(Model.)

3 Sheets—Sheet 1.

O. H. J. KRAG & E. JÖRGENSEN.

MAGAZINE GUN.

No. 492,212. Patented Feb. 21, 1893.

Fig. 1.

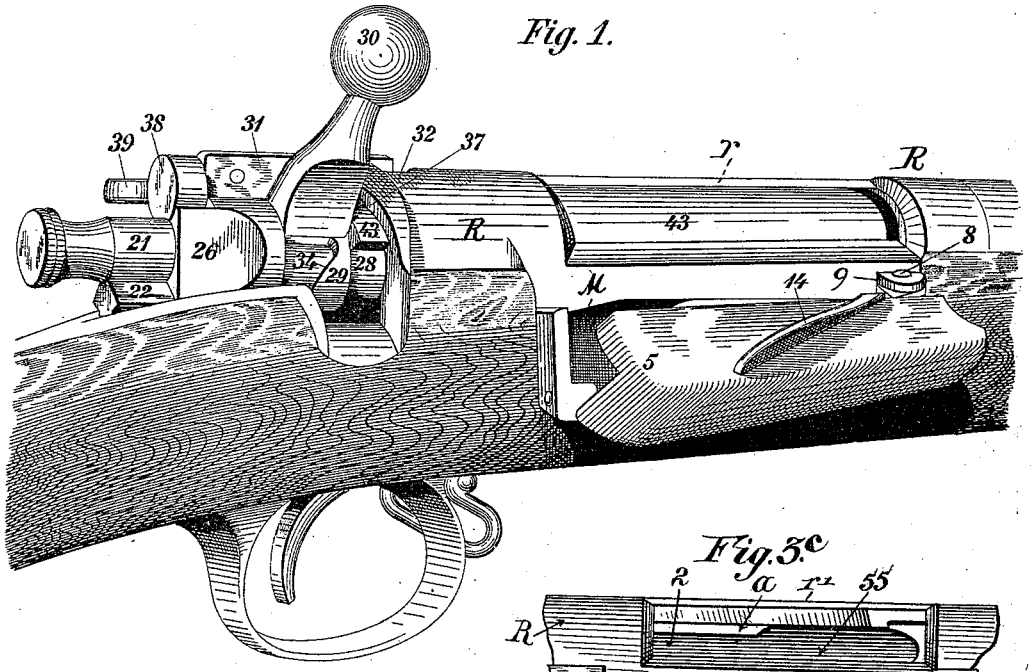


Fig. 3c

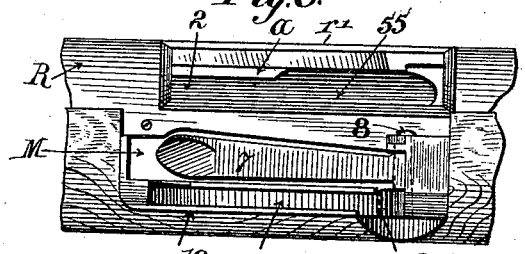
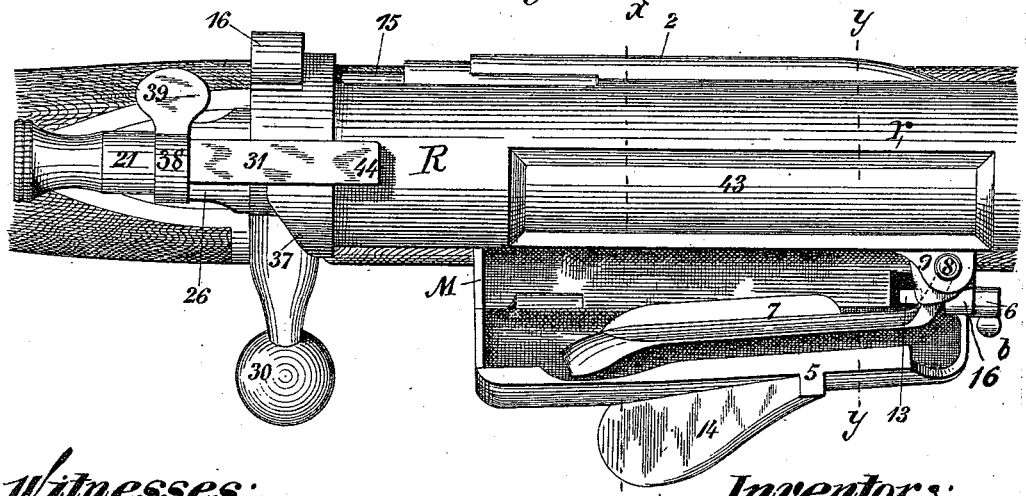


Fig. 2.



