

## New Inventions.

## Improved Car Axle.

John Case, of Millford, N. J., has invented an improvement in car axles, on which he has application for a patent. The nature of this invention consists in strengthening the axle and wheels by means of a strong wrought-iron tube in combination with strong elbow-shaped braces. The tube extending from the inner face of one wheel to that of the other, serves to encase the axle, and fits snugly over hubs projecting from the inner space of the wheels, and is secured fast to said hubs by means of strong bolts and wrought-iron straps, which are riveted to the tube and bolted fast to the hub.

## Improved Slotting Machine.

P. Williams, Sec., of Barre, Mass., has invented an improvement in slotting machines for cutting key seats in hubs of wheels, pulleys, and all articles required to be keyed on shafts. The invention consists in securing the mandrel in the top of the column which supports the hub, so that it may serve with the aid of a key to hold the hub in place, containing also a slot on the side in close contact with the hub, which serves as a guide for the tool while cutting the slot in the hub. A peculiar combination of parts, consisting of a wedge, screw, and spring, and the mode of attaching the tool to the stock are also embraced in the claim.

## Improved Cannon.

W. H. Harbaugh, of Piqua, Ohio, has invented a new mode of loading and discharging cannon, which consists in having a rod pass longitudinally through the bore of the cannon, on one end of which rod is a plunger corresponding in size with the bore. The cannon is loaded by attaching the cartridge to the plunger, and drawing it inward to the breech, where it is exploded by a rod inserted within the plunger, said rod being, by striking against the breech, forced against percussion powder at the end of the cartridge. The inventor has applied for a patent.

## Screw Cutting Machinery.

Ebenezer H. Plant, of Southington, Conn., has invented an improvement in machines for cutting screws, on which he has made application for a patent. The machines commonly employed for screwing bolts contain only one mandrel and set of dies, and each machine requires one attendant. The object of this invention is to arrange and combine in the same machine two or more mandrels and sets of dies, in such a manner as to bring all the dies at one end of the machines within the control of one attendant, so that two or more bolts can be cut at the same time.

## Improved Temple for Looms.

Heman Turrell, of Birmingham, Conn., has invented an improved jaw-temple, on which he has made application for a patent. The invention consists in an improved method of opening the jaws of the temple to liberate the cloth at the termination of every beat of the lay, and also in certain mechanism by which the temple is held in place during the proper operation of the loom, but is set free so as to be driven forward when the shuttle fails to enter the box, and is arrested in its motion, and thereby caught between the temple and the reed.

## Improved Water Closet.

Alex. Edgar, of New York City, has invented an improved water closet, which consists in the employment of a double cock connected with a reservoir and outlet pipe, and operating in such a manner that the water is admitted alternately into the pipes. The cock is connected with a system of levers attached to the seat, so that a person using the closet will depress the seat and open the cock. The inventor has applied for a patent.

## Card Grinder.

P. Z. Freeman, of Natick, R. I., has invented an improvement in machinery for grinding cotton cards, on which he has made application for a patent. The nature of this invention consists in providing one end of the shaft which carries the emery roller with a right and left-

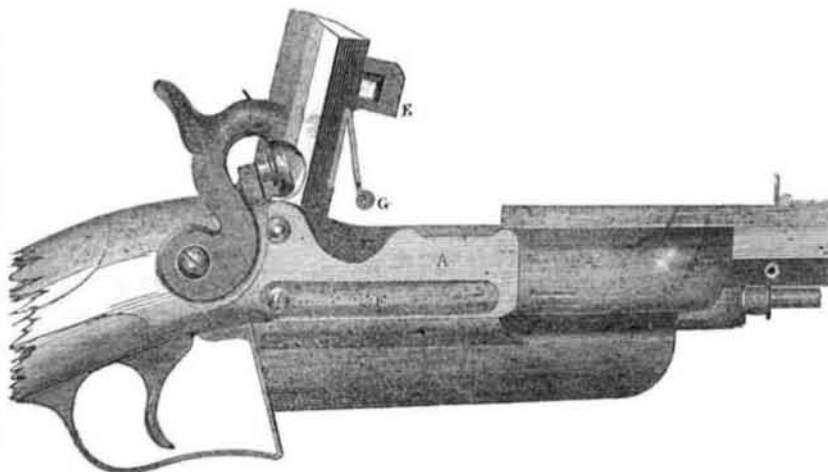
hand screw thread, so as to give the roller a horizontal reciprocating motion in addition to its rotary one, for the purpose of rendering the grinding more accurate and uniform. This is effected by combining with the screw threads a forked reversible follower or roller. It is a very ingenious contrivance.

