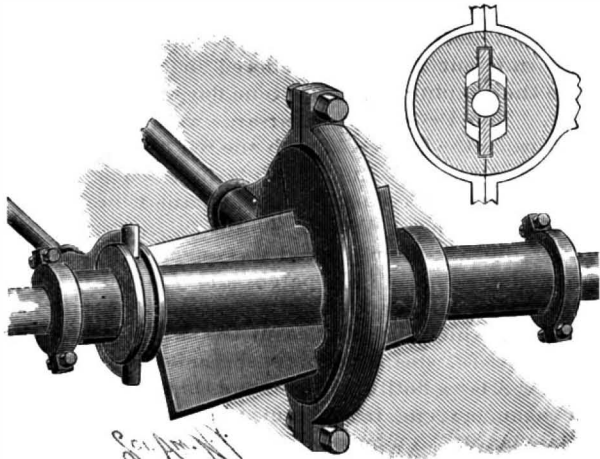


AN IMPROVED SHIFTING ECCENTRIC.

The illustration represents a device adapted for cutting off at any desired point, or for stopping and reversing the motion of the machine whenever desired. It consists of a disk held to slide across the main shaft, with inclines mounted to slide and pass centrally through the disk, the inclines turning with the main



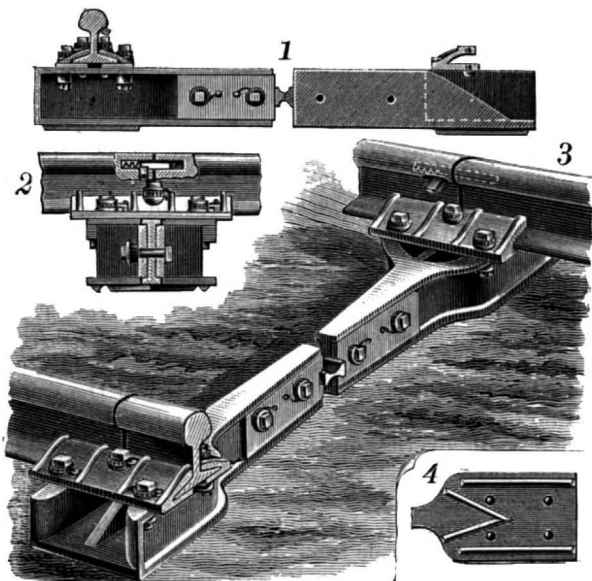
BRANCH'S SHIFTING ECCENTRIC.

shaft. A sleeve, preferably made in two parts, is secured by end clamps on the main shaft, and a portion of the central part of this sleeve has flat sides, as shown in the sectional view, on which fits a disk having an elongated opening with curved ends, so that when the sleeve is turned the disk is turned also, while at the same time free to slide across the sleeve. On the disk is held, in the usual way, an eccentric strap connected with the slide valve of the machine. In the two sections of the sleeve are opposite longitudinal grooves in which slide inclines, secured at one end to a collar sliding on the sleeve, and at their other ends to a flanged collar connected with a shifting lever, whereby the inclines may be moved backward and forward in the opposite grooves of the sleeve. The inclines also fit into opposite recesses in the disk, in the top and bottom of the elongated opening. When the eccentric is in the position shown in the sectional view, no eccentric motion takes place, and the valve is at a standstill; but by shifting the flanged collar to one side, the inclines cause the disk to slide into an eccentric position relative to the main shaft, so that a backward and forward motion is imparted to the valve, the extent of which can be so regulated that the steam or other motive will be cut off at any desired point.

For further information relative to this invention address Mrs. Emma L. Branch (administratrix of Jesse M. Branch, the inventor, deceased), Lawrence, Mich.

AN IMPROVED RAILROAD TIE.

