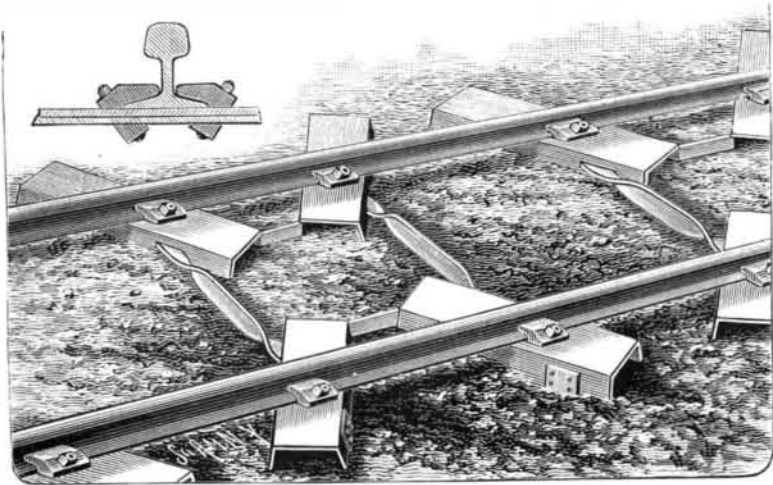


RAILROAD SLEEPERS ARRANGED IN PAIRS.

The illustration represents a novel construction of railway sleepers designed to hold the rails so that they cannot spread or be forced out of parallel alignment, the sleeper being made of light material and designed to box in ballast. It is made of four members placed at an angle to each other, and so arranged that they have the same relation one to the other as if the sleeper were composed of two members extending across the track and centrally crossing each other. Each of the four members has a depending flange flaring slightly outward, embedded in the ballast, and the inner ends of each pair on a side are united by strips bent to extend parallel with the flanges, to which the strips are bolted. The members opposite each other on opposite sides of the track are connected by tie rods, twisted to a vertical position in their cen-



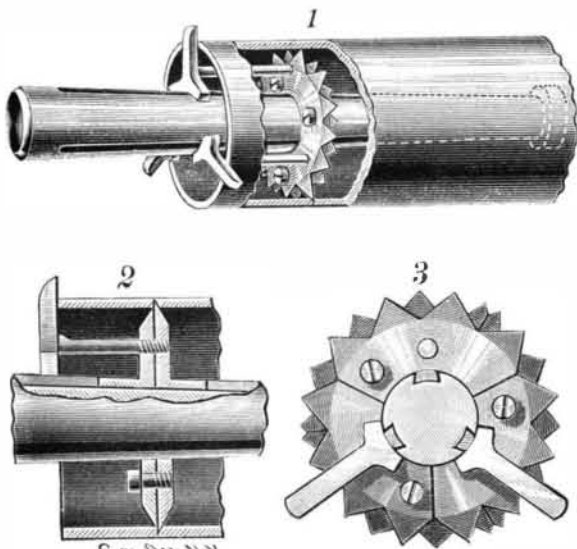
EWING & BOCKUS' RAILROAD SLEEPER.

tral portion, but extending horizontally through perforations in the members, on the outer flanges of which the ends of the tie rods are bent down and bolted in place. The rails are held in position on the upper surface of the members by clips, as shown in the small sectional view, bolts extending diagonally through the clips and through the outer surface of the members and the tie rods.

Further information relative to this invention may be obtained of the patentees, Messrs. Charles H. Ewing and Charles G. Bockus, Ninth and Green Station of Philadelphia and Reading Railroad, Philadelphia, Pa.

AN IMPROVED PIPE OR FLUE CUTTER.

