

No. 648,767.

Patented May 1, 1900.

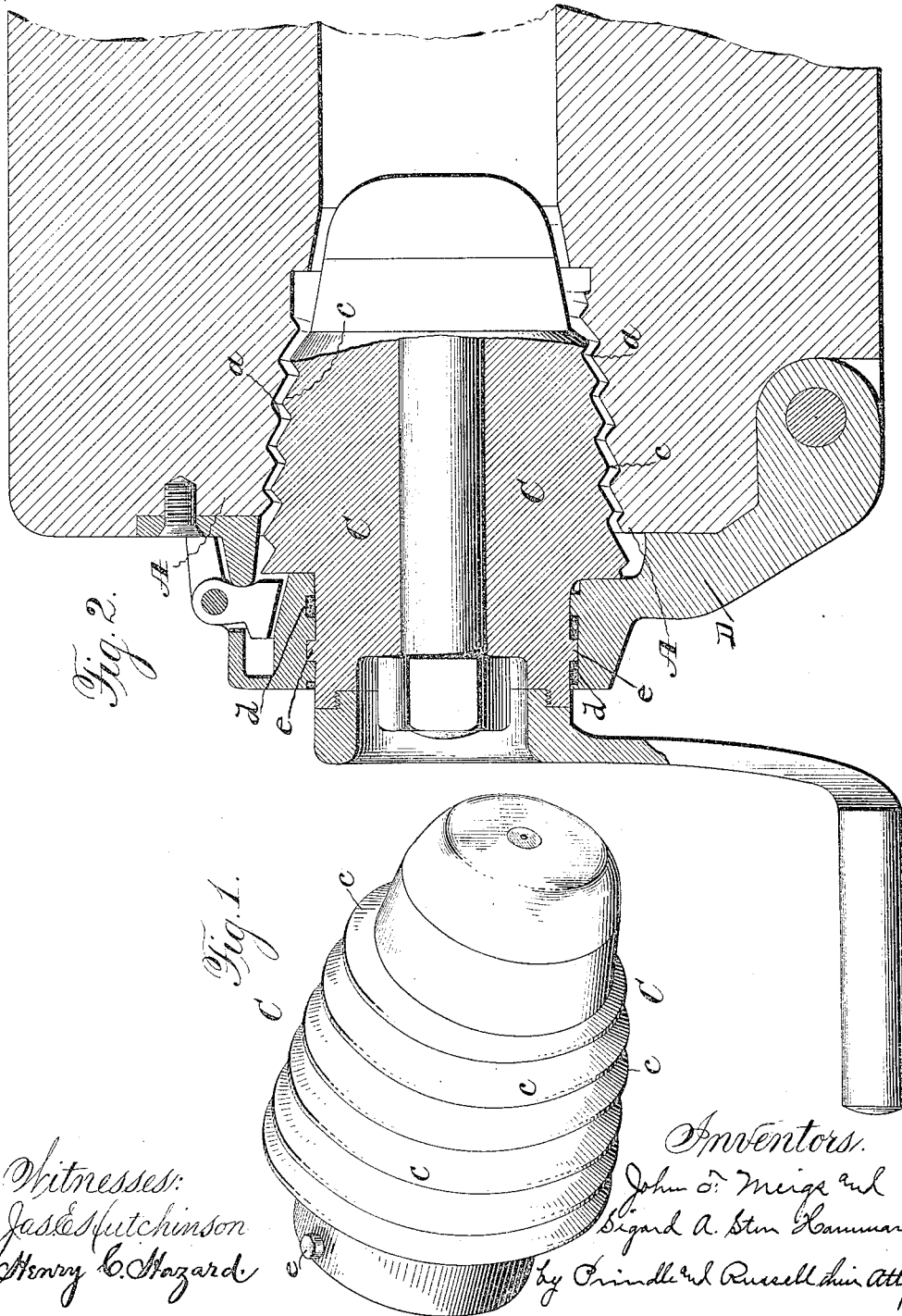
J. F. MEIGS & S. A. S. HAMMAR.

BREECH LOADING ORDNANCE.

(Application filed Mar. 15, 1899.)

(No Model.)

