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Improvement in Battery Guns.

The accompanying engraving represents an improved ten barreled gun, recently manufactured at Colt's Armory, Hartford, Conn., under the supervision of R. J. Gatling, the inventor.

In this new gun there are many improvements upon the one published on page 17, Vol. XVI., of this journal.

First. The lock mechanism has been greatly strengthened and improved, and an adjustable plug, as shown at B, provides a means for taking out and putting in the locks, without taking the gun apart. By this arrangement, an old lock can be taken out and a new one, if desired, inserted in a few seconds.

Second. The gun has also a new cocking device, operated by a knob, shown at C, by the simple turning of which the gun is kept from being snapped when it is revolved while not in service; but in an instant, when desired, the gun can be made to snap or fire by simply reversing the position of the knob which operates the cocking device.

Third. The mode of feeding the cartridges to the gun has also been greatly improved by the use of automatic feed cases from which cartridges are fed to the gun through the hopper shown at A. These improvements enable the most inexperienced soldiers to work the gun without the least difficulty.

The cartridge for the use of this gun, a section of which is shown in Fig. 2, has been greatly improved. The cartridge shells, or cases, are now manufactured out of much stouter material than they were formerly, and are made with solid heads. They will now withstand the heaviest charges without the possibility of bursting, and the shells can be fired and then re-loaded, over and over again, for fifty or more times. The cases, or shells, being thus utilized, the cost of the ammunition will be but little more than that of the lead and powder used in reloading. The heads of the cartridges in front have square shoulders, which enable the shells to be easily extracted from the chambers of the barrels after they have been fired. The carriage upon which the gun is mounted has also been much improved. It has an adjustment which enables one man to give to the gun, when it is firing, a lateral train motion, so as to sweep the sector of a circle of more than twelve degrees without moving the wheels or trail of the carriage. In this way the gun can be played like a hose pipe, and made to cover five hundred yards, or more, of the enemy's front, and that too without interrupting its continuous fire. The gun fires with great rapidity, but always one shot at a time in rapid succession, so that the tendency of recoil is only that produced by a single shot, and this is entirely overcome by the weight of the gun and the carriage, and by a simple device attached to the trail of the carriage. The true elevation having therefore been once obtained, any desired number of shots may be rapidly fired with accuracy without resighting or any further adjustment of the gun. These are advantages not possessed by any other arm.

This peculiarity of *no recoil* is of special value in the de-

fense of bridges, fords, mountain passes, etc., for the reason that such points are usually attempted to be passed during darkness, fog, or storm, when the movements of the enemy cannot be clearly observed. The gun, having once been properly located and accurately aimed to cover the threatened point, is ready at any time to pour its rapid and deadly fire with certainty of effect, while other guns placed under similar circumstances, after having delivered the first fire, must

engine of warfare. The use of such an arm must undoubtedly have a tendency to shorten wars and to lessen the number of troops required in service as well as to deter nations from going to war.

The Gatling system is equally well adapted to large or small caliber, which is not the case with other kinds of repeating arms. The projectiles of the largest caliber Gatling gun, like those of field artillery, may be solid shot, shell, or canister. A canister cartridge is shown in Fig. 3, and a solid shot in Fig. 4.

Four sizes of these arms are now being manufactured by Colt's Patent Fire Arms Company, at Hartford, Ct.

The gun is simple in its construction, strong, and durable, and in all respects stands first among the numerous ingenious fire-arms which have been brought into use during the past ten years.

Any further information may be had by addressing "Gatling Gun Co.," at Indianapolis, Ind., or "Colt's Patent Fire Arms Co.," Hartford, Conn.

Blasting on the Pacific Railroad.

