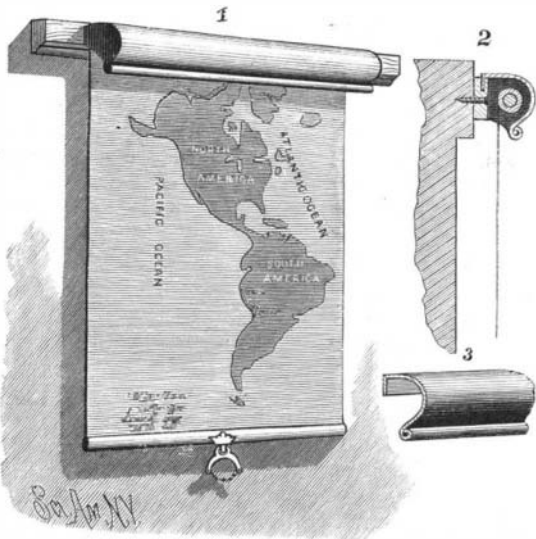


a height sufficient to bring it above high water mark. Layers of brush, willows, reeds, etc., are lashed vertically to the trestle by means of horizontal stringers bound to the frame of the trestle as shown. The trestle frame is then filled with stones and gradually sunk.

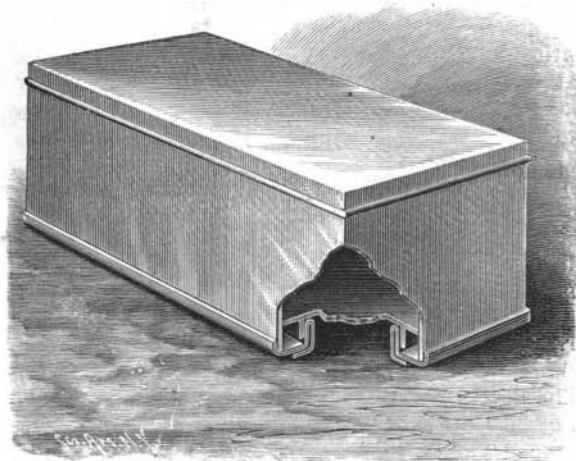


BULLARD'S EXHIBITOR FOR WINDOW SHADES, ETC.

The weight of the stones will be sufficient to retain the dike firmly in position. A bundle of reeds or willows is bound to the frame at the point of intersection of the vertical and horizontal layers of reeds to prevent the water from flowing between these layers, and a pile of stones from two to four feet high is piled upon this to keep it in place. This system has been patented by Mr. Henry C. Weeke, of St. Charles, Mo.

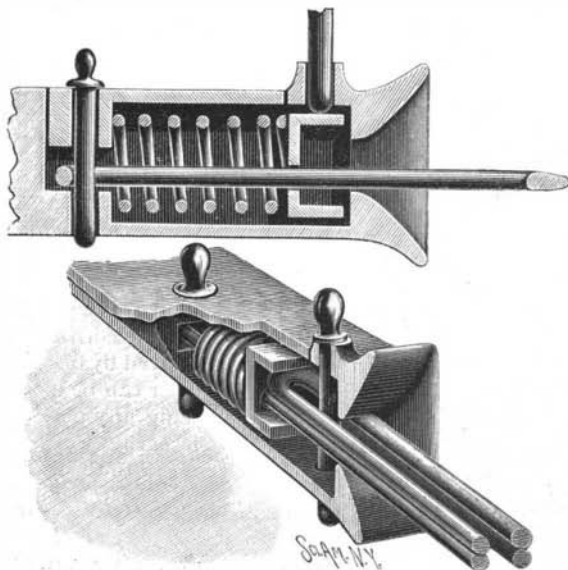
A BOX TO HOLD BRICKS OF ICE CREAM.

