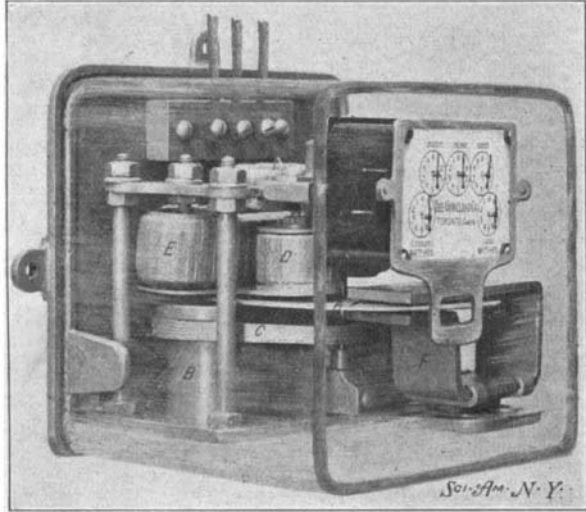


background of the show window will be illuminated at intervals by automatic means acting upon an electric lamp, so that shoppers who stop at the window to gaze at their reflection in the mirror will be surprised to have their images suddenly disappear, and see in their stead the latest thing in Paris fashions or the like.

NEW PREPAYMENT METER.

During the last few years there has been a remarkable development in various devices of a prepayment type. We have had with us for some time now the



RECORDING WATT-METER WITH NOVEL INDUCTION MOTOR.

prepayment gas meter, which has met with phenomenal success.

We illustrate herewith a prepayment electric watt-meter, designed to cover the entire field where electricity is used for light and power. This meter is of novel design; it is strictly automatic in its action, there being no switches, handles, or other mechanism to operate. All that the person desirous of purchasing light has to do, is to place a coin of the denomination for which the machine is constructed in the receptacle provided for that purpose, and it will deliver the gas paid for automatically and with absolute accuracy, as required. On the front of the machine are the recording dials. The large hand shows at a glance the amount of electric light or power to the consumer's credit at all times. The smaller hands indicate the watt-hours consumed, as in an ordinary meter. There are many points in this meter that will appeal to the practical electrician. The absence of delicate construction and the simplicity of mechanism insure durability. The moving elements are mounted upon ball bearings. The prepayment device of this meter operates entirely by gravity, thereby entailing no cost to the seller or purchaser of the light for the operation of the prepayment mechanism.

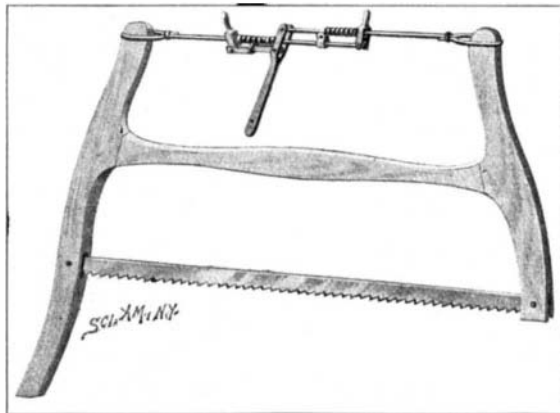
The prepayment mechanism will be readily understood by reference to the illustration. The coin is placed in slide *A*, and travels down by gravity on to the supplemental slide *B*. The latter is supported on the end of a lever, and is normally held in the position illustrated by the counterweight *E*. The additional weight of the coin, however, depresses the slide *B*, forcing the pins attached thereto into the cups *C*, which are filled with mercury. The motor is thereby connected with the electric circuit. At the same time a stop pin on the slide *B* is moved out of engagement with a notch in a disk *D*, permitting the mechanism to start up. The disk is directly connected with

the large hand referred to above. The train of gearing which connects this disk with the motor is so arranged as to permit the disk to make but one complete rotation while the motor makes the full number of turns paid for by the coin. The stop pin then engages the notch in the disk, permitting the slide *B* to rise, breaking the electric connection and bringing the parts to rest.

