of a few hours' run with the steam pump. The amount saved over the old system is not less than $35 per month.

The problem of economy so far, then, has been solved and that of efficiency practically demonstrated.

Moss on Grass Lawns.

It is generally thought that a damp, undrained bottom is the cause of moss on grass lawns, but by some it is regarded as proceeding in a great measure from poverty of the soil, for where grass grows freely this parasite is rarely if ever found. To effect a riddance of this pest there is nothing equal to fresh-slaked lime and wood ashes mixed—so writes a correspondent in *Land and Water*—which, he states, not only kill it and cause it to shrivel up, but have a most beneficial result on the lawn by stimulating the natural herbage. Where this is really poor and needs assistance I would strongly recommend the use of both the above named, together with the addition of soot and finely sifted soil, which mixture is far better than guano, nitrate of soda, or other patent manures, that force too much growth for a time, only to be succeeded by increased exhaustion soon after. The first proceeding, however, to cure a mossy grass path should be to scarify it well over with an iron toothed rake, followed by a good sweeping after with partly used-up brooms, which will make way for seeds to be sown, and these should be worked in by using the rake as before. This done, the soil mentioned and the ingredients with it will then come in for affording an additional covering, under which it will germinate, and, once through, make rapid progress.

Etna in Eruption.

At the beginning of the current month great anxiety prevailed with regard to the rapid increase in the volume of lava pouring out of the craters of Mount Etna. Craters had formed on two slopes, and a double eruption was in progress. On the night of May 28 a number of brilliant balls of fire were thrown to a great height and burst aloft like rockets, emitting a fiery shower.

Later, fresh craters opened, endangering Bianca Villa, Randazzo, and Castiglione. Clouds of ashes overhung Piedmont, which was in almost total darkness. The Aci Reale and Catania Road was blocked and considerable damage had been done.

By the 2d of June a considerable portion of the bed of the Alcantara River had been covered by the lava. The damage to agriculture was already very serious. The inhabitants had been forced to abandon the village of Majo. Many large and valuable estates had been destroyed. The four main craters continued to pour forth streams of lava, while many of the smaller ones had become inactive. The stream of lava which had interrupted the road at Passa Pescaro was half a mile wide and a hundred feet deep.

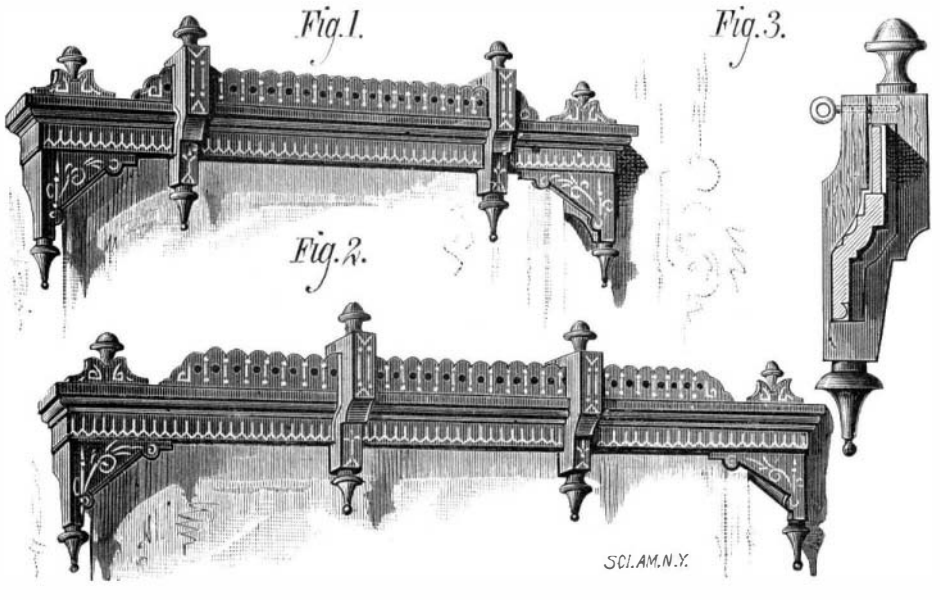
IMPROVED WINDOW CORNICE.

