A. T. DAWSON AND G. T. BUCKHAM.

BREECH LOADING ORDNANCE.

APPLICATION FILED APR. 13, 1915.

1,302,520.

Patented May 6, 1919.

2 SHEETS—SHEET 1.

Fig. 1.

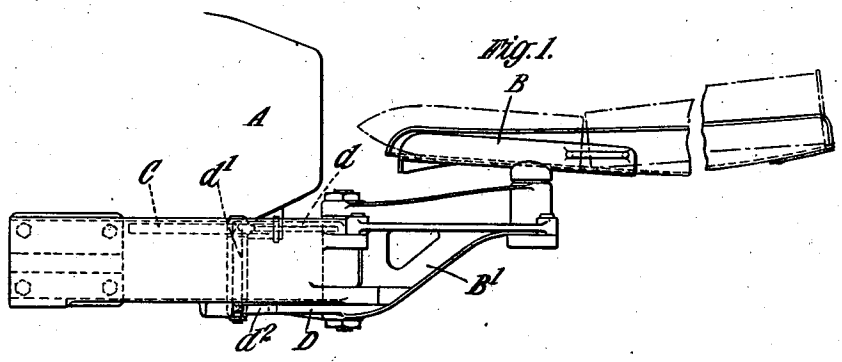


Fig. 2.

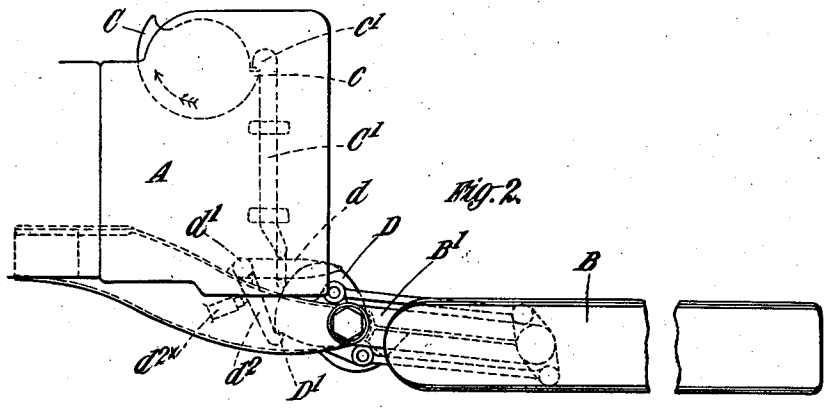


Fig. 3.

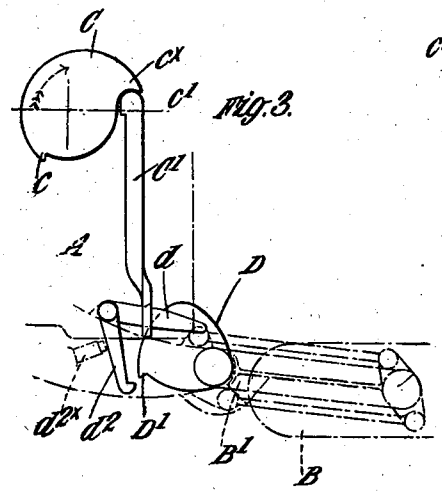
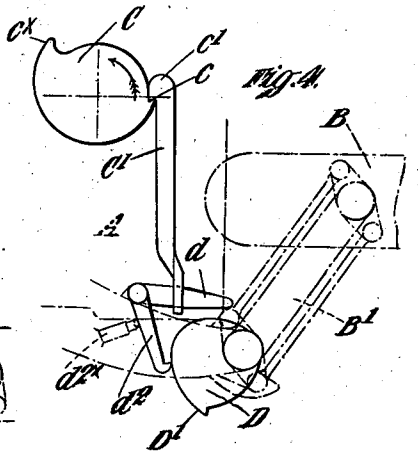


Fig. 4.



Inventors:
Arthur Trevor Dawson
& George Thomas Buckham
By Fennemore Craig & Marvin
Attys.

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2 SHEETS—SHEET 2.

Fig. 5.

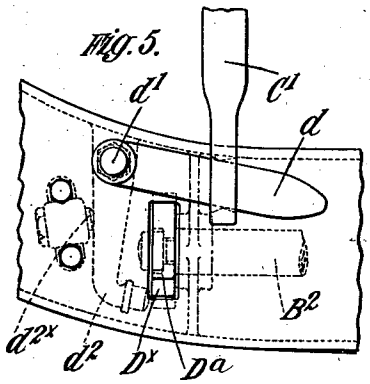


Fig. 6.

