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PULL MECHANISM FOR GUNS.

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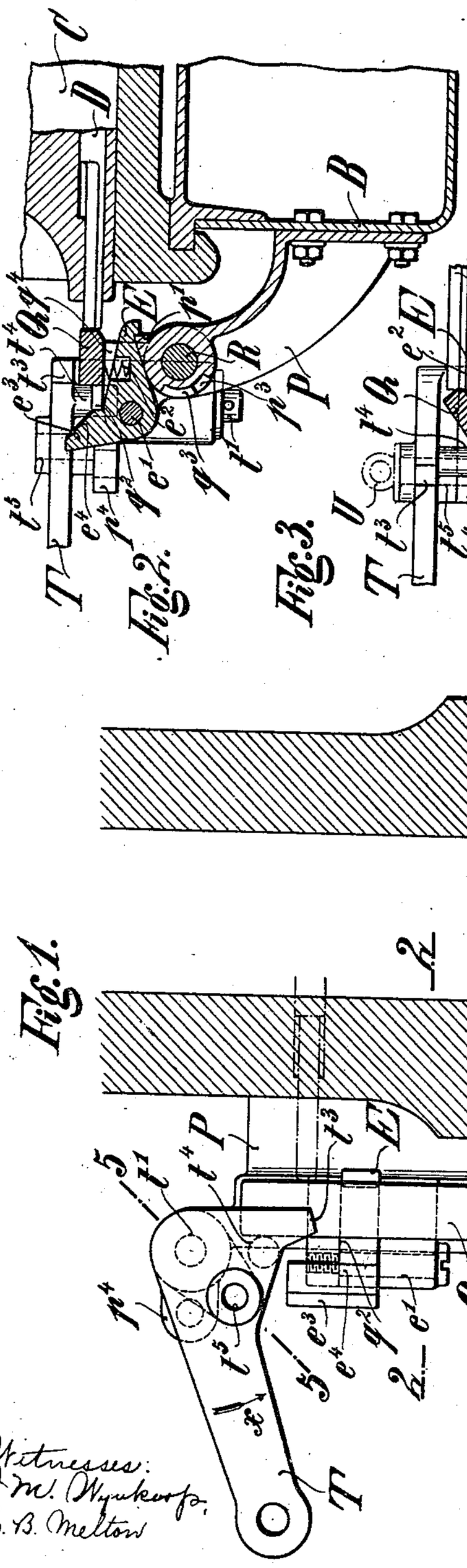


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# UNITED STATES PATENT OFFICE.

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## PULL MECHANISM FOR GUNS.

985,171. Specification of Letters Patent. Patented Feb. 28, 1911.

Application filed February 16, 1910. Serial No. 544,147.

*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 Pull Mechanisms for Guns, of which the following is a specification.

The present invention relates to the type of pull mechanisms for guns which is provided with a pivoted bar or rail arranged on the slide-track carrier or cradle, which rail has its axis of oscillation extending parallel to the direction of recoil of the gun barrel and has its free end capable of acting on a slide when the gun barrel is in firing position, the slide being arranged in the gun barrel transversely to the axis of the bore of the barrel and being connected with the percussion lock.

The object of the invention is to make this type of pull mechanism adapted for use also in the type of guns, such as the so-called differential recoil guns, in which the gun is automatically fired during the counter-recoil of the gun-barrel.

The accompanying drawings show one embodiment of the invention, by way of example.

Figure 1 is a top view, partly in section, of the parts of a gun to which the invention relates, the gun barrel being shown in the position which it assumes shortly before the counter-recoil is completed. Fig. 2 is a section on line 2—2, Fig. 1, showing the gun barrel in another position. Fig. 3 is a part of Fig. 2, showing the pull mechanism in another position. Fig. 4 is a top view of Fig. 3, and, Fig. 5 is a section on line 5—5, Fig. 1.

Through the medium of a bolt R a rail or bar Q is rotatably arranged in a bearing P on the slide-track carrier B (Fig. 2) in such a manner that it can swing about an axis parallel to the direction of recoil of the gun barrel. Through the medium of a slide D the rail Q, which has its rear end $q^1$ (Fig. 1) bent outwardly, can act on a percussion lock with continuous pull mechanism which is arranged in the breech block C. The percussion lock is tensioned and pulled when the slide D is moved by the rail Q from the position shown in Fig. 1 to the position shown in Fig. 2, and when the slide D is released, the percussion lock is returned to the position of rest by the repeating spring K and the firing spring F. The arrangement thus far described is old.

