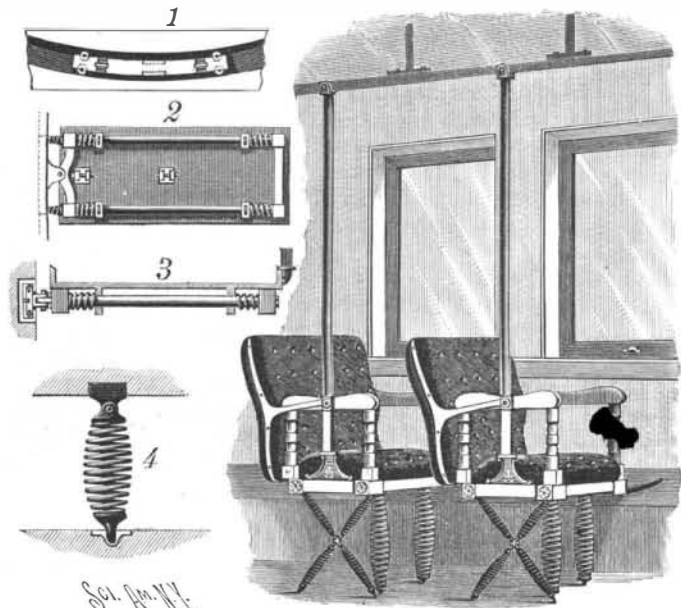


AN IMPROVED CAR SEAT.

The illustration herewith represents a novel construction of railroad passenger car seats, in which the seats are ordinarily held in fixed position, but are caused to swing in case of collision, thus retaining their occupants from being thrown out of their seats or from being jammed or crushed by contact with adjacent seats. Each of the seats is carried, at its end farthest from the side of the car, by a pendant rod pivoted to the car roof, while a curvilinearly grooved plate, shown in Fig. 1, is secured in the side of the car body, with a roller slide fitting therein, to support the car seat at its other



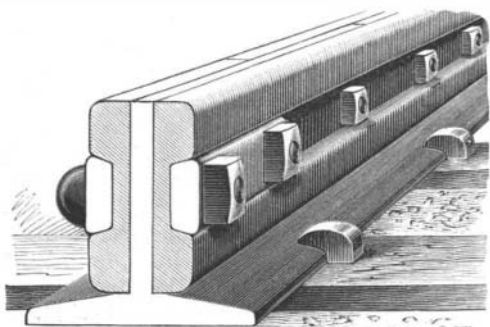
ENEQUIST'S CAR SEAT.

end. Figs. 2 and 3 represent an under side view and section of one of the seats, with its attached frame, composed of back and front longitudinal rods and cross bars, this frame being connected to the under side of the seat by lugs, so as to allow a slight movement of the seat in the direction of its length, springs being interposed between the lugs and the ends of the cross bars of the frame. The cross bar next the side of the car is connected with the roller slide moving in the grooved plate by being pivoted intermediately of its length to the slide, small springs being interposed to keep the seat square and prevent twisting. The seats are ordinarily held stationary, in part, by upright springs, as shown in the perspective view and in Fig. 4, and in part by a series of diagonally arranged springs permanently attached to the frame of the car seat and the floor of the car. The upright springs have an upward pressure, and are jerked out by a violent shock only, being fitted in the floor by sockets. The diagonal springs also serve to restrain the seats from swinging too violently while returning them to their normal position afterward. The construction is also designed to add to the comfort of railroad travel by mitigating the severity of the sudden jerks and shocks so frequently experienced on trains traveling at high speeds, while the car floor can be readily scrubbed and cleaned.

For further information relative to this invention address the patentee, Mr. Erik Enequist, in care of L. Feuchtwanger & Co., Long Island City, N. Y.

AN IMPROVED COMPOUND RAIL.

A railway rail made in three parts and designed to be durable and easily repaired has been patented by



CHAMBERLAIN'S COMPOUND RAIL.

Mr. Edward G. Chamberlain, and is illustrated herewith. It is preferably made of steel, and has a central strip with flanged base, side bars being clamped to the central strip by means of bolts and nuts. These side bars rest upon the base and extend to the top of the central strip, while they are of similar shape at the top and bottom, so that they may be reversed when one edge becomes worn or injured. To form a continuous rail and prevent "pounding" of the car wheels the parts may be made to overlap and break joints, the side bars breaking joints midway between the ends of the rails.

