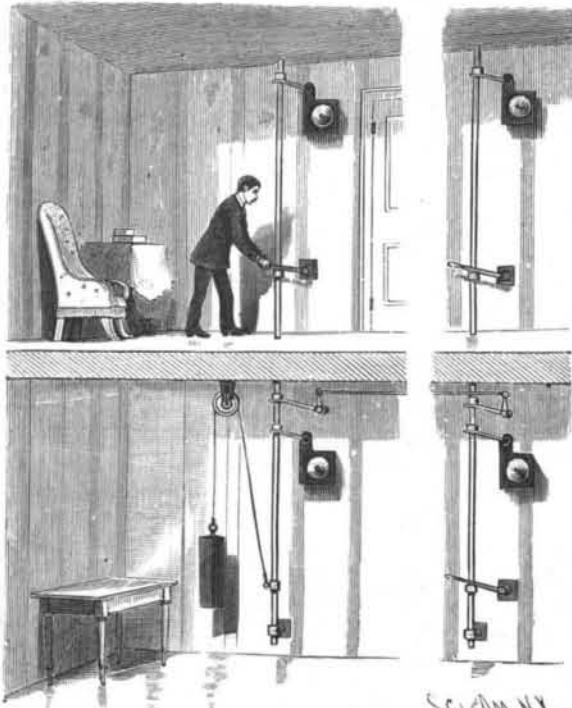


A FIRE ALARM FOR LARGE BUILDINGS.

A device whereby an alarm may be sounded from any room in large buildings, such as factories, schools, hotels, etc., and be immediately and automatically communicated to all the other rooms, has been patented by Mr. James West, of St. Louis, Mo., and is illustrated herewith. From each of the lowest rooms in the building a rod extends vertically through the floors into the highest rooms, parallel with a line of gongs at-

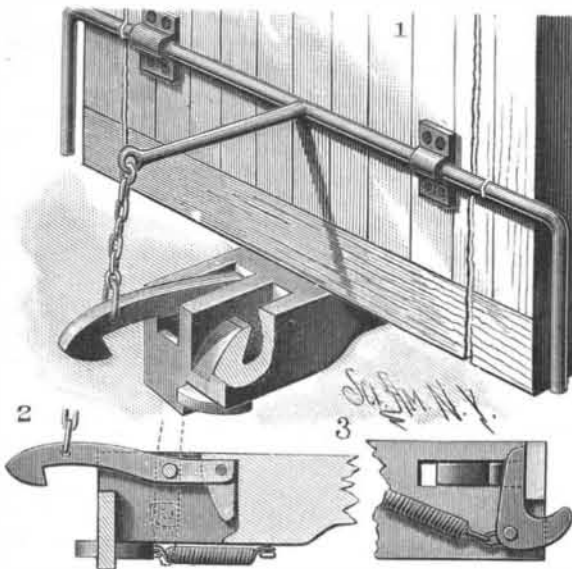


WEST'S FIRE ALARM.

tached to suitable supports in each room, the various rods being connected with each other and counterbalanced by one or more weights in one of the lower rooms. In each room two or more collars are fitted upon the vertical rods, one of the collars being adapted to engage a trip rod attached to the striking arm of a gong, the other collar being engaged by a hand lever, hinged or pivoted to a convenient bracket. The various rods are so connected that when one is reciprocated, the motion will be communicated to the others, and an alarm will be sounded in each room. An alarm of this character may also be used as a drill signal, whereby the occupants may be trained to act properly in case of fire, quickly locating the means of escape and preserving their presence of mind.

AN IMPROVED CAR COUPLING.

A car coupling which is designed to be automatic, and applicable to drawheads of the same or different



REED'S CAR COUPLING.

heights, has been patented by Mr. William M. Reed, of Shelton, Neb., and is illustrated herewith, Fig. 2 showing a vertical longitudinal section and Fig. 3 a plan view of the under side of the coupling. The forward end of the drawhead has two comparatively wide vertical slots, one extending entirely through, and having a front end wall for a portion of its height. A hooked coupling bar is pivoted in this slot, to the rear end of which is pivotally hung a dog, so jointed that it may either be in a line with the coupling bar, when the latter is held vertically, as shown in the dotted lines in Fig. 2, or swung at an angle thereto. A lever having two angular arms is pivoted to the under side of the drawhead, its forwardly extending arm projecting beyond the front, a spring holding the lever with one arm in its outermost position. Upon the end of the car, in suitable bearings, is a horizontal shaft, with crank handles at either side, by which, or by a chain extending to the top of the car, the coupling bar may be operated. Should the coupling bar be raised,

an abutting car, striking the lever arm extending beyond the drawhead, causes the other lever arm to move the dog, and with it the coupling bar, to swing it down. The other slot in the forward end of the drawhead is arranged to automatically couple with an approaching hooked coupling bar, so that whether the drawbars are in their normal coupling positions or whether they are raised, on meeting another similar drawhead, a coupling will be effected.

