E. GUERRERO.

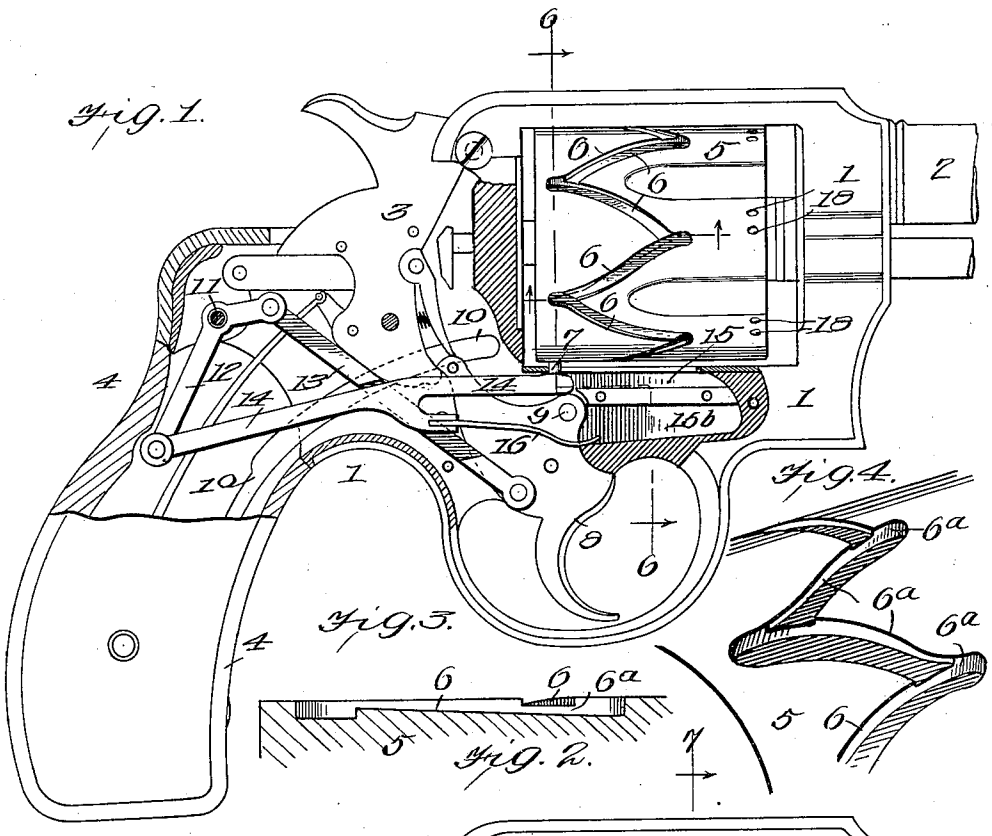
MECHANISM FOR ROTATING AND LOCKING THE CYLINDERS OF REVOLVERS.

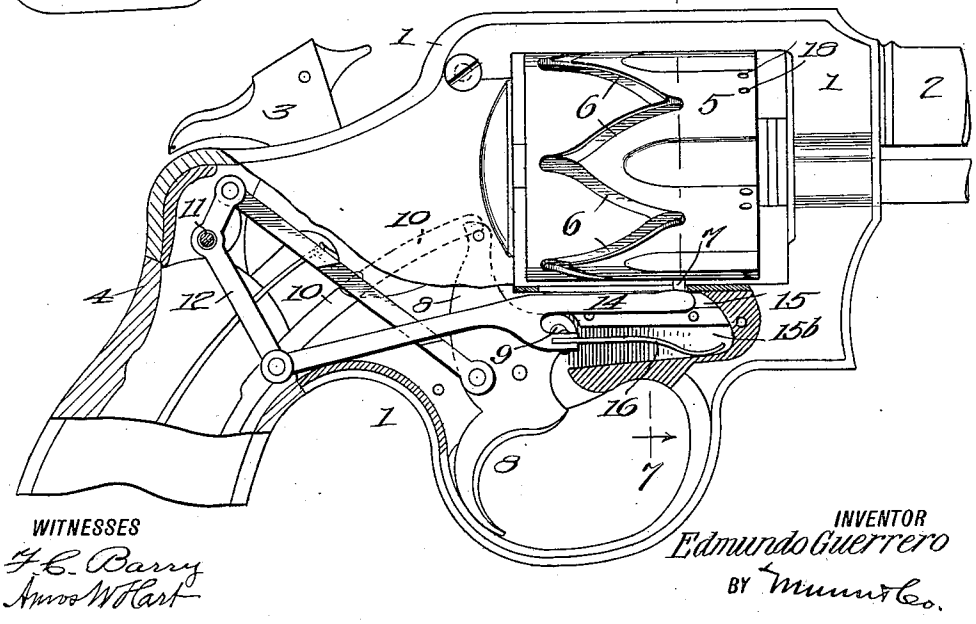
APPLICATION FILED JUNE 5, 1913.

