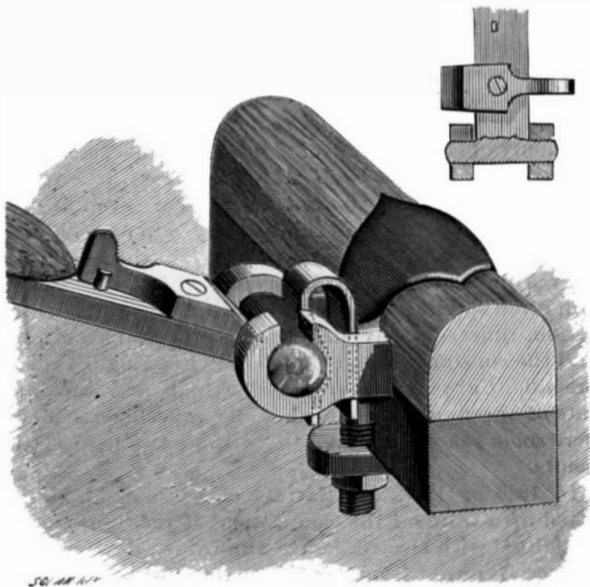


**IMPROVED THILL COUPLING.**

In the engraving is shown a simple and effective coupling for attaching thills or poles to vehicles in such a way that they cannot be accidentally loosened. The clip which is attached to the axle is provided with apertured ears, one of which is slotted from the aper-



**MASON'S THILL COUPLING.**

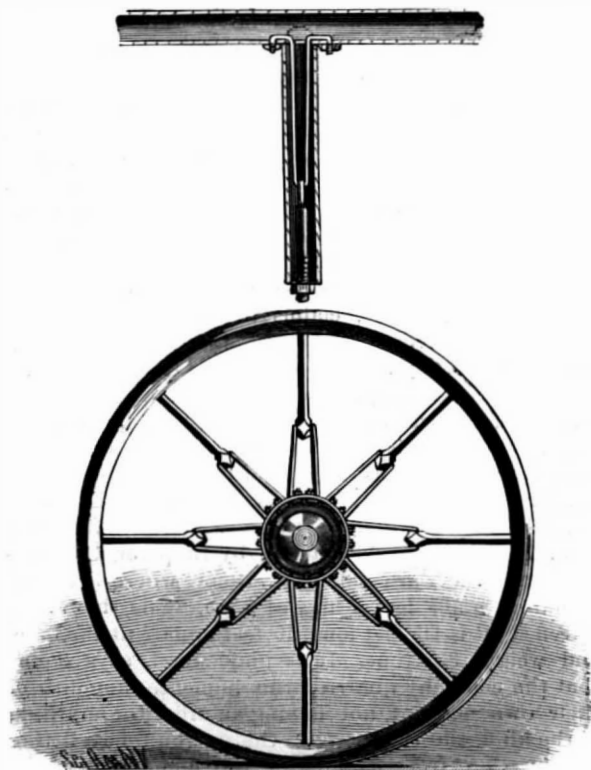
ture outward. The thill iron is provided at its extremity with a cylindrical cross bar adapted to fit into the apertures of the ears. To the thill iron is pivoted a latch, the motion of which is limited in one direction by a stud projecting from the iron, the latch being capable of swinging in the opposite direction, as shown in the detailed view. The latch and the thill iron taken together are thicker than the slot in the ear of the clip.

When the iron is raised to a vertical position, it cannot be drawn out through the slot without first turning the latch as shown in the small figure. The thill iron can then be moved forward and drawn out laterally from the clip. To prevent rattling, a U-shaped spring is inserted between the end of the thill iron and the clip.

This useful invention has been patented by Mr. William Mason, of Clifton, Hamilton, Victoria, Australia.

**A METALLIC JOINT OR COUPLING FOR WHEELS AND OTHER USES.**

The engraving illustrates an improved joint or coupling, patented by Mr. John Wood, more particularly adapted to serve as a spoke for wheels of all kinds, and in consequence of its lightness and strength especially fitted for use on bicycles and similar devices. One view in the cut represents this joint employed in a wheel spoke, the other one showing its use in connection with tubular structures. The essential parts of the improvement are: a straight rod, with one end screw-threaded and the other end provided with an eye, and, passing through this eye, a smaller rod bent back upon itself to form two spring arms, bent at right angles near their ends, the ends being again bent at right angles and screw-threaded. In the application of the device to a wheel, as shown, the screw-threaded end of the straight rod is secured to the felly or tire, and the spring arms passed through the eye at its other end, the hooked ends of these arms being passed through suitable openings in the hub, to which they are secured by nuts. The eyes of the straight rods are angular in



