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PROVISIONAL SPECIFICATION.

Improvements in Breech Loading Small Arms.

I, CLAUD HERMANN RICHARD CLAUDIUS, of No. 1 Margarethenstrasse Hamburg, Germany, Retired Captain, do hereby declare the nature of this invention to be as follows:—

5 This invention relates to means for closing the breech between the barrel and the lock of an automatic firearm adapted to be both loaded and freed from spent cartridge cases with the aid of the backward pressure of the gases of explosion. Means for this purpose according to this invention comprise a peculiarly constructed breech closing head located between the barrel and the lock, and specially  
10 formed projections in the rear mouth of the barrel.

10 The movable barrel is guided in the usual manner in rings along the stock, and a stock spring has a tendency to keep the barrel in its forward position or to return it thereto. A stop is provided to limit the forward and rearward movements of the barrel.

15 The lock chamber is also movable and is connected to the rear of the barrel in the usual manner. On firing, it is coupled to the barrel and is moved towards the rear together with the barrel by the action of the explosion gases, after which it first of all remains behind whilst the barrel alone is shot forward by the stock spring over the loading-space and the cartridge-magazine (if such be used). The arrangement is such that the lock-chamber is held back by a stud that catches the  
20 front of a nose on the rear end of the said chamber, whilst the barrel, in shooting forwards, becomes automatically uncoupled from the chamber, as hereinafter more particularly described. There is thus produced between the barrel and the lock chamber, a vacant loading-space into which a cartridge is inserted by being raised up it may be, from an underlying magazine. Then pressure is applied to the  
25 outwardly projecting knob of a lever which is mounted in the stock and carries the aforesaid stud whereby the latter is depressed in front of the aforesaid nose of the lock chamber. A spring arranged in one side of the stock now shoots forward again the lock chamber, which is thereby caused to push with its front breech-closing head, the cartridge that has just been inserted into the loading space, from  
30 behind into the barrel and is connected with the barrel by means of the breech-closing head in a manner hereinafter described.

The firearm is now loaded and ready for firing, for on the shooting forward of the lock chamber, a nose projecting from the striking bolt will have struck against the upwardly projecting end of the trigger-lever and in consequence thereof the  
35 firing pin of the striking bolt is held back with the firing spring in compression, to such an extent that it does not yet enter the cartridge contained in the barrel. Whilst the lock chamber is shooting forward, and pushing the cartridge into the barrel, the breech closing head, which has a hole through it along its axis, projects beyond the firing pin and prevents the latter from entering the cartridge. During  
40 the last instant of the forward movement only, the striking bolt with its firing pin and the breech-closing head are held back (the striking bolt by the trigger-lever as already mentioned and the breech-closing head in a manner hereinafter described) and the lock-chamber moves forward alone to such an extent that after

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the disengagement of the trigger-end from the nose of the striking bolt, the latter can be shot forward by the firing spring in its guide slot sufficiently to cause the firing pin to penetrate the cartridge in the barrel and to fire the same. The barrel and the breech-closing cylinder connected therewith are now immediately moved back again by the backward pressure of the gases and at the completion of their backward movement the cylinder is retained by the aforesaid stud which engages with the nose of the lock-chamber, and the barrel is disconnected and shot forwards by the stock-spring. The spent cartridge-case has meanwhile been held back in the loading-space (thus opened) and been ejected in the usual manner by means of an extractor on the breech-closing head which engages in the rear annular groove of the cartridge. 5 10

In the space hollowed out of the stock for the trigger lever and the lever that carries the stud that engages with the nose of the striking bolt, there is also mounted a third lever a centrally grooved end of which projects into the path of the nose of the lock chamber and passes up behind the said nose when it is shot forward, in order that the said chamber shall not be thrown back again by the strongly strained firing-spring so long as the gun is not fired. 15

During the forward movement of the lock-chamber, the nose thereof slides over the inclined back of the said grooved lever end and the nose of the striking bolt passes through the groove thereof. In the same manner, when the lock chamber moves back, its nose moves over the inclined back of the aforesaid stud with which it then engages. 20

The small lever having the grooved end lies under the trigger lever and can be pressed down independently by means of a knob that projects laterally through the stock, so as to cause the grooved end of the lever to release the nose of the lock-chamber, whereupon the said chamber shoots back slightly, without the shot being fired. Then the breech-closing cylinder can be drawn back completely by means of a knob on the chamber, the said cylinder being thereby uncoupled from the barrel (which remains at rest) and the chamber being caught by the stud at the rear. Then the cartridge, which has remained undischarged and has been drawn back into the loading space by the lock, can be taken out—that is to say, the gun can be unloaded without firing. In consequence of the shooting back of the lock-chamber, the firing spring is uncocked, so that the firearm is thereby secured against being fired whilst the chamber is in this position. 25 30

