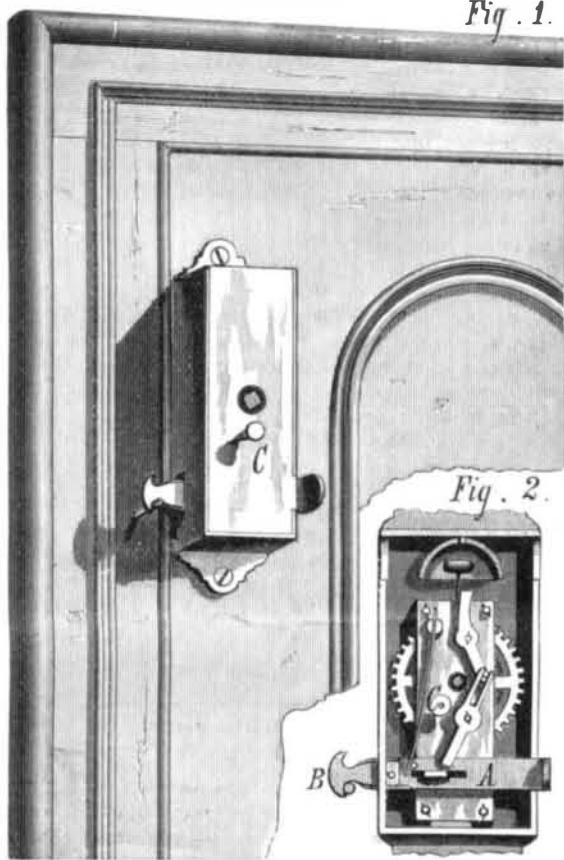


**POWELL'S IMPROVED BURGLAR ALARM.**

In the accompanying engraving is represented a new and simple burglar alarm, which may easily be attached to any door. It is so constructed as to be rendered operative or inoperative at will, and is located on the door, shutter, or window, so that a wire inserted from the outside cannot be used as a means of discovering its presence. It presents a neat exterior appearance, as shown in Fig. 1. The rotary parts are exhibited in Fig. 2.

The device consists of a metal box in which is inserted an ordinary clock train, provided with spring, etc., and having the arm, to which the pendulum is usually attached, extending upward and carrying a hammer for striking a gong. Across the frame is a sliding bar, A, the movement of which is limited by a projection passing through a slot made in the direction of its length. This bar, by means of a spring, has a tendency to move inwards or to the right, as placed in the engraving. Connected with the bar is the lower arm of a lever, the upper forked arm of which is adapted to a pin on the arm of another lever. The lever last mentioned comes in contact with the hammer arm, and prevents its vibration when the bar, A, is in the position shown in the engravings. To the end of the bar, A, is attached a catch, B, which hooks over a pin fixed on the door frame when the apparatus is set. On the door being opened, this catch is moved from the pin; and the bar, A, being carried back by the spring, the hammer arm becomes free, and the clockwork causes the bell to sound the alarm.



When it is desired to hold the alarm out of action, a pin, C, is pushed inward so as to prevent the movement of the escapement arm.

Patented May 18, 1875. For further information, relative to sale of State rights, etc., address the inventor, Mr. Thomas Powell, No. 802 Chesnut street, Philadelphia, Pa.

**THE EMISSION OF CARBONIC ACID FROM ROOTS.**

It is generally known that leaves decompose carbonic acid when they are exposed to the action of the sun, and disengage carbonic acid when kept in the shade. This is easily proved by simple apparatus, but it is not so readily shown that carbonic acid is emitted from the roots. An interesting experiment, which evidences the latter fact, may be made by means of a slab of polished marble placed a few inches beneath the soil and covered with fine sand. Beans are planted in the sand, in which they will grow well for several weeks. When the plants begin to wither they are pulled up, and the



marble plate removed. The surface of the latter over which the roots have run will be found covered with fine grooves, as shewn in the engraving, which indicate the course of the roots. Marble is entirely insoluble in pure water; but like all varieties of carbonate of lime, it is soluble in water charged with carbonic acid, so that the grooves show that the roots must have emitted carbonic acid, which thus acted upon the stone.

**THE HOLBROOK PATENT BLIND HINGE.**

We illustrate herewith a novel blind hinge, which is so constructed that by simple mechanism, outside blinds may be closed and opened from the inside, and may be held in any desired position, and all without raising the window. The

Fig. 1.



device also effectually prevents the blinds' slamming during strong winds, and is well suited for either heavy or light shutters. It will be found without doubt a convenience of importance during the approaching winter, since it admits of greater ease in operating the blinds, and at the same time obviates the necessity of any part of the person being exposed to the cold air.

