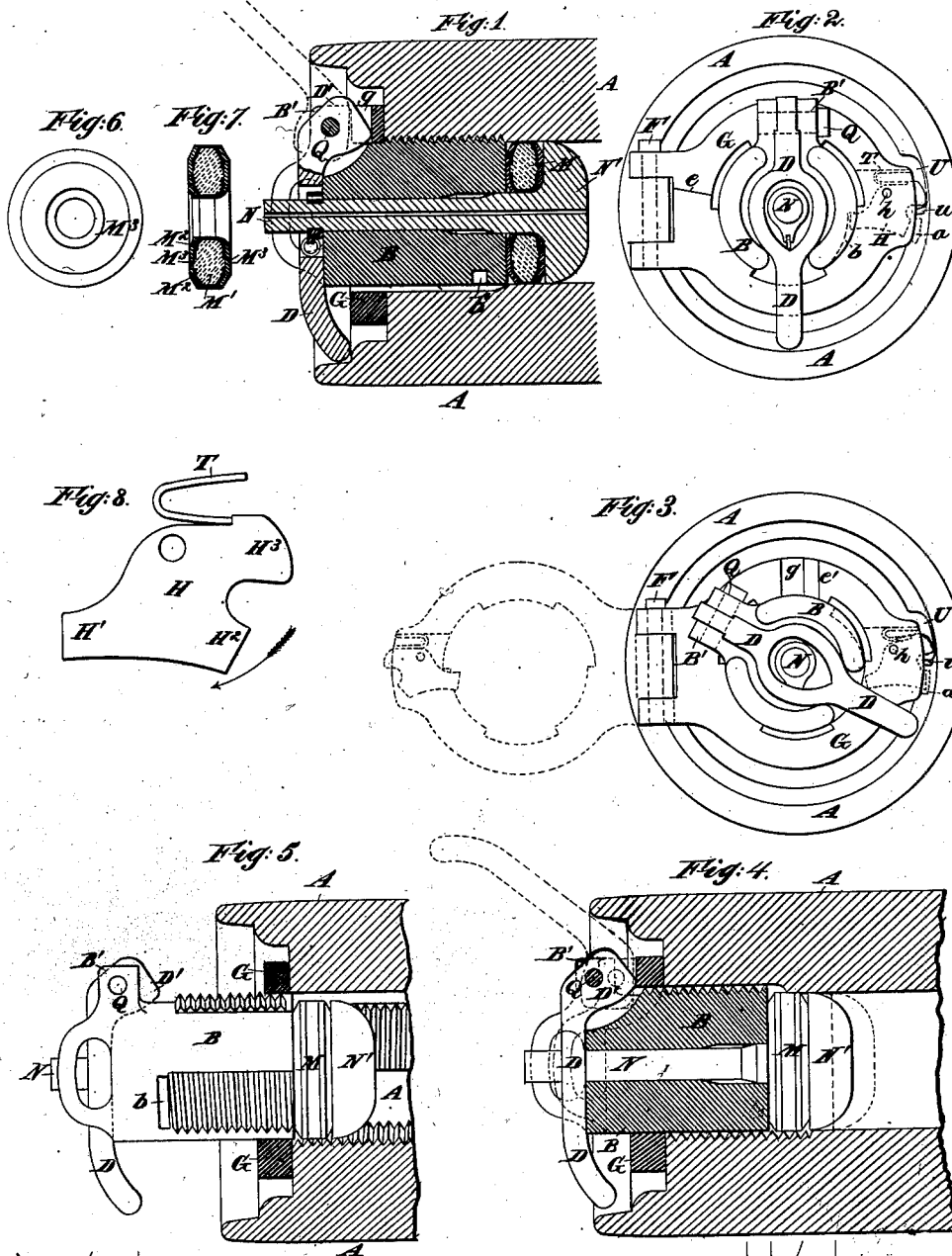


(No Model.)

C. T. M. V. DE BANGE.
BREECH LOADING ORDNANCE.

No. 301,220.

Patented July 1, 1884.



WITNESSES—

Charles R. Searle,
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INVENTOR—

C. T. M. V. de Bange
by his attorney
Thomas D. Stetson.

UNITED STATES PATENT OFFICE.

