

**Improved Machinery for Excavating Ditches.**

Draining the soil is an important process in agricultural operations and one demanding a large degree of hard labor, labor of the most arduous character; consequently the adaptation of machinery to ditching is very desirable; but most machines heretofore produced have been too costly and too cumbersome to come into general use. The machine shown in the accompanying engravings is intended to supply a want generally felt by farmers. It is comparatively light, easily worked, simple in its parts, and efficient.

It consists, first, of a horizontal triangular frame, the wide or rear end of which supports the main axle, carrying two

If one has an idea, he should thoroughly understand it himself before he attempts to impart it to others. If he cannot put it into grammatical or journalistic form, that is his misfortune, and on this paper, at least, will not prevent him from a hearing from the great public reached by the SCIENTIFIC AMERICAN; but if he does not, himself, understand what he attempts to write about, it is too much to require that the editors of the paper should do the work which his incompetency prevents him from accomplishing. If correspondents of newspapers and magazines would consider, never so slightly, the labor they impose upon editors in sending illegible and incongruous articles intended for publication

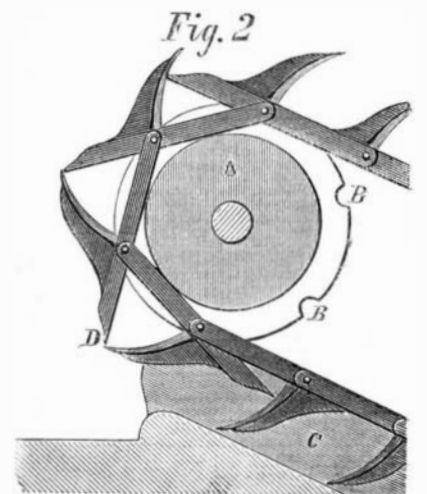
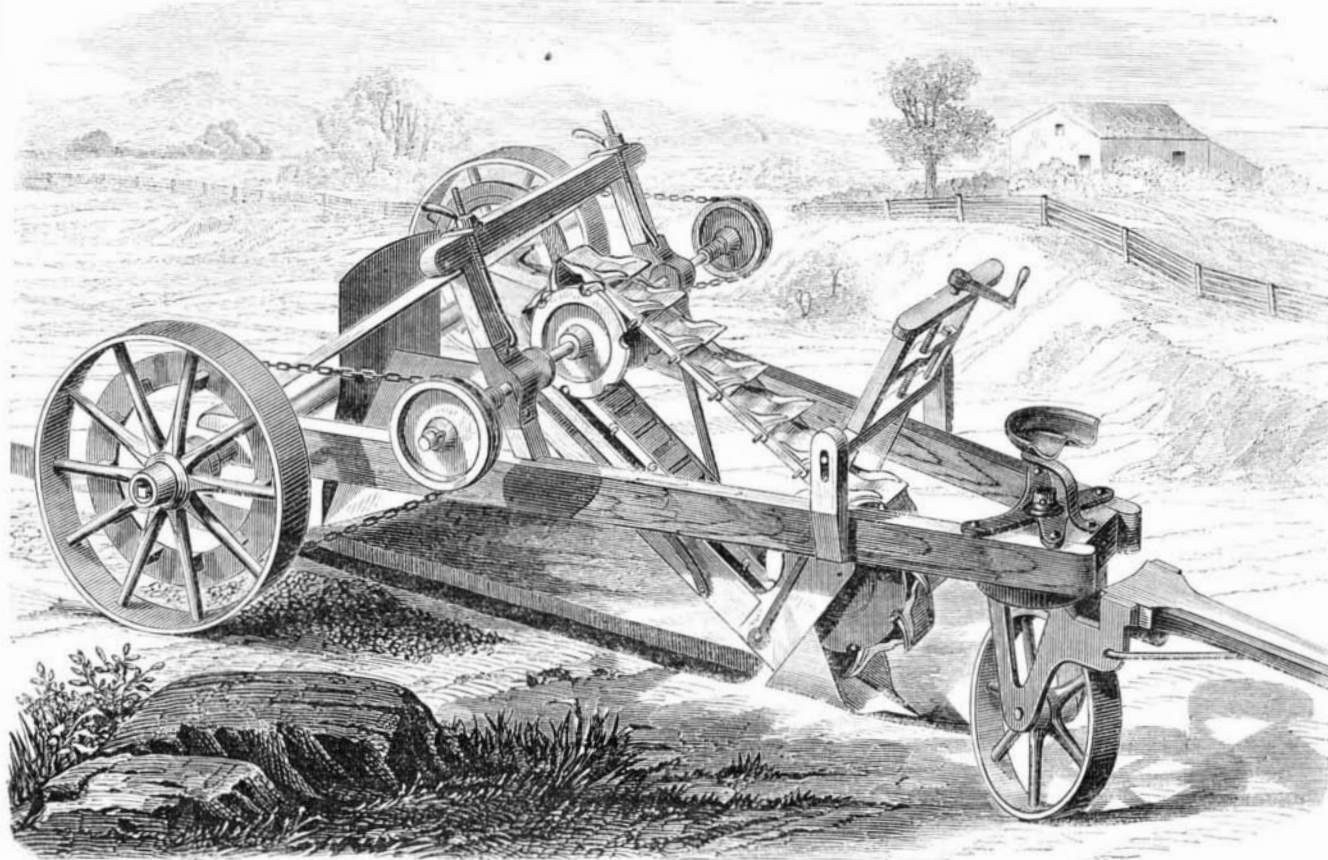
**SMALL-POX AND VACCINATION.**

