

932,017.

Patented Aug. 24, 1909.

2 SHEETS—SHEET 1.

Fig. 1.

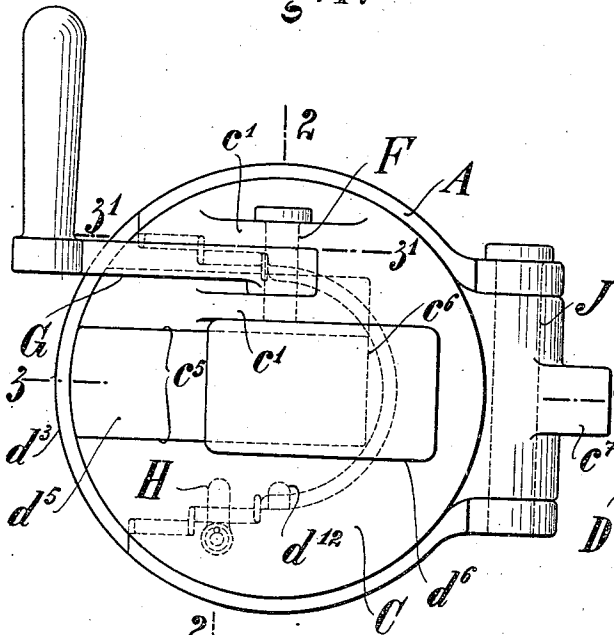


Fig. 2.

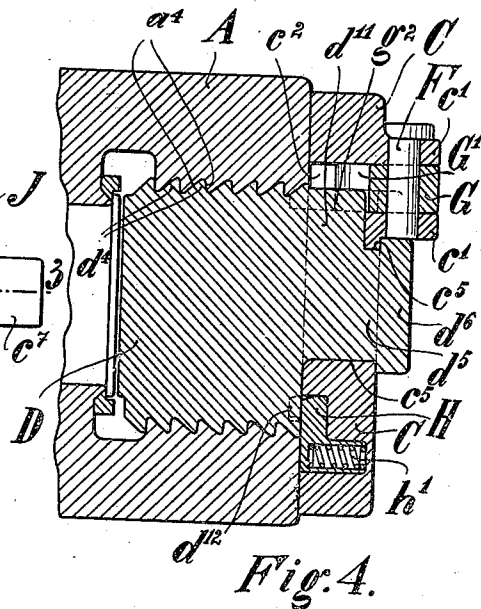


Fig. 3. E

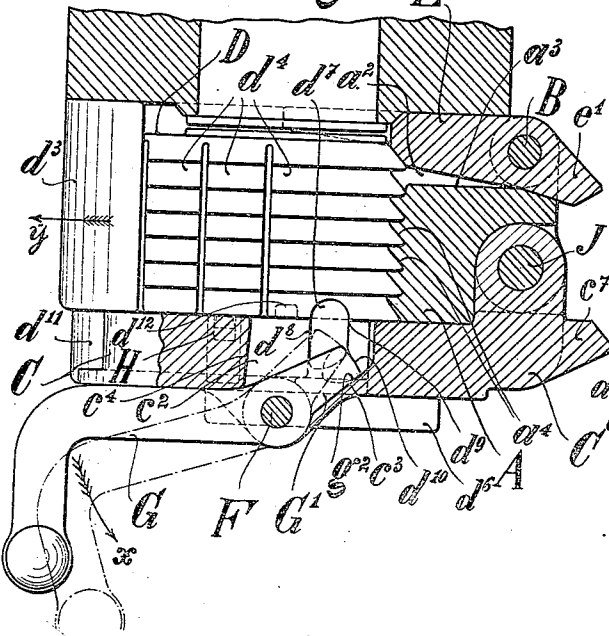
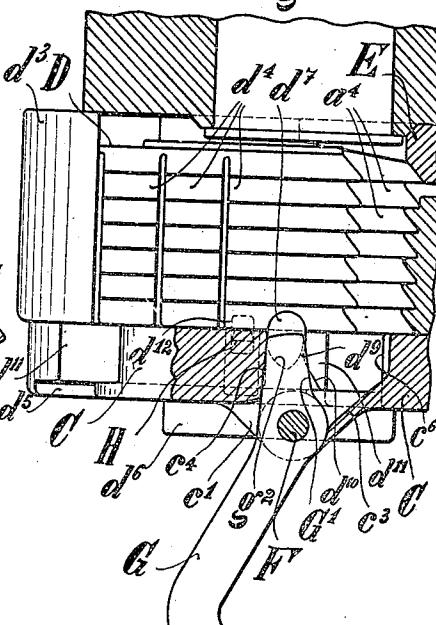


Fig. 4.



