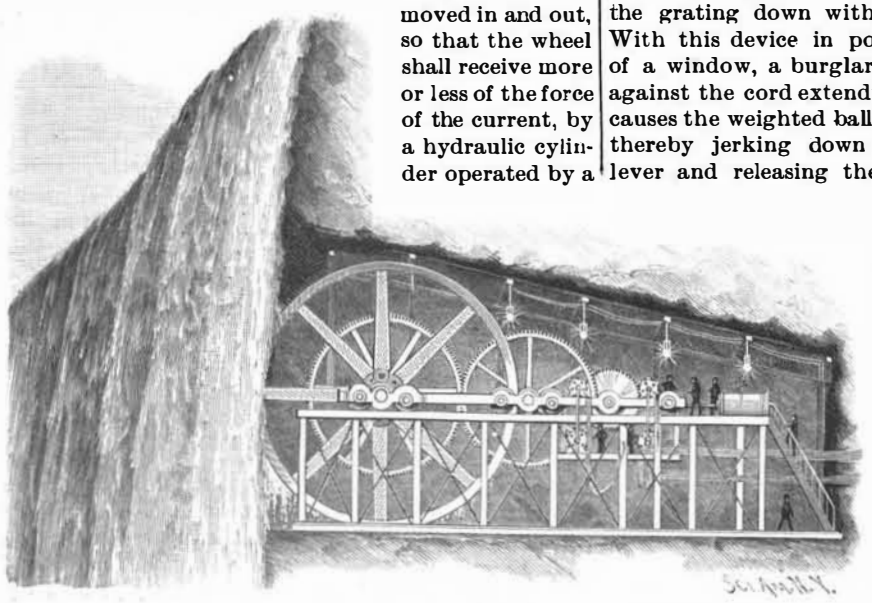
A NEW WATER POWER DEVELOPING DEVICE.

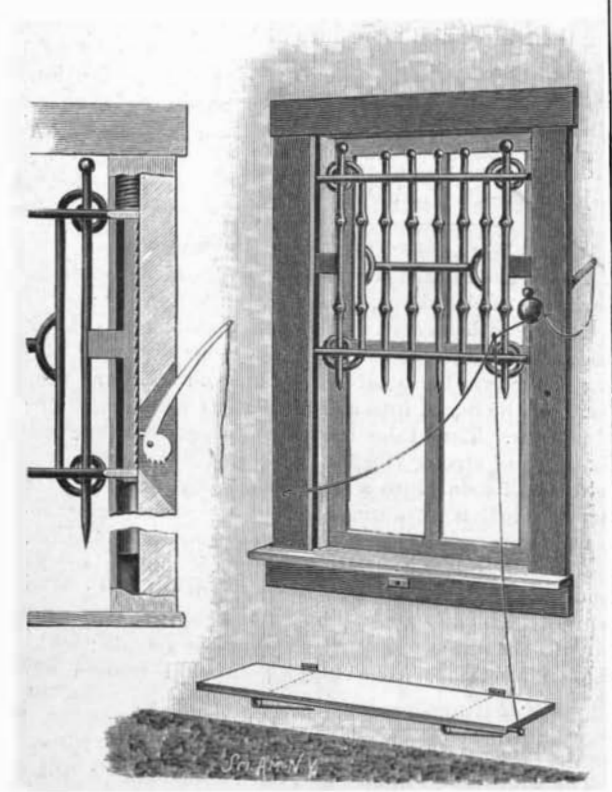
The device represented herewith for economically and efficiently developing natural water powers has been designed by Mr. M. Maginn, a mechanical engineer, of No. 2222 Wabash Avenue, Chicago, who suggests its advantageous use at Niagara Falls. The inventor proposes to excavate a cavity or drift under the falls, in front of which the flow of water will be continuous, making a recess in the rock some 30 feet wide and 65 feet high, and of sufficient depth to accommodate any desired machinery. In this recess is to be fixed, on permanent foundations, a stationary iron truss designed to carry a traveling frame sufficiently heavy to support an overshot steel water wheel of 60 feet diameter, with main driving shaft and spur gears, and intermediate shaft and connecting gears, with which are to be connected electric generators. It is designed to place upon the traveling frame four mammoth dynamos, of approximately 2,500 horse power each, and four similar dynamos upon a suspension frame directly underneath, one-half only of the whole number of dynamos being operated simultaneously, while the others are reserved for auxiliary purposes. The traveling frame is to be moved in and out, so that the wheel shall receive more or less of the force of the current, by a hydraulic cylinder operated by a steam force pump on the river bank, and arranged to automatically keep up the required pressure. The machinery is to have permanent inclosing walls, within which light will be furnished by electricity, the power being distributed to distant points by electric cables.