But if the shot be fired by moving the trigger, the trigger lever pushes downwards the lever with the grooved end, so that the end just mentioned is held down out of the path of the lock, which is driven back with the barrel, because the backward pressure of the explosion gases is exerted instantaneously and whilst the finger of the marksman is still holding down the trigger lever. 35

The forwardly propelling spring of the lock-chamber and the firing spring have a certain peculiar mutual relation during the last instant of the forward movement of the lock chamber, the propelling spring is capable in consequence of the kinetic energy it has received, of still compressing the firing-spring although by that time the resistance of the firing spring has become greater than the pushing force of the propelling spring and is overcome only with the aid of the aforesaid energy. Consequently as already stated, the cocked firing spring is able to push back the lock-chamber to some extent in opposition to the cocked propelling spring, after the grooved end of the stud is depressed—in order to enable an inserted cartridge to be taken out without being fired. 40 45

It is, however, not absolutely necessary that the cocked firing-spring should be more powerful than the uncocked propelling spring, because the lock can also be drawn back by hand (without having been first pushed back by the firing spring), after the grooved end has been depressed by pressing with the finger upon the corresponding knob. Indeed, it is very desirable that the propelling spring of the lock, and also the propelling spring of the barrel, (hereinbefore referred to as the stock-spring) should be as weak as possible, in order that powder-charges of very slight backward pressure and very light projectiles may be used. Consequently 50 55

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the propelling spring of the lock should not be made more powerful than is necessary, in view of the described relations between it and the firing-spring.

For the purpose of making the propelling spring of the barrel as weak as possible, and of consequently being able to employ powder-charges having a very  
 5 weak recoil and projectiles of any desired lightness, the lateral surfaces of the usual projections on the breech-closing head are not axially rectilinear, but are in the shape of a helix which has an equal but opposite pitch to that of the groove in the breech-closing head, in which groove engages a pin projecting inwardly from the wall of the lock-chamber. The inner projections in the rear mouth of the barrel  
 10 have a pitch similar to that of the projections just described. The helical groove in the breech-closing head terminates at the rear in a groove which extends perpendicularly to the axis of the cylinder and with which there connects the entering groove for the aforesaid pin.

When the breech-closing head, which closes the rear mouth of the barrel,  
 15 couples together the barrel and the lock-chamber, the front end of the said head strikes against a shoulder in the rear mouth of the barrel, the projections of the breech-closing head are then situate in front of the projections of the barrel, and the pin of the wall of the lock-chamber is situate in the forward part of the first mentioned helical groove of the breech-closing head. Thus connected, the barrel  
 20 and the lock are thrown to the rear by the backward pressure of the gases, and the lock is temporarily caught by the aforesaid stud. The barrel which shoots back again at once, pulls the breech-closing head forward with it and thereby also moves the front helical groove of the head forwards over the pin of the chamber. In consequence, the breech-closing head is rotated and its projections move in front  
 25 of the passages between the projections of the barrel, which now slide forwards along the projections of the head, and rotate them in the same direction as that in which the breech-closing head is rotated by the helical groove aforesaid. Thus all possibility of jamming between the barrel and the breech-closing head is obviated, and the former can be projected forwards by a weak spring, thereby  
 30 rendering possible the use of powder-charges having a small recoil, and of light projectiles.

As soon as the pin of the lock-chamber has entered the perpendicular groove of the closing-head, the latter is held back and is rotated, still without jamming, only to such an extent that two opposite projections of the head, which extend out  
 35 of the rear mouth of the barrel, rest on sliding-bars which are extensions of the projections of the barrel-mouth, and are guided by two sliding-bars of the breech-closing chamber. The projections that lie on the first mentioned bars prevent the further rotation of the breech-closing head, which, consequently, unrotated and undisturbed moves forward rapidly with the lock chamber, when, but not until, the latter is  
 40 liberated by the aforesaid stud. Hereupon the projections of the breech-closing head pass in between those of the barrel, and the breech-closing head, now rotating, strikes against the shoulder in the barrel. It then remains stationary in a longitudinal direction and is only in consequence of the further forward movement of the lock-chamber and its pin, rotated to such an extent that its projections again  
 45 catch the front of those of the barrel and again couple the lock chamber with the barrel.

The coupling cannot be unfastened by striking against the forward-surfaces of the breech-closing head, whilst on drawing the barrel from the chamber or  
*vice versa* the uncoupling takes place quite easily.

50 Dated this 31st day of December 1895.

F. WISE HOWORTH,  
 46, Lincoln's Inn Fields, London, W.C., Agent for the Applicant.

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## COMPLETE SPECIFICATION.