3 Sheets—Sheet 1.



J. F. MEIGS & S. A. S. HAMMAR.

BREECH LOADING ORDNANCE.

(Application filed Mar. 15, 1890.)

(No Model.)

3 Sheets—Sheet 2.

Fig. 3.

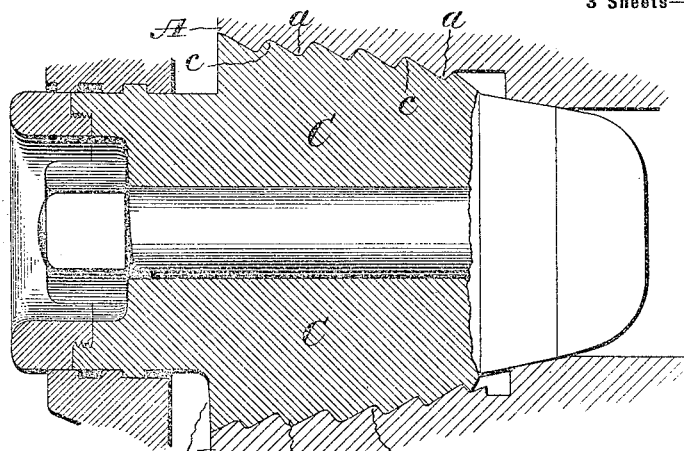


Fig. 4.

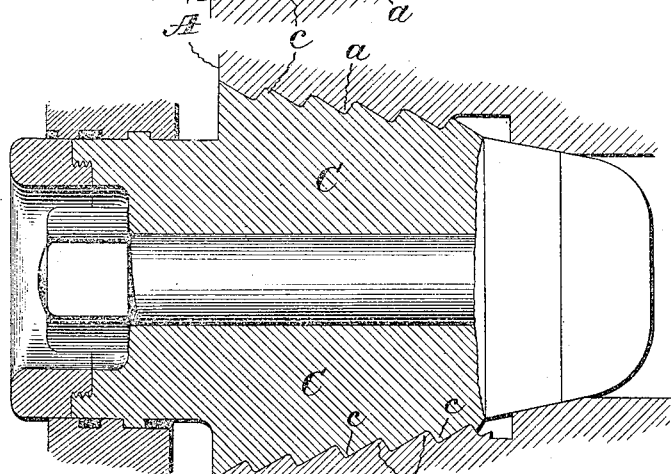
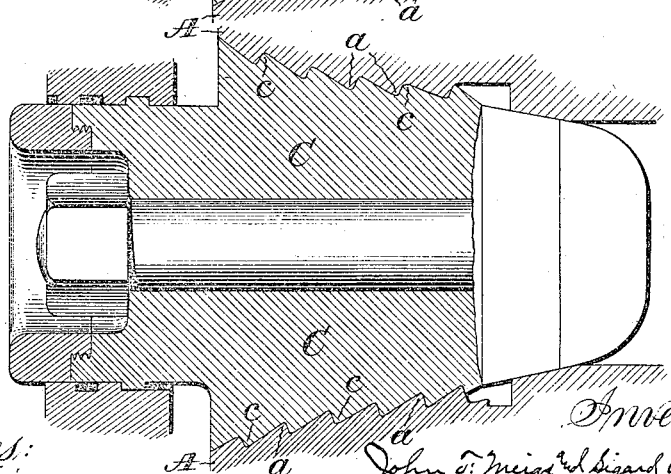


Fig. 5.



