

IMPROVED REPEATING PISTOL.

We have described at various times automatic military arms, like the Maxim gun, automatic rifles to be used from the shoulder, like the Rees magazine rifle, and now comes an automatic pistol, which extracts the cartridge case, inserts a new cartridge and compresses the striker spring, by the force of the recoil. Of course, it cannot be kept in action for an indefinite period, like the Maxim gun, as the supply of cartridges is limited to eight. Up to this number, however, it can be fired as fast as the trigger can be pulled, and that without the disturbing effect that arises in a re-

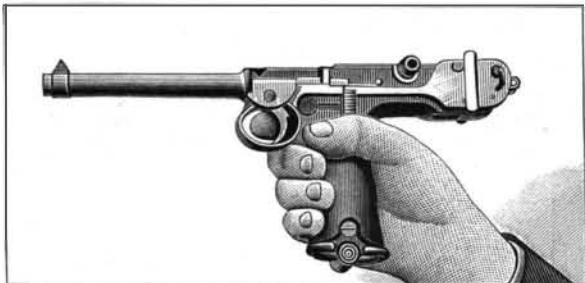


FIG. 1.

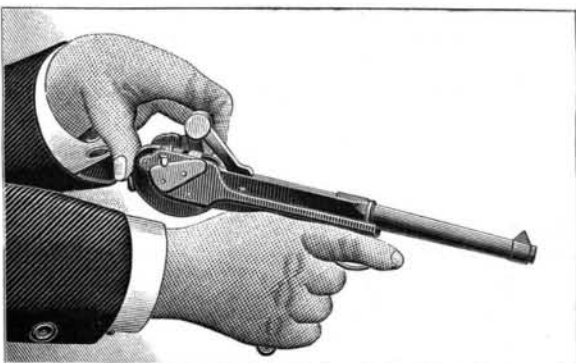


FIG. 2.

THE BORCHARDT REPEATING PISTOL.

volver from the exertion of having to rotate the chambers and compress the spring each time.

The Borchardt repeating pistol is manufactured by Messrs. Ludwig Loewe & Company of Berlin. As shown by the illustrations, it departs considerably from the usual form of such a weapon, the stock being continued backward to provide for the repeating mechanism. The cartridges are contained in the grip, and as they are fired there is no perceptible difference in the balance of the weapon. The barrel (Figs. 1, 2, and 11) is of considerable length, and is capable of sliding in guides in the grip 3 (Figs. 4 and 11), together with the receiver 34 (Fig. 11). The breech block 41 is guided in the receiver by means of two ribs, and is held up firm against the force of the explosion of the charge by means of two links 47 and 49 (Figs. 4, 7, and 11), which at the time of firing are in line. The link 47 is pivoted to the breech block, and the link 49 to the receiver. When a cartridge is fired, the barrel is forced backward by the recoil, the receiver, the breech block, and the two links all moving together, the parts being in the positions shown in Figs. 3 to 5. But after a very short motion the roller 52 (Figs. 4, 7, and 11) strikes the curved path 19, whereupon the two links are brought into the toggle joint position shown in Fig. 9, and the breech block 41 is drawn clear back from the barrel. In going back it takes the empty shell with it, by means of the extractor, until the shell strikes the ejector 14 and is thrown out. The top cartridge in the magazine is held by the feeding spring 68 to 71 (Figs. 10 and 11), ready to be inserted into the chamber on the return of the breech piece. The lips at the mouth of the magazine allow the base of the top cartridge to project a little into the path of the breech block, whose return is effected by the springs 31 and 17. The former is fixed to a pin in the grip at one end, and is pivoted to the link 49 at the other end (Fig. 8), while the spring 17 limits the movement of the link 49. The effect of these two springs is to move the parts from the position shown in Fig. 7 to that in Fig. 8, immediately the back stroke is completed.

We have thus seen how the breech is opened, the empty shell extracted, a fresh cartridge put in position and driven into the chamber, and the breech closed. It remains to be seen how the striker spring is compressed and the lock cocked. The front end of the forward link 47 has, on the left side, a projecting nose,

which draws back the firing bolt as soon as the opening of the breech takes place. The firing bolt 43 (Fig. 3) is a hollow cylinder, with a projecting lug on one side, and a spiral spring 44 (Fig. 8) in its interior. This spring takes against the screw plug 42 which closes the rear opening of the breech block. The lug on the firing bolt is engaged by the nose of the sear 35. The trigger 10 moves in a circular groove in the side and forward of the grip. When it is pulled, the wedge-shaped end presses the front arm of the sear inward, and raises the nose of the sear arm sufficiently to release the firing bolt.

