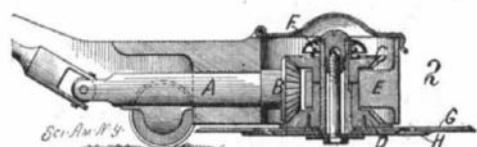
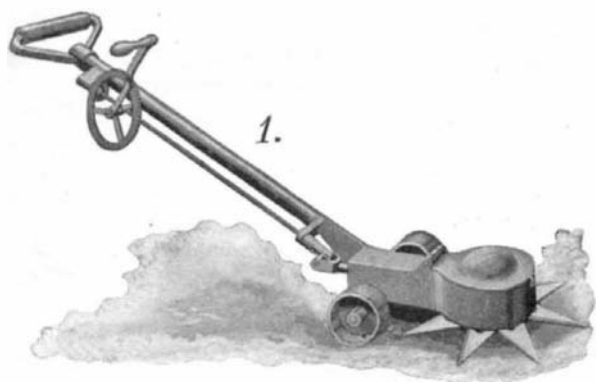




IMPROVED GRASS CUTTER.

One of the drawbacks to the ordinary lawn mower is that it cannot operate close to a fence and will not

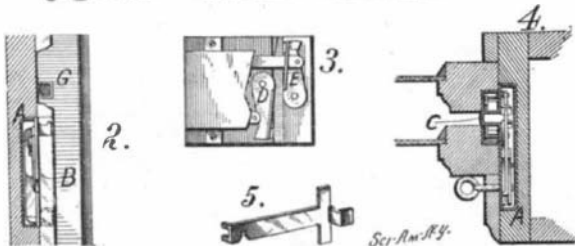
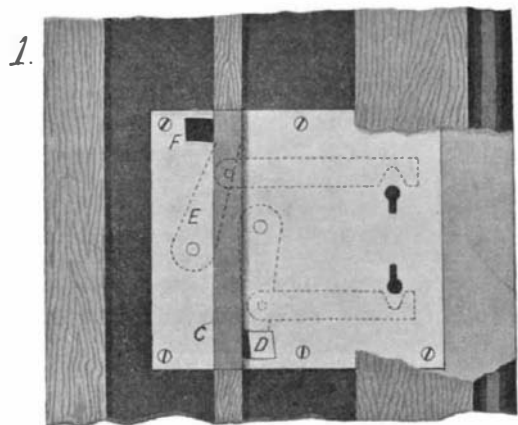


IMPROVED GRASS CUTTER.

reach into the corners, so that after a lawn has been mowed it is necessary to trim by hand the fringe of grass left at these inaccessible places. This trimming is commonly done with a sickle or with shears, and is a very tedious process. In order to expedite this work, Mr. Charles F. Crosby, of Burlington, Vt., has invented the grass cutter which we illustrate herewith. It will be observed that the mechanism is carried in a frame supported on wheels. The shaft *A* is connected by a universal joint with a drive-shaft which, in turn, is operated by a hand crank acting through a pair of bevel gears. The shaft *A* carries a bevel pinion *B* which, at opposite sides, meshes with the bevel gears *C* and *D*. Secured to the lower gear *D* is a cutter *G*. This cutter is of star shape, being formed with a series of projecting blades. The gears *C* and *D* are journaled in a bracket, *E*. A hollow shaft passes through both of these gears, and is splined to the upper gear *C*. Fitted to this shaft is a second cutter *H*, similar in form to the cutter *G*. A bolt which passes through the hollow shaft carries a washer at its lower end, which bears against this cutter. The opposite end of the bolt is threaded into a plug which, in turn, is threaded into the upper end of the hollow shaft. A cap carried by this plug engages a spring *F*, which is held in compression between the cap and the bevel gear *C*. It will be observed that the spring *F* serves to hold the two bevel gears into resilient engagement with the bevel pinion *B*, and also to hold the cutters *G* and *H* in resilient engagement with each other. Since the bevel pinion *B* is engaged on opposite sides by the bevel gears, it will be evident that the cutters will rotate in opposite directions, so that they will act like shears to cut the grass. In case a twig is caught between the cutters, the spring *F* will prevent breakage of the mechanism.

A NOVEL SASH LOCK.