For further information relative to this invention address Mr. Edward G. Chamberlain, in care of the Consolidated Ice Machine Co., Chicago, Ill.

Anti-fouling Paint.

An important experiment with anti-fouling paint has been brought to a conclusion with the docking of the Indian troopship *Crocodile* at Portsmouth on her third and final passage from Bombay. It was the custom formerly to dock the Indian troopships at the end of each voyage to India and back, for the purpose of inspection and repainting. Subsequently, in consequence of improvements in the nature of the compositions used, they were enabled to perform two voyages out and home without docking. More recently, as the inventor of the paints, Colonel-Commandant Crease, C.B., Royal Marine Artillery, contended that the three passages to Bombay and back could be performed without the necessity of intermediate docking and repainting, the *Crocodile* was selected by the Admiralty for trial. Her bottom was coated early in September last with one coat of anti-corrosion and one coat of specially prepared anti-fouling paint, and she started on her first trip to India on the 18th of that month. She concluded her third voyage, without having been docked in the meantime, on the morning of April 25 last, each voyage having been made in good time, although during her last trip she suffered, in consequence of an accident in the Suez Canal, an unavoidable delay of a day and a half. By special order from the Admiralty, she was docked on April 26, with the result that, with the exception of a belt of grass, tapering from six feet wide below her central water line on the starboard side, and a little more on the port side, to nothing at all at the extremities, her entire bottom was perfectly clean, being free from weeds, barnacles, and other incrustation, and also quite protected in every part. This excellent result, obtained with a single coating of anti-fouling composition, has been pronounced by the dockyard authorities and the experts sent specially down to inspect the ship from the Admiralty to be the most satisfactory hitherto obtained. It was remarked that the fine grass on the *Crocodile's* bottom only grew where she had been scrubbed with brushes by the ship's company, and where, it is assumed, the skin had been denuded of paint.

Filling for Nail Holes.

The following method of filling up nail holes in wood is not only simple, but said to be effectual: Take fine sawdust and mix into a thick paste with glue, pound it into the hole, and when dry, it will make the wood as good as new. Frank Christin, Jr., in *Stoves and Hardware*, says he has followed this for thirty years, with unvarying success in repairing bellows, which is the most severe test known. Often by frequent attachment of new leather to old bellows frames, the wood becomes so perforated that there is no space to drive the nails, and even if there was the remaining holes would allow the air to escape. A treatment with glue and sawdust paste invariably does the work, while lead, putty, and other remedies always fail.

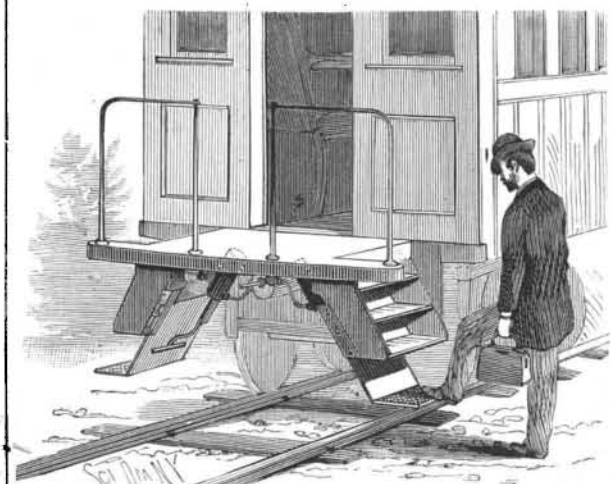
AN IMPROVED CABLE CAR TRANSFER SYSTEM.

A means of transferring a car from one propelling cable to another, at the intersection of cable railways, and wherein the propelling cable is utilized to effect such transfer, is illustrated herewith, and forms the subject of a patent issued to Mr. Allen R. Parkeson, of Monongahela City, Pa. Each of the surface tracks has the usual underground propelling cable, but these cables cross in direct lines at their intersection, as shown by the arrows, and do not extend around the curves conforming to the turnouts. In the conduit at the center of the crossing or intersection of the tracks is journaled a large pulley, to which motion is communicated by two or more of the propelling cables, such cables being brought in sufficient contact therewith by means of guide rolls, as shown, or considerably greater frictional contact of the cable with the pulley may be obtained by crossing the cables at each side of the pulley. A smaller pulley is secured below the large driving pulley, as shown in Fig. 1, and an auxiliary cable from this smaller pulley is carried thence around tightening guide rolls journaled below the grip slots of two of the intersecting tracks, and around other guide rolls, to form a loop and an approximately four-sided figure, as shown