The device shown in the illustration may be readily applied, and is designed to quickly cut a pipe or flue at any desired point. Fig. 1 is a perspective view, partly



WARREN'S PIPE OR FLUE CUTTER.

broken away, to show the application of the device, and Figs. 2 and 3 are sectional views. The device is made with a tapering bar in which are longitudinal dovetailed grooves, adapted to receive correspondingly shaped flanges of two series of segmental cutter sections, each having at its periphery teeth placed alternately. The cutter sections of one set overlap those of the adjacent set, and they are fastened together by suitable screws. The cutter sections are also held by a bolt with a head having its lower end in the shape of a segment of a circle, and adapted to rest on the central bar, the head being adapted to engage the outer edge of the tube to be cut, as shown in Fig. 2, while holding the cutter sections in place at the proper distance therefrom. On the small end of the central bar is screwed a nut to prevent the cutter sections from sliding out of the longitudinal grooves, and the consequent liability of their being mislaid or lost. When the parts are adjusted to cut a tube, the operator strikes with a hammer on the large end of the central bar, the inward movement of which forces the

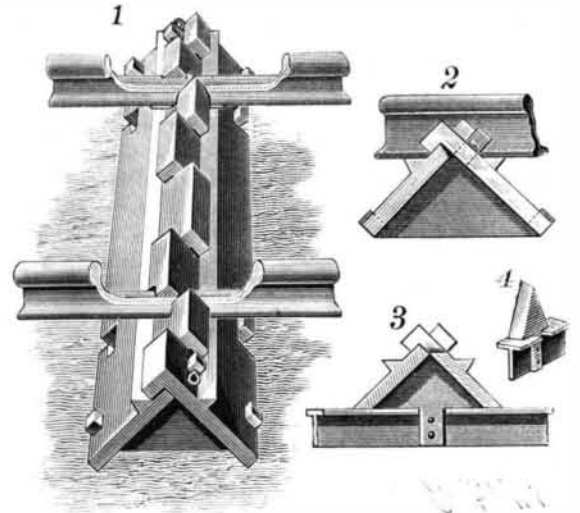
cutter sections outward, so that the operation is effected by a few strokes.

Further information relative to this invention may be obtained of Mr. Joseph Warren, No. 150 Norman Avenue, Greenpoint, Brooklyn, N. Y.

AN IMPROVED METALLIC RAILWAY TIE.

The railway tie shown in the illustration is designed to possess a certain degree of elasticity, to prevent injury to rolling stock, while it may, if desired, be made to hold the rail without the use of separate bolts. It has been patented by Mr. Joseph J. Callahan, of Newburg, N. Y. Fig. 1 is a perspective view of this tie supporting two rails, which are partially broken away to show the construction of the tie plates; Fig. 2 is an end view of the tie and one rail; Fig. 3 is a sectional view of one end of the tie and a track beam on a trestle or bridge, Fig. 4 showing the anchor and beam. The two metal plates which together compose the tie are locked together at their edges to stand at an angle to each other, the locking being effected by projections on the upper edge of each plate, while a space is formed in and between the projecting lips the size of the thickness of the flange of the rail, but giving room for its expansion and contraction without material displacement of the plates. The grip on the rail is as in a vise, the locking lugs grasping the rail with increasing force, according to the weight coming upon the rail. Flanges are formed in the plates at the rail seats, to furnish wide supports for the rails. In setting the ties, after the plates are locked and placed they are wholly or partially

so the device will be ready for operation. As a car comes down over the rails its forward wheels strike the spring pressed lever, when the pitman releases the bell crank from the lever pivoted in the rack, as shown in the illustration, and the spring on the transverse shaft raises the blocks in position to engage the car wheels.

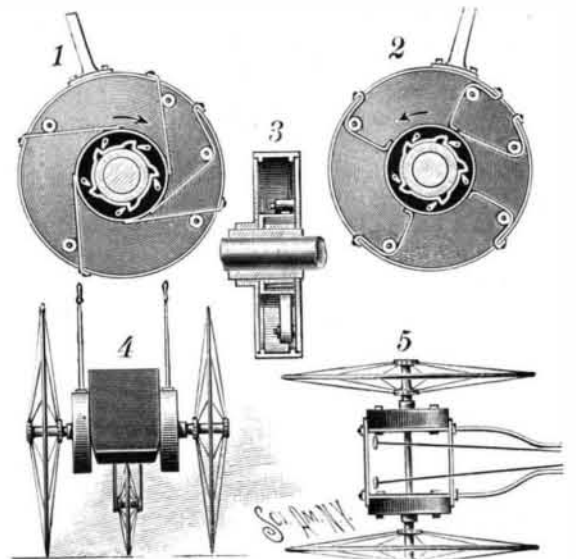


CALLAHAN'S METALLIC RAILWAY TIE.

