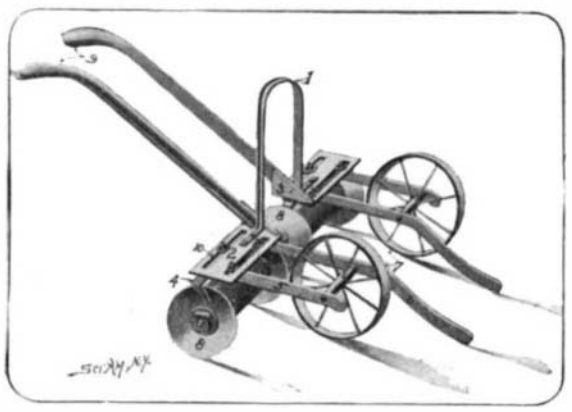
Patent Department

ADJUSTABLE CULTIVATOR.

A patent has recently been granted to Mr. Arthur A. Thogersen, of Brookings, South Dakota, for an improved cultivator of a type used in gardens and nurseries for the cultivation and weeding of small plants. The improvement lies in the provision of means for adjusting the cultivator disks relative to the main frame, or to the rows of plants, so that the soil may be thrown toward or away from them, as occasion may require. The ground wheels and beams



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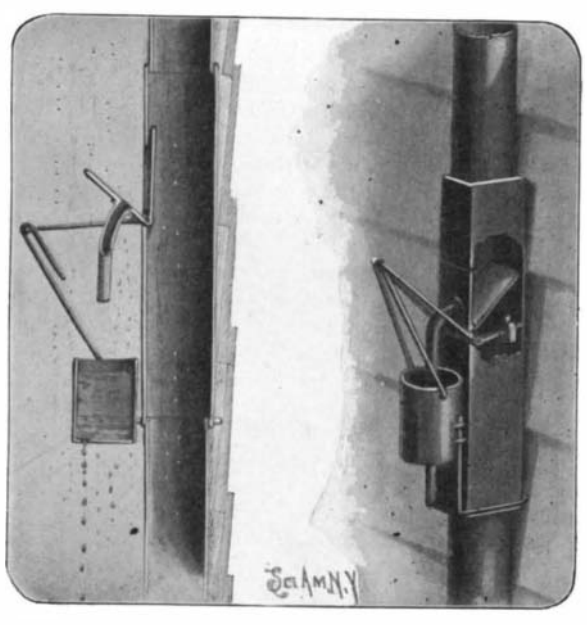
may also be shifted laterally to a sufficient degree to permit passage of large plants or bushes. The construction of the cultivator will be readily understood by a glance at the accompanying illustration. The frame comprises the usual arch 1, which connects the angle plates 2, and the handles 9, secured to the vertical portions 3 of the plates. The plates are provided with lateral slots 10, through which the pivot bolts of the bearing sleeves for the cultivator disks 8 project. The bars or beams 5 and 6, supporting the ground wheels 7, are similarly secured to the frame by bolts projecting through slots in the plates. Now, according as the rows of plants to be cultivated are close together or far apart, by loosening the nuts on the pivot bolts, the pairs of disks may be shifted to a corresponding distance from each other. By swinging the bearing sleeves about on their pivots, the amount of soil broken up by the disks, and the direction in which it is thrown, may be governed at will. The scrapers 4, which swing with the bearing sleeves, serve to remove any soil that may collect on the disks. It will be observed that the beams 6 are extended and curved downward to the ground. These serve to stir up the soil adjacent to the rows of plants, thus rendering them more susceptible to the disintegrating action of the disks.

USEFUL ATTACHMENT FOR RAIN-WATER LEADERS.