## Improvements in Breech Loading Small Arms.

I, CLAUS HERMANN RICHARD CLAUDIUS, of No. 1 Margarethenstrasse, Hamburg, Germany, Retired Captain, do hereby declare the nature of this invention and in what manner the same is to be performed to be particularly described and ascertained in and by the following statement:—

This invention relates to improvements in breech loading fire-arms especially of that class in which the barrel and the breech-bolt are movably arranged so that they may recoil together in firing, but may be independently forced forward again by spring power for the purpose of opening or laying bare the loading chamber of the breech frame, which class of breech loaders is known as straight-pull bolt guns. 5

The invention comprises a peculiarly constructed breech closing head arranged between the breech bolt and the barrel and adapted to make a turning and sliding movement which are utilized for coupling or uncoupling the breech bolt and the barrel accordingly; and the object of the improvement is to secure a reliable closing of the breech by coupling the said movable closing head of the breech bolt to the barrel and to permit on the other hand an easy and ready uncoupling of the barrel from the temporarily retained closing head when the said barrel alone is shifted forward by its spring after the recoil. 10

To enable the present invention to be properly understood I will proceed to describe, as an example, a small arm arranged in accordance with the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification. 20

Referring to the drawings

Fig. 1 is a longitudinal sectional elevation of so much of a breech loading gun as will be necessary to illustrate my invention, the parts being shown in their respective positions after firing. 25

Figs. 1<sup>A</sup> and 1<sup>B</sup> are cross sections on the lines 1—1 and 2—2 of Fig. 1.

Fig. 1<sup>C</sup> is a detailed view shewing the closing head in longitudinal side elevation and illustrating the co-operation of the same with the breech-bolt.

Fig. 2 is a top plan view partly in section of the improved breech loading gun shown by Fig. 1. 30

Fig. 3 is a similar sectional elevation as Fig. 1, the parts being shewn in their respective positions before firing.

Fig. 3<sup>A</sup> is a cross-section on the line 3—3 of Fig. 3;

Fig. 4 is a top plan view of Fig. 3, partly in section; 35

Figs. 5 and 6 are views, partly in section, illustrating the mode of co-operation of the breech-bolt, the closing head and the barrel during the forward motion of the latter, in order to uncouple the locked breech-bolt or its movable closing head respectively from the barrel;

Figs. 7 and 8 are detail views showing the structural features of the closing head and the breech-bolt respectively. 40

Similar letters refer to similar parts throughout the several views.

The movable barrel *a* arranged in a suitable groove of the stock *b* is guided in the usual manner in rings attached to the stock; (the rings being not shewn in the drawings). Upon the rear end of the barrel *a* is screwed a socket *a*<sup>1</sup> provided on its interior wall with lugs or projections *a*<sup>1</sup>. From the rear end side or surface of this socket there are extending two  $\Sigma$  shaped slide-rails *a*<sup>2</sup> engaging a dove-tail shaped guide-groove of the breech-frame or breech-plate *r* sunk into the stock *b*, and forming at the same time a part of the path of the breech-bolt *e* and its 45

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movable closing head  $l$ , as will be described later on. A recoil spring  $c$  arranged in a suitable recess of the stock  $b$  and acting upon a shoulder  $a^5$  of the barrel has the tendency to keep the barrel in its forward position or to return it thereto. A stop  $d$  striking against suitable shoulders  $a^6$   $a^7$  on the barrel is provided to limit the forward and rearward movements of the barrel (Fig. 1).

The socket like breech-bolt  $e$  carrying a handle  $e^2$  and adjoining the socket  $a^4$  of the barrel is adapted to slide on the frame  $r$  and on the rearwardly extending rails  $a^3$  of the said socket  $a^4$ . In order to guide the breech-bolt  $e$  in a reliable manner during its sliding motion, the breech-bolt is furnished at its lower front part with two interior grooves  $e^4$  engaging or embracing the upper edges of the  $\Sigma$  shaped rails  $a^3$  (see Figs. 1<sup>A</sup> 3<sup>A</sup> and 8). The breech-bolt  $e$  contains the firing mechanism and the movable closing head  $l$  both of which will be explained more particularly hereinafter. A spring  $k$  placed in a recess  $k^1$  of the stock or the frame  $r$  and adapted to act upon a projection  $e^5$  of the breech-bolt  $e$  tends to keep the said breech-bolt  $e$  in its forward position or to return it thereto.

