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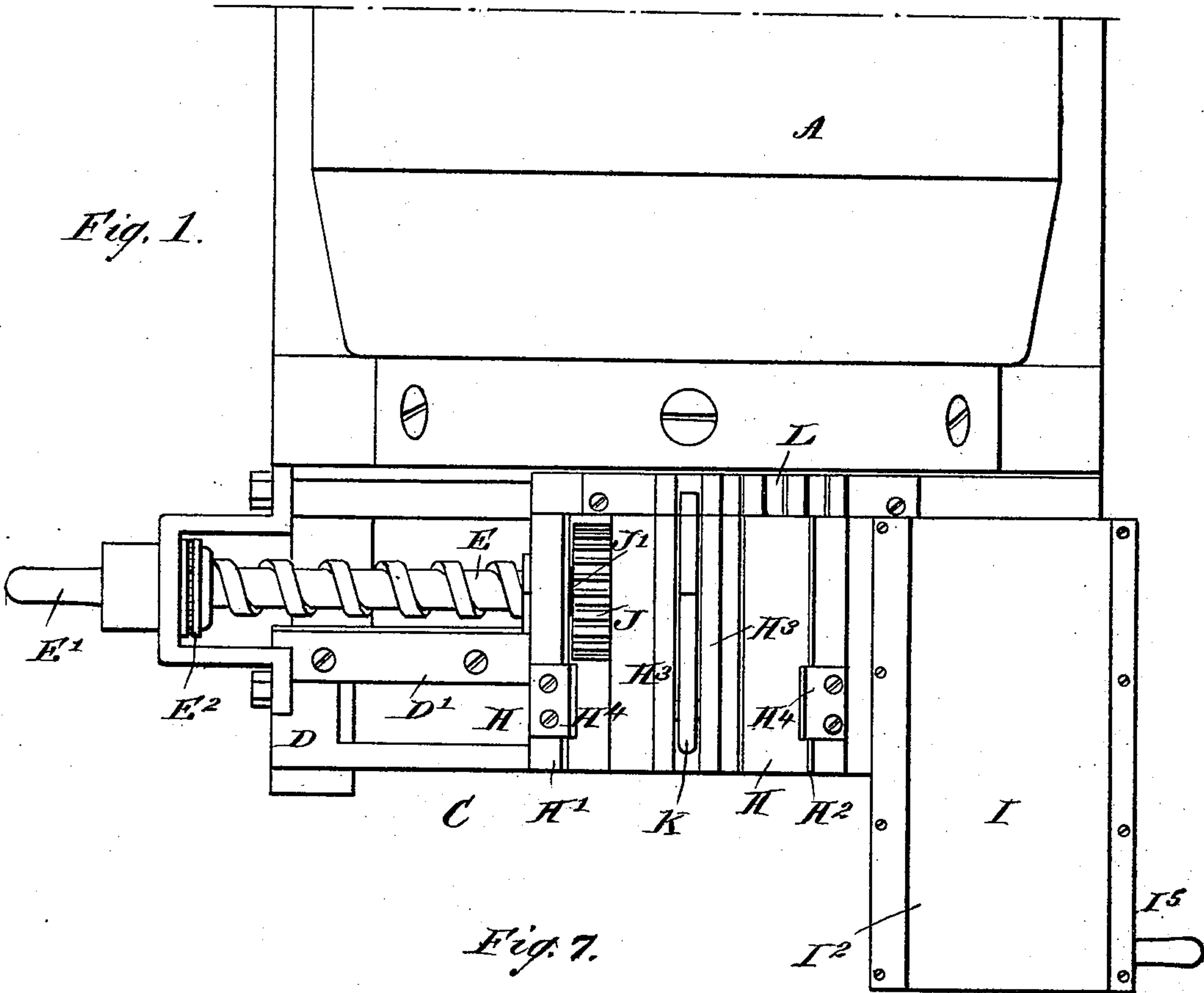
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R. B. DASHIELL.  
DEVICE FOR MANIPULATING BREECH PLUGS.

