

## THE NEW FRENCH ARMY GUN.

Through the courtesy of a Paris correspondent, we have lately obtained tracings of the official drawings of the new gun, which a board of officers, under the presidency of Marshal Canrobert, adopted, on the 13th of August last, as the weapon with which the army is to be provided. Out of the various designs submitted to the examiners, it appears that but two were favorably regarded. One known as the Beaumont, the invention of a Hollander, found support from four of the eight members of the board, while the remaining half advocated the Gras gun, a French invention. The casting vote of the president, probably influenced somewhat by a patriotic feeling, decided the question in favor of the Frenchman, and so the weapon of which Captain Gras is the reputed inventor is that of the French army of the present and future.

We give an engraving of the Beaumont gun, and also illustrations of the Gras arm, prepared from the tracings above referred to, to enable the reader to draw his own comparison. In the Beaumont (Fig. 1), the spring, A, is contained in the lever of the movable breech piece, and its longer branch exercises a pressure in rear of the needle, B. The dog, C, has, beneath its lower forward portion a helicoidal projection, which, at the firing, lodges in a corresponding recess in the bolt, B. The rotation thus impressed upon the latter causes a pressure against each other of the spiral surfaces, and, consequently, the recoil of the dog and needle, sufficient to bend the spring. All the movable portion is then drawn to the rear, so as to expose the end of the spent cartridge, in order to remove the same, and to introduce a new one. This done, the movable part is brought forward until the stop on the bottom of the dog takes against the trigger catch, at D. The breech lever, which has hitherto been in a horizontal position, is then turned upward, closing the mechanism, when the parts are as shown in our illustration, and the weapon is ready to fire.

From this arm the Gras gun, represented in Figs. 2 and 3 (section in the latter), will be found to present much material difference. Fig. 2 shows the position of parts as the cartridge is being extracted, and Fig. 3 the mechanism just before it is closed together for firing. A A is the movable breech piece operated by the lever, B. C is the dog, at the end of which is a button, to which the rod, D, of the firing pin, E, is attached. F is the coiled spring, which throws the pin forward. For loading the gun, the parts are drawn back as shown in Fig. 2. The cartridge is inserted, and the bolt, A, by the lever, B, is drawn forward. While this is being done, a stop, G, enters a cam groove, H, in the side of the bolt, A, so that the latter is forced to turn as it is brought forward. In Fig. 3, it will be noticed that the notch on the dog, C, is almost in contact with the spring stop, I, governed by the trigger. By pulling on the latter, this stop is withdrawn, and the needle is thrown forward by its spring, stri-

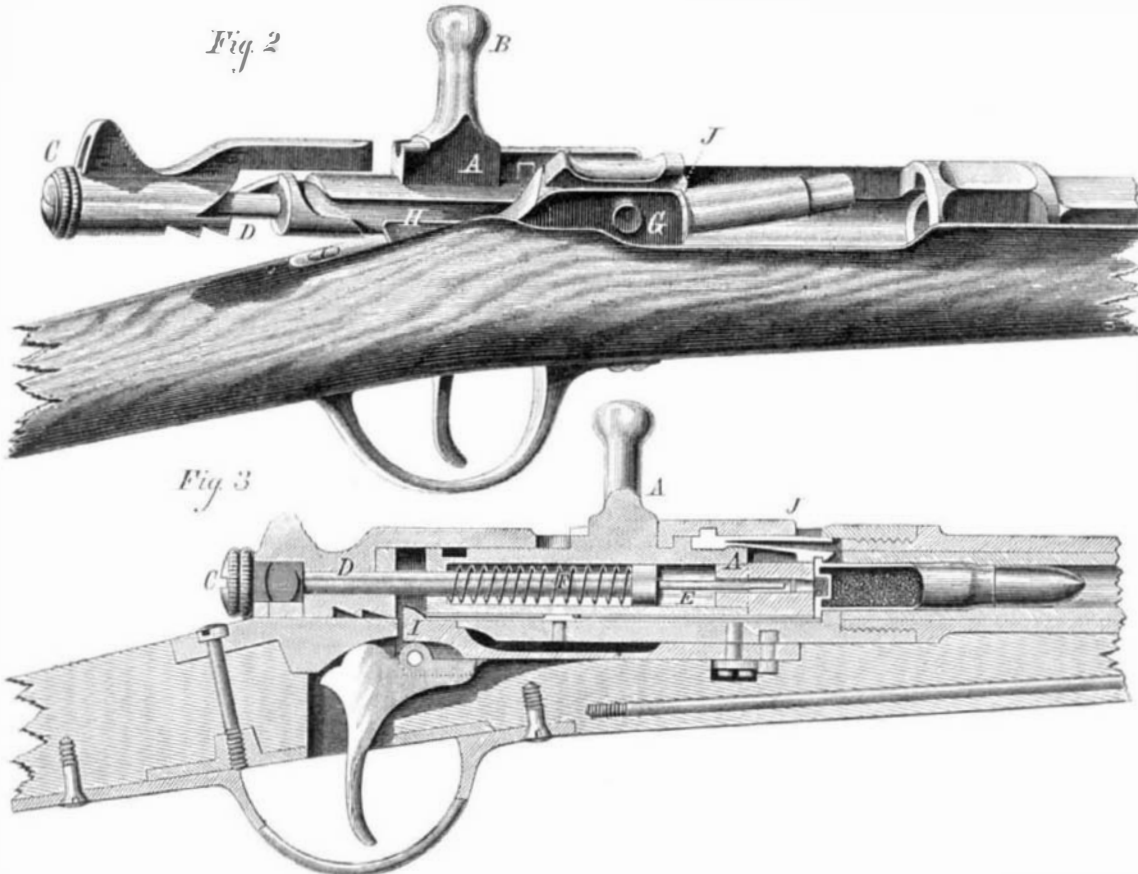


king and exploding the cartridge. At J is the extractor, the part containing which, though drawn back, does not turn with the movable breech, so that the spring hook always grasps the rim of the cartridge case from above. With this gun, it is stated that 45 shots can be fired in three minutes, effective at a range of 5,120 to 5,440 feet.