MAGINN'S DEVICE FOR UTILIZING WATER POWER.

AN IMPROVED WINDOW BURGLAR GUARD.

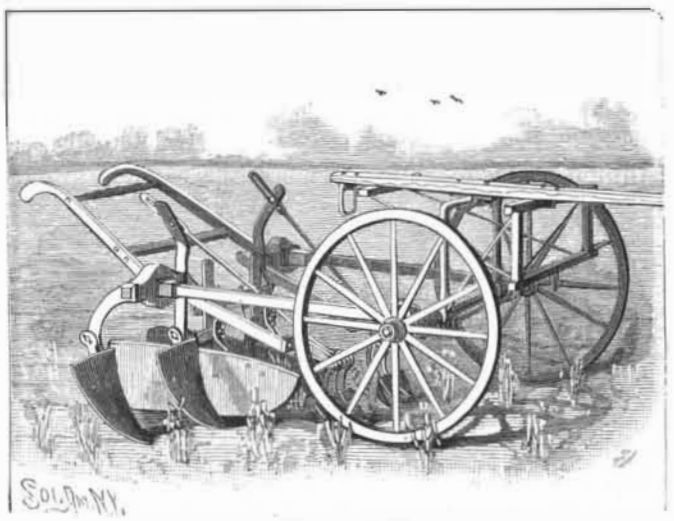
The illustration herewith represents a device by means of which a person attempting to unlawfully enter a building through a window will be caught and held a prisoner. It has been patented by Mr. John B. Harris, of Eutaw, Ala. The inner face of the sides of the window frame are provided with grooved ways extending from top to bottom, in which are adapted to slide projections from a perpendicularly moving metallic grating, these projections being attached to vertically sliding bars, while the lower ends of the grating bars are formed with sharp points. To hold the grating in raised position when set for use, a lever with cam-shaped head is pivoted in a recess in the side of the window frame, as shown in the sectional view, the lever having a pin adapted to fit in one of a series of holes in the vertically sliding bar in the grooved ways in the side of the casing. The cam-shaped head also has teeth by which the grating may be locked in lowered position. A bracket is mounted at the window side, in the shape of a ring, over which fits another hinged ring having an arm, the latter ring being adapted to hold a weighted ball, connected by a cord with the lever holding the grating in raised position, a cord from the arm likewise leading across and being made secure upon the other side of the window frame. Beneath the window frame is a board mounted on springs, and serving as a step, a cord from this board being also fastened at its other end to the arm extending from the ring supporting the weighted ball. This board is hinged so that it may be folded up against the wall and secured by a button when not in use. In the bottom of each pocket of the grooved ways at the sides of the window frame are cushions for the vertically sliding bars to strike against when the grating falls, and to the upper ends of the bars are secured coiled springs to throw the grating down with force when released. With this device in position upon the inside of a window, a burglar entering, on pushing against the cord extending across the window, causes the weighted ball to drop off the inclined arm, thereby jerking down the arm of the cam-headed lever and releasing the pin holding up the grating, which is then thrown down by the compressed springs. Should the burglar observe the cord, and cut it, a similar result would follow upon his pressing his foot on the step just inside the window, the intruder being in either case impaled by the sharp points of the descending grating.



HARRIS' WINDOW BURGLAR GUARD.

AN IMPROVED CULTIVATOR.