Witnesses:
H. G. Dieterich.
C. H. Sommers.

Inventors;
Ole H. J. Krag, and
Erik Jörgensen.
By Henry Orth
Atty.

(Model.)

3 Sheets—Sheet 2.

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Fig. 3.

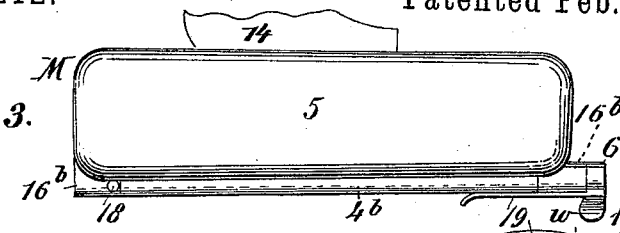


Fig. 3b.

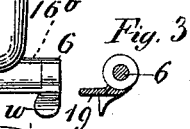


Fig 3a

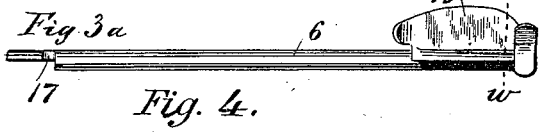


Fig. 4.

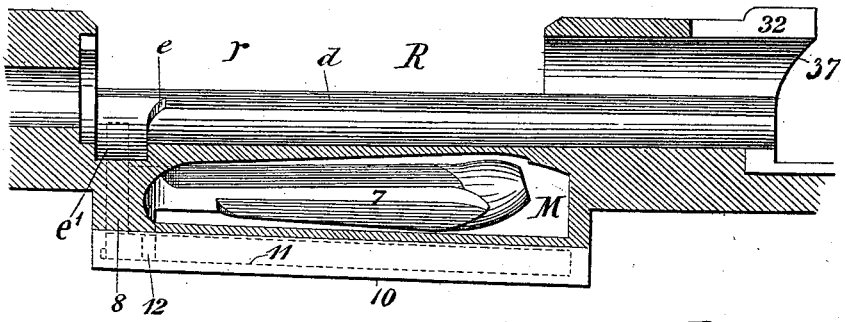


Fig. 5.

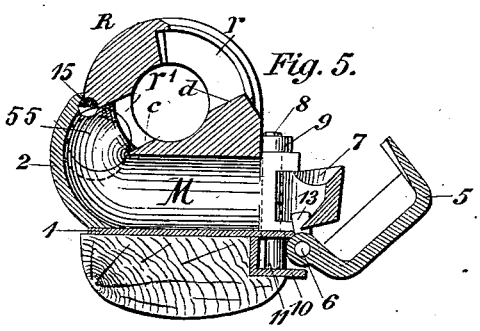


Fig. 6.

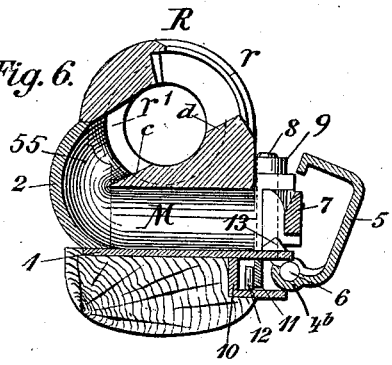
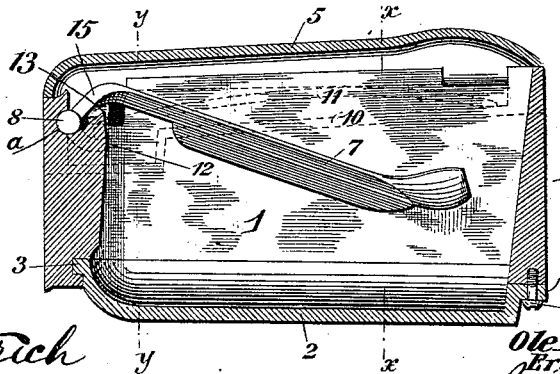


Fig. 7.



Witnesses:
H. S. Dieterich
B. V. Sommers

Inventors:
Ole H. J. Krag, and
Erik Jörgensen,
By Munn & Co
Attys.

(Model.) 3 Sheets—Sheet 3.

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Fig. 8.