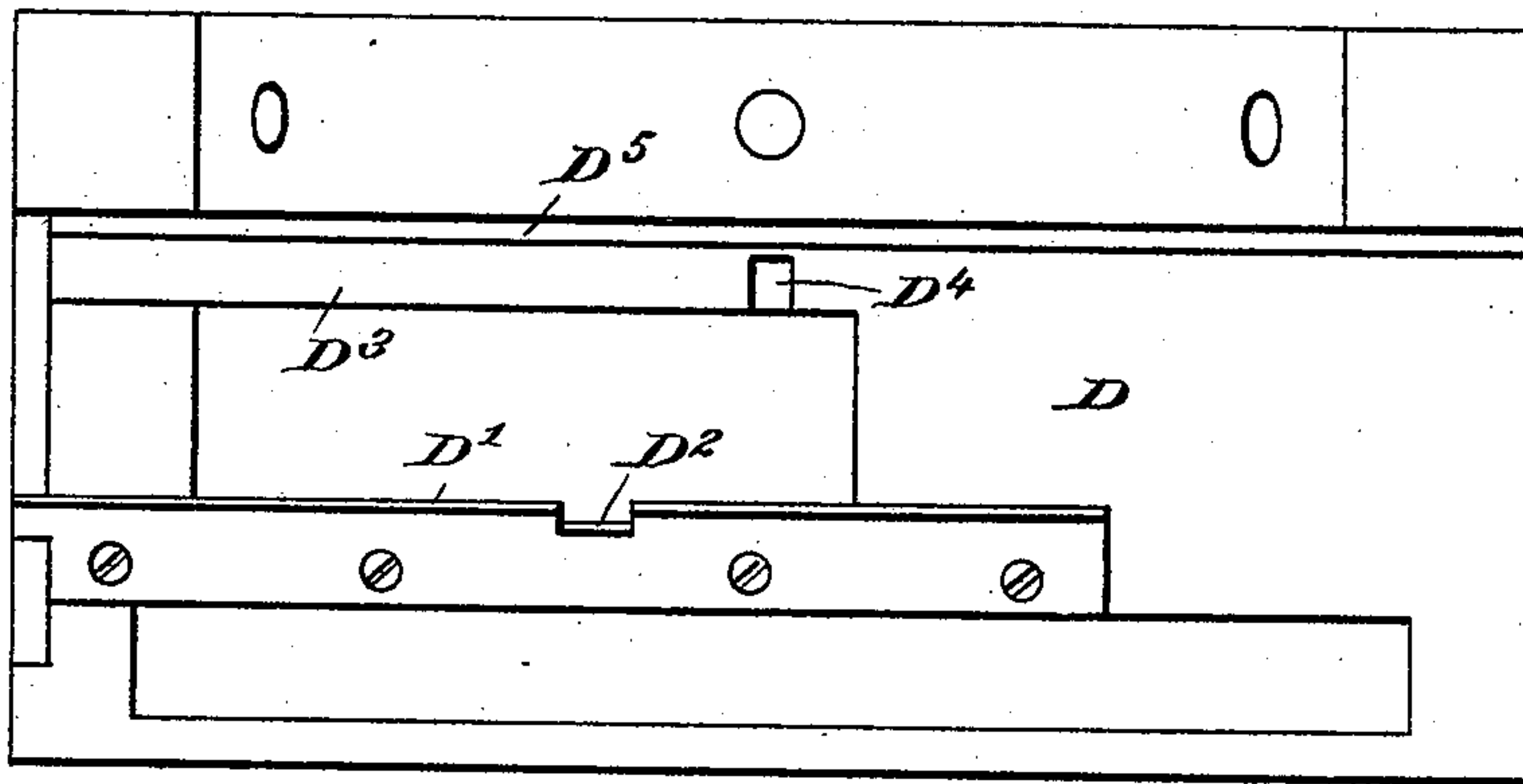
No. 435,803.

Patented Sept. 2, 1890.

*Fig. 1.*



*Fig. 7.*



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(No Model.)

