

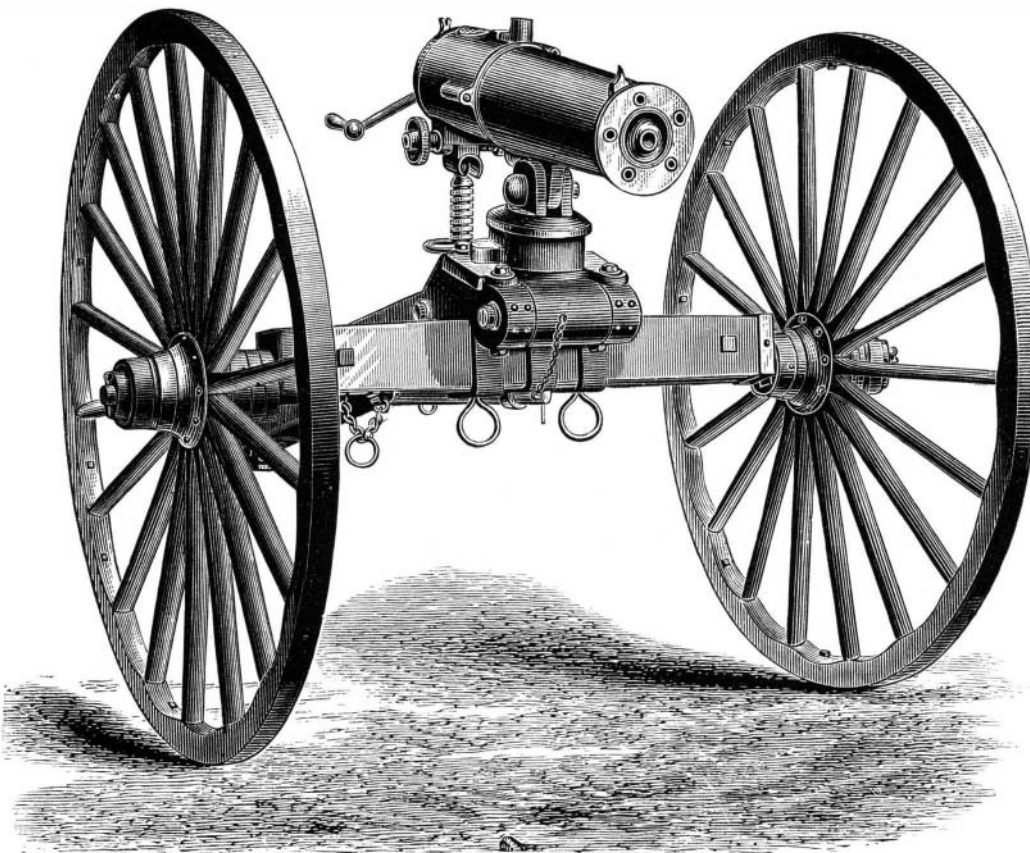
NEW GATLING GUN.

The annexed illustration represents a new and improved five-barreled Gatling gun, which, in lightness and rapidity of fire, excels any gun heretofore made on the Gatling system.

This gun weighs only 97 lbs. and fires one thousand shots per minute. It differs from the previous models in the following particulars: 1. The barrels and working mechanism are enveloped in a metal casing, which supplies the place of the frame formerly used. This casing protects the mechanism from rain, dust, rust, etc. 2. The crank is attached directly to the rear end of the main shaft, superseding the use of gearing to revolve the gun. 3. Improvement in the feed has been made, so that the cartridges are fed directly to the carrier on a central line, vertically, above the axis of the gun. These improvements can be applied to guns of ten barrels.

The manufacture of Gatling guns was commenced at Colt's Armory, Hartford, Conn., in 1866, and has there been continued uninterruptedly since. They are also made at the works of Sir W. G. Armstrong & Co., Newcastle on Tyne, England, and by Ludwig Nobel, at St. Petersburg, Russia, under agreements with the Gatling Gun Company. They have been sold to the following governments: Austria, Argentine Republic, Brazil, Bolivia, Chili, China, Costa Rica, Denmark, Egypt, Ecuador, France, Germany, Baden, Bavaria, Prussia, Great Britain, Guatemala, Hayti, Holland, Italy, Japan, Mexico, Nicaragua, Paraguay, Peru, Russia, Siam, Spain, Sweden, Switzerland, Turkey, Tunis, and the United States.