The scourge of small-pox has, it is well known, visited the city of San Francisco during the past season with frightful severity. Fears have been expressed that it would, in spite of the precautions taken to prevent its spread, visit the large towns in the Atlantic States. In view of these facts we copy from the *Pacific Medical and Surgical Journal*, facts upon which the public should be posted at all times, and which are of special value upon a threatened invasion of this horrible disease.

"Small-pox does not tend to spread extensively in a city or district, unless quickened by an epidemic influence. It may exist in a city constantly, from year to year, a few cases at a time, without displaying an active contagion.

"During an epidemic aggravation *recent vaccination is the only safeguard*. Persons who have had small-pox, or who have been exposed to it in former years with impunity, as nurses and the like, are not secure from attack.

"The duration of an epidemic is from six months to a year. The disease seldom progresses steadily, but fluctuates without relation to the sensible changes of climate. Winter is the season most favorable to its prevalence.

**CONARROE'S BUCKEYE DITCHING MACHINE.**

broad faced driving wheels. The apex or front end of the frame has a guiding wheel, swiveled by a king bolt to turn in any direction. The main axle has secured on it, just inside the driving wheels, two chain wheels of somewhat smaller diameter, which, by means of chains, give motion to a cross shaft hung on a transverse frame rising from the frame near the rear. This shaft, by means of a suitable wheel at its center, impels an endless apron composed of a series of scrapers which, at the front end, pass over a similar wheel near the ground. Under this endless apron is an inclined trough, adapted in depth and width to the scrapers, and armed at the lower end with a pointed plow. The depth to which this plow is adjusted is governed by a screw seen directly back of the driver's seat. When not working, the plow may be raised entirely above the surface by this means. An examination of the large engraving will explain these parts without the necessity of letters of reference.

Fig. 2 gives the details of the scrapers. A is a section of the upper wheel over which the scrapers pass. These are pivoted together about midway of their length; the pivots projecting to engage with the semi-circular recesses, B, on the flanges of the wheels. These pivots operate, also, as fulcrum on which the scrapers turn. As the scrapers travel up the inclined trough, C, bringing the earth with them, they successively turn on the wheel, as seen, their projecting back ends sweeping the face of the scraper next in the rear until they assume the position represented at D, when the earth is thrown out and falls on a V-shaped incline that deposits it on either side of the excavation. This incline and guard are represented in the large figure.

Patented, Nov. 19, 1867, by Robert Conarro. A patent for recent improvements is now pending. For machines or other information, address Conarro, Young, and Smyers, Hamilton, Ohio.

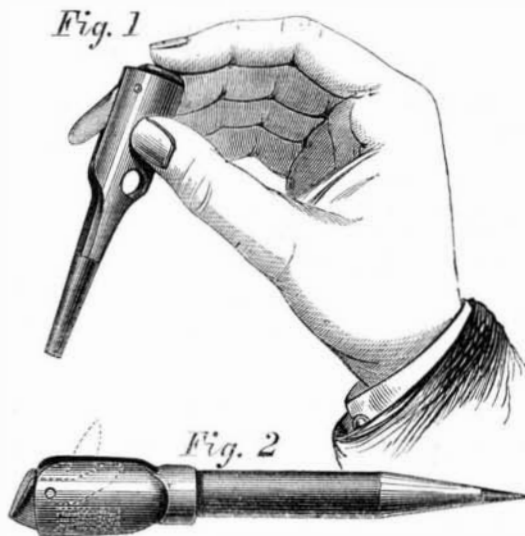
**WRITE LEGIBLY AND INTELLIGENTLY.**

The grand object of putting language on paper—of writing that others may read—is to give to the reader the ideas in the mind of the writer. This cannot be done if the writing is illegible. A large part of the annoyance of editors—those who attempt to give to the public the ideas of their correspondents through the organs (papers) they conduct—is occasioned by the neglect of their correspondents to write legibly. Not infrequently we receive articles containing facts that should see the light, and theories which should be brought to the notice of our thinkers; but they are frequently presented in such a garb that it is more than they are worth to pick out the grains of wheat from the ocean of chaff. Many of these communications have been laid quietly aside in our oblivion box, which if presented in any reasonable shape would have appeared in our columns. We do not allude only to valuable communications from those who have never had the advantage of a grammar school and do not understand the rules of orthography, but to those who have an idea on mechanical or scientific subjects but are themselves befogged and do not know how to present it, simply because they do not understand it.

they would take some pains to prepare their articles for their insertion.