1,077,135.

Patented Oct. 28, 1913.

2 SHEETS—SHEET 1.





WITNESSES

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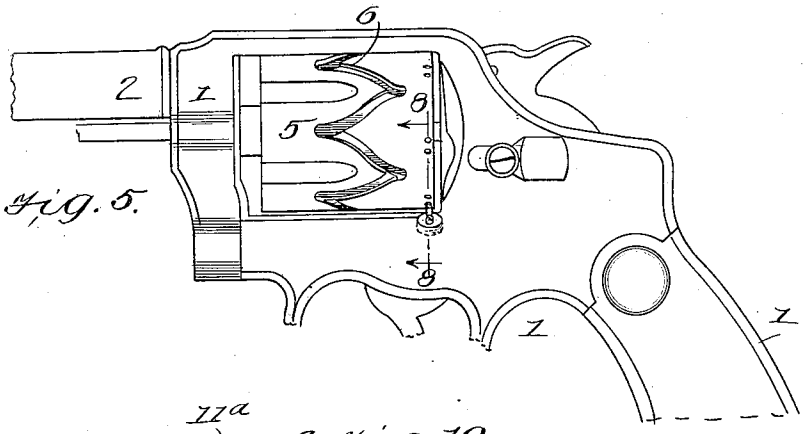


Fig. 5.

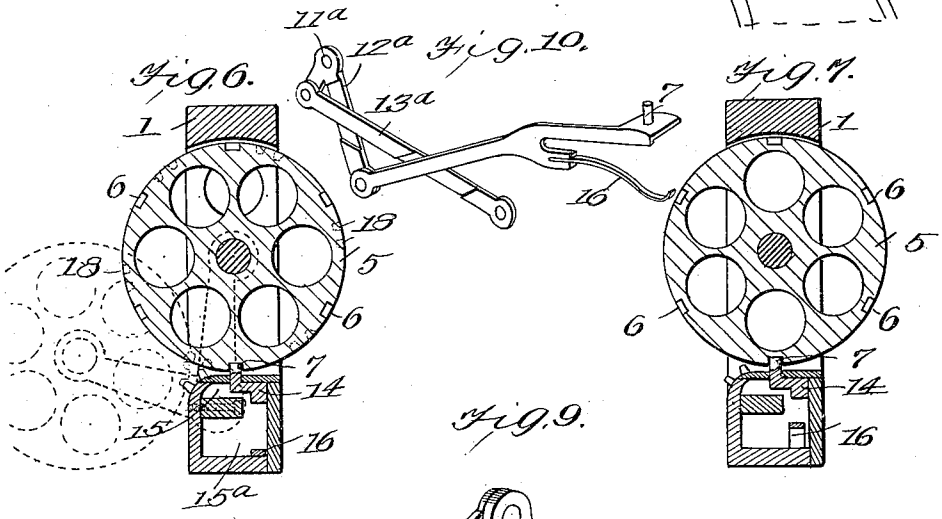


Fig. 6.

Fig. 10.

Fig. 7.

Fig. 9.