The movement of the breech block and links is so rapid that the finger cannot release the trigger before they have reloaded the pistol. There is, therefore, a special contrivance to prevent the whole eight cartridges being fired off in a second or so. In order that the sear may not strike solid against the still raised wedge-shaped end of the trigger, a yielding pin 39 is fitted into the forward end of the sear. This pin rests on the spiral spring 40, and recedes when it strikes against the trigger, and after the trigger has been released, snaps forward behind the wedge-shaped end of the latter, so that the firing can be repeated.

The cartridges, eight in number, are contained within a case 61 to 67, which is pushed up into the hollow grip, and snapped there by the spring 8. This case can be withdrawn at any time to see how many remain. Spare cases can, of course, be carried to expedite the loading in the heat of battle. The spring 8 also secures the "safety" 7 in both positions. This latter is fitted into vertical grooves in the side of the grip. When pushed upward by the thumb, it locks the sear and trigger, and prevents every motion of the mechanism.

Fig. 2 shows the method of introducing the first cartridge into the chamber. The grip is held in the right hand, and the knob on the link 49 drawn back by the left hand until the breech block is past the base of the top cartridge. The breech block is then allowed to return, pushing the cartridge before it. The pistol is now loaded and cocked, and if it is not to be fired immediately, the "safety" must be pushed upward to prevent accident. For our illustrations and the foregoing particulars we are indebted to Engineering.

The Elm Leaf Beetle in New England.

The advance of the elm leaf beetle into New England

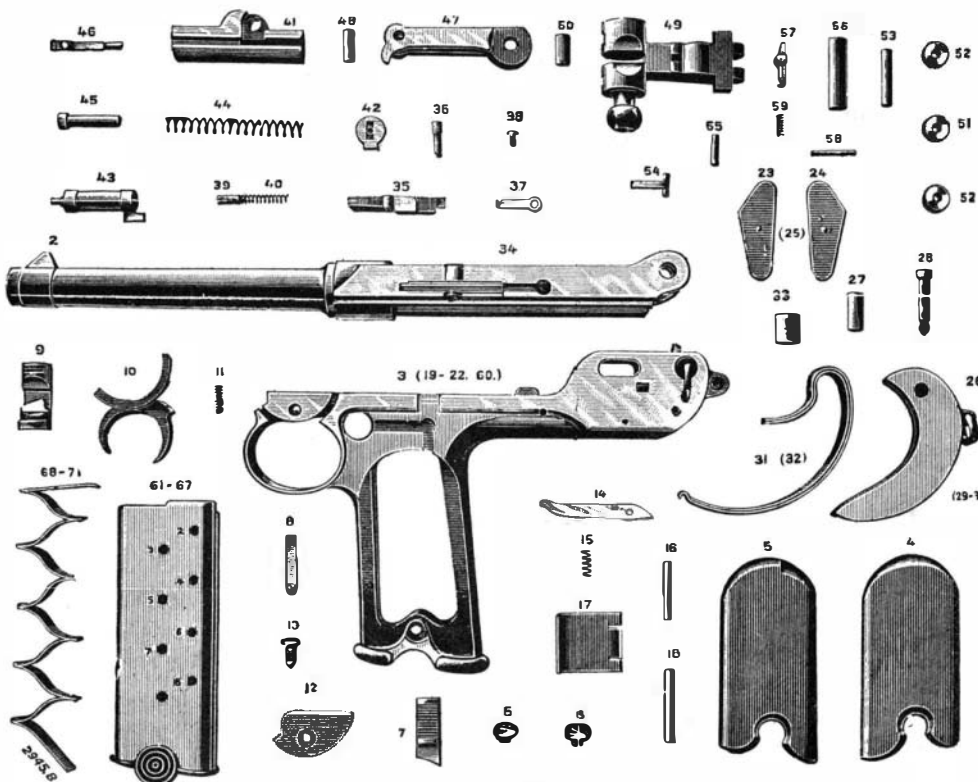
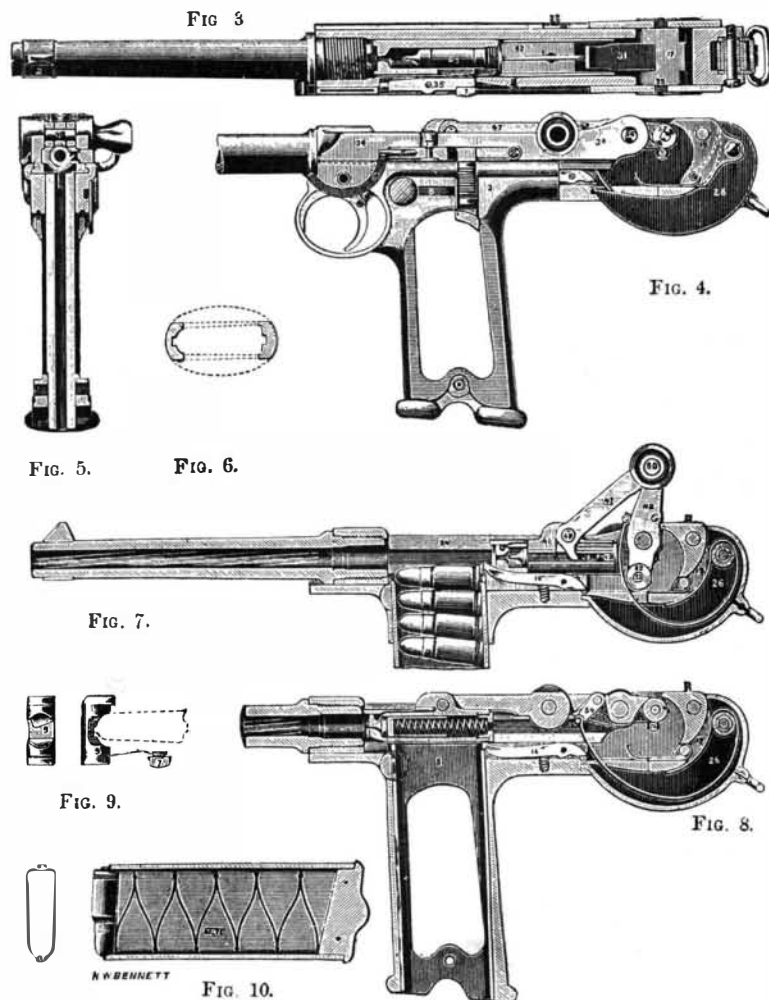


