

## AGRICULTURAL INVENTIONS.

An improved sulky plow has been patented by Mr. Horace E. Reeves, of Fort Dodge, Ia. The object of this invention is to construct sulky plows in such a manner that the plows can be readily adjusted and controlled, will be firmly held while at work, and will yield should they strike an obstruction.

An improved horse hay rake of that form in which a revolving rake having teeth on opposite sides of its center is connected to an axle mounted on a set of running wheels and is provided with stop devices, which either hold the rake rigid while it is gathering the load or may be released to allow the rake to revolve and the load to be dumped, has been patented by Messrs. Isaac Q. Williams and Gustavus H. Osborn, of Goshen, Ark.

## New Zealand Cast Steel.

The black beach sand, so abundant in certain New Zealand shores, is likely to prove of great industrial benefit to that rising colony. The government has lately employed a mechanic to test the ore; and although restricted to an expenditure of \$500, he has succeeded in turning out five hundredweight of excellent steel. He mixed the iron sand with an equal quantity of clay and shelly sea sand to form bricks, which, after hardening in a kiln, were broken up and smelted in an ordinary cupola furnace. The product was fine cast steel, from which some promising specimens of fine cutlery were manufactured.

## IMPROVED LACE CUTTER.

Since the universal adoption of belting as a means of transmitting power, no little attention has been paid to devising means of uniting the two extreme ends of a belt, in a manner both efficient and easy of application. Perhaps the first thing ever used for this purpose was a thong or lacing cut from thin tough leather, and passed alternately through holes punched in either end of the belt, very much after the fashion of lacing a shoe, from which the idea was probably taken.

Judging from the amount of lace leather annually made, it would seem that the method of lacing belts was by no means the least popular. The disadvantages of cutting these lacings with a knife are so great that many consumers prefer to buy "cut lacings," notwithstanding the fact that they are seldom just what is wanted.

This objection is fully obviated by the use of the little tool shown in our engraving, which cuts and points lacings of any length or width as wanted and without loss of time or leather.

The construction of this lace cutter will be understood from the engraving. It is a practical and well made tool, the result of a long experience in the manufacture of tools of this class by the inventor, who was the first to place a lace cutter upon the market.

Manufactured exclusively by Sterling Elliott, 262 Dover street, Boston, Mass.

## IMPROVED HARNESS BUCKLE.

The engraving shows a harness buckle possessing several points of novelty and several advantages over buckles of the ordinary style. In point of appearance it is certainly all that could be desired, and it is very easily operated.

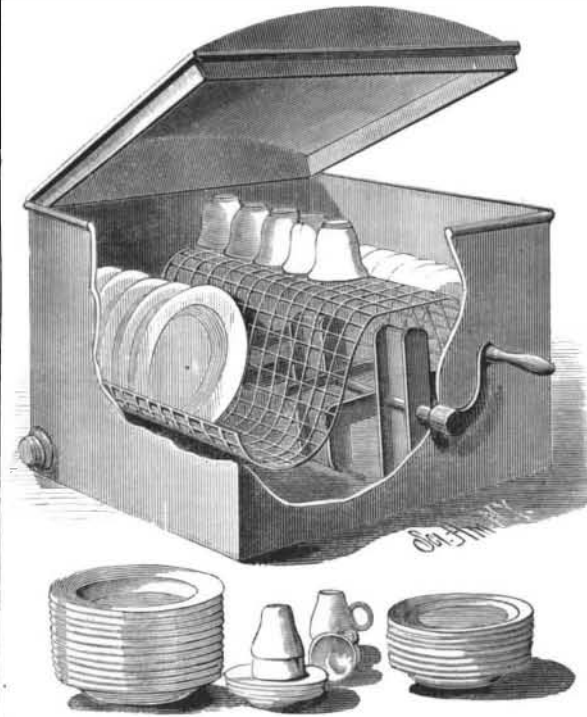
Fig. 1 is a longitudinal section of the buckle; Fig. 2 is a face view, and Fig. 3 is a detail view of the tongue showing the arrangement of the spring. The free end of the tongue is circular, and fits in a recess formed in the plate, C. A finger is formed with the free end of the tongue, and when the tongue is closed, the prong passes through a hole in the head plate, C, and in the plate below it. The spring catch, F, holds the tongue closed, or prevents the prong from being accidentally disconnected from the strap or trace, which is inserted between the bar, C, and the lower bar. The catch is made of spring wire, which is bent so as to have approximately a U-shape, and is confined in a recess in the under side of the tongue, E, as shown in Fig. 3. The ends of the arms of the catch, F, enter lateral notches formed in the plate, C, on each side of the recess, in which the head of the tongue fits. To open or close the tongue, E, the spring arms of the catch are pressed inward or toward each other, forcing the ends of the arms out of notches in the bar, C.

