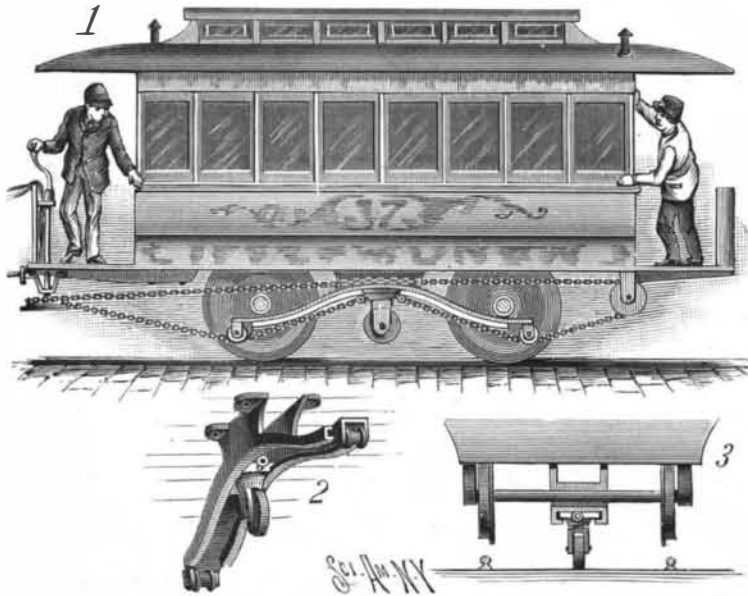


DERAILING AND REPLACING ATTACHMENT FOR STREET CARS.

To the bottom of the car is secured a bracket, shown detached in Fig. 2, carrying a curved guide, which bends from the bracket downward and toward both ends of the car, passing below the axles. Mounted to slide in the guide is a crosshead, on which is centrally pivoted a forked arm, carrying on its lower end a wheel. Secured to the crosshead are the two ends of a chain, which passes under a grooved pulley at each end of the



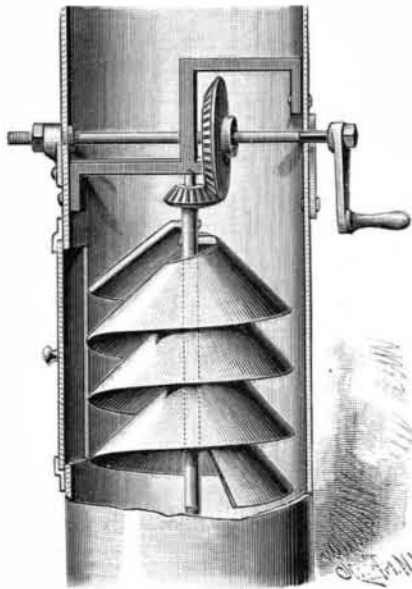
HENNIG & RETTIG'S DERAILING AND REPLACING ATTACHMENT FOR STREET CARS.

guide, around a pulley at one end of the car, and around a sprocket wheel attached to a turning shaft on the front platform of the car. When, for any reason, it is desirable to run the car off the track, the shaft is turned so as to slide the crosshead toward the front. This forward and downward motion of the crosshead brings its wheel in contact with the ground, and when the crosshead is in its lowest position, directly under the front axle, the car is raised and the front wheels are above the rails, as shown in the cross section, Fig. 3. The car may then be hauled off the track, either to the right or left. On account of its pivoted arm, the wheel turns in the direction in which the car is moving. The car can then be driven around an obstruction and brought upon the track again. As soon as the front wheels stand above the rails the shaft is turned in the opposite direction, to bring the crosshead back to the center of the car, thereby lowering the front end. By moving the crosshead to the rear end of the guide, the rear wheels of the car can be raised in a similar manner.

This invention has been patented by Messrs. Albert F. B. Hennig and Adam Rettig, whose address is 1314 Tenth Street, West Denver, Colo.

DAMPER FOR STOVE PIPES, CHIMNEYS, ETC.

The stove pipe is provided with an opening and a suitable cover, which is shown in the illustration as a



SOHN'S DAMPER FOR STOVE PIPES, CHIMNEYS, ETC.

slide working in guides. Within the pipe are placed two cross pieces, that form bearings for the tapered ends of a vertical rod provided with a series of laterally inclined arms, fastened to which is a plate which is wound around the rod so as to form a cone-shaped spiral nearly filling the interior of the pipe. The plate is so formed that when in position on the rod a central opening is provided which permits the exit of products of combustion. Upon the upper end of the rod is a small pinion engaging with a somewhat larger gear wheel mounted upon a shaft having bearings in the pipe. One end of the shaft is threaded to receive a nut and the other end is squared and receives a crank.