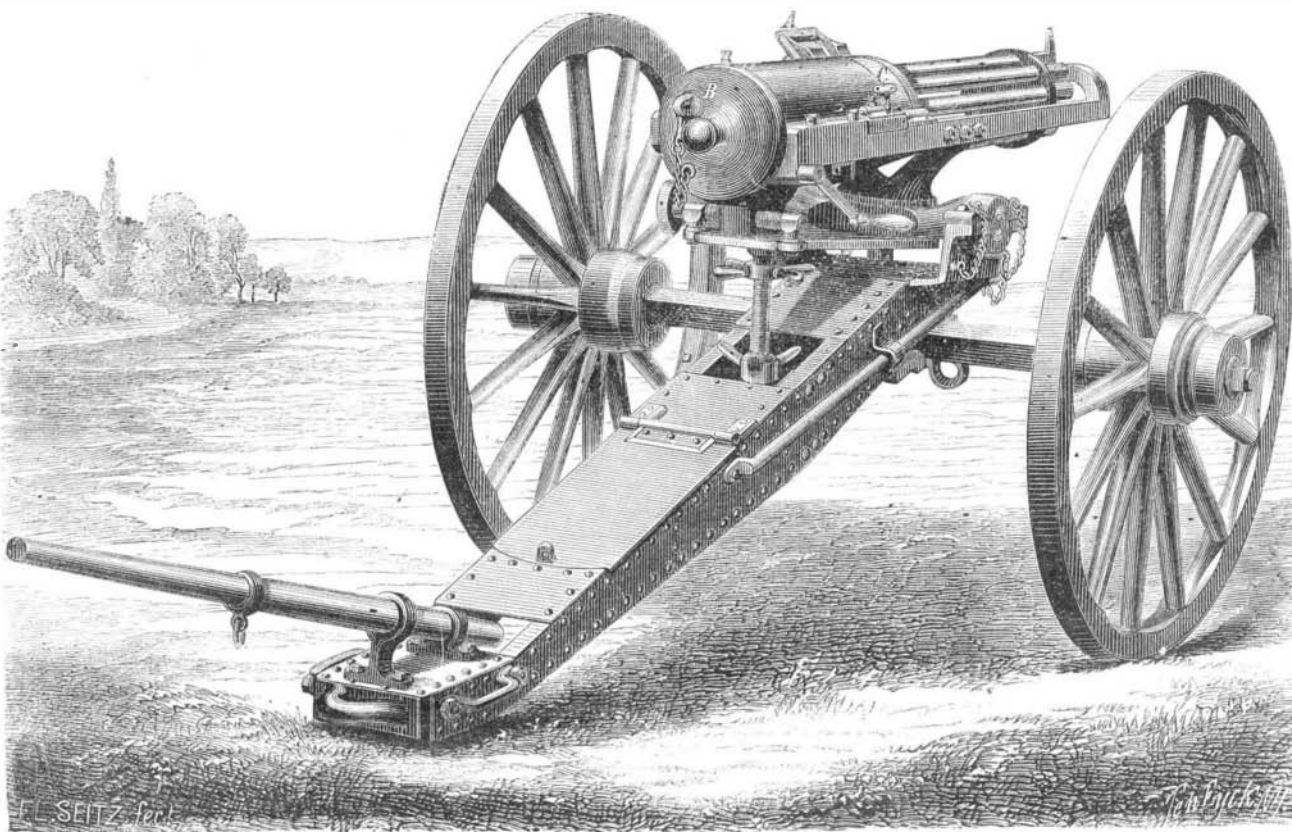
In several places, where one side of the road-bed was at grade, the other slope would be in seventy feet cutting. Royal have been the salutes fired from

What enjoyment to have been here two months before, in the heat of the battle between intelligent force and mountain cohesion! The powder bill alone for the month of July was \$54,000! From five thousand to ten thousand men were employed all the season. The times of firing along the whole cliff were limited to three a day. At those times, an immense broadside cleaved a little of the shell from the grand mountain side, transforming a goat's path to a way for the iron steed. Let me relate one instance of skillful execution. With one drilled hole, eight feet in depth, 1,440 yards of granite were thrown clear from the road-bed. The eight-foot hole was drilled near a fine seam, lightly loaded, and fired. This enlarged the seam, which was lightly loaded, and exploded. This operation was performed carefully, several times, until the seam was widened to a considerable fissure, when an immense load was put in, the fire communicated, and three thousand tons of granite were torn from their long resting place, making sad havoc with the sturdy pines beneath. I observed one rock, measuring seventy tons, a third of a mile away from its accustomed place; while another, weighing 240 lbs., was thrown over the hotel at Donner Lake—a distance, certainly, of two thirds of a mile. In fact, the whole valley is covered with drops from these

granite showers. As the season here is short, much of the work has been carried on night and day. Here we saw a retaining wall seventy feet in height; there a tunnel of granite.

