

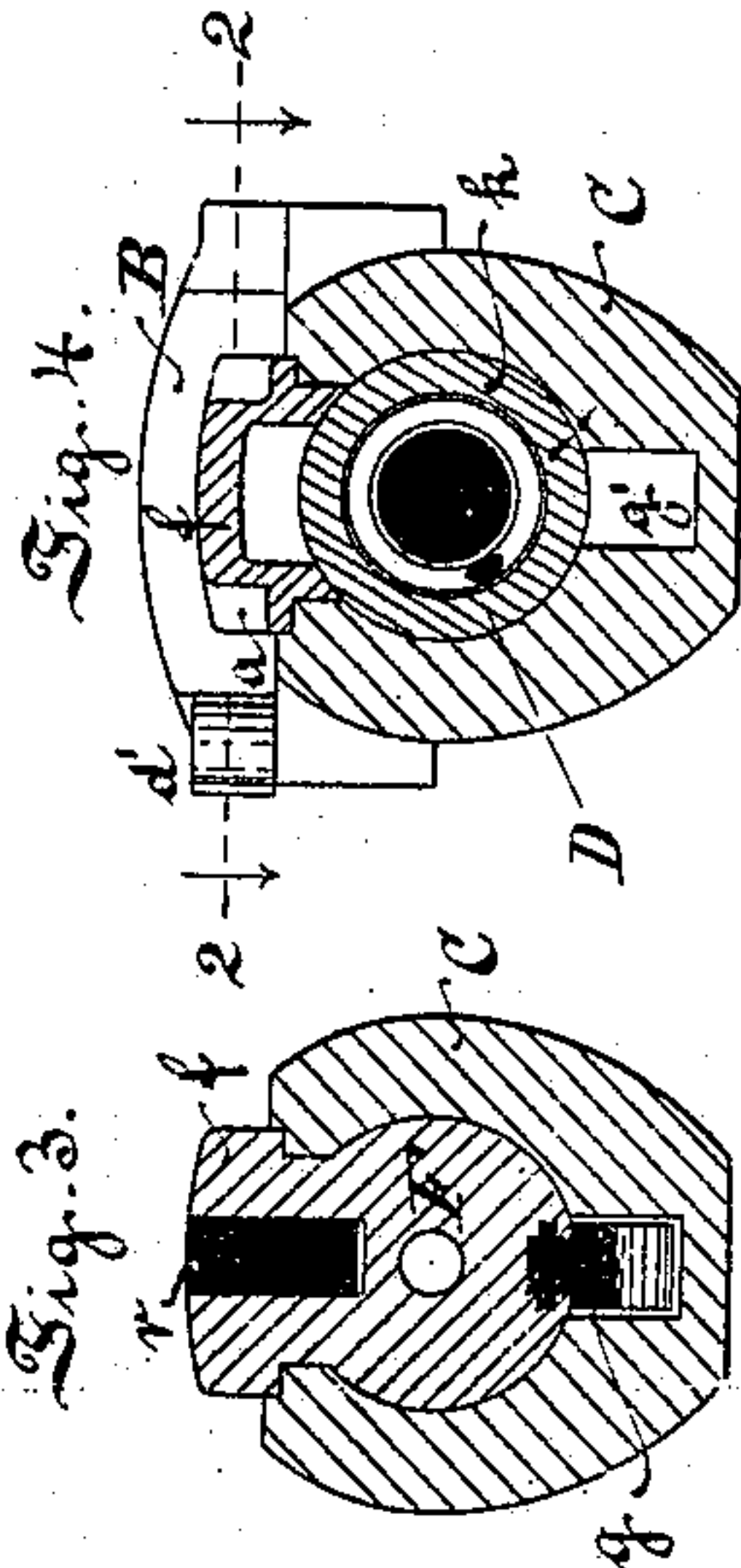
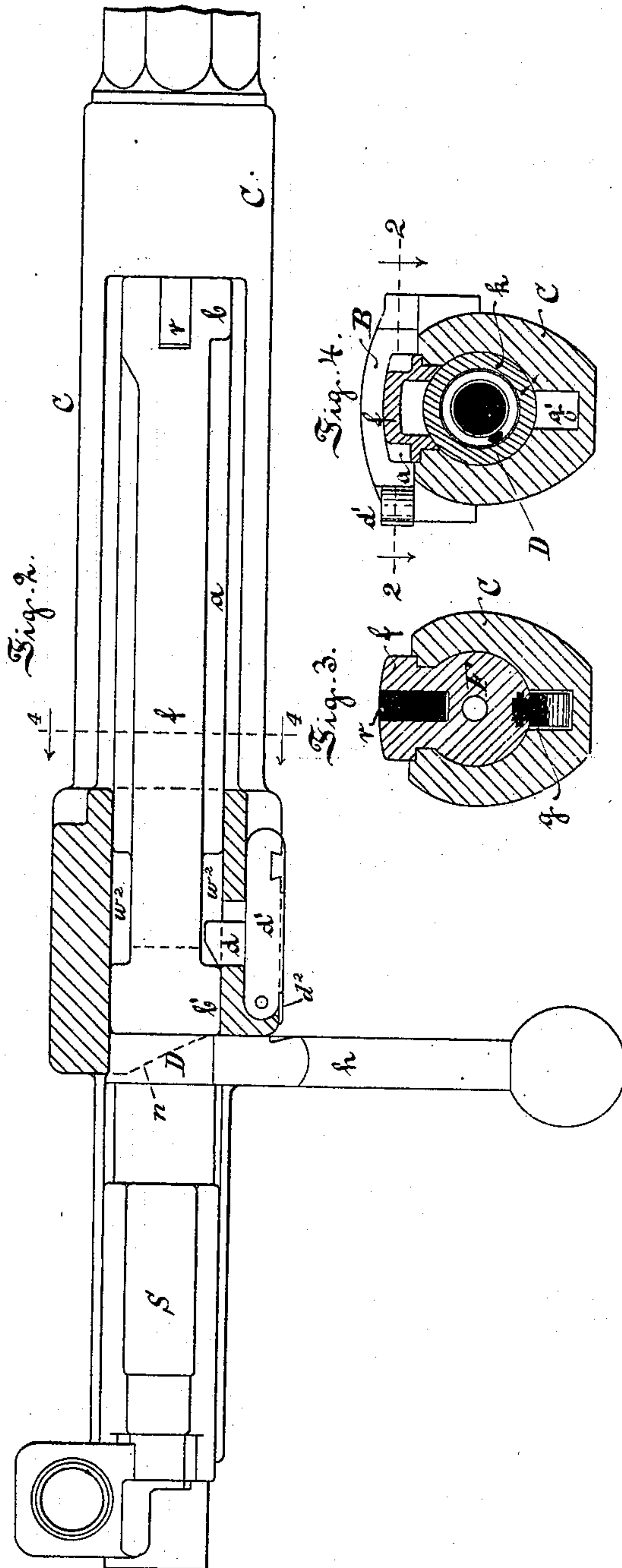