by the arrows, with curved sides and ends projecting into the four lines of tracks forming the crossing. The tightening guide rolls are shown in Fig. 2, and are journaled upon a block which slides in suitable guideways, and has a screw by means of which it may be adjusted longitudinally in the line of the loop branch of the auxiliary or transferring cable. By adjusting the tightening rolls away from the main driving pulley, the loop and the entire auxiliary cable are tightened. The latter cable travels with less speed than the main cables, on account of the smaller size of the pulley from which it receives motion, thus carrying the cars with proportionately less speed around the curves than their rate of travel upon the straight tracks, while an increase of power is obtained to overcome the greater frictional resistance of the track.

AN IMPROVED EXTENSIBLE CAR STEP.

A car step mounted to slide in ways secured to the under side of the permanent car steps is shown herewith, and has been patented by Messrs. James F. and John F. Wood, of Wilmington, Del. To the casings which support the permanent steps are secured castings formed with ways, serving as guides for a diagonal leaf rigidly connected to a tread, anti-friction rolls being carried by the leaf within the ways. To the rear under face of the leaf is secured an arm carrying a piston working in a cylinder connected by means of a tube with the compressed air reservoir of the air brake system, there being a spring above the piston. The arrangement is such that when pressure is on, as when the cars are running, the auxiliary treads are held up, but when the pressure is thrown off, that the brakes



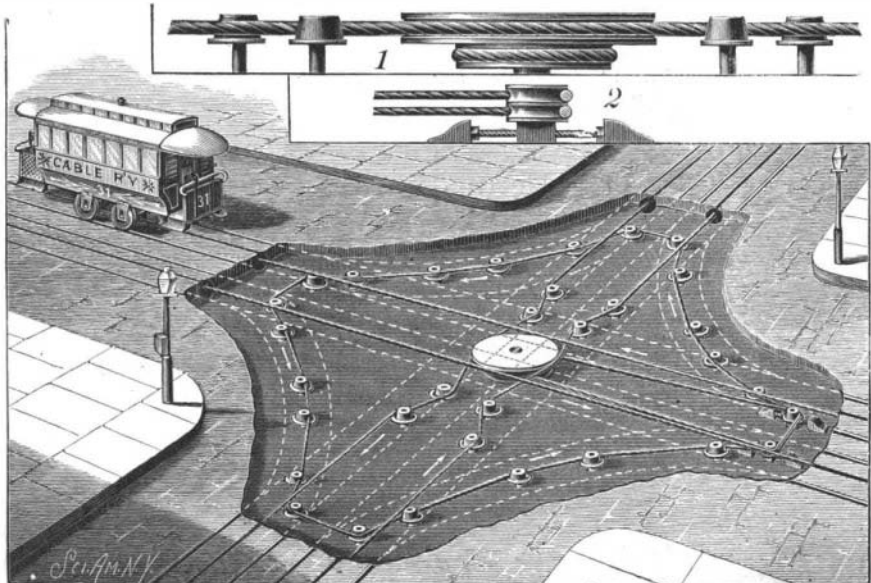
WOODS' EXTENSIBLE CAR STEP.

may be applied, as in approaching a station, the springs force the steps down to convenient position for use, the steps again returning to their raised position after the brakes are thrown off. The steps can be worked independent of the brakes, if so desired, by having a separate pipe from the main compressed air reservoir at the engine, by means of which the engineer can lower the steps whenever he chooses.

For further information relative to this invention address Messrs. James F. Wood & Co., Wilmington, Del.

Copper-Steel Alloy.

Schneider & Co., of France, manufacture steel containing a variable portion of copper, which is to be used in making artillery of large caliber, armor plates, rifle barrels, and projectiles. Ordinary copper is used for the purpose, care being taken to prevent it from oxidizing before it is mixed with the steel in the crucible, and the composition contains two to four per cent of copper, the alloy being capable of far more resisting power and more elastic and malleable than simple steel would be. This new material will also probably be valuable for making girders for building purposes and ship plates.



PARKESON'S CABLE CAR TRANSFER SYSTEM.