The pipe is provided with two latches, one of which is formed with a recess to fit the squared end of the shaft, so that, when no movement of the damper is desired, this latch may be moved to engage its recess with the squared portion of the shaft, which will thereby be held. The other latch is designed to prevent lateral movement of the shaft by its free end dropping between the nut and face of the pipe. This latch also serves to keep the gear wheels in engagement with each other. By raising this latch, the shaft may be shifted, so as to separate the wheels, when the damper will be free to be revolved by the action of the heat and products of combustion passing through the pipe by the natural draught. In cases where insufficient draught exists in the chimney, the right hand latch is moved so as to free the shaft, while the left hand latch is placed in position to keep the gears in engagement. The shaft is then turned, causing the screw propeller to revolve rapidly, thus creating a suction and forcing the products of combustion quickly up out of the pipe, thereby increasing the draught of the chimney. To check the draught the parts are held stationary by the right hand latch, when the smoke will pass slowly up through the spiral. It is obvious that when the spiral is locked, the exit of the products of combustion will be checked in their passage through the screw, and, in consequence, much of the heat that is now carried up the pipe will be saved. When the screw is left free to rotate, it will still check the flow of the products of combustion,

but in a less degree than when it is prevented from moving. The opening in the pipe is of such size as to admit of cleaning the screw and other parts should it become necessary.

This invention has been patented by Mr. Charles E. Sohn, of Hamilton, Ohio.

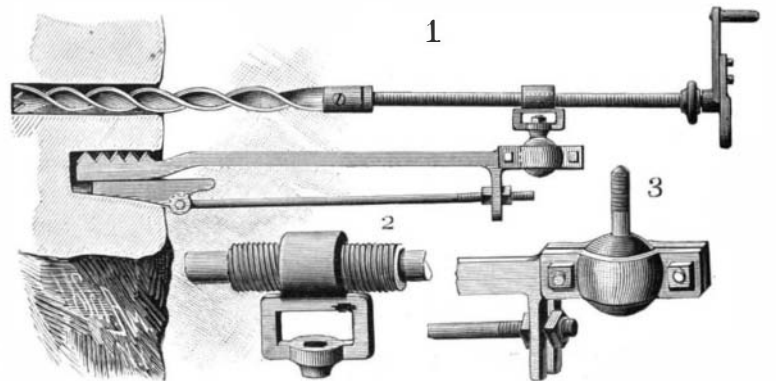
AUTOMATIC FIRE EXTINGUISHER.

This fire extinguisher is especially applicable for use with car heaters, and is designed, in the event of a collision or overturning of a car, to automatically extinguish any fire existing in the heater, and thereby prevent a conflagration. The cylindrical case shown in section in Fig. 2 is preferably made of brass, copper, or equivalent material, and upon the inside of the bottom is provided with four inclined rods forming a seat for a heavy metal ball. Held centrally in the top of the cylinder is a glass vessel made as thin as possible at the bottom. Screwing into and forming a cap for the cylinder is a conical top provided in one side with an outlet, over the outside of which a stout metallic tube is secured. The end of the tube is adapted to be inserted in the stove or heater above the fire pot, and is provided with an inclined surface having a hinged lid, the object of which is to prevent the heat passing up the tube. Between the pipe entering the heater and that portion connected to the cap is a flexible connection. The position of the stove, cylinder, and connecting tube is clearly shown in the perspective view. In operation, the cylinder is filled with a solution of carbonate of potash or soda, and the glass vessel with sulphuric acid. The cap is then screwed on and the extinguisher placed upon a bracket, a convenient distance from and above the stove, being held in position by a band or other appropriate means. The pipe connected with the cap is then carried downward through the stove, and its end held above the fire pot. In the event of a collision, or of the car being thrown upon its side, the heavy ball will strike and break the thin glass vessel, thereby liberating the sulphuric acid. The carbonic acid gas then generated will pass through the tube, spray over the heated fuel, and extinguish the fire. This fire extinguisher is the invention of Messrs. F. L. Hotchkiss and P. A. Raby, of 423 Fulton St., Brooklyn, N. Y.

The Eastern standard is the official time in Maine.

IMPROVED COAL OR ROCK DRILL.