The illustration represents a strong and durable tie, with means for attaching the rails thereto, which has been patented by Mr. John M. Fellows, of Burlington, Ind. Fig. 1 shows a longitudinal view, and Fig. 2 a cross section of the tie with rail attached, the latter view being partly broken away, Fig. 4 being a bottom view of one end of the tie, showing its strengthening ribs, while Fig. 3 illustrates the entire device in perspective. The tie may be of wood or metal, preferably of the latter, and has two similar end portions with inwardly extending shanks, united near the center by a spring, to permit of the tie bending without breaking. The ends of the tie are widened or forked, and have



FELLOWS' RAILROAD TIE.

flanges on their upper portion on which rest the chairs, the flanges having holes by means of which the chairs are bolted and pinned thereto. The chairs also have suitable holes for these bolts, and depending pins to fit in corresponding holes in the flanges, to assist in holding the chairs in position, the rails resting and being firmly held in a longitudinal recess of the chair

adapted to fit the flanges of the rails. The abutting ends of the rails have each a longitudinal recess in which fits a dowel pin, so that the ends of the rails will always be in line; and in the rear of the dowel pin, in a recess of one of the rails, is a spiral spring pressing the end of the pin, permitting the rail to contract or expand under the influence of heat or cold. The dowel pin has a removable arm extending through a slot to the outside of the rail, by means of which the pin may be drawn back into the rail when a joint is to be made. The bolts used are peculiar in that they have a ratchet wheel just below the head, and when turned to position are held by a pawl attached to the part to which the bolt is applied adjacent to the bolt.

Grouping Trees.

It is one thing to plant, and almost any one may in some way accomplish the task; but it is another thing to plant effectively, for it needs a true artist to do this successfully. A wide range of acquaintance with the aspects, habits, and dimensions of plants, their development of special features, times of flowering, alternation of tint, the positions best suited to bring out their beauties or to be beautified by them, are all matters of importance, and calculated to tax the skill and taste of the most experienced and accomplished. Grouping is a department of ornamental planting at once the most effective and the most difficult. There is a wide difference between a group and a clump. A clump is usually a mass of planting, formal and monotonous in aspect; whereas a group should present an infinite variety of form and outline, all the material of which it is composed retaining a certain amount of individuality, and yet blending in happy and graceful unison, free from trim formality, as also from absurd incongruity; and he who would accomplish the art of thus planting cannot do better than become an earnest student of nature herself.

As a rule, groups should be bold and dense; anything like thinness has a mean and poverty-stricken aspect, which should be carefully avoided. The outlines of groups, both on the ground and against the sky, should be carefully designed; the ground lines should be easy and flowing, free from false curves and anything approaching to rigidity; the sky line widely diversified, but ever harmonious—here rendered striking by the upshooting of some plant of distinct character, anon merging easily and naturally into lines of smoothness, graceful as those of nature herself. Thus will be secured those exquisite effects of light and shade so full of charm and beauty to the eye capable of their appreciation. These features are of the greatest importance in the immediate vicinity of water, where shadows and reflections are ever changing and ever new. Again, park and other like groups should always be accompanied by a few irregularly planted trees, such as thorns, etc., especially at their salient points; this happily removes all stiffness, and gives a natural expression to the whole. The composition of groups should always be ruled by the position they occupy. On the lawn the plants employed should be rich and elegant; in the park or on the hillside, noble and majestic; near water, partially pendulous; and not only so, but the general aspect of the locality and the style of house should also be taken into account, as certain trees are more in unison with wild, and others with sylvan scenery. It is also usually laid down as a rule that pyramidal forms harmonize best with Grecian and round-headed forms best with Gothic styles of architecture. This rule, however, must be understood as of general rather than minute application, or a most unnatural and monotonous effect will be the result. Groups may be composed of one or more species or varieties, and if carefully executed, with equally good results. As a rule, the plants should differ in size, in order that the outline may be more varied; if the group be of irregular form, the largest plants should be placed in its center and salient curves; it will thus gain in dignity, and be far more natural and pleasing than if faced by a stiff gradation. Mixed groups should be composed of such trees as harmonize or contrast well with each other.—*The Garden.*

161,397 Miles of Railway.