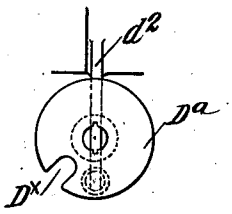


Fig. 7.

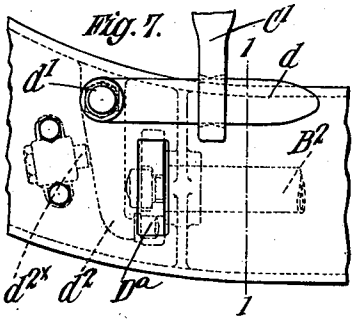
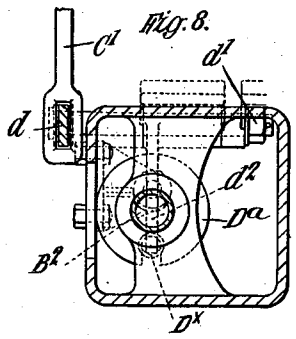


Fig. 8.



Inventors:
Arthur Trevor Dawson
& George Thomas Buckham
By Lawrie Davis & Marvin
Attys.

UNITED STATES PATENT OFFICE.

ARTHUR TREVOR DAWSON AND GEORGE THOMAS BUCKHAM, OF WESTMINSTER, LONDON, ENGLAND, ASSIGNORS TO VICKERS LIMITED, OF WESTMINSTER, LONDON, ENGLAND.

BREECH-LOADING ORDNANCE.

1,302,520. Specification of Letters Patent. Patented May 6, 1919.

Application filed April 13, 1915. Serial No. 21,124.

To all whom it may concern:

Be it known that we, Sir ARTHUR TREVOR DAWSON, knight, and GEORGE THOMAS BUCKHAM, 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 Breech-Loading Ordnance, of which the following is a specification.

This invention relates to breech loading ordnance having breech mechanism of the wedge or sliding block type and in which a loading tray is employed for bringing the ammunition into loading position behind the gun. In such breech mechanism the actuating mechanism after having displaced the breech block to its fully closed position performs a further movement which has the effect of locking the breech block without however imparting any further motion thereto and during the final portion of this locking movement the actuating mechanism liberates the striker, so that the gun can then be fired by pulling the trigger.

According to this invention we provide a safety device which is so constructed and arranged that as long as the loading tray is in the path of recoil of the gun the breech actuating mechanism is prevented from performing its aforesaid final movement to liberate the striker. We may provide a cam or the like moving with the breech actuating mechanism and another cam or the like moving with the loading tray, these cams being connected by mechanism which is of such a character that when the loading tray is in the path of recoil the breech actuating mechanism is positively prevented from being moved to its aforesaid final position, but is permitted to be so moved when the loading tray is displaced to its safe position, while until the breech mechanism is opened the loading tray cannot be moved into the path of recoil.

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 and 2 are respectively a side elevation and a plan showing a constructional form of the safety device interposed between the breech actuating mechanism and a vertically hinged loading tray, the parts being in the position they occupy when the breech actuating mechanism is in its aforesaid final locking position and the loading tray consequently out of the path of recoil of the gun.

Fig. 3 is a diagrammatic plan showing the position of the parts when the breech mechanism is fully open, the loading tray being consequently released to enable it to be swung into position behind the gun, and

Fig. 4 is a view similar to Fig. 3 showing the position of the parts when the loading tray is in the path of recoil of the gun and the breech actuating mechanism therefore prevented from assuming its final locking position, *i. e.* the striker cannot be released until the loading tray is out of the path of recoil of the gun.

Fig. 5 is a modified form of the safety device adapted to be used in conjunction with a loading tray rocking about a longitudinal axis, the parts of the safety device being in the same position as is shown in Fig. 4, that is to say the loading tray is in the path of recoil of the gun.

Fig. 6 is an end elevation of a detail of Fig. 5.

Fig. 7 is a view similar to Fig. 5, but showing the parts in the position they occupy when the loading tray is out of the path of recoil of the gun, and

Fig. 8 is a section taken approximately on the line 1, 1 of Fig. 7.

In these figures A is the breech end of the gun, and B the loading tray. C represents the aforesaid cam moving with the breech actuating mechanism and D represents the cam or its equivalent moving with the loading tray.