A box for containing bricks of ice cream, and which will admit of the cream being dislodged from the box with neatness and dispatch, is illustrated herewith, and has been patented by Mr. James Van Dyk, of No. 116 Bridge Street, Brooklyn, N. Y. The cover may be



VAN DYK'S ICE CREAM BOX.

of any approved construction, but the bottom is movable, of a form to fit snugly within the box, and has a downwardly extending flange a little distance from the edge. At the bottom of the body of the box is formed a flange adapted to constitute a seat for the movable bottom, and also a channel between the flange and the body of the box, the flanges being so formed and arranged that the one will fit snugly within the other. The body of the box is made gradually wider from the bottom upward, so that as the movable bottom is pressed up, acting as a follower to the cream, the latter need only to be started to loosen it and permit its ready removal. To retain the bottom within the box, and obviate the possibility of its misplacement or injury, retainers, not shown in the illustration, are secured to the inner surface of the body of the box, each formed of sheet tin or like sharp material,



CLARRIDGE'S CAR COUPLING.

whose sharp edge will present but little resistance to the cream, and will not mar its appearance.

AN IMPROVED EXHIBITOR FOR SHADES, MAPS, ETC.

A readily attachable device, which will effectually conceal a shade when rolled up and shield it from light and dust, is illustrated herewith, and has been patented by Mr. Edwin A. Bullard, of Vassar, Mich. The fixtures of a spring curtain roller are secured upon the face of a strip of wood, a number of which strips may be arranged in succession over the shelving. In the upper edge of the strips is a groove, to receive and retain in position over the curtain fixtures and roller a protector, consisting of a piece of sheet metal or equivalent material, bent to form a semi-cylindrical body, as shown in Fig. 3, the manner of attachment being shown in the sectional view, Fig. 2. When a series of such covers are in position they will form a moulding as far as they extend. These exhibitors may also be used in connection with curtain fixtures of dwelling houses, the protector being put up the full width of the curtain, and the slats secured to the casing of a wide or narrow window.

AN IMPROVED CAR COUPLING.

An automatic car-coupling, employing ordinary coupling pins and links, with the drawbar of about the form of those already in use, is illustrated herewith, and has been patented by Mr. John Clarridge, Sr., of Libertyville, Iowa. The draw bar has the usual flaring mouth, but with the inner part reduced in size to form a guide for the link, the chamber for receiving which contains a spring. In the rear of the chamber are shoulders to act as an abutment for the spring, and in its mouth are shoulders to limit the motion of a follower pressed forward by the spring, this follower consisting of a plate bent twice at right angles, and having an oblong aperture to admit a link. At the rear of the chamber are vertical apertures for receiving a coupling pin to permanently retain a link in place in the drawbar, the follower then, when the coupling is ready to be connected with another coupling, being in the position indicated in the sectional view, and forming a support for a coupling pin, for which vertical apertures are provided in the forward part of the drawhead. The outer end of each link is beveled, so that when it approaches another link similarly supported it will not be liable to collide with it, but will slip past, either above or below it. When the cars approach each other, the parts being arranged as shown in the sectional view, the link carried by each drawbar enters the other drawbar and pushes back the follower against the pressure of the spring, allowing the outer pins supported by the followers to fall through the links thus introduced, and automatically effecting the coupling.

KANE'S CAR BRAKE.

Mr. George O. Kane, of No. 193 Thurbus Avenue, Providence, R. I., is the patentee of an improved brake for railroad cars in which the brake shoe is applied to the track instead of to the wheel of the car. By this method the wear upon the wheels from friction with the shoe and sliding on the track is avoided. The entire weight of the loaded car bearing upon the brake shoe brings the car and train to a sudden stop. Two pairs of oppositely arranged brake shoes are pivoted at one end to a depending frame on each side of the car, the other end of each shoe being connected with the lower extremity of a toggle joint. The upper arms of the toggle joints are pivoted to the car frames, while the joints are attached to opposite ends of the brake beams, so that when the brake beams are made to approach one another, the angle of the toggle joint is increased and the shoe is lowered on to the track. As may be seen by examining the cut, between the brake beams fixed upon an immovable frame is pivoted a brake lever, which is united with the brake beam by connecting rods, so that when the brake lever is turned by means of the brake rods, that connect the ends of the lever with the brake on the platform of the car, the two brake beams will be made to approach one another, straightening the toggle joints, and the brakes will be forthwith applied. The rods connecting the brake beam with the brake levers are provided with springs at their outer ends.