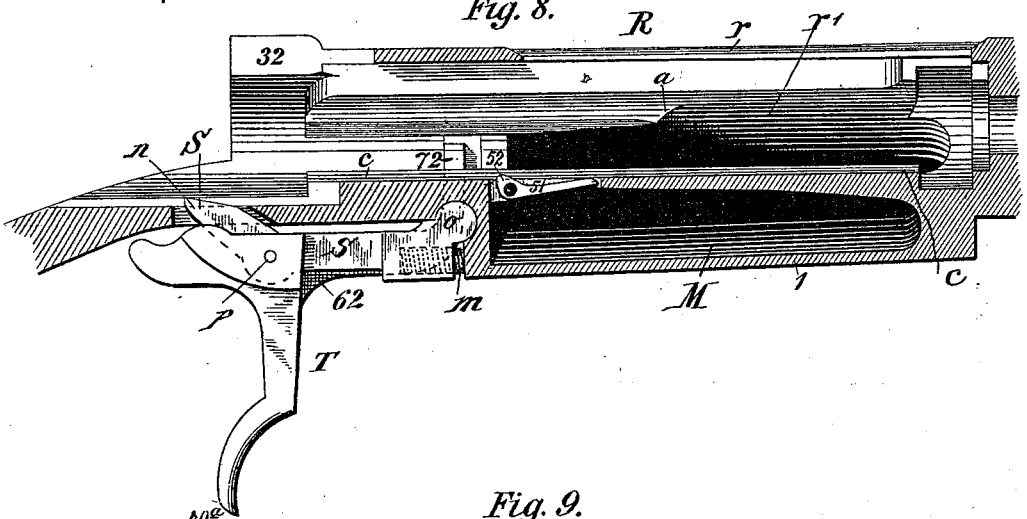


Fig. 9.

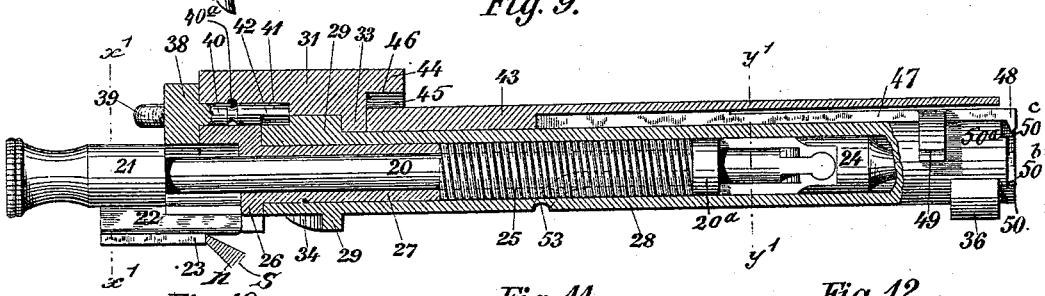


Fig. 10.

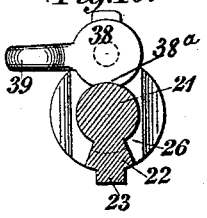


Fig. 11.

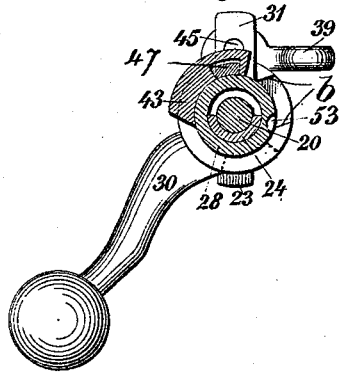


Fig. 12.

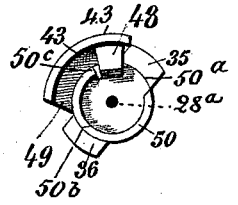


Fig. 13.

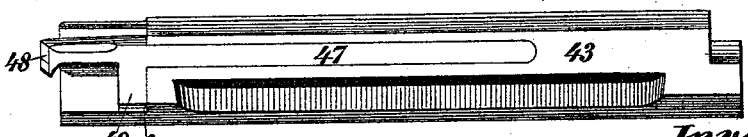
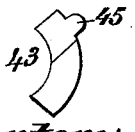


Fig. 13a



Witnesses:
H. G. Dieterich
P. W. Sommers.

Inventors:
Ole H. J. Krag, and
Erik Jörgensen,
By Munn & Co Attys

UNITED STATES PATENT OFFICE.

OLE HERMAN JOHANNES KRAG AND ERIK JÖRGENSEN, OF KONGSBERG, NORWAY.

MAGAZINE-GUN.

SPECIFICATION forming part of Letters Patent No. 492,212, dated February 21, 1893.

Application filed June 17, 1892. Serial No. 437,097. (Model.)

