

The New Railway Line from Eagle Pass to the City of Mexico.

The officials of the International Railway announce that the road was opened Thursday, March 1, for through passenger and freight business between the United States and this republic. It will be known as the "Sunset Route" to Mexico. This road was built by C. P. Huntington and associates, and is practically a branch of the great Southern Pacific system. It leaves the main line of the Southern Pacific at Eagle Pass, Texas, 168 miles west of San Antonio, and crosses the Rio Grande River to Piedras Negras, Mexico, from which point it traverses an interesting country, rich in minerals and agriculture, passing through the large coal deposits acquired by Mr. Huntington some years ago, and then on to Torreon, where connection is made with the Central. A contract has recently been made between the Central and International companies for an interchange of traffic, which permits the running of through cars between Piedras Negras and all points on the Mexican Central Railway, including the city of Mexico.

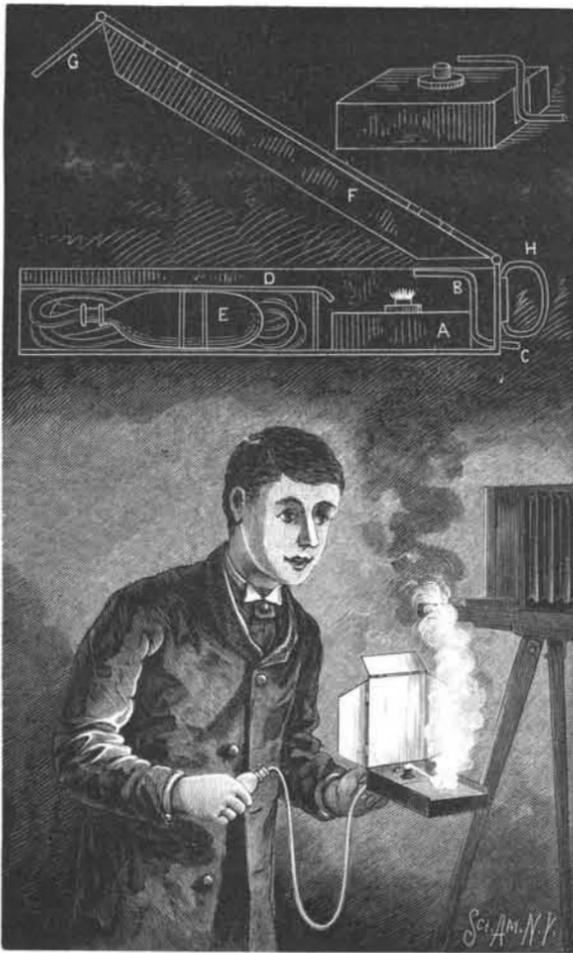
The new line is finely equipped, and has received a number of Pullman buffet sleepers, which are not surpassed for elegance on any road in America. These sleepers will run through between the city of Mexico and New Orleans, making but one change of cars to the city of Washington, St. Louis, Chicago, and other important cities. The completion of this road is hailed with pleasure here, as it reduces the distance to New Orleans, New York, and the Atlantic coast cities of the United States by 553 miles, and to St. Louis, Chicago, and cities in the Middle States about 400 miles, and shortens the time 24 hours. The freight and passenger rates have been greatly reduced, and it is expected that prompt freight service will be afforded without unnecessary delays.—*Mexican Financier.*

MAGNESIUM FLASH LAMPS.

Since the introduction of the magnesium powder flashlight for photographic purposes, numerous devices have been invented for easily igniting the powder. We illustrate some of the latest forms.

The engraving herewith shows a lamp constructed to operate on the blow-through principle. A small tin box about six inches long, four inches wide by two inches deep, forms the foundation of the lamp. The box is provided with a cover, hinged at the back, having side wings, F, hinged to it, which fold under the cover when it is closed. It also has an end wing, G, which covers the end of the box. When opened and placed in a vertical position, the cover with the side wings turned out acts as a reflector of the light, and also as a protector, preventing the powder from flying back and burning the hand.