## A New Fire-Arm.

The Boston "Courier" mentions a pistol now

in the market, which it says is entirely different from any ever before offered to the attention of the public. It has a revolving hammer instead of a revolving cylinder, is loaded by unscrewing the barrel, which exposes the chambers, and is not at all liable to become inoperative by corrosion or rust, as all the working parts are contained within the stock or breech. The great objection to it is, that it requires a barrel for every charge in the cylinder.

## BREECH-CHARGING AND SELF-PRIMING RIFLE--Fig. 1.



This new arm, which has been patented by the inventor, M. J. Gilby, of Beverley, England, in Europe and the United States, is assumed to possess the following advantages:—

1st. Peculiar facility for rapid charging at the breech, either with flask and ball, or with cartridge.

2d. Superior strength, with accuracy and security in firing.

3d. Freedom from fouling, until after very long and rapid shooting.

4th. May be used without "patches" over the ball, as well as with them.

5th. Is as light and handy as a common rifle and balances better in the hand, and, of course, requires no ramrod.

6th. Being simple, and easily managed, it is equally well adapted for sporting or military purposes.

Fig. 1 of our engravings is a side external elevation of the rifle lock, with portions of the stock and barrel; and fig. 2 is a corresponding longitudinal section of the same parts.

A breech-case, A, occupies a great part of the space usually taken up by the forestock, connecting the stock and barrel as firmly as if

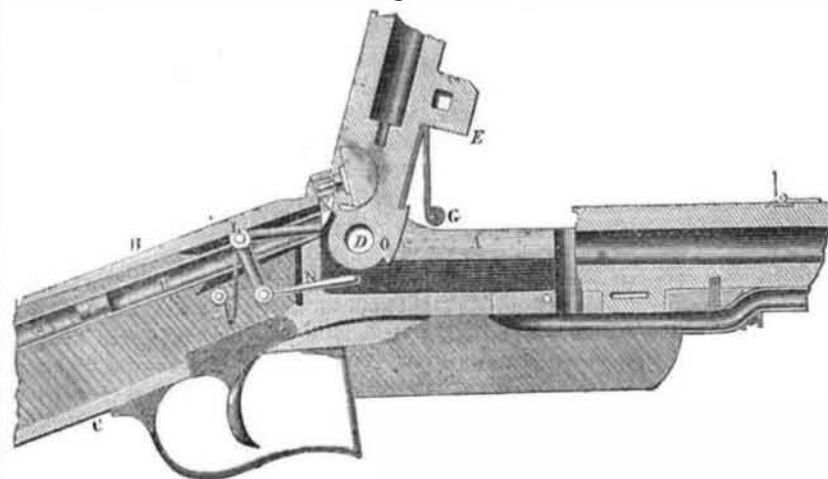
these parts were in a single solid piece. The fastening to the barrel is effected by transverse steel bolts, while a breech-plate, B, secures it to the stock above and trigger-plate, C, below. The breech is detached from the barrel, and has a joint at its end, D, the bore of the breech being slightly larger than that of the barrel.—

At its fore end is a loop, E, having a rounded projection, which works a spring-catch, F; so that, when the breech is shut down, after charging, the spring-catch enters the loop, and thus holds the breech securely.

In rifles of large bore, a steel bolt, passing through the loop, and completely across the breech-case, is substituted for this "catch," and, therefore, in no case can the breech be shifted during the discharge. A spring, G, with a roller attached to it, is fastened to the under side of the breech, to throw the latter up for charging; and it is readily liberated, when required, by a stud and pin on the left side of the breech-case, working against the catch or bolt, and moved by the left hand, as the rifle is held in the usual manner.

The ends of the barrel and breech are cut at similar angles, so that the fitting surfaces are

Figure 2.



brought into direct actual contact round the entire circumference of the bore. The gaseous escape during discharge is very slight; but to carry it off, a groove is cut in the circumference of the breech-case, round the junction of the barrel and breech, and an aperture is left in the bottom of the breech-case, opening into an escape tube, fastened along its under side. By this means, the "fouling," so often complained of in breech-charging guns, is effectually prevented.