To all whom it may concern:

Be it known that we, OLE HERMAN JOHANNES KRAG and ERIK JÖRGENSEN, subjects of the King of Sweden and Norway, residing at Kongsberg, in the province of Kongsberg and Kingdom of Norway, have invented certain new and useful Improvements in Magazine-Firearms; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

This invention relates to breech-loading magazine guns, and it has for its object certain improvements on a similar gun shown and described in Letters Patent of the United States granted to us on the 10th of June, 1890, No. 429,811, whereby the construction of the breech mechanism and the manipulation of the gun are materially simplified, the invention consisting essentially in structural features and combinations of co-operative elements or parts, as will now be fully described, reference being had to the accompanying drawings, in which—

Figure 1 is a perspective view, and Fig. 2 a top plan view of so much of a breech-loading magazine gun as is necessary to illustrate our invention, the magazine gate being shown open, and the breech bolt in its unlocked and locked positions respectively. Fig. 3 is a front view of the magazine, the thumb piece being partly broken away. Fig. 3^a is an underside view of the magazine hinge pintle, and Fig. 3^b is a section taken on or about on line w—w of Fig. 3^a. Fig. 3^c is a side elevation of the magazine, the gate removed. Fig. 4 is a longitudinal section of the receiver and part of the gun barrel as seen from the left side, the tang at the rear end of the receiver being broken away. Figs. 5 and 6 are cross sections of the gun taken on or about on lines x—x and y—y of Figs. 2 and 7, the magazine gate being shown fully and partly open, Fig. 7 is a cross sectional view of the magazine. Fig. 8 is a longitudinal sectional view of the receiver as seen from the right side of the gun. Fig. 9 is a similar view of the breech bolt, of which Figs 10. and 11 are cross sections on or about on lines x'—x' and y'—y' respectively, and Fig. 12 an end view thereof. Fig. 13 is an underside view of the shell extractor carrier, and Fig. 13^a an end view thereof.

Similar symbols indicate like parts wherever such may occur in the above described figures of drawings.

In order that our improvements may be more clearly set forth relatively to the construction shown and described in our patent hereinabove referred to, we will describe the several parts of the gun separately and then their co-operation.

The magazine and receiver.—Referring to Figs. 1 to 8 inclusive, R, indicates the receiver, and M, the magazine, which latter forms an integral part of said receiver and of the barrel, whereby the construction is materially simplified. But that access may be had to the magazine from both sides of the gun we preferably make the curved left hand wall, 2, of the said magazine detachable, and to this end the said wall is provided at its front end with a locking rib, 3, that fits a corresponding recess in the front wall of the magazine, and at its rear end said wall, 3, has a flange, 4, that is secured to the face of the magazine by means of a screw or screws, 4^a, see Fig. 7. Below the front edge of the magazine floor, 1, is formed a chamber or pocket extending along said magazine and having at each end a hinge knuckle, 16^b, Fig. 3, for the hinge pintle, 6, of the magazine gate, 5, and said gate is likewise provided with a hinge knuckle, 4^b. The rear hinge knuckle, 16^b, has a hole drilled through it at right angles to its axis for the reception of a locking pin, 18, that serves to lock the hinge pintle, 6, against endwise motion. To this end the rear end of the pintle is semi-cylindrical, and there is a notch, 17, cut in this semi-cylindrical portion at the point of junction of the latter with the cylindrical body of the pintle, as shown at Fig. 3^a, into which notch the pin, 18, extends, and thus holds the pintle against endwise motion. That the said pintle may be held against rotation in its bearings, it is provided at its forward end with an elastic or spring plate, 19, that has bearing on the forward knuckle, 16^b,