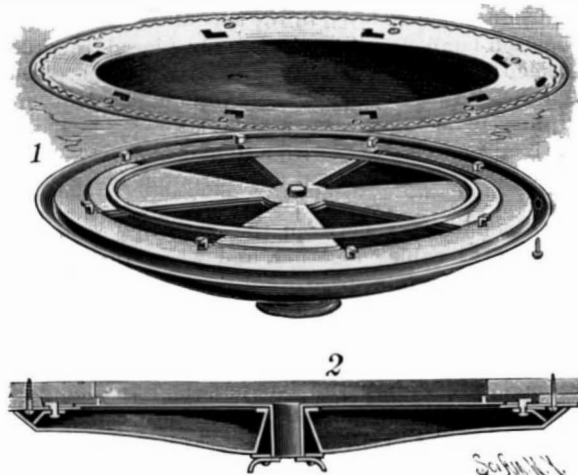
**WOOD'S WHEEL AND METALLIC FRAME JOINT.**

cross section, and the rods of the spring arms are shaped to conform to the angularity of the eyes, which may be lozenge shaped, triangular, or any shape that will present a series of shoulders to bind the two parts and prevent looseness and vibration. The relative position of the rods may be changed, if desired, so that the straight rod will have its threaded end secured in the hub, when the ends of the spring arms will be attached to the felly, their hooked and threaded terminals then passing back through suitable openings and being secured by nuts. In inserting the rod and its spring arms in tubular structures, one end of the smaller rod is passed through the eye of the other until the bend is reached, when the two parts are pressed together and passed along the upright to the transverse section, when they spring apart slightly, and their threaded ends pass through the openings, where they are secured by nuts, the threaded end of the straight rod being extended through a suitable opening in the other closed end of the tube or hollow column, and a nut applied to bring the two sections together and unite them firmly. In a modified structure the outer ends of the spring arms are simply bent at a right angle, and rest along the interior of the tube, making a fastening in which there are no protruding ends of rods or nuts to interfere with the symmetry of the framework. This improvement is also designed for use in awning frames, show cases, tree boxes, fences, bridges, saw frames, turn buckles, and for a wide variety of other purposes.

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**A CEILING CENTER-PIECE AND VENTILATOR.**

Our illustration shows a combined ceiling center-piece and ventilator, and ceiling trap door, Fig. 1 being a top and Fig. 2 a sectional view. It is designed for new or old ceilings, and consists of a ceiling plate having L-shaped slots, shown in the top view, and of a dished ornamental and perforated body having a register, and an indicator to turn the register and show its



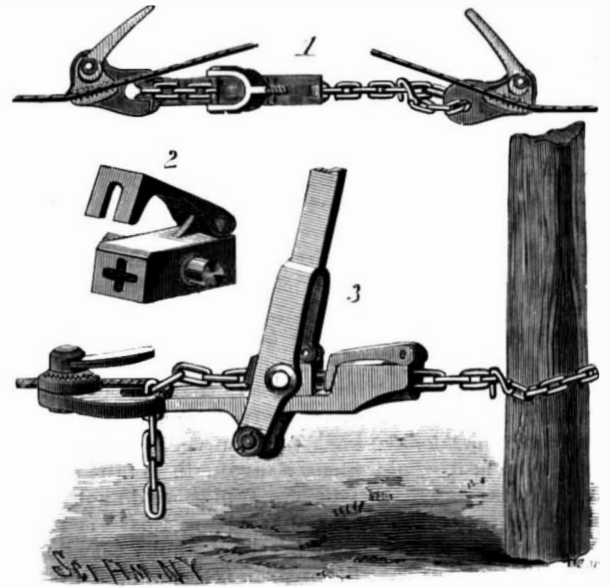
**O'LEARY'S CEILING CENTER-PIECE AND VENTILATOR.**

position, and also having L-shaped lugs to engage in the slots in the ceiling plate. By taking out a screw, the body may be readily detached from the ceiling, and the opening in the ceiling plate used as a trap door. This invention was patented February 4, 1890, by D. O'Leary, of Winchester, Cal.