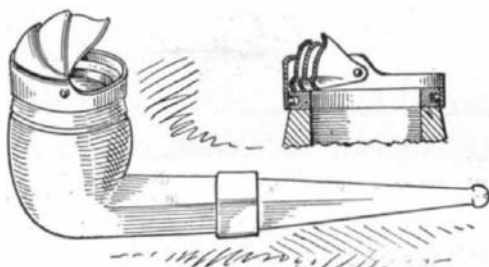
With a view to providing a simple lock which will enable either the upper or lower sash of a window



A NOVEL SASH LOCK.

with sliding sashes to be locked in an open or closed position, Mr. William Stephens, of Redding, Cal., has invented the device which we illustrate herewith. Fig. 1 of the engraving shows the jamb of a window casing with the lock set in place. This lock is fitted into a recess in the jamb, and consists of a case *A* in which the mechanism is contained, and a face plate *B* which is set flush with the jamb. The face plate is formed with an outwardly-disposed channel, *C*, which registers accurately with the parting bead. Within the case a pair of dogs *D* and *E* are provided. These dogs are pivoted near the center of the case, the dog *E* projecting upwardly, and the dog *D* downwardly. At the extremity of the dog *E* the face plate is provided with a circumferentially-disposed slot *F*, which extends through the side wall of the channel *C*, and a similar slot is provided in the lower portion of the case. Each dog is provided at its extremity with a toe which, when the sashes are not locked, lies within the channel *C*. The dogs are each connected to a lock mechanism in the case, and may be operated by separate keys to bring the toes in the path of the sashes. The toes are adapted to engage keepers *G*, which are set in recesses in the adjacent edges of the sashes. These keepers may be situated at any desired point in either sash, and one of the keepers should be placed at such a point that when engaged by the corresponding toe, the sash will be locked in closed position. The toes are provided with lips which pass laterally into the keeper, and prevent the sash from being forced away from the jamb of the casing. Fig. 5 illustrates a modified form of locking bolt, which may be used in place of the dogs.

WIND GUARD FOR TOBACCO PIPES.—A large number of devices have been invented for the purpose of protecting the bowl of a tobacco pipe from the wind. The particular novelty in the device which is shown herewith consists in the fact that the wind guard is adjustable to any particular direction of the wind, that it will cover the bowl to any extent desired, and that it may be readily folded out of the way in order to give the smoker ready access to the bowl when desired. The guard is formed of telescoping plates, which in



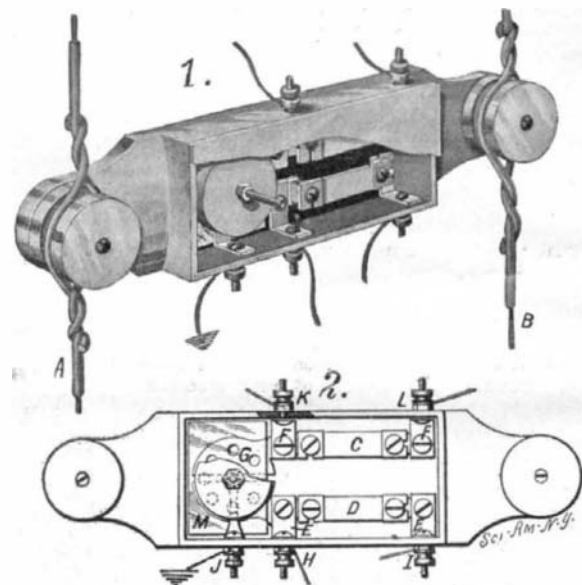
WIND GUARD FOR TOBACCO PIPES.

folded position lie approximately level with the top of the pipe bowl. They are hinged to a ring which is secured to the pipe by means of pins that project into an annular groove near the top of the bowl. This method of attachment permits the guard to be rotated to any desired position. When in use the telescoping plates are raised, and form a hood which rises over the mouth of the bowl, at the same time leaving sufficient opening for the admission of air. The extent to which the bowl is covered may be governed by the number of members which are raised.

COMBINED LIGHTNING ARRESTER, FUSE BOX, AND INSULATOR.

