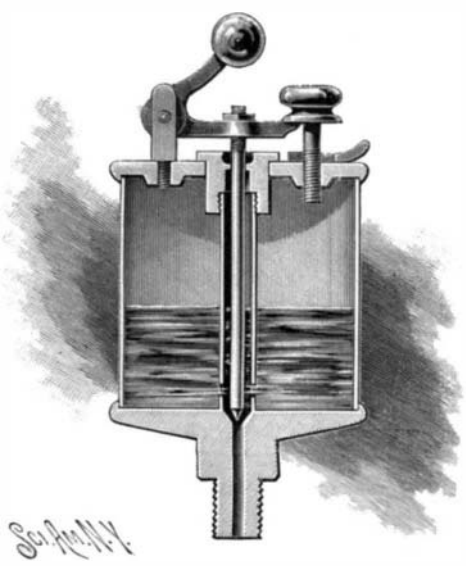
AN AUTOMATIC FEED LUBRICATOR.

The oil cup shown in the illustration may be conveniently applied to any reciprocating portion of an engine, whether the part moves horizontally, perpendicularly or through any intermediate angle, or it may be advantageously used on any part having a crank motion. It has been patented by Mr. George W. Mitchell, of Lunenburg, Nova Scotia, Can. Its base is a disk like casting, with upturned marginal flange, and a shank with reduced and threaded lower end, to screw into a socket communicating with the part to be oiled. The base has a central channel communicating with an upwardly projecting tubular extension having



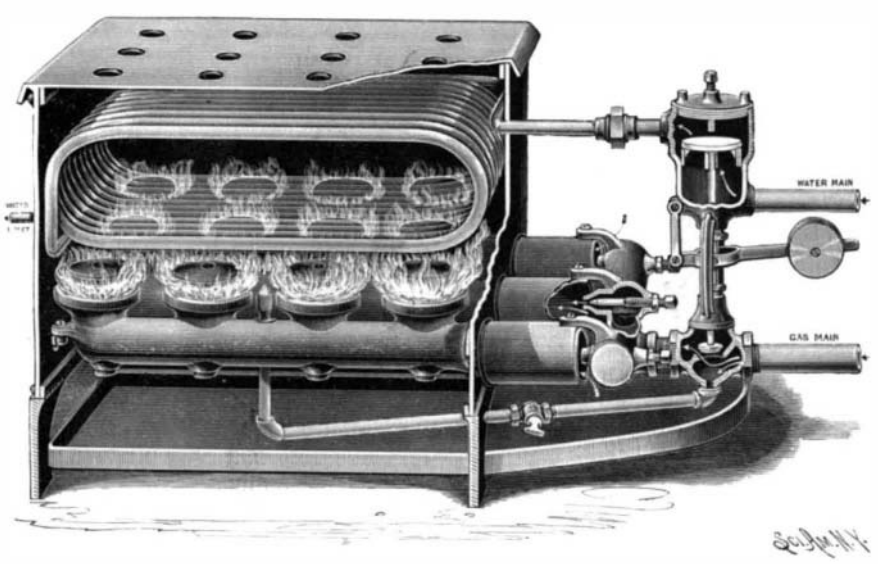
MITCHELL'S LUBRICATOR.

apertures in its lower portion, and with its upper end threaded to receive a tubular plug centrally located in a cap plate having a downwardly turned marginal flange. The body of the oil cup consists preferably of a cylindrical glass casing held within the marginal flanges of the base and cap plate. In the central tube is a regulating rod with conical lower end adapted to be seated in the beveled wall of the entrance to the central channel of the base, the rod extending upward through a packing in the tubular plug, and its upper end being threaded to receive an angular weighted lever. The lever is fulcrumed in a bracket bearing on the cap plate, being held in place on the rod by a lock nut. The lever is so arranged that it will have the same motion or power on a back and forth or an up and down movement, or a combination of both movements. To regulate the throw of the lever, a guide screw is secured in the cap plate, the horizontal member of the lever being limited in its movement by contact with the under surface of the head of the screw, the guide screw being held in adjusted position by a lock nut. This manner of seating the conical end of the regulating rod forms a needle valve which is reciprocated when the machinery is in motion through the pendulum-like action of the weighted lever, the oil being thus passed through the base channel at regular intervals and in predetermined quantities. In the top plate is an opening closed by a cap for introducing the supply of oil or lubricating compound.