In the front part of the box is a horizontal sheet of metal, D, forming a platform on which the powder is placed. Directly behind it is an alcohol lamp, A, made quite flat, and low enough to allow the flame to project about an inch above the platform. Rising from



PNEUMATIC BLOW-THROUGH LAMP.

the bottom of the box, and projecting through the back, is a metal tube, B, tapered at its upper end like the jet for a lime light. It rises to a level with the igniting platform, and projects over the wick of the alcohol lamp. To the rear end of the tube, at C, is attached a rubber tube and a pneumatic bulb. A folding wire handle, H, is secured to the back of the box.

After placing the magnesium powder compound on the center of the igniting platform opposite the flame

of alcohol, it is at once ignited by pressing the pneumatic bulb, since the horizontal stream of air emitted from the jet carries with it a certain portion of the alcohol flame. The moment the latter plays on the powder, a brilliant flash is produced.

The lamp may be held in the hand as shown or it may be placed on a stand or table, quite a distance from the operator.

The space under the igniting platform may be used for storing the bulb, E, rubber pipe, and powder when not in use, so that the whole when folded up will be compact enough to be carried in one's pocket. The general idea of this lamp is similar to one devised by Mr. Thos. McCollin, of Philadelphia, and lately exhibited before the Society of Amateur Photographers, of this city.

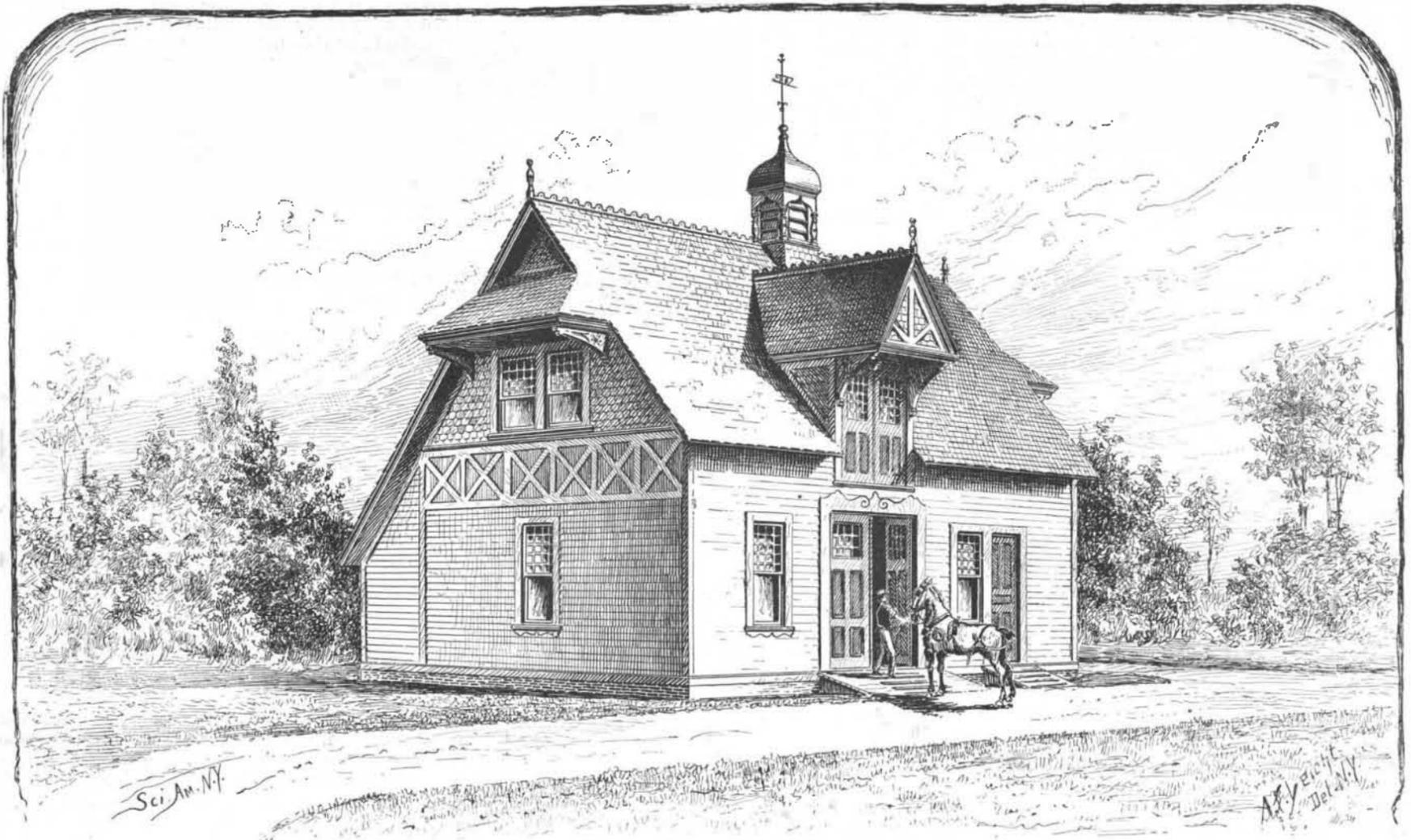
Fig. 1 represents a box similar to the one previously described, but the lamp is operated on a different principle. D is some loose cotton wicking, from four to six inches long, spread lengthwise on the igniting platform. E is a bottle of alcohol stored for convenience, together with the rubber bulb and tubing, when not in use, under the igniting platform.