Steam Jackets.

According to the *Revue Industrielle*, M. P. Guzzi, an Italian engineer, has recently introduced a system of constructing steam engines in which the jacket is supplied with steam of a higher pressure than that used inside the cylinder. The high pressure steam is generated by a small boiler constructed on Perkins' system, which is placed inside the furnace of the main boiler. In this way steam is obtained at a pressure of about 220 lb. per square inch, with a corresponding temperature of about 390 deg. Fahr., and with this steam the jackets are supplied, and when condensed in these it drains back into the boiler. By this arrangement the initial condensation in the cylinder is materially reduced, with a corresponding improvement in the efficiency of the motor, as the following figures, taken from an engine when working as described above, and when working under normal conditions, show:

	Jacket using Steam at a Pressure of 176 lb. per sq. in.	Jacket working under Normal Conditions.
Date of experiment.....	Feb. 24, 1886.	Feb. 20, 1886.
Duration of test.....	6 hrs. 18 min.	7 hrs. 11 min.
Mean effective pressure in main boiler.....	56.6 lb. per sq. in.	56.2 lb. per sq. in.
Mean indicated horse power.....	25.9	25.07
Consumption of water per indicated horse power per hour.....	19.6 lb.	23.5 lb.

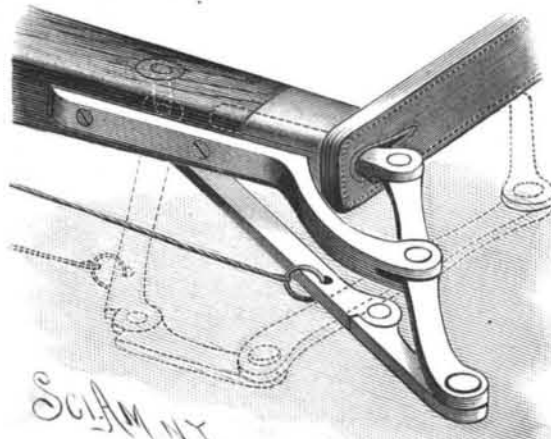
This engine has now been working for about eighteen months, but in other cases, to avoid the risk arising from high pressure steam, it has been proposed to substitute for the steam the vapor of linseed oil, which boils under atmospheric pressure at about 700 degrees Fahrenheit.

Incendiary Rats.

According to *Fire and Water*, Fire Marshal Whitcomb, of Boston, has been recently experimenting with rats and matches, shut up together in a cage, in order to ascertain whether they were likely to cause fires or not. In the absence of other known cause, frequent fires have been ascribed to their agency, while at the same time many underwriters affected to scoff at the idea. The question may, however, now be considered as settled. The very first night that Marshal Whitcomb's rats were left alone with the matches, four fires were caused, and not a day passed while the experiment was being tried that fires were not set in this way. The rats were well fed, but they seemed to find something in the phosphorus that they liked. It was noticed that only the phosphorus ends were gnawed, and in nearly every instance the matches were dragged away from the spot where they had been laid.

AN IMPROVED HORSE DETACHER.