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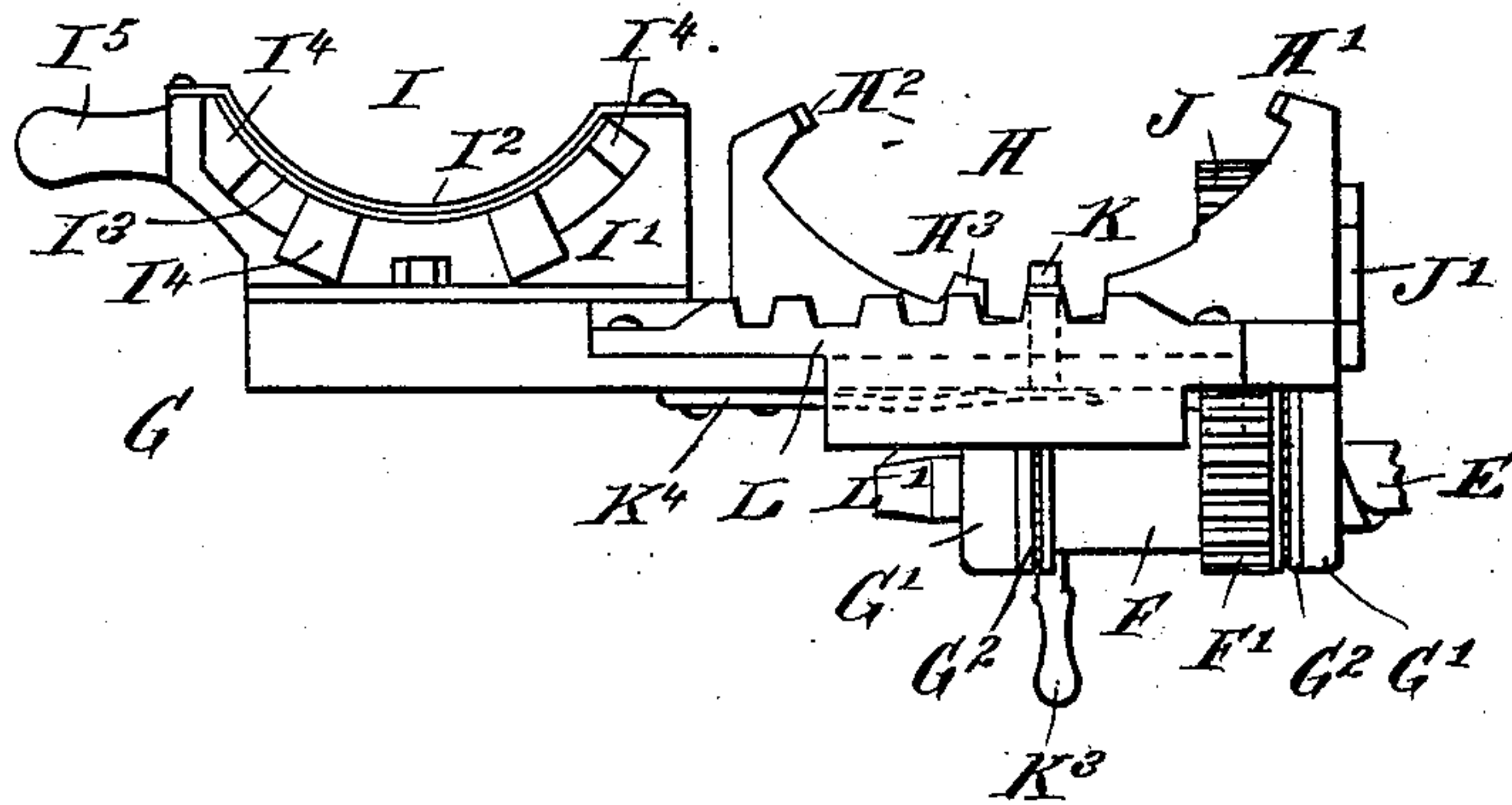
R. B. DASHIELL.

DEVICE FOR MANIPULATING BREECH PLUGS.

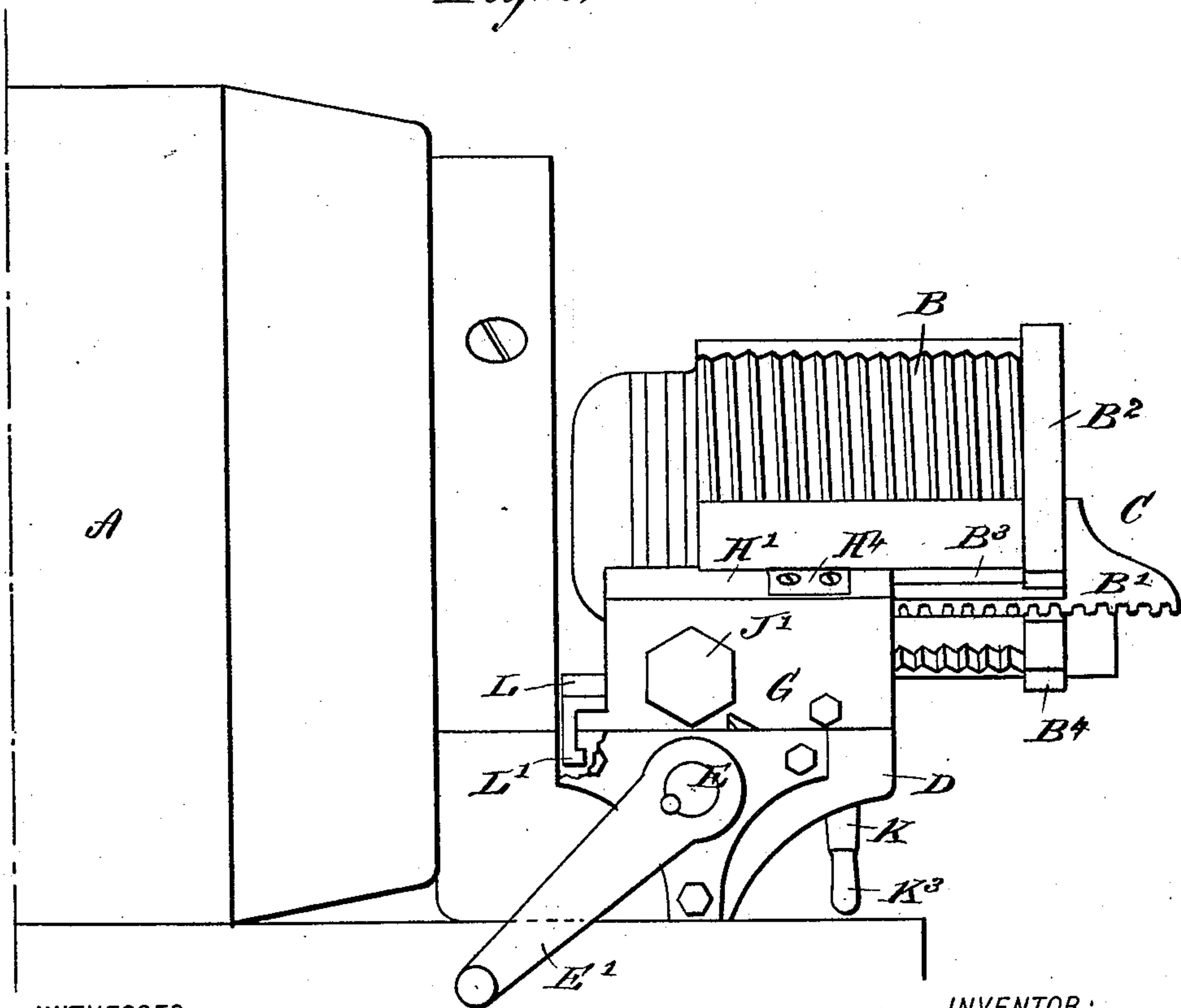
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*Fig. 8.*