When the blocks are in elevated position they do not prevent a car from running in the opposite direction, as a crank on the transverse shaft is connected by a rod with a lever on the inner side of the rail, and adapted to be struck by a car wheel running in the reverse direction before it reaches the blocks, thereby depressing the blocks and bringing them into a position parallel with the rails.

AN IMPROVED VELOCIPEDE.

In the machine shown in the illustration the driving mechanism is designed to be simple in construction and



MARTIN'S VELOCIPEDE.

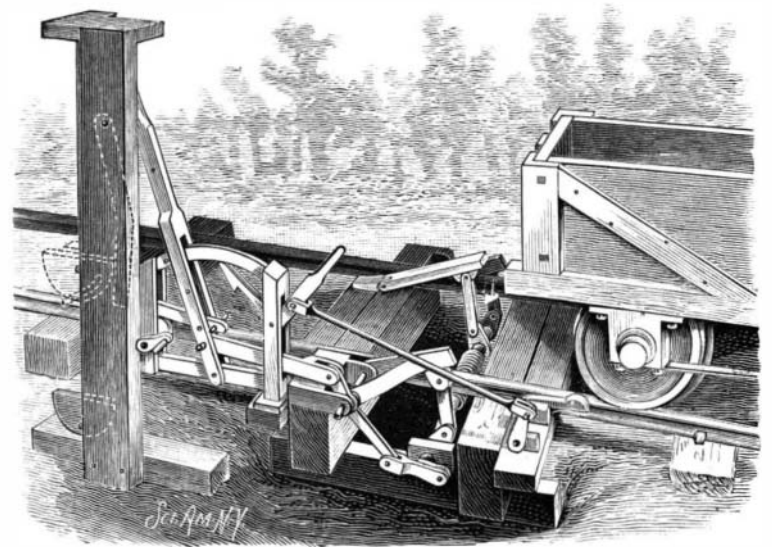
positive in operation, to propel the machine at a high speed with a minimum outlay of power. It has been patented by Mr. Frank Martin, of Fort Douglas, Salt Lake City, Utah. Fig. 4 is a front view of the machine and Fig. 5 is a plan view of its front portion, with the seat removed. Upon the hub of each of the large wheels are attached two spaced disks, and upon the periphery of the disks a collar is held to slide, covering the space between the disk plates, as shown in the sectional view, Fig. 3. A box collar is loosely mounted on the hub between the disks, and within this collar a ratchet casting is attached to the outer face of the hub,

A DEVICE TO BLOCK CARS ON A GRADE.

The illustration represents a device which may be automatically set or tripped by the passage of cars over it, and which may also be operated by hand, being especially intended to block or trig mining cars running on a grade. It has been patented by Mr. Andrew Deets, of Plymouth, Pa.

At a convenient point is a pair of extra thick ties resting upon a base support, forming a recess beneath the rails in which is mounted a transverse shaft carrying a spiral spring, one end of which is fixed to the shaft and the other end to one of the ties, whereby cranks on the shaft are held normally in elevated position just outside the rails. Pivoted to the outer ends of the cranks are connecting rods which are pivoted at their upper ends to the ears of blocks arranged adjacent to the rails, the blocks being braced and pivoted at one end to short shafts mounted in plates bolted to one of the ties, so that when their free ends are raised they will engage the wheels of a car on the rails. Fixed to one end of the transverse shaft is a crank connected by means of a lever and rods with a lever pivoted in a rack, and having a pin to engage the hook of a bell crank lever. This lever is pivoted at its elbow between two members of the rack, and has at its forward end a hook, while its rear portion is connected by a pitman with a crank on a shaft in bearings on a tie, the inner end of the shaft having a spring-pressed lever extending parallel with the rail, and normally held in position to be engaged by a car wheel.

A vertically sliding block is mounted on adjacent vertical supports, on the inner side of which is pivoted a bent arm, a rod extending from which is adapted to engage one of the levers, the vertically sliding block being adapted to lock the device so that it cannot be automatically worked or release the lock



DEETS' CAR BLOCK.