The forward end of the main bar or stock of the drill is provided with teeth adapted to be forced into the side of a hole made in the rock by a wedge driven into the hole. To the wedge is pivoted the end of a brace rod, the back end of which enters a slot made in a heavy lug formed on the main bar. The rear end of the rod is threaded to receive a pair of jam nuts, which, after the wedge has been driven tightly in the hole, will be screwed hard up to opposite faces of the lug, as shown in Figs. 1 and 3. The main bar will thus be stiffened or strengthened to give substantial support to the drill-operating mechanism which it carries, so that the drill will work with little or no vibration, and its operation be made more easy and effective than it otherwise would be. At the back end of the main bar is a semi-spherical socket, formed partly in the bar and partly in a plate held to the bar by bolts, and in this socket is fitted a ball bearing (Fig. 3), provided with a threaded stem passing through the lower end of a head piece (Fig. 2), and receiving a nut within a slot of the head piece, as shown in the engraving. The top of the head piece is threaded to receive a hollow screw feed bar, provided at its outer end with a hand wheel. The spindle of the drill is fitted to turn freely in the bar. The spindle head or socket, in which the drilling tool is held, abuts one end of the feed bar, and the hand crank, by which the drill is turned, abuts the other end of the feed bar. By turning the hand wheel one way, the drill may be forced forward to cut deeper, and by turning it in the opposite direction, the tool may be withdrawn from the hole. The ball bearing may be turned in its socket to set the drill at any required angle, up or down, or to either side, as will be readily understood. The drilling tool is made with three cutting points or teeth. This assures quick cutting action, and as the twist of the body portion increases in pitch

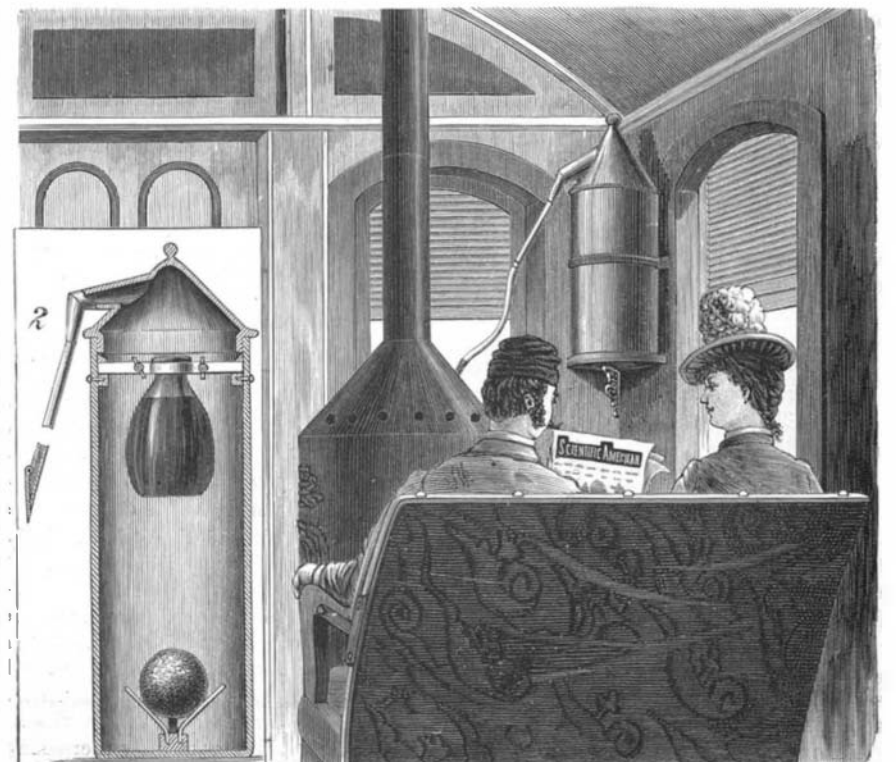


WILLIAMS' IMPROVED COAL OR ROCK DRILL.

from the point to the heel, the tool is self-clearing, so that the cuttings will not bind or clog in the hole, but will be carried backward and discharged as fast as made, which insures the free and easy working of the tool to any required depth.

This invention has been patented by Mr. John L. Williams, of Shenandoah, Pa.

The plan of throwing a bridge over the Straits of Messina, that separate Sicily from Italy, will, when consummated, be one of the most striking feats of modern engineering. The place selected is where the channel is two and one-half miles wide and three hundred and sixty-one feet deep, and two piers will support a viaduct of steel rails to a height of three hundred and twenty-eight feet above the water.



HOTCHKISS & RABY'S AUTOMATIC FIRE EXTINGUISHER.