ANCEL'S STOVE PIPE AND TENT SUPPORT.

In the device illustrated in the accompanying engraving, the smoke pipe of the stove is used as the support of the tent. This device has been patented by Mr. John W. Ancel, of Fort Buford, Dakota. The stove pipe is made telescopic, the smaller sections at the top being made to slide inside of the sections under it. Each section at its extremities is provided with holes into which are inserted screw-threaded pins for locking the pipe in position. The stove may be of any desired type. The top section of the pipe has a sleeve provided with a flange from which is suspended the heavy ring which carries the tent proper. This sleeve is removable, and is likewise locked in position by means of a pin. A bell-like shield caps the whole to prevent rain or snow from entering the opening at the top of the tent. The sections of the pipe are made flanging at the bottom and are bent in at the top so as

to make the joints tight-fitting. By this device the smoke is carried away and the tent is thoroughly ventilated, while the ordinary tent pole is done away with. When traveling, the pipe may be folded and packed

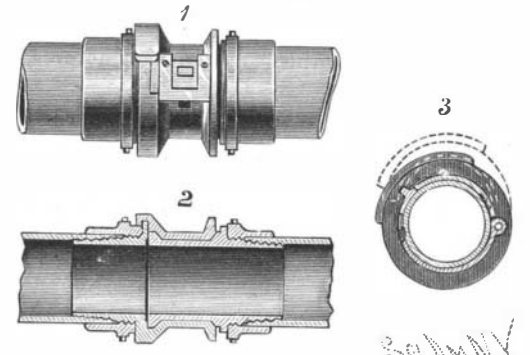


COMBINED STOVE PIPE AND TENT SUPPORT.

away into very small space, occupying no more room in fact than the largest pipe section.

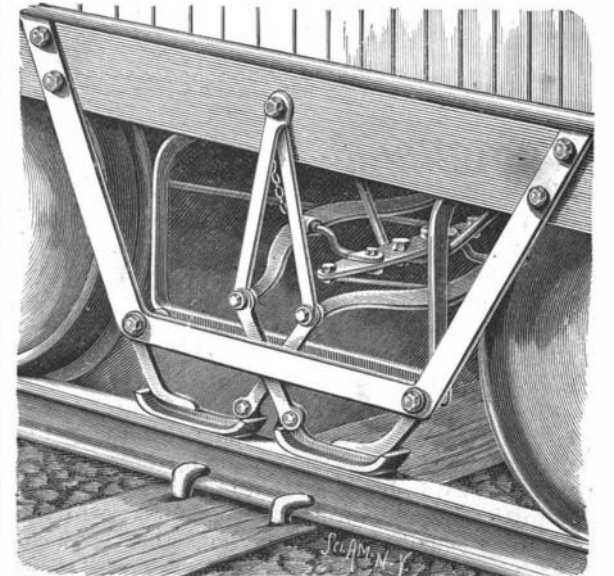
AN IMPROVED HOSE COUPLING.

The illustration herewith represents a hose coupling designed to be simple in construction and efficient in operation. It has been patented by Mr. James D. Sloan, of Rushville, Ind. Fig. 1 represents a side view and Fig. 2 a longitudinal section of the coupling engaging two pieces of hose, while Fig. 3 represents a cross section. Collars, internally screw-threaded, are engaged on the respective ends of the hose, each hose being then engaged to the corrugated ends of a coupling, each collar being shorter than the corrugated ends of the coupling, permitting the outer end of each corrugated part to expand on the inside of the hose, and cause the hose to expand over the outer edge of each collar. This feature, with the corrugations, forms a strong connection between the hose and coupling. The body of the