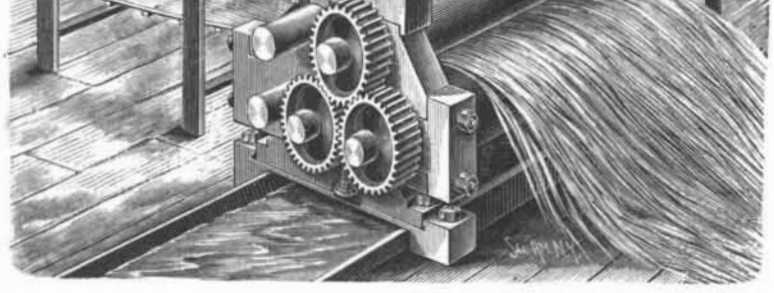
The accompanying illustration represents an improved cultivator which has been invented by Mr. Enoch Landes, of Reserve, Brown County, Kansas. It is designed specially for cultivating young corn, and is adapted to be used alone or in connection with a riding frame. It has an adjustable shield for protecting the plants, and the cultivator blades are adapted to break up the ground and clear away the weeds at each side of the rows, the blades and hoes being adjustable. The frame block from which the handles extend has on its inner end a downwardly extending arm, to which a cultivator blade is adjustably attached, while a rearwardly curved arm carries another detachably secured cultivator blade. To the inner face of this blade-carrying arm bars are secured which carry two or more forwardly curved hoes, the vertical adjustment of which is effected by a rod carried rearward and upward to a contact with the inclined face of an upper extension of the blade-carrying arm. From a perpendicular standard on the inside of the blade-carrying arm a shield is adjustably secured, adapted to travel upon the ground longitudinally of the implement between the rows to be cultivated, the attachment of the shield being such that it may be given any vertical inclination desired. In operation it is designed that two of these cultivators shall be employed, one to travel at each side of the row, the shafts or tongues being united to a transverse pole, to which the whiffletrees are attached, or directly to the axles of a pair of wheels or equivalent riding apparatus.



LANDES' CULTIVATOR.

IMPROVED MILL FOR CRUSHING SUGAR CANE.

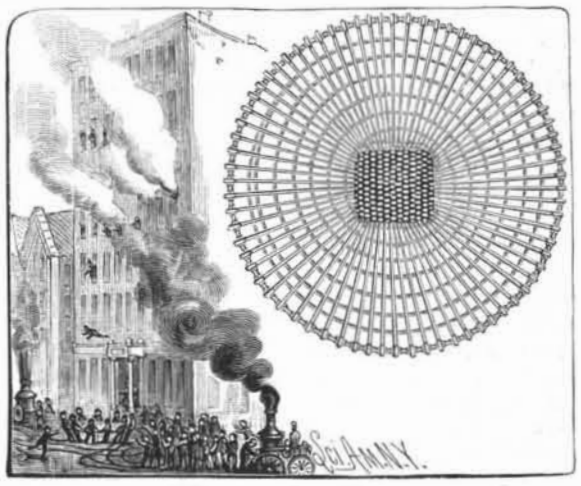
The accompanying illustration represents a mill designed to crush sugar cane so thoroughly as to extract all the juice therefrom, and furnish a dry bagasse. It has been patented by Mr. Charles Hughes of Matanzas, Cuba. The mill is made with five rollers, three being mounted alongside of each other in a horizontal plane, while the other two are placed above and inside the outer line of the lower rollers, the rollers being all geared together, so that a rotary motion imparted to one will be communicated to all. Adjustable turn plates are supported between the first and second and the second and third lower rollers, and there is one such plate centrally between the two top rollers, whereby the cane will be passed through, so as to be subjected four times to the pressure of the rollers, from its entrance at one side to its exit at the other. Each of the lower rollers has an annular flange to prevent the cane from leaving the roller sidewise, while a pan or other suitable receptacle is placed below to receive the juice pressed out of the cane. The shafts of the two outer lower rollers are mounted in sidewise adjustable boxes, but the shaft of the central roller is mounted in bearings which are adjustable sidewise and laterally, so as to regulate the relative distance between the several rollers with great accuracy. The adjustable bearing of the central roller consists of a box resting on a bottom plate supported on a wedge-shaped plate, through a groove of which pass set screws to raise or lower the box as desired, there being also vertically adjustable wedge-shaped plates on the sides of each box, with bolts and nuts to take up sidewise pressure.



HUGHES' CANE MILL.

AN IMPROVED LIFE-SAVING NET.

A net designed to be held beneath the windows of a burning building, so that the inmates in jumping or falling upon it will not be injured, is illustrated herewith, and has been patented by Mr. Malcom Hunter, of No. 32 Dutch Kill Street, Long Island City, N. Y. This net is preferably made about ten feet in diameter, of Russian bolt rope three-quarters of an inch in circumference, and with a three-sixteenths inch outside galvanized grasping chain, but has an approximately solid rope center piece, with ropes radiating therefrom to form the body proper of the net. Each of the radiating ropes is equal in length to the full diameter of the net, and they are so intertwined and spliced with short pieces as to make at the center a compact, closely united piece, affording great strength, while still designed to act as a cushion for a body falling thereon. The use of a grasping chain instead of a heavy rope permits the net to be folded into a small compass.



HUNTER'S LIFE-SAVING NET.

COLORADO is becoming an oil producing State. Wells in the valley of the Arkansas, near Pueblo, are yielding about 1,000 barrels per day.