The cotton, D, is saturated with a little alcohol. A is a vertical tube or cylinder, having a funnel-shaped top, and plugged with a cork. C is a tube rising from the bottom of A, and projecting over the igniting platform.

The tube, B, enters the rear of the box at the bottom, and connects with the top of tube, A. To operate the lamp, the rubber tube and bulb is attached at B, the cork removed from A, and into the latter is put the charge of plain magnesium powder. The cork is next tightly replaced. The wicking, D, is ignited with a match.

Compressing the pneumatic bulb will now force the powder in A through the tube, C, into the long alcohol flame and ignite it, producing as a result a brilliant flame. By means of a suitable reservoir, the cylinder, A, can be easily automatically refilled with magnesium powder, so that the latter can be successively forced into the flame at each pulsation of the bulb. The design shown is intended to supply a simple and easy means for igniting the powder. The box has a folding cover, and can be made of small dimensions.

Fig. 2 represents a plan for igniting small charges of magnesium powder with a Bunsen gas burner. The supply of gas enters through the tube, D. Located centrally within the burner, A, is a metal tube, B, which extends outward and is connected by tubing, C, to the bulb. Just below the top of the burner, at the end of tube, B, is fixed a metal funnel-shaped cup, E. The magnesium powder, on a small circular piece of paper, is set into the cup, E. The burner is then lighted, and pressure on the air bulb forces the paper



MR. BERGEN'S STABLE AT BABYLON, L. I.*

* In our last issue we presented a design of a handsome, inexpensive dwelling house, which had been erected at Worcester, Mass. As a companion to the dwelling house, we reproduce from the ARCHITECT AND BUILDERS EDITION of the SCIENTIFIC AMERICAN the elevation of a very pretty stable, which was designed by Mr. W. H. Beers, architect, of

this city, for Mr. Jacob M. Bergen, who had one built after the plan at Babylon, L. I., in 1886. The December number of the SCIENTIFIC AMERICAN ARCHITECT AND BUILDER of that year contains the plan of the first and second stories of the stable, which are well arranged for the comfort of the horses, the housing of the carriages, and convenience of the coach-

man. A full specification accompanies the drawings, giving full details of the construction, from the foundation to the ventilated cupola on the top of the building. Copies may be had at the office of this paper, and of most of the news agents. Price, 25 cents.

and powder up from the cup, E, into the Bunsen flame, whence it is ignited with a flash.

The lamp shown in Fig. 2 operates on the same principle, but the central tube is connected by a metal tube, C, to the reservoir, A, holding a supply of magnesium powder. The gas enters at E, and the flame burns just above D. F is a reflector. The rubber pipe and bulb is attached at B. The hole for admitting the powder

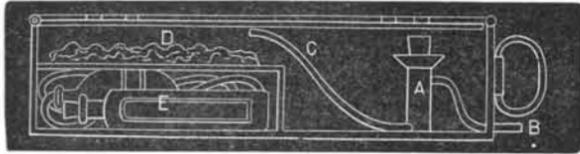


Fig. 1.

to this reservoir, A, is stopped with a cork. The gas may be kept burning all the time. As the air is forced into A, by compressing the bulb, a quantity of the powder is forced upward into the gas flame and ignited with a flash. It is only necessary to make successive compressions of the bulb to produce successive flashes, until the powder in the reservoir, A, is exhausted.