SLOAN'S HOSE COUPLING.

coupler has an end collar, a middle collar, with one part narrower than another, and external corrugations at one end, a part of the side at one end of the body being cut away, or provided with a large opening, to be closed by a hinge. When the hinge is closed, a yoke spring engages a lug on the body and locks the parts. When disengaged, a flat spring is exerted to open the hinge, the extent to which it may be opened being limited by a small lug, as shown in dotted lines in Fig. 3. When the hinge is open, the part corresponding with the pipe section, having two collars and threaded end, held in one end of the hose, may be engaged with the body or hinged part of the coupling. Then by closing the hinge and causing the yoke spring to engage with a lug on the body, the several parts of the coupling are firmly united.



IMPROVED CAR BRAKE.

The Luster of Metals.

Dove was the first to attempt an investigation of the causes of metallic luster. He had examined, by the aid of a stereoscope, two images of a pyramid, one being colored blue and the other yellow, expecting to find a relief image of a green color. He was, however, astonished to find that the mixture of colors gave a reflection like that of a polished metallic surface. Having repeated the experiment, using a black and a white image, he obtained the metallic gray of lead and tin. Dove concluded that metallic luster is due to two reflections from superposed surfaces, and that the accommodation of the eye being different for each color, a perfect coincidence of the images of different colors was impossible. The luster of metals would thus be caused by a reflection from the actual surface and another from beneath the surface. This explanation attributes a considerable degree of transparency to the metals, more indeed than seems consistent with fact. Brücke offered another theory, according to which the color of light reflected from bodies not possessing the metallic luster should be independent of the local color—that is, the color of the reflecting body—while in the case of metals the color of the reflected light is that attributed to the substance, the incident light being white. Brücke also considered that a certain intensity of reflection was a necessary condition for metallic luster, this intensity resulting from the opacity of the metals, and he mentions the phenomenon of total reflection as producing a perfect imitation of metallic luster. The theories of Dove and Brücke represent opposing views of the transparency of the metals; the one considers them as opaque, the other as transparent. Herr W. Spring (*Bul. Soc. Chim.*, 50, 219) endeavors to reconcile these views by a study of the nature of the surfaces of the solids he has obtained during his experiments on the compression of solids within polished steel cylinders. He finds that substances which in the form of powder are opaque produce solids that have a metallic luster, whatever the nature of the substance, while such substances as yield powders more or less transparent formed cylinders having vitreous surfaces, looking as if varnished.

The Deadly Wire.

Recently an electric wire carrying a powerful current of the subtle and mysterious force fell across Bourbon Street, near the theater of the French opera, at a time when many people were passing. It happened that a mule which was drawing a street car came in connection with this wire, and was at once stricken down by the deadly electricity and killed on the spot. The unfortunate mule was in some sense a sacrifice to save the lives of men and women, some of whom, but for the warning given, might, in all probability, have stumbled upon the fatal wire with a like result.

The electric wire has introduced a new element of menace to human life and to the security of property that seems scarcely to have come into the purview of law makers, who are charged with legislation for the protection of life and property. The industrial uses to which electricity is being put are constantly increasing, and scarcely a week passes without additional wires being erected to conduct the force which has been wrongly termed a fluid. Every such wire is a new danger—an additional thread from which to suspend a sword of Damocles over the heads of the people.

As to laws for their protection, there seems to be none. True, a general law exists which would make an electric light company liable for damage caused by wrongful or criminal negligence on their part, but so little is known of electricity as a practical industrial force motor, save by a few experts, that it would be extremely difficult in court, in a claim for damage, to establish undue or wrongful negligence on the part of an electrical company. Let us inquire a little. The wires are suspended from wooden poles over the streets of the city. Are the wires securely placed? What constitutes security in the premises? The wooden pole readily rots; it may be broken by the enormous weight of the wires it carries, and such a result is extremely likely when a great network of wires so suspended is violently and forcibly vibrated by the wind. There appear to be no restrictions as to the number of wires strung upon a pole. Almost every day additions are made to those already there. Then as to the methods of fastening the wires to the poles—the main thing considered is to insulate the wire from electrical communication with the posts. The fastenings may be deemed secure by those who use them. The fact is, however, that the wires frequently fall into the streets, with fatal consequences to the people at large, not to the corporations who own them. They may suffer temporary delay of business.—*N. O. Picayune.*

AN IMPROVED FIRE ESCAPE.