By means of a bolt $e^1$ a latch E is rotatably mounted on the rail Q. The axis of the bolt $e^1$ extends parallel to the axis of the bolt R. The latch E projects through an opening $q^4$ in the rail Q and, when the rail is in the position shown in Figs. 1 and 2, the latch engages over a projection $p^1$ on the bearing P and thereby retains the rail in position. The latch E is provided with a bore in which is located a helical spring $e^2$ which has its uppermost winding abutting against the rail Q and which holds the latch E in the retaining position. The latch E is furthermore provided with a projection $e^3$ which is caused by the spring $e^2$ to abut against a projection $q^2$ on the rail Q. The projection $e^3$ is provided with an inclined face $e^4$ (Figs. 2 and 3) for a purpose which will presently be explained. A trigger T, which is under the action of a torsional spring $t^2$, is mounted in a sleeve $p^2$ on the bearing P through the medium of a pin $t^1$ (see especially Fig. 5). The spring $t^2$ has one end secured in the sleeve $p^2$ and has its other end secured in the trigger T, and tends to turn the trigger in the direction of the arrow $x$ (Figs. 1 and 4). The trigger T carries an arm $t^3$ which is adapted to cooperate with the inclined face $e^4$ of the projection $e^3$ of the latch E when the trigger is shifted from the position shown in Figs. 1 and 2 to the position shown in Figs. 3 and 4. The arm $t^3$ of the trigger T is provided with a downwardly directed pin $t^4$ which abuts against the rail Q and the purpose of which is to cause the rail Q to be shifted from the inclined position (Figs. 3 and 4) to the upright position (Figs. 1 and 2). The nave of the rail Q is provided with a projection $q^3$ (Figs. 2 and 3) which engages in a groove $p^3$ in the bearing P, and which limits the movement of the rail. The trigger T is furthermore provided with a bore $t^5$ which, when the trigger is in the position shown in Figs. 3 and 4, registers with an eye $p^4$ provided on the sleeve $p^2$. The object of this arrangement is to make it possible to secure the trigger T in the position shown in Figs. 3 and 4 by the insertion of a retaining pin U (Figs. 3 and 4).

If a gun provided with the pull mechanism described in the foregoing is to be automatically fired during the counter-recoil

of the gun barrel, the several parts of the pull mechanism must assume the position shown in Figs. 1 and 2 in which the rail Q is in its upright position and is coupled to the bearing P by the latch E. In this position, the spring $t^2$ causes the pin $t^4$ of the trigger T to abut against the rail Q. Shortly before the counter-recoil is completed, the slide D hits the bent part $q^1$ of the rail Q (Fig. 1). During the further counter-recoil, the slide D now slides along this part of the rail and is moved toward the percussion lock which is thereby automatically fired. During the recoil of the gun barrel, the slide D is returned to its initial position by the repeating spring K as soon as the slide has reached the bent part $q^1$ of the rail Q and the percussion lock is then returned to the position of rest by the repeating spring K and the firing spring F.

In case of misfire, the trigger T is shifted by hand into the position shown in Figs. 3 and 4. While this is being done, the arm $t^3$ of the trigger T hits the inclined face $e^4$ of the projection $e^3$ on the latch E and slides along this face and thereby lifts the latch E from the projection $p^1$. The repeating spring K then causes the slide D to move the rail Q into the position shown in Figs. 3 and 4, and the percussion lock reaches its position of rest. If then the trigger T is returned to its original position, the rail Q is carried along by the pin $t^4$ on the trigger T and the rail moves the slide D in the direction to cause the percussion lock to be fired. When the trigger is turned back in the position shown in Figs. 1 and 2, the spring $e^2$ causes the projection $e^3$ of the latch E to lie against the projection $q^2$ of the rail Q. The projection $q^2$ then holds the latch in the position in which it can enter into engagement with the projection $p^1$ of the bearing P. This engagement takes place when the rail Q has reached its upright position. After the trigger T has been shifted the pull mechanism is therefore once more in the position in which it effects the automatic pulling of the percussion lock during the next counter-recoil of the gun barrel.

If it is desired to prevent the percussion lock from being pulled during the counter-recoil of the gun barrel, the trigger T is secured in the position shown in Figs. 3 and 4, through the medium of the retaining pin U. The pull mechanism is secured in that manner when it is desired to cause the gun barrel to run out unloaded into the running out position (transport position).

Having thus described the invention, what is claimed and desired to be secured by Letters Patent, is:—

1. In a gun having a recoiling barrel, a non-recoiling part and a percussion lock, a pull mechanism comprising a slide arranged in the barrel transversely to the axis of the bore of the barrel and connected with the percussion lock, a pivoted rail arranged on the non-recoiling part having its axis of oscillation parallel to the direction of recoil of the barrel and having its free end adapted to act on said slide when the barrel is in firing position, and a locking device adapted to couple the rail to the non-recoiling part of the gun in the position which the rail assumes when the percussion lock has been pulled.

2. In a gun having a recoiling barrel, a non-recoiling part and a percussion lock, a pull mechanism comprising a trigger, a slide arranged in the barrel transversely to the axis of the bore of the barrel and connected with the percussion lock, a pivoted rail arranged on the non-recoiling part having its axis of oscillation parallel to the direction of recoil of the barrel and having its free end adapted to act on said slide when the barrel is in firing position, and a locking device adapted to couple the rail to the non-recoiling part of the gun in the position which the rail assumes when the percussion lock has been pulled, said locking device comprising a latch jointed to the rail, a spring tending to hold the latch in its locking position, and a projection on the latch adapted to coöperate with the trigger in such a manner that movement of the trigger causes the latch to be moved from its locking position against the action of said spring.

The foregoing specification signed at Barmen, Germany, this 28th day of January, 1910.

MAX HERMSDORF. [L. S.]

In presence of—
OTTO KÖNIG,
CHAS. J. WRIGHT.