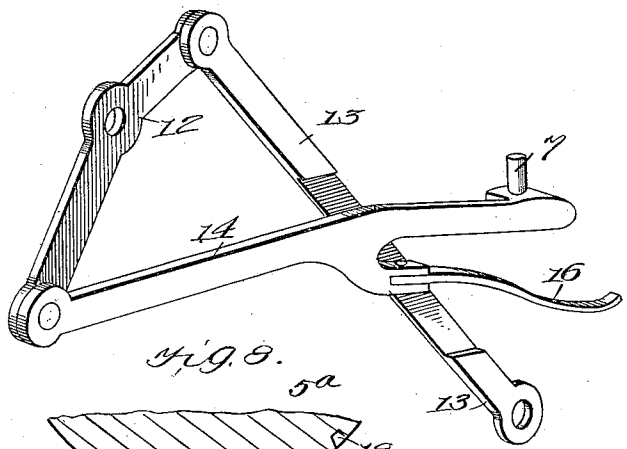
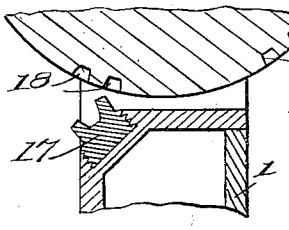


Fig. 8.



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MECHANISM FOR ROTATING AND LOCKING THE CYLINDERS OF REVOLVERS.

1,077,135. Specification of Letters Patent. Patented Oct. 28, 1913.

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To all whom it may concern:

Be it known that I, EDMUNDO GUERRERO, a citizen of the Republic of Guatemala, and a resident of Antigua, Republic of Guatemala, Central America, have invented an Improved Mechanism for Rotating and Locking the Cylinders of Revolvers, of which the following is a specification.

My invention is a simple mechanism connected with, and operated by, the trigger of a revolver, whereby the cylinder is rotated intermittently when the trigger is pulled, and is locked to safety intermediately of its step-wise movements, so that safety from premature or accidental discharge of the weapon is insured. The said mechanism includes as a principal part or feature a reciprocating bar which carries at its free forward end a vertical lug that reciprocates and is guided in a lengthwise groove formed in the frame of the revolver underneath the cylinder, and engages and successively traverses connected grooves arranged zigzag on the periphery of the cylinder. Another important feature is the variation in the depth of the grooves at the vertices of the angles formed by them, whereby a shoulder is produced that insures the proper or progressive traverse of the aforesaid lug from one groove to another, and the consequent rotation of the cylinder.

The invention is hereinafter described with reference to the accompanying drawing, in which—

Figure 1 is in part a side and in part a sectional view of a revolver with my improvement applied, the trigger and cylinder-operating mechanism being shown in the normal or inoperative position. Fig. 2 is a similar view, but with the cylinder rotating and locking mechanism in the position assumed when the trigger is pulled and the cylinder has been turned half of one step. Fig. 3 is a detail sectional view, and Fig. 4 a perspective view particularly illustrating the arrangement and varying depth of the zigzag groove in the cyinder. Fig. 5 is a side view of a solid-frame revolver including a device for engaging and holding the cylinder when swung outward or to one side for ejecting empty cartridge cases. Fig. 6 is a cross section on the line 6—6 of Fig. 1. Fig. 7 is a cross section on the line 7—7 of Fig. 2. Fig. 8 is an enlarged cross section on the line 8—8 of Fig. 5. Fig. 9 is a perspective view of the mechanism operatively connecting the trigger with the cylinder for rotating and locking the latter. Fig. 10 is a perspective view of essentially similar mechanism which is applicable to a revolver having an uneven number of cartridge chambers.