FIG. 11.

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has been extremely rapid. When attention was first called to their probable advent a month ago, the entomologists had not evidence that there was one in New England, but they had probably then begun their visitations, and about a fortnight ago they were reported in full force in several towns in Connecticut and western Massachusetts. Stamford, Milford, Bridgeport, and other towns along Long Island Sound have been ravaged, and from New Haven they have come

up the valley, and are in Hartford as well as in this city. The damage done in the famous elms of New Haven, the Elm City, is melancholy to contemplate. The trees are as brown as in the last of fall, and no work has as yet been done to stop the despoilment. Last week the city council determined to take measures against the pest. Most of the mischief for this



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year had been done, and that will be the case almost everywhere, though perhaps in this city we may have begun in time to save most of our trees. A few weeks ago the State Agricultural School at Mansfield, Conn., published full directions for the meeting of the elm leaf beetle at the outset. Prof. C. D. Woods said:

"The easiest way to destroy the beetles and prevent to a considerable extent their ravages another season is to treat the ground around the base of the trees for a distance of several yards with strong kerosene emulsion. This will not help the trees this season, but if all the pupæ at the surface of the ground are destroyed, and if this is done under all the trees in a given town, there will be no beetles to lay eggs next season."

"Unless pupæ are destroyed now the only way to protect the elms next year will be by the expensive and somewhat difficult method of spraying with Paris green or London purple. The kerosene emulsion is best prepared in this way: Soft soap, one quart; kerosene, one pint; water, six quarts. Warm the soap until it becomes liquefied. Remove from near fire, add the kerosene, and agitate rapidly with a force pump for five to ten minutes until it becomes a homogeneous creamy mass from which the kerosene will not separate on standing. Add the water and thoroughly mix, when the emulsion will have the appearance of milk. This should be applied near the trees at two or three different times in sufficient quantities to thoroughly saturate the surface of the ground. A force pump with spraying nozzle or a watering pot with rose can be used to apply the emulsion."

The Elm City authorities began their tardy work Saturday by pumping the kerosene emulsion into the tops of the elms.

In many places in Massachusetts the old protection against the canker worm is brought into play, the same which was used a score or more years ago all over Boston, every tree on the Common being then belted with tin bands, drawn taut about the tree trunks with their projecting, crumpled edges bent downward, and a gutter kept filled with kerosene to receive the larvæ as they crawl up.—Springfield Republican, July 22.