nd the gate knuckle, 4^b, when the pintle is ocked against endwise movement, see Figs. , 3^a, and 3^b. In the front wall of the magaine, M, is formed a recess or bearing, 9^a, for he pivot pin, 8, of a feed lever, 7, that serves o feed the cartridges to the receiver, the upper end of said pivot having its bearing in a ug or ear projecting from the receiver, R, vhich lug is shown at 9, Figs. 1, 2, 5, 6, and '. At its forward end the gate, 5, has a lug, 3, Figs. 2, 5, 6 and 7, that engages the neck r curved portion, 15, at the pivot end of the eed lever, 7, as soon as the gate is slightly pened (Fig. 6) by pressure on the thumb iece thereof, and as the gate is caused to swing downward the said lug moves the feed ever outwardly out of the way, so as to admit of the introduction of cartridges into the magazine, see Figs. 1, 2, and 5. In the chamber or pocket, 10, below the front or gate edge of the magazine, M, is placed a flat convex spring, 11, in such a manner that its convex face bears upon the hinge knuckle, 4^b, of the gate 5, the forward end of said spring having a pin or lug in perpetual engagement with the radial arm, 12, projecting from the lower end of the pivot pin, 8, as shown in dotted lines in Figs. 4 and 7. The pressure exerted by the spring, 11, upon the hinge knuckle, 4^b, of the gate is sufficient to hold the same against movement either when the gate is fully opened or when it is closed. The free end of the said spring exerts sufficient pressure upon the radial arm 12, of the pivot pin, 8, to force said lever inwardly against the cartridges when the magazine gate is closed to feed said cartridges to the receiver. It is obvious that as the gate swings downwardly and the feed lever outwardly, the latter moves against the stress of the spring, 11, thereby increasing the tension of the same and correspondingly increasing the pressure exerted by the spring on the hinge knuckle, 4^b, whereby the gate is held in position when open. In order to increase the points of contact between the spring and hinge knuckle, the latter is preferably flattened at said point, so as to present a plane bearing to the spring. The receiver, R, has in its upper wall a longitudinal slot or opening, r, extending from about the center of the receiver toward the right thereof, and diametrically opposite said opening, r, is formed a second opening, r', the faces, d, and c, of said openings forming guide surfaces for the lugs, 35 and 36, at the front end of the breech bolt, and said faces are extended beyond the openings or slots, r, and r', nearly the full length of the receiver. Through the opening, r, the empty cartridge shells are ejected, or cartridges may be introduced into the receiver, R, through said opening when the gun is used as a single loader, and through the opening, r', the cartridges pass from the magazine to the receiver. As shown in Fig. 8, the opening or slot, r', is contracted for a portion of its length, or from the point, a, rearwardly, so that only the flange of a cartridge lying in said slot will project into the slot, but when it is desired to use the gun as a single loader, and the magazine is not empty, it is necessary to provide means for holding the cartridge at the slot, r', back sufficiently to prevent its flange from projecting into the receiver and into the path of the breech bolt or a lug thereon. To this end a stop pin, 15, provided with a thumb piece, 16, (Figs. 2 and 5) is seated in the rear enlarged end of the receiver, the forward end of the said pin projecting into the passage, 55, leading from the receiver to the magazine at the upper rear edge of the slot, r'. That portion of the pin within the passage is semi-cylindrical, so that when it is turned into the position shown in Fig. 5, it will obstruct the slot sufficiently to prevent the flange of the cartridge thereat from projecting into the receiver. As above stated the rear end of the slot r' is sufficiently contracted to prevent a cartridge from passing therethrough, the guide face, c, forming one of the longitudinal walls of said slot while the opposite longitudinal wall thereof along the contracted portion also acts as a guide for the lug 36 when the latter moves in said contracted portion of slot, r', so as to engage the flange of a cartridge projecting into the slot and carry the same forward through the enlarged portion of said slot into the breech of the gun. The rear face, 37, of the receiver is inclined rearwardly, and near its forward end said receiver is provided with a rearwardly inclined shoulder, e, as shown in Fig. 4, and for purposes presently to be described.

The breech bolt.—Referring now to Figs. 9 to 13^a inclusive: The breech bolt consists essentially of a tube, 28 that is provided near its forward end with the two locking lugs, 35, and 36, that fit a suitable recess in the forward end of the receiver when the breech bolt is in its normal position closing the breech chamber and locking the bolt against endwise motion. At said forward end the breech bolt is provided with an annular flange or shoulder, 50, a portion of which is cut away to accommodate the extractor hook, as shown at 50^a, while another portion of said flange is shallower from about the point 50^b, to the cut away portion or to the point, 50^c, Fig. 12, for purposes hereinafter explained. At its rear end the breech bolt is of increased diameter, and on this enlarged portion, 29, is formed a spirally inclined shoulder, 34, and on said enlarged portion of the breech bolt is mounted the hand lever, 30, so as to bear against the rearwardly inclined face, 37, at the rear end of the receiver. This end, 29, of the breech bolt is also provided with a radial slot, b, shown in Fig. 11, of such width as to admit of the passage of an overhanging arm, 31, on a retaining or locking sleeve, 27, and when said parts are assembled so that the depending lug, 33, on said arm lies in front of the said enlarged end of the breech bolt and the sleeve is partly turned, said parts will be securely locked together. The firing pin, constructed

