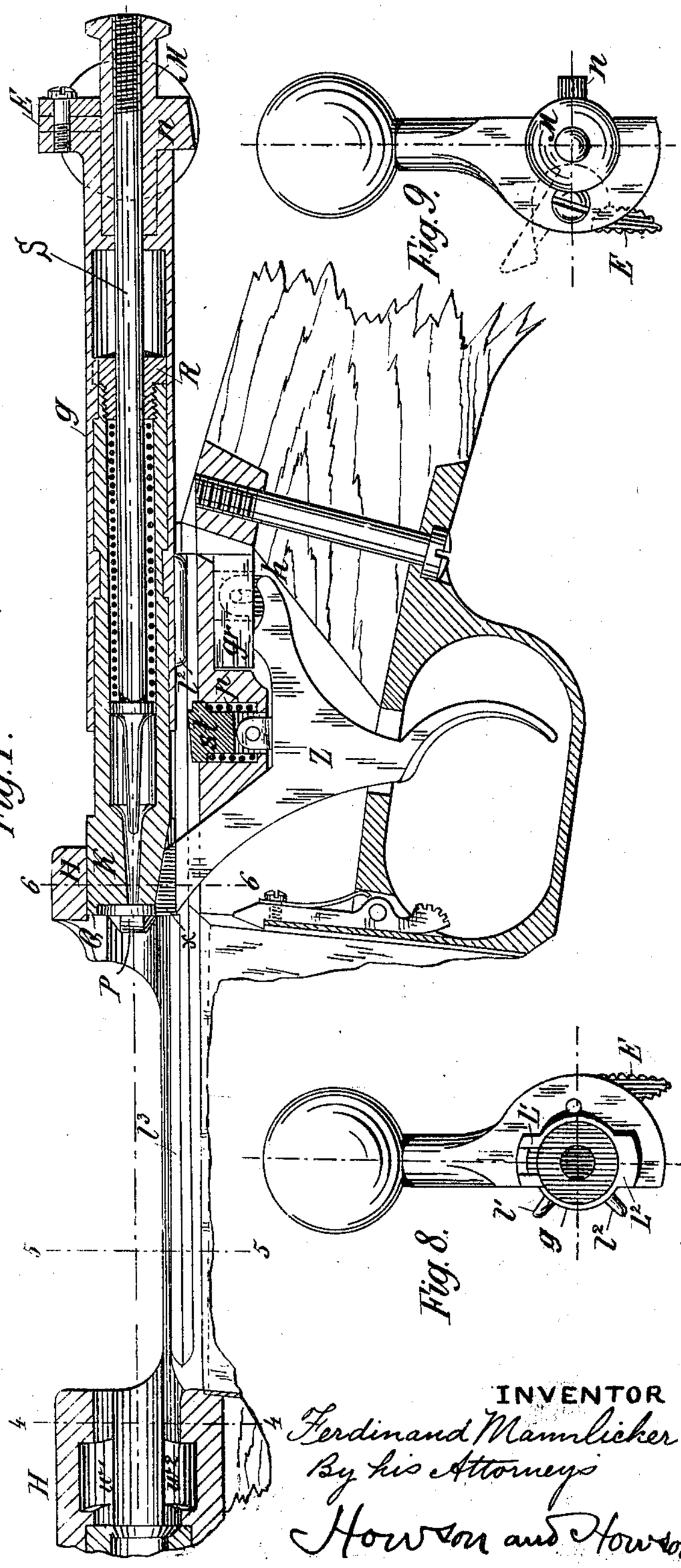
(No Model.) 2 Sheets—Sheet 1.

F. MANNLICHER.

REPEATING FIREARM.

No. 472,795. Patented Apr. 12, 1892.



WITNESSES

John Revell

George Baumann.

INVENTOR

Ferdinand Mannlicher

By his Attorneys

Howson and Howson

(No Model.) 2 Sheets—Sheet 2.