On firing, the breech-bolt  $e$  being coupled to the barrel by means of the movable head  $l$ , which closes the breech of the said barrel, is recoiled together with the barrel by the action of the gases of explosion. The breech-bolt  $e$  being thus forced to the rear for a sufficient extent is caught by a stud or nib  $g$  which slips in front of a nose  $e^1$  on the rear end of the said breech-bolt. Accordingly the latter is locked in its rear position, whilst the barrel  $a$  is moved forward again under the action of the spring  $c$  and thereby becomes automatically uncoupled from the breech-block  $e$  and its movable head  $l$  respectively, as hereinafter more particularly described. Thus between the barrel and the unlocked and retracted breech-bolt is produced as clearly shown by Figs. 1 and 2, a free loading space or loading chamber  $f$ , into which a cartridge  $h$  may be inserted by hand or by raising it up through a suitable slot of the frame  $r$  from a lower magazine by means of any well known cartridge elevator  $u$ . When pressure is applied to the outwardly projecting knob  $i^1$  of the lever  $i$ , which is mounted in a suitable chamber or recess in the stock and carries the aforesaid stud or nib  $g$ , the latter is depressed in front of the nose  $e^1$  of the breech-bolt, so that the same is released or unlocked from the said nib  $g$  and the breech-bolt thereby enabled to slide forward under the action of the lateral spring  $k$ . By this forward movement of the breech-bolt  $e$ , the closing head  $l$  carried along with it is caused to push the cartridge that has just been inserted into the loading chamber  $f$  into the barrel and the cartridge chamber respectively and to couple or connect the breech-bolt  $e$  with the socket  $a^4$  of the said barrel  $a$  in a manner hereinafter described.

The fire-arm is now loaded and ready for firing, for on the shooting forward of the breech-bolt  $e$ , a nose  $m^1$  projecting from the firing pin  $m$  movably supported in the breech-bolt will have struck against the nib  $o^1$  of the trigger lever  $o$  (Fig. 3) and in consequence thereof the point  $m^2$  of the said firing pin will be held back with the firing spring  $m^3$  in compression, to such an extent that it will not then enter the cartridge contained in the barrel. Whilst the breech-bolt  $e$  is thus moving forward, and pushing the cartridge into the barrel, the cylindrically shaped breech closing head  $l$ , which is movably inserted into a recess  $e^6$  provided in the fore part of breech-bolt  $e$ , and which head has a hole  $l^6$  through it along its axis, projects beyond the firing point  $m^2$  of the firing-pin and prevents the latter from entering the cartridge. During the last instant of the forward movement only, the firing pin  $m$  with its firing point  $m^2$  and the breech-closing head  $l$  are held back (the firing pin by the nib  $o^1$  of the trigger lever as already mentioned and the breech closing head  $l$  in a manner hereinafter described) and the breech-bolt moves forward alone to such an extent that after the disengagement of the trigger nib  $o^1$  from the nose  $m^1$  of the firing pin  $m$ , the latter can be shot forward by the firing spring  $m^3$  in its guide slot  $m^4$  sufficiently to cause the firing point  $m^2$  to penetrate the cartridge in the barrel and to fire the same. Immediately after the firing, the barrel and the breech-bolt connected therewith are moved back again by the backward pressure of the gases, and at the completion of their recoil movement

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the breech-bolt is retained by the aforesaid nib  $g$  which engages with the nose  $e^1$  of the breech-bolt  $e$ , whereupon the barrel is disconnected and shot forwards by the stock-spring  $c$ . The empty cartridge-case has meanwhile been held back in the loading chamber (thus opened) by means of an extractor  $l^1$  on the breech-closing head  $l$  and which engages in the rear annular groove of the cartridge case. The cartridge case may then be ejected in the usual manner.

In the space hollowed out of the stock for the trigger lever  $o$  and the lever  $i$  that carries the stud or nib  $g$ , there is also mounted a third lever  $p$  a centrally grooved nib  $p^1$  of which projects into the path of the nose  $e^1$  of the breech bolt and passes up behind the said nose when the breech bolt is shot forward, in order that the said breech bolt may not be thrown back again by the strongly strained firing-spring  $m^3$  so long as the gun is not fired.

During the forward movement of the breech bolt the nose  $e^1$  thereof slides over the inclined top of the grooved nib  $p^1$  the nose  $m^1$  of the firing pin  $m$  passing along through the groove thereof. In the same manner, when the breech bolt recoils, its nose  $e^1$  moves over the inclined top of the aforesaid stud or nib  $g$  with which it then engages.

The small lever  $p$  having the grooved nib  $p^1$  lies under the trigger lever  $o$  and is capable of being independently pressed down by means of a knob  $p^2$  (Fig. 2) that projects laterally through the stock  $b$ , so as to cause the grooved nib  $p^1$  of the lever  $p$  to release the nose  $e^1$  of the breech-bolt, whereupon the said breech-bolt will move back slightly, without the cartridge being fired. Then the breech-bolt may be drawn back completely by means of the handle  $e^2$  on the breech bolt, the latter or the head  $l$  thereof being thereby uncoupled from the barrel (which remains at rest) and the breech-bolt being caught by the nib  $g$  engaging the nose  $e^1$ . Then the cartridge, which has remained undischarged and has been drawn back into the loading space or chamber  $f$  by the extractor  $l^1$  may be taken out that is to say, the gun may thus be unloaded without firing. In consequence of the shooting back of the breech-bolt, the firing spring  $m^3$  is uncocked, so that the firearm is thereby secured against being fired whilst the breech-bolt is in this position.