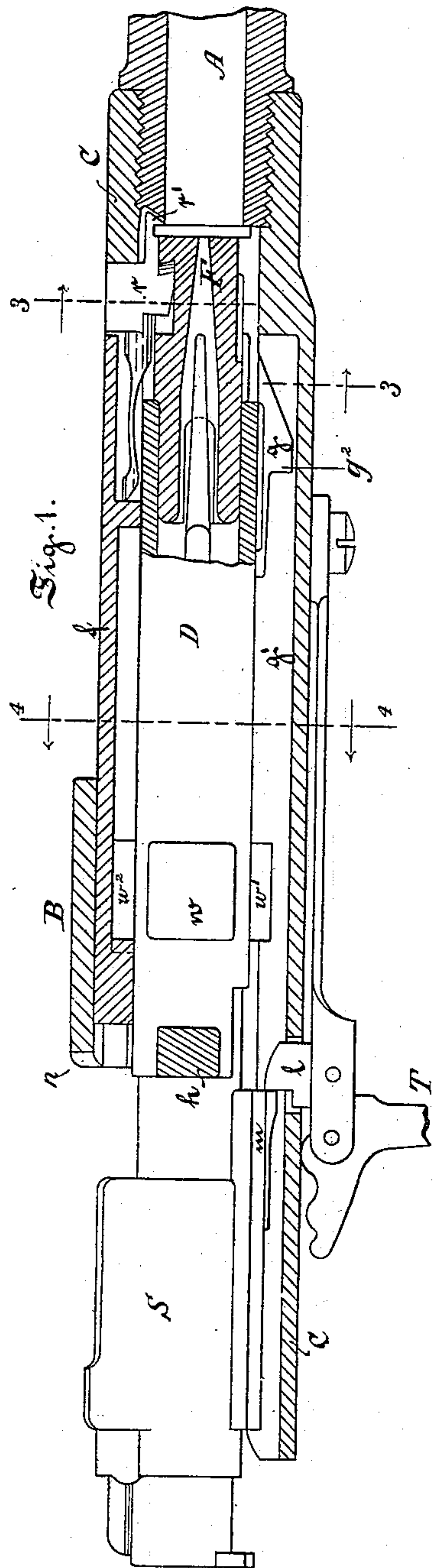
(No Model.)