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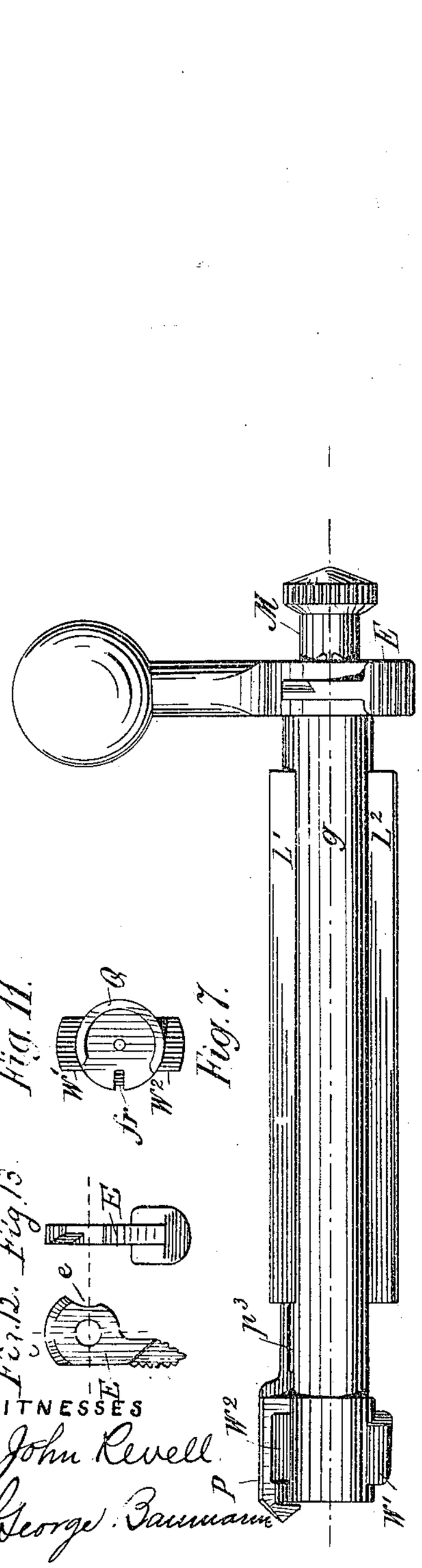

Fig. 1.

