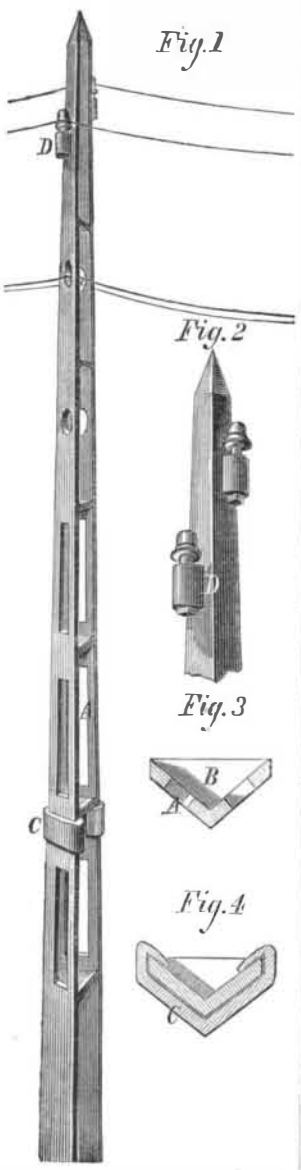
NEW FORM FOR METALLIC TELEGRAPH POLES.

We presume that there are few who, in common with ourselves, have not been impressed with the unsightliness of the cumbrous wooden telegraph poles which disfigure the finest thoroughfares of our large cities. Huge tall posts, often crooked, with their defects made still more glaring by a coat of white paint, far from correspond with handsome stone façades or elegant architectural adornment. Hence it may be imagined that any substitute, particularly if made of metal, such as the novel invention herewith illustrated, and of a neat and graceful design, will receive favorable consideration, both from telegraph companies, in point of its superior economy, and on account of its unobtrusive and even ornamental appearance from those charged with the improvement of our city streets.



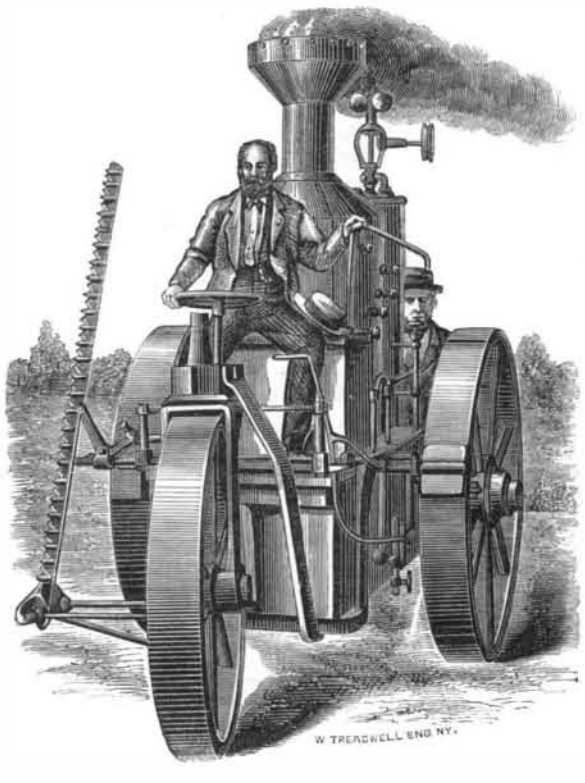
The posts are made in sections, of either cast or rolled angle iron, and constructed of the form shown in Fig. 1, that is, tapering from the base to the top; and when made of cast metal the wide flanges have long openings or slots, A, in which pins may be inserted to adjust the wires. A horizontal section of these portions is represented in Fig. 3. The cross pieces, B, by which to climb, may be cast in the angle between the wires.

The sections are connected together by slips, C, Figs. 1 and 4, on the end of one section; between which and the extremity of said section, the end of the adjoining portion is slid in. Similar clips, or dovetailed grooved clips, D, are applied to the upper ends of the top sections, Fig. 2, for the reception of the insulators for holding the wires.

It is claimed that posts of this form are cheaper and more durable than those of any other pattern now in use. Patented through the Scientific American Patent Agency, June 3, 1873. For further particulars address McCarver, Athey & Jennings, Oregon city, Oregon.

CUMMINGS' STEAM MOWING, REAPING, AND THRASHING MACHINE.

