

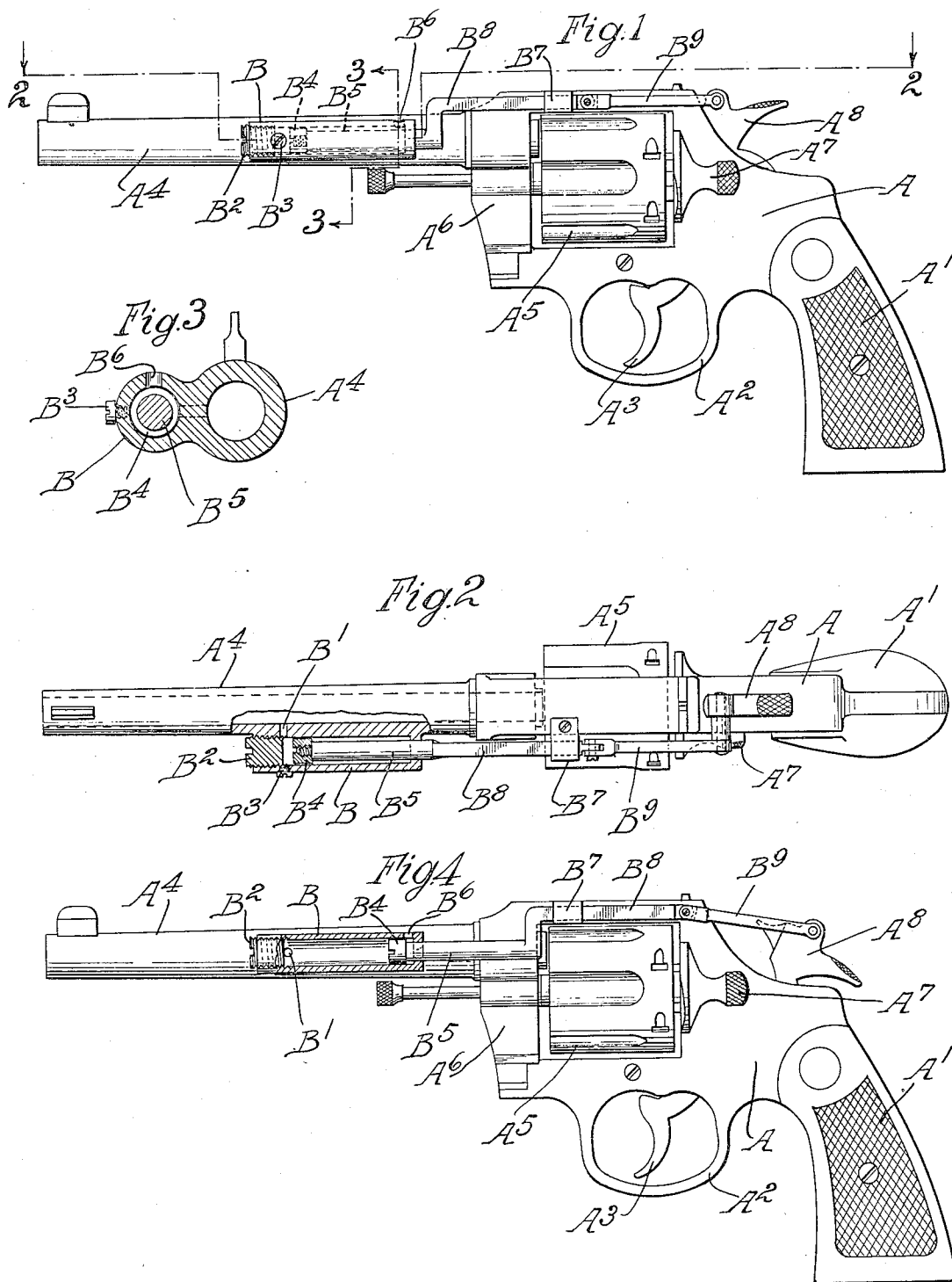
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AUTOMATIC FIREARM

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UNITED STATES PATENT OFFICE

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AUTOMATIC FIREARM

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My invention relates to improvements in automatic fire arms and has for one object to provide an automatically operated revolver. Another object is to provide an automatically operated fire arm which may be cocked and operated entirely with one hand. Another object is to provide an automatic weapon which may be cocked or started in operation by one hand manipulation. Other objects will appear from time to time in the specification and claims.