CHARLES T. M. VALÉRAND DE BANGE, OF PARIS, FRANCE, ASSIGNOR TO SOCIÉTÉ ANONYME DES ANCIENS ÉTABLISSEMENTS CAIL, OF SAME PLACE.

BREECH-LOADING ORDNANCE.

SPECIFICATION forming part of Letters Patent No. 301,220, dated July 1, 1884.

Application filed June 12, 1883. (No model.)

To all whom it may concern:

Be it known that I, CHARLES TIMOTHÉE MAXIMILIEN VALÉRAND DE BANGE, of Paris, in the Republic of France, have invented certain new and useful Improvements in Breech-Loading Guns, of which the following is a specification.

The improvements apply to breech-loading cannons which employ a screw-plug having its threads interrupted.

I have devised a system of packing placed in advance of the plug, and which is expanded by the force of the explosion of the powder to make a tight joint, to prevent the leakage of gas. I also employ a lever which performs two important functions—one to aid in turning the plug, and another as a safety-guard to insure that the breech is reliably closed before the piece is discharged. My system requires no special tools or apparatus for the opening and closing.

The accompanying drawings form a part of this specification, and represent what I consider the best means of carrying out the invention.

Figure 1 is a central longitudinal section. The strong lines show the parts ready for firing. The dotted lines show the transverse lever in a position for conveniently operating to turn the screw-plug. Fig. 2 is a rear view showing the parts locked. Fig. 3 is a corresponding view showing the parts unlocked. The dotted lines show the breech mechanism swung around so as to leave the breech entirely open. Fig. 4 is a longitudinal section showing the screw-plug partially moved toward the rear. Fig. 5 is a corresponding section partly in elevation, showing the screw-plug moved far to the rear, ready to be carried around by turning on the hinges of the inclosing-collar. Figs. 6 and 7 represent the packing-ring detached. Fig. 6 is a face view, and Fig. 7 a section in the plane of the axis. Fig. 8 shows what I term the "turning-catch" on a larger scale.

Similar letters indicate like parts in all the figures.

A is the rear portion of the body or barrel of the gun. B is a screw-plug having its threads interrupted.

C is a door in the form of a ring or collar, larger than the bore, strongly hinged to the body A on one side, and adapted to swing open when required. When closed, it sinks into a depression surrounding the bore at the breech.

The interior of the breech of the gun is equipped with series of partial screw-threads alternating with longitudinal spaces, in which the screw-threads are cut away, and allow corresponding segments of screw-thread on the plug to be moved inward and outward easily when the plug is turned in the right position. By thrusting the screw-plug in as far as may be by a direct thrust, and then giving it a partial revolution, the screw-plug is strongly engaged with the breech of the gun. A reverse motion liberates it. D is a lever extending across in rear of the screw-plug B, and hinged thereto by the pivot Q in the short arm B'.

I employ a locking-catch turning on a center, and subject to the force of a spring, T, which tends to turn it always in one direction. It performs important functions. It is marked H, certain portions being designated, when necessary, by additional marks, as H' H". It turns on a center, h, fixed in the door or hinged ring G.

A liberal hole in the line of the axis of the screw-plug B carries a stout sliding pin, N, at the extreme front of which is a stout head, N'. The portion of the body adjacent to the head N' is slightly enlarged. The head N' is adapted to receive the force of the powder at the discharge. At the moment of the discharge this head moves backward, compressing a relatively soft and expansible packing-ring, M, behind it. Certain portions of this ring will be distinguished, when necessary, by additional marks, as M' M". The body M' of this packing is of asbestos saturated with tallow, and affords a sufficiently yielding mass with the required capacity for enduring heat and for withstanding the very strong compressive force to which it is subjected by the discharge. It is inclosed between two thin shells, M² M², of copper, one fitting the body M' on the inner and the other on the outer side, and nearly incasing the entire packing.

Both the body M' and the copper M^2 are then inclosed between two strong shells of brass, $M^3 M^3$. The entire packing thus made is adapted to maintain its form, but to allow a small amount of radial expansion sufficient to pack the joint tightly against the escape of gas. This expansion is due to two causes—the tapering form of the front end of the pin N , which acts on the interior of the packing, and the powerful compression received from the head N' . The expansion from one or both causes is sufficient to press the exterior of the copper M^2 tightly against the interior of the gun, thus effectually preventing any leakage of gas.