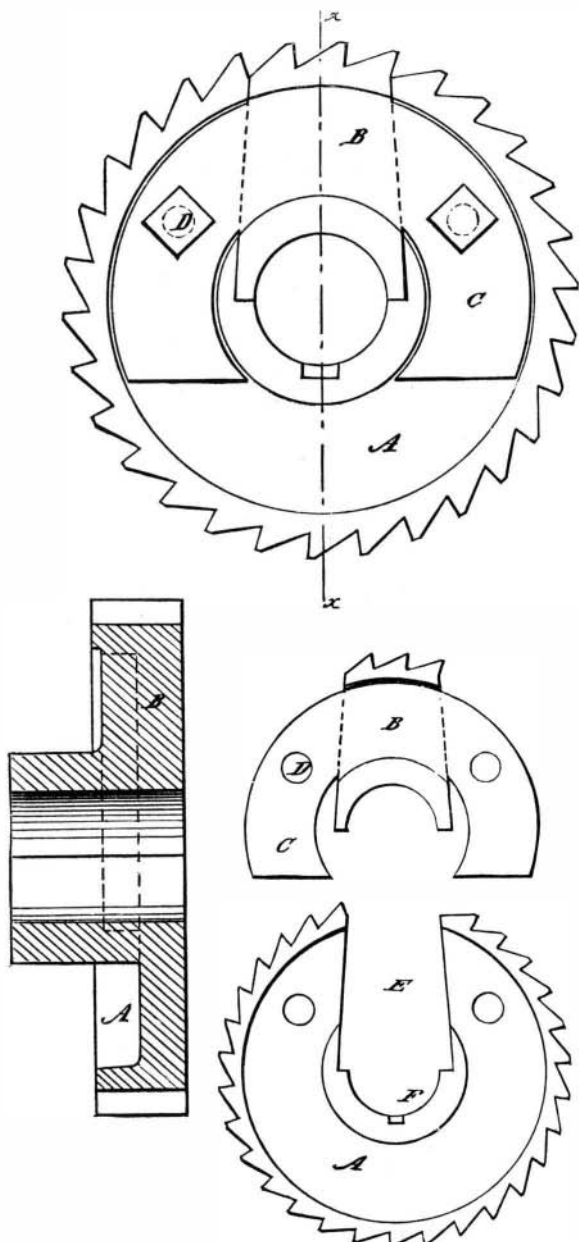
It will be seen from the above that the Gatling gun has met with remarkable success, and is destined to play no inconsiderable part in future wars.



THE LATEST IMPROVED GATLING GUN.

IMPROVED SPLIT WHEEL.

Mr. Benjamin G. Mills, of Fall River, Mass., has patented



through the Scientific American Patent Agency, April 18, 1876, an improved split gear or other wheel, so contrived that flanges on the one side of one part fit upon and are bolted to the side of the other part, to allow of applying to, and removing from, the shaft such wheels in less space than is required when they are fastened by bolting two flanges to-

gether at the sides of the wheel. One part of the wheel may also be dovetailed in the other, to sustain the expanding action of the key better than in the common way.

A is one part of the wheel, and B the other. The latter has curved flanges, C, projecting from one side, suitably for fitting against the side of part, A, so as to be secured thereto by bolts, D, when the two parts are fitted together on the shaft. The part, A, comprises nearly the whole of the wheel, being only as much less as is necessary for the notch, E, to admit the shaft to the center, F. Said notch is made in dove-

tail shape, so that the part, B, will be securely held against the expanding effect of the key, by which the wheel is secured to the shaft.

The Chinese Management of Roses.

It has been stated that the Chinese method of layering roses is sometimes more successful than ours. Late in the summer they select a vigorous shoot of the same year's growth and tongue it in the usual way; then put in a small pebble to keep the slit open, and bind a handful of fresh moss around the tongue, keeping it constantly dampened. In about six weeks it will have struck roots, and can be planted without disturbing the mossy covering. Many of the garden roses can be increased by suckers from the roots, which can be severed with a sharp spade in the autumn and new bushes formed of them. Budding roses is a simple process, by which amateur cultivators often increase their stock. A sharp penknife can do duty for a budding knife, and the handle of a toothbrush, if ground down smoothly, will answer for a spud to aid in lifting the bark. From the last of June to the last of August is the best time for this process, as the bark can then be more easily raised from the wood. Take a smooth stalk and make a horizontal cut across the bark, through to the wood, but not into it. From the center of this cross cut make another cut straight down the stem, an inch or more in length. These two cuts should resemble a T. Slice off the bud you desire to propagate with one cut of the penknife, cutting it close to the main stalk. Now, with the edge of the spud turn back the bark on each side of the straight cut and insert the bud on the wood of the branch to be budded, fitting it tightly to be crossed cut. With a bit of soft yarn bind down the bark, leaving the point of the bud exposed. A handful of dampened moss must then be bound round the stem, taking care to leave the tiny point of the bud exposed to the air. In six weeks the wrappings can be removed, but all other shoots must be kept from growing on the budded branch. By this means a rosebush can be made to bear half a dozen different colored roses.

Gigantic Advertising.

Probably the largest advertisement in the world is that of the *Glasgow News*, which displays its name on the slope of the Ardenlee, Scotland. The length of each letter is 40 feet; the total length of the line is 323 feet, and the area covered is 14,845 feet. The borders of the letters are sown with a pure white flower, the center is set with dwarf beet, the dark purple of which shows well at a distance, and on each side of this there is a row of light purple candytuft.