2. Sheets—Sheet 1.

P. MAUSER.
BREECH LOADING FIRE ARM.

No. 398,063.

Patented Feb. 19, 1889.



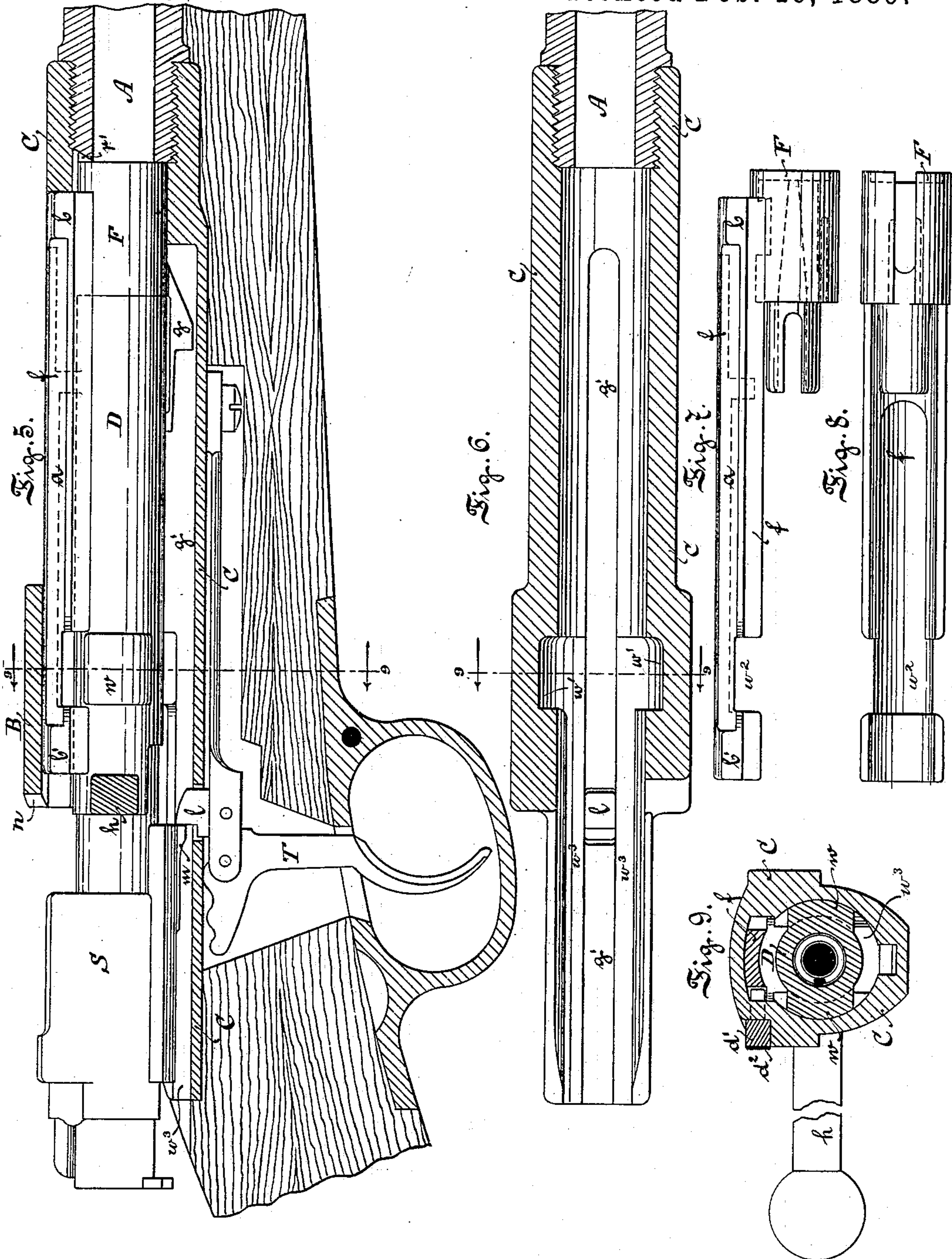
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WITNESSES:

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UNITED STATES PATENT OFFICE.