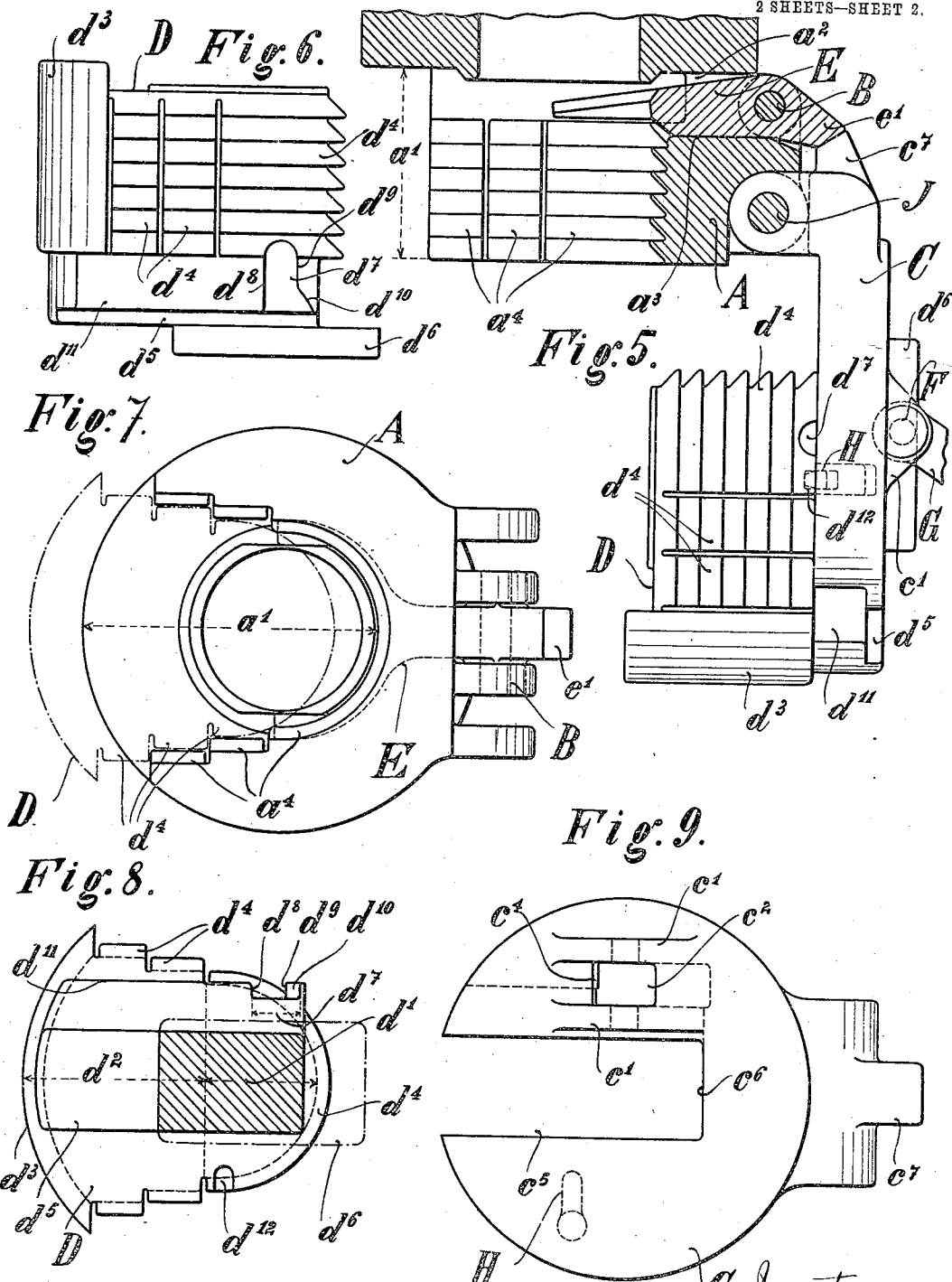
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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

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BREECH-CLOSURE.

932,017.

Specification of Letters Patent. Patented Aug. 24, 1909.

Application filed March 9, 1908. Serial No. 419,995.

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 Breech-Closures, of which the following is a specification.

This invention relates to breech closures of that type in which the opening movement of the breech block comprises a displacement in a direction transverse to the axis of the gun and then a swinging movement.