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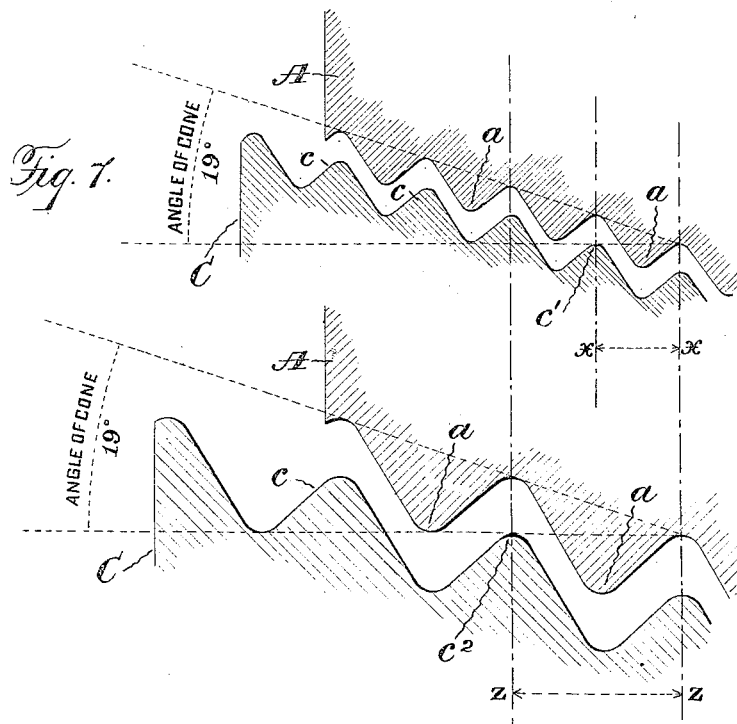
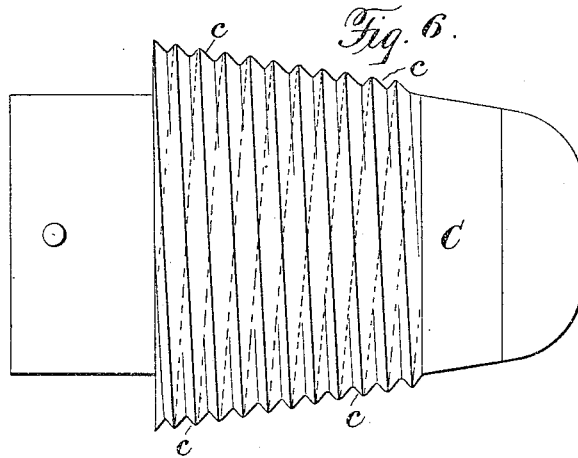
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(No Model.)

3 Sheets—Sheet 3.



Witnesses:

James Hutchinson
Henry C. Hazard

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UNITED STATES PATENT OFFICE.

JOHN FORSYTH MEIGS AND SIGARD AXEL STEN HAMMAR, OF SOUTH BETHLEHEM, PENNSYLVANIA. ASSIGNORS TO THE BETHLEHEM IRON COMPANY, OF SAME PLACE.

BREECH-LOADING ORDNANCE.

SPECIFICATION forming part of Letters Patent No. 648,767, dated May 1, 1900.

Application filed March 15, 1899. Serial No. 709,183. (No model.)

To all whom it may concern:

Be it known that we, JOHN FORSYTH MEIGS, a citizen of the United States, and SIGARD AXEL STEN HAMMAR, a subject of the King of Sweden and Norway, both residing at South Bethlehem, in the county of Northampton, and in the State of Pennsylvania, have invented certain new and useful Improvements in Breech-Loading Ordnance; and we do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, in which—

Figure 1 is a perspective view of our breech-plug as preferably constructed separated from the gun. Fig. 2 is an axial section of the same and of the gun-breech before the plug is seated. Fig. 3 is a like view of said parts after the seating of said breech-plug. Figs. 4 and 5 are like axial sections of said gun-breech and plug, showing modifications in the lines of their engaging surfaces; Fig. 6, a view in side elevation of the breech-plug with a double thread; and Fig. 7, a view in section of the nature of a diagram to illustrate by comparison the difference in the amount of movement required to free from the thread of the breech plugs having, respectively, a single and a double thread.

Letters of like name and kind refer to like parts in each of the figures.

The object of our invention is to increase the strength of connection between the breech and plug of ordnance; and to such end said invention consists in the construction and combination of parts, substantially as and for the purpose hereinafter specified.

In the application of our invention the open end of the breech A of a gun is provided with an internally-threaded section *a*, which from its outer end inward decreases in diameter. The sides of such threaded section longitudinally are preferably formed upon a convexly-curved line; but instead thereof the lines of said threaded section may be straight or oppositely-curved, as shown in Figs. 4 and 5, respectively.