PAUL MAUSER, OF OBERNDORF-ON-THE-NECKAR, WÜRTEMBERG, GERMANY,
ASSIGNOR TO THE WAFFENFABRIK MAUSER, OF SAME PLACE.

BREECH-LOADING FIRE-ARM.

SPECIFICATION forming part of Letters Patent No. 398,063, dated February 19, 1889.

Application filed June 27, 1888. Serial No. 278,321. (No model.) Patented in Belgium March 8, 1888, No. 80,932; in Italy March 31, 1888, No. 23,206/479; in England April 9, 1888, No. 5,244, and in Spain May 18, 1888, No. 8,039.

To all whom it may concern:

Be it known that I, PAUL MAUSER, manufacturer, a resident of Oberndorf-on-the-Neckar, in the Kingdom of Würtemberg, German Empire, and a subject of the King of Würtemberg, German Empire, have invented certain now and useful Improvements in Breech-Loading Fire-Arms, (which are the subject of Letters Patent in Belgium, No. 80,932, dated March 8, 1888; in Italy, No. 23,206/479, dated March 31, 1888; in Spain, No. 8,039, dated May 18, 1888, and in England, No. 5,244, dated April 9, 1888,) of which the following is a specification.

This invention relates to breech-loading fire-arms of the class known as "bolt-guns."

According to my invention I provide, in addition to the bolt, a longitudinally-sliding plate called the "guide-plate" or "bolt-guide," which is arranged over the bolt and partakes of the longitudinal movement thereof, but without having any oscillating movement. When the bolt is pushed forward, this plate closes the so-called "case-opening" in the top of the breech-case and prevents the entrance of dust. The breech-block or front end of the bolt, called the "bolt-head," is made separate from the oscillating portion of the bolt, and is attached to or made integrally with the guide-plate. The breech-case is bridged over at the heel or rear portion of the bolt, thereby inclosing the bolt and guide-plate, and is formed on its rear surface with an incline which engages the bolt-lever as the latter is turned up, and thereby forcibly draws back the bolt to start the extraction of the empty shell. The bolt is formed on its opposite sides with recoil shoulders or projections, which, when the bolt is locked, engage corresponding recesses in the bolt-case and hold the bolt firmly in position, and when the bolt is oscillated to draw it back one of these projections enters the guideway in the bottom of the breech, and the other projection enters a recess in the guide-plate, so that as the bolt is drawn back it draws the guide-plate back with it. Improved means are also provided for ejecting the empty shell and for limiting the back-stroke of the bolt.

In the accompanying drawings, Figure 1 is a vertical longitudinal mid-section of the breech portion of the gun. Fig. 2 is a plan view of this portion of the gun, partly in horizontal section, in the plane of the line 2 2 in Fig. 4. Fig. 3 is a vertical transverse section in the plane of the line 3 3 in Fig. 1. Fig. 4 is a vertical transverse section in the plane of the line 4 4 in Figs. 1 and 2. Fig. 5 is a vertical longitudinal mid-section of the breech portion of the gun, including the stock, the bolt and guide-plate being shown in elevation. Fig. 6 is a horizontal mid-section of the breech-case with the bolt removed. Fig. 7 is a side elevation of the bolt-head and guide-plate. Fig. 8 is an inverted plan thereof, and Fig. 9 is a transverse section in the plane of the line 9 9 in Figs. 5 and 6.

In the several views the gun is shown in the locked position ready for firing.

A designates the barrel, and C the breech-case.

F is the breech-block or bolt-head which comes against the base of the cartridge.

D is the bolt, which is cylindrical on its exterior, is provided with the usual bolt-handle, *h*, and is formed near its rear end with two opposite recoil shoulders or projections, *w*.