Any one who has had occasion to change his residence knows too well that what will do for one house will not answer for another. The furniture, carpets, and fixtures need remodeling to adapt them to their new situation. Not the least among annoyances is the variation in the width of windows, necessitating a change of shades and curtains and also of cornices, the latter being usually fully as expensive as either of the other items, and incapable of being adapted to a window narrower or wider than it was originally designed for.

To obviate these difficulties as well as to enable makers and dealers in window cornices to fit any kind of window without making a cornice especially for it, Mr. James W. Campbell, of No. 9 Baxter street, New York city, has devised the extension cornice shown in the accompanying engraving.

It consists of two thin mouldings, fitted one over the other, and arranged to slide and thereby lengthen or shorten the cornice to adapt it to any window. The vertical pieces or trusses are attached one to the inner end of each sliding piece, and they are split at their upper ends, and provided with a clamping screw, by means of which the parts may be fixed after they are properly adjusted. The trusses are lined with felt or flannel, as shown in Fig. 3, to prevent marring the face of the mouldings. Fig. 1 shows the cornice closed together. In Fig. 2 it is represented as extended.

These cornices are not restricted to any particular style of moulding or finish, and their form is always symmetrical. Further information may be obtained from the patentee, whose address is given above.



CAMPBELL'S IMPROVED WINDOW CORNICE.

THE MEXICAN EXHIBITION IN DOUBT.—The work of preparation for the proposed Mexican Exhibition has been stopped, and it is believed that the Mexican Cabinet has determined to abandon the enterprise for lack of means.

NEW COMBINATION TOOL FOR MERCHANTS.

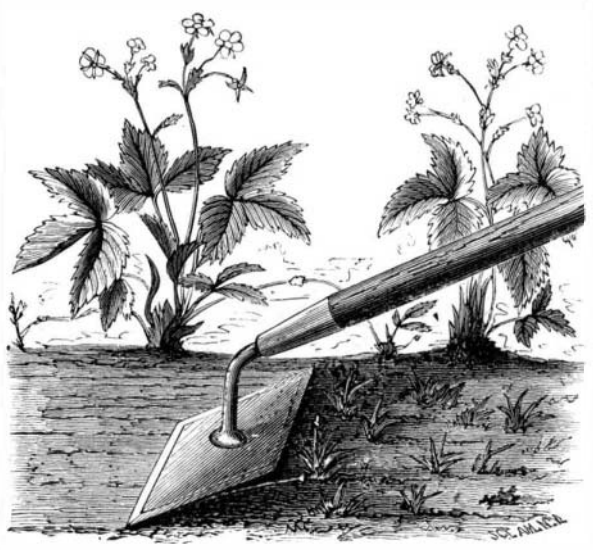
The accompanying illustration will scarcely need explanation, as the merits and usefulness of the article will readily be seen by those who have frequently to pack or open boxes or packages of merchandise. The tool combines in very simple form a hammer pincers, and wrench. When it is used as a nail extractor a driver, which is not shown in the engraving, is used for forcing the jaws into the wood.

This tool seems to combine the advantages of the more costly implements for a similar purpose. It was recently patented, and is being manufactured by Messrs. W. K. Smith & Co., of Kirkville, Mo.

SMITH'S COMBINATION TOOL.

A NEW SCUFFLE HOE.

The improved implement shown in the accompanying engraving is designed to take the place of the ordinary hoe in various gardening operations, but it is more especially adapted to such work as the cultivation of the strawberry and other similar plants, and to weeding onions, etc.



MUNSON'S SCUFFLE HOE.