A novel form of induction motor is used in connection with this meter, which adapts it for use on alternating current circuits. The motor is best shown in our illustration of the recording wattmeter. An aluminium disk *A* is mounted on a vertical spindle which has worm and gear connection with the indicator clockwork of the meter. Below this disk is an electromagnet *B*, made of thin iron sheets and divided by a copper plate. The magnet is energized by a coil on one pole, the other pole being provided with a tongue-shaped flux-plate *C*, composed of copper laminæ. This flux-plate, it will be observed, lies parallel with the under surface of the aluminium disk and follows its periphery for a short distance. Mr. G. L. Gowlland, the inventor of the motor, has discovered that this non-magnetic pole-piece increases greatly the rotative effect on the disk. This effect is still further increased by a solenoid *D*, lying above the disk and over the end of flux-plate *C*. The coil is supported on a plate of copper projecting from the copper core of a large solenoid *E*. This plate constitutes a second flux-plate. The usual starting coil lies above the solenoid *E*. The magnet coils on being energized by the alternating current produce eddy currents in the copper flux-plates. These eddy currents creep toward the ends of the flux-plates, and acting indirectly on the aluminium disk, cause it to rotate. The sensitiveness of the instrument can be governed by adjusting the movable pole-piece of the solenoid *D* toward or from the disk. A permanent magnet *F* is used to produce a damping effect upon the disk, in order to prevent it from continuing its rotation by reason of its momentum when the current has been cut off. The patents for the prepayment mechanism and the induction motor are owned by the Gowlland Company, of Toronto, Canada.

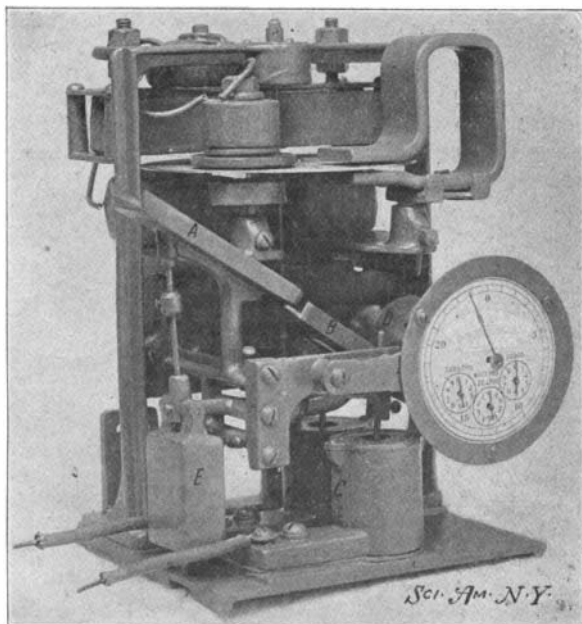
A DURABLE SAW-TIGHTENER.

Having experienced considerable annoyance with the ordinary type of saw-tightener for bucksaws, by



A DURABLE SAW-TIGHTENER.

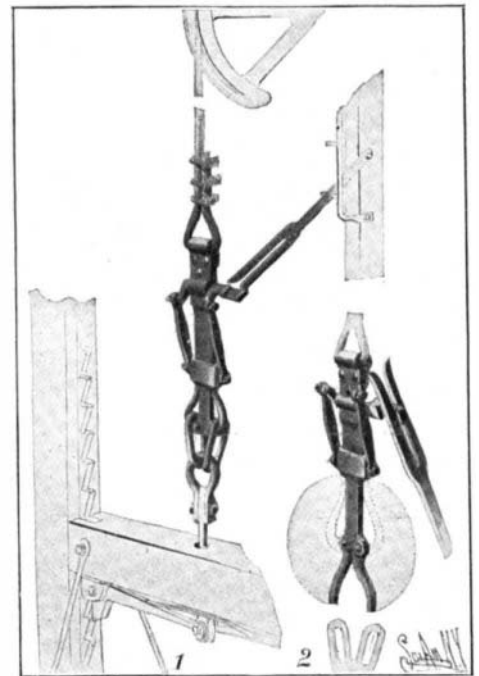
reason of its liability to wear out in a single winter of steady work, Messrs. A. H. South and J. C. Bostwick, of Orson, Iowa, recently directed their attention to the invention of a new device for tightening saw blades which would be very simple and durable. This they have succeeded in doing, as shown in the accompanying illustration. Their invention also embodies other important improvements which will be readily apparent from the following description of the construction. The tension rods extending from the upper ends of the saw frame overlap each other, but lie in different horizontal planes, being properly spaced apart at the center by a clip secured to the lower rod. A bifurcated lever hinged to the end of the upper rod is provided with an arm connecting with a sliding block on the lower tension rod. The block on the upper rod is hinged at its lower end to the lower rod. These blocks have apertures through which the rod extends, but the apertures are larger than the diameter of the rods so that the blocks may be swung out of the vertical to bind the rods. Now, by moving the lever back and forth the rods may be drawn inward toward each other with a ratchet movement, first one and then the other block gripping the rods to prevent them from slipping apart. When it is desired to loosen the saw blade the sliding blocks may be fed inward toward each other by gripping the handles formed on them, thus permitting the rods to move apart. The springs, it will be observed, tend to retain the parts of the device in frictional locking engagement when it is desired to have the same remain stationary, as when the saw is in use.