The lock is situated on the left side of the rifle, and the tumbler-pin is brought through the stock, so that the hammer occupies its usual position. This leaves room for the priming apparatus, which fills the space commonly assigned to the lock. But when no primer is required, the breech-charging principle alone

being applied in the piece, the lock obviously occupies its usual position.

At H, in the stock, is a metal tube, of a bore sufficiently large, to admit the caps, running along it end to end, with a spiral spring, J, inside, to force them forward as required. This tube is inserted at the butt end of the stock, and is continued far enough to reach up to the detent, K, which moves on a pin at L, and is forced up by the spring, M. At N is a small connecting-rod, passing through the breech-case, and acted on by a shoulder or projection on the joint of the breech at O, when the breech is shut down, forcing the detent down at the same time. A hole in the part of the detent, just opposite the end of the tube, H, now receives a cap, forced into it by the spiral spring in the tube. Thus the store of caps is closed against

the influence of the weather; and in this position they remain until they are brought up, one by one, by the action of the priming apparatus; and the nipple is projected into them as they arrive, by the upward motion of the breech, so that the latter is primed by its own movement. After charging, the breech again is shut down in its place, carrying with it the cup just put on. The primer is more especially adapted for rifles of a bore above 40, but it is capable of use in smaller pieces.

## Locomotives for Steep Inclines.

John C. Trautwine, of Philadelphia, Chief Engineer of the "Coal Run Improvement R. R. Co." has made a report to the Directors, in which it is stated that the grading of five miles of the road will be 150 feet to the mile. This greatly exceeded the limits at which ordinary locomotives cease to be economically efficient, especially for heavy freight. He however confidently recommends it, in connection with the use of the locomotive of G. E. Sellers, of Cincinnati. The report says:—

"Mr. Sellers has for nearly twenty years been engaged in the planning and construction of locomotives, and is, at this moment, at the head of that department in one of the most extensive establishments in Cincinnati.

In his engine, adhesion is obtained, not by the weight of the engine alone, but by pressure produced by the load itself. This pressure is made to operate by means of two horizontal adhesion wheels or rollers, which act upon the opposite sides of a center rail. The force with which they press the rollers, is (by means of a most ingenious device) made to adjust itself instantaneously to the varying resistance to be overcome, whether that resistance be modified by an increase, or diminution of load, or by change of grade.

I have seen a small working engine on Mr. Seller's principle, ascend and descend a grade of 276 feet per mile, with the same loads that it could barely start on a level. On this grade the engine was under the most perfect control of the engineman. The experiments with this engine were witnessed, for some days in succession, not by myself only, but by several of the most eminent civil and mechanical engineers in the country."

We saw this model in operation in this city six years ago, and it performed well on the grade here mentioned. Since that time we have heard nothing of it, and it seems that it has not yet been applied on a large scale on any railroad. We hope it will now receive a fair trial.

## Planing Machines—Interesting Patent Decision.

On another page will be found an advertisement, respecting a recent decision of the Supreme Court of the United States, in the case of the Woodworth and the Norcross Planing Machines. The decision was made on an appeal from a decree of the U. S. Circuit Court for the District of Massachusetts, wherein the machine of Norcross was held to be no infringement of the Woodworth patent. As the Supreme Court of the U. S., does not decide questions of fact, this decision (which we have not yet seen) circumscribes the claims set up by the owners of the Woodworth Patent. The decision of Judge Sprague, of Massachusetts, from which the appeal was taken, was to the effect that the Woodworth Machine was but a simple improvement on Hill's, and that the Norcross Machine was also an improvement, and a different one. This decision is confirmed. "Justice to whom justice is due," and "honor to whom honor is due."

## Cementing Leather Belts.

We have received from H. Underwood, foreman at Rees & Hoyt's, 37 Spruce street, this city, a sample of leather belting composed of two layers of leather, cemented face to face, with a peculiar cement, which is adhesive, both in water and the atmosphere. It appears to have united the two pieces of leather as firmly as the fibres of the material are united to one another. It is the best piece of leather cementing for belting that we ever saw.

Since the discovery of gold in California, six hundred vessels have gone round Cape Horn and never returned.