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W. HEINE

GUN BARREL

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1,467,159

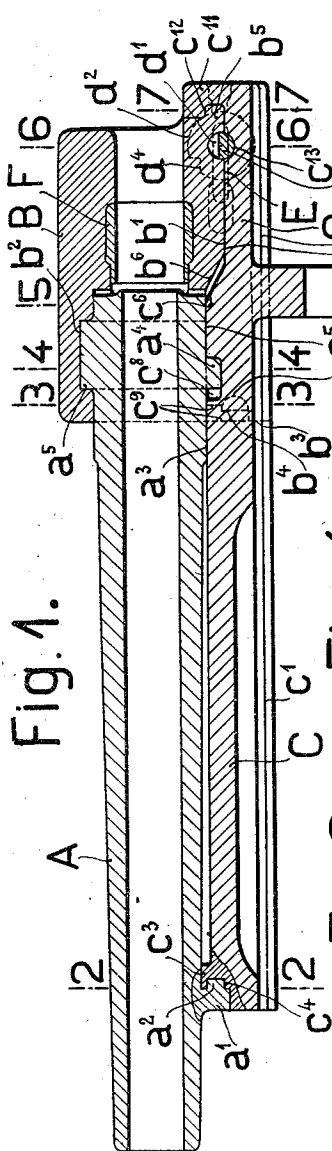


Fig. 1.

Fig. 2.

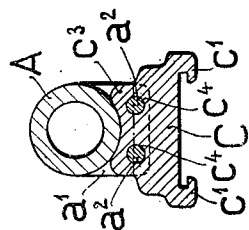


Fig. 3.

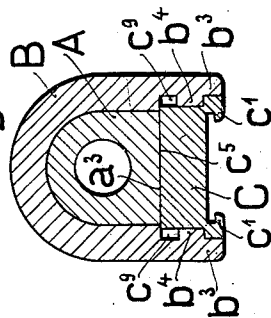


Fig. 4.

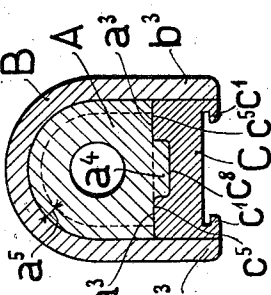


Fig. 5.

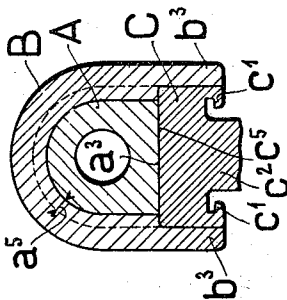


Fig. 6.

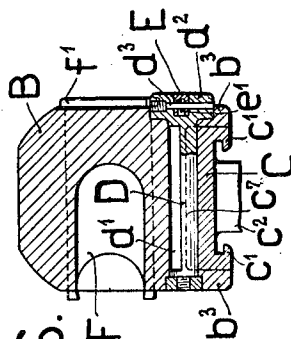


Fig. 7.

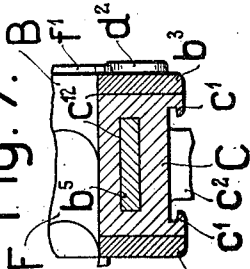


Fig. 8.

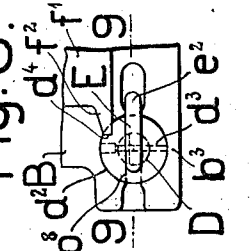
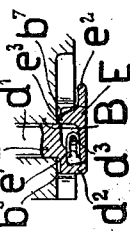


Fig. 9.



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## UNITED STATES PATENT OFFICE.

WILHELM HEINE, OF ESSEN, GERMANY, ASSIGNOR TO FRIED. KRUPP AKTIENGESSELLSCHAFT, OF ESSEN-ON-THE-RUHR, GERMANY.

## GUN BARREL.

Application filed January 3, 1921. Serial No. 434,678.

*To all whom it may concern:*

Be it known that I, WILHELM HEINE, residing at Essen, Germany, a citizen of the German Republic, have invented a certain new and useful Improvement in Gun Barrels (for which I have filed application in Germany, filed August 21st, 1917), of which the following is a specification.

This invention relates to a gun barrel which can be divided up into a tube and a breech portion together with a slide therefor and has for its object to provide a particularly simple connection between tube, breech portion and slide.