My invention is illustrated more or less diagrammatically in the accompanying drawings, wherein—

Figure 1 is a side elevation;

Figure 2 is a plan view in part section along the line 2—2 of Figure 1;

Figure 3 is a section along the line 3—3 of Figure 1;

Figure 4 is a side elevation in part section.

Like parts are indicated by like characters throughout the specification and drawings.

A is the frame having the usual handle A^1 , trigger guard A^2 , trigger A^3 and fixed barrel A^4 . A^5 is the cylinder mounted on the crane A^6 so that it may be swung out for loading in the usual manner. A^7 is the cylinder lock, A^8 the hammer which fires the cartridge. The mechanism connecting the hammer and the trigger and the mechanism whereby cocking of the hammer rotates the cylinder to bring a new cartridge in line with the barrel and to hold the cylinder in firing position is of the conventional well-known type and not here illustrated.

B is a working cylinder either integral with or rigidly mounted on the barrel A^4 . B^1 is a gas port in the wall of the barrel communicating with the interior of the cylinder. B^2 is a closure plug for the front end of the cylinder. It is threaded in the cylinder and adjustable to limit the effective opening of the gas port B^1 to control the operation of the arm. B^3 is a relief plug in the wall of the cylinder B placed in line with the port B^1 for convenience of manufacture which plug will serve as a pressure relief in the event of unexpected extreme pressures which would otherwise break the mechanism. B^4 is a drive piston mounted for reciprocation

in the cylinder B and carrying a piston rod B^5 . B^6 is a relief vent behind the piston to permit escape of gas which may pass around the piston and permit an escape of entrapped air from the cylinder as the piston travels toward the rear. B^7 is a cross head guide and B^8 is a cross head on the end of the piston rod B^5 . This cross head guide is mounted on the frame of the revolver. It will be noted that the cross head takes the form of an L-shaped structure, this being necessary to permit the cross head guide to be located on the upper strap of the frame and provide clearance so that the cylinder may be swung out. B^9 is a connecting rod pivoted at one end on the cross head and at the other end on the hammer.

The use and operation are as follows:

The mechanism which responsive to the cocking or drawing back of the hammer causes rotation of the cylinder is of the well-known single action type, that is,—a type wherein the trigger has no function except to release the hammer from cock and permit it to fall to strike the cartridge. Holding the trigger then does not prevent operation of the device as would be the case with the well-known double action type of mechanism. When the hammer is cocked and the trigger is pulled the main spring not shown drives the hammer forward and fires the cartridge in the cylinder. As the bullet passes out from the cylinder through the barrel it is followed by burnt powder gases. As soon as the bullet passes the gas port and during the travel of the bullet from the gas port to the muzzle some of the gas under pressure in the barrel passes out through the gas port into the actuating cylinder exerting a pressure on the piston to drive it back, the backward movement of the piston cocks the hammer and simultaneously rotates the cylinder to bring a new cartridge into register with the barrel. As soon as the bullet leaves the muzzle the pressure in the barrel drops and the pressure in the cylinder also drops.

The effect of the gases on the piston is in the nature of an explosive effect and therefore it is possible to have a sufficient clearance between the piston and the cylinder so that

the changes in temperature will not cause binding of the piston and the cylinder. Upon firing as the hammer falls the air entrapped in front of the piston head passes out through the gas port, there being also some leakage around the piston, the hammer and piston head being low enough so that whatever air is entrapped in the cylinder will not have a deleterious effect upon the firing action.

The adjustable screw plug makes it possible to control the effective opening of the gas port and thereby limit the power applied by the burnt gases so as to prevent the development of dangerous backward velocities on the part of the piston. It will be noted that the piston rod is almost as large in diameter as the piston so that when the piston head is unscrewed from the piston rod after the gas port control plug has been withdrawn the piston may be drawn out toward the muzzle, the piston rod withdrawn toward the breach and the actuating cylinder can be cleaned throughout its length by the use of a cleaning rod and patch, in the same way that the barrel and cylinder are cleaned. The gas port can be cleaned by withdrawing the relief plug so that a cleaning tool can be passed in across the working cylinder for cleaning.