Some issues back, we published an engraving and description of the Hayes steam reaper, an agricultural invention of considerable merit recently introduced in England. The article attracted the notice of a correspondent, Mr. Marcellus



V. Cummings, of Geneseo, Henry county, Illinois, who has lately forwarded to us the facts, embodied in the following description and illustrated in the annexed engraving, relative to a machine of similar description, invented and patented by him (May 12, 1868) over five years ago, which, he informs us, is now in actual and successful use in the above mentioned locality. Our illustration, from a photograph, will convey an excellent idea of its appearance and construction. The boiler is thirty-one inches in diameter by five feet in length, and is of the tubular pattern. There are two steam cylinders, each four by eight inches, together with a water tank holding five barrels of water, and coal bunkers containing five bushels of coal. The large driving wheels are five feet in diameter and eight inches in tread; the front steering wheel, operated as shown, is four feet in diameter, with similar tread. The grass sickle cuts six feet four inches and the grain sickle nine feet six inches.

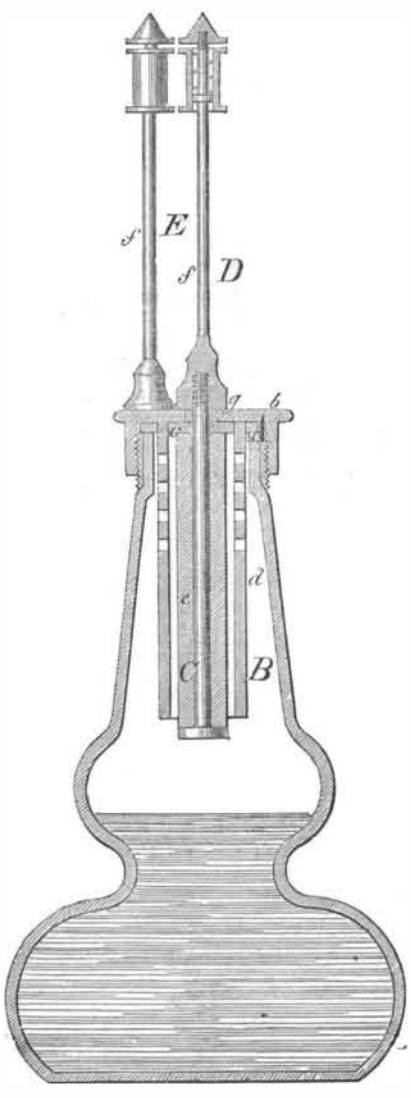
The inventor states that he drives his engine from farm to farm without the aid of horses, and that it traverses over plowed land, up hill or down, with the greatest ease. The rate of speed is about four miles per hour, and an acre of ground can be mown in twenty minutes. The grain thrashing machine is placed on a two wheeled carriage, which is coupled on behind the engine, and is thus hauled by the latter over country roads, from place to place, throughout whole counties. The entire weight of the apparatus is 4,200 lbs.

Judging from the facts transmitted to us, this invention appears of considerable importance and worthy of the attention of farmers having large tracts of land under cultivation. The patentee states that his means did not admit of his constructing more than one machine, by the aid of which, however, he has earned sufficient to build another. If, as he asserted, and doubtless with truth, its advantages, both in itself and as a traction engine, are so extended, it amply deserves a reputation much wider than it has attained.

ELECTRIC GAS LIGHTER.

We are indebted to the Belgian *Bulletin de Musée* for the accompanying illustration and description of an ingenious gas-lighting apparatus, the invention of Dr. Klinkerfues. The principle of the device is the heating of a coil of fine platinum wire, by a weak current of electricity, to a sufficient temperature to ignite the gas.

The invention is composed of a glass vase of suitable shape, closed by a cover screwed on, and packed so as to exclude the air by a rubber plate, A. The two elements, B and C, are zinc and graphite, the former is in the shape of a tube, is pierced with several holes, and is attached to the



cover. The graphite is in the form of a cylinder and is secured as described further on. Upon the cover are the two electrodes, D and E, consisting of rods of brass at the upper extremities of which are spring clamps which hold the spiral of platinum wire. One electrode, D, is attached directly to the cover, the other, E, carries the graphite cylinder, and is isolated at its point of contact with the cover by a rubber envelope.

