

No. 702,240.

Patented June 10, 1902.

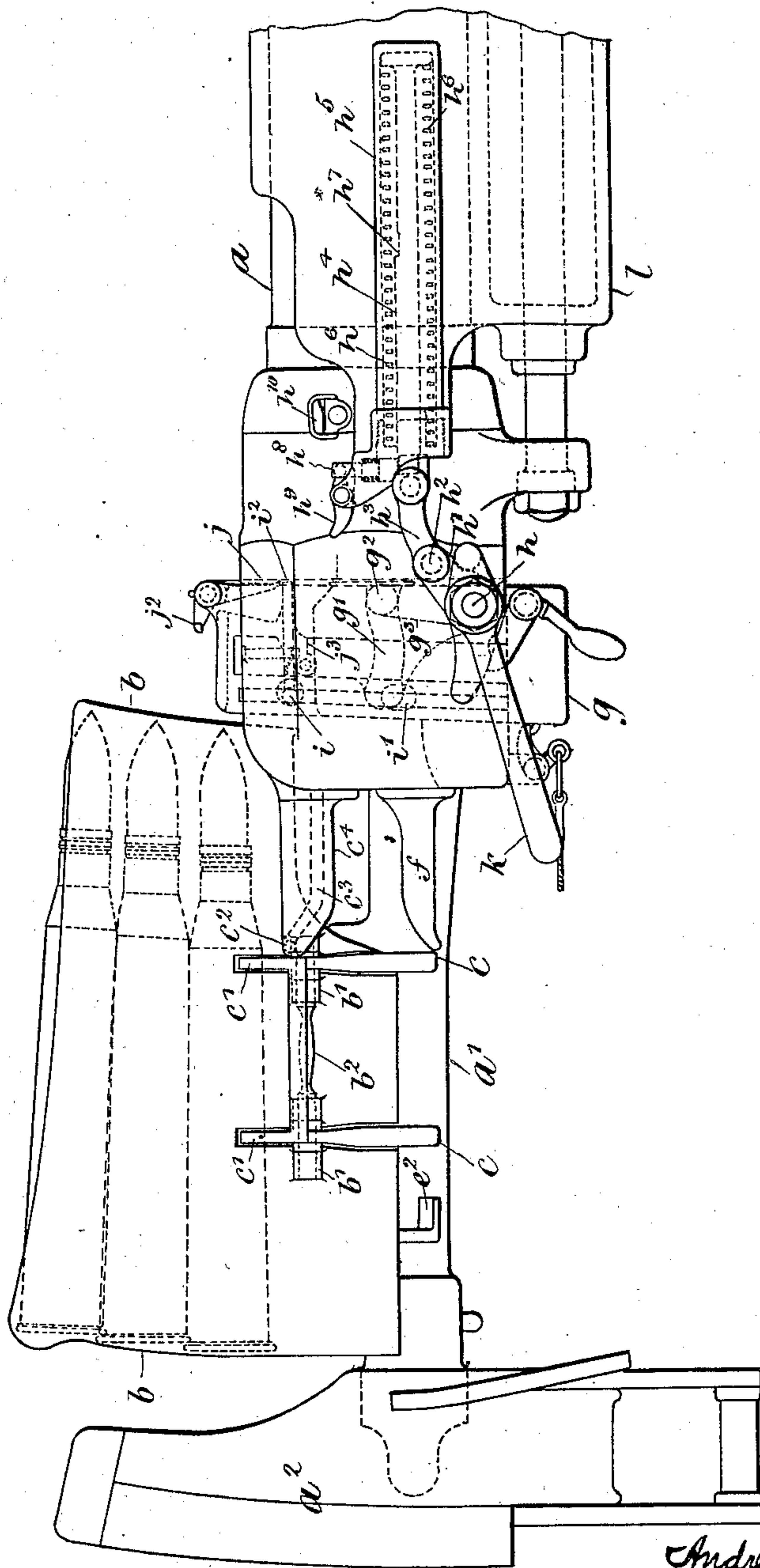
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AUTOMATIC GUN.

(Application filed Jan. 31, 1902.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1.



Witnesses.

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# UNITED STATES PATENT OFFICE.