*Fig. 2.*



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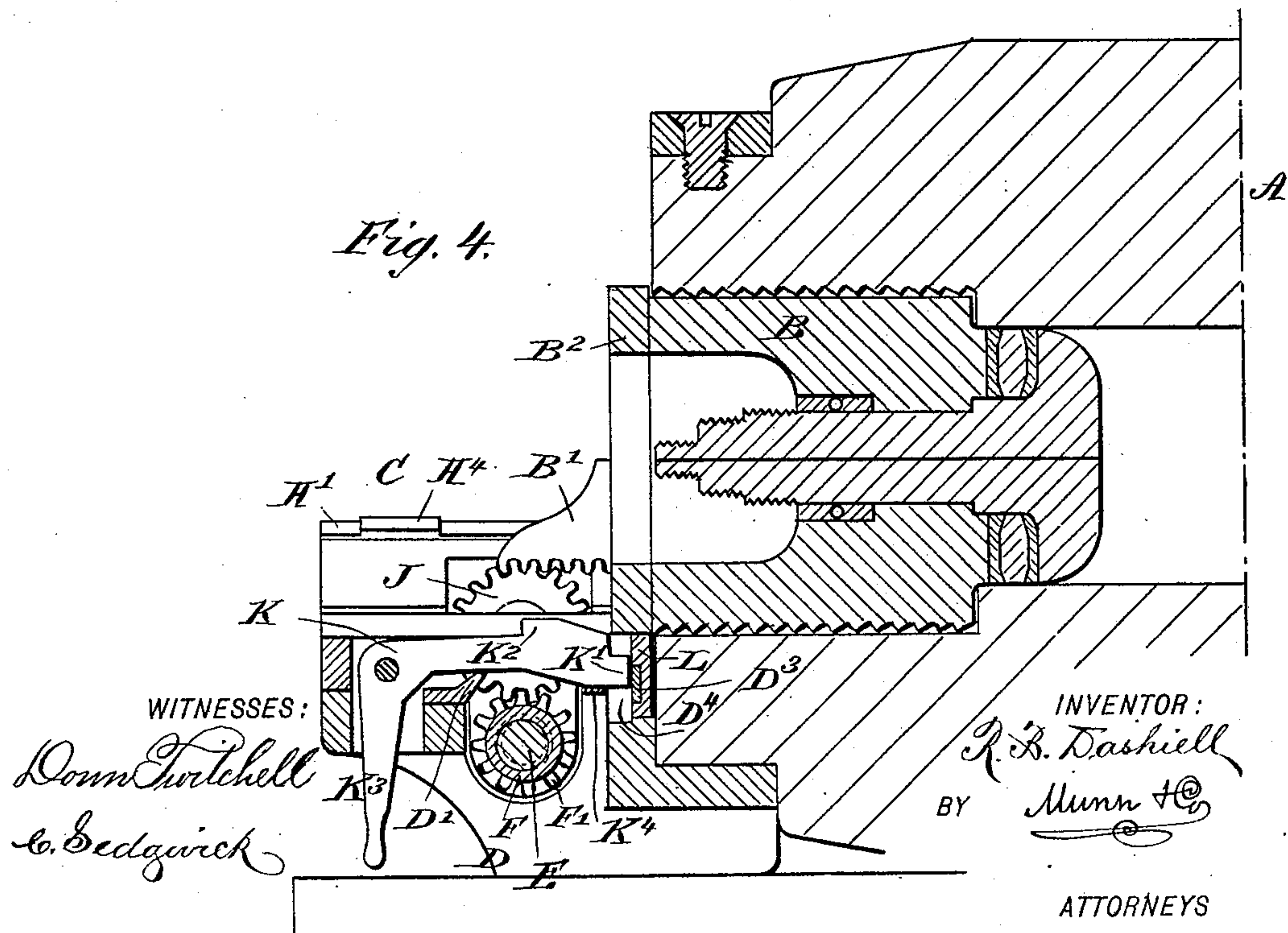
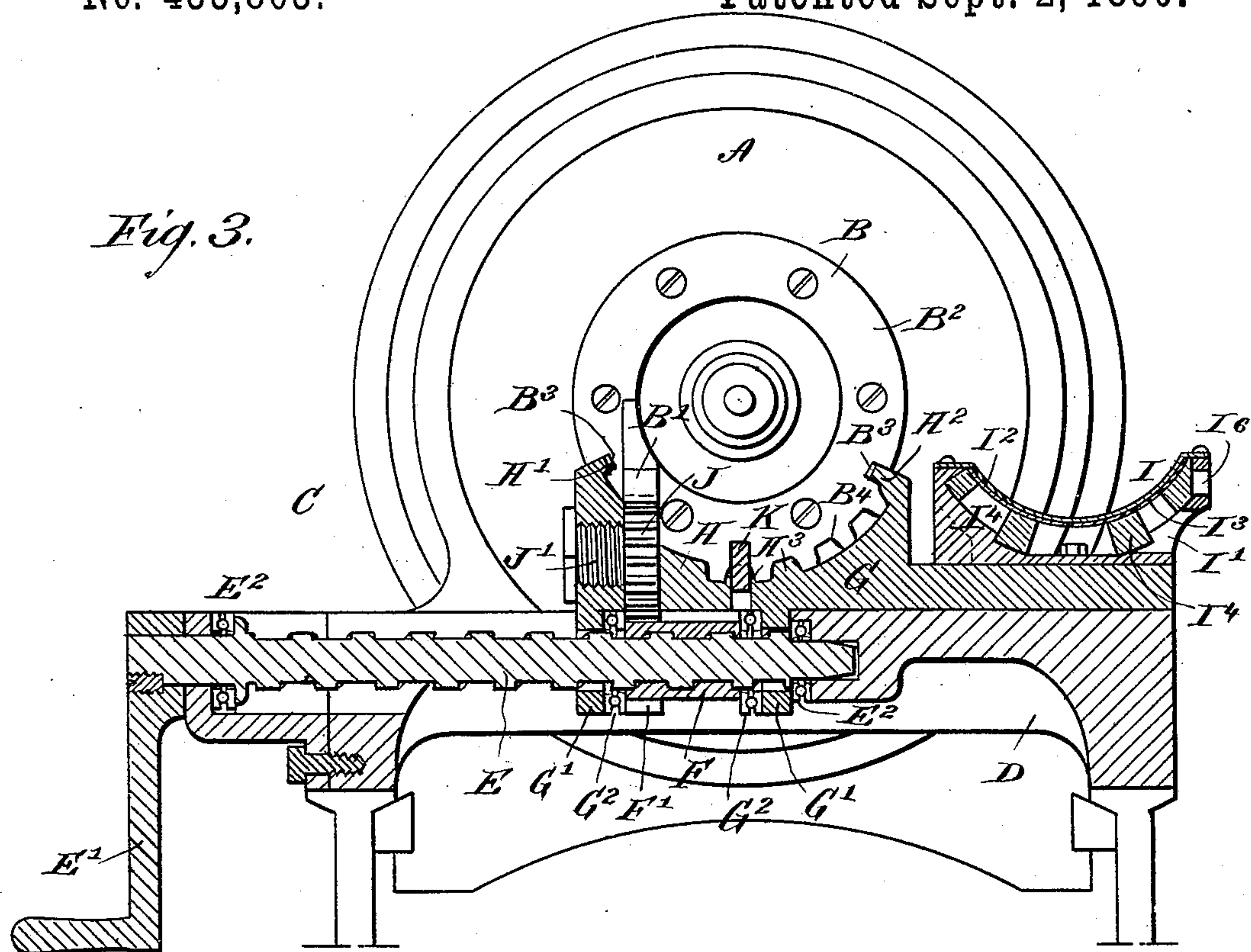
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DEVICE FOR MANIPULATING BREECH PLUGS.

No. 435,803.

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4 Sheets—Sheet 4.

Patented Sept. 2, 1890.



# UNITED STATES PATENT OFFICE.

ROBERT BROOKE DASHIELL, OF ANNAPOLIS, MARYLAND.

## DEVICE FOR MANIPULATING BREECH-PLUGS.

SPECIFICATION forming part of Letters Patent No. 435,803, dated September 2, 1890.

Application filed April 8, 1890. Serial No. 347,022. (No model.)

*To all whom it may concern:*

Be it known that I, ROBERT BROOKE DASHIELL, of Annapolis, in the county of Anne Arundel and State of Maryland, have invented a new and Improved Device for Manipulating Breech-Plugs, of which the following is a full, clear, and exact description.

