presence of—

WILLIAM ESSENWEIN,
PETER LIEBER.