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ORDNANCE BREECH MECHANISM.

APPLICATION FILED AUG. 1, 1918.

1,340,215. **Patented May 18, 1920.**

Fig. 1.

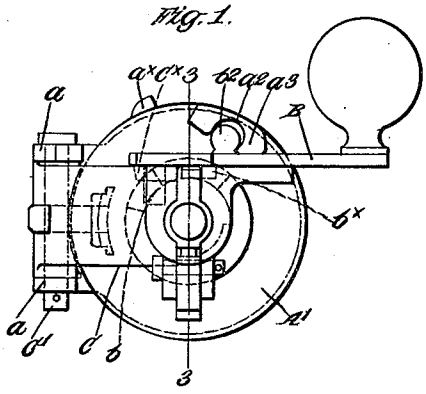


Fig. 3.

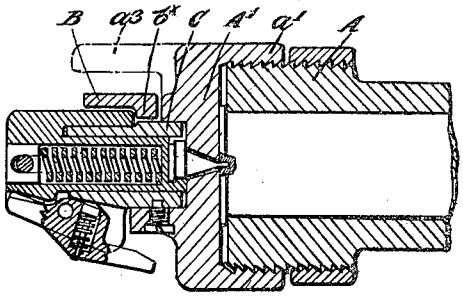
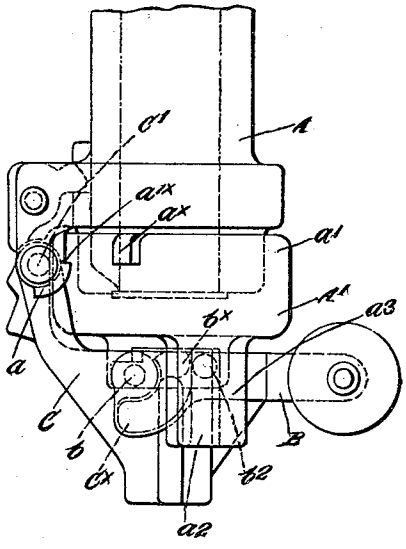


Fig. 2.



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UNITED STATES PATENT OFFICE.

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ORDNANCE BREECH MECHANISM.

1,340,215. Specification of Letters Patent. Patented May 18, 1920.

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To all whom it may concern:

Be it known that we, Sir ARTHUR TREVOR DAWSON, knight, and Sir GEORGE THOMAS BUCKHAM, knight, both subjects of the King of Great Britain, residing at Vickers House, Broadway, Westminster, in the county of London, England, have invented certain new and useful Improvements in or Relating to Ordnance Breech Mechanism, of which the following is a specification.

This invention relates to ordnance breech mechanism of the swinging carrier type having a breech block or screw arranged around the breech end of the gun instead of within it as is usual; the improved breech mechanism is intended more particularly for use with ordnance of comparatively small caliber.

According to the invention the breech actuating hand-lever is pivoted on the carrier to move about an axis parallel to that of the carrier hinge and has a pin or projection, preferably of spherical form, which engages with a slot or groove in part of the externally arranged breech screw to angularly displace the latter to its locked and unlocked positions, the said pin or projection and the slot or groove being so arranged in relation to the pivot of the hand lever that the final portion of the movement of the handlever in locking the breech screw causes the pin or projection to pass over the dead point (*i. e.* a point in a plane which contains the pivotal axis of the handlever and is situated at right angles to the axis of the gun) thus locking the breech mechanism in the closed position against movement other than that imparted by manual unlocking movement of the handlever, this result being obtained owing to the fact that the said dead point is the point beyond which continued movement of the handlever in the locking direction would commence to impart reverse or unlocking movement to the breech screw.

In order that the said invention may be clearly understood and readily carried into effect, we will describe the same more fully with reference to the accompanying drawings, in which—

Figures 1, 2 and 3 are respectively a rear elevation, a plan, and a section on the line 3, 3 of Fig. 1, showing the breech end of a gun provided with the improved breech mechanism.

A is the breech end of the gun, A′ is the breech screw having a forwardly projecting flange a' provided with internal interrupted collars or threads for engaging with corresponding external interrupted threads or collars on the breech end of the gun. B is the breech actuating handlever having a vertical spigot b by which the handlever is connected to the breech screw carrier C which is connected to the breech end of the gun by a hinge pin C′ passing through the carrier and through hinge lugs a, a, on the breech end of the gun. b^2 is the aforesaid spherical pin or projection on the handlever and a^2 is the slot or groove with which the said pin or projection engages, this slot or groove being longitudinal with respect to the gun and formed in the inner surface of a rearward lug a^3 on the breech screw. When the handlever B is moved to open the breech, the pin b^2 by its engagement with the slot a^2 angularly displaces the breech screw until its interrupted threads or collars come opposite the gaps between the interrupted threads or collars on the breech end of the gun. At this time a shoulder b^x on the handlever comes into contact with the end of a groove C^x in the carrier in which groove the said shoulder moves, and the carrier and breech screw are then swung out about the carrier hinge pin C′. During this movement the breech screw is prevented from becoming angularly displaced in the locking direction, by the engagement of a pin or projection a^x on the breech screw with the lower side of the upper one of the hinge lugs a, a on the breech end of the gun, the said pin or projection a^x coming opposite a gap a'^x (Fig. 2) in the said hinge lug when the carrier is in the closed position so that the said projection can then pass from one side to the other during the locking and unlocking of the breech screw. If desired the projection a^x might be so situated as to engage in a similar manner with the lower instead of the upper hinge lug.