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## AUTOMATIC GUN.

SPECIFICATION forming part of Letters Patent No. 702,240, dated June 10, 1902.

Application filed January 31, 1902. Serial No. 92,035. (No model.)

*To all whom it may concern:*

Be it known that I, ANDREW NOBLE, K. C. B., F. R. S., a subject of the King of Great Britain, residing at Elswick Works, Newcastle-upon-Tyne, England, have invented a certain new and useful Automatic Gun, of which the following is a specification.

This invention relates to an improved method of feeding cartridges from a hopper above the gun to a position behind the opening in the breech and of injecting the cartridge into its chamber and also to a method of operating the breech.

A number of cartridges are carried in a fixed hopper supported by the training-arm and having hinged to it two pairs of arms, one pair for lowering a cartridge from the hopper to the axis of the bore of the gun and the other for preventing the remaining cartridges from dropping. The arms are actuated by a projection fast with them running in a suitably-shaped groove in an arm on the breech of the gun. As the cartridge is lowered its rear end is received by a bearer on an arm on the injector, while its front end rests on a bearer attached to the rear face of the gun. The injector, which is carried by the training-arm, is actuated by a spring, but is retained by a catch until released at the proper moment by a sloping face formed on the breech of the gun. The breech-block, which has a vertical sliding wedge action, is actuated by a crank in the usual manner. The crank-shaft is turned by a lever connected by a detachable link to a rod moving in a spring box or cylinder attached to the cradle or mounting. When the gun recoils, it carries with it the rod and compresses the spring, and the rod is held by a shoulder upon it engaging with a spring-catch, so that when the gun is returning to firing position the crank is revolved and the breech opened. At the proper moment an arm on the gun passes over the end of a lever, which withdraws the catch. This frees the rod and brings the force contained in the compressed spring to bear on the crank to raise the breech-block and close the breech. A retaining-bolt, however, which drops into a recess in the gun when the block moves down, prevents the block from rising

until it is withdrawn by a lever pivoted in the breech-block and so arranged that when a cartridge is injected into the chamber of the gun the rim of the case presses against one end of the lever, thus freeing the breech-block, which immediately rises and closes the breech.

Figures 1 and 2 of the drawings are right and left side elevations of the rear of a gun with its training-arm and hopper. Figs. 3 and 4 are sections on the lines 3-3 and 4-4, Fig. 2. Figs. 5 and 6 show the injector and extractor, and Fig. 7 is a local section of part of the breech-block.

$a$  is the gun;  $a'$ , the training-arm with shoulder-piece  $a^2$  and having formed on it pins  $a^3$  to receive sockets  $a^4$  on the arms  $a^5$ , carrying the hopper  $b$ . Turning in bearings  $b'$  on the hopper is a spindle  $b^2$ , fast with which are two pairs of arms  $c$  and  $c'$  and also an arm carrying a bowl  $c^2$ , working in a groove  $c^3$  in an arm  $c^4$  on the gun. The training-arm and shoulder-piece fixed to it by an interrupted screw-thread are bored out to receive a spring  $d$ , the forward end of which enters a recess  $e'$  in the injector  $e$ , whose form is clearly shown in Fig. 5 and which is situated partly inside and partly outside the training-arm. The part outside consists of an arm  $e^2$ , adapted to receive the base of a cartridge and to inject it into the gun, and a leg  $e^3$ , abutting against the breech of the gun, while inside the training-arm is a leg  $e^4$ .

$d'$  is a spring-catch in the training-arm, which as soon as the leg  $e^4$  has passed it on the recoil of the gun moves forward in front of the leg  $e^4$ , so that its point enters a groove  $d^2$  on the gun, and the injector is thus retained in its rearward position until as the gun moves out again the catch is pushed back by the incline  $d^3$  at the rear of the groove  $d^2$ , when the injector is shot forward by the spring  $d$ , the leg  $e^4$  passing through a recess in the catch.

$f$  is a shoe on the breech of the gun to receive the nose of the projectile of a cartridge.