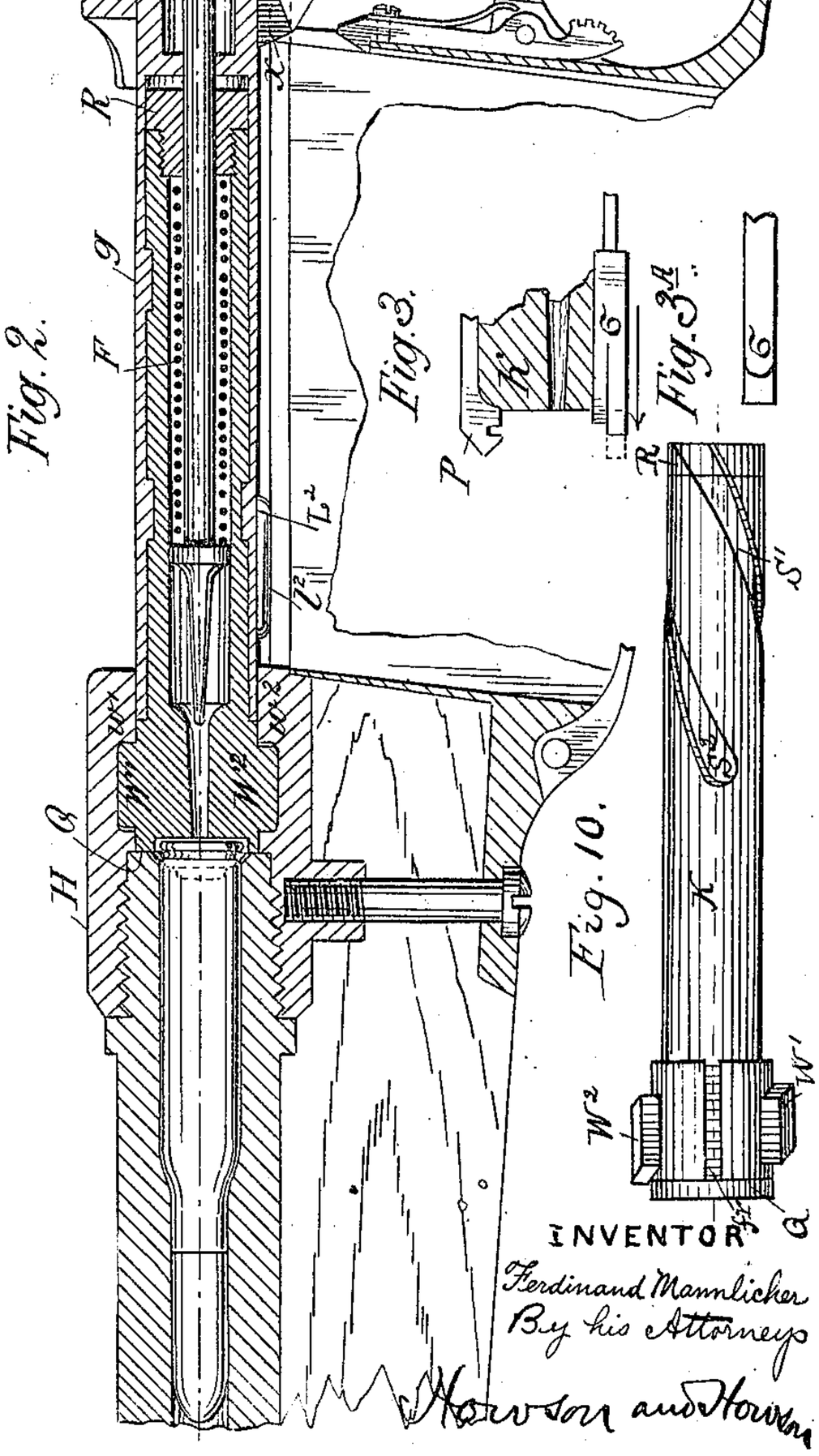

Fig. 2.

Fig. 3.

Fig. 3a.

Fig. 10.

Fig. 11.

Fig. 12.

Fig. 7.

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UNITED STATES PATENT OFFICE.

FERDINAND MANNLICHER, OF VIENNA, AUSTRIA-HUNGARY.

REPEATING-FIREARM.

SPECIFICATION forming part of Letters Patent No. 472,795, dated April 12, 1892.

Application filed July 18, 1889. Serial No. 317,939. (No model.) Patented in Belgium June 4, 1889, No. 86,505; in Sweden June 12, 1889, No. 3,280; in England June 13, 1889, No. 9,773; in France June 14, 1889, No. 198,933; in Italy June 30, 1889, XXIII, 25,954; in Norway July 13, 1889, No. 1,598; in Spain October 5, 1889, No. 332/9,829, and in Austria-Hungary October 19, 1889, No. 2,527 and No. 2,578.

To all whom it may concern:

Be it known that I, FERDINAND MANNLICHER, a subject of the Emperor of Austria-Hungary, and a resident of the city of Vienna, in the Empire of Austria-Hungary, have invented certain new and useful Improvements in Repeating-Firearms, (for which I have obtained Letters Patent in Austria-Hungary October 19, 1889, No. 2,527 and No. 2,578; in Belgium June 4, 1889, No. 86,505; in Great Britain June 13, 1889, No. 9,773; in France June 14, 1889, No. 198,933; in Italy June 30, 1889, No. XXIII, 25,954; in Spain October 5, 1889, No. 332/9,829; in Norway July 13, 1889, No. 1,598, and in Sweden June 12, 1889, No. 3,280,) of which the following is a specification.

The object of the present invention is to render the breech-bolt action generally used with repeating-firearms capable of effectually resisting the most powerful charges and yet to make the same shorter and lighter than heretofore.

The several improvements included in this invention are shown on the accompanying drawings as applied to a firearm with "straight-pull" bolt-closure.