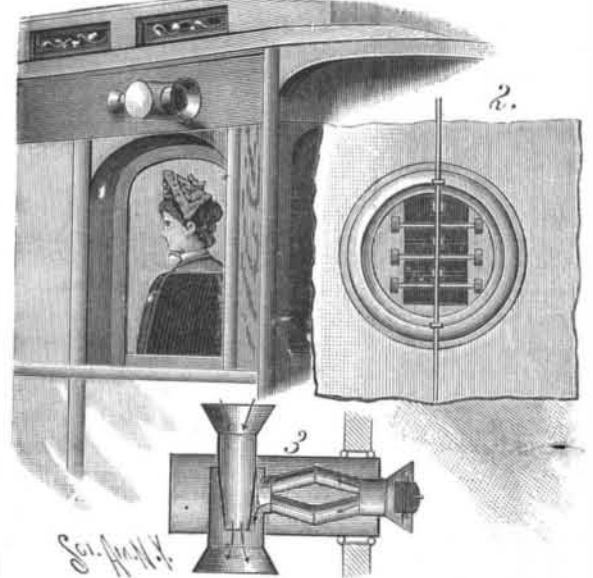
A device for detaching horses from vehicles, in which the parts cannot rattle, and with which great reliability of action is assured, is illustrated herewith, and has been patented by Mr. Thomas White, of Peekskill, N. Y. The whiffletree is provided with end sockets to receive the trace bolts, which are hinged to levers pivoted to rigid brackets on the whiffletree, the free end of each bolt-carrying lever being connected to the whiffletree by a knuckle-jointed rod. The rods on each end of the whiffletree are connected together by a cord or line, guided by pulleys on the inside of the whiffletree, and to the middle of this connecting cord is attached an operating cord, to be carried within easy reach of a person in the vehicle. By pulling on this operating cord, in case of a runaway, the knuckle-jointed rods are simultaneously folded at their joints, thereby retracting the bolts and releasing the traces, as shown in dotted lines in the illustration.



WHITE'S HORSE DETACHER.

AN IMPROVED VENTILATOR FOR RAILWAY CARS.

A ventilator of light construction, but extremely strong, to resist the heavy currents produced by the rapid motion of cars, has been patented by Mr. Frederick C. Werner, M.D., of Watertown, Wis., and is illustrated herewith, Fig. 3 being a sectional plan view and Fig. 2 showing the inner end of the ventilator. A collar is fitted in the side of the car in which is mounted to turn the inner end of a cylinder having caps on its inner and outer ends. The inner end of the ventilator has a slotted register, with regulating rod and keeper extending within convenient reach of an operator. Two small pipes lead toward the outer end of the ventilating cylinder, first diverging and then

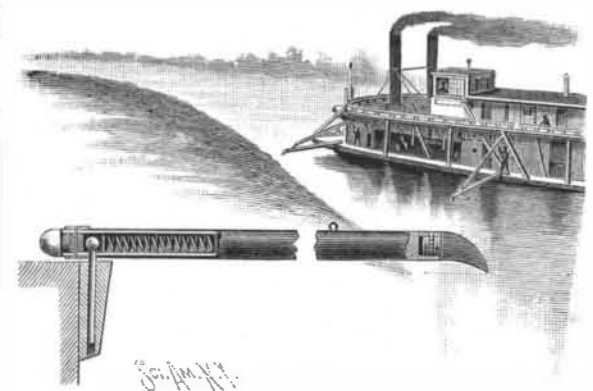


WERNER'S VENTILATOR.

converging at an angle, and open into the side of a large pipe, the outer end of which has a flaring mouth, the inner end having a collar receiving the tapering nozzle of a smaller pipe which has an outward flaring mouth. With this construction, the register being open, the air currents passing outward from the car, as indicated by the arrows, meet at an angle at the outer end of the small pipes, forming a fan-like stream, completely surrounding the tapering nozzle, through which air is passing according to the speed of the train, thus inducing a very strong draught through the ventilator.

A FENDER SPAR FOR VESSELS.

A spar for use on wharfs and different kinds of vessels, to obviate the severe jar at present consequent upon boats making a landing, or to hold the vessel in a given position, is illustrated herewith, and has been patented by Mr. William J. Rankins, of Augusta, Ky. The spar has a longitudinal bore at its inner end, in which is a coiled spring, above a longitudinal slot in the spar, there being a plate at the rear of the spring bearing against the head of a pin socketed in a bracket attached to the wharf or the gunwale of a boat. In a bore at the outer end of the spar the shank of a bifurcated headblock, with claw-like points, is held to turn, the upper side of the spar having eyes, to which tackle



RANKINS' FENDER SPAR.

may be attached. By this device a boat may be held at a given distance off shore, and kept in place there for repairs or painting, or the device may be employed to ease the approach of a vessel to a dock.

Sodium Bicarbonate.

The genesis of the ammonia process for the manufacture of sodium bicarbonate is thus described by its originator, Mr. Thoms, in a letter to his son: "My first experiment was made by taking a good pinch of the substances (bicarbonate of ammonia and common salt), placing them in my left hand, mixing them with the forefinger of the right hand, and allowing water to drop from the fingers of my right hand to wash with as little water as possible. The heat of my hand dried very soon the product, and I learned that the decomposition could be made, whether profitable or not." After the first "plant" was established for carrying out the new process, Mr. Thoms was employed to run it at a salary of £80 a year.