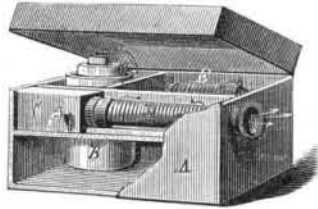


for their work. When the handle of the machine is turned a rapid vibratory motion is given to the files and the tooth of the saw is quickly and nicely filed.

ELECTRICAL INVENTION.

Apparatus for Continuous Production of Ozone.

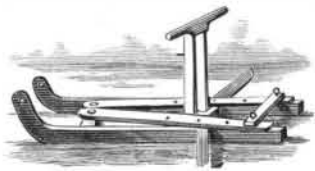
The engraving shows an improved apparatus for the continuous production of ozone, which has lately been patented by Theodore J. Yost, of Mahwah, Bergen county, N. J. In the engraving, B is a galvanic battery, and C a motor, consisting of spring power clockwork. D is the ozonizer, and E is an induction coil. The ozonizer is a glass tube attached at its inner end to a short metal tube, at its outer to the mouthpiece, c. A rod or wire is sustained centrally in the glass tube and covered by protecting material, put on in sections. The outer end of this wire connects with the induction coil, and a wire from the other end of the coil passes to the inner end of the glass tube, around which it is wound to near the outer end. Between the sections (before mentioned) are placed disks of metal foil having serrated edges that allow passage of air. The induction coil connects to the battery, E. A fan blower, run by the motor, C, being set in motion, a continuous current of air is forced through the ozonizer, and during its passage it is charged with ozone by the silent discharge of the electric current through the glass. The operations being automatic and continuous, a constant discharge of ozone takes place from the mouthpiece, c, and a comparatively small apparatus will answer all ordinary purposes.



AGRICULTURAL INVENTIONS.

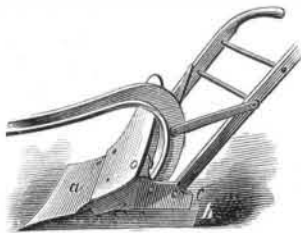
A New Cotton Stalk Cutter.

Among the new inventions we find a simple and ingenious device for cutting down cotton stalks, in preparing the ground for a new crop, that is patented by Mr. Francis M. Thompson, of McKinney, Collins county, Texas. It is clearly shown by the annexed engraving. A sled is constructed of such a width as to pass readily between the rows of stalks. And the lower parts of the runners are made thin, so that they will bed themselves in the ground to steady the sled against lateral movement. To the middle part of the front cross bar and at a little distance apart are hinged by bolts the forward ends of two adjustable bars, the rear ends of which are held at the desired distance apart by a cross bar located at the rear end of the sled and secured to it by pins or other suitable means. Several holes are formed in the adjustable bars and in the sled runners to receive pins, so that cutters can be adjusted to such a distance apart as the width of the rows may require. To the adjustable bars, a little in the rear of their centers, are securely attached the inner ends of two knives which incline to the rearward. They are also inclined downward, slightly, toward their outer ends, so that they will cut the stalks close to the ground as the machine is drawn forward between the rows. To the rear part of the sled is attached a platform for the driver while using the machine, and standards are provided to take hold of to give him more security. The device is intended to be drawn by one horse, or by two, driven tandem.



An Improved Plow.

A novel arrangement of the parts of a plow is patented by Mr. Joseph George, of Fayetteville, Washington county, Ark. In the accompanying engraving a is the share and b the shaft bar of a plow, made in one piece. c is the land-side, having a lug secured to its inner face which projects below its lower edge and is bolted to the share bar, whereby the land-side and share bar are secured to each other. The forward end of the land-side is bent angularly to its plane, so as to form a wing through which a bolt passes, securing it to the mould board. The colter forms a continuation of the land-side, abuts against its front vertical edge, and projects beyond the mould board. It is provided with a front cutting edge and is bolted to the land-side and share bar. A brace having bent ends is attached at one end to the inner rear face of the share bar and at the other to the inner faces of the mould board and share. The handles are of usual construction, and bolted one to inner face of the land-side and the other to the mould board in the usual manner, and braces extend from the handles to the beam. The beam is curved near its end, so as to form a plow standard, and flattened out near its

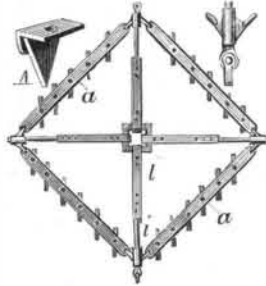


lower end and bolted to the land-side and share bar. It will be seen that by this construction the several parts of the plow are securely attached to each other, and the arrangement is compact.