Figure 1 shows a part horizontal section of a firearm with straight-pull bolt-closure in the open position. Fig. 2 is a similar section with the bolt closed and firing-action cocked. Figs. 3 and 3^a show a modification of the ejector. Figs. 4, 5, and 6 are sections on lines 4 4, 5 5, and 6 6, respectively, Fig. 1. Fig. 7 is a plan of the detached breech-bolt the straight-pull closure mechanism. Fig. 8 is a front view, and Fig. 9 is a back view, of the same. Fig. 10 is an inverted plan of the breech-bolt. Fig. 11 is a front view of the same. Fig. 12 is a front view of the locking-catch. Fig. 13 is a side view of the same.

Referring to Figs. 1 and 2, H is the receiver, and K the breech-bolt, the front part of which has two locking-studs W′ W^2, Figs. 2, 7, and 10, which when the bolt is closed, as at Fig. 2, take into corresponding recesses in the receiver H, the back faces w' w^2 of which form the abutments for the studs, Fig. 1. For locking and unlocking the bolt-head is turned, whereby the studs are brought into contact with and are removed from the abutments w' and w^2. The turning of the bolt is effected for this purpose by placing the bolt in a tubular part g, formed or fixed on the handle, the bolt being formed with helical grooves S′ S^2, Fig. 10, into which take studs on the part g, so that on drawing back the latter a certain distance the bolt K turns, for instance, through an angle of ninety degrees, after which it does not turn any more, but is drawn back with the part g, the studs w' w^2 then entering longitudinal grooves L^3 L^4 in the receiver H, Figs. 4, 5, and 6. The helical grooves S′ S^2 are so placed that they do not become visible even when the part g is drawn right back, and they are thus preserved from dirt.

As shown, the front part of the bolt K is perfectly solid with the exception of the central hole for the firing-pin.

The breech-bolt is guided by ribs l' l^2, formed on the part g, Figs. 1 and 2, and which take into corresponding grooves l^3 l^1 in the receiver H, Figs. 4, 5, and 6. The part g may also be provided with two long guide-fillets L′ L^2, which work in grooves L^3 L^4 in the casing, the latter serving, also, for guiding the studs W′ W^2.

The arrangement of the guide-ribs l' l^2 on the breech-bolt allows of the receiver being shortened to such an extent that the bolt when quite drawn back only engages to a very small extent the end of the receiver.

The bolt carries the firing-pin S and spring F. The spring has its rear abutment against the head R, which is secured into the end of the bolt K, Figs. 1 and 2. The helical grooves S′ S^2 are continued through the head R, as shown at Fig. 10, so that when the bolt K is placed in the part g the head R cannot become unscrewed.

M is the nut screwed on the end of the firing-pin S and which carries the trigger-stud n. The trigger Z has in this construction of repeating-firearms, in addition to its usual functions, the function of holding the breech-bolt in the receiver H and of effecting the ejection of the cartridge-shell, in conjunction with the extractor. For this purpose the trigger is provided with the sear *st*, which is pressed upward by the spring p, and cocks the spring F by engaging with the trigger-stud n as the breech-bolt is returned from its

open to its closed position. The trigger also has at its front end an ejector-beak *x*, the action of which will be presently described, and which holds a limiting-piece *gr* in position in the receiver II, as seen in Figs. 1 and 2, where a stop-surface *h* prevents any unintentional downward motion. The upper part of this limiting-piece comes in contact with the guide-fillets *l' l²* of the sliding bolt and prevents the sliding bolt from being withdrawn from the gun. By pressing down the limiting-piece by means of the trigger the bolt can readily be drawn out at the rear. The reintroduction is effected in the same manner.

The extractor P, Fig. 7, at the front end of the breech-bolt is so arranged that during the locking and unlocking of the bolt it does not turn therewith. For this purpose the extractor is set with its tail-piece p^3 into the fillet L' of the piece *g*, and partly by this means and partly by the guiding which it has in the groove L^4 of the receiver, Figs. 4, 5, and 6, its rotation with the head K is prevented.