In many localities rain-water when pure is preferably used for drinking purposes, being collected from the roofs of houses and kept in cisterns. One serious objection to rain-water thus collected lies in the fact that during dry weather impurities of many sorts gather upon the roof, and these when washed into the cisterns, often contaminate the water thus collected, and render it unfit for use in cooking or on the table. Mr. John Keller, of Ottoville, Putnam County, Ohio, overcomes this objection in the following manner. Located at any desired point on the rain-pipe is a box-like section containing in its front



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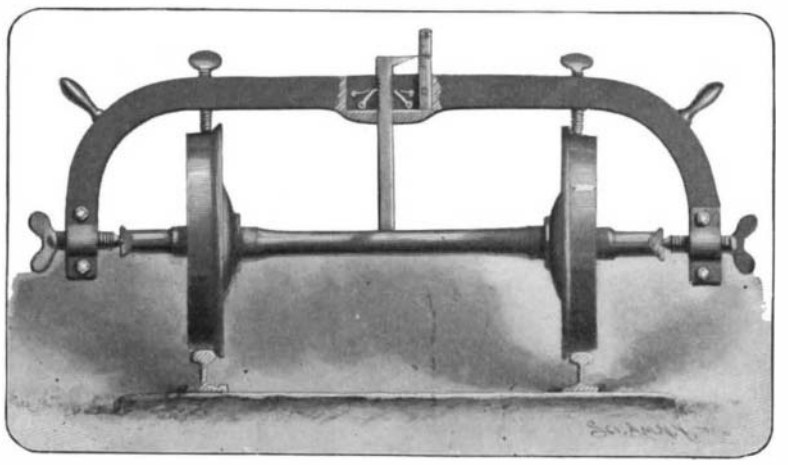
wall an opening closed by a two-part gate valve. This valve consists of two gates joined at the bottom, preferably at an angle of 45 degrees. The valve is rigidly secured to a shaft which has bearings in the sides of the box section. To the projecting ends of this shaft, the ends of a U-shaped rocker arm are secured, and from this rocker arm a water pail is hung, being adapted to slide between guide bars on the box section. Normally the parts assume the position shown at the right in our engraving, being thus held by a weight on an extension of the rocker arm. In this position it will be observed that the inner gate closes the passage through the box section, while the outer gate closes the opening in the front wall. The only outlet for the rain-water therefore is through a spout in the outer gate and thence into the water pail. The water will continue to flow into the pail until the increased weight of the latter overbalances that of the weight on the rocker arm, when the pail will drop, and the gates swing out to the position shown in our sectional view. By this time the impurities on the roof will have been washed off, and the pure water will flow down through the rain-pipe into the cistern. By adjusting the weight on the rocker arm, the amount of water allowed for washing off the roof may be varied at will. The water pail is provided with an opening at the bottom, through which this impure water may escape; the opening may be normally closed, or if it be exceedingly small, so that it would require several hours for the pail to empty, the opening may remain open continuously.

HEATER ATTACHMENT FOR LAMPS AND GAS BURNERS.

The problem involved in the effort to utilize the waste heat of a lamp or a gas jet, for the purpose of warming a room is no small one. The natural tendency of heated air, on account of its expansion, is to travel upward; consequently, the lower parts of a room may be very cool while the ceiling is lined with a layer of hot air. Some systems make use of mechanical means for casting the heat down where it is needed, but obviously, such mechanisms could not be economically applied to a small heater adapted to be used on a kerosene lamp, a gas jet or the like. However, a very simple solution of the difficulty has been found. Heretofore inventors have apparently been experimenting with heat only as carried by a draft of air. Heat may be easily absorbed by an air current and again radiated out at some other place, but this is evidently an indirect method of distribution; for like light, heat is a vibration of the ether and may therefore be transmitted without the aid of any other medium. The heating of any material substance is merely the gradual communication of this vibration to the particles of the substance. With this brief review of high-school physics, we can readily see that the rays of heat may be made to travel in any desired direction, regardless of air currents; that the heat rays of a lamp may be reflected down to the floor in exactly the same way as light rays can.