substantially as described in our Letters Patent aforesaid, is contained in the breech bolt and carries at its rear end a hand hold or pull knob, 21, the striking point of the jointed portion, 24, of the pin projecting through an axial opening, 28ª, Fig. 12, in the forward closed end of the breech bolt when projected by its spring, 25, in firing. The pull knob, 21, has on its underside a longitudinal rib, 22, fitted and sliding in a slot in the rear end of the receiver and having the full cock shoulder, 23. Within the breech bolt, 28, at the rear end thereof is located the retaining or locking sleeve, 27, hereinbefore referred to, against the front end of which one end of the actuating spring, 25, abuts, the other end of said spring abutting against a collar, 20ª, on the firing pin. The rear end, 26, of the sleeve is of increased diameter and has formed thereon a forwardly projecting or overhanging arm, 31, which is under-cut at its forward end, 44, as shown at, 46, Fig. 9, to form a recess for purposes presently to be explained, said arm extending into a longitudinal slot formed in the rear end of the receiver, R. The locking sleeve, 27, has near the forward end of the arm, 31, a depending lug, 33, that lies in front of the shoulder formed by the enlarged end of the breech bolt, and in said arm is formed a socket bearing for a locking pin, 40, the end of which projects into a semi-cylindrical recess 42 formed in the enlarged rear end, 29, of the breech bolt. The end, 41, of the pin, 40, that projects into the said recess, is also semi-cylindrical, so that when the pin is in the position shown in Fig. 9, the breech bolt has free rotary motion in the receiver but when the position of the pin is reversed, so that its half cylindrical end, 41, will lie in said recess, the breech bolt is locked against rotation. The locking pin, 40, has at its rear end a cylindrical head, 38, provided with a thumb piece or handle, 39, and in the underside of said head is formed a concave recess, 38ª, Fig. 10, the arc of said recess having for its center the center of the cylindrical pull knob, 21, of the firing pin, 20, so that when said pin is in the position shown in Figs. 9 and 10, the firing pin has free motion in the breech bolt, but when the position of the pin is reversed as above set forth after the firing pin has been drawn out to the position of full cock, Fig. 9, the recess, 38ª, will be moved out of the path of the knob, 21, of the firing pin, which latter is thereby locked against forward motion, so that by a half revolution, more or less, of the pin, 40, the firing mechanism is locked out of operation. The pin, 40, is held against endwise motion in its socket bearing by a pin, 40ª, inserted from the side of the gun, 31, and projecting into a peripheral groove of the pin, 40.

The extractor and ejector.—Referring to Figs. 8, 9, 11 and 13, the extractor, 47, consists of a plate the forward end of which is attenuated to give it more or less elasticity, and at said forward end the plate is provided with a hook, 48, adapted to snap over the rim flange of a cartridge when the breech bol moved into position to close the breech, s hook overhanging the breech bolt and ly in the cut-away portion, 50ᵇ, of the annu flange, 50. At the outer end of said bre bolt, and near said hook end, the extracto provided with a lateral curved arm, 49. T extractor carrier consists of a concavo-con plate, 43, held loosely on said bolt, in tha lug, 45, Figs. 11 and 13ª, on the rear enc said carrier fits in the undercut or rec 46, at the outer end of the overhanging a 31, of the locking sleeve, 27, whereby s plate, 43, is held against lateral motion r tively to the arm, 31. The extractor carr 43, has a dovetailed groove, Fig. 11, forme its under side, in which groove the extrac 47, is loosely inserted, and the said carrie also provided on its underside with a sh der or abutment, *f*, against which the cur arm, 49, on the extractor bears. By mean the construction described the extractor, and its carrier (the plate 43) are detacha secured together and to the breech bolt that they can be readily removed. As sh in the drawings the extractor carrier 43 i such dimensions as to substantially close opening, *r'* in the receiver, said carrier forming the function of a dust cover for bolt as well as for the receiver when said is in its normal position, as shown in Fi The trigger, T, Fig. 8, is provided with a wardly projecting arm, 62, the end of wh is bent at right angles and projects thro a slot in the receiver into the path of the 35 on the breech bolt, as shown at 72, wh by the rearward motion of said bolt is ited. By pulling the trigger rearwardly s to move the arm, 72, out of the path of lug, 35, the breech bolt may be pulled ou the receiver. S, indicates the sear lever crumed on a pin, *p*, to the trigger, T, and otally connected to the receiver at its ward end which is provided with a circ head, *o*, loosely seated in a corresponding cess in said receiver. Below its pivot the lever is provided with a socket for an act ing spring *m*, that holds the nose, *n*, of lever in the path of the full cock shoul 23, of the breech bolt. By means of the scribed construction, if the barrel and ceiver is removed from the gun stock and trigger, T, pulled back, as in firing, so a move the sear and arm, 72, clear of t openings in the receiver the trigger and lever can be detached by simply push them to one side (to the right, for insta to move the head, *o*, out of its recess in under side of the receiver. The shell ejec 51, 52, Fig. 8, is precisely of the same struction as that described in our Let Patent hereinbefore referred to, the heel, of said ejector lying in a groove, 53, Fig and 11, of the breech bolt, and will there need no further description.