But if the shot be fired by pulling the trigger  $o^2$ , the trigger lever  $o$  pushes downwards the lever  $p$  with the grooved nib  $p^1$ , so that this grooved nib is held down out of the path of the breech-bolt, which is driven back with the barrel, because the backward pressure of the explosion gases is exerted instantaneously and whilst the finger of the marksman is still holding down the trigger lever  $o$ .

The forwardly propelling spring  $k$  of the breech-bolt and the firing spring  $m^3$  have a certain peculiar mutual relation during the last instant of the forward movement of the breech-bolt; the propelling spring  $k$  is capable in consequence of the kinetic energy it has received, of still compressing the firing-spring  $m^3$  although by that time the resistance of the firing spring  $m^3$  has become greater than the pushing-force of the propelling spring  $k$  and is overcome only with the aid of the aforesaid energy. Consequently as already stated, the cocked firing spring  $m^3$  is able to push back the breech bolt to some extent in opposition to the propelling spring  $k$ , after the grooved nib  $p^1$  is depressed—in order to enable an inserted cartridge to be taken out without being fired.

It is however, not absolutely necessary that the firing spring  $m^3$  should be more powerful than the uncocked propelling spring  $k$ , because the breech-bolt may also be drawn back by hand (without having been first pushed back by the firing spring), after the grooved nib  $p^1$  has been lowered by pressing down the knob  $p^2$  attached to the lever  $p$ . Indeed, it is very desirable that the propelling spring  $k$  of the breech bolt, and also the stock spring  $c$  of the barrel, should be as weak as possible, in order that powder-charges of very slight backward pressure and very light projectiles may be used. Consequently the propelling spring  $k$  of the breech bolt should not be made more powerful than is necessary, in view of the described relations between it and the firing spring  $m^3$ .

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For the purpose of making the stock spring  $c$  of the barrel  $a$  as weak as possible, and of consequently being able to employ powder charges having a very weak recoil and projectiles of any desired lightness, the lateral surfaces of the usual projections or locking wings  $l^2$  on the breech closing head  $l$  are not axially rectilinear, but are in the shape of a part helix or screw thread which has an equal but opposite pitch to that of the groove  $l^3$  in the breech closing head  $l$ , in which groove  $l^3$  engage pins or shoulders  $e^3$  projecting inwardly from the wall of the breech bolt (see Figs. 1<sup>c</sup>, 3<sup>A</sup> and 8). The inner projections or lugs  $a^1$  in the rear socket  $a^4$  of the barrel  $a$  have a pitch similar to that of the wings  $l^2$  just described.

10 The helical grooves  $l^3$  in the breech-closing head  $l$  terminate at the rear in a groove  $l^4$  which extends at a right angle to the axis of the head  $l$  and with which there connect the entrance grooves  $l^5$  for the aforesaid pins  $e^3$  of the breech bolt (Figs. 4 and 7).

When the breech closing head  $l$ , which closes the rear mouth of the barrel, couples together the barrel  $a$  and the breech-bolt  $e$ , as shown in Figs. 3 and 4, the front end of the said head  $l$  rests or bears against the rear surface  $a^2$  of the barrel  $a$ , the wings  $l^2$  of the breech closing head  $l$  are then in front of the lugs  $a^1$  of the socket  $a^4$ , and the shoulders or pins  $e^3$  of the wall of the breech-bolt are in the fore part of the first mentioned helical grooves  $l^3$  of the breech-closing head  $l$ .

20 Thus connected, the barrel  $a$  and the breech bolt are recoiled to a sufficient extent by the backward pressure of the gases, for effecting the passage of the nose  $e^1$  of the breech bolt behind the nib  $g$ , whereby the said breech bolt is caught, as hereinbefore stated. The barrel  $a$  which shoots forward again at once, pulls the breech-closing head  $l$  forward with it, so that thereby the front helical grooves  $l^3$  of the head  $l$  slide along or over the pins  $e^3$  of the breech bolts. In consequence of this the breech closing head  $l$  is rotated and its wings  $l^2$  turned in front of the passages between the projections or lugs  $a^1$  of the socket  $a^4$ , whereupon these lugs  $a^1$  slide forwards along the projections or wings  $l^2$  of the head  $l$  and rotate them in the same direction as that in which the breech-closing head  $l$  is rotated by the action of the pins  $e^3$  in the helical grooves  $l^3$ . Thus all possibility of jamming between the barrel or socket  $a^4$  and the breech closing head  $l$  is obviated, and the barrel can be projected forward into its firing position by a weak spring, thereby rendering possible the use of powder charges having a small recoil action and of light projectiles.

