THE FARMERS' CLUB ON LIGHTNING.

The Farmers' Club have now had three pow-wows on lightning, an account of the first of these was given on page 150 of the present volume of the SCIENTIFIC AMERICAN. At the second, held on the 3d inst., after several members had related their experience, a Mr. Gilbert gave the subject a new turn by making a statement of some of the established laws of electricity which pertain to the construction of lightning rods. Mr. Gilbert's remarks, although they were of an elementary character and what may be found in any good school book which treats of the subject, appeared quite too profound for the farmers, and the speaker was rather summarily called to order by one of the oldest and ablest of the farmers (an editor of the *Tribune*), who declared that the club could not listen to the fanciful speculations of gentlemen, and that he didn't want anything but facts. This onslaught on science rather discomposed the meeting, and after a few more stories of "hair-breadth 'scapes," the club adjourned.

The third pow-wow was held on the 10th inst., and was opened by the reading of several communications, expressing a variety of opinions, which the chief farmer pronounced good common sense. The letters were followed by short speeches from various members, from which it appeared that one gentleman believed that a lightning rod is a sure protector, another that a lightning rod is extremely dangerous, another that "it's of no consequence" anyhow. Several original theories also were propounded, the most curious of which makes heat and lightning about the same thing; the author of this theory looks at the tip of a lightning rod during a storm with an opera glass, and observes that it is red hot. Finally, it was proposed to appoint a committee to find out if lightning rods are of any use; but the secretary suggesting that the club is a committee, a resolution was passed inviting all men to furnish facts to the club, from which it may be determined if lightning rods are good; and the club adjourned for another set-to on the 17th.

At present the aspect of affairs is rather squally. Suppose the Farmers' Club should go and say that lightning rods ought not to be. Shade of Franklin forbid! We hold our breath again.

But let it not be supposed that we feel disrespectfully towards the Farmers' Club, or would wrongfully speak ill of it. The Farmers' Club is a noble society and has done a great deal of good; we have no safer or higher authority for practical or scientific agriculture. As to facts and theories pertaining to the growing of vegetables, we are willing to defer to farmers, but our deep respect ends with such subjects. And we submit that it is presumptuous in a farmers' club to attempt to teach the world about things of which they have yet to acquire the rudiments of knowledge. *Ne sutor ultra calcem*, that is, let the farmers stick to farming, but if they persist in teaching the people about lightning, let them fortify themselves with a few good school books.

LIGHTNING ON THE RAILROAD.

MESSRS. EDITORS:—The Charlotte (S. C.) Railroad runs 160 feet from my house, and, during thunder and lightning, a succession of cracks is frequently heard along the track, like fire-crackers or the report of a small pistol. Would not this afford ground of diminished apprehension—nay, of comparative safety—from lightning, especially when surrounded by a number of lightning rods, which are attached to adjacent buildings in the village? D. L.

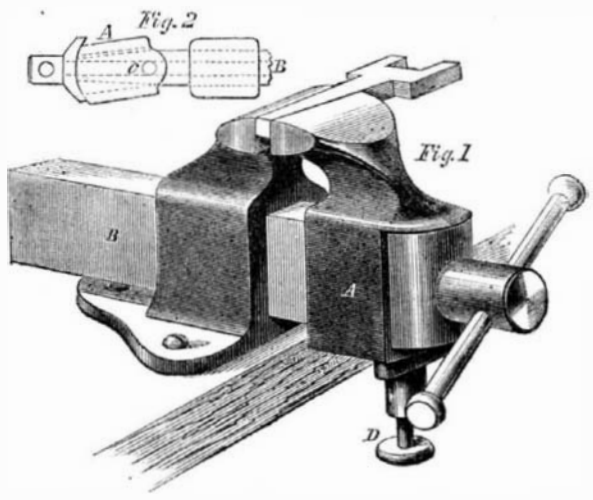
Charlotte, S. C., Sept. 15, 1860.

[Yes, without doubt, unless your house is a meeting-house, set on a hill, and with a tall spire which has no lightning rod. The *dictum* that a rod will protect a circle of a diameter four times the length of the rod is not rigidly true. The real truth, as in many other things which are said, "depends upon circumstances." Get a copper rod, if you can afford it, and do not let it be in metallic contact with the chimney, as the old one was.—EDS.

CLARK'S IMPROVED VISE.

It is well known that it is impossible to hold a tapering piece of iron firmly in the ordinary vise with parallel jaws, and much time is lost in looking about the shop for a piece of thin plate to place under the narrow end of the metal to be held, to prevent it from falling down between the jaws of the vise. The annexed engraving illustrates a little modification of the common parallel vise, which enables it to grasp firmly any tapering body, and a slight adjustment immediately secures the jaws in the usual parallel position.