We have tried insect powder devices for forcing out the magnesium powder, but they do not prove effective unless the conical expelling tube is packed with the powder, that it may act as a piston, so that with a sudden compression of the bulb the whole of the powder will be ejected at one impulse. If space is allowed for the air to pass by, the powder will

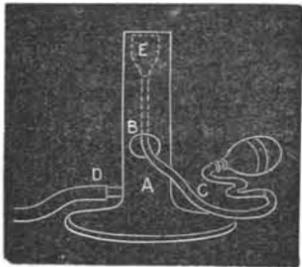


Fig. 2.

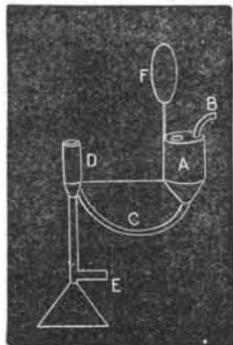


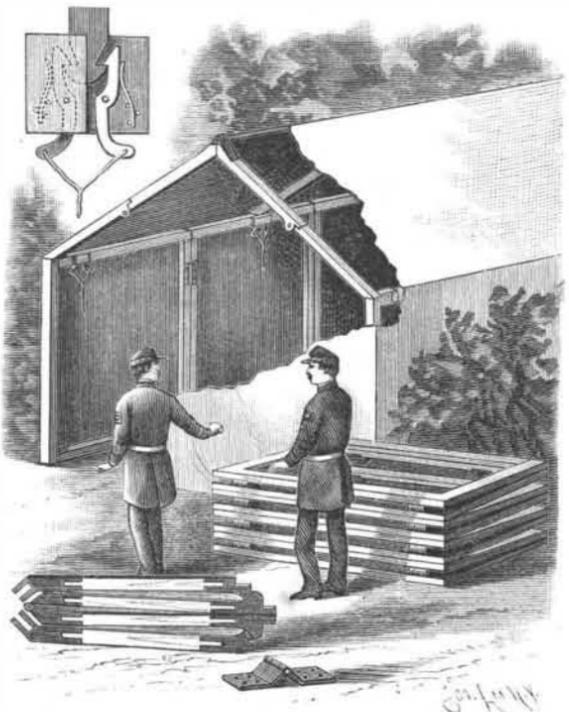
Fig. 3.

not be evenly discharged. The mouth of the jet in Fig. 1 should be about one-eighth of an inch in diameter.

It seems certain that the value of the flash light is now fully established as a means of obtaining photographs at night. Hence there is a field open to inventors for devising more effective devices, whereby the full power of the magnesium powder may be utilized.

AN IMPROVED FOLDING TENT OR LODGE.

An invention providing a folding tent or pavilion, which can be folded in small compass for transportation, has been patented by Mr. Laurence F. Ryan, of No. 172 East 112th Street, New York City, and is illustrated herewith. The body of the support is made of a series of rectangular frames, as shown folded in the illustration, the contiguous sides of the frames constituting the angles when the body is set up, being connected at top and bottom by a bracket hinge, the frames designed to be in alignment when the tent is set up having their contiguous sides united by a different form of hinge, and a locking device being provided for attach-



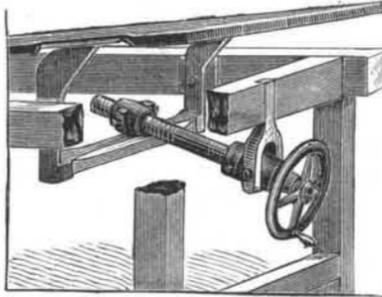
RYAN'S FOLDING TENT.

ment to the inner faces of the upper ends of the frames. The rafters are made to fold in sections, as shown, and when the tent is set up, are held in engagement by the locking device. A canvas covering is then thrown over the structure and made fast in any approved man-

ner, making a tent or pavilion which is firm and commodious, and which may be quickly and easily struck, or set up with little labor.

