moment, do not require oil or packing, and will not involve any daily expense in service. They will also be much cheaper in construction than the ordinary ones. The grooves or conduits on the under side of the rail afford facilities for placing telegraph and other similar wires, and will thus save the cost of the present system

V. A. EMOND, SR.

of poles and overhead wires, besides giving to conductors of trains the means of immediate communication by wire with any point on the line. This combination of rails and truck will permit of the use of much lighter cars, thus lessening the cost of rolling stock and motive power. In addition to the amount saved in material, the invention will also save the sums paid for accidents and loss of life.

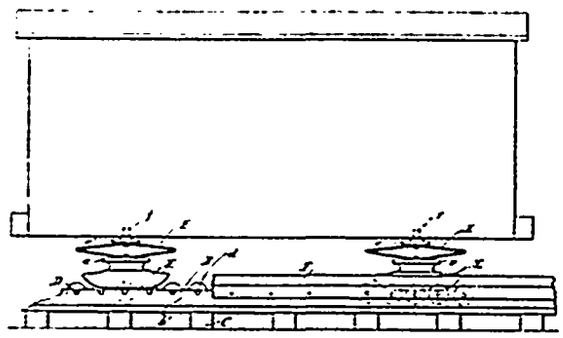


FIG. 1

Reference to the illustration will make quite clear the novel features of the invention. Fig. 1 is a side view of a portion of railway constructed according to the invention. Fig. 2 is a cross-section, and Fig. 3 is a plan view of one of the rails. *A* is the outline of the car body, and *B* the rails upon which the car runs. Each rail, *B*, is provided with a V-shaped groove, *b*, and flanges, *b'*, for securing it to the ties, *C*. The grooves in the under sides, which may be used to contain telegraph or other wires, are marked *C'*, and *c* indicates holes in the rails for draining out water. *D* are rollers, which are journalled in notches, *d*, in the upper sides of the rails, *B*. The inverted V-shaped runners, *E*, slide upon the rollers, *D*; they are secured in pairs to *e*, and *E'* are springs arranged above the plates, *e*, and coupling them to similar plates, *e'*. A pair of runners is placed at each end of the car. The car is connected to the plates by a pin, *f*. The cover plates, *F*, are secured to the rails and prevent the rollers and runners being displaced.

Nothing but a practical demonstration, on a large scale, of the merits of this departure in railroad construction, will satisfy the public of its possibilities. Of the advantages claimed, many seem hardly probable of attainment at the first glance. How can the risk from obstructions be lessened by securing the train to the track? If an object be heavy enough to derail a train, as at present operated, it will certainly cause something like telescoping when run into by a train going at from

FIG 2

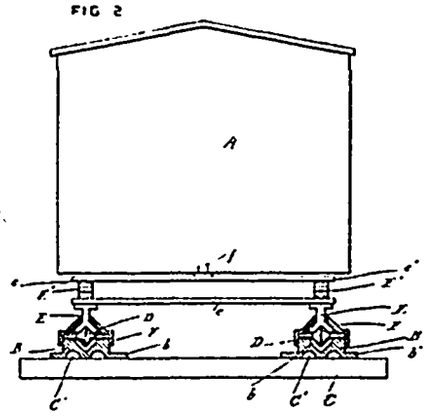
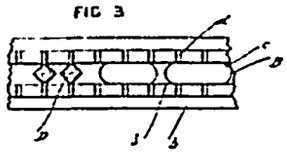


FIG 3



three to five times the present speed. Then, anything which would cause the runners to rise from the journals at the end or side of the car, ever so slightly, as the swaying of the cars rounding a curve, or the meeting with an obstacle on the track, would develop friction between the runners and the cover-plates, with a result varying from a slight loss of speed to the destruction of the rail. The drainage provided for the rail may be ample

V. A. EMOND, JR.

and may dispose even of the sleet difficulty, though we do not see how it will do so, but snow will certainly pack into the opening, and in such places as level street crossings render the rail useless. We do not see how it will be cheaper to provide a rail and journals as described, rather than to maintain rolling stock as at present, especially where, as in Canada, the rolling stock in proportion to the mileage of the road is not of large amount. In Great Britain, where the traffic is heavy, the lines very short, and the climatic conditions more favorable, a successful experiment might perhaps be made.

THE FIRST LIGHT AUTO-CAR.

The first moto-car which used petroleum, says the April number of the *Auto-Car*, London, Eng., was made from the designs of Joseph Wilkinson about 1865. It was constructed in the famous shops of Joseph Clements, since celebrated by Smiles in his "Industrial Biography." It was at Clements' that mechanical England was revolutionized by the invention of the