Poor's Manual says at the close of 1889 there were, in this country, 161,397 miles of track, of which 5,751 were laid during the year. The gross earnings for the year were a trifle over one billion dollars, and the net earnings nearly one-third of a billion—\$318,125,339.

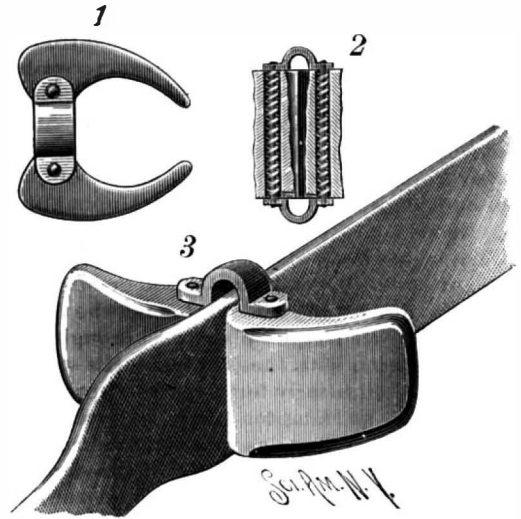
It costs, on an average, 2.17 cents to carry a passenger one mile in the United States, and the average length of his trip is 24.17 miles. About half a billion passengers were carried.

Over 600,000,000 tons of freight were handled during the year. The cost of moving one ton one mile, on the average, has been brought down to 0.97½ cent, while for some of the great trunk lines the rate is much lower.

The total investment, measured by share capital, funded and unfunded debts, in American railways is \$9,680,942,249, on which last year's gross earnings were 10.4 per cent, and net earnings 8.3 per cent.

AN IMPROVED REIN GRIP.

The accompanying illustration represents a small, neat device, to be located on the driving reins or a riding bridle, to afford an adjustable abutment whereby a firm grip upon the reins may be assured at all times. It has been patented by Elvin L. Smith, of Mansfield,



SMITH'S REIN GRIP.

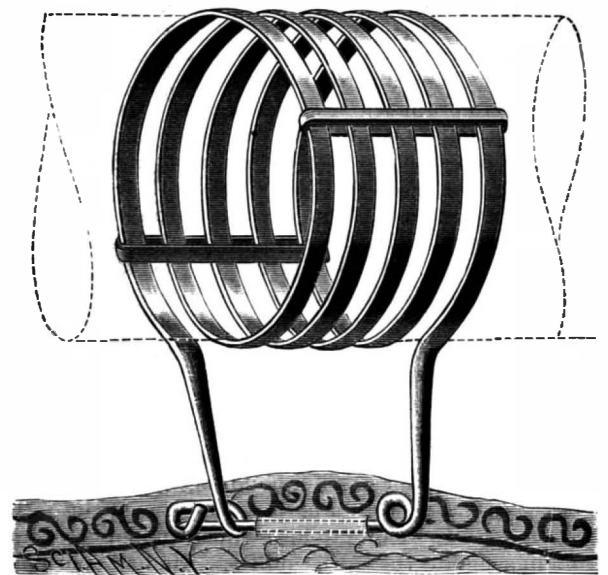
Mass. The device consists of two similarly shaped cam blocks with curved wings, held oppositely by bracket plates, as shown in Figs. 1 and 3. The plates are held spaced apart by parallel rods whose ends are secured in the flanges of the bracket plates, and upon these rods the cam blocks are mounted, a spiral spring being introduced around the rods, as shown in Fig. 2. One end of each spring is fastened to the flange of the bracket plate, and the other end is interlocked with the cam block, in such a manner that their strength will be exerted to extend the wings oppositely, and cause the cams to bind upon a rein passed between them. When in use, the fingers abut against the lateral wings, giving a firm hold, but by a slight pressure upon the free ends of the wings they may be instantly folded into the position shown in Fig. 1, when the grip is released from the rein. The grip may be made to embrace two lines as well as one, or a grip may be applied to each rein where a team hard to control is to be driven.

A Large Tree.