The operation of the breech mechanis

lows:—Assuming the magazine, M, to be ied with cartridges, the gate, 5, closed at the feed lever, 7, bearing on the last e cartridges will under the stress of its g, 11, hold the first cartridge with its e projecting slightly into the narrower of the slot, r', in receiver, R, and assum- hat the breech chamber contains a car- e and the firing pin is at full cock, on ng the trigger, T, rearwardly the firing s released and is thrown forward by its ig and explodes the cartridge; the rib, 22, ie underside of the pull knob or handle, f the firing pin, now abuts against the wardly inclined face, 34, formed on the rged end, 29, of the breech bolt, 28. If hand lever, 30, is now turned from its ial or locking position, Figs. 2 and 11, to position Fig. 1, both the breech bolt and g pin will be moved rearwardly to the po- n shown in Fig. 9, by the inclined faces, nd 37 on which the locking sleeve and l lever have bearing, as above set forth. his partial rotation of the breech bolt the 35 and 36 will be moved out of the annu- ocking recess at the forward end of the iver, R, and have bearing on the inclined itudinal guide faces, c, and d, thereof, the 36, now lying in front of the arm, 49, of extractor, 47, so that the latter will also ioved rearwardly together with the breech and firing pin, thereby starting the empty ridge shell in the breech of the gun so it may be readily withdrawn when the ech bolt is moved rearwardly, which can be done. As the breech bolt is about to h the limit of its rearward motion the tor lever, 51—52, ejects the empty shell of the receiver through the slot, r. If the ech bolt 28, after having been moved rear- dly as far as this can be done, that is to , until its rearward motion is arrested by arm, 72, of the trigger, T, coming in con- t with the lug 35, at the forward end of breech bolt, and the said breech bolt is in moved forward, the said lug, 35, will gage the rim of the cartridge in slot, r', and ry the same along with it until it reaches the ler end of the slot, when by reason of the curv- ire of the passage, 55, and the outer end of d slot, said cartridge will be guided into the eiver R, and thence into the breech of the n. After the breech bolt has been moved for- rd a certain distance, the full cock shoul- r, 23, on the pull knob, 21, of the firing pin, will contact with the sear, S, whereby the rther forward movement of said firing pin is evented, and as the breech bolt moves to the nit of its forward motion the spring, 25, of e firing pin is brought under tension by e locking sleeve, 27, against the forward d of which one end of the said spring bears. ie handle or lever, 30, may now be turned ick to its normal or locking position, Figs. and 11, whereby a partial rotation is im- arted to the breech bolt, the rear faces of ie lugs 35 and 36 at the same time engaging the rearwardly inclined face or shoulder, e, formed by the rear face of the annular lock- ing recess, e', in the forward end of the re- ceiver, Fig. 4, thereby drawing the bolt to its seat and locking the same to and closing the breech of the gun, the hook, 48, of the ex- tractor at the same time snapping over the rim or flange of the cartridge in the breech of the gun. The annular flange, 50, partly cut away at 50^a, for the accommodation of the extractor hook, 48, and made shallower from a point, 50^b, to the point, 50^c, Fig. 12, and, as hereinbefore described, serves as an abutment for the butt end of the cartridge. When the breech bolt is revolved to unlock the same, by which movement a rearward mo- tion is imparted to said bolt and extractor whereby the empty shell is also partly moved out of the breech of the gun, the said shal- lower portion of the flange acts upon the ex- tractor hook and lifts the same slightly, so that the said hook will have just sufficient hold on the shell to carry the same along with it when the breech bolt is moved rearwardly as described, thereby facilitating the ejection of the empty shell from the receiver.

Having thus described our invention, what we claim as new therein, and desire to secure by Letters Patent, is—

1. In a breech loading magazine gun, the combination with the magazine having its feed opening on one side of the gun, a gate for closing the opening hinged to the maga- zine so as to swing downwardly, said gate be- ing provided with a lug, 13, a feed lever ar- ranged within the magazine, a vertical pivot for said lever one end of which projects out of the magazine, said outwardly projecting end being provided with a radial arm, of the convex leaf spring, 11, having bearing on said radial arm and on the hinge knuckle of the gate, substantially as and for the purpose set forth.

2. In a breech loading magazine gun, the combination with the magazine provided with two hinge knuckles, 16^b, one of said knuckles being provided with a pin hole at right an- gles to its axis, and the gate, 5, provided with a hinge knuckle, 4^b, of the hinge pintle, 6, one end of which is semi-cylindrical and pro- vided with the locking notch, 17, and the elas- tic plate, 19 at the other end of said pintle, substantially as and for the purpose set forth.