The apparatus is shown attached to the lower part of the blind in Fig. 1, and in detail in Fig. 2. Referring to the latter figure, C is a rod which extends through the window casing and terminates outside in the pinion, D. This pinion en-

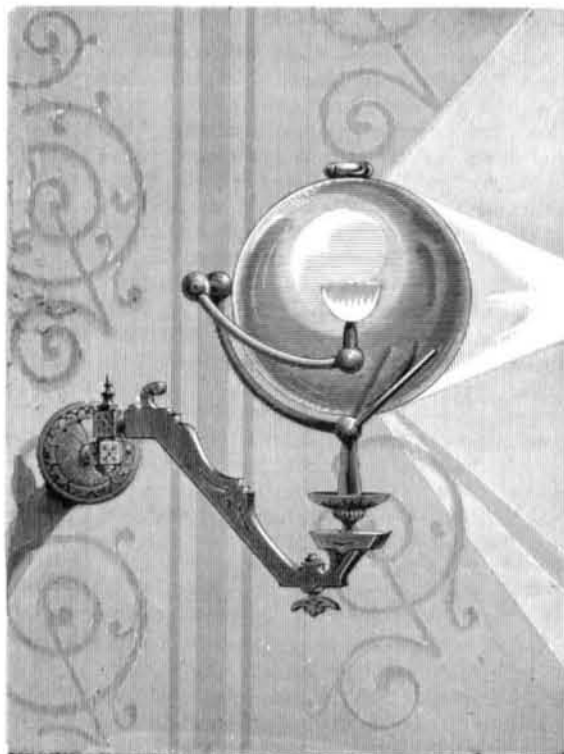
Fig. 2.



gages with the crown wheel, E, Fig. 1, which is operated thereby. The rod, C, is turned inside the house by the crank, A, which has a joint motion, and carries a lug on its under side which meshes in the serrated edge of the fixed rosette, B. It will readily be understood that turning rod, C, through the gearing, moves the blind on its hinges; and as the rod, by the means already described, can be held firmly in any position, of course the blind is at the same time secured. The device is durably constructed, and not likely to get out of order. For further information, address the Holbrook Blind Hinge Manufacturing Company, Watertown, N. Y.

**MEIGS' IMPROVED DIOPTRIC LIGHT.**

The annexed illustration represents a dioptric light, invented and patented by Brevet Major-General M. C. Meigs, Quartermaster General, U.S.A. It consists of a spherical



lens and adjustable bracket. The lens is hollow and is filled with filtered water or a solution of salts; its diameter, for general purposes, is about six inches. The bracket consists of an ordinary ground burner and socket, the latter joined to the adjustable or swinging arm. The lens is supported at three points, namely, by the lower or stationary half of the swinging arm and by two small supports projecting from the upper part of the socket.

This dioptric light is so simple in its construction that the illustration is about all that is needed to explain it, and this

simplicity is an addition to its value as a useful invention. It can be handled by any one without instruction, and there is nothing complicated or intricate in its workings, to increase its liability to getting out of repair.

One such lens, possessing the capacity for adjustment of this apparatus, if placed upon a bracket or candelabrum on the side wall of a room or on the gallery rail of a church or hall, could readily be adjusted to cast its beam of light upon the reading desk of the preacher or lecturer, and thus enable him to dispense with lights about the desk on chandeliers above or in front of him, which are so fatiguing to the eyes of the audience. The lens condenses the light directly upon the object; and several such lights and lenses may be mounted upon brackets or chandeliers, and so adjusted as to concentrate their rays upon any book, map, picture, diagram, or piece of apparatus which it may be desired to strongly illuminate.

Messrs. Baker, Arnold & Co., and Cornelius & Sons, of Philadelphia, are General Meigs' principal agents for the sale of the dioptric light.

**PEDDEN'S IMPROVED COW TAIL HOLDER.**

In the annexed engravings is represented a handy little device, designed for the convenience of farmers and dairymen. Its object is to prevent the cow switching her tail during the operation of milking, thus rendering the process of milking less fatiguing in the fly season, and the likelihood of spilling the milk less frequent. Dairymen, we believe, avoid this trouble, in a measure, by fastening the tail to one hind leg by a bit of string; but this is a rather primitive and certainly unhandy device, for which the present invention will serve as a substitute.



The attachment, which is represented plainly in Fig. 2, consists of a short bar of metal, on each end of which is cast one of the stationary jaws which, with movable jaws pivoted at the ends of their shanks to said bar, form, when closed together, rings, A and B, of different sizes. The jaws are held together and the rings thus closed by collars, C, which are forced outward by the spiral spring, encircling the bar. To use the device, the smaller ring, A, is opened and sprung around the cow's tail just above the switch; the larger ring is similarly attached to the gambrel of the leg, the whole being disposed as indicated in Fig. 1. It will be seen that the invention holds the tail firmly, while it can very easily be slipped on or off. The inventor assures us that it occasions no annoyance to the cow.

Patent now pending. For further information regarding sale of invention or of rights, address the inventor, Mr. Thomas Pedden, Middletown, Conn.

**The Brayton Oil Engine.**

The Brayton gas engine, a motor driven by the combustion of ordinary street gas mingled with air, and now quite well known to engineers, has been made the basis of another invention of somewhat similar nature, in which the motive power is furnished by burning a mixture of crude petroleum vapor and air. The oil engine, as far as we have been able to learn, and judging from our own brief inspection of its workings, bids fair to be a successful machine, and one of considerable utility to those who require light power but who wish to avoid the inconveniences of steam. The engine which we saw in operation was alleged to be of 5 horse power, and served to run a variety of metal-working machine tools.

The expense of its working, we were told, was only the cost of five gallons of crude petroleum per day, averaging some forty cents. At a future time we hope to go into the construction of the apparatus more fully; our limited space enables us to give but brief notice this week. A small pump lifts the petroleum directly from the barrel to the cylinder. An air pump compresses air into a reservoir at the lower part of the machine. The air current passes to the cylinder, and in suitable proportion mingles with the oil, which is introduced in the form of spray. The mixture, by a small flame which is constantly maintained, becomes ignited, expands, and so acts upon the piston.