A simple device used to accomplish this result is pictured in the accompanying illustration. It consists of a parabolic reflector surrounded by a drum and supported on a bracket. Two forms of bracket are provided—one adapted to be attached to a gas burner, Fig. 3; and the other applicable to a lamp chimney, as shown best in Fig. 1. The heat rays on striking the walls of the parabolic reflector are cast downward in parallel beams. In the case of the lamp bracket, a buffer plate lies under the draft opening in the top of the reflector. This is necessary because most of the heat passes up the chimney and must be spread out to come in contact with the reflecting wall. The drum serves to assist in the circulation and to prevent the reflector from injury under the intense heat. Part of the heat is of course taken up by the air and the products of combustion, and passes up through the draft opening; but a large percentage is reflected down despite the strong upward air current. This may be demonstrated by the use of a lighted cigar, the smoke of which will be seen to pour into the reflector and out through the draft opening, while in the meantime, heat can be strongly felt at a considerable distance below the reflector. This heat is of course free from those objectionable gases resulting from combustion, and is consequently more healthful than the air which passes up to the ceiling. It also sets up a general circulation in the air with which it comes into contact, and these currents do not pass through the flame to be robbed of oxygen. It is claimed that this device will heat a room ten by twelve feet to 76 deg. when the thermometer outside is at zero, and that in such weather the capacity of each heater on an ordinary gas jet is about 12 deg. an hour; this necessarily increases or decreases according to the temperature outside. The device offers the further advantage of utilizing the heat without any reduction in the light-giving power, for even on a gas jet the heater is supported with the bottom on a level with the tip of the burner, and the parabolic reflector, particularly if kept bright, throws down a concentrated light on the work below, which means that at night, when a light is necessary, the heating of a small room is done at no cost whatever. The heater is made by the Giant Heater Company, of 68 Monmouth Street, Springfield, Mass.



GAGE FOR RAILWAY CAR AXLES.

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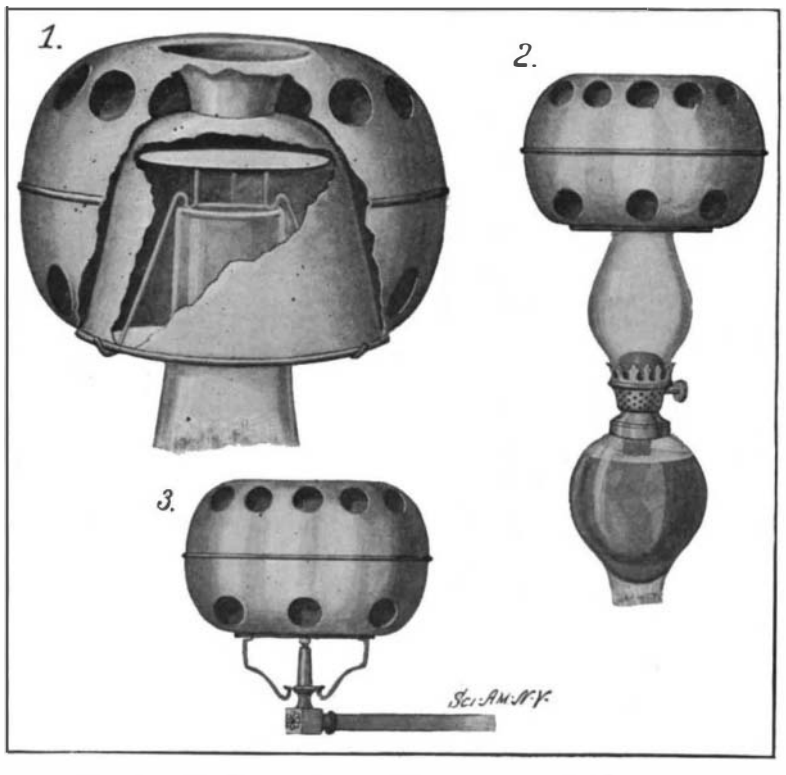
In railway shops where the rolling stock is brought in for repairs after accidents or long usage, it is very convenient to have a gage which will, at a single measurement, detect any misplacement of car-wheels on the axles, and any flattening of their treads, and also any bend in the axle itself. Such a gage, in improved form, has been invented by Messrs. F. J. Compliment and J. O. Robinson, of Ironton, Ohio. The construction of the gage is shown in the accompanying illustration. It comprises a frame or yoke adapted to span the car wheels and axle and having, in its downwardly-turned ends, screws adapted to engage the lathe-centers of the car-axle. Movable vertically through the center of the yoke is a gage-bar designed to indicate the trueness of the axle. At the upper end of this gage-bar is a pointer movable along a graduated plate. Ratchet-teeth are formed on the bar below this pointer and are engaged by spring-pressed pawls. The yoke is further provided with gage-screws designed to engage upon the periphery of the wheels, to indicate whether or not they have slipped on the axle. In operation, the axle-gage is applied to the car wheels and axles in the manner illustrated, and then the wheels are moved over a floor or a track, and the frame is held in vertical position by means of the



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