The invention will be further described with reference to the accompanying drawing which shows by way of example, one embodiment of the subject matter of the invention and in which:

Fig. 1 is a vertical longitudinal section through the parts concerned of a gun barrel constructed according to the invention.

Figs. 2 to 7 are cross sections on lines 2—2, 3—3, 4—4, 5—5, 6—6 and 7—7, respectively of Fig. 1, looking from the right.

Fig. 8 is a side elevation of a detail and

Fig. 9 is a sectional top view on line 9—9 in Fig. 8.

Referring to these drawings, the gun barrel comprises a tube A and a breech portion B adapted to embrace the rear end of the tube. Both these parts repose on a slide C serving to guide the gun barrel on the slide carrier (not shown) of the gun, said slide to this end being provided with guide ribs  $c^1$ . The slide is further provided with a spur  $c^2$  (see in particular Fig. 1) adapted to connect the slide with the recoil brake and the recuperator.

The tube is lodged close to the muzzle by means of a cylindrical surface on a correspondingly shaped surface of a rib  $c^3$  (Figs. 1 and 2) of the slide C, and is moreover provided at this point with a depending projection  $a^1$ . This projection has two horizontally disposed pins  $a^2$  engaging holes  $c^4$  formed in the slide. At its rear end the tube is lodged by means of a flat surface  $a^3$  (Figs. 1 and 3 to 5) on a flat surface  $c^5$  of the slide which surface passes over, to the rear of the tube, by intervention of a beveled surface  $c^6$  (Fig. 1) into a surface  $c^7$  running in parallel to the surface  $c^5$  (Figs. 1 and 6). Opposite to the surface  $c^6$  and at a certain distance remote therefrom, there is arranged on the breech

portion a bevel surface  $b^6$ . On the surface  $c^7$  reposes the rear end of the breech portion by means of a flat surface  $b^1$  (Fig. 1). The tube A is provided at its surface  $a^3$  with a projection  $a^4$  (Figs. 1 and 4) adapted to engage a recess  $c^8$  formed in the slide C. Measured in the longitudinal direction of the gun barrel, the recess  $c^8$  possesses a somewhat larger dimension than the projection  $a^4$ . On the tube is mounted, close to its rear end an inverted U-shaped rib  $a^5$  (Figs. 1, 4, 5) which, starting from the surface  $a^3$ , extends across the whole circumference of the tube and engages a correspondingly shaped recess  $b^2$  (Fig. 1) of the breech portion B, thus forming together with this latter a vertical guide. The breech portion B is fitted with two depending flanges  $b^3$  (Figs. 3 to 7), adapted to embrace the slide C as far as the rearward end thereof projecting beyond the breech portion. Close to their forward end, the flanges  $b^3$  are each provided with an inwardly extending projection  $b^4$  (Figs. 1 and 3), adapted to engage an undercut portion  $c^{10}$  (Fig. 1) of a groove  $c^9$  (see also Fig. 3) formed in the slide. On the rearward end surface of the breech portion B there is arranged a lip  $b^5$  (Figs. 1 and 7), in respect of which there is provided a recess  $c^{12}$  in an extension  $c^{11}$  (Fig. 1) of the slide C which extension serves as an abutment for the breech portion. Within the breech portion there is finally lodged to rotate but not to be displaced, a bolt D (Figs. 1, 6, 8, 9) which is provided for a part of its length, which part corresponds to the width of the slide with a recess  $d^1$  having a segmental cross section. The bolt D engages a recess  $c^{13}$  (Fig. 1) of the slide corresponding to the said recess  $d^1$  and has on its one end a plate  $d^2$ . Within the plate  $d^2$  there is mounted to rotate on a pin  $d^3$  (Figs. 6, 8 and 9) a pawl E (see more particularly Fig. 9) having a handle  $e^2$  and destined to engage under the action of a spring  $e^1$  by means of a projection  $e^3$  either one of two notches  $b^7$ ,  $b^8$  disposed diametrically opposite to each other and formed in the breech portion. The plate  $d^2$  is provided on its edge with a recess  $d^4$  (Figs. 1 and 8) destined to accommodate a projection  $f^2$  (Fig. 8) of the stop plate  $f^1$  mounted on the breech wedge or breech block F (Figs. 1, 6 and 7).