The invention consists in a breech closure of this kind, in which the breech block is movable in a guide in a carrier hinged to the base of the gun barrel, which guide extends transverse to the axis of the bore when the breech is closed.

In the accompanying drawings, which disclose one embodiment of the invention by way of illustration, Figure 1 is a rear view of the closed and locked breech closure; Fig. 2 is a section of the line 2—2 of Fig. 1, seen from the left; Fig. 3 is a section taken in part on the line 3—3 and in part on the line 3¹—3¹ of Fig. 1; Fig. 4 is a view corresponding to Fig. 3, in which the parts are shown in the positions which they assume immediately after the unlocking of the breech closure; Fig. 5 is a view corresponding to Fig. 3, with the breech completely opened; and Figs. 6 to 9 are detail views.

The closure of the breech opening is attained through the medium of a breech block D, the main body of which comprises a semi-cylindrical portion d^1 and an integral stepped portion d^2 (Fig. 8). The offset of the portion d^2 extends from the semi-cylindrical portion d^1 outward. The essentially cylindrical breech of the gun barrel, is provided with a recess a^1 (Figs. 5 and 7) for the breech block D. This recess conforms to the breech block and is open toward the left and rear. The breech block D carries a closing face d^3 of such curvature that when the breech is closed (see particularly Figs. 1 and 3) the cylindrical surface of the gun barrel breech is complete. To permit of an interlocking of the breech block with the gun barrel breech, the semi-cylindrical portion d^1 of the breech block, as well as its offset portion d^2 , are provided with ribs d^4 while the corresponding walls of the recess a^1 of the gun barrel breech are provided with grooves a^4 to receive the ribs d^4 . The grooves a^4 and ribs d^4 run in

such a manner that the breech block D may be interlocked with and disengaged from the gun barrel breech by means of a sliding movement transverse to the axis of the bore (see particularly Fig. 7). The extent of this transverse movement necessary to interlock or disengage the breech block and the breech, is slight owing to the described stepped formation of the breech block.

The breech block D is slidably mounted in a carrier C (see also Fig. 9) which is hinged through a bolt J at the right side of the gun barrel breech. The general form of the carrier C is that of a disk and said carrier is provided with a guide c^5 (Figs. 1, 2 and 9) for a slide piece d^5 projecting from the rear face of the breech block. The guide c^5 lies transversely to the axis of the bore when the breech is closed.

From the described arrangement of the gun barrel breech A, the breech block D, and the carrier C, it follows that the breech block must be slid in the direction away from the hinge bolt J of the carrier C, for unlocking the breech. This movement leaves a space between the slide piece d^5 of the breech block and that wall c^6 of the guide c^5 which lies toward the hinge bolt J. To cover this space, the slide piece d^5 is provided with a portion d^6 which spreads over the outer surface of the carrier C. This portion d^6 engages the sides of the guide c^5 and consequently serves the further purpose of holding the breech block in the carrier C.

For sliding the breech block D relatively to the carrier C, the thrust lever G G¹ is swingingly fulcrumed upon a bolt F between eyes c^1 arranged upon the outer face of the carrier C. The arm G¹ of the thrust lever engages in a recess c^2 (Figs. 2, 3 and 9) of the carrier C and stands in engagement, through the medium of a stud g^2 (Figs. 2 to 4) on its underside, with a curved thrust groove d^7 of the breech block. The curved groove d^7 is cut into a ledge d^{11} on the breech block, which ledge is integral with the slide piece d^5 . The arrangement of the curved groove d^7 is so determined that its walls (d^8 and d^9) with which the stud g^2 cooperates in the interlocking of the breech block, lie perpendicular to the direction in which the breech block is slid relatively to the carrier. The curved groove d^7 is further provided with a wall d^{10} which, when the breech is interlocked (see particularly Fig. 3), lies con-

centric with the axis of rotation of the thrust lever and against this wall d^{10} , the stud g^2 impinges with a correspondingly inclined face, when the thrust lever G^1 resumes its position of rest indicated by full lines in Fig. 3. At this time, the thrust lever arm G^1 is supported against a wall c^3 (Figs. 3 and 4) of the recess c^2 provided in the carrier C. This wall limits the displacement of the thrust lever in one direction. In the other direction, the displacement of the thrust lever is limited by a wall c^4 of the recess c^2 . In the under portion of the carrier C is slidably mounted a bolt H (see particularly Fig. 2). While the breech is closed, this bolt, under the influence of a spring h^1 , impinges against both the face of the gun barrel breech A and against the breech block D. For this bolt H, a recess d^{12} (see particularly Fig. 8) is provided in the semi-cylindrical portion d^1 of the breech block. The bolt can spring into this seat, after the breech block has executed the necessary sliding movement to unlock it from the gun barrel breech, and the carrier has been swung away from the breech.