The invention relates to breech-loading ordnance; and its object is to provide a new and improved device for conveniently and rapidly manipulating the breech-plug in drill or action to load, fire, &c., a breech-loading rifle.

The invention consists of a carriage adapted to turn the plug and to move it laterally and longitudinally.

The invention also consists in certain parts and details and combinations of the same, as will be described hereinafter, and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a plan view of the improvement with the breech-plug removed. Fig. 2 is a side elevation of the same with the breech-plug in position on the carriage. Fig. 3 is a sectional end view of the same. Fig. 4 is a sectional side elevation of the same with the plug in the rifle. Fig. 5 is a side elevation of the same with the plug withdrawn and run to one side, the loading-tray extending into the rifle shown in section. Fig. 6 is an end view of the improvement with the breech-plug locked ready for firing the gun. Fig. 7 is a plan view of the frame, and Fig. 8 is an end elevation of the carriage.

The device is specially applicable to the interrupted screw system for closing the breech of cannon.

The rifle A is provided with the usual breech-plug B, adapted to be manipulated by the device C, having a frame D, secured by suitable means to the rear end of the rifle A.

In suitable bearings in the frame D is mounted to turn the transversely-extending screw-rod E, provided on its outer end with a handle E' or other suitable means for turning the said screw-rod by hand or power. A nut F is engaged by the said screw-rod, and is fitted between two friction-washers G<sup>2</sup>, abut-

ting against the inner faces of two lugs G', projecting downward from the under side of a carriage G, fitted to slide on the top of the frame D. Friction-washers E<sup>2</sup> are also arranged on the bearings for the screw-rod E, so as to take up all lateral strain on the screw-rod E and the nut F.

On the top of the carriage G are arranged the plug-tray H and the loading-tray I, placed alongside of each other. In one side of the plug-tray H is held a gear-wheel J, turning on a stud J', secured in the tray H, the said gear-wheel being in mesh with a pinion F', secured or formed on the nut F. The gear-wheel J is adapted to mesh into a longitudinally-extending rack B', secured to the plug B and extending rearward a suitable distance beyond the face-plate B<sup>2</sup> of the said plug. The top of the tray H is formed like the segment of a circle corresponding to the plug B, and at the upper ends of the tray are arranged longitudinally-extending guides H' and H<sup>2</sup>, adapted to fit into correspondingly-shaped grooves B<sup>3</sup>, formed longitudinally on the plug B. In the middle of the segmental top of the tray H are formed gear-teeth H<sup>3</sup>, adapted to be engaged by corresponding gear-teeth B<sup>4</sup>, formed on the periphery of the face-plate B<sup>2</sup> of the plug B.

In order to prevent the gear-wheel J from rotating while the carriage G is moved transversely, two successive teeth on the said gear-wheel are adapted to engage a feather D', extending transversely on top of the frame D, as is plainly shown in Fig. 7. In this feather D' is formed a notch D<sup>2</sup>, corresponding to the width of the gear-wheel J, so that when the carriage G has arrived at its innermost position the gear-wheel J passes into the notch D<sup>2</sup>, so as to be free to revolve. When the frame G is in this position, the gear-wheel J is also adapted to engage the rack B' of the plug B, which now has its axis coincident with the axis of the rifle A. (See Fig. 3.)

In order to lock the carriage G, the frame D, and the plug B in the proper place, a spring-pressed lever K is provided, which is preferably made L-shaped, as is plainly shown in Fig. 4, and pivoted to the carriage G. The inner end of this lever K is provided with a shoulder K', adapted to travel over a trans-



versely-extending bar  $D^3$  of the frame D, and also adapted to pass into a recess  $D^4$ , formed in the said bar  $D^3$ , as shown in Fig. 7. When the carriage G moves into its innermost position, the shoulder  $K'$  can be snapped into the recess  $D^4$ , so as to lock the carriage to the frame D.

On the top of the inner end of the lever K is arranged another shoulder  $K^2$ , adapted to engage the inner edge of the plug B, so as to lock the latter in place on the tray H. The handle end  $K^3$  of the lever K extends downward and is within convenient reach of the operator in the rear of the rifle. A spring  $K^4$  is secured to the under side of the carriage G and presses against the inner end at the under side of the lever K, so as to hold the said inner end in an uppermost normal position. The lever K extends longitudinally in about the middle of the tray H, as is shown in Figs. 1, 3, and 8. Suitable slots are formed in the frame D for the passage of the projecting ends of the said lever K.

To the front of the carriage G is secured a transversely-extending rack L, adapted to engage the teeth  $B^4$ , formed in the face-plate of the plug B, the teeth of the said rack extending in line with the teeth  $H^3$  of the tray H, as is plainly shown in Figs. 1 and 8. The lower end of the rack L is provided with an inwardly-extending flange  $L'$ , fitting into a correspondingly-shaped groove  $D^5$ , arranged in the frame D, so as to prevent the carriage G from moving upward from the frame D.

