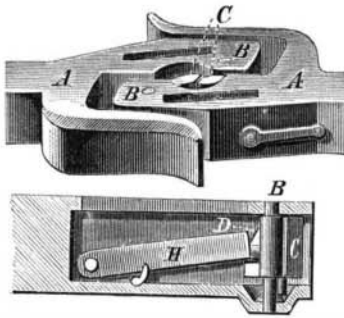


RECENT INVENTIONS.

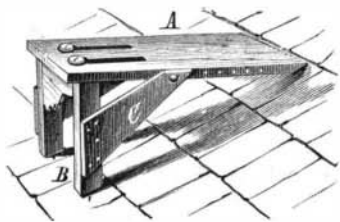
Car Coupling.

An automatic car coupling recently patented by Mr. Michael J. McCrone, of Louisville, Ky., is shown in the accompanying engraving. The drawhead of the car is U-shaped, and in the end of one of the shanks a short vertical spindle, B, having a curved lateral hook, C, on one side and a spiral shoulder, D, on the opposite side, is journaled. In a recess in the shank, back of the spindle, B, a latch, H, is pivoted that is raised and lowered by a cam finger attached to a transverse shaft journaled in the side of the drawhead, and is operated by a series of levers attached to a chain reaching to the top of the car. The latches, H, rest in the bottom of the recess with their ends against the bottom of the spiral shoulder, D, and prevent the hooks, C, from swinging outward. In coupling the hooks, C, will face each other, and swing inward sufficiently to allow the shanks of the drawhead to pass into each other, when they swing out and the cars are coupled. When the latch, H, is raised and the cars drawn apart, the hooks, C, turn each other outward and the cars separate.



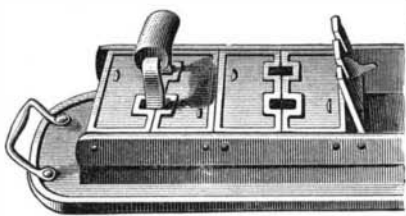
Roof Seat.

A novel and convenient seat, designed to be used in shingling roofs, has been patented by Mr. William P. Thomson, of Joliet, Ill. In the cut A is the top of the seat, B the front perpendicular support, and C side braces uniting the two. The top is secured to the front support by screw fastenings that pass through longitudinal slots in the top, thereby adapting the seat to roofs of different inclinations. To adapt the braces, C, to this adjustment of the top they are rigidly secured to the sides of the support, B, but are adjustably attached to the top, A, by screws that engage with a series of holes in the sides of the top. The back end of the top and the bottom of the support are each provided with spurs to prevent the seat from slipping on the roof. The seat is simple, firm, easily constructed, and well adapted for shingling roofs.



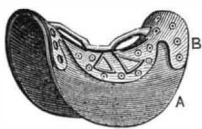
Sad Iron Heater.

The accompanying engraving shows an improved sad iron heater patented by Mr. Platt McDonald, of Plymouth, Ind. The heater consists of a metal box provided with transverse swinging lids, having lugs projecting from the under surfaces, and also having recesses in the swinging edges. When the sad iron is passed into the box the bottom of the iron strikes against the lugs and closes the lids automatically. The lids are also opened automatically when the sad irons are withdrawn and the lids are provided with check studs to prevent them from opening too far. The heat is retained in the box, as the lids fit closely to the sad irons.



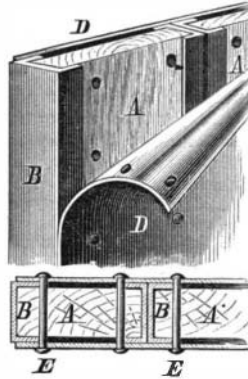
Horse Collar Cap.

The device shown in the accompanying engraving is a new horse collar cap, recently patented by Mr. Andrew Waugh, of Carthage, Jefferson county, N. Y. The collar cap, A, differs from the ordinary cap by having the ends more rounding, and it is secured by rivets to a malleable iron frame, B, of the form shown in the engraving. The part of the frame between the middle and the ends is made narrow, so as to be more flexible; the middle is in skeleton form, and the ends are perforated to allow the air to come in contact with the cap, A. Loops are formed on the top of the frame for the collar straps to pass through to hold the cap to the collar. The advantages are that as the cap is more rounding it is not so liable to chafe the horse's neck, and the frame being made so as to be flexible is easier accommodated to the shape of the neck. The perforations keep the cap cool and comfortable, and the loop for the collar straps being iron will not wear out by coming in contact with the hame strap.