Dangerous Vails.

Ladies in traveling at this season of the year frequently wear vails of gauze, most commonly light green in color. It appears that the use of these is not wholly safe; as a case has lately been published of a child, in Troy, N. Y., whose face while asleep was covered with a green veil to protect it from flies. The infant managed to get the fabric in its mouth, sucked it, and died shortly afterward, with all the symptoms of poisoning.

IMPROVED MORTISING MACHINE.

We illustrate herewith an improved machine for cutting mortises in all work not too heavy to be raised to the chisel by the table, including sash, doors, blinds, carpentry and joinery work in general, furniture, carriage work, etc.

The frame, table, and attached parts are of cast iron, very strong and heavy. The running and reciprocating parts are of the best cast steel, as light as is compatible with strength and durability. The high velocity of 700 to 800 strokes per minute is attained with but little vibration; and as the crank shaft is provided with an outside bearing, the thrust being direct from the crank pin to the mortise, the machine is capable of driving an inch chisel into hard wood without boring. The method of applying this extra bearing prevents injury by careless workmen, both to themselves and to the machine. All boxes are of bell metal, and that in the reversing cylinder is split and made adjustable with screws, to correct any inaccuracy.

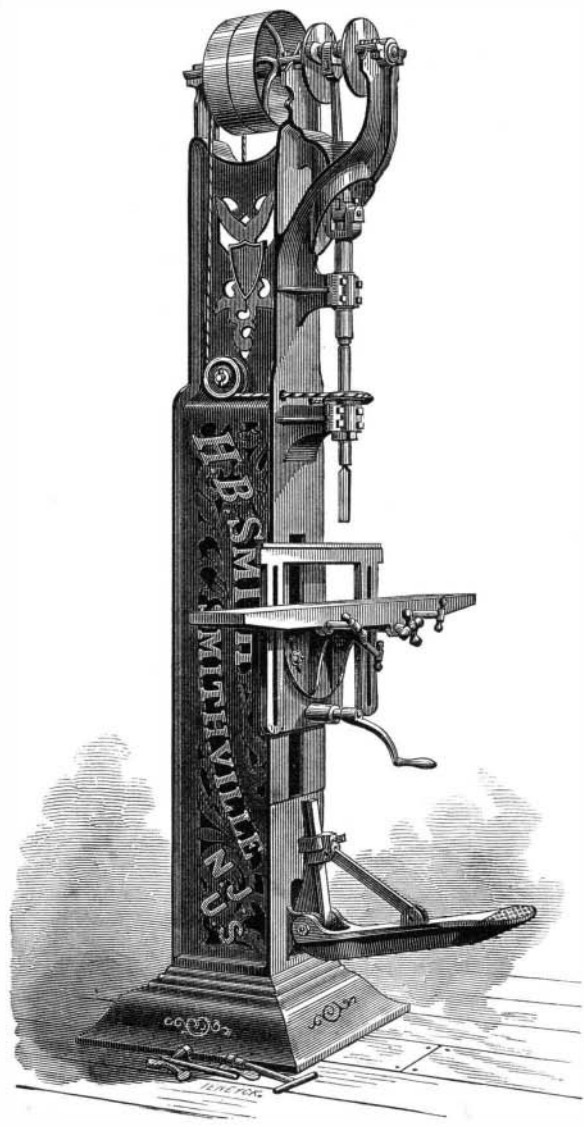
A practical trial of over twenty years, we are informed, has proved the efficacy of the device for reversing the chisel. It turns the chisel promptly, by power, with a scarcely perceptible motion of the treadle, and holds it true, regardless of wear or inequalities in the timber being worked.

The destructive effects upon joints in reciprocating parts has been duly considered in the design, and but three joints are employed in the reciprocating parts, it being impossible to have less and to allow the chisel to turn.

The table tips to mortise on any angle required; and when desired, a rack and pinion feed and boring apparatus are attached. To insure accuracy and cheap production, special tools are used in the construction of this machine; and the running parts and boxes are made to

gauge, and can be duplicated.

Many hundreds of the old style of this mortiser, embodying the same reversing device, we are informed, are now in use. The machine illustrated can be seen in daily operation at the Centennial Exposition. One is in the space of the manufacturer, in Machinery Hall, section B 7, columns 47 and 48, and another in the adjoining wood shop of the Commission, which is fitted up with machinery of the same maker



Further particulars can be obtained by addressing H. B. Smith, Smithville, Burlington county, N. J.

ONE pound of coke evaporates 9 lbs. water; 1 lb. of coal, the same; 1 lb. slack, 4 lbs. water; 1 lb. oak (dry) 4½ lbs. water; 1 lb. pine, 2½ lbs. water.