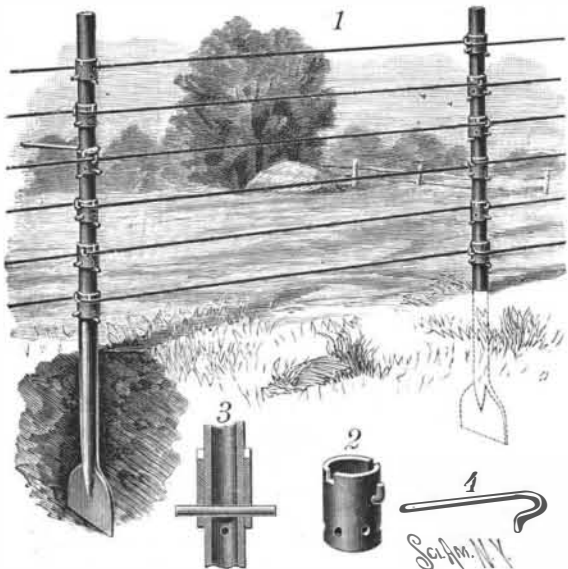


**AN IMPROVED WIRE TIGHTENER.**

The illustration herewith represents an invention patented by Mr. Thomas Reily, of Blencoe, Iowa. The post for fences with which such device is used preferably consists of a metal tube having a spade-like lower end, whereby it may be readily driven into the ground and will be held from turning. The post has a series

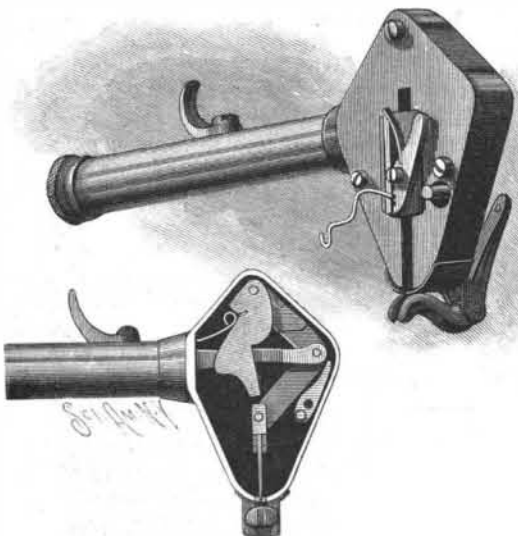


**REILY'S WIRE TIGHTENER.**

of diametrically opposite apertures, as shown in Fig. 3, one aperture for each strand of wire to be used in the fence, and just above these apertures are similar ones at right angles thereto. Collars or sleeves, as shown in Fig. 2, are adapted to be slipped over the post, and held to turn loosely thereon by pins passed under them through the apertures in the post. In the lower ends of these sleeves are apertures adapted to register with one of the series of apertures in the post, whereby the sleeves can be turned around on the post and held in desired position by pins passed through the sleeve and the post. The sleeve has an upwardly extending arm, adapted to engage and support a fence wire, and in the upper end of the sleeve are vertical slots, to engage the lip of a wrench shown in Fig. 4. After the strands of wire have been secured to the end posts, the wire passing from post to post in contact with the sleeves, and in engagement with the upwardly extending projections, the wrench is inserted in one of the slots of the sleeve and turned in the direction in which the wire is to be tightened, the sleeve being held in fixed position, after the wire has been drawn sufficiently taut, by passing a pin through one of the apertures therein and a corresponding registering aperture of the post.

**A DEVICE FOR PIERCING EARS AND INSERTING EARRINGS.**

The illustration herewith represents an ear-piercer, patented by Mr. John J. Greenough, by which the needle is instantly projected through the ear and retracted, the needle also carrying the wire of an earring to remain lodged in the incision, the hole being bored, the earring inserted, and the needle withdrawn at a single instantaneous operation. The ear is held while being pierced by a spring lip on the bottom of the device, adapted to lightly embrace the lobe of the ear. The needle slide is attached to a toggle joint, the upper end of which is jointed to the case, as shown in the section-