In a recess a^2 (Figs. 3 and 5) of the breech, a shell extractor E is swingingly mounted upon a vertical bolt B. This extractor carries a protruding end e^1 which co-operates with a projection c^7 on the carrier C for the purpose of swinging the extractor outward. A wall a^3 of the recess a^2 limits the throw of the extractor E.

When the closure is closed and locked, the parts assume the position shown in Figs. 1 to 3. The ribs d^4 of the breech block are in engagement with the grooves a^4 of the gun barrel breech. The stud g^2 of the thrust lever arm G^1 lies against the wall d^{10} of the curved thrust groove d^7 , so that the breech block in the same manner as the wedge of the well known thrust lever wedge closure, is secured against an unintentional displacement.

In order to open the breech, the thrust lever arm G is thrown in the direction of the arrow x (Fig. 3). This movement causes first the movement of the stud g^2 out of engagement with the wall d^{10} of the curved thrust groove d^7 , compare the dot and dash line position of the thrust lever shown in Fig. 3. By a further swinging of the thrust lever, the breech block will be slid in the direction of the arrow y (Fig. 3) in consequence of the coöperation of the stud g^2 with the wall d^8 of the curved thrust groove d^7 . When the thrust lever arm G^1 reaches a position against the wall c^4 of the recess c^2 (Fig. 4), the ribs d^4 and grooves a^4 have become disengaged from each other. Simultaneously the seat d^{12} has reached a position opposite the bolt H. But since the lower portion of the bolt still remains against the gun barrel breech A, the bolt cannot yet

enter the seat d^{12} . A continuation of the thrust on the lever G, in the direction of the arrow x , will have the effect of swinging the carrier C together with the breech block, upon the hinge bolt J. Immediately after the commencement of this swinging movement of the carrier C, the bolt H, having now lost its impingement upon the gun barrel breech piece, enters, under the pressure of its spring h^1 , into the seat d^{12} , so that the breech block, during the further swinging movement of the carrier C is prevented from sliding relatively to the carrier. Finally the projection c^7 of the carrier C impinges on the projection e^1 of the extractor E, so that the latter is drawn outward and withdraws the cartridge shell. Through the impingement of the extractor E against the walls a^3 of the recess a^2 , the swinging movement of the extractor and through it that of the carrier C, is limited. At this moment the parts occupy the positions shown in Fig. 5.

In closing the breech, the several steps above described follow in reverse order.

The breech closure herein described possesses in common with the wedge breech closure, the advantage that in closing the breech, the pin of the striker or firing pin stands opposite to the primer of the cartridge only after the breech is locked. Furthermore, in case of emergency, the breech block can be disabled by a blow directed against the part d^6 of the slide piece d^5 . Furthermore, the described breech closure makes it possible to load with ease as in the case of the wedge breech closure, since the recess a^1 provided for the breech block in the gun barrel breech is open on two sides.

The breech closure forming the subject of the present invention possesses the advantage in common with the screw closure, that the breech of the gun barrel may be constructed in cylindrical form and need not project beyond the breech block in the longitudinal direction of the gun barrel.

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

1. A gun having a breech closure comprising a pivotally mounted carrier for closing the rear opening in the breech, and a breech block mounted on said carrier and slidable thereon horizontally and transversely to the axis of the gun to fill the breech.

2. In a breech closure, a slotted carrier pivotally mounted upon the base of the gun and slotted horizontally and transversely to the axis thereof, and a breech block provided with a projection fitting within said slot whereby said breech block slides on the carrier horizontally and transversely to the axis of the gun.

3. In a gun closure, the combination of the gun-barrel breech, and the breech-block, constructed to permit the breech-block to

slide in a direction transverse to the axis of the bore, into and out of closed position in the breech, interengaging ribs and grooves by which the breech block and walls of the breech engage when the breech block is in closed position, and a swinging carrier lying transversely to the axis of the bore when the breech is closed, constructed with a guide in which the breech-block is slidably mounted.

4. In a breech-closure, opened by a combined transverse and swing movement, a pivotally mounted carrier, and a breech-block mounted to slide transversely on said carrier; the sliding movement which unlocks the breech-bolt being in a direction away from the center about which the carrier swings.