35 As soon as the pins  $e^3$  of the breech-bolt have entered the perpendicular or circular groove  $l^4$  of the closing head  $l$ , the latter is held back and is rotated, still without jamming, only to such an extent that two of the wings  $l^2$  leaving the rear mouth or socket  $a^4$  of the barrel, rest on the sliding bars  $a^3$  which are extensions of the socket  $a^4$  or its lugs  $a^1$  and are guided as already described by means of a dovetail shaped groove of the breech-plate  $r$ . The two opposite wings that lie on the first mentioned bars  $a^3$  therefore prevent further rotation of the breech-closing head  $l$ , which consequently, also in this position that is to say unrotated and undisturbed, will be moved forward again with the breech bolt, when, but not until, the latter is liberated by depressing the nib  $g$ . The wings  $l^2$  of the breech-closing head  $l$  when moved forward by the released and returning breech bolt  $e$  pass then in between the locking lugs  $a^1$  of the socket  $a$  and the breech-closing head  $l$ , now rotating, strikes against the rear surface  $a^2$  of the barrel  $a$ . The head  $l$  then remains stationary in a longitudinal direction and is only in consequence of the further forward movement of the breech-bolt and its

50 pin  $l^3$  rotated to such an extent that its wings  $l^2$  again pass in front of the locking lugs  $a^1$  provided in the socket  $a^4$  behind the cartridge chamber of the barrel and again become coupled with the socket  $a^4$  and barrel  $a$ .

The parts thus connected and locked cannot be disconnected by shocks exerted or imparted against the forward surface of the breech-closing head  $l$ , whilst on drawing the barrel from the breech-bolt or *vice versa* the uncoupling takes place quite easily.

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Having now particularly described and ascertained the nature of the said invention and in what manner the same is to be performed I declare that what I claim is:—

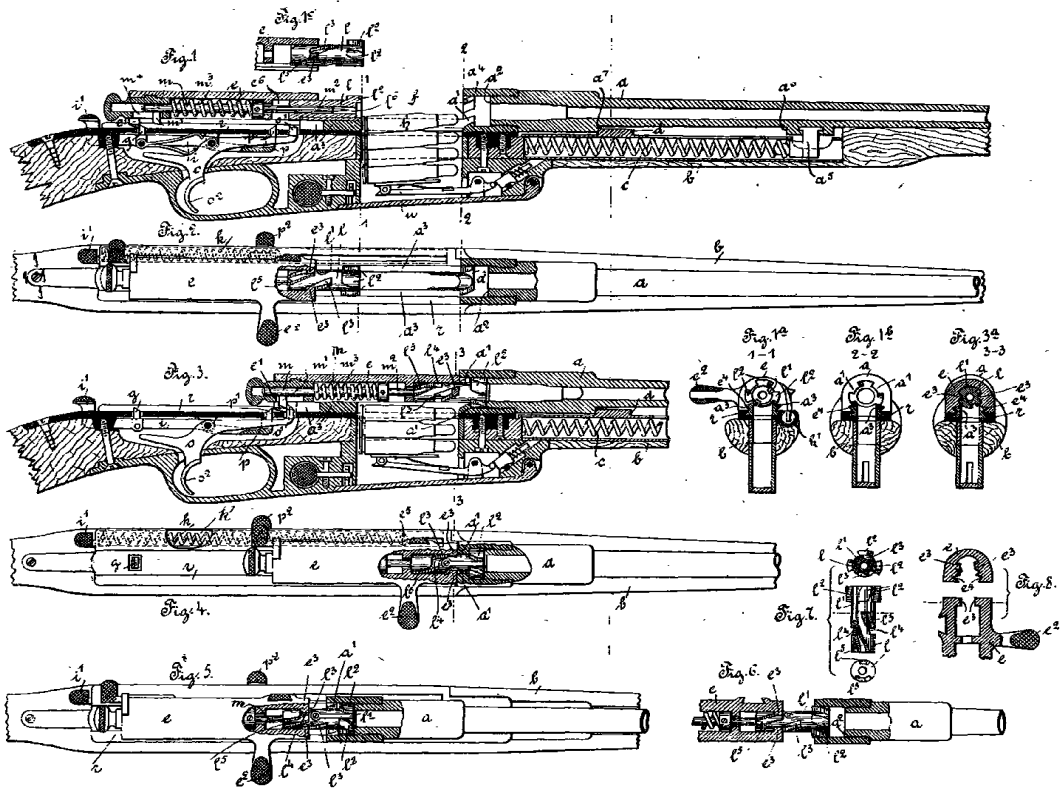
The herein described locking device between the barrel and breech-bolt of a breech-loading small arm of the kind in which the loading-chamber is laid open 5 by the recoil action of the explosion gases, the said locking-device comprising a cylindrical closing head  $l$  provided with locking-wings  $l^2$  and movably arranged in a suitable recess of the breech-bolt  $e$ , and locking-lugs  $a^1$  provided in the rear mouth of the barrel behind the cartridge-chamber, the lateral faces of the said wings and lugs having a helical or screw like outline with an equal but opposite 10 pitch to that of groove  $l^3$  in the breech closing head  $l$ , with which grooves  $l^3$  engage pins or shoulders  $e^3$  on the breech-bolt and with which groove  $l^3$  connects a groove  $l^4$  extending at a right angle to the axis of the said breech closing head  $l$ , the arrangement being such that the breech closing head during the uncoupling of the barrel effected by its returning to the firing-position receives by the retained 15 breech-bolt a rotation corresponding to the pitch of the said wings and lugs, so that all possibility of jamming between the disengaging wings and lugs, which would render difficult the forward movement of the barrel, is effectually obviated, substantially as and for the purpose specified.