This buckle is very readily buckled and unbuckled, a great advantage when a horse gets down, as it can be unbuckled when the straps and traces are drawn tight. Where the buckle is applied all of the straps are kept perfectly straight, and the stitches are not worn or strained. The buckles may be of a uniform pattern throughout the harness, giving the harness a fine appearance. The spring is placed in a cavity in the tongue, and is thoroughly protected from dust, mud, and rain.

This improved buckle was recently patented by Mr. James A. Gavitt, of Dayton, Washington Ter.

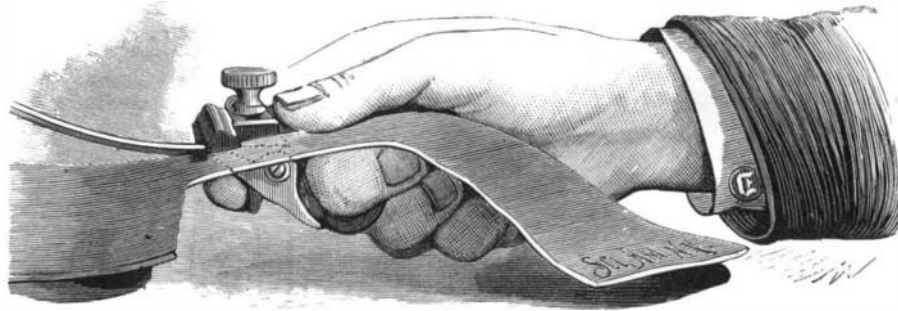
## NEW DISH WASHER.

Our engraving represents a very simple and effective machine for washing dishes, recently patented by Mr. Benjamin



HOWE'S DISH WASHER.

J. Howe, of Sing Sing, N. Y. The machine is shown in perspective, with a portion broken away to show the internal



ELLIOTT'S LACE CUTTER.

construction. A shaft carrying paddles revolves in a suitable vessel of tin or galvanized iron, and over the shaft is placed a curved grating which supports the dishes to be washed.

Cups and similar articles are placed on the elevated portion above the shaft, and plates and flat dishes are placed on either side of the shaft.

The paddles are of peculiar shape, being tapered and provided with flanges or lips which strengthen them and cause them to throw more water and with greater force than they would if made perfectly plain. The vessel containing the dishes and the paddle shaft has a tight-fitting cover, and

cleansed in five minutes by the use of this machine as can be done by one operator in the usual way in an hour.

It is of great utility to private families, and its use in restaurants and hotels will effect a great saving both in labor and in dishes. This machine can be made of any size, form or material, to hold from 50 to 1,000 dishes if desired.

## Photographs by Lightning.

Mr. R. Crowe, of Liverpool, communicates to the *British Journal of Photography* an account of some attempts to photograph a landscape by the aid of lightning flashes. A gelatine plate, requiring by day an exposure of two seconds, was exposed from 10:15 P.M., to 10:45 P.M., during which time there were 120 brilliant flashes and about half as many minor ones. Most of these were in a horizontal direction, and five or six of them were imprinted on the negative. A perpendicular flash which struck a church tower half a mile away was rendered with extraordinary sharpness and brilliancy. The surrounding objects, in spite of the long exposure, were but feebly impressed; whence Mr. Crowe argues that though the light of a flash of lightning is of a very actinic character, there still is not sufficient volume of light to illuminate a landscape or building to allow a successful photograph to be taken. [The probable difficulty is that the photo-plates are not sufficiently sensitive. The duration of a lightning flash was found by Wheatstone to be less than a millionth part of a second. We believe there is no record of the successful photographing of any object with a plate exposure of so short a length of time, even in the strongest sunlight.—Eds.]

