

AN IMPROVED PROPELLING MECHANISM.

The accompanying illustrations represent improved means for the propulsion of bicycles, railway velocipedes, and hand cars, showing also the position and appearance of the mechanism when adapted to the bicycle and velocipede car. The improvement forms the subject of a patent recently issued to James J. Thompson, of Jacksonville, Fla., of which the object is to increase the power of propulsion of either class of cars or bicycle, by utilizing power generated through the instrumentality of a flywheel, and at the same time proportionately lessen the muscular exertion on the part of the operator. The sectional view represents the mechanism and its working, the device being attached to the frame bar for use on either style of car, or to the tubular frame of the bicycle. The hubs of the cranks, secured to the crank shaft, are journaled in ball bearings adjustable in hangers, and a large gear secured to the crank shaft meshes with the smaller gear of a compound gear revolving on ball bearings. The larger of the compound gears meshes with a small gear on the hub of the flywheel, revolving freely on ball bearings on the crank shaft. A sprocket wheel on the crank shaft connects in the usual way by an endless chain with a sprocket on the driven wheel.

By rotating the crank shaft, as in driving the ordinary bicycle, the gears are made to also revolve the flywheel, and power is thus accumulated. For hand cars, motion is obtained by the use of the ordinary lever and rods connecting it with the cranks, which, by their simultaneous action, convert the reciprocal motion of the lever into the rotary motion of the cranks. The flywheel is made to revolve many times oftener than the crank shaft through the medium of the compound gears, and, when once the power is properly adjusted, it is a simple matter to gear the speed of the bicycle to any pitch desired, and of either class of cars sufficiently to maintain the same upon the track with safety. At no period in the revolution of the cranks is there a diminution of power applied to the crank shaft through the lack of leverage force, as the increased momentum gained in the flywheel develops power sufficient to eliminate the effects of lost motion and drives the cranks on over dead centers, thus perpetuating the constant speed or progress of the car or bicycle, that would otherwise be retarded by sacrificing a sufficient amount of the speed power in rotating the cranks to the initial point of leverage.

Velocipede and hand cars equipped with this mechanism are also provided with patent roller bearing axle boxes, in the chamber of which the wheel axle of the car is made to revolve freely without friction. One of our views is a reproduction from a photograph taken of a velocipede car upon the track in actual service equipped with this mechanism, and another is a side view representing the mechanism in place on a bicycle.

A Novel Headlight.

An Englishman has invented an automatic headlight. In going around curves headlights on locomotives, being stationary, throw the light straight ahead, instead of throwing it so that it covers the track, where, of course, the light should be all the time. The automatic headlight is suspended on two pivots, one on top and one on the bottom, so that it can swing

freely. From the bottom of the headlight two chains run to the ends of an arm which is connected by a rod that runs to the pilot wheels' truck. When the pilot wheels strike a curve, the outside wheel forges slightly ahead, and this moves the rod and chain enough to move the headlight so that the reflection is cast directly ahead on the track. Out of the total of 1,650 rail-

Paul, the newest representative of the American Line, has been made known far and wide through the columns of the daily press. Starting from Southampton, England, on January 15, for America, the ship was making a fast passage across. When partly across, the Campania, of the Cunard Line, appeared on the scene, and for many hours the two ships were in company with each other. The claim made for the St. Paul and for her sister ship, the St. Louis, is that they are remarkably fast in a seaway, it being generally conceded that the larger Campania is faster in smooth water. For some reason both ships got far south of their reckoning, and approaching the American coast in a dense fog, headed straight for the New Jersey coast at Long Branch, fifteen or twenty miles south of their proper position. The lead was kept going on both ships, but in spite of the frequent soundings, the St. Paul, at 1:47 A. M., January 25, ran aground on the beach at Long Branch, near the Iron Pier, while the Campania, some three miles to the south, barely escaped a like fate.

The wreckers were at once notified of the disaster and have made strenuous efforts to pull the ship off, but the want of sufficiently high tide has militated against their efforts.

We present our readers with a view of the stranded ship, as she lay almost broadside on to the beach. Long Branch is one of the great summer resorts of New Yorkers and is within easy reach of the city. The trains running there have done a heavy business in the transportation to Long Branch of people desirous of seeing the stranded vessel. Thousands have gone there, and the place, ordinarily deserted at this season, has presented a scene of life and animation very foreign to the seashore in the month of January.

A telephone station was established on the ship, so as to keep her in constant communication with the outer world. As she lay on the beach, the wire of the telephone line, running from a pole on shore to the ship rail, has been her only connection with the land. It seemed a curious illustration of fin-de-siècle advancement, the establishment of a telephone station on a wrecked ship. There was no loss of life or property. The ship struck so gently that the passengers were not awakened.

We have already fully described and illustrated the St. Paul. She appeared to be on her way to making some fine transatlantic records and may do so in the coming season. She is fitted throughout with the most elaborate improvements for comfort and safety. Her staterooms in their arrangement and size are a distinct

advance on those of other ships. One excellent feature is the arrangement of rooms opening into each other, so that friends or members of the same party occupying rooms opening on adjoining corridors can open the door between them and have thorough ventilation all day.

Our illustrations show some of the most interesting features of a cabin on the St. Paul and St. Louis, the most novel being the air mattresses. If there is any place where a person requires every appliance for comfort it is in a ship's stateroom, and in supplying their new vessels with air mattresses the American Line has made a distinct advance over the old time practices. The air mattress presents the features of being always in condition, never wearing into hills and



BICYCLE WITH THOMPSON'S PROPELLING MECHANISM.



RAILWAY VELOCIPEDE WITH THOMPSON'S PROPELLING MECHANISM.

road accidents in 1895, about 875 were due to derailments, usually on curves. There is no doubt that a certain percentage of these accidents could have been avoided by the use of an automatic headlight.

THE STRANDING OF THE STEAMSHIP ST. PAUL OF THE AMERICAN LINE.

The news of the stranding of the steamship St.



THE STEAMSHIP ST. PAUL STRANDED OFF LONG BRANCH.