Dated this 21st September 1896.

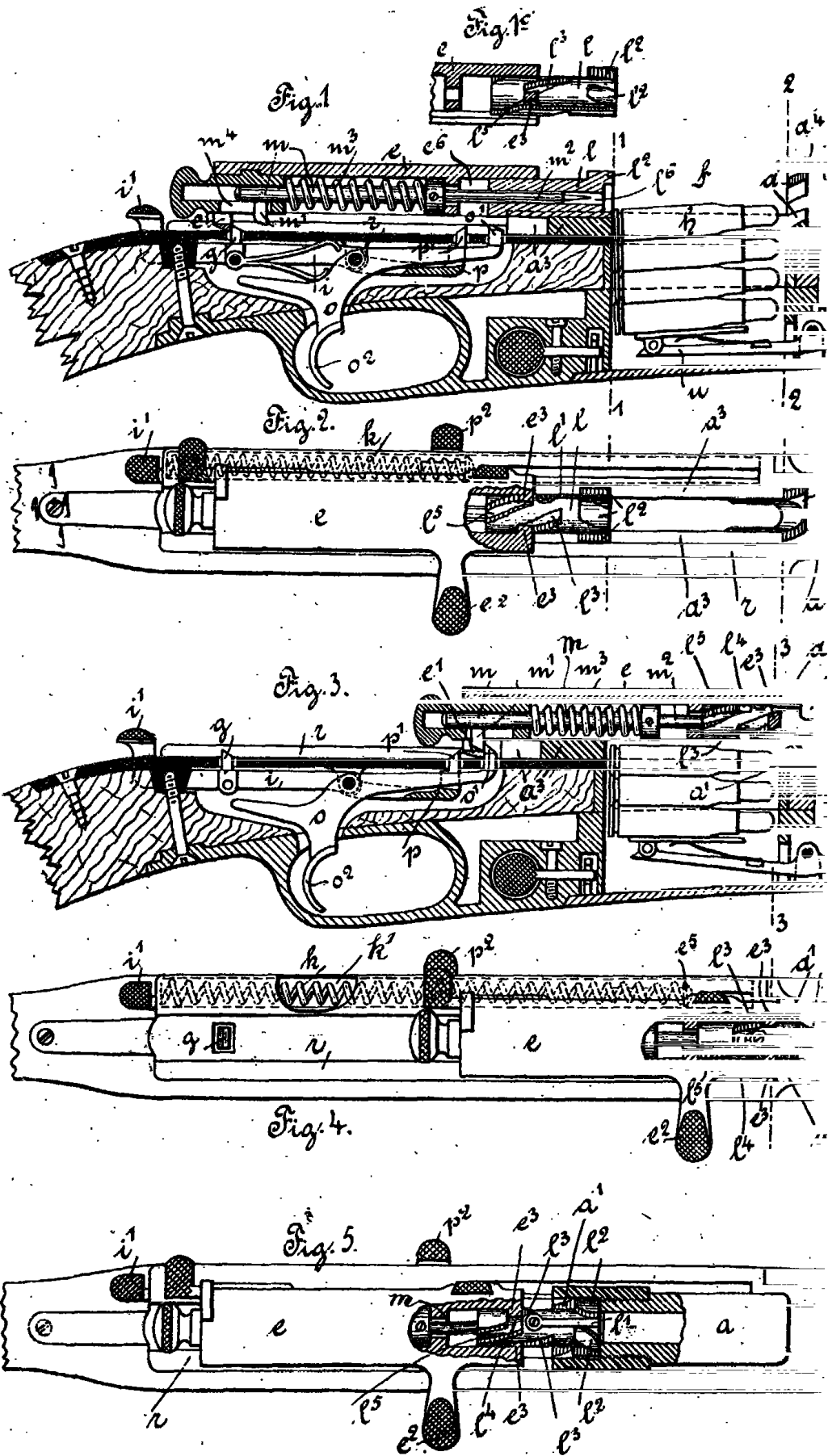
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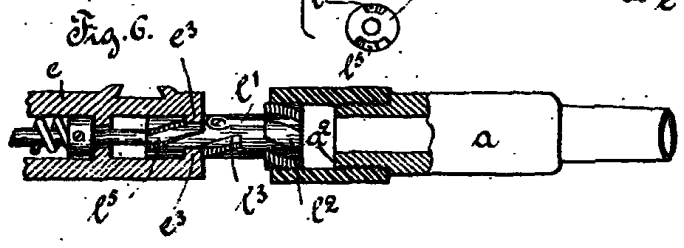
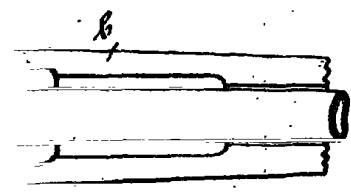
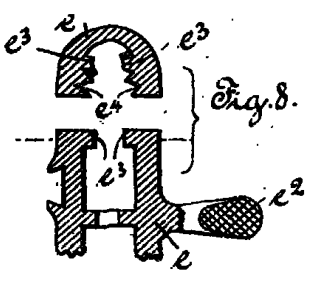
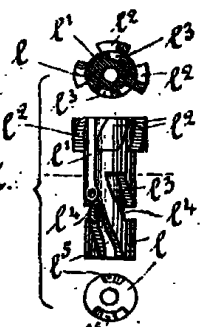
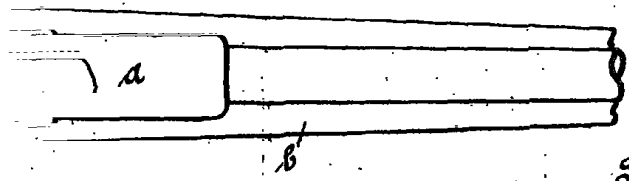
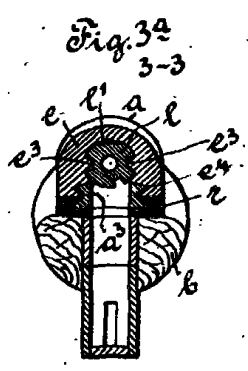
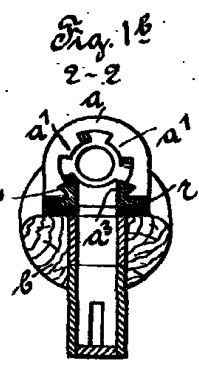