The *Victoria Colonist* says: "Among a boom of logs at Leamy & Kyle's mill, on False Creek, Vancouver, is a tree cut into four 24 foot logs taken from one tree, which is one of the largest specimens of the Douglas fir that has ever been cut in this province, whose record for giants of the forest is world-wide. These four logs were respectively 84 inches, 76 inches, 70 inches, and 60 inches, and in none of them was there a knot or other defect. The total number of feet of lumber that can be cut out of this tree is 28,614."

AN IMPROVED CURTAIN-POLE RING AND PIN.

An improvement in rings and pins for suspending curtains, portieres, lambrequins, and other draperies from horizontal poles, is shown in the illustration, and has been patented by Mr. Leopold Weidenfeld, of Broken Bow, Neb. The part which encircles the pole is made of spring metal in the form of a helix, the two end portions thereof projecting downwardly. One of these ends is turned up to form a clasp, and the lower part of the other end is bent to form a coil to give sufficient spring to the end, which is formed into a pin



WEIDENFELD'S CURTAIN-POLE RING AND PIN.

adapted to be retained by the clasp. The helical portion of the device is clasped by one or two flattened rings or bands, to prevent it from spreading and allow the pin to be released from the clasp. The pin is designed to be passed through a fabric to be suspended, as shown in the illustration, and is long enough to take firm hold thereof, so that it will not be easily torn away.

Transplanting Large Trees.

The superintendent of a cemetery in Chicago gives an account in *Garden and Forest*, of the removal of two trees, one of which was sixty feet high and more than two feet in diameter. They were removed in an upright position on rollers, with the aid of a heavy framework of timber. A part of the earth was retained on the roots. The cost was between five and six hundred dollars. It is pronounced too early yet to speak with confidence of the result. There is no probability, however, that the original vigor of the trees will be imparted to these monsters after removal. A tree sixty feet high has a circle of roots at least one hundred and twenty feet in diameter, and an old tree will not easily recover from the loss of most of them, as in a younger tree. We noticed this mode, or a similar one, in use at Chicago, in a former volume of the *Country Gentleman*.

The practice of removing very large trees has never been successful. In the experiments made many years ago on a liberal scale in the moist climate of Scotland, although the large trees survived the operation, they never recovered their luxuriance, but remained feeble and sickly. We have seen trees removed when eight inches in diameter without ever recovering from the operation. But much depends on preparing them beforehand by shortening the roots, and there would of course be much difference between giving a copious supply of carefully taken up roots, or only a scant quantity of badly mutilated ones.

As a general rule and for common planting, it is not advisable to attempt the removal of trees over an inch and a half in diameter. But with a previous preparation by one or more transplantings, it will not be difficult to remove those which are three inches. Occasionally it becomes desirable to secure by transplanting those which may be four or five inches. Evergreens especially may be required to be transplanted to new grounds. The practice of attempting the work on very large trees, or two feet or more in diameter, as in the Chicago experiment, is not to be recommended in any case. The same outlay of five hundred dollars under the direction of skill, with smaller trees, would accomplish many times more in landscape effect and in sylvan ornament.—*Country Gentleman*.

AN IMPROVED FOLDING UMBRELLA.