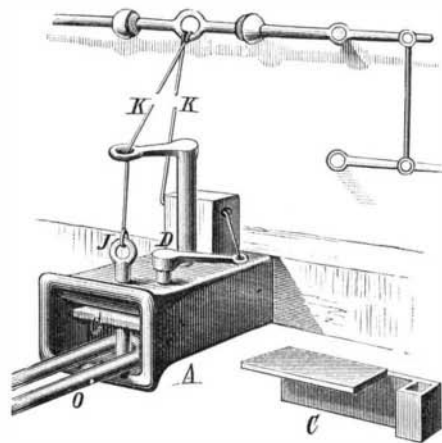
Fireproof Shutter.

An improved fireproof shutter that will not warp by heat has been patented by Mr. Cornelius Berrian, of Clinton, Ia. The shutter is formed of strips of wood, A, against the edges of which are placed channel irons, B, as shown in the engraving, the flanges of the irons overlapping the strips on the sides. The backs of the irons are in contact—as shown—and on the inner and outer sides of the shutter are metal plates, D, held to the shutter by rivets, E, that pass through the plates and the strips, A. As the plates rest on the flanges of the channel iron, B, small air spaces are formed between the plates and the surface of the strips, A, that protect them from heat, and the strips prevent the channel irons from warping. Even if the wooden strips are charred the shutter will not break, as the rivets hold it together.



Car Coupling.

Mr. Peter Zehner, of Mifflin, O., has patented a car coupling that operates automatically for coupling, and can be uncoupled from the outside of the car. In a recess in the drawhead, A, of the car is journaled a vertical shaft, D, to which is attached a swinging flanged plate, C, the flange projecting



toward the outer end of the drawhead when the plate is thrown forward. The shaft is provided at its upper end with an arm projecting at right angles to the swinging plate. A rope, K, attached to the end of the arm passes through a block on the drawhead, and is attached to levers that can be operated from either the top or side of the car. The coupling pin, J, is also attached by a rope to the same levers, and when the levers are pulled the pin is raised from the coupling so that the link, O, can be withdrawn, and at the same time the flanged plate swings under the pin opening, so that when the levers are released the pin will rest on the flanged plate. When the cars are coupled the link strikes the plate, pushing it back, permitting the pin to drop and couple the cars.

LONDON FIRE SERVICE.

Capt. Eyre M. Shaw, Chief of the London Fire Department, now visiting this country, gives a number of interesting facts with regard to the system and material for fire protection in use in London. The area to be protected is 121 square miles. The force employed numbers 536 men and officers of all grades, one-third of the number doing duty by day, and two-thirds by night, each set working twelve hours. The equipment of the department comprises 53 land fire engines, 121 fire escape engines, three floating steam fire engines, eleven movable land stations, four floating stations, three large land fire engines, thirty-five small steam land fire engines, two steam tugs, four barges, twenty-nine hose-carts, fifteen vans and two trollies.

The movable land stations are large vans that are taken to a designated spot every night at 8 o'clock, each one drawn by four horses. The horses are then returned to the engine-house to which they belong. They are sent the next morning at 8 o'clock to fetch the vans back. In each van is an engine and a number of men, who are always ready to attend a fire in the immediate neighborhood where the van is stationed. The department is forced to use these movable stations on account of the cost of building permanent stations. The engine does not leave its place, but depends upon its length of hose to reach a fire.

The system of telegraph alarms fifty-three telegraph lines with forty-four "call points" or alarm boxes, and seven telephone lines. The intention is to replace all the telegraph lines with telephone lines. The city is divided into four sections or fire districts, each with a central office, communicating with headquarters. The area covered is so great that a single system like that of New York would not answer.