An Improved Harrow.

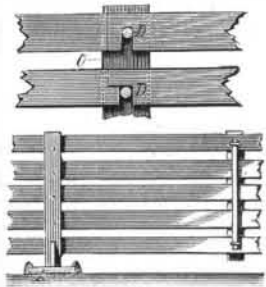
An ingeniously constructed harrow, in which all its parts in its movements in any direction will conform to the undulations of the ground, is patented by Messrs. Henry R. Burger and Joseph B. Simpson, of Fincastle, Botetourt county, Va., and is quite clearly shown in the accompanying engraving.

a a are the outer beams of the harrow to which the teeth are attached, and forming a square harrow. Each beam is formed of angle iron, the flange, b, of the iron projecting upward on the outer edge of the beam, thus making a barrow beam stronger and lighter than the ordinary construction. The ends of the beams are perforated to receive hooks that project upwardly from opposite corners of a triangular metallic block. This block has a central socket extending its entire length, into which is inserted an adjustable rod, i, which passes thence through a hole in a flange projecting downward from the metallic plate, l (provided with a series of adjustable holes), into any one of which the threaded inner end of the rod, i, may be inserted and secured by a nut. The inner end of these plates are formed into downward projecting books, each of which engages with the side of a central opening made in a metallic block placed at the center of the harrow. Clevises are secured to the outer ends of two of the rods, lying in line with each other. In the normal condition of the harrow the four beams form a square; but if it is desired to widen the harrow in one direction it may be readily accomplished by adjusting the inner ends of the rods, i, along the line in which the harrow is to be widened and placing them in holes nearer the outer ends of the plates, l. By this construction it will be seen that the outer harrow beams are pivoted to each other at the ends, and will conform to the undulations of the ground. The tooth of this harrow is triangular, the triangle being formed of sides of unequal length, and is attached to the side of the tooth holder by a bolt and nut passing through holes in the tooth that hold it at either of its angles, and the tooth holder is bolted to the frame of the harrow.



New Portable Fence.

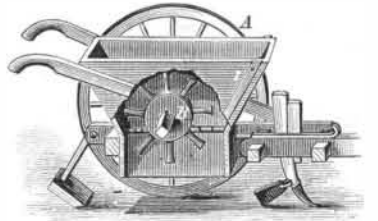
Mr. Oscar E. H. N. Reichling, of Marion, Grant county, Iowa, has patented an improved portable fence, that is easily erected or taken down and stands firmly when erected. The construction is shown by the accompanying cut. A base plate, A, is provided with a slot into which the lower end of the upright board, C, is placed. This board is provided with a series of apertures to receive the ends of transverse pins, D, which have a greater diameter in the middle than at the ends. The opposite ends of the pins are passed into an upright board corresponding with the first, but which rests on the base plate. The two uprights are then pressed together by means of wedges driven into the base plate through apertures provided for this purpose. The upright boards are prevented from coming together by the thickness of the middle part of the pin, D, and in the opening between the boards are placed the slats which have a shoulder formed at each end that rests upon the pin, D, and prevents swaying endwise. The upper slat is provided with notches in its under edge into which the pins, D, pass and thus serves to bind the several posts together. The slats are stiffened by means of a board, H, resting upon and crossing them on one side, and provided with a loop at the top and bottom, through which a bar is passed resting on the other side. The base plate is held to the ground by wooden spikes driven through it, or by pins having heads that catch on the plate.



A Combined Cotton Planter and Fertilizer Distributer.