FARWELL'S SAW TABLE ADJUSTER.

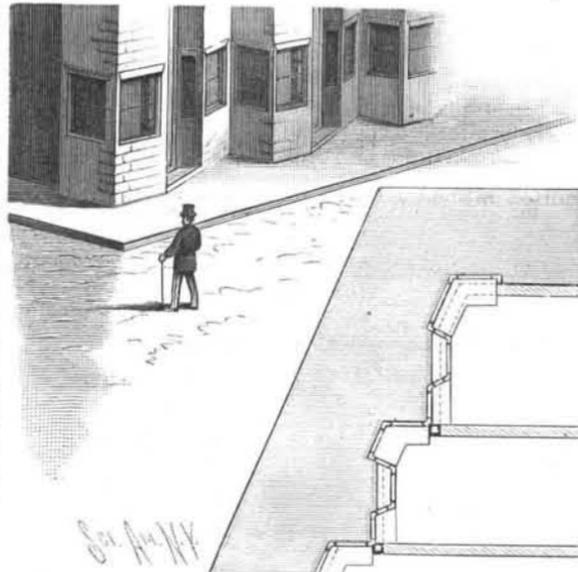
This adjuster, as shown in accompanying cut, consists of an arm each side of the frame, pivoted to an iron plate screwed to the frame. Connecting the arms at the bottom is a cross piece, in the center of which is an iron stand, for the reception of a pivoted nut, threaded to a screw extending to a bracket at front of frame, passing through a pivoted collar to a hand wheel, by which the arms are raised and lowered alike, and at the same time securing a solid bearing for each corner of the bench top, by means of a grooved track, in which the arms work, thus preventing any side motion, and enabling the operator to adjust the top to any height required very quickly. The cross piece at bottom of arms is of wood, thus easily adjusted to any bench.



The Rollstone Machine Co., 48 Water Street, Fitchburg, Mass., the well known manufacturers of all kinds of wood working machinery, are the sole manufacturers, and will be pleased to furnish any additional information.

BUILDING FRONTS ON DIAGONAL STREETS.

An invention relating to the construction of buildings on the line of a diagonal street, providing a design according to which the front of one building will not interfere with the view of another, and the front entrance will be at right angles, while there will be advantageous show window space, is illustrated herewith, and has been patented by Mr. Addison Smith, of



SMITH'S IMPROVED CONSTRUCTION OF BUILDINGS.

the Elliott House, New Haven, Conn. Each side wall has a window reaching to the building line, and from such windows are built diagonal front windows on the building line, reaching nearly to a central door entrance. At the left of the doorway is built a window set somewhat back of the building line, and parallel with the doorway, as shown in the plan view.

The French Navy.

According to a recent report, the French navy consists of 386 vessels of all kinds, made up as follows: 18 first class ironclads, 19 armored cruisers, 1 ironclad floating battery, 9 battery cruisers, 9 first class cruisers, 11 second class cruisers, 15 third class cruisers, 15 first class dispatch boats, 31 second class dispatch boats, 16 dispatch boats also available as transports, 8 dispatch boats available as torpedo vessels, 16 unarmored gun boats, 12 launches, each carrying a gun, 11 steam launches, 10 sea-going torpedo boats, 62 first class torpedo boats, 41 second class torpedo boats, 7 vedette torpedo boats, 10 first class transports, 10 second class transports, 4 third class transports, 13 sailing ships, 29 ships used for fishery protection, and 3 training ships.

A WRITER in the *Sanitary News* suggests the following simple mode of thawing our water pipes:

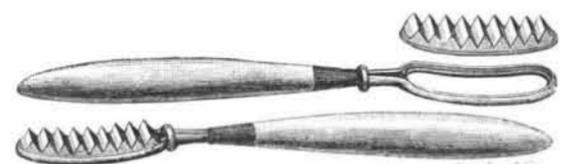
When I think there is a possibility that the pipes leading to the boiler might be frozen, as soon as I start the fire I pour a little alcohol into an old spoon and burn it under and along the hot water pipe from the stove to the boiler until it is warm. This loosens any ice that may have formed, and makes a vent that will prevent any explosion. If the cold water pipe was thawed instead, it might freeze up again before circulation started to keep it open.

