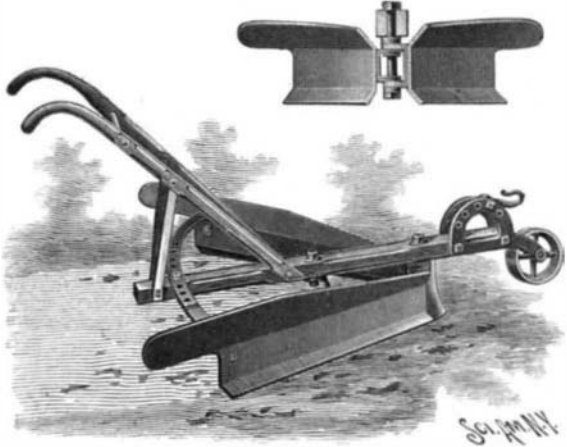


**AN EFFICIENT CORN AND POTATO HILLER.**

Our illustrations picture a new implement for hilling corn and potatoes in which the mold boards can be adjusted relatively to the advance share so as to insure the banking of the soil close to the rows of plants at each side of the furrow. The hiller has been patented by Van Allen Whitbeck, of Aquetuck, N. Y.

To the underside of the beam a bracket is secured, at the forward end of which a share is carried, extending up into engagement with the beam. A pivot-pin passes through the beam, the bottom portion of the bracket behind the share, and the overlapping projections of the mold-boards. These mold-boards are straight and

**A NEW FORM OF CORN AND POTATO HILLER.**

in all positions are within the line of the side edges of the share so that the earth turned up by the share passes freely to the outer faces of the mold-boards. The mold-boards are provided with extensions on their rear ends, from which extensions apertured segmental arms project laterally. These arms are designed to slide one over the other, and are held in adjusted position by means of a bolt passing through registering apertures. By this means the hiller can be adjusted to any desired width. The peculiar formation of the mold-boards insures the earth's being carried up close to the roots of the plants, and deposited on the upper portions of the rows. The lower part of each mold-board serves to cut weeds; the upper part throws rising earth downward; and the straight body sections conduct the earth directly to the plant stems.

The inventor informs us that by mounting the hiller on a runner and raising the colter-wheel a very efficient snowplow is formed which runs with remarkable steadiness.

**A BICYCLE MOTOR EQUIPMENT.**

How a bicycle can be transformed into a self-propelling machine by the addition of a small motor and the few other essential parts is shown in the annexed illustrations. It forms one of the simplest and most compact automobiles imaginable, and will doubtless be very useful to riders of ordinary endurance, who wish to increase their riding radius, easily ascend hills, or make long trips on the flying steed.

A reference to the larger illustration will show the reader at a glance the details of the driving mechanism. This consists of the small, water-jacketed motor, 3, having on one side the flywheel, 11, and on the other a small sprocket, which is connected to the large auxiliary driving-sprocket on the back wheel by a chain passing over a sprocket guide-wheel supported upon the bicycle frame. The tank, 1, contains the gasolene, while in the box, 2, is placed the ignition battery. This is connected by flexible cord to the igniter of the motor and to a push button, 6, located under one of the handles of the handle-bar. The motor is lubricated from the oil cup, 10, and is cooled by water from the tank, 7, placed under the seat which circulates through the pipes, 8, to and from the water-jacket. The tube, 9, is a muffler and is said to be very effective.

In starting the machine, the compression lever, 4, is released, then the rider mounts and drives ahead by giving the pedals two or three revolutions in the ordinary way. He immediately throws on the compression lever, 4, and presses the button, 6, whereupon the motor starts and drives the machine at a good rate of speed. The speed may be regulated by moving the wire hook, 5, which controls the air mixture while the bicycle can be quickly and effectually stopped by simply ceasing to press the igniter circuit button, which will cause the compression of the unexploded charges to powerfully brake the motor.

The smaller illustration shows the appearance of the machine when the parts are all incased. When viewed from the front, the remarkable compactness of the equipment is evident from the fact that the width of

the casing is no greater than the width of the front fork. The entire weight of the motor addition is only about 25 pounds, and a pint of gasolene is sufficient to drive the bicycle over twenty miles.

This motor attachment is the invention of Mr. Steffey, a mechanic, of San Diego, Cal., and we understand a company has recently been formed under his name for the manufacture of the entire equipment.

**A Victim of the Bubonic Plague.**

A well-printed, illustrated weekly newspaper comes to us from Honolulu, Hawaii—Austin's Hawaiian Weekly. The last number received contains an account of the black plague which prevails at present on that island. The following graphic account of a single case indicates the nature of that direful disease, of which little is known in this part of our country.