**AN IMPROVED WIRE OR CABLE TIGHTENER.**

The illustration represents a device for stretching or tightening fence wires, or ropes or cables on shipboard or elsewhere, prior to making them fast or to joining and splicing them when broken. It has been patented by Mr. William Mason, of Clifton, Hamilton, Victoria, Australia. Fig. 1 is a plan view, and Fig. 3 a side elevation, showing applications of the device, Fig. 2 showing the movable pawl block, which in use is connected to the main operating lever of the tightener. The stock is preferably of cast malleable iron, to which is pivoted a forked main operating lever engaging the side trunnions of a metal block movable backward and forward on the stock. This block has a central lengthwise opening in cross form to receive the vertical and horizontal links of a tightening chain, which also passes through an opening in the stock, and to the back end of the block is pivoted a pawl which has a notch in its free end to slip down over a vertical link and catch a horizontal one. At the back end of the stock is a box with a central lengthwise slot and a similar pawl pivoted to the back end of the box. The latter pawl is automatically lifted by successive horizontal links of the pulling chain, and locks behind them after they pass forward, while the vertical links pass freely through the vertical slot in the free end of the pawl, the pawl thus retaining the chain against backward movement while the lever with the other block and pawl are moved to engage with or behind another flat link of the pulling chain. At its forward end the stock has a lug which forms a fixed jaw of the wire or cable clamp, with a movable jaw fitted on an eccentric block bearing having a fixed handle, the ec-

centric bearing being held to turn loosely on a pin or stud fixed in the stock. The edge of the movable jaw is preferably serrated, and it is tightened to the wire by swinging its handle. This description of the device covers its application in stretching one end of a wire or cable while the chain is hitched to a post or other fixed



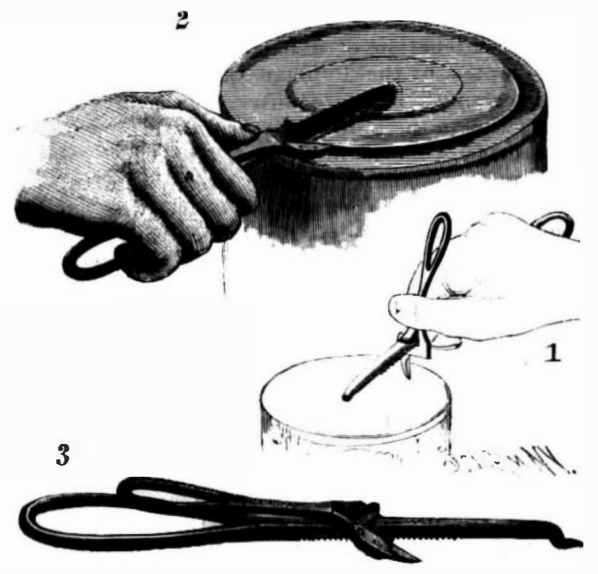
**MASON'S WIRE OR CABLE TIGHTENER.**

object; but when a broken cable is to be pieced or joined, an auxiliary clamp is employed for one end of the broken wire or cable. Whichever way the device is used, it may be worked by one man, who may also easily secure the wire or cable stretched by it.

**AN IMPROVED CAN OPENER.**

This device is so constructed that a fulcrum for a lever purchase is secured in the center of top of can, and a knife, which may be easily and quickly adjusted and locked to any size of can, is set, when cutting, at three distinct angles, for securing a shearing cut. This reduces the exertion required to a minimum, and causes the blade to retain its relative position while cutting without effort. It has been patented by Hasbrouck Alliger, of Rondout, N. Y. (New York office, 125 Chambers Street). The device is shown in perspective in Fig. 1, and consists of a main bar with a handle at one end and an angled pivot pin at the other end, and having a toothed surface or ratchet along its under face, combined with a knife carrier with an opening similar to the cross section of the main bar, whereby the carrier may be passed over the pivot pin and slide along the main bar. The blade is attached to the carrier at one side of the opening therein, and the handle of the carrier extends rearward at an angle thereto. The cutting edge of the blade is slightly inclined toward the outer edge of the can, the blade being also inclined transversely in the direction of the main bar, or pointed forward, whereby all liability of the knife to work upward or out of its kerf is avoided. By grasping opener as shown in Fig. 1, the pivot pin is easily pushed through the center of the can, and the blade, being held rigidly at right angles to the main bar, is easily pushed through the can where desired by pressing down on the main bar. The handle of the knife carrier is then dropped on to or parallel with main bar, as shown in Fig. 2, and by grasping the tool with the right hand over both handles, as far back from the can as possible, the top of the can may be quickly and easily removed. Should the blade become dulled, it may be sharpened in the same manner as any knife blade.

PROF. HAZEN suggests that the force of a tornado may be largely diminished by the explosion of gunpowder or dynamite, just as the waterspout at sea is diverted and broken by a like discharge of explosives.



**ALLIGER'S "BEST YET" CAN OPENER.**