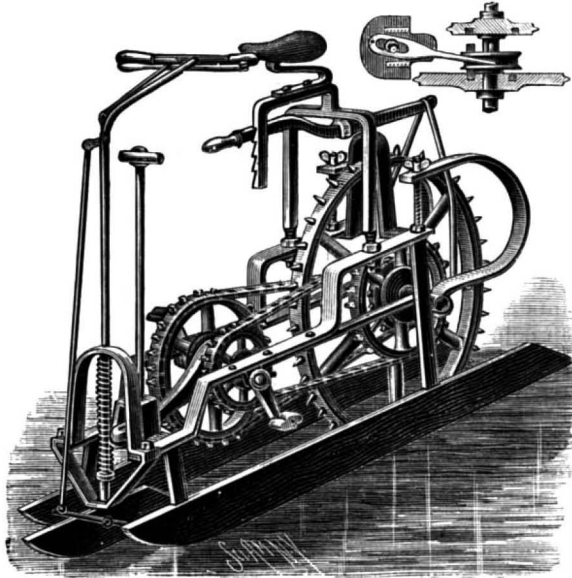
The accompanying illustration represents an umbrella which can be readily folded up when not in use (as shown in Figs. 1 and 3) for conveniently carrying it in a pocket, valise, or other suitable receptacle. The cane of the umbrella is made in three telescoping sections, of which the lower or handle section serves to push the upper section out of the middle section, suitable catches being provided for holding the several sections in an extended position when the umbrella is used, as illustrated in Fig. 2. On the upper or outermost section is secured the crown piece, to which are pivoted the ribs, each made in two parts connected with each other by a joint plate, shown in detail in Fig. 4, so that one rib part can fold on to the other, as shown in Fig. 1, thereby permitting a close folding of the umbrella. The ribs are pivotally connected by braces with a brace piece, which is fastened on or near the upper end of the middle section. The joint plates of the ribs are so constructed that when the umbrella is opened the rib parts are prevented from bending outward, and an accidental closing or folding of the rib parts cannot take place. At or near the joints of the ribs, at the inside of the covering material, is arranged a flexible cord or braid connecting the several ribs with each other and serving to prevent the covering material from becoming entangled in the joints of the ribs when the umbrella is closed. The umbrella can be readily extended by the operator pulling out the handle section of the cane to engage with its upper end the spring catch (shown in Fig. 5) of the uppermost cane section; by then pushing the handle section inward the upper cane section is pushed out of the middle section, which latter is held with the left hand of the operator, the right hand being used to manipulate the several parts. A spring catch locks the outermost cane section, when extended, to the middle cane section. The handle section is then again moved outward until it automatically locks itself to the middle section by a spring catch, shown in Fig. 2. At the time the outermost cane section slides outward the braces swing upward and outward, thus moving the ribs and the covering material into their proper places. The folding of the umbrella is readily accomplished by unlocking the spring catches and telescoping the cane sections, whereby the braces and ribs, with the covering material, fold up into the position shown in Fig. 1. The folded umbrella takes up very little room, and may be placed in an additional casing of a suitable fabric, as illustrated in Fig. 3. This invention has been patented and is manufactured by Mr. John Bergesen, 250 Wyckoff Street, Brooklyn, N. Y.



BERGEBSEN'S FOLDING UMBRELLA.

AN IMPROVED SLED PROPELLER.

A device to facilitate the propulsion of a sled over ice or hard snow, and by which different rates of speed may be maintained, is illustrated herewith, and has been patented by Mr. John Stanford, of Chester, Lunenburg County, Nova Scotia, Canada. The main runners are held spaced apart by front and rear yoke frames, the latter frame having an upwardly extending contracted portion over the propelling wheel, which is centrally mounted between the runners upon a short transverse shaft, the wheel having suitable teeth or spikes in its periphery to insure a strong hold on the ice or snow. The bearings of the propelling wheel shaft are in the lower portion of rearwardly and



STANFORD'S SLED PROPELLER.

upwardly curved spring bars, the upper terminals of which are held on standing screw-threaded bolts extending upward from side bars of the frame, whereby, by means of winged nuts, a regulated pressure may be held upon the spring bar ends to cause the propelling wheel to bite more or less upon the ice. Directly forward of the standing bolts is mounted an arched seat support, the uprights of which are adjustable for height, the base plate for the seat spring receiving a rider's saddle, and being bent downwardly in front to provide a depending notched locking bar. To the rear surface of the seat standard is secured a bifurcated bracket arm in which is pivoted a lever having a rearward connection with a pendent link loop, the outwardly inclined limbs of which at their lower ends have a hooked engagement with the spring bars near the journal supports of the propelling wheel, while the forward end of the lever terminates in a handle within easy reach of the rider. By depressing this lever, and interlocking it with one of the notches of the locking bar, the spring bars and the propelling wheel will be raised, and the wheel may thus be removed from contact with the ice or road bed. On the treadle shaft, which is located at a convenient distance in advance of the propelling wheel, are two sprocket wheels of different sizes, connected by proper chains with wheels on the shaft of