In Figs. 1 and 2, the solid frame 1, barrel 2, hammer 3, combined stock and handle 4, and cylinder 5 present nothing distinctively new save that the cylinder is provided with a continuous peripheral groove 6 which is sinuous or zigzag and receives a lug 7 forming a part of mechanism operatively connecting the trigger 8 with the cylinder, so that when the trigger is pulled, the cylinder is rotated intermittently or stepwise, and when the trigger is released, the cylinder is locked in safety position by means of the aforesaid lug 7. The trigger 8 is pivoted at 9 in the frame 1 and is held normally projected forward, as shown in Fig. 1, by means of a stiff spring 10 which is secured as usual in the hollow handle 4. In the rear portion of said handle, there is pivoted at 11 an obtuse angle lever 12, and the shorter arm of the same is connected by a bar or rod 13 with the body of the trigger 8 at a point below its pivot 9. To the longer arm of the lever 12 is pivoted a bar or rod 14 arranged approximately horizontally, its forward or free end which carries the lug 7 being adapted to slide in a guideway 15 formed in the frame 1 directly below the cylinder. The upper side of this guideway is slotted, as indicated at 15^a, and the lug 7 works therein, the floor or bottom of the guideway 15 serving to support the free end of the bar 14 so that the lug is held constantly engaged with the groove 6 of the cylinder. A curved plate spring 16 is attached to the under side of the slidable cylinder operating bar 14 and projects forward into a recess 15^b which serves as a guideway and lies directly below and parallel to the guideway 15 before described. This spring tends to press the lug 7 constantly upward and into the groove 6 of the cylinder, thus insuring its due engagement with shoulders 6^a formed adjacent to the vertices of the groove, as shown in Figs. 1, 2, 3 and 4.

It is obvious that the rotation of the cylinder 5 depends upon the travel of the lug 7 from one groove section into an adjacent one, the same passing intermediately the vertex of the angle of the two sections. Each section or approximately straight por-

tion of the groove 6 is deeper at one end than the other, the depth of the section gradually increasing from its shallowest end toward the vertex of the angle where it is deepest—see especially Fig. 4. Owing to the difference in the depth of the adjacent or meeting ends of the groove sections, the shoulder 6ª is formed, and over this, the lug 7 rides as it passes from one section into the next one. Having passed the shoulder, the latter prevents the return of the lug and consequently in the next movement of the bar 14, the lug slides along the next section which effects the desired intermittent rotation of the cylinder. When the pull on the trigger is released, its spring 10 restores it to the original normal position shown in Fig. 1, and the cylinder rotates to the position also there shown, the lug 7 being then at the rear vertex of one of the angles of the groove. In such relative position of the parts, the spring 16 attached to the bar 14, as already described, holds the lug 7 pressed deeply into the groove, so that there is no danger that it will override the shoulder 6ª, and consequently, the cylinder 5 is locked in firing position. It is obvious that the described stepwise rotation of the cylinder is due to the two facts that the cylinder is rotatable on its axis and the lug is guided in a direct or straight line beneath the same. It will be understood that the pull on the trigger causes the lug 7 to traverse one of the groove sections in its outward or forward movement and that upon release of the trigger, its spring 10 completes the movement by retracting the bar 14 to the position shown in Fig. 1.

The vertices of the groove 6 are so located at or near one end of the cylinder that they lie over sections of the cylinder which are intermediate of two adjacent cartridge chambers, and contrariwise, the vertices of the groove which are adjacent to the other end of the cylinder are directly over the cartridge chambers. In brief, the arrangement is such that in the normal position of parts indicated in Fig. 1, the firing pin is not in alinement with the cartridge chamber and hence cannot strike the cap and explode the cartridge. When, however, the trigger is pulled to cock the hammer as shown in Fig. 2, the cylinder is rotated half a step and one of the cartridge chambers is brought in alinement with the firing pin, so that the revolver may be fired. The fall of the hammer being impelled by the spring connected with it in the usual way, results instantaneously, and hence even if the trigger 8 be released abruptly, the firing pin will explode the cartride before the next rotative movement of the cylinder can take place. In other words, when the trigger is pulled, the cylinder revolves until the center of a cartridge is directly opposite the firing pin, and when the trigger returns to its original position, the cylinder also moves to the safety position so that the solid section of a cylinder between two cartridge chambers is brought opposite the firing pin and this position it will maintain until the next movement caused by pulling the trigger. Thus the rotation of the cylinder is produced by two operations, one being the pull on the trigger and the second, the reaction of the spring 10 which restores the trigger to its original position. Therefore, each one of the movements of the cylinder will require half the strength which would otherwise be necessary were the two movements produced by a single action or operation. In revolvers having a solid frame, the cylinder is swung outward laterally, as indicated by dotted lines in Fig. 6, and the empty cartridge shells are then ejected manually.