The implement has been used for a number of years by the inventor in his own market garden, where he has proved to his own satisfaction that the men who use it can accomplish three times the work possible with an ordinary hoe. It may be used as a subsoiler, as it will readily break up the soil to a depth of five inches without great exertion on the part of the user, and it is stated that it is not at all difficult to make, in ordinary soil, strokes of five feet. It answers an excellent purpose in weeding onions and other plants growing in drills or rows, as it completely uproots the weeds and renders unnecessary any work with the hands. As a strawberry hoe it may be pushed around and under the vines without injuring them, and by inverting the blade it forms an efficient runner cutter, and it may also be used to set runners to root.

The great advantages possessed by this implement over others of its class are that it may be used without bending the back, and much less force is required to work it.

The general appearance of the scuffle hoe is shown in the engraving. The blade is diamond-shaped, and is curved, having its convex surface uppermost. The edges are beveled or sharpened, and the curved shank which receives the handle is secured to the center of the blade.

This invention was recently patented by Mr. T. V. Munson, of Denison, Texas, from whom further information may be obtained.

ENGINEERING INVENTIONS.

Messrs. Philo A. and Ira S. Knapp, of Danbury, Conn., have invented an improved cut-off for steam engines in which the valve is arranged so that it will close the live steam port at one third, half, or two thirds of the stroke, while the exhaust port remains open to the end of the stroke.

An improved railroad gate has been patented by Messrs. Henry Hahn and Anderson L. Gaston, of Gainesville, Texas. It is intended to fill up the gaps in fences crossing the railway track. It is lowered by the passing trains from either side, and is raised as soon as the train has passed over it.

Mr. Henry Ruse, of Baltimore, Md., has patented an improvement in railway ties. In a track formed with these ties two permanent clamping lugs of any one tie project in the same direction, but are arranged upon opposite sides of the rail from the permanent lugs of the next tie. The inventor also provides a peculiar locking device, by which important advantages are secured.

An improved car coupling has been patented by Mr. Geo. W. Cushing, of Sedalia, Mo. The object of this invention is to furnish a more efficient and durable substitute for the plate springs and other devices that are now used on that class of draw hooks that require side pressure to retain them in position.

Color Blindness.

That the prevalence of color blindness among railway employes, and the consequent danger, were not overrated by us in our early articles on this subject, continues to receive abundant confirmation. Dr. Keyser, of Philadelphia, according to the *Railway Review*, has examined the eyes of the train hands of three Philadelphia railways, and finds that three and one half per cent are color blind. These cannot discern the difference between colors; and in addition there are eight and one half per cent who can distinguish colors, but cannot distinguish shades of the same color apart. There are thus twelve per cent who have not that quickness and accuracy of perception of colors which should be considered absolutely necessary in the railway service, as long as signaling is done by means of colored lights. It is fair to presume that general investigation would show about the same results.

A Great Russian Telescope Projected.

At a meeting of the Naval Institute in Washington, May 29, Professor Newcomb stated that he has received letters from Otto Struve, Director of the Pulkowa Observatory, announcing that the Russian Government has voted 250,000 rubles for the construction of the largest telescope that can be advantageously made, including the building in which to mount it. The object glass is intended to be between thirty inches and three feet in diameter, if the glass makers find it practicable to cast a disk of this size of the necessary evenness and purity.

It has not yet been decided who shall undertake the most difficult part of the work, the grinding of the glass; and before deciding it Strune intends to visit this country in order to examine the Washington and other great telescopes made by Alvan Clark & Sons. He will probably arrive here for this purpose some time during the summer. Should his examination prove satisfactory he will be ready to open negotiations with the Clarks for the work if he is sure it will be done enough better to warrant the risk of sending the glass twice across the Atlantic.

Molecular Oscillations.

M. Raoul Pictet, of Geneva, one of the two chemists who not long ago were so brilliantly successful in liquefying hydrogen, has recently been engaged in researches which deal with some of the most delicate problems in molecular physics. He has endeavored to determine the length of the molecular oscillations of a body subjected to the action of heat. No explanation is given as to the method of calculation employed, but M. Pictet arrives at the remarkable result that the product of the length of molecular oscillation by the temperature of fusion is constant in all solid substances. He adds that the higher the