During the closing of the breech, the breech screw is prevented from becoming angularly displaced about its axis until the pin or projection a^x thereon comes opposite the gap a'^x in the upper hinge lug on the breech end of the gun. It will be observed from Fig. 2 that when the breech screw has been fully locked as shown, the pin or projection b^2 has passed over the dead point (*i. e.* the point beyond which continued

movement of the handlever in the locking direction would commence to impart reverse or unlocking movement to the breech screw) to lock the breech mechanism in the closed position against movement other than that imparted by manual unlocking movement of the handlever. The lug a^3 on the breech screw is, in this position, in contact with the upper surface of the handlever B as shown in Fig. 1. The improved breech actuating gear gives the maximum power at the commencement of the unlocking, and at the termination of the locking of the breech screw, since at such times the amount of angular movement given to the breech screw per unit of angular movement of the handlever is at the minimum.

What we claim and desire to secure by Letters Patent of the United States is:—

1. In ordnance breech mechanism, the combination with the breech screw, the swinging breech screw carrier and the hinge pin connecting said carrier to the gun, of a breech actuating hand lever, means for pivoting the hand lever to the carrier so as to move about an axis parallel to the carrier hinge pin, and a projection on said handlever engaging with a groove formed in the breech screw longitudinally with respect to the gun, said projection and groove being so arranged in relation to the pivotal axis of the handlever that the final portion of the movement of the latter in locking the breech screw causes the projection to pass over the dead point so as to lock the breech mechanism in the closed position against movement other than that imparted by manual unlocking movement of the handlever.

2. In ordnance breech mechanism, the combination with the breech screw the swinging breech screw carrier and the hinge pin connecting said carrier to the gun, of a breech actuating handlever, means for pivoting the handlever, at its end remote from the handle, to the carrier so as to move about an axis parallel to the carrier hinge pin, and a projection on said handlever between its pivotal axis and its handle for engaging with a groove formed in the breech screw longitudinally with respect to the gun, said projection and groove being so arranged in relation to the pivotal axis of the handlever that the final portion of the movement of the latter in locking the breech screw causes the projection to pass over the dead point so as to lock the breech mechanism in the closed position against movement other than that imparted by manual unlocking movement of the handlever.

3. In ordnance breech mechanism, the combination with the breech screw, the swinging breech screw carrier, hinge lugs on the gun and the hinge pin connecting said carrier to said lugs, of a breech actuating handlever, means for pivoting the handlever to the carrier so as to move about an axis parallel to the carrier hinge pin, a projection on said handlever engaging with a groove in the breech screw, said projection and groove being so arranged in relation to the pivotal axis of the handlever that the final portion of the movement of the latter in locking the breech screw causes the projection to pass over the dead point so as to lock the breech mechanism in the closed position against movement other than that imparted by manual unlocking movement of the handlever, and a projection on the breech screw engaging with one of the hinge lugs during the locking and unlocking movements of the breech screw.

4. In ordnance breech mechanism, the combination with the externally arranged breech screw, the swinging breech screw carrier and the hinge pin connecting said carrier to the gun, of a breech actuating handlever, means for pivoting the handlever to the carrier so as to move about an axis parallel to the carrier hinge pin, and a projection on said handlever engaging with a groove formed in the breech screw longitudinally with respect to the gun, said projection and groove being so arranged in relation to the pivotal axis of the handlever that the final portion of the movement of the latter in locking the breech screw causes the projection to pass over the dead point, so as to lock the breech mechanism in the closed position against movement other than that imparted by manual unlocking movement of the handlever.

5. In ordnance breech mechanism, the combination with the externally arranged breech screw, the swinging breech screw carrier and the hinge pin connecting said carrier to the gun, of a breech actuating handlever, means for pivoting the handlever, at its end remote from the handle, to the carrier so as to move about an axis parallel to the carrier hinge pin, and a projection on said handlever between its pivotal axis and its handle for engaging with a groove in the breech screw longitudinally with respect to the gun, said projection and groove being so arranged in relation to the pivotal axis of the handlever that the final portion of the movement of the latter in locking the breech screw causes the projection to pass over the dead point, so as to lock the breech mechanism in the closed position against movement other than that imparted by manual unlocking movement of the handlever.

6. In ordnance breech mechanism, the combination with the externally arranged breech screw, the swinging breech screw carrier, the hinge lugs on the gun and the hinge pin connecting said carrier to said lugs of a breech actuating handlever, means for pivoting the handlever to the carrier so as to move about an axis parallel to the carrier hinge

pin, a projection on said handlever engaging with a groove in the breech screw, said projection and groove being so arranged in relation to the pivotal axis of the handlever that the final portion of the movement of the latter in locking the breech screw causes the projection to pass over the dead point so as to lock the breech mechanism in the closed position against movement other than that imparted by manual unlocking movement of the handlever, and a projection on the breech screw engaging with one of the hinge lugs during the locking and unlocking movements of the breech screw.

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