The death of a Japanese woman on Maunakea Street last week was an event of more than passing notice. She was stricken with the malady at eleven o'clock in the morning, while performing her household duties, the first symptoms being a sudden rise of pulse with the accompanying fever. She called her husband and told him she must lie down as she felt weak and exhausted. She reclined on a pallet, which was about the only article of furniture in the shanty where they were living, and attempted to go to sleep, but a sensation of strange pains dispelled all thoughts of rest and she asked her husband to come to her bedside. She could only murmur: "Don't call the doctor; ask Ito to come." Ito, who was her sister living a few doors away, was speedily brought, and she proceeded to act as nurse. The contact of the black plague is like that of a ravenous tiger—short and fierce. In a little while the poor woman was groaning with pain and throwing herself from side to side in a vain endeavor to get relief. Ito procured ice and applied cooling cloths to her temples, but the fever had gained a headway that baffled nursing. The disease was a complete master of the patient, and the swellings that characterize the bubonic plague began to appear in just an hour after the first symptoms asserted themselves. It was noon when the miserable victim was suffering indescribable torture. Shrieking and imploring her husband to kill her, she writhed on her bed of agony. Ito then prepared poultices and applied them to the nauseous protuberances that had appeared over the groins and under the arms. At one o'clock the woman gave up her life and added another unit to the list of Honolulu's plague-stricken victims.

THE southern hemisphere has been visited by intense heat. A few days ago the thermometer registered 120°

**THE STEFFEY MOTOR CYCLE.****MOTOR ATTACHMENT FOR BICYCLES.**

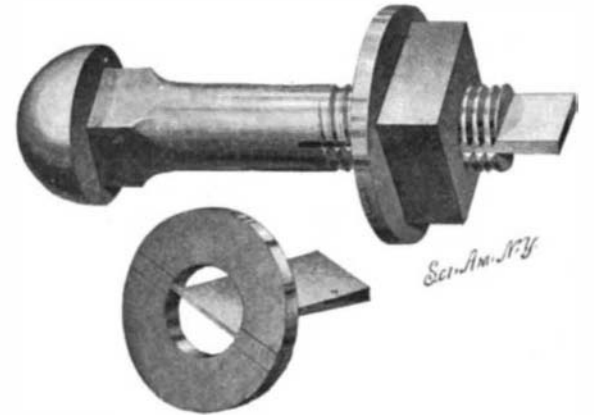
F. in the shade, nearly all day at Buenos Ayres, says The Medical Record. There were 102 cases of sunstroke, of which 93 were fatal, and the next day there were 219 cases, of which 134 were fatal. The weather has also been extremely hot at Melbourne, and in South Africa the British troops have suffered exceedingly from the almost unbearably high temperature. Indeed, the whole world seems to be warmer than usual, for the winter in this country has been far from severe, and in the Klondike the weather is almost

mild, and even at the health resorts at Switzerland, Davos Platz, the season has been ruined by warm weather turning the snow into slush, which has resulted in keeping all of the invalids in the house.

**A NEW NUT-LOCK.**

To provide a lock which will securely hold a nut in position and prevent its displacement by vibration is the object of an invention recently patented by Robert L. Bargelt, of Woodstock, Va. Fig. 1 is a perspective view of a bolt with a nut locked in place. Fig. 2 is a perspective view of a combined washer and wedge.

The bolt, as shown in Fig. 1, is formed with a longitudinal slot in its threaded end, by which slot the wedge is designed to be received. On its face the

**A COMBINED LOCKING WASHER AND WEDGE FOR NUTS.**

washer is provided with two aligned recesses in which the laterally extending arms of a wedge are engaged. The washer and wedge are slipped over the bolt, with the wedge in the slot of the bolt. The nut as it is turned on the thread, draws the wedge into the slot, thereby expanding the outer end of the bolt and increasing its diameter. When the bolt is used in positions where it is not subjected to the action of rust, the nut can readily be removed by sharply striking the wedge laterally. When the bolt is used underground, as in the laying of street railways, the metal is quickly coated with rust, and the usual procedure of breaking the nut loose from the bolt must be resorted to.

The action of the locking-wedge is in effect that of a rivet. The great merit of this nut-lock resides in the impossibility of loosening the nut by means of a wrench, when used on a railway fish-plate. The cost of the manufacture of the washer and wedge is small; for the parts can be stamped out of suitable materials very cheaply.

**A Comparison of Automobiles.**

In a recent lecture on "The Development of the Automobile," before the Electrical Engineering Section of the American Institute, Mr. R. E. Fless stated that the automobile of to-day was divided into three classes, those propelled by steam, electricity and petroleum. Each class has good points. The best record for speed is credited to the electric style, which has made a speed for a short distance of sixty-three miles an hour.

As a matter of record, the electric machine has proved to be best for city streets and over level roads; for short distances the petroleum or gasoline motor is best for ordinary runs in the country where there is some uneven ground to be covered; while steam is the choice where heavy work is to be done.

The automobile first came into prominence in France in 1894, during which year the first race was run. England became interested two years later, and the following year (1897) the "auto" was introduced in this country. Since that time it has made great strides.

The interest reached its zenith last year in both Europe and America. There are 7,000 owners of horseless vehicles in Europe to-day, 5,000 of whom are in France. In Paris alone there are 600 manufacturers and more than 900 dealers. In this country it is not so far advanced, although popular interest is increasing.

The lecturer enumerated among the advantages of automobiles that they occupy less space in front of a store in the shopping districts, and give more reliable service in heavy weather than can be attained in any other way.

THE Paris Exposition will have the largest theater in the world, accommodating 12,000 to 15,000 persons. It is to be erected within the "Galerie des Machines." The auditorium will consist of five tiers. The stage is to be circular and capable in parts of being moved round on a turntable which will alone measure 300 feet in diameter. It will be largely used for spectacular performances.