## A Wooden Railroad in Michigan.

The tram road of Van Etten, Kaiser, & Co., manufacturers of rough and dressed pine, lumber and lath, at Pinconning, Bay county, Mich., is 11 miles long, and is thus described by the firm: "There are, first, logs laid crosswise, about five or six feet apart. The logs are from 12 to 16 feet in length. Then gains are cut in the logs and flattened timber laid in these gains; this prevents the road from spreading. Our rails are of hard maple. Before spiking the rails down we put ties across the stringers, notching the stringer enough to let the tie down even with the top of it, and spike the tie fast before the rail is laid on. The ties are of 2 inch hem-

lock plank, from 6 to 12 inches wide; this prevents the stringer from rolling. We would recommend any one who wishes to build a road on the above system to build it as straight as possible. We have some curves in our road, and we have been obliged to dispense with wooden rails on the curves, and lay down iron. We operate our road with locomotive power. Cost of building, without rolling stock, is about \$2,000 per mile. The stringers are made from elm,



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oak, pine, and ash, and are flattened on two sides to 10 inches in thickness."

## A BRIDLE AND A BLINDER FOR UNRULY HORSES.

A novel arrangement of horses' head gear has been patented, June 30, 1874, by Mr. R. W. Sanborn, of Rochester, N. Y., by which, it is claimed, the most unruly animal can be constantly kept under control. The device consists of a kind of bridle, as represented in our engraving (Fig.



1), the ends passing over the horse's nose, thence through the bit rings, then through two apertures in a sliding piece, and finally through guide loops on the head stall, the extremities being made fast to the reins. The effect of this is, when a strain is brought upon it, to draw the animal's head

up, and, at the same time, to compress the upper jaw between the strap going over the nose and the bit. The amount of power which it is desired to use is regulated by tightening or loosening the bridle in its connection with the reins, so that either a constant strain may be maintained, or the pressure on the jaw applied only when the reins are strongly pulled upon.

By means of the sliding piece just above the nose, the parts of the bridle may be brought together at any desired distance above the ends of the bit. By thus changing the adjustment of the bridle, its action on the animal may be varied as desired.

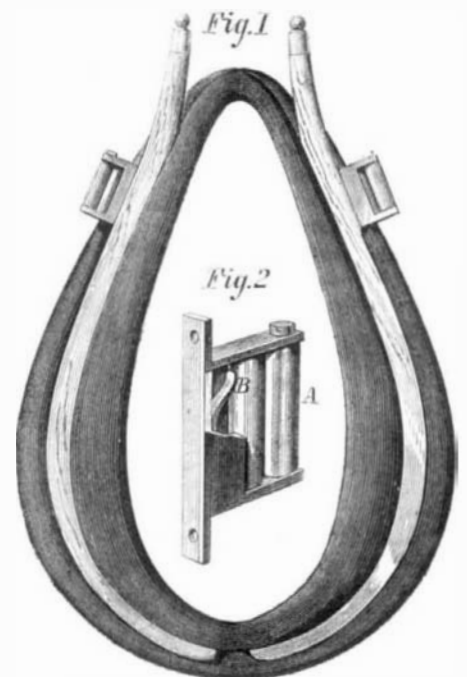
The second invention, which is represented in Fig. 2, is designed to prevent horses turned out to pasture from jumping fences and so running away. It consists of a strap which buckles around the horse's head just below the eyes, to the front part of which the blinder, in shape concave upon the arc of a circle, is secured. This is further supported by the short strap shown leading to the edge of the blinder from the top of the animal's head.

As will be readily understood, this blinder is not for travel. While it admits plenty of light and air to the horse's eyes, it, however, stops the animal's view, both in front and at the sides, so that, as he approaches a fence, he is able to see neither the bars nor the ground beyond, and consequently does not attempt the leap. The device is easily detachable, and may be used in connection with an ordinary halter or bridle. It was patented through the Scientific American Patent Agency, June 23, 1874, by Mr. John W. Kennedy, of Central Village, Windham county, Conn.

SMITH'S IMPROVED REIN HOLDER.

This invention is intended to prevent the fastening of the reins to the bridle in a twisted condition, also to keep the former from falling under the horse's feet when unattached to the bit, or from dropping under the tongue of the vehicle.

The device is represented in our illustration secured to the harness, and also separately in Fig. 2. It consists of a simple metal casing, having one pivoted roller, A, and another, not pivoted, but forced in close contact with the first by means of a spring, B. The rein is passed through between the rollers, and thus supported.



On work harness, the rein holder may be made pendent to conform to the position of the reins. On light harness it may take the place of the terret, and thus, it is claimed, be of greater service than a rein holder secured to the carriage, since it keeps the reins up in front of the animal so that he cannot get his fore feet over them. At the same time the reins, when thrown over the dashboard, are less liable to get under the horse's feet and tail. The inventor points out that, in similar devices which keep the reins taut, the horse is apt to put his tail over, and so, pulling on the lines, to cause himself to back, thus breaking the hitching strap, a difficulty evidently obviated by the present invention.

The entire right is for sale; or, if not sold within six months, proposals for manufacturing on royalty are invited. Patented August 25, 1874, by Mr. A. K. Smith, of Nebraska, Pickaway county, Ohio, who may be addressed for further information.