G. TOBORG.

AUTOMATIC FIREARM.

APPLICATION FILED JULY 11, 1912.

1,047,337.

Patented Dec. 17, 1912.

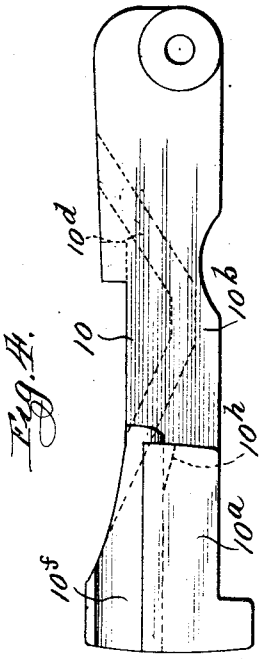

Fig. 4.

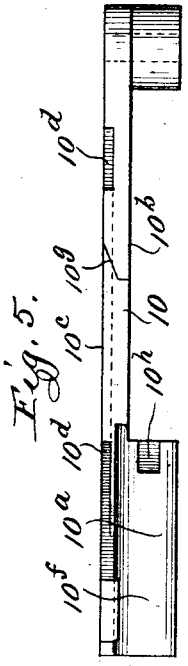

Fig. 5.

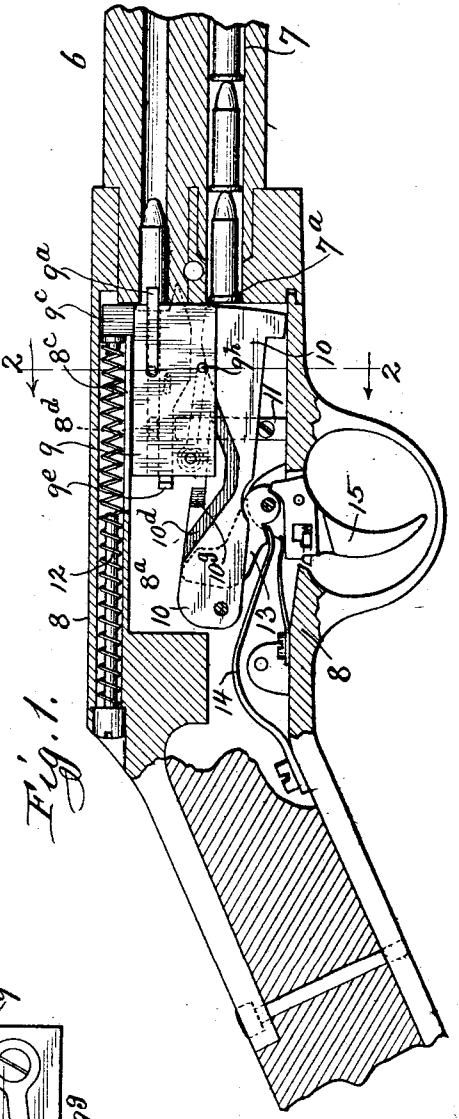

Fig. 1.

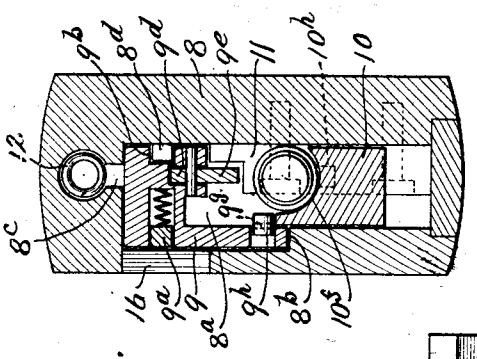

Fig. 2.

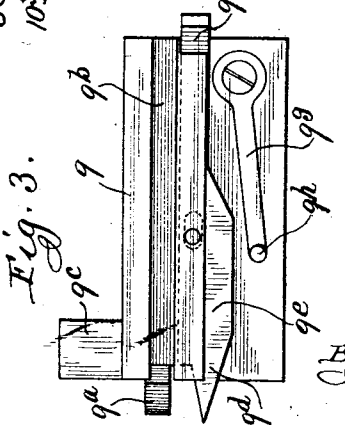

Fig. 3.

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UNITED STATES PATENT OFFICE.

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AUTOMATIC FIREARM.

1,047,337. Specification of Letters Patent. Patented Dec. 17, 1912.