5. In a breech-closure, opened by a combined transverse and swing movement, a pivotally mounted carrier, and a breech-block mounted to slide transversely on said carrier; the sliding movement which unlocks the breech-bolt being in a direction away from the center about which the carrier swings, and said carrier having a lever that engages the breech-block to unlock it, the operating end of which lever swings when unlocking the block, in the direction to impart swinging movement to the carrier after the block is unlocked.

6. In a breech closure opening and closing by combined sliding and swinging movements, the combination of the swinging carrier, the breech-block mounted to slide transversely on the carrier, the lever adapted to impart the sliding and swinging movements in the order in which they occur in opening and closing the breech, and a bolt interlocking the carrier and breech block at the end of the block's opening sliding movement.

7. In a breech closure having an opening sliding and swinging movement, and a closing swinging and sliding movement, the combination of the swinging carrier, the breech-block mounted to slide transversely in the carrier, and the locking device interlocking the block with the carrier at the end of the block's opening sliding movement, and automatically displaced by the closing swinging movement, to release the breech-block and permit it to receive its closing sliding movement.

8. In a breech closure having an opening sliding and swinging movement, and a closing swinging and sliding movement, the combination of the swinging carrier, the breech block mounted to slide transversely in the carrier, and the locking device interlocking the block with the carrier at the end of the block's opening sliding movement, and automatically displaced by the closing swinging movement, to release the breech-block and permit it to receive its closing

sliding movement; said locking device comprising a bolt movably mounted in the carrier and entering a seat in the breech-block, but abutting the base of the gun-barrel when the carrier is in closed position.

9. The combination with a gun provided with a horizontally and laterally opening breech; of a breech block slidable into and out of said breech; and a carrier upon which said block is slidably mounted, said carrier being swingingly mounted upon the base of the gun.

10. A gun having a breech closure opened by a combined sliding and swinging movement, provided with a lateral opening in the base of the gun-barrel and a swinging carrier for the breech-block pivoted on that side of the gun-barrel away from said lateral opening, said opening being adapted to permit a transverse movement of the carrier with the breech-block.

11. A gun having a breech-closure opened by a combined sliding and swinging movement in a direction horizontally and transversely to the axis of the gun, said breech closure comprising a flat slotted disk swinging about one edge and a breech block slidably mounted in the slot.

12. In a breech closure, the combination with a disk-shaped carrier adapted to swing to and from the butt end of the gun; of a breech-block constructed with locking off-sets arranged in steps extending transverse of the axis of the gun, said block being slidably mounted upon said carrier in such manner as to adapt it to slide into and out of locking relation with the breech and to be swung away from the breech when unlocked therefrom.

13. In a gun-barrel breech-closure opening by a combined sliding and swinging movement, a breech-block transversely slidable on a pivotally mounted carrier and constructed with an essentially semi-cylindrical body portion, and an offset or stepped portion extending therefrom and increasing in dimension outward.

14. In a gun-barrel breech-closure, the combination with the cylindrical base of the barrel having a laterally opening breech provided with locking grooves extending transverse to the bore of the gun; a breech block provided with ribs corresponding to said grooves, said block being thus adapted to be slid into and out of locked relation to said breech and constructed with an outer curved surface conforming to and completing the cylindrical form of the gun-barrel when the breech is closed; and a swinging arm upon which said breech-block is slidably mounted.

15. In a gun-barrel breech-closure, a breech provided with a stepped lateral opening and with grooves transverse to the bore of the gun, a breech-block constructed to fit

said breech and provided with ribs whereby it is adapted to slide into locked relation with the breech; a carrier plate hinged at one edge to the base of the gun; and means
5 for slidably mounting the breech-block upon said carrier plate.

16. In a breech-closure, the combination of the carrier constructed with a slide-way and a breech-block constructed with a reduced portion fitting said slide-way, and an enlargement on said reduced portion overlapping the rear face of the carrier.
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17. In a breech-closure, the combination of the carrier constructed with a slide-way and a breech-block constructed with a reduced portion fitting said slide-way, and an enlargement on said reduced portion overlapping the rear face of the carrier and proportioned to cover the inner end of the slide-
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way, when the breech-block extension is in the outer end thereof. 20

18. In a gun having a breech-closure opened by a combined sliding and swinging movement, the combination of the pivotally mounted carrier, the breech-block slidably supported by the carrier, the operating lever fulcrumed on the carrier and having controlling engagement with the breech-block and the extractor engaged by the carrier when in opened position. 25

The foregoing specification signed at Düsseldorf, Germany, this 7th day of January, 1908. 30

MAX HERMSDORF.

In presence of—

PETER LIEBER,

WILHELM FLASCHE.