$g$  is the breech-block, having in it a cam-groove  $g'$ , in which moves a bowl  $g^2$  on a crank-arm  $g^3$  on the shaft  $h$ , carried by the gun, and having fast with it an arm  $h'$ , connected by



a pin  $h^2$  to a link  $h^3$ , whose farther end is connected to a rod  $h^4$ , moving in a cylinder  $h^5$  on the cradle or mounting and compressing a spring  $h^6$  in the cylinder. On the rod is a shoulder  $h^7$ , engaging with a spring-catch  $h^8$ , carried by a lever  $h^9$ , pivoted to the carriage and rocked by an arm  $h^{10}$  on the gun. On the breech-block is a spring retaining-bolt  $i$ , which engages with a recess  $i'$  in the gun as the block drops and holds the block down until the rim of an injected cartridge strikes the end of the lever  $i^2$ .

The cartridge-extractor  $j$  is pivoted to the top of the block  $g$  and is provided with a spring  $j'$  to insure its returning to its proper place. As the block descends arms  $j^2$ , fast with the extractor, come in contact with trippers  $j^3$ , pivoted to the gun, which turn the extractor to throw out the cartridge-case. The trippers  $j^3$  are fitted with springs, so that they can turn up out of the way as the block rises.

$k$  is a hand-lever on the shaft  $h$ , by which the breech-block can be operated, if desired, after removal of the pin  $h^2$ , and  $l$  a control-cylinder for controlling the recoil and running out the gun, as is usual.

The action is as follows: As the gun recoils, first, the injector is pushed back, (owing to the breech pressing against the leg  $e^3$ ;) compressing its spring  $d$  until the retaining-catch  $d'$  slips in front of the end of the leg  $e^4$ ; second, the spindle  $b^2$  is turned by the action of the groove  $c^3$ , so as to turn the arms  $c$  and  $c'$  to the position shown in dots in Fig. 4, with the result that the cartridges in the hopper descend a short distance; third, the spring  $h^6$  is compressed, and the catch  $h^8$  engages with the shoulder  $h^7$ . As the gun runs out, first, the breech-block descends, owing to the turning of the shaft  $h$ ; second, the extractor is operated and throws out the empty case; third, the bolt  $i$  enters the recess  $i'$  to hold the breech-block down; fourth, the arm  $h^{10}$ , acting on the lever  $h^9$ , raises the catch  $h^8$ , and the rod  $h^4$  moves forward enough to clear the catch, when it again drops, but is prevented from further movement by the bolt  $i$  reaching the top of the recess  $i'$ ; fifth, the spindle  $b^2$  is turned so that the arms  $c'$  enter the hopper above the bottom cartridge to hold up those above while the arms  $c$  lower it to the line of the bore; sixth, the incline  $d^3$  releases the catch  $d'$ , and the spring  $d$  throws forward the injector, which injects the cartridge into the gun; seventh, the rim of the cartridge strikes the lever  $i^2$ , which withdraws the bolt  $i$  and allows the spring  $h^6$  to turn the shaft  $h$  and raise the breech, when the action is complete.

What I claim is--

1. In an automatic gun the combination of a cartridge-hopper, a spindle at the lower part thereof, a lowering-arm and a retaining-arm both fast on the spindle and means for giving a partial rotation to the spindle first in one direction and then in the other.

2. The combination of a gun-mounting a gun sliding therein, a cartridge-hopper carried by the mounting, a spindle at the lower part of the hopper, a lowering-arm and a retaining-arm both on the spindle, means for giving a partial rotation to the spindle first in one direction and then in the other, and means carried by the mounting for injecting a cartridge into the gun.

3. The combination of a gun-mounting, a gun sliding therein, means for running out the gun after recoil, a transversely-sliding breech-block in the gun, a cartridge-hopper carried by the mounting, a spindle at the lower part of the hopper, a lowering-arm and a retaining-arm both on the spindle, means for giving a partial rotation to the spindle as the gun recoils to allow a cartridge in the hopper to drop onto the lowering-arm means for opening the breech and ejecting the empty cartridge-case while the gun runs out, means for subsequently turning the spindle back again to bring the cartridge on the lowering-arm in line with the bore of the gun and means for injecting this cartridge into the gun.