In the example shown by Figs. 1 to 4, the cam C is carried by the breech actuating

spindle and is adapted to coöperate with the hook shaped head c' of a rod or link C' slidably mounted transversely in the breech end of the gun. This rod has a looped end which engages with an arm d rigidly mounted on a vertical spindle d' (mounted in a bracket attached to the cradle) which also carries another arm d^2. The loop on the rod C' enables the latter to become disengaged from the arm d during the recoil of the gun and to be reëngaged when the gun runs out. The arm d^2 is hooked and coöperates with the aforesaid cam D which forms part of the swinging arm B' that supports the loading tray B. The said cams are so arranged that when the loading tray is in the path of recoil of the gun (Fig. 4) the operative surface of the cam D retains the arms d, d^2 in a position such that the hook c' of the sliding rod C' will coöperate with a shoulder c on the cam C of the breech actuating spindle, thereby limiting the closing movement of this spindle in the direction of the arrow in Fig. 4 and preventing the mechanism from being finally locked and the striker liberated. When the loading tray is moved to its safe position out of the path of recoil of the gun (Figs. 1 and 2) the operative surface of the cam D no longer engages with the arm d^2 and the breech actuating spindle can then be moved farther in the direction of the arrow in Fig. 4 to finally lock the breech mechanism. In this condition of affairs the hook on the arm d^2 engages with a shoulder D' on the cam D and the hook c' of the sliding rod C' still engages with the shoulder c on the cam C so that a positive connection is established between the two cams and the loading tray is thus prevented from being moved from its aforesaid safe position. When the breech mechanism is being opened the cam C moves in the direction of the arrow in Figs. 2 and 3 and as the mechanism approaches its fully open position another shoulder c^x on the cam C pushes the rod C' to displace the arm d^2 against the resistance of a spring d^{2x} and release this arm from the shoulder D' on the cam D, thereby enabling the loading tray to be moved to its loading position behind the gun.

Referring to Figs. 5 to 8, the loading tray is connected to a longitudinally arranged shaft B^2 which carries a plate D^a serving the same purpose as the cam D of Figs. 1 to 4. This plate is formed with a notch D^x which when the loading tray is clear of the recoil of the gun (Figs. 7 and 8) registers with a pin on the arm d^2 and thus enables the sliding rod C' to assume the position shown in Fig. 2. When the loading tray is in the path of recoil of the gun the plate D^a holds the arms d, d^2 in the position shown in Figs. 5 and 6 and thereby prevents the striker from being released as described with reference to Fig. 4. In other respects this form of the invention is similar to that illustrated by Figs. 1 to 4. Suitable stop devices may be employed for limiting the movements of the tray, either or both of these devices being preferably resilient.

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

1. In breech-loading ordnance of the sliding-block type, the combination with the breech-actuating mechanism and a movable loading tray, of locking mechanism interposed between said tray and the breech-actuating mechanism and comprising a member adapted to be moved longitudinally during the final locking movement of the breech-actuating mechanism, and means comprising a member whose position is shifted by movement of the tray to lock said member against longitudinal movement when the tray is displaced into the path of recoil of the gun, and hence prevent the breech-actuating mechanism from performing its final locking movement.

2. In breech-loading ordnance of the sliding-block type, the combination with the breech-actuating mechanism and a movable loading tray, of locking mechanism interposed between said tray and the breech-actuating mechanism and comprising a rotary cam associated with the breech-actuating mechanism, a longitudinally movable member adapted to be moved longitudinally by said cam during the final locking movement of the breech-actuating mechanism, and means comprising a member whose position is shifted by movements of the tray to lock said member against longitudinal movement when the tray is displaced into the path of recoil of the gun to prevent rotation of said cam when it is attempted to cause the breech-actuating mechanism to perform its final locking movement.

3. In breech-loading ordnance of the sliding-block type, the combination with the breech block actuating spindle, of a movable loading tray, a cam movable with said spindle, a second cam adapted to be shifted by movements of the tray, and locking means interposed between said cam and adapted when the tray is displaced into the path of recoil of the gun to lock said first-named cam against its final movement for locking the breech block and also adapted when the tray is not in the path of recoil of the gun to lock the second-named cam and the tray against movement until the breech is opened.

4. In breech loading ordnance of the sliding block type, the combination with the breech block actuating spindle, of a pivoted loading tray, a cam member moving with

said spindle, a member moving with said tray and a rod coöperating between said members for preventing the spindle from performing its final locking movement when the tray is in the path of recoil of the gun, and for preventing said tray from being moved into the path of recoil until the breech is opened.

In testimony whereof we affix our signatures in the presence of two witnesses.

ARTHUR TREVOR DAWSON.
GEORGE THOMAS BUCKHAM.

Witnesses:
HENRY KING,
JNO. R. CASWELL.