The bolt-head F and bolt D are made separate from one another, so that as the bolt D is oscillated by its handle *h* the bolt-head F remains stationary. Over the top of the bolt extends a guide-plate, *f*, which, when in the position shown, entirely fills the usual opening in the top of the breech-case through which, when the bolt is drawn back, the empty shell is ejected and the new cartridge is inserted. This guide-plate and the bolt-head F are fastened together, or, by preference, formed integrally with one another, as shown in Fig. 3, so that the bolt-head F is held stationary during the oscillatory motion of the bolt in locking or unlocking. When the bolt is locked, its projections *w w* are housed in cavities or recesses *w' w'* in the inner sides of the breech-case C, which cavities are best shown in Fig. 6. When the bolt is turned to unlock it, the right-hand projection *w* (seen in Fig. 1) is turned up into and engages a cavity, *w*², Fig. 7, in the under side of the guide-

plate *f*. The bolt and guide-plate are thus fastened together, so that when the bolt is drawn back to open the breech the guide-plate is caused to slide back with it, thereby moving back also the bolt-head *F*. The bolt is guided in its retractile movement by its left-hand projection *w* sliding in a groove or guideway, *w*³, of like width, in the bottom of the breech, which communicates with the left-hand recess *w*¹, and extends thence backwardly a distance at least equal to the retractile stroke of the bolt.

The guide-plate *f* slides in a suitably-shaped slot or way on the top of the breech-case *C*, as best shown in Fig. 4. At the end of the cartridge-rest of the breech-case the latter is not open, but is extended across the bolt, forming a bridge, *B*. The under side of this bridge and the adjacent portions of the breech-case are so shaped as to allow the guide-plate *f* to slide through, so that it may be drawn out rearwardly. In order to prevent the bolt being drawn back farther during the ordinary use of the gun than is necessary to bring the bolt-head *F* back to where it clears the cartridge-rest, a stop is provided, which engages the guide-plate *f*. This plate has a groove or rabbet, *a*, milled out on its right-hand edge for a sufficient distance and terminates at its front end in an abrupt shoulder, *b*. A similar shoulder at its rear end, *b*¹, is immaterial, except that it serves to fill up the guide-opening in the bridge *B*. In the right-hand side of the bridge is a slot through which projects a stop-tooth, *d*¹, pivoted to the bridge and held in the position shown by the tension of a spring, *d*². When the bolt is drawn fully back, the shoulder *b* on the guide-plate *f* encounters the stop *d*, thereby preventing the further retraction of the bolt. When it is desired to remove the bolt from the gun, the lever *d*¹ is turned outwardly, thereby removing the stop *d* from the path of the shoulder *b*.

The shell-extractor *r* is arranged in a recess formed in the top of the bolt-head *F*, where the guide-plate *f* joins it. The claw *r*¹ of the extractor, which projects forward beyond the end of the bolt-head, engages the rim of the cartridge-shell, and thereby drags the shell back with it during the backward movement of the bolt. In order to start the retraction of the shell, at which time, by reason of its tight fit in the barrel, it affords the greatest resistance to its movement, an inclined face, *n*, is formed on the rear side of the bridge *B*, as best shown in dotted lines in Fig. 2, and the foot of the hand-lever *h* in being turned up moves over this face; and thereby forcibly draws the shell out of the barrel for a distance corresponding to the pitch of the inclined face. By the time the hand-lever *h* reaches the vertical position the shell has been so far drawn out that its further extraction can be easily accomplished by the pulling back of the bolt.

The ejector *g* consists of a sliding piece

dovetailed into the under side of the bolt-head *F*, as shown in Figs. 1 and 3, its front end resting against the rim of the cartridge, while its rear end projects backwardly and outwardly in a groove, *g*¹, formed in the breech-case *C*. As the bolt is drawn back this ejector moves with it in the ejector-groove *g*¹ until the cartridge-shell is wholly withdrawn from the barrel, after which the shoulder *g*² on the rear of the ejector encounters the trigger-beak *l* or other stationary stop and is stopped thereby, while the bolt is drawn farther back, so that the cartridge-shell, being pulled by the extractor-claw *r*¹ at the top and pushed by the ejector *g* at the bottom, is thrown upwardly out of the case-opening.

It may be remarked that the nose *m* of the small lock *S* also slides in the ejector-groove *g*¹, thereby giving the necessary lateral guidance to the small lock.