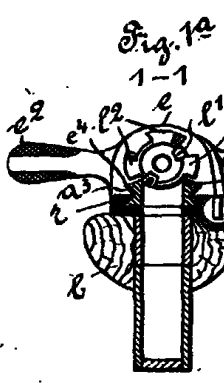
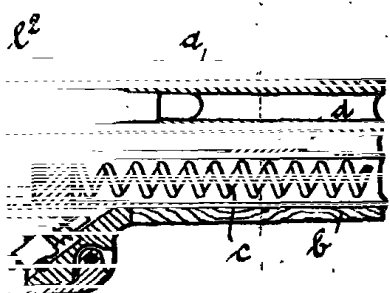
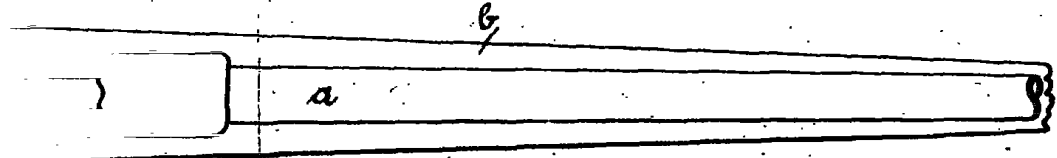
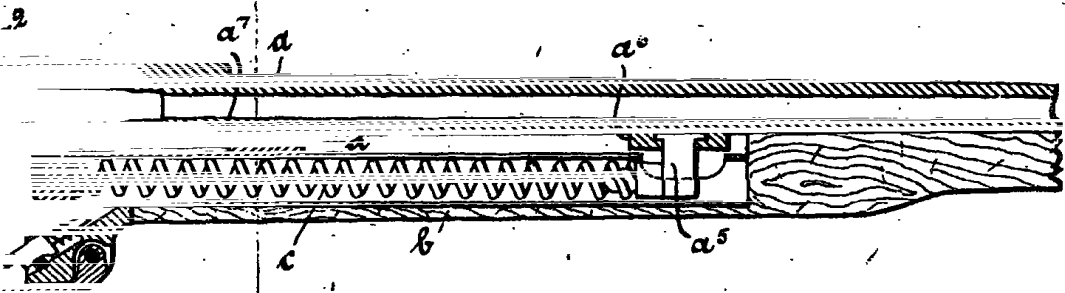
F. WISE HOWORTH,  
46, Lincoln's Inn Fields, London, W.C., Agent for the Applicant.





[This Drawing is a reproduction of the Original on a reduced scale.]





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