In order to limit the outward movement of the plug B on the tray H, stop-plates  $H^4$  are provided, which are secured on the upper ends of the tray and adapted to engage shoulders in the grooves  $B^3$ .

The loading-tray I is provided with a frame  $I'$ , secured to the top of the carriage G and supporting a longitudinally-extending segmental plate  $I^2$ , below which is arranged a similarly-shaped plate  $I^3$ , fastened to a number of longitudinally-extending bars  $I^4$ , fitted to slide in the top of the fixed frame  $I'$ . To one of the bars  $I^4$  is secured a handle  $I^5$ , which projects through a longitudinally-extending slot  $I^6$ , formed in the fixed frame  $I'$ . When the handle  $I^5$  is in its outermost position, the plate  $I^3$  is directly under the top plate  $I^2$ ; but when the handle  $I^5$  is pushed inward the said plate  $I^3$  slides from under the top plate  $I^2$ , but extends in line with the latter. This extending of the plate  $I^3$  takes place when the plug B is removed from the firing-chamber of the rifle A and when the said tray I is in line with the said chamber. (See Fig. 5.)

The operation is as follows: When the breech-plug B is locked to the rifle A, then these several parts are in the position shown in Fig. 6. Now, when it is desired to remove breech-plug B, the operator turns the crank-arm  $E'$  from right to left, so as to revolve the screw-rod E in the same direction, whereby the nut F moves on the said screw-

rod, thereby carrying the carriage G transversely until it stands in the position shown in Fig. 1. It is understood that the nut F is prevented from turning during this operation on account of being locked in position by the gear-wheel J engaging the feather  $D'$  of the frame D. When, however, the carriage G is moved into the position shown in Fig. 1, the gear-wheel J has passed into the notch  $D^2$  of the said feather  $D'$  and is thereby unlocked, thus also unlocking the pinion  $F'$  of the nut F. The carriage G is held in this position by the thrust of the screw-rod E pressing the lug  $G'$  of the carriage G against the friction-washer  $E^2$ . In other words, the carriage has reached the limit of its travel to the right. The transverse movement of the carriage G also brings the rack L into mesh with the gear-teeth  $B^4$  on the face-plate  $B^2$  of the plug B, whereby the latter is given about one-sixth of a turn, thus unlocking the plug from the rifle A. By this movement of the breech-plug B its rack  $B'$  is moved into mesh with the gear-wheel J, so that a further turning of the crank-arm  $E'$  causes the nut F to revolve, so that its pinion  $F'$  turns the gear-wheel J, and the latter, by being in mesh with the rack  $B'$ , moves the plug B outward into the tray H, in which it is securely held in place by engaging with its longitudinal grooves  $B^3$  the guides  $H'$  and  $H^2$ . The outward movement of the plug B is stopped by the stop-plates  $H^4$ , the plug then being completely freed from the rifle A, as is plainly illustrated in Fig. 5. In its outward movement the plug B presses the shoulder end of the lever K downward against the tension of the spring  $K^4$ , and when the plug has passed to its outermost position the said lever K engages by means of its shoulder  $K^2$  the shoulder of the plug, thus locking the plug to the tray H. The operator now turns the crank-arm  $E'$  in the opposite direction, whereby the carriage G moves to the left, the gear-wheel J being locked in place by reason of being in mesh with the rack  $B'$  of the plug B, which is now held firmly in the tray H by the shoulder  $K^2$  of the latch K. Consequently the pinion  $F'$  of the nut F, being in mesh with gear-wheel J, cannot turn, and the nut F moves laterally on the screw-rod E, two of the teeth of wheel J engaging the feather D, as previously described. When the carriage G has reached the end of its travel, the loading-tray I is in line with the chamber of the rifle A. The operator now pushes on the handle  $I^5$ , so as to move the plate  $I^3$  into the chamber of the rifle, thus protecting the thread for the plug in the said rifle. The projectile and charge are now passed over the loading-tray I into the rifle in the usual manner without any injury to the threads for the plug in the rifle. When the loading has been accomplished, the operator moves the handle  $I^5$  outward to withdraw the plate  $I^3$ , after which the operator turns the crank-shaft  $E'$ , so as to cause the carriage G



to move to the right until the plug B is again in line with the bore of the rifle, when the handle K<sup>3</sup> of the lever K is pulled to the rear by the operator, thus causing the shoulder K' of said lever to descend into the recess D<sup>4</sup> and locking the carriage in place. By this same movement of the lever K the front end of the plug B is freed from the shoulder K<sup>2</sup> of the said lever. The operator now turns the crank E' in the opposite direction, (viz., from left to right.) The nut F is thereby rotated, and by its pinion F' imparts a rotary motion to the gear-wheel J, which, on account of being in mesh with the rack B', moves the plug B longitudinally into the chamber of the rifle A. As soon as the plug begins to move toward the rifle the operator may release the handle K<sup>3</sup> of the lever K, as the said lever is now kept down by the plug B above its shoulder K<sup>2</sup>. When the plug is pushed entirely into its place in the rifle, its rear end will have moved from above the shoulder K' of the lever K, and the spring K<sup>4</sup> will now throw the shoulder K' upward from the recess D<sup>4</sup>, thus unlocking the carriage G from the frame D. The continued turning of the crank-handle E' in the same direction will cause a side-wise movement of the carriage G to the left, whereby the rack L, being in mesh with the teeth B<sup>4</sup> of the face-plate of the plug B, gives the latter about one-sixth of a turn, so as to screw the plug into the rifle A, thus locking the plug and the rifle together. The carriage G then stands about in the position shown in Fig. 6.