3. In a breech loading magazine gun, the barrel, receiver, and a magazine open on op- posite sides of said receiver, said parts being formed integral, the side wall, 2, and a gate for closing said openings, said side wall and gate being detachably secured to the maga- zine, for the purposes set forth.

4. In a breech loading magazine gun, the combination with the magazine having its feed opening on one side of the gun, a gate for said opening arranged to swing downwardly, and a feed lever in engagement with the gate and having its pivot proximate to said feed open- ening on one side thereof; of a spring adapted

to actuate the feed lever to move the same into the magazine, said spring located outside of the magazine, for the purpose set forth.

5. In a breech loading magazine gun, the combination with the receiver, the breech bolt provided at its forward end with the locking lugs 35 and 36, and the locking sleeve, 27, having a forwardly projecting arm, 31, undercut or recessed at 45, and an extractor carrier provided with a lug fitting into said recess, and with a dove-tailed longitudinal groove, of an extractor consisting of a more or less elastic plate fitted in the groove of the carrier and having an extractor hook at one end and a curved arm projecting laterally therefrom near the hook end, said lug, 36, engaging said curved arm when a partial rotation is imparted to the breech bolt in a given direction, substantially as and for the purpose set forth.

6. In a breech loading gun, the combination with the receiver provided with two guide faces, *d*, and *c*, extending nearly the full length of the receiver, and with a lateral slot, *r'*, of which the guide face, *c*, forms one of the walls, said slot being contracted at its rear end; of the breech bolt having lugs, 35 and 36 at its forward end, said lug, 35, having bearing on the guide face, *d*, and said lug, 36, having bearing on the guide face or wall, *c*, when moving along the wider portion of the slot, *r'*, and on both walls of said slot when moving along the narrower portion thereof, for the purpose set forth.

7. In a breech loading gun, the combination with the receiver and the trigger provided with an augular arm projecting into the receiver near its rear end, of the breech bolt provided at its forward end with a radial lug engaging said angular arm on the trigger when said bolt has reached the limit of its rearward motion whereby said bolt may be removed from the receiver by pulling the trigger rearwardly, substantially as set forth.

8. In a breech loading magazine gun, the combination with the receiver, the breech bolt and the locking sleeve, 27 having forwardly projecting arm, 31, recessed at 46, of the extractor carrier consisting of a plate, 43, concavo-convex in cross-section, provided at its rear end with a lug, 45, fitting loosely into recess, 46, and with a longitudinal dove-tailed groove, an extractor consisting of a plate, 47, having a portion thereof attenuated to give it elasticity, the body of said plate being loosely fitted in the dove-tailed groove of the carrier, and an extractor hook at the end of the attenuated portion of the extractor, and a locking device to lock the extractor and carrier against endwise motion independently of said breech bolt when the latter is moved back into the receiver, substantially as and for the purpose set forth.

9. In a breech loading magazine gun, the combination with the receiver having guide bearings, *d*, and *c*, and breech bolt having at its forward end two lugs, 35, and 36, guided by said bearings when the bolt is positioned for rectilinear motion, of the trigger, T, and an angular arm or lever, 62, the vertical branch of which projects into the receiver in the path of the lug, 36, when the breech bolt is pulled rearwardly to limit the motion of said bolt, said trigger being adapted to actuate the angle lever for the purpose of withdrawing its vertical arm from the path of the lug, for the purpose set forth.

10. In a breech loading gun, the combination with the receiver, of the breech bolt and the extractor connected therewith, said bolt provided at its forward end with a substantially circular abutment, 50, for the butt of the cartridge, said abutment being recessed to accommodate the extractor hook and provided with an inclined or cam face acting on said hook to lift the same when a partial rotation is imparted to the bolt in one direction, for the purpose set forth.

11. In a breech loading gun, the combination with the magazine having its feed opening on one side of the gun, a gate for said opening arranged to swing downwardly, a feed lever pivoted within the magazine, and a single spring acting on the gate and feed lever to hold said gate yieldingly when open or shut, and force the feed lever into the magazine when the said gate is shut, for the purposes set forth.

12. In a breech loading gun, the combination with the magazine having its feed opening on one side of the gun, a gate for said opening, and a pivoted feed lever in engagement with the gate and having its pivot proximate to said feed opening on one side thereof; of a single spring acting on the gate and feed lever to hold the said gate yieldingly when open or shut, and force the feed lever into the magazine simultaneously with the closing of the gate, for the purpose set forth.

In testimony whereof we affix our signatures in presence of two witnesses.

OLE HERMAN JOHANNES KRAG.
ERIK JÖRGENSEN.

Witnesses:
ALFRED BRYN,
L. DAAE.