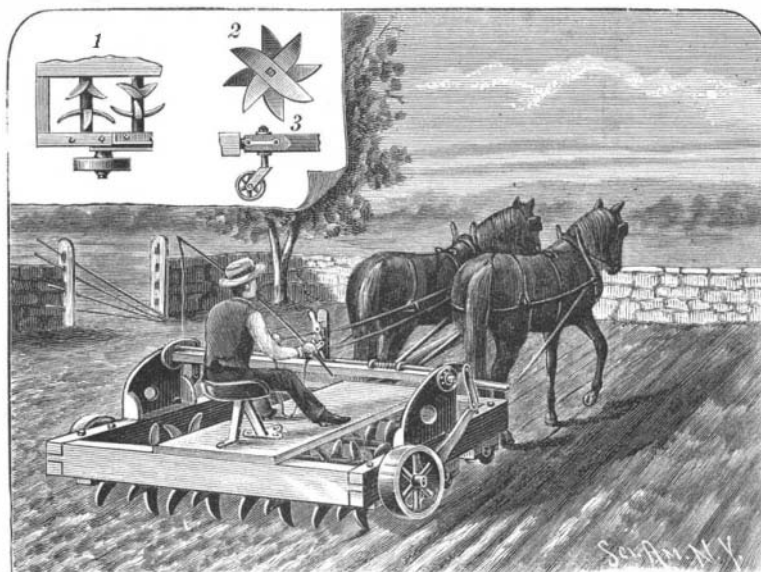
A simple form of fire escape, which can be readily made available from any window of a house, and with which the speed of descent can be readily regulated by the person descending, is illustrated herewith, and has been patented by Mr. Joseph Abbott, of Rumney, N. H. It is made with two forked arms, pivoted at their forked ends, and each having a snap hook at its free end, the fork of one arm extending within that of the other. Around the pivotal bolt, as shown in the small views, a rope may be wound one or more times, and is

**ABBOTT'S FIRE ESCAPE.**

thence extended down between jaws made by the arms, which are drawn closely upon it by a spiral spring connecting the two arms. The upper end of the rope has a hook by which it is to be secured to a window sill or other part of the building, while the lower end is dropped to the ground. A hanger, or strap, in which the person descending is to be seated, has rings at its ends, to be connected with the arms by hitching upon the snap hooks, both ends of the strap passing through a metallic adjusting ring, before being connected with the arms, the speed of the descent being then regulated by moving the adjusting rings up or down, whereby greater or less brake pressure is put upon the rope. An extra strap is supplied to be passed under the arms, when desired, and attached similarly to the snap hook. The device is furnished to weigh less than three pounds, and only 10½ inches in length.

AN IMPROVED SOD CUTTER AND HARROW.

An apparatus for effectively breaking up sod or ground, and wherein the cutters may be regulated to any desired depth, or the apparatus may be carried from field to field without the cutters touching the ground, is illustrated herewith, and has been patented by Mr. Abraham Madson, of Galesville, Wis. Within