The device for firing the gun may be conveniently attached to the carriage G between the loading-tray I and the plug-tray H, so that when the said carriage is moved into the position shown in Fig. 6 the firing device is in the proper position for firing the gun.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a device for manipulating breech-plugs, the combination, with a gun and a frame secured transversely thereon, of a carriage fitted to slide on the said frame transversely to the said gun, a plug-tray held on the said carriage and adapted to support the plug, and means, substantially as described, for moving the said carriage forward and backward to move the plug on the plug-tray to and from the bore of the said gun, substantially as shown and described.

2. In a device for manipulating breech-plugs, the combination, with a fixed frame and a screw-rod mounted to turn thereon and provided with a crank, of a nut engaging the said screw-rod, and a carriage fitted to slide on the said frame transversely to the bore of the gun and provided with lugs between which the said nut is held, substantially as shown and described.

3. In a device for manipulating breech-plugs, the combination, with a frame and

screw-rod having a crank for turning the same in the said frame, of a nut engaging the said screw-rod, a carriage fitted to slide on the said frame and provided with lugs between which the said nut is held, a plug-tray held in the said carriage, and a gear-wheel mounted to turn on the said tray and in mesh with a pinion formed on the said nut, substantially as shown and described.

4. In a device for manipulating breech-plugs, the combination, with a screw-rod provided with a crank for turning the same, of a nut engaging the said screw-rod and adapted to turn with the same, a pinion formed on the said nut, a gear-wheel in mesh with the said pinion, and a breech-plug provided with a longitudinal rack adapted to mesh into the said gear-wheel, substantially as shown and described.

5. In a device for manipulating breech-plugs, the combination, with a carriage provided with a plug-tray and a plug having a longitudinal rack and adapted to slide on the said plug-tray, a pinion in mesh with the said gear-wheel, a nut on which the said pinion is formed, and a screw-rod extending transversely on the said carriage, of a crank for turning the said screw-rod to move the said plug longitudinally to and from the bore of the gun, substantially as shown and described.

6. In a device for manipulating breech-plugs, the combination, with a fixed frame extending transversely on the gun and provided with a feather having a notch, of a screw-rod provided with a crank for turning it in the said frame, the said rod extending in line with the said feather, a nut engaging the said screw-rod, a carriage mounted to slide on the said frame and engaging the ends of the said nut, a plug-tray held on the said carriage and adapted to support the plug, and a gear-wheel mounted to turn on the said tray and engaging a pinion formed on the said nut, and also adapted to engage the said feather on the frame, substantially as shown and described.

7. In a device for manipulating breech-plugs, the combination, with a fixed frame extending transversely on the gun and provided with a feather having a notch, of a screw-rod provided with a crank for turning it in the said frame, the said rod extending in line with the said feather, a nut engaging the said screw-rod, a carriage mounted to slide on the said frame and engaging the ends of the said nut, a plug-tray held on the said carriage and adapted to support the plug, and a gear-wheel mounted to turn in the said tray and engaging a pinion formed on the said nut, and also adapted to engage the said feather on the frame, and a spring-pressed lever held in the said carriage and adapted to engage a notch on the said frame to lock the said carriage in place on the said frame when the said gear-wheel enters the notch in the said feather, substantially as shown and described.



8. In a device for manipulating breech-plugs, the combination, with a gun and a frame secured transversely thereon, of a carriage fitted to slide on the said frame transversely to the said gun, a plug-tray held on the  
5 said carriage and adapted to support the plug, means, substantially as described, for moving the said carriage forward and backward to move the plug on the plug-tray to and from  
10 the bore of the said gun, and means, substantially as described, for moving the said plug into and out of the bore of the gun, as set forth.

9. In a device for manipulating breech-plugs, the combination, with a gun and a  
15 frame secured transversely thereon, of a car-

riage fitted to slide on the said frame transversely to the said gun, a plug-tray held on the said carriage and adapted to support the plug, means, substantially as described, for moving  
20 the said carriage forward and backward to move the plug on the plug-tray to and from the bore of the said gun, means, substantially as described, for moving the said plug into and out of the bore of the gun, and means,  
25 substantially as described, for screwing up or unscrewing the breech-plug in the said gun, as set forth.

ROBERT BROOKE DASHIELL.

Witnesses:

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JOHN J. KNAPP.