AN AUTOMATIC INSTANTANEOUS WATER HEATER.

The illustration represents an entirely new departure in the method of heating water for the bath, the kitchen, or other domestic uses, designed to wholly supersede the familiar kitchen boilers and water backs in all houses supplied with gas. The heater is made on the principle of the latest improved water tube boilers, heating the water as it flows, and only so long as it does flow, the gas being automatically shut off from the burners with the closing of the outlet faucet, and there being no large standing body of hot water radiating away units of heat, making the surroundings always uncomfortable in warm weather, and necessitating double work in a range fire. The Gilbert & Barker Manufacturing Company, of No. 82 John Street, New York, have just commenced the introduction of these heaters, which are a foot wide and thirty inches long, and may be placed in a cellar or on a bracket in the kitchen, or wherever it may be most convenient to make the pipe connections. The valve arrangement is similar to that of a direct acting steam pump. In one end is a cylinder containing a piston which rises on the inflow of water from the main, on the opening of any faucet in the pipes connected with the heater, no matter how distant may be the faucet, and the movement of the piston opens a valve by which gas is admitted to burners under the heating coil, the gas being instantly ignited by a pilot light. The valves and pistons complete are about four inches in diameter and eight inches long, and the coil is of drawn copper tubing, half inch diameter and thirty-two feet long, coiled in an iron frame or box. The movement of the piston is regulated by a counterpoise, according to the pressure of water in different cities, or on different floors of a house, the regulation of the gas supply, according to its pressure and quality, being also provided for by adjustable needle valves, whereby sufficient air is likewise supplied to the bell-shaped atmospheric burner pipe. The heater may thus be adjusted to use any quality or any pressure of gas and any pressure of water. As will be seen, the supply of hot water which may be drawn from this heater is illimitable, all the water drawn through it being heated, but the heating of the water stops simultaneously with the closing of the outlet valve, the supply of gas being cut off with that of the inflow of water. By checking the faucet from which water is being drawn, a smaller quantity of water will be heated to a much higher temperature.

This heater is the invention of Mr. W. C. Clarke, treasurer of the Gilbert & Barker Company.



CLARKE'S AUTOMATIC WATER HEATER.

Activity of Animals.

Thus far the animals experimented on have been rats, mice and squirrels. They are kept in circular, easily rotated cages, so arranged that any motion of the animal rotates the cage, and by means of a tambour or levers this motion of the cage is recorded upon kymograph paper kept moving night and day. An electromagnetic circuit with a clock marks hours and minutes. We thus have the manner in which an animal divides his time between rest and activity recorded by himself. Rats and mice divide their days into about 12 hours' rest and 12 hours' intermittent work during the night. During the work period, short intervals of activity, rarely exceeding an hour, are interrupted by almost equal periods of rest. The squirrel, in winter, works almost continuously for from twenty minutes to two hours early in the morning, with sometimes a short interval of activity late in the evening, and rests nearly 22 hours in the day.

Food has a most marked influence upon diurnal activity. In general the richer the diet in proteid, the greater the activity. Fat has the opposite effect, reducing the activity of mice from 6 to 8 hours' actual work to a few minutes a day. To test the influence of alcohol on spontaneous activity, rats kept on dry corn were given instead of water alcohol of from 5 per cent to 60 per cent. During 50 days of this treatment, no uniform effect of the alcohol could be demonstrated. All normal animals experimented on tended to work more minutes per day when barometric pressure was high, and this must be taken into careful account in estimating the effect of any condition upon daily activity.—C. C. Stewart, Physiological Society.—Science.

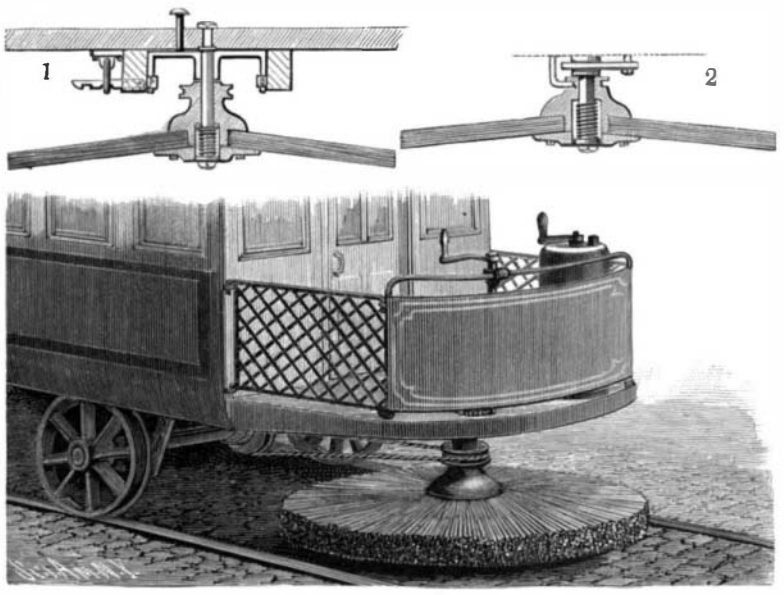
A Thousand Dollars an Acre from Blackberries.