Pictured in the accompanying engraving is a device adapted for use on telegraph or telephone lines, which combines a fuse box, a lightning arrester, and an insulator. The device consists of a box of porcelain provided with extensions at opposite ends, each of which carries an insulator integrally formed thereon. These insulators provide means for attaching the line wires *A* and *B*. The device may be secured to a support by means of screws, which pass through openings in the insulators. Within the box are two pairs of fuse clips, in which the fuses *C* and *D* are made fast. The fuse *D* is connected by a pair of angle clips *E* with the binding posts *H* and *I*, while the fuse *C* is connected by similar clips *F* to the binding posts *K* and *L*. The current may pass from the binding post *L* through the fuse and binding post *I* to the instrument, and back again through the opposite binding post *H* and fuse *D* to the binding post *K*. A lightning arrester is provided in connection with the clips *E* and *F*. This consists of a pair of semi-cylindrical plates *G*, connected to these clips, and separated from each other by a slight gap. A sheet of mica, *M*, is placed over these plates, and supported on this sheet is a carbon block. The mica sheet is preferably perforated, so as to permit an abnormal discharge of electricity to pass from the plates *G* to the carbon block. The under side of this spark block is preferably provided with the usual cup or recess, to receive a fusible composition for the purpose of short-circuiting the arrester if the current is of too long duration. A spark clip connects the carbon block with the bind-

ing post *J*, to which a ground wire is attached, so that if the lightning should strike in such a way as to produce a current of great potential in the line, a spark will pass between the plates *G* and the block, and the current will be carried to the ground. By inclosing the fuses and lightning arrester within the porcelain box, there is no danger from fires in case the fuses burn out or a lightning bolt passes through the device. The



COMBINED LIGHTNING ARRESTER, FUSE BOX, AND INSULATOR.

inventors of this device are Messrs. Russel R. Burrin and Theodore F. Gaebler, of Rockville, Ind.

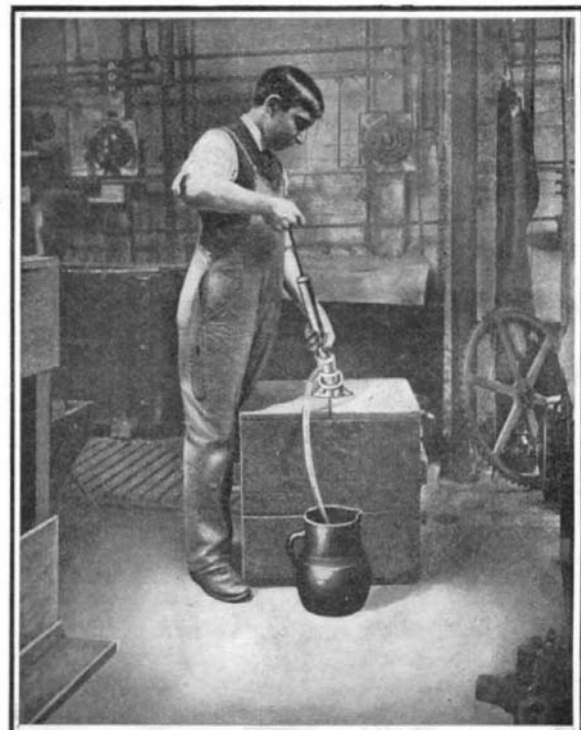
A NEW METHOD OF HANDLING ACIDS.

There has been an evolution in the methods of handling acids during the past few years, and very marked is the progress too. Acids, where these are used in any considerable quantities, are purchased in carboys, that is, large glass bottles inclosed in wooden boxes leaving only the neck exposed.

The old way of pouring out the acid required two men, one to tilt the carboy and the other to hold the receptacle. This primal scheme required not only an excess of labor, but was at the same time far from being safe.

An advance in methods was made when the carboy rocker was invented; for in this case, after the carboy had been lifted on the rocker, one man could handle the acid, and with little danger. The latest idea is to use an acid pump, a clever device designed and built by the Hanson & Van Winkle Company for the electroplating trade, but which speedily found its way into other arts and industries.

In using the acid pump, it is no longer necessary for two men to handle the carboy, nor is a man required to tilt the rocker. A boy suffices, for all that is needed is to carry the acid pitcher or receptacle to the carboy, when one end of the pump tube is placed in the acid, the rubber cork making an air-tight joint in the neck of the carboy, while the other end of the pump is carried to the pitcher. These simple preliminaries done, a steady flow of acid is obtained by pumping. After the flow is started, the device can be used as a siphon, where small quantities of acid only are required. Thus it is obvious that the acid pump conserves the energy of employees, is safe, simple, and effective, and insures with the minimum of labor the maximum of safety.



A NEW METHOD OF HANDLING ACIDS.