**GREENOUGH'S EAR PIERCER.**

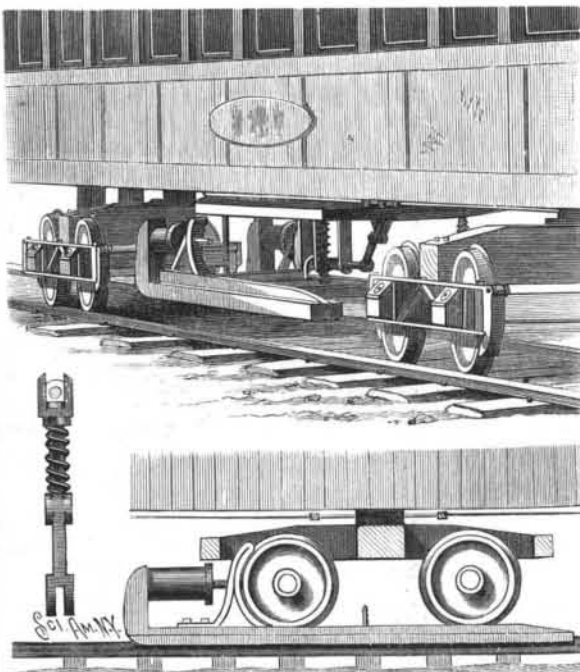
al view, the center joint of the toggle being coupled with a slide rod extending into a hollow handle, where it is surrounded by a spiral spring. A collar on the rod has a stud working in a slot in the handle, there being a notch to engage the stud and hold the slide rod back with the spring compressed. Then, on releasing the stud, the slide-rod in moving forward forces the toggle joint past its center to the same distance on

the other side, moving the needle-slide forward and back by the single impulse of the spring. Directly over the piercer is a slot through the cover, in which slides a forceps block carried by the needle slide, this block having a groove in which the wire of the earring is held, by a movable eccentric jaw, against a corresponding groove in the needle, this forceps block pressing the wire of the earring into the groove of the needle only during the downward motion of the latter, so that the needle retreats without drawing back the wire.

For further information relative to this invention address Mr. George W. Langdon, Clinton, Mass.

**AN IMPROVED BRAKE SHOE FOR RAILROAD CARS.**

A brake shoe, adapted to be carried beneath the cars of a train, all of the shoes being capable of being brought into simultaneous action, whereby the cars may be expeditiously stopped from the engine cab, is illustrated herewith, and has been patented by Mr. Gustav A. Diedel, of No. 375 Third Avenue, New York City. This brake is principally designed for use in case of emergency, on trains carrying other brakes, as an auxiliary means of suddenly stopping the cars. A rectangular turntable is pivoted centrally beneath the car, and held in position by a bolt passing through the car floor and into a recess in the upper face of the turntable, the bolt being normally locked by a spring. About the center of the under side of the table is a hanger, in the posts of which a horizontal releasing bar is held to slide, to the outer end of which is pivoted a trip lever, shown in detail in the small view. This lever is fulcrumed upon a bracket, the upper end of the lever being curved to one side and carried upward through and beyond the turntable. The trip lever is manipulated by a rod, chain, or wire rope, sliding be-



**DIEDEL'S BRAKE SHOE.**

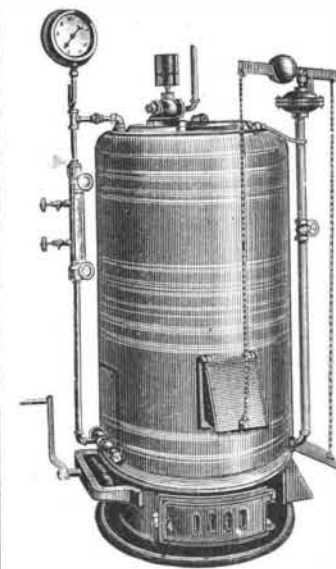
neath the car body, and with a suitable lever within or adjacent to the engine cab, similar connections being made with all the different brake shoes employed on the same train. The brake shoe consists of two side bars, spaced to the width of the track rails by cross bars, each side bar having a track formed longitudinally on its upper surface, while its lower side is adapted to fit snugly over the rail head. The side bars are also connected by a cross beam, from which a head block is projected, with a horizontal air cylinder attached, with a small vent and piston head and rod, the outer end of the rod being carried through and held to slide in buffers attached to the side bars, so that when the truck wheels ride upon the shoe track, an effective air cushion will thus be formed. When the shoe is attached to the turntable, it is manipulated to bring the buffer end in the direction of the forward end of the car, this being done by lifting the bolt through the car floor and revolving the turntable, the trip lever being then disengaged from the draw rod. To stop the train, the engineer pulls the cab lever, which withdraws the releasing bar from the hook or staple of the shoe, in each shoe in use on the train, the shoes then dropping and remaining saddled upon the rails.