In order to allow the locking-studs W' W^2 to pass on turning the breech-bolt, the extractor is crank-shaped at the front end, as shown at Fig. 7. The front end of the bolt K is formed dished or recessed, as shown at Figs. 1, 2, 10, and 11, so that a raised rim Q is formed thereon, which surrounds the base of the cartridge, but which is cut away at the point that is presented at the magazine of the gun when the breech-bolt is open, so that the carrier can raise the cartridge and press it into the space within the rim Q. By this means the feeding of more than one cartridge at a time into the receiver is prevented. The bolt-head also has a notch *fr*, Figs. 10 and 11, into which enters the ejector-beak *x* of the trigger when the breech-bolt is open, Fig. 1, and thus ejects the cartridge-case which was withdrawn by the extractor and is inclosed by the rim Q. In place of this arrangement of the ejector the constructions shown at Figs. 3 and 3^a can be employed, in which an ejector-pin *y* is arranged on the bolt-head K opposite the extractor P in such a manner that in the position shown in full lines it forms an abutment for the cartridge-base; but on drawing back the breech-bolt it strikes against a fixed stop, whereby it is pushed forward into the dotted position, and thus ejects the cartridge-shell.

In Figs. 1 and 2 a safety device is shown. It consists of a locking-latch E, Figs. 12 and 13, which is pivoted to the breech-bolt handle and has a notch *e*, so that in the normal position of the locking-latch the nut M can move freely forward with the firing-pin. If, however, the latch E be turned into the position shown in dotted lines at Fig. 9, it prevents the forward motion of the firing-pin. This position is, however, only possible when the lock is at full-cock, as the firing-pin is provided with a suitable notch, (not shown in the drawings,) into which the cover part of the latch E enters when the firing-pin is to be cocked.

With the before-described construction of breech-action any arrangement of cartridge-magazine can be employed. I prefer, however, to employ the arrangement forming the subject-matter of another application.

I claim as my invention—

1. In breech-loading firearms, the combination, with the sliding breech-bolt composed of the rotary part K, provided with the locking-studs W' W^2, and the sliding part *g*, of the guide-ribs *l' l²*, radially disposed upon the lower side of the sliding part *g*, and the receiver II, having its interior provided with the corresponding grooves l^3 l^4, in which said ribs *l' l²* may slide, and with the recesses for the reception of studs W' W^2, substantially as and for the purpose described.

2. In breech-loading firearms, the combination, with the sliding breech-bolt composed of the rotary part K, provided with the locking-studs W' W^2, and the sliding part *g*, of the guide ribs *l' l²*, radially disposed upon the lower side of the sliding part *g*, the longitudinal guide-ribs L' L^2, radially disposed in a horizontal plane upon part *g*, and the breech-receiver H, having its interior provided with the corresponding grooves l^3 l^4 and L^3 L^4 and recesses for the reception of studs W' W^2, substantially as and for the purpose described.

3. A breech-loading firearm having a receiver and a breech-bolt movable longitudinally therein, the bolt-head having a notch *fr*, in combination with the trigger having a head at its front end adapted when the bolt is withdrawn to enter said notch and eject the cartridge-shell, substantially as described.

4. In breech-loading firearms, the combination of the sliding breech-bolt composed of a sliding part with guide-ribs L' L^2 and a rotary part, locking-studs upon the forward end of the rotary part, with an extractor P, bent to follow the outline of one of the locking-studs, so as to permit the turning of the said locking-studs with the rotary part of the breech-bolt, extractor P prevented from rotating with the breech-bolt by groove L in the receiver, substantially as described.

5. In repeating-firearms receiving the cartridges from a magazine situated underneath the receiver and having a sliding breech-bolt, the forward end of said breech-bolt provided with a rim Q for the reception of the cartridge-head, the said rim being cut away flush with the end of the bolt on its under side, leaving an open space facing the top of the magazine when the bolt is unlocked, substantially as and for the purpose described.

In testimony whereof I have affixed my signature in presence of two witnesses.

FERDINAND MANNLICHER.

Witnesses:
JOHN GEORGE HARDY,
JULIUS MOELLER.