In the event that the hammer falls and the piece fails to fire the operator merely cocks the hammer with his thumb in the usual manner so that it is not necessary to use two hands as in the case of the conventional type of automatic pistol to put the piece back into operation.

In order that when the single action trigger is pulled back, the piece may not fire automatically as a machine gun, a disconnecter of the conventional type is interposed between the hammer and the trigger so that the trigger must be released each time before another shot is fired. The mechanical details of this disconnecter form no part of my invention and are therefore not illustrated.

I claim:

1. The combination with a revolver having a fixed barrel and a hammer, the cocking of which rotates the cylinder, of means operative upon the firing of a cartridge in the cylinder, to cock the hammer, said means comprising an actuating cylinder, a piston mounted for reciprocation therein, a piston rod, a pivoted link interposed between it and the hammer and a gas port adapted to conduct gas from the barrel into the actuating cylinder.

2. The combination with a revolver having a fixed barrel and a hammer, the cocking of which rotates the cylinder, of means operative upon the firing of a cartridge in the cylinder, to cock the hammer, said means comprising an actuating cylinder, a piston mounted for reciprocation therein, a piston rod, a cross head rigidly connected thereto, a cross

head guide for the cross head on the revolver frame and a pivot link interposed between the cross head and the hammer and a gas port adapted to conduct gas from the barrel into the actuating cylinder.

3. The combination with a revolver having a fixed barrel and a hammer, the cocking of which rotates the cylinder, of means operative upon the firing of a cartridge in the cylinder, to cock the hammer, said means comprising an actuating cylinder, a piston mounted for reciprocation therein, a piston rod, a cross head rigidly connected thereto, a cross head guide for the cross head on the revolver frame and a pivot link interposed between the cross head and the hammer and a gas port adapted to conduct gas from the barrel into the actuating cylinder, the cross head and cross head guide being located above the gas operating cylinder to permit the revolver cylinder to swing out beneath them.

4. The combination with a revolver having a fixed barrel and a hammer, the cocking of which rotates the cylinder, of means operative upon the firing of a cartridge in the cylinder, to cock the hammer, said means comprising an actuating cylinder, a piston mounted for reciprocation therein, a piston rod, a cross head rigidly connected thereto, a cross head guide for the cross head on the revolver frame and a pivot link interposed between the cross head and the hammer, the cross head comprising an L-shaped member, the short arm of the L terminating in line with and connected to the piston rod, the long arm of the L and the cross head guide being located on the frame above the revolver cylinder.

5. An automatic fire arm comprising a frame, a barrel fixed therein, a cylinder having a plurality of chambers adapted to contain a cartridge and mounted for rotation in the frame so that successive chambers may be presented in line with the barrel, a hammer adapted when cocked to rotate the cylinder, a trigger adapted to release the hammer to permit it to fall and fire a cartridge, the cocking of the hammer and rotation of the cylinder being independent of the trigger, an actuating cylinder associated with the barrel and removed from the rotating cylinder, a plunger mounted for reciprocation in the actuating cylinder, a connection outside of the revolver frame and removed from the rotating cylinder interposed between the plunger and the hammer whereby movement of the plunger moves the hammer into the cocked position.

6. An automatic firearm comprising a frame, a barrel fixed therein, a cylinder having a plurality of chambers adapted to contain a cartridge and mounted for rotation in the frame so that successive chambers may be presented in line with the barrel, a hammer adapted when cocked to rotate the cylinder,

a trigger adapted to release the hammer to permit it to fall and fire a cartridge, the cocking of the hammer and rotation of the cylinder being independent of the trigger, an actuating cylinder associated with the barrel and removed from the rotating cylinder, a plunger mounted for reciprocation in the actuating cylinder, a connection outside of the revolver frame and removed from the rotating cylinder interposed between the plunger and the hammer whereby movement of the plunger moves the hammer into the cocked position, said connection comprising a crosshead guide mounted on the frame, a crosshead slidable in the guide connected at one end to the plunger and a pivot link connection between the other end of the crosshead and the hammer.

Signed at Chicago county of Cook and State of Illinois, this 22nd day of June 1928.
JACOB M. DICKINSON, Jr.

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