In recounting his experience, Mr. C. E. Chapman, of Peru, N. Y., said that he had heard that blackberries would grow anywhere, and he, therefore, bought some plants of Kittatiny, took no particular pains to set them, and many died. He used on the ground a quantity of raw, coarse manure, and the next year many of the canes broke. He then concluded that to grow blackberries required some study. As a result of the study he prepared a piece of chestnut loam, put it in prime condition, bought some plants of Agawam & Snyder from good, careful growers, at prices that would warrant him in expecting good plants. He set them carefully in trenches seven feet apart and eight inches deep in the trench. He found these varieties deep-rooted and thrifty, and where mulched, pruned and not fed too much raw manure, he had little trouble from winter killing. When setting his plantation he applied eight hundred pounds of potash to the acre. He was careful to have all plants well set, and he frequently clipped the tops. All weak canes were cut out. Every spring he applies a light dressing of commercial fertilizer. Immediately after fruiting he cuts out and destroys all old canes, as these are the seat of nearly all the troubles of this fruit. In the winter he mulches heavily and leaves the mulch on late in the spring to prevent early starting.

Although he did not believe a thousand dollars an acre could be realized under ordinary conditions, yet this was an achievement worth striving for, and small patches had been made to yield at that rate. It required the right combination of man, soil, variety and cultivation, but it could be done.

A REVOLVING BRUSH CAR FENDER.

The decidedly novel means represented by the illustration for averting danger to pedestrians from fast running cable and electric cars forms the subject of a patent recently issued to Messrs. Andrew Mohn and August J. Bothur, of No. 131 Bloomfield Street, Hoboken, N. J. A revolving brush, of a diameter to cover the roadway to the outer side of each rail, is held under each end of the car, the brush being revolved by a mechanism connected with one of the car axles, or, in the case of trolley cars, by a separate electric motor, if desired. When revolved from the axle, as represented in the transverse sectional view, Fig. 1, the hub of the brush is journaled on a vertical shaft secured to the platform, and on the hub is a pulley connected by a belt with a loose pulley on the car axle, the latter pulley being adapted to be locked to the axle by a simple form of clutch moved by a shifting lever. A coiled spring on the lower end of the vertical shaft, pressing upward against a washer in the hub, holds the brush



MOHN & BOTHUR'S CAR FENDER.

normally at a little distance above the track, but the brush may be readily moved down into contact with the top surface of the track by pressure upon a pin extending up through the platform, and bearing upon a vertically sliding frame having a central tubular boss resting upon the upper end of the hub. When the motorman or gripman ceases to press upon the pin the brush is raised by the spring to its normal position. When an electric motor is employed for driving the brush, the vertical shaft is replaced by a shaft rotated from the motor, and, as shown in Fig. 2, a change is made in the frame by which the brush is moved downward, although the movement is similarly effected by pressure upon the pin extending up through the car platform. The improvement is also designed to be especially valuable for clearing tracks of snow and ice.

"MALARIA a Water-borne Disease" was the title of a paper read by Dr. W. H. Daly, of Pittsburg, at the recent meeting of the Mississippi Valley Medical Association at Hot Springs, Ark. The author said, in summing up the evidence in a given case of so-called malaria, it is important to remember that the water vehicles of malaria may include contaminated land water, taken into the stomach on the stalks of celery or on the leaves of lettuce, or it may find its vehicle in the rinsing of milk cans with malaria water, or in the adulteration of milk with contaminated water containing the Laveran germ. The cistern water stored under the earth may be easily contaminated by the earth water containing the germ, if the cistern itself is cracked or otherwise inefficient.