This is effected by securing the movable jaw, A (Figs. 1 and 2), to the sliding bar, B, by means of a pivot, *c* (Fig. 1), so that it may turn horizontally through a small arc, varying to this extent the position in which

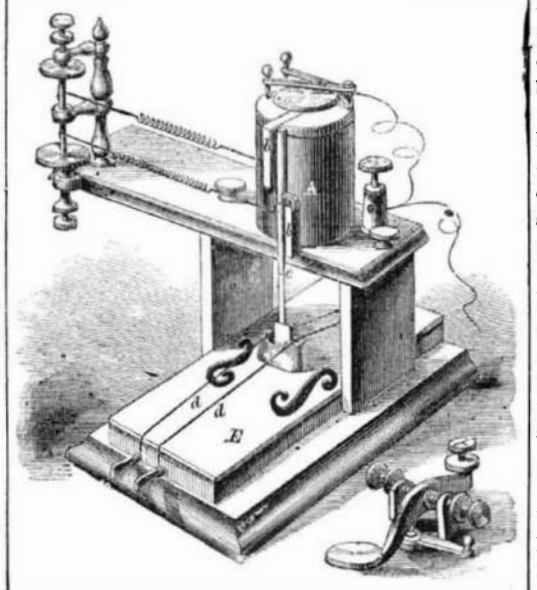


CLARK'S IMPROVED VISE.

it stands in relation to the other jaw. The sliding bar must of course be cut away somewhat to permit this motion of the jaw, but as the bar in this part is solid, while there is a groove cut in the other portions of it, the whole bar is not thus weakened. The movable jaw is fastened upon the sliding bar in a position parallel with the other jaw, by means of a pin, D (Fig. 1), which enters a hole in the bar made to receive it, when a quarter of a turn holds it in place. Besides the great convenience of this vise, it is made of elegant form and finely finished, being a veritable ornament to a manufactory.

The patent for this invention was granted to C. B. Clark, the inventor, March 16, 1858, and the vises are manufactured by W. T. Nicholson, at Providence, R. I., to whom inquiries for further information in relation to the matter may be addressed.

IMPROVED RELAY AND SOUNDER.



We mentioned, last week, that we should present in this issue an illustration of Dr. Bradley's improved relay magnet and sounding-board, by which far greater delicacy in the magnet was obtained, and local circuits in telegraph offices wholly dispensed with.

The accompanying cut is a representation of this neat little apparatus. A is the helix of copper wire, with the two ends, *b b* (of soft iron, which is made magnetic by the passage of the electricity around it), projecting from the ends of the helix, and bent over along its outer sides. The round armature, *c*, is suspended at its middle by a delicate spring, between the two ends of the magnet, in such a position as to be in close proximity to them throughout the length of the helix, and to be caused to oscillate on its spring fulcrum by the joint action of both ends of the magnet drawing the ends of the armature in opposite directions. Attached to the lower end of the armature is the thin blade of metal, *e*, which has a shovel-shaped enlargement at its lower end for striking the two wires, *d d*, that are stretched on the sounding-board, E. The wires, *d d*, are bridged on each side of the point at which they are struck, by which means they impart but a single wave or vibration to the air, producing a sharp, clear, short sound, without any prolonged musical tone. The spiral spring, G, draws the armature back from the magnet when the circuit is opened, and the action of this spring is rendered more rapid by putting it in a state of tension, which is done by applying a counteracting spring, *g*, to the armature on the opposite side of the fulcrum. This property of springs, by which the rapidity of their action is increased without increasing their power, is an important discovery in mechanics made by Dr. Bradley.

In winding the helix, after a certain number of layers of wire, a loop is brought up and connected with a brass knob in the end of the helix; and, in the course of the winding, similar loops divide the helix into a number of concentric sections. As electricity always takes the shortest road along conductors equally good, if one end of the conducting wire is fastened to the helical wire at its inner end, and the other end of the conducting wire is connected with the inner section by its brass knob, the flow of electricity will be only through the innner section of the helix, and, by connecting with the different knobs, any desired portion of the helix may be brought into the current. To facilitate this adjustment of the helix, two levers, *h*, are secured to the top of the helix, in such a manner that one end of each may be placed readily in contact with either of the brass knobs which are placed in a circle concentric with the fulcrum of the levers.

The form in which this magnet is constructed, by affording a large amount of attracting surface and by securing the action of the electricity on both the inner and outer surfaces of the helix, obtains a larger amount of attractive power from a given length of helical wire than is realized from the ordinary magnet with the double helix; and in practice, it is found that the iron becomes magnetic, and is demagnetized more rapidly and completely than is the case in the old relay. The hanging of the armature, too, in this magnet is so delicate that it acts without any difficulty from the current of the main line, requiring no local current; and the sounding-board so increases the loudness of the knocks that they are read by the ear with the greatest facility. It has been tried on the lines between New York and Boston, and on those between New York and Montreal, and invariably gives the highest satisfaction to the operators. The apparatus above described, with the key represented in the corner of the cut, is all the apparatus required for telegraphing, in addition to the main wire and batteries. It will be understood that this does not embrace Dr. Bradley's recording apparatus, spoken of in our last week's issue, by which he can transmit 15,000 words in an hour. The action of this is limited by the power of the hand and ear to make and interpret telegraphic signals.

The patent for this invention was granted on August 28, 1860; and further information in relation to it may be obtained by addressing the inventor, Dr. L. Bradley, 38 Pine-street, New York city.

A STRAWBERRY has been produced in England over 3 inches in diameter; the size of a very large apple.