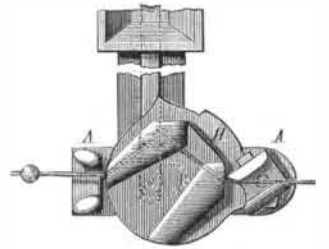
The device shown in the accompanying engraving is a peculiarly arranged and constructed cotton planter and fertilizer distributer combined. A A are wheels revolving on an axle B, and having on the inner ends of their hubs notched bands. The axle, B, is made square next to its journaled ends, and upon its squared parts are placed clutch bars, D, which may be moved upon the axle to enter or be withdrawn from the notches in the bands of the hubs of the wheels to cause the wheels to carry the axle with them in their revolution, or to revolve on their journals. The axle,

B, is made round at its point of intersection with the frame, E, and its rounded parts revolve in bearings attached to the side bars of the frame, to the forward end of which is attached a tongue, and a hook to receive the draught. A hopper is placed over the middle part of the frame, E, and is attached at its corners to the upper end of four bars, I, the lower ends of which are attached to the frame. The ends of the hopper extend below the frame to serve as ends to the discharge chamber. The sides of the discharge chamber are hinged at their upper edges to the side bars of the frame, so that the opening may be larger or smaller for more or less seed or finer or coarser fertilizer to be distributed. To the square part of the axle within the hopper is attached a hub having radial arms, to force the seed or fertilizer into and out of the discharge chamber. To the middle forward part of the frame, E, is attached a plow to open a furrow to receive the seed, and to its rear is hinged a block to pack the sides of the furrow and prevent the soil from falling in. The furrow is filled and the seed is covered by a coverer attached to the rear part of the frame, E. By the above construction it will be seen that the machine may be used as a cart for carrying the fertilizer to the field by sliding the clutch bars along the axle so as not to engage with the hubs, and when the machine is at the field the clutch bars are made to engage with the hubs and the fertilizer distributed.



A Novel Check Row Corn Planter.

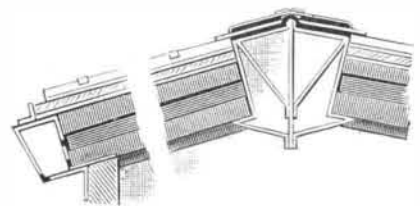
We find among the recent patents a novel device calculated to simplify and cheapen the construction, and insure accuracy in the operation of corn planters, of the class in which the seed dropping mechanism is operated by a cord or wire extending across the field. It is the invention of Mr. Lycurgus J. Bosworth, of Monmouth, Warren county, Ill., and is shown in the annexed cut. To the forward end of a frame, A, is attached a forked guide, to bring the cord into proper position for the balls attached to it at suitable distances to enter the guide channels attached to or formed upon the wheel, H. These channels allow the cords and balls to pass through freely, but have slots to their inner sides that will allow the cord, but not the balls, to pass through, and are made with an outward bend, near their rear ends, for the balls to draw against and turn the wheel, H. To the rear end of the frame, A, is pivoted a forked guide, the arms of which are made so that the pressure of the cord may have sufficient leverage to turn it, and to its base is attached a double pawl to engage with shoulders formed upon the rim of the wheel, H, to prevent the wheel from rebounding out of position. The channels in the wheel, H, are so arranged that when the rear end of either is opposite the rear guide, the forward end of the other will be opposite the forward guide. The wheel, H, is pivoted to a bearing attached to the frame, A, and to the lower end of the pivot is formed a crank to which is pivoted a seed dropping slide. With this construction the reciprocating motion of the wheel, H, will operate the slide and the seed will be dropped.



An Improved Skylight.

The accompanying engraving shows a peculiar construction, by which the metallic bars, curbs, and rafters of skylights are so adapted to each other that troublesome fitting is avoided, and strength, simplicity, and cheapness are secured. It is also formed so that the moisture resulting from condensation is amply provided for, and the glass securely held without the use of putty, at the same time allowing free contraction and expansion without permitting the glass to rattle.

This very desirable result is accomplished by the inventor by making the ridge bars of metallic plates, so bent as to form upper shelves and lower ledges when they are riveted to a central vertical plate. The ridge bar is strengthened by



bracing plates reaching from the vertical plate to the upper shelves.

The rafter bars are also formed of bent plates having upper ledges, and in the center of the sides water gutters are formed. These plates are also riveted together. Upon the top of the rafter bars is placed a strip of felt, which has