**MADSON'S SOD CUTTER AND PULVERIZING HARROW.**

aligning hangers attached to the under face of the frame side pieces are journaled transverse shafts, polygonal a greater portion of their length, upon which are fixed the knives or cutters, Fig. 2 being a transverse section through one of the cutter shafts, while Fig. 1 is a partial plan view at the ends of two of the cutter shafts. Each set of cutters consists of two knives mounted in such manner that one knife will be at right angles to the other, forming a cross. The

several shafts carrying the cutters are so journaled that the curved surface of the blades mounted upon one shaft will be contiguous to the surface of the equivalent blade of the next shaft, whereby the entire surface of the ground traversed by the apparatus will be pulverized. A lever is pivoted centrally to each side bar of the frame, on the lower end of which the drive wheels of the apparatus are studded, the other ends of the levers projecting diagonally upward parallel with the outer face of brackets attached to the upper surface of the side bars. In the brackets a transverse rock shaft is journaled, having near each end an arm pivotally connected by a link with the upper extremities of the levers on which the drive wheels are studded. A standard is secured centrally on this rock shaft, with a hand lever fulcrumed in its top, whereby the lever carrying the operating wheels may be raised or lowered, to regulate the depth of cut or lift the cutters from the ground. The rock shaft is held in the position desired by means of rods passing through apertures in the arms at the ends of the shaft, each rod also passing through one of a series of apertures in the bracket around the bearings of the rock shaft, these rods being automatically projected by a spring on each. The shaft hinged to the forward end of the frame has an adjustably secured caster wheel.

Miscellaneous Notes.

The Eiffel Tower in Paris had reached a height of 761 feet on January 9, 1889—the highest structure upon the globe.

Standard Time.—All the railroads in the United States and Canada, without exception, now use the standard time of one of the four sections—eastern, central, mountain, or Pacific. Cities and towns have very generally conformed to railroad time of their respective sections. Out of 288 cities of over 10,000 inhabitants, less than 25 still retain local time.

Force of the Wind.—The high wind of Saturday night, January 5, blew the car cable out of the sheaves on the Brooklyn bridge, stopping travel for a short time.

Work of Flowing Artesian Wells.—At the Ponce de Leon Hotel, St. Augustine, Florida, an artesian well furnishes power through a turbine and dynamo for lighting the building and grounds by electricity.

At Yankton, Dakota, a flowing well drives the dynamos of an electric lighting company, the water flowing to a reservoir, from which a turbine is actuated.

African Railways.—It is proposed, by a new company just formed in Brussels, to build a railroad to connect the head of navigation on the lower Congo with Stanley Pool, thus opening up a line of about 7,000 miles in the interior of Africa to trade and commerce.

Trade Schools.—By the munificent gift of Mr. I. V. Williamson of stocks of a market value of \$2,250,000, a "Free School of Mechanical Trades" is to be erected and organized near Philadelphia.

The Pratt Institute of Trades and Art, Brooklyn, N. Y., opened the year with 1,000 pupils.

Cloth and Paper of Corn Husks.

One of the best utilized waste products in Austria, resulting in the manufacture of large quantities of paper and cloth, are corn husks. The *Evening Telegram* condenses from a foreign publication the process for separating the fiber. The husks are boiled with an alkali in tubular boilers, as a result of which the fibers of the husks are found at the bottom of the boiler in a spongy condition, filled with a glutinous substance, and which proves to be a perfect dough of corn meal, containing in a concentrated form all the pabulum originally contained in the husk. The glutinous matter is pressed out from the fibers by hydraulic apparatus, leaving the fiber in the shape of a mass or chain of longitudinal threads interspersed with a dense mass of short fiber. The linen made from the long fibers furnishes a very good substitute for the coarser kinds of flax and hemp, and is superior to jute, gunny cloth, coir, and the like.

The paper, for which mostly the short fibers are used—the long fibers constituting the material for spinning—is stronger than papers of the same weight made from linen or cotton rags, its hardness and firmness of grain exceeding that of the best dipped English drawing papers, being especially adapted for pencil drawing, stenographic writing, and water colors. Its durability exceeds, it is claimed, that of paper made from any other material, and the corn husk parchment is not at exposed points destroyed by insects. If the gluten is left in the pulp, the paper can be made extremely transparent without sacrificing any portion of its strength. Again, the fiber is easily worked, either alone or in combination with rags, into the finest writing or printing papers. It also readily takes any tint or color, and can be worked almost to as much advantage into stout wrapping papers of superior quality as into fine note and envelope papers.