The breech-plug C is fitted to and adapted to fill the internally-threaded section *a* of the

breech A, for which purpose the periphery of such plug is formed upon longitudinal lines which correspond to those of said breech, and upon such periphery are provided threads *cc*, that correspond to and are adapted to engage with and fill the threads of said breech, so that when said plug is screwed to place it will be firmly held in position and close such breech.

It will be seen that in consequence of the tapering form of the breech-plug C a partial rotation, dependent upon the amount of taper and the pitch of the threads, will disengage it from and permit of its ready removal from the breech, thus rendering unnecessary the removal of sections of the threads, as is usually done, and as the engaging threads are continuous a materially-stronger connection is made between said parts than could be had by use of "interrupted screws." We use by preference a multiple thread, because such construction has certain important practical advantages over a single thread. With, for example, a double thread instead of one and of the same pitch as the one less longitudinal movement, and consequently less angular movement, of the plug is necessary to free the plug-thread from the thread of the breech. This is clearly shown by the diagrammatic illustration in Fig. 7, where similar portions of two breech mechanisms are shown, one of which has a single and the other double thread, whose pitch is the same, the angle of whose thread-faces is the same, and the taper or angle of the two plugs being the same. As a result of the use of double thread in the place of one the height or projection of the double thread is half that of the single thread, and hence it is necessary to move the plug longitudinally only half as far to free or clear its thread from the breech as with the case of a single thread. The amount of movement required to free the plug with the double thread is indicated by the dotted line *xx*, Fig. 7, which shows the distance traveled by a certain part *c'* of a thread, while the amount of movement required to free the plug with the single thread is shown by the dotted line *zz*, which shows the distance traveled by a

certain part c^2 of the thread. The pitch of the thread being the same in both cases, it is apparent that only half as much angular movement is required in the case of the plug with double thread as in the case of the plug with single thread. It is apparent in the case illustrated that the bearing-surface of the thread, where the double thread is used, is the same as the bearing-surface where one thread is employed, for as two are used in the place of one with no change in the angle of the thread-faces the aggregate area of two equals that of one.

The plug, as is common, is secured at its rear end to a swinging plate or carrier D, being provided with a cylindrical part E, of reduced diameter, that is provided with radial pins or lugs e and e , that engage screw-thread d in the carrier-opening. The pitch of the thread d is the same or substantially the same as that of the thread on the conical plug, until a point in the rearward travel of the plug is reached, when the thread c thereof is disengaged from the gun, and then the pitch of the thread d increases. The purpose of this arrangement is to enable the longitudinal travel of the plug to be accelerated when the plug is out of engagement with the thread of the breech. The diameter of the pins or lugs e and e is such that there will be clearance or space between them and the thread d when the plug is in the breech, so that the pressure on the plug when the gun is fired will not fall upon said pins or lugs.

The means employed for rotating, locking, unlocking, and swinging the breech-plug to and from position have no necessary connection with this invention and therefore need not be described.

Having thus described our invention, what we claim is—

1. In breech-loading ordnance, the combi-

nation of a breech-plug threaded to engage the threaded breech, and a carrier having a threaded opening engaged by a part on the plug, the thread of said opening having a greater pitch than the thread of the plug and breech, substantially as and for the purpose described.

2. In breech-loading ordnance, the combination of a breech-plug having an inwardly-decreasing diameter, and provided with a continuous screw-thread to engage a similarly-threaded portion of the gun, and a hinged carrier having a threaded opening that is engaged by the rear end of the plug, the thread of said opening having an increasing pitch, substantially as and for the purpose described.

3. In breech-loading ordnance, a breech-plug having an inwardly-decreasing diameter and provided with a continuous, multiple screw-thread, in combination with the breech of a gun having a correspondingly formed and threaded interior, substantially as and for the purpose described.

4. In a breech-loading gun, the combination with the breech of a gun having an inwardly-decreasing diameter, and provided with a plurality of continuous screw-threads, a breech-plug having a correspondingly formed and threaded exterior, a carrier for the plug, and means for causing the plug to move faster in one part of its longitudinal movement than in another, substantially as and for the purpose described.

In testimony that we claim the foregoing we have hereunto set our hands this 28th day of February, 1899.

JOHN FORSYTH MEIGS.

SIGARD AXEL STEN HAMMAR.

Witnesses:

EDWARD J. MALLOY,

HOWARD S. HESS.