NEW PREPAYMENT WATT-METER.

CAGE AND CABLE RELEASE.

A patent recently granted to Mr. Robert Le Roy, of Park City, Utah, covers the invention of an improved device for automatically releasing a cage in a gallows frame from the cable should the cage be moved too close to the sheave or above the desired point for discharging loaded cars raised from a mine. The releasing device is very simple in construction, and is not liable to get out of order. It comprises a body portion attached at its upper end to the cable, and provided at its lower end with a pair of keeper arms hinged thereto. The keeper arms pass through links attached to the draw-

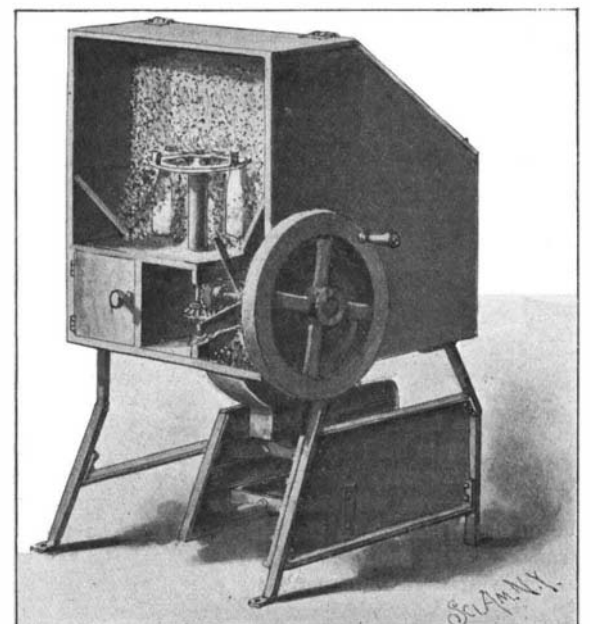


AUTOMATIC RELEASE FOR MINE CAGES.

rod of the cage, and their free ends are swung up and held against the body portion by a locking slide movable thereon. The locking slide is connected by links with a crank-shaft mounted at the upper end of the device, and from this crank-shaft a flattened piece projects, in such position as to be engaged by a forked lever, hinged to the gallows frame. This lever is placed at the point at which it is desired to stop the cage. Should the cage move above this point, the crank-shaft will be rotated by reason of its connection with the forked lever, and the locking slide will thus be drawn upward, releasing the keeper arms and permitting them to swing to the position illustrated at the right. The cage is thus released from its cable, and comes to a standstill, the ordinary safety catches being brought into action to prevent it from falling.

SUGAR CABINET.

In retail grocery establishments the cabinet illustrated herewith will be found very useful for holding sugar or other granular material. By its means a barrel of sugar may be stored in a closed receptacle and kept from exposure to dust and dirt of the store. At the same time the sugar may be readily dispensed in small quantities, and conveniently and quickly delivered to the purchaser. The cabinet comprises an upper compartment, in which the sugar is stored, and means for feeding the sugar out of this compartment through a lower compartment into any receptacle placed thereunder. The feeding mechanism consists of an agitator or wheel supported on a vertical shaft and rotated by suitable gearing connection with the hand-wheel at



CONVENIENT SUGAR CABINET.