—*Overland Monthly.*
THERE are no less than 3,642 spoken languages.

FIG. 1.



GATLING'S IMPROVED BATTERY GUN.

of necessity be readjusted and fired at random, and therefore with little effect.

The effective range of the gun is over two thousand yards, being greater than that of any other rapid firing arm; its accuracy is also very remarkable, and is claimed to be quite equal, if not superior, to the best rifled cannon. The inventor

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FIG. 2.

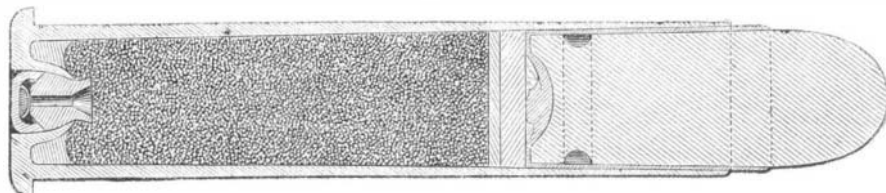


FIG. 3.

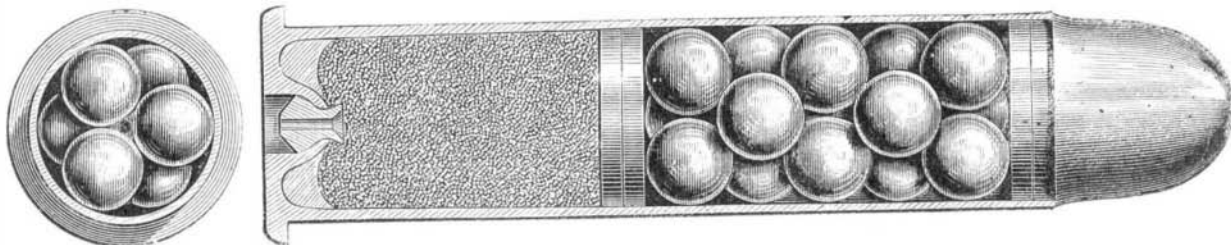
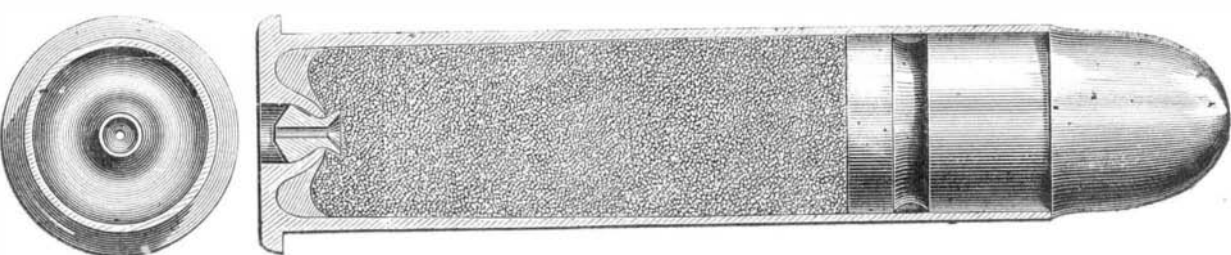


FIG. 4.



assures us that with it more "hits" in a given time can be made on a target placed at a distance, say of 1,500 or 2,000 yards, than with any other arm.

Such rapidity and continuity of fire must give the performance of this gun the greatest moral effect. Few troops can be found so brave as to contend against such a death-dealing