Captain Shaw was greatly interested with the method employed in this city of loosing the horses from their stalls by electricity on the sounding of an alarm, and the automatic

harnessing. The London horses stand in their stalls harnessed. All the London firemen are given a two-months' course of instruction and systematic drilling before they are sent out for actual service. The department has discarded rubber hose entirely, and use "fabric hose," which is much lighter, costs one-third as much, and lasts three times as long. It is manufactured at Dundee.

Telephone Sounds.

The *Operator* says: "Mr. Nat. G. Warth, manager of the Midland Telephone Company, Gallipolis, O., writes: 'Please give some one the chance of explaining this phenomenon. This morning early, while in temporary communication over a Western Union wire with Major R. B. Hoover, at Pomeroy, O., twenty miles away, I could distinctly hear the croaking of frogs and the singing of birds. The wire passes through dense woods and along large streams between the two points. There were only the two sets of instruments in circuit. The sounds certainly were taken up and transmitted from some point between us. Now, by what law could this occur? Could the sound have been induced by a damp atmosphere?'"

The *Review of the Telegraph and Telephone* says: For want of a better explanation, we put forward our own ideas:

Every telegraph line, and every telephone line, too, for that matter, has necessarily a certain number of joints in it; every one of these joints is, unless soldered, a microphone of more or less power; the more perfect the joint the less perfect the microphone, and vice versa. A microphone is nothing more or less than two or more conductors connected together electrically by an imperfect joint. The Blake transmitter is a good example of this. In it, the point of contact between the button of carbon and the point of platinum is the imperfect joint, which, when varied ever so slightly, correspondingly varies the resistance of the circuit, thus producing changes in the strength of the current; these changes in turn causing variations of the magnetic power in the telephone magnet, which of course are made manifest to the listener by noises in the telephone identical in character with those originally inducing the varying resistance of the bad joint.

A battery current on the line is, however, necessary to vitalize the imperfect connection, and enable it to act microphonically.

Our explanation, then, from the foregoing premises, is this:

The line in question had at some point near the locality where the frogs were croaking and the birds were singing in the morning an imperfect joint, which was affected by the noises of the vicinity, and its resistance accordingly varied. Being a Western Union wire, it is possible that a battery was at the time in circuit, though unmentioned by the inquirer.

But, if such was not the case, it is unquestionable that sufficient current would constantly leak from other and parallel telegraph wires to charge the wire which was being used at that time for telephonic communication.

This effect might be aided, and probably was, by the damp atmosphere referred to.

Proposed Dutch Colonial Exhibition.

The plan of the Colonial Exhibition to be held in Amsterdam, Holland, next summer, has been extended so as to admit exhibits from all countries. It is now styled an "International Colonial and General Export Exhibition," and will be divided into five sections:

- (1) A colonial exhibition, (2) an exhibition for export trade, (3) an exhibition of fine arts and arts applied to industry, (4) special exhibitions, (5) scientific conferences. This last division will include meetings for the discussion of subjects pertaining to colonial public education, teaching, domestic and public hygiene, political economy, the relations between colonies and the mother countries, etc. The exhibition will offer special advantages to manufacturers who make articles likely to find a sale in any of the Dutch colonies, as these latter will be well represented at the Exhibition by their products and agents. Articles for exhibition must be on the ground before the 20th of April, 1883. The Exhibition will open in May and close in October. Information and application forms will be given by the Netherlands Consul, 47 Broad street, New York.

The Rag-Pickers' Harvest.

As many as 2,000 rag-pickers find employment about the streets of this city. They are almost exclusively Italians, who have displaced the Irish and Germans who used to do the work. Their gatherings of rags are valued at \$750,000 a year. The hand-cart dealers do a business of \$3,000,000 a year. The aggregate rag trade of the city amounts to \$30,000,000 a year. A prominent dealer estimates the number of rag dealers in the city at 800, about a fifth of them doing a large business. The general trade is controlled by a few extensive dealers. Last year the cotton rag importations reached \$10,000,000 in value, the home gatherings being worth \$12,000,000; the paper mills taking the whole supply. The cotton rags are worth from 1 1/4 to 6 cents a pound; the woolen rags from 3 to 35 cents a pound. The latter are used in making shoddy-goods. The rags are sorted by women, who earn \$5 a week, and packed by men, whose wages range from \$12 to \$14 a week. Some of the larger dealers have accumulated large fortunes.