Application filed July 11, 1912. Serial No. 708,807.

To all whom it may concern:

Be it known that I, GEORGE TOBORG, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Automatic Firearms, of which the following is a specification.

My invention relates to that class of firearms in which a cartridge magazine is arranged in front of the breech and under the barrel and the chief object of my improvements is the betterment of the construction shown in my United States Letters Patent, #1,008,498 issued Nov. 14, 1911.

Other objects will appear from the description of the parts and their mode of operation as presently given.

I attain the objects best by the mechanism illustrated in the accompanying drawings in which—

Figure 1 is a longitudinal section through the chambered stock-frame and an adjacent portion of the barrel and magazine, and shows the reciprocating breech-block and cartridge lifter with other parts in elevation as arranged in the chamber of the stock-frame looking toward the left hand side of the gun; Fig. 2 a cross section taken at the line 2—2 of Fig. 1 the view being enlarged; Fig. 3 an enlarged detail showing the breech-block detached, and the view being of the left hand side; Fig. 4, a detail showing a left hand side view of the cartridge-lifter detached; and Fig. 5, a detail showing a top view of the cartridge-lifter.

Similar numerals refer to similar parts throughout the several views.

6 is the barrel; 7, the cartridge magazine; 8, the chambered stock-frame; 9, the reciprocating breech-block; and 10, the cartridge-lifter.

The breech-block in cross section has the shape of an inverted L the top part of which fills the width of the chamber 8^a at the roof and slides thereagainst, being stopped against the ends of the chamber. The vertical part of the inverted L depends in the chamber at the side and slides on or against the adjacent side of the cartridge-lifter, resting on a ledge 8^b of the chamber wall. On the right hand side and near the end of the breech-block pointing toward the gun's muzzle, is mounted the usual spring-pressed shell extractor 9^a (Fig. 3) and on the opposite side of said breech-block, at the same level with the extractor, is a groove 9^b throughout its length. On the top of said block and at the front end of it there is formed a stout arm or extension 9^c which works in a channel or slot 8^c formed in the roof of chamber 8^a, said extension meeting the end of said channel simultaneously with the said block's striking the rear wall or end of chamber 8^a.

The under side of the breech-block is provided with a groove in which is mounted a firing pin 9^d which has a portion 9^e that projects out through said groove and carries a tapered front end. A pin or lug 8^d (shown by dotted lines Fig. 1) works in the groove 9^b to knock the shell out of the extractor. Set in a groove on the opposite side of the breech-block is a spring arm 9^g the tip end of which 9^h is a pin set in a hole in that part and projecting out of the groove but is adapted to be depressed in said hole to the level of the surface of the block, for a purpose presently explained.

The cartridge-lifter in length corresponds with the chamber 8^a and is pivoted therein at the rear end. At the front end 10^a, and for some distance back, the lifter corresponds in thickness with the width of the chamber and farther on as at 10^b, toward the pivoted end it is cut away or reduced a little more than half its thickness to near the pivoted end where it again substantially fills the width of the chamber. That side 10^c of the lifter opposite from the thickened ends is a straight plane in which is formed a vertically curved way 10^d adapted to receive the pin 9^h of the arm 9^g of the breech-block, for raising and lowering the front end of the cartridge-lifter by the reciprocation of the breech-block. The lifter is pivoted to the frame at the rear end, leaving the front end 10^a free to rise and fall within the limits of the chamber 8^a, and has a cartridge receptacle 10^f having its open end facing the discharge end 7^a of the cartridge magazine so that when released the adjacent cartridge will pass from the magazine into said receptacle, the rear end or rim of the cartridge, striking a stop 11 projecting up from the floor of the chamber 8^a just after the point of the bullet has passed behind the rear end or vertical line of the gun barrel. The side 10^c of the lifter at 10^g is provided with an inclined surface for a short distance, which serves to raise the pin 9^h into the way 10^d at the pivotal end of the lifter as said pin passes said inclined surface. The top of the

lifter, just behind the cartridge receptacle is provided with an inclined groove 10^h which is traversed by the tapered front end of the portion 9^c of the firing pin in order to raise the rear end or rim of the cartridge to the level of the barrel bore just previous to the point's entering the bore.