On the parts assuming the position dis-

closed in the drawings, the gun barrel is secured against being lifted off from the slide C by means of the pins  $a^2$ , the projections  $b^4$  and the lip  $b^5$ . The extension  $c^{11}$  of the slide and the bolt D prevent a displacement of the breech portion along the slide, while the tube A is prevented from being displaced on the slide by the projection  $a^4$  and the rib  $a^5$  engaging the recess  $b^2$  of the breech portion. The plate  $d^2$  of the bolt D assumes such a position that its recess  $d^4$  will come to be located within the path of the projection  $f^2$  of the stop plate  $f^1$  mounted on the breech-wedge F. Hence, the breech mechanism may now be closed.

If the gun barrel is to be taken apart, then the breech mechanism is first of all opened, so that the projection  $f^2$  will come to disengage the recess  $d^4$  of the plate  $d^2$ . Thereupon, by raising the handle  $e^2$ , the projection  $e^3$  of the pawl E is disengaged from the notch  $b^7$  of the breech portion and the bolt D is caused to rotate for  $180^\circ$ . When the bolt D has assumed this position, the projection  $e^3$  of the pawl snaps into the notch  $b^8$ . In this contingency the recess  $d^1$  of the bolt will register with the surface  $c^7$  (Fig. 1) of the slide. Hereupon the gun barrel is displaced along the slide so far forward until the projection  $a^4$  of the tube comes to bear up against the front wall of the recess  $c^8$  of the slide. Simultaneously herewith the engagement of the pins  $a^2$  with the holes  $c^4$ , of the projections  $b^4$  with the undercut portions  $c^{10}$  of the grooves  $c^9$ , as also of the lip  $b^5$  with the recess  $c^{12}$  comes to be broken. As a result, both the breech portion and the tube may now be separately lifted off from the slide.

The manner in which the gun barrel is to be mounted on the slide and the method of locking the gun barrel to the slide by means of the bolt D will require no further explanation after the foregoing description. It may be only noted that the plate  $d^2$ , before the locked state can be attained, assumes a position in which its edge projects into the path of the projection  $f^2$  so that it thereby prevents the breech mechanism from being closed. It will thus be obvious that the gun can only be fired after the gun barrel and the slide have been reliably interlocked.

#### Claims:

1. A separatable gun barrel comprising a tube, a breech portion and a slide, easily detachable means on said tube and breech portion for connecting said tube to said breech portion and means formed on said tube and breech portion, cooperating with means formed on said slide for securing said tube and breech portion to said slide, the inter-engagement of said connecting

and securing means being solely accomplished by separately placing said tube and breech portion upon said slide and thereafter longitudinally displacing said tube and breech portion with respect to said slide.

2. A separatable gun barrel comprising a tube, a breech portion and a slide, means for connecting said tube to said breech portion comprising an inverted U-shaped rib formed on said tube, said breech portion being provided with a correspondingly shaped recess, means formed on said tube and breech portion and cooperating with means formed on said slide for securing said tube and breech portion to said slide, the interengagement of said connecting and securing means being accomplished by placing said tube and breech portion upon said slide and thereafter longitudinally displacing said tube and breech portion with respect to said slide.

3. A separatable gun barrel of the class described comprising a tube, a breech portion and a slide, means carried by said tube and breech portion and cooperating with means formed on said slide for connecting said tube and breech portion to said slide, the interengagement of the connecting means being effected by placing said tube and breech portion upon said slide and thereafter longitudinally displacing the same relatively to the slide, a locking member adapted to prevent the displacement of said tube and breech portion relatively to said slide and means whereby the breech mechanism of the gun can be closed only when said locking member is in locking position.

4. A gun barrel comprising an A-tube and breech portion and a slide therefor, means for disengageably connecting said gun barrel to said slide which comprises projections carried by said gun barrel and cooperating means formed on said slide whereby the inter-engagement of said gun barrel and said slide may be accomplished by placing said gun barrel upon the slide and thereafter longitudinally displacing the gun barrel relatively to the slide, a locking member carried by said gun barrel and engaging said slide to prevent a displacement of the gun barrel along the slide and a stop carried by said locking member adapted to permit the closing of the breech mechanism only when said locking member is in its locking position.

The foregoing specification signed at Essen, Germany, this 27th day of October, 1920.

WILHELM HEINE.

In presence of—

HANS GOTTMANN,  
JOHANN DECKERS.