A NOVELTY IN TOOTH BRUSHES.

It is obviously the intention of nature to supply every member of the human family with a good set of teeth. Strangely enough, the value of these very necessary organs is not appreciated by a large proportion of the people until decay is indicated by pain of the most uncomfortable sort. Then the sufferer resorts to the dentist, who perhaps succeeds in repairing the masticating apparatus so that it still serves its purpose. But a lesson has been learned, and it becomes a question as to preserving the teeth from further decay, thus avoiding pain, discomfort, and the dentist.

A tooth brush, tooth powders, and rubber bands or silk floss are the usual preventives of dental troubles. The utility of the first of these, in its common form, has been questioned by authorities in these matters. The bristles of tooth brushes are extremely harsh and unpleasant, producing unnecessary friction and wear upon the enamel, and inducing diseases of the gums. The bristles tooth brush has been used for so many years as to render it difficult to realize that anything better could be provided for the same purpose, still we here present a cut of a brush which, although of recent invention, has come into extensive use, and is favorably known wherever introduced. It is a tooth brush, or polisher, formed of felt and adapted to be used in connection with a suitable holder, as shown in the engraving.

This brush conforms to all the surfaces of the teeth,



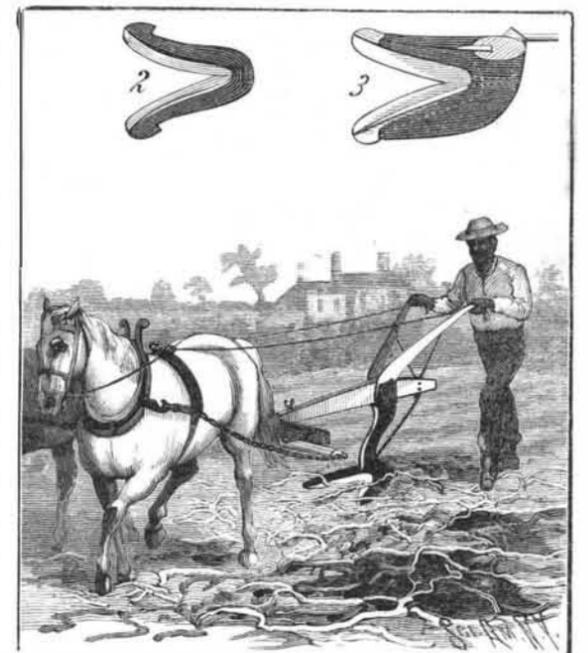
A NOVEL TOOTH BRUSH.

thoroughly cleansing and polishing them without undue friction, and without in any way injuring the gums. When one of the serrated felt tablets becomes worn, it may be instantly replaced by a new one at slight expense.

This novel article is being extensively manufactured by the Horsey Manufacturing Co., of Utica, N. Y.

AN IMPROVED GRUBBER.

A device specially adapted to remove from the surface of the ground the "saw palmetto," by cutting the roots which the stem sends out from its under surface into the ground, has been patented by Mr. Austin E. Lyman, and is represented herewith. To a beam similar to a plow beam is attached a standard having a bifurcated integral base or shoe, the opening being to the front, the bottom of the shoe being of a shape to run readily along the surface of the ground, and the standard and shoe being steadied by an inclined brace from the rear of the beam. The inner front edge of the body of the shoe is adapted to hold a knife or knives attached thereto, whereby an acute angle is formed at the back of the frame, as shown in Fig. 2, permitting nothing entering the open forward end of the carrier and traveling backward to escape uncut. A colter or vertical blade is affixed in the front edge of the standard, as shown in the sectional view, Fig. 3, to cut any transverse roots or vines that might come in the path of the shoe, and the grubber is made both right and left handed. By means of the handle the shoe may be



LYMAN'S GRUBBER.

given a motion from side to side as the team moves forward, rendering it easier for the team in working and facilitating the cutting of the roots.

For further particulars relating to this invention address Mr. John R. Lyman, Melbourne, Fla.