In Figs. 5, 6, 7 and 8, I show a device 17 consisting of a block provided with teeth and screwed into, or otherwise secured in, a portion of the frame adjacent to the breech end of the cylinder and at one side of the same. The cylinder is provided adjacent to its rear end with corresponding sockets 18 to receive the teeth of this device, and when the cylinder is swung out, as indicated by dotted lines in Fig. 6, the teeth of the device 17 enter said sockets and thus hold the cylinder locked in the swung out position, so that when restored to the normal position shown in Fig. 6, the lug 7 will strike into the zigzag groove. In other words, the teeth of the device 17 prevent the cylinder from rotating upon the axis of the ejector when swung out, as shown by dotted lines, and when the cylinder is swung back to normal position, the lug 7 enters the groove.

It will be understood that the invention thus far described is applicable and intended for revolvers whose cylinders are provided with an even number of cartridge chambers, say six or eight. Fig. 10 shows mechanism for connecting the trigger with a cylinder having an uneven number of cartridge chambers. In this case, the only change required is to connect the trigger rod 13ª with the shorter arm of the lever 12ª at a point below its pivot 11ª. It will thus be seen that in the case of a revolver having six or eight, that is to say, an even number of cartridge chambers, the lever 12—see Fig. 9—is of what is technically known as the first class, whereas in the case of a revolver having an uneven number of cartridge chambers, say five or seven, the lever 12ª employed and shown in Fig. 10 is of the third class, these changes being necessary in order to obtain safety.

It will be understood that my invention, while described with reference to a solid-

frame revolver, is equally applicable to one having a jointed frame and an automatic shell ejector.

Revolvers having hammers provided with springs adapted for producing instantaneous recoil or rebound after a stroke on the firing pin are well known, and I of necessity employ a revolver of this type for the purpose of allowing free rotation of the cylinder immediately after firing.

I claim:—

1. In a revolver, the combination with a rotatable cylinder having a zigzag peripheral groove, a spring-actuated trigger, and intermediate mechanism comprising a pivoted lever, a rod connecting it with the trigger and a bar whose forward end is adapted for engagement with the cylinder groove, and means for guiding and supporting said rod in its reciprocations, as described.

2. In a revolver, the combination of a spring-actuated trigger and a cylinder having a zigzag peripheral groove, each of whose sections is deeper at one end than at the other, the connecting section being shallowest at the junction and a shoulder formed at the termination of the shallower portion, mechanism intervening the trigger and cylinder and operatively connecting the same and consisting of a pivoted lever, a rod connecting one of its arms with the trigger and a bar pivoted to the other extremity of the lever, a guideway and a guide slot formed in the frame underneath the cylinder and adapted for receiving the free end of said bar and a projection of the same adapted to work in the cylinder groove, and a spring tending to press upward the free end of the bar for insuring constant engagement of the same with the cylinder groove, as described.

3. In a revolver, the combination of the trigger, a cylinder having a zigzag groove, a frame provided with guideways in the portion beneath the cylinder, of mechanism comprising a pivoted lever, a rod connecting it with the trigger and a cylinder-actuating bar having its forward end provided with a rod working in one of the aforesaid guideways and engaging the cylinder groove, and a spring attached to the said bar and working in the lowest guideway, as and for the purpose specified.

4. In a revolver, the combination with a solid frame and a cylinder adapted to be swung laterally for ejection of empty shells, the cylinder having a series of peripheral sockets spaced at regular intervals, and a device fixed on the frame and adapted to engage such sockets when the cylinder is swung out, as and for the purpose specified.

EDMUNDO GUERRERO.

Witnesses:
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AMOS W. HART.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."