## Bread Making in Spain.

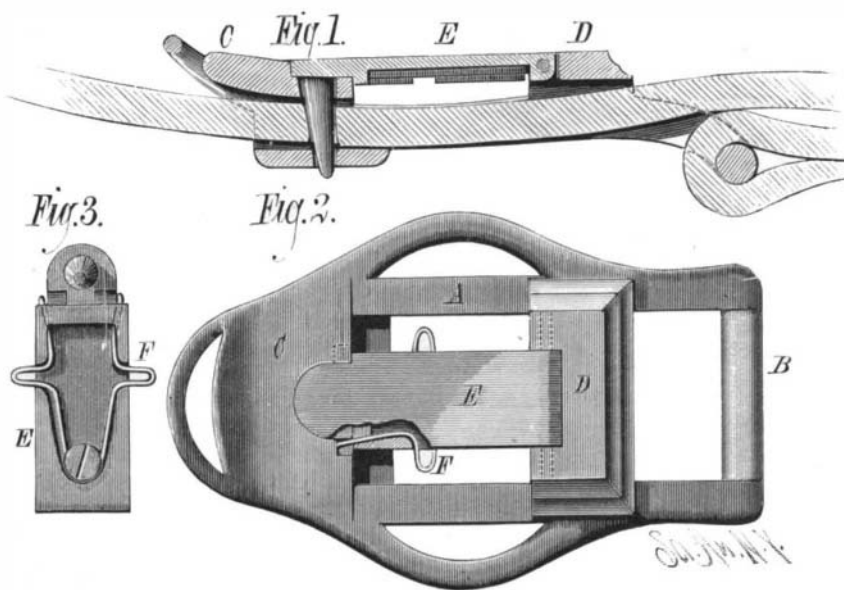
The bread in the south of Spain is delicious; it is white as snow, close as cake, and yet very light; the flour is most admirable, for the wheat is good and pure, and the bread well kneaded. The way they make this bread is as follows: From large, long panniers filled with wheat they take out a handful at a time, sorting it most carefully and expeditiously, and throwing every defective grain into another basket. This done, the wheat is ground between two circular stones, as it was ground in Egypt two thousand years ago, the requisite rotary motion being given by a blindfolded mule, which paces around and around with untiring patience, a bell being attached to his neck, which, as long as he is in movement, tinkles on; and when it stops he is urged to his duty by the shout of "arra mule" from some one within hearing. When ground, the wheat is sifted through three sieves, the last of these being so fine that only the pure flour can pass through it; this is of a pale apricot color. The bread is made in the evening. It is mixed with sufficient water, with a little salt in it, to make into dough;

a very small quantity of leaven or yeast in one batch of household bread, as in Spain, would last a week for the six or eight donkey loads of bread they send every day from their oven. The dough made, it is put into sacks and carried on the donkeys' backs to the oven in the center of the village, to bake it immediately after kneading. On arriving there the dough is divided into portions weighing three pounds each. Two long, narrow wooden tables on trestles are then placed down in the room, and a curious sight may be seen. About twenty men, bakers, come in and range themselves on one side of the table. A lump of dough is handed to the nearest, which he begins kneading and knocking about with all his might for about three or four minutes; and then passes it on to his neighbor, who does the same, and so on successively until all have kneaded it, when it becomes as soft as new putty and ready for the oven. Of course, as soon as the first baker has handed the first lump to his neighbor, another lump is given to him, and so on until the whole quantity of dough is kneaded by them all. The bakers' wives and daughters shape the loaves for the oven, and some of them are very small. They are baked immediately.

## Electricity on the Stage.

In Paris, during the play of "Le Pied de Mouton," a table is brought on to the stage, and afterwards a candlestick carrying two lighted candles. One of the characters in the play blows out the candles; but as soon as he moves away one of them unaccountably becomes relighted. The actor again blows out this light, when the other one becomes kindled; and, becoming enraged, the man takes up the candlestick and blows furiously without being able to extinguish the lights permanently. This effect, which gives rise to some amusement and astonishment, is produced by means of an induction spark which inflames the vapor from a mixture of ether and spirits of turpentine contained within the vessels which represent the wax tapers.

A cable of four fine conductors connected the latter, and the points between which the spark passed, with the table, and through it with the induction coil below the stage.



GAVITT'S HARNESS BUCKLE.

the shaft is provided with a crank by which it is turned. The vessel is partly filled with water, with the addition of a little soap, and the crank is vigorously turned both ways for a moment or so, when the cover of the vessel is removed and a quantity of water is poured over the dishes to rinse them. The dishes are quickly and thoroughly washed, with the expenditure of very little labor, and the breakage and nicking of dishes is entirely avoided. It is claimed that as many dishes can be washed and thoroughly