**GROSS' PATENT COMBINED LETTER OPENER.**

The ordinary methods of opening letter envelopes by means of an ivory paper cutter, a knife, or the handle of an eraser, is slouchy and in many cases destructive to the envelope, the preservation of which is sometimes very important in settling



disputes, either in or out of the courts. Very methodical men carefully cut the end of the envelope with scissors; but when the inclosed letter fills the envelope, as it frequently does, there is danger of mutilating the letter and its contents, which is not comfortable in the case of a dunning letter or one containing greenbacks. The engraving, however, shows two adaptations of a simple device intended for opening letter envelopes, and useful, also, for ripping seams in garments and similar purposes.

Fig. 1 is the device in the form of a watch key, and Fig. 2 the same, forming the head of an ordinary lead pencil. The device is very simple: it is merely a blade, like a diminutive pen-knife blade, held in a sheath or handle of metal, and so formed and pivoted that a light spiral spring, inside the sheath, keeps the blade inclosed until pressure is applied by the finger to the projecting head of the blade. This construction is plainly seen in Fig. 2. In Fig. 1 the manner of using it is exhibited. It forms an ornament to the watch guard or a neat head to the pencil, to which it is attached by a screw thread in the socket.

Patented by Henry Gross, Sept. 8, 1868. All orders should be addressed to Gross, Lysle, & Co., Tiffin, Ohio.

Two large steamers, each 246 feet long, have just been dispatched from New York to China. They are to sail on the Yangtse river.

"During an epidemic of small-pox, other diseases are more frequent and more fatal.

"Foul emanations from sewers and so forth have little to do with it. They affect the general health, but do not promote in a marked degree the spread or duration of the epidemic.

"When the disease is not epidemic, the morbid germs emanating from a patient soon lose their vitality. But when an epidemic influence prevails, these germs resist decay and infect the entire atmosphere. They do not cause sickness unless the condition of the individual be favorable to their development. In an infected city, many persons—perhaps most of the inhabitants—receive them in the blood without injury.

"Disinfectants, such as chlorine, carbolic acid, the fumes of sulphur, etc., will not destroy the germs of small-pox, unless they are strong enough to destroy human life. Sunlight, air, and heat are the best disinfectants. Clothing is perfectly disinfected by baking in an oven, or exposure for a short time to a heat at or above that of boiling water.

"The period of most active contagion is after the appearance of the eruption and during the process of scabbing. It is questioned by some good authorities whether the disease is contagious at all prior to the formation of pustules.

"Vaccination will not take perfectly a second time in more than one or two out of every one hundred persons.

"It will take partially, with some resemblance to the genuine cow-pox, in twenty-five per cent of the cases. Here the presumption is that re-vaccination was useful.

"A large scar is no evidence of genuine vaccination, nor is a large and painful sore. A spurious pustule is apt to be worse than the genuine vaccina.

"When re-vaccination is not followed by itching, or any other effect, it should be repeated. The virus may not have been active.

"No other matter should be employed than the lymph or crust from the first vaccination of a healthy child; or that taken from the cow. There is less uncertainty in the former than the latter.

"The crust should never be kept long after mixing it with water. It develops a virulent poison.

"Evacuation of the pustules is advised not only to prevent pitting, but as possibly serviceable in lessening danger from secondary fever, and as a case in point it is stated thus: An entirely unexpected recovery of a very bad case, was effected by the patient opening of the pustules and wiping away of the matter by the wife of the patient, rapid improvement taking place at the time when the dreaded secondary fever should have set in."

**INDIA RUBBER LIQUID BLACKING.**—Take of ivory black, sixty pounds; molasses, forty-five pounds; gum-arabic dissolved in a sufficient quantity of hot water, one pound; vinegar, twenty gallons; sulphuric acid, twenty-four pounds; India rubber, dissolved by the aid of heat in nine pounds of rape seed oil, eighteen ounces; mix them well together. This blacking may be applied by means of a small sponge, attached to a piece of twisted wire, like the well-known Japan blacking.