To check the speed of the sled a brake is provided consisting of a loop-shaped bar, pivoted to the steering runner, and its limbs loosely embracing the sides thereof, while its forward ends are engaged by an upright rod extending to one arm of a bell crank, the other arm of which is pivoted to a horizontal connecting bar, loosely secured at its opposite end to a brake lever hinge-jointed by one end to the handle bar of the steering rod. A movement of the free end of this lever toward the handle bar depresses the pointed ends of the brake bar limbs and causes them to engage the road bed to impede the forward motion of the sled.

A Cyclone at Wilkesbarre, Pa.

On the afternoon of the 19th of August this thriving city was visited by a whirlwind, which resulted in sad loss of life and destruction of valuable property.

One of the most painful scenes was at the Hazard wire rope works. The cyclone struck the rear of the large brick building. About two hundred men are employed in the works. The roof and side walls were crushed in. The bricks and ponderous machinery were scattered all over. When the storm was imminent the men rushed for the door, but many of them were caught in the ruins. As soon as the calm succeeded the cyclone, men rushed into the ruins and rescued the injured. One by one they were dragged out from under the debris. The number seriously injured at these works exceeds twelve, and there were two killed.

St. Mary's Catholic Church, in South Washington Street, is a total wreck, as is also St. Mary's parochial school, brick, on Canal Street, opposite the church. Father McAndrew's parochial residence was considerably damaged. The solid tin roof on St. Mary's convent, on South Washington Street, was torn off and blown into the street, and a part of the brick wall taken away.

A car on South Washington Street was overtaken by the cyclone near the Catholic church. In the midst of the terror a large tree fell on the roof, and the passengers gave themselves up for lost.

The Barber Asphalt Company works are blown down. S. L. Brown & Co.'s mammoth business block on Market Street, containing ten wholesale stores, is among the ruins. The Murray coal breaker was partly destroyed, with heavy loss. The mammoth Hollenback breaker is a complete wreck. The fans were stopped while twenty-seven men were at work in the Hillman vein, but luckily they were able to start them immediately. It was a very narrow escape.

The number of the dead is about thirty. A careful estimate places the number of buildings demolished and partly destroyed at nearly four hundred, and some estimate that it will exceed this figure. The loss will probably reach nearly if not quite \$1,000,000.

Corrosion of Zinc in Contact with Brick.

A German paper mentions the fact that, under some conditions, sheet zinc, when in direct contact with brickwork, suffers to an appreciable extent from rapid corrosion. In building the Berlin city market halls, a portion of the zinc work which rested upon brick walls was found to be deeply pitted at a number of places, particularly where the metal was close to the bricks.

Chemical examination of these resulted in showing that they contained as high as 1.14 per cent of soluble salts, of which the destructive effect increases by moisture. The proportion of such salts varies with different kinds of brick, while in some there may be nothing to induce any such corrosion. As a preventive, roofing felt or similar material may be placed between the zinc and brickwork.

Guimbobo.

The Belgian legation at Mexico has recently reported to the Belgian government on the subject of *guimbobo*, known also as *angu*, which is found in the State of Vera Cruz, a plant which should be included in the category of all the varieties of Mexican textiles. The *guimbobo* or *angu* produces not only a fiber of very superior quality, but can be easily and cheaply cultivated; moreover, the fruit of the plant constitutes a nutritious food. It appears from experiments that have already been made that the *guimbobo* differs essentially from the ramie, cotton, and hemp, as in the *guimbobo* the covering of the plant surrounds the fiber, and is not mixed up and interlaced with it; this constitutes a decided economy, added to great facility in extraction and utilization. The structure of the plant permits of the operations of separating and removing the bark being performed by machinery, while in the other fibrous plants these operations are difficult, at the same time very costly, and only possible in countries where there is a large number of hands available and cheap. The fiber of the *guimbobo* has a luster similar to that of silk, and is undoubtedly finer and stronger, with a creamy color between white and straw color.