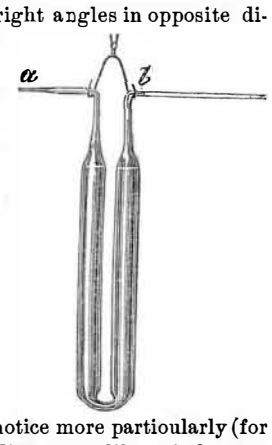
The liquid contained in the vase is composed of three parts chromate of potash, four of sulphuric acid, and eighteen of distilled water. To use the apparatus it is only necessary to slightly incline the vase so that the liquid is brought in contact with the elements. A current is established which heats the platinum by which the gas is lit. On returning the device to its vertical position, the fluid rests at the bottom and the current is interrupted.

The same inventor has arranged a similar plan for the automatic lighting of jets, the apparatus being placed upon the burner. During the day, while the pressure of gas is low, or when the supply is partially or wholly turned off, the liquid is not in contact with the zinc and graphite; but on admitting a greater pressure, the fluid is forced up and a current established. This device, hardly so practical in form as that above described, was fully explained on page 393 of our volume XXIV.

SPECIFIC GRAVITY INDICATOR.

Dr. Hermann Sprengel says, in the *Journal of the Chemical Society*: "I have, for a number of years, availed myself of pipette shaped vessels in preference to the usual specific gravity bottle, the following being a short description of my method:

"The form of my instrument, Fig. 1, is that of an elongated U tube, the open ends of which terminate in two capillary tubes, which are bent at right angles in opposite directions. The size and weight of this instrument should be adapted to the size and capability of the balance in which it is to be weighed. The instrument which served for my determinations had a length of 7 inches, and was made of a glass tube, the outer diameter of which was $\frac{7}{16}$ of an inch. It hardly need be mentioned that the U shape is adopted for the sake of presenting a large surface, and so rendering the instrument sensitive to changes of temperature. The point, however, which I wish to notice more partioularly (for reasons explained below) is the different caliber of the two capillary tubes. The shorter one is a good deal narrower (at least towards the end) than the longer one, the inner diameter of which is about ·02 of an inch. The horizontal part of this wider tube is marked near the bend with a delicate line, *b*. This line and the extremity of the opposite capillary tube, *a*, are the marks which limit the volume of the liquid to be weighed.



The filling of the instrument is easily effected by suction, provided that the little bulb apparatus (as represented in Fig. 2) has previously been attached to the narrow capillary tube by means of a perforated stopper, that is, a bit of india rubber tube, tightly fitting the conical tubulus of the bulb. On dipping the wider and longer capillary tube into a liquid, suction applied to the open end of the india rubber tube will produce a partial vacuum in the apparatus, causing the liquid to enter the U tube. As this partial vacuum maintains itself for some time (on account of the bulb, which acts as an air chamber), it is not necessary to continue the suction, if the end of the india rubber tube be timely closed by compression between the fingers. When bulb and U tube have about equal capacity, it is hardly necessary, during the filling, to repeat the exhaustion more than once. Without such a bulb, the filling of the U tube through these fine capillary tubes is found somewhat tiresome. The emptying of the U tube is effected by reversing the action and so compressing the air.

"After the U tube has been filled, it is detached from the bulb, placed in water of the standard temperature almost up to the bends in the capillary tubes, left there until it has assumed this temperature, and, after a careful adjustment of the volume, it is taken out, dried, and weighed.

"Particular care must be taken to insure the correctness of the standard temperature, for a mistake of 0·1°, causes an error in the 5th decimal, making 100000 parts 100001·4 parts.

"A peculiar feature of my instrument is the ease and precision with which the measurement of the liquid can be adjusted at the moment it has taken the standard temperature; for it will be found that the liquid expands and contracts only in the wider capillary tube, namely, in the direction of the least resistance. The narrow capillary tube remains always completely filled. Supposing the liquid reaches beyond the mark, *b*, it may be reduced through capillary force

by touching the point, *a*, with a little roll of filter paper. Supposing, however, that in so doing too much liquid is abstracted, capillary force will redress the fault, if point, *a*, be touched with a drop of the liquid under examination; for this gentle force acts instantly through the whole mass of the liquid, causing it to move forward again to or beyond the mark.

"As the instrument itself possesses the properties of a delicate thermometer, the time when it has reached the standard temperature of the bath may be learned from the sta-