**Street Tramways in New York.**

During the year ending September 30, 1888, the number of passengers on the street railways and elevated railways of New York City was 376,913,586, an increase of 18,000,000 over the number for 1887. This, at the uniform fare of five cents, represents a total revenue of \$18,845,679.30. There are nineteen "city railway" companies, eighteen of which are horse car surface lines, and the other is the elevated railway system, with its four parallel lines. The equipment consists of 3,054 cars and 13,586 horses. The elevated lines have 921 cars and 291 locomotives. The number of employes is 11,725.

**AN IMPROVED STEAM HEATER.**

A heater designed to make steam quickly, and maintain a high degree of heat with a comparatively small quantity of fuel, is illustrated herewith, and has been patented by Mr. Henry Sperl, of Susquehanna, Pa. This heater is made with a tubular base ring and a tubular crown ring, these rings being connected by a

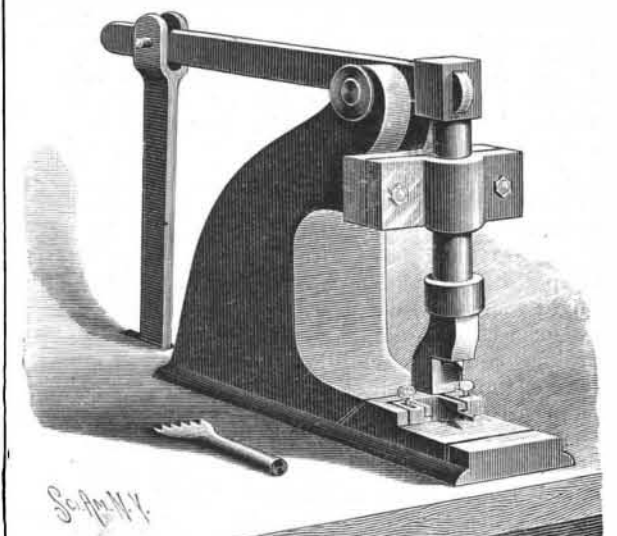


**SPEL'S STEAM HEATER.**

reservoir with one of the vertical tubes at its upper end. The heater has an outer and an inner jacket, each having an opening for the reception of a damper box, and the outer jacket also has an opening for the admission of a water induction pipe, and another for a discharge pipe, each pipe communicating with the tubular base ring. The furnace fire quickly heats the water in the central reservoir, setting up a circulation through the series of pipes and the base and crown rings, and rapidly generating steam, the products of combustion passing upward around the pipes, thence over the top of the inner jacket, and downward between the jackets to the discharge flue near the base, several dampers being provided for the easy regulation of the draught.

**A DEVICE FOR SHARPENING STONE-CUTTING TOOLS.**

The accompanying illustration represents a simple mechanism for sharpening tooth chisels, tooth axes, etc., and for gumming saws and punching holes in metals. It has been patented by Mr. Edward England, of No. 16 Buchanan Street, Duluth, Minn. A cutter or punch is held in a shank or chuck fastened to an upright shaft operated through a compound lever by the foot or other mechanical power. A throat plate is firmly secured to the under jaw of the device, forming a guide to the shank through a throat, the guide being secured to the ledge of the throat plate by a thumb screw to move in and out from the ledge and regulate the length of the teeth. A gauge is also secured to the ledge of the throat plate by a thumb screw, and can be moved from right to left or left to right to regulate the width of the teeth. The proper size cutter or punch having been fixed in the chuck, and the guide and gauge adjusted, the edge of the chisel or other instrument to be sharpened is heated red hot and held against the ledge of the throat plate, when the lever is pressed down by the



**ENGLAND'S TOOL SHARPENER.**

foot of the operator, the operation being repeated as often as required.

The *Electrical Review* suggests that our city authorities should put danger signals over all electrical subway manholes. Then when the unwary passer-by is hurled against Trinity Church spire, he or his heirs won't have so strong a suit for damages.