In order to remove the bolt from the breech-case, the stop-lever *d*¹ is turned out, as described, and the trigger-beak *l* is also drawn down by the trigger *T*, so as to clear the shoulder *g*² of the ejector *g*. In reinserting the bolt the sloping under surface of the ejector *g* automatically presses down the trigger-beak *l*, and the front edge of the shoulder *b* of the bolt-guide *f*, riding by the inclined side of the stop-tooth *d*, presses this stop outwardly, so that the bolt can be pushed in without any hinderance.

When the gun is locked by the turning of the hand-lever *h* down to the horizontal position, the two recoil shoulders or projections *w* *w*¹, entering, as described, into the corresponding recesses, *w*¹ *w*², in the breech-case *C*, hold the bolt-head *F* in correct position firmly against the base of the cartridge and serve to transfer the recoil to portions of the breech-case on opposite sides, which are of equal strength, so that the bending or springing of the breech-case cannot occur, and the bolt is kept absolutely central, which is of the greatest importance for insuring accuracy of shooting.

As the case-opening is entirely covered by the guide-plate *f* when the bolt is in the closed or locked position, the working in of dust, sand, rain, &c., to the interior is almost absolutely prevented, so that the gun is more reliable under all conditions and circumstances than has hitherto been possible.

I am well aware that recoil shoulders or projections on the bolt, coacting with suitable faces or shoulders on the breech-case, have been before known, and I therefore make no claim to them in general.

I claim as my invention the following-defined improvements in breech-loading fire-arms of the class known as "bolt-guns," substantially as hereinbefore specified, viz:

1. The combination, with the bolt and breech-case, the latter formed with the bridge over the rear portion of the bolt and with a longitudinal guideway extending beneath said bridge, of the bolt-head made in a separate

piece from the bolt and swiveled thereto, so that it is moved longitudinally with the bolt, but does not partake of the oscillatory movement thereof, and a guide-plate arranged over the bolt and beneath said bridge, movable longitudinally in said guideway, and fastened to the bolt-head, whereby it derives longitudinal motion from the latter and prevents oscillatory movement thereof.

2. The combination, with the breech-case formed with a longitudinal guideway and the bolt formed with a recoil projection, of a guide-plate arranged over the bolt in said guideway and having a recess into which said projection enters as the bolt is oscillated to unlock it.

3. The combination, with the bolt having a recoil projection, of the breech-case having a recess entered by said recoil projection when the bolt is in the locked position and a guide-plate mounted to slide longitudinally and having a recess entered by said recoil projection when the bolt is in the unlocked position.

4. The combination, with the bolt and its locking-lever, of the breech-case formed with a bridge over the rear portion of the bolt, and having an inclined face, *n*, at the rear of this bridge in position to be engaged by the locking-lever while the latter is being turned up to unlock the bolt, and thereby to draw back the bolt sufficiently to start the extraction of the cartridge-shell.

5. The combination, with the bolt and the longitudinally-sliding guide-plate connected to and moving with it, of the reciprocal stops for limiting the rearward movement of the

bolt, consisting of a shoulder on said guide-plate and a stop-tooth or projection stationary relatively to the breech-case in the path of said shoulder.

6. The combination, with the breech-case and the bolt, of a longitudinally-sliding guide-plate connected to the bolt to be moved thereby, and formed with a groove, *a*, terminating in a shoulder, *b*, and a stop-tooth, *d*, arranged in said groove and mounted on a lever, *d'*, pivoted to the breech-case.

7. The combination, with an oscillatory bolt and a bolt-head restrained from oscillation, of an ejector consisting of a sliding piece working in a longitudinal guideway in the bolt-head and projecting beneath the same, the breech-case having a longitudinal groove in which said projecting portion moves when the bolt is retracted, and a stop projecting into said groove for arresting said ejector.

8. The combination, with an oscillatory bolt and a bolt-head restrained from oscillation, of an ejector consisting of a slide-piece mounted in a longitudinal guideway in said bolt-head and having a rearward shoulder, and a trigger-beak arranged in position relatively to said shoulder to be encountered thereby and arrest the ejector during the retractile movement of the bolt.

This specification signed by me this 3d day of February, 1888.

PAUL MAUSER.

Witnesses:

EDMUND GRONCKI,
THEO. ABENHEIM.