4. The combination of a gun-mounting, a gun sliding therein, a cartridge-hopper carried by the mounting, a spindle at the lower part of the hopper, a lowering-arm and a retaining-arm both on the spindle, a groove on the gun and an arm on the spindle engaging the groove.

5. The combination of a gun-mounting, a gun sliding therein, means for running out the gun after recoil, a transversely-sliding breech-block in the gun, a cartridge-hopper carried by the mounting, a spindle at the lower part of the hopper, a lowering-arm and a retaining-arm both on the spindle, means for giving a partial rotation to the spindle first in one direction then in the other, a transverse shaft on the gun, an arm on the shaft, a spring carried by the mounting, a rod compressing the spring during recoil, a link connecting the rod with the arm on the shaft, a catch retaining the rod in its rearward position, a crank on the shaft operating the breech-block and an arm on the gun releasing the catch to free the arm and allow the spring to close the breech.

6. The combination of a gun-mounting, a gun sliding therein, means for running out the gun after recoil, a transversely-sliding breech-block in the gun, a bolt on the block engaging a recess in the breech for holding the block down, a lever engaging the bolt and adapted to be operated by an injected cartridge, a cartridge-hopper carried by the mounting, a spindle at the lower part of the hopper, a lowering-arm and a retaining-arm both on the spindle, means for giving a partial rotation to the spindle first in one direction and then in the other, a transverse shaft on the gun, an arm on the shaft, a spring carried by the mounting, a rod compressing the spring during recoil, a link connecting the



rod with the arm on the shaft, a catch retain-  
ing the rod in its rearward position, a crank  
on the shaft operating the breech-block and  
an arm on the gun releasing the catch to free  
5 the arm and allow the spring to close the  
breech.

7. The combination of a gun-mounting, a  
gun sliding therein, means for running out  
10 the gun after recoil, a transversely-sliding  
breech-block in the gun, a cartridge-hopper  
carried by the mounting, a spindle at the  
lower part of the hopper, a lowering-arm and  
a retaining-arm both on the spindle, means  
15 for giving a partial rotation to the spindle  
first in one direction and then in the other, a  
transverse shaft on the gun, an arm on the  
shaft, a spring carried by the mounting, a rod  
compressing the spring during recoil, a link  
20 connected to the arm on the shaft, a remov-  
able pin connecting the rod and link, a catch  
retaining the rod in its rearward position, a  
crank on the shaft operating the breech-block  
and an arm on the gun releasing the catch to  
25 free the arm and allow the spring to close the  
breech.

8. The combination of a gun-mounting, a  
gun sliding therein, a cartridge-hopper car-  
ried by the mounting, a spindle at the lower  
part of the hopper, a lowering-arm and a re-  
30 taining-arm both on the spindle, a groove on  
the gun, an arm on the spindle engaging the  
groove, means for running out the gun after  
recoil, a transversely-sliding breech-block in  
the gun, a transverse shaft on the gun, an

arm on the shaft, a spring carried by the 35  
mounting, a rod compressing the spring dur-  
ing recoil, a link connecting the rod with the  
arm on the shaft, a catch retaining the rod in  
its rearward position, a crank on the shaft  
operating the breech-block and an arm on the 40  
gun releasing the catch to free the arm and  
allow the spring to close the breech.

9. The combination of a gun-mounting, a  
gun sliding therein, a cartridge-hopper car-  
ried by the mounting, a spindle at the lower 45  
part of the hopper, a lowering-arm and a re-  
taining-arm both on the spindle, a groove in  
the gun, an arm on the spindle engaging the  
groove, means for running out the gun after  
recoil, a transversely-sliding breech-block in 50  
the gun, a bolt on the block engaging a recess  
in the breech for holding the block down, a  
lever engaging the bolt and adapted to be op-  
erated by an injected cartridge, a transverse  
shaft on the gun, an arm on the shaft, a spring 55  
carried by the mounting, a rod compressing  
the spring during recoil, a link connecting  
the rod with the arm on the shaft, a catch re-  
taining the rod in its rearward position, a  
crank on the shaft operating the breech-block 60  
and an arm on the gun releasing the catch to  
free the arm and allow the spring to close the  
breech.

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Witnesses:

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