Let us observe the succession of the several movements. To open the breech after firing I proceed as follows: I elevate the cam-lever D into the position shown in dotted lines in Fig. 1. This brings the head or cam D' out of the mortise g ; and I then turn the screw-plug B from right to left about one-sixth ($\frac{1}{6}$) of a revolution, the movement being limited by the stop e . (See Figs. 2 and 3.) During this movement the wedge form of the groove b acts on the arm H' , forcing it out of the groove. This causes a partial revolution of the turning catch H on its axis h , and engages the arm H^2 in the mortise a of the breech. The screw-plug B is now free to be drawn bodily outward; but the engagement of the arm H^2 in the breech compels the door G to remain immovable. So soon as the screw-plug B is drawn out sufficiently, the mortise b in the screw-plug is presented to the arm H' , and the catch H , under the influence of the spring T , turns a little on its pin h and engages the arm H' in said mortise. This locks the screw-plug B and the door G firmly together, and by the disengagement of the arm H^2 from the mortise a in the breech allows the door G , carrying the screw-plug B , to be turned on the axis F , leaving the breech entirely open. This position is represented in dotted lines in Fig. 4. If there be any considerable adhesion of the packing M to the interior of the gun, it may be difficult to draw the screw-plug endwise. In such case, before drawing out the screw-plug, I pull down the lever D into the position shown in strong lines in Fig. 4. This causes the head D' to strike on a high part of the door G , and acts camwise with great force to induce a small endwise movement of the head N' and packing M sufficient to overcome the adhesion. Then the plug may be easily drawn out by a direct pull, as before described. To close the breech again after a fresh cartridge is introduced, I operate in the reverse manner. I turn the door G on its axis F , carrying therewith the screw-plug B until the door is closed against the breech of the gun. This closing movement causes the arm H^2 of the turning-catch H to strike the inclined side u of the recess U , formed in one side

of the breech, and to thereby turn the catch H against the force of the spring T . This turning of the catch H takes the arm H' out of the mortise b' in the screw-plug B , and leaves the latter free to be pushed forward. I then push the screw-plug forward into the gun. Next I turn the screw-plug from left to right a sixth of a revolution, the movement being limited by a stop, e' , which is a shoulder or offset formed on the door. Now the lever D drops by its gravity, assisted, if necessary, by the force of the hand, and its cam D' enters the mortise g in the door. This makes sure that the closing is complete, for if the screw-plug has not been turned sufficiently the head D' of the lever D will not enter the mortise.

Modifications may be made in the forms and proportions. Parts of the invention may be used without the whole.

I claim as my invention—

1. The partially-threaded plug B , headed pin $N N'$, extending through said plug, and the yielding packing M , arranged between the head N' and the inner end of the plug, in combination with each other and with the gun A , arranged as shown, to allow the pin to be driven rearward and compress the packing, as herein specified.
2. The locking-ring G , turning like a door on the hinge F , screw-plug B , and headed pin $N N'$, extending through said plug, in combination with the packing M , arranged between the head N' and the inner end of the plug and the gun A , as herein specified, for the purpose set forth.
3. The packing M , having a tough yielding interior, M' , elastic shells M^2 , and rigid shells M^3 , arranged between the inner end of the screw-plug B and inner surface of the head N' of the pin N , in combination with such parts B , N , and N' , and the whole arranged and serving relative to the gun A as and for the purposes set forth.
4. The turning-catch H , in combination with the hinged locking ring or door G , gun A , and partially screw-threaded plug B , arranged to engage its arms alternately with the gun and with the screw-plug in the several positions, as herein specified.
5. The lever D , having a projection or cam, D' , in combination with the locking ring or door G , having a groove, g , and with the partially-threaded screw-plug B and gun A , as herein specified.

In testimony whereof I have hereunto set my hand, at Paris, France, this 28th day of May, 1883, in the presence of two subscribing witnesses.

CHARLES TIMOTHÉE MAXIMILIEN
VALÉRAND DE BANGE.

Witnesses:

EDWARD P. MACLEAN,
EUG. DURAIL.