The breech-block is under the constant pressure of a spring 12 held in a bore of the stock-frame over the chamber 8^a and communicating therewith through the slot 8^c which allows the arm 9^c to reciprocate in said slot. The hammer 13 is mounted within the chamber 8^a so as to be turned back and set by the recoil of the breech-block. 14 is the main spring, and 15 the trigger. The opening 16 where the spent shell is thrown out is completely covered by the breech-block as it slides against the chamber wall.

In operation the recoil of the firing throws the breech-block back against the rear wall of the chamber 8^a and the spring 12 bearing upon the arm 9^c returns it. In the backward movement the pin 9^h will strike the incline 10^g and be thereby deflected so as to fall into engagement with the way 10^d at the rear end on the rearward movement. From this point said way is inclined downward for a portion of the way so that the return will cause the lifting of the free end of the lifter. Then follows a level portion of said way and then an upgrade adapted to produce the desired depression of the lifter during the remainder of the return or the required portion of it. The stop 11 is arranged on the floor of the frame chamber and stands high enough and broad enough to close the lifter receptacle at the rear so as to preclude the possibility of the cartridge ever passing back too far. The distance of this stop from the rear end of the barrel bore is preferably the same as the length of the cartridge.

The cartridge can be made so as to lie loosely in the lifter receptacle when just put in, and, through the instrumentality of the tapering portion of the firing pin traversing the inclined groove 10^h of the lifter receptacle, can be beveled with the gun bore and held in positive apposition therewith when being entered and pushed in.

The pin 9^h, carried by the breech-block, travels back and forth lengthwise of the frame chamber in a straight line, and the cam way 10^h on the pivoted lifter imparts transverse movements to the lifter. The first part of the return movement produces an upward movement of the free end of the lifter and the remainder of the return movement produces a downward movement of the lifter, which is thereby brought before the open magazine to receive the charge, and the pin 9^h is passed out of connection with said cam way, the recoil movement passing said pin over the cam surface 10^g, effecting the connection of said pin with the way 10^d at the opposite end of said way.

What I claim is:—

1. In an automatic firearm, a barrel, magazine, and chambered frame, in combination with a reciprocating breech-block provided with a spring arm, a pivoted cartridge lifter provided with a way having parts oppositely inclined toward the ends and a level part at about its mid-length, said way being arranged in the path of the spring arm, and means for causing the spring arm to engage with said way at its rear end and to disengage therefrom at its front end.

2. In an automatic firearm, the barrel, magazine and chambered frame, in combination with a reciprocating breech-block provided with a slot for the firing pin and a downward extension from the firing pin having a tapering point, a pivoted cartridge lifter with a cartridge receptacle having an inclined groove 10^h adapted to be traversed by said tapering point at each return of the breech-block for leveling the cartridge with the barrel bore.

3. In an automatic firearm, a barrel, magazine, and chambered frame, in combination with a reciprocating breech-block and pivoted cartridge lifter provided with a cartridge receptacle with its opening facing toward the magazine and a cam way 10^i on the lifter having reverse inclines, a spring arm mounted on the breech-block, and adapted to traverse the cam way through both inclines during the return movement of the breech-block, means for shunting the spring arm into engagement with the rear end of the way and a stop means for checking the movement of the cartridge in the receptacle.

4. In an automatic firearm, a barrel, magazine and chambered frame, in combination with a reciprocating breech-block and a pivoted cartridge lifter, the latter being provided with a vertically curved cam way 10^d having reverse inclines toward its ends, a laterally extended cam 10^g on the lifter, and a spring arm mounted on the breech-block and adapted to traverse the cam way on the return movement of the breech-block.

5. In an automatic fire-arm, a barrel, magazine and chambered frame, in combination with a reciprocating breech-block and a pivoted cartridge lifter, a spring pin mounted on the breech-block and variously inclined cam surfaces formed on the lifter and adapted to produce connection of the spring pin with the lifter at the commencement of the return movement of the breech-block and disconnection during the backward movement of the breech-block.

6. In an automatic firearm, the combination with a longitudinally reciprocating breech-block of a pivoted cartridge lifter, a spring pin mounted on the breech-block, a

cam way formed on the cartridge lifter and presenting reversely arranged inclined planes toward the end of the way, said way being open at the front end, and a cam lug presenting a plane inclined laterally to the way at its rear end, for automatically effecting connection of the breech-block and the cartridge lifter at the rear end of the way and disconnection of the same at the front end of the way.

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Witnesses:
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