

LITTLE INCIDENTS DEPICTED BY JAMES MONTGOMERY FLAGG



TWO GENERATIONS.

NEW WAY OF TRANSPORTING LARGE QUANTITIES OF MAIL AT HIGH RATE OF SPEED

Novel Electric Carrier Capable of Handling Tons of Letters and Packages on Exhibition at Paterson, N. J.—Expected to Travel at Rate of 100 Miles an Hour

SHORTCOMINGS of the physical and mechanical agencies of the postal service have been emphasized by the advent of the parcel post. It is true that the horse-drawn mail wagon has largely disappeared within the limits of Manhattan and motor wagons have supplanted it with a material gain in efficiency. There is also a pneumatic tube service which flows to and from the main post office a very modest percentage of the first class matter in transit within municipal limits. When first installed, years ago, this tube answered fairly well, but Greater New York has been growing steadily and rapidly since then and, by contrast, this eight inch mail tube has been shrinking correspondingly in its capacity to meet the momentary needs. This of itself shows how far behind the demands of the day are the postal facilities.

Over at Paterson, N. J., has recently been set going an extensive mail carrying installation which gives every reasonable promise of supplying a satisfactory means of transporting large quantities of postal matter at high speed. It is not a child's affair like the eight inch tube now used, but a man sized apparatus having an internal tubular diameter of three feet. Where the existing tube can handle only pounds, this will have a capacity of tons, and a speed of travel of a much higher degree.

Before the establishment of the parcel post, there was moved daily between the Grand Central and the Pennsylvania Station quite three hundred tons of mail matter. Not only has this increased, but the parcels by post have immensely swelled the volume now to be carried. Perhaps you are fond of figures. If so, the following details will be of interest to you.

The average weight of each mail pouch is probably fully 100 pounds, and at only 300 tons every twenty-four hours this would represent 6,000 pouches to be taken from station to station. Unfortunately, this total cannot be distributed over the whole twenty-four hours; there are rush periods in the postal service, and most of this mail matter has to be disposed of inside of nine hours. You can see that this calls for a great deal of hustling, and even so there is a decided lag.

The conditions of the streets because of the weather, the state of traffic of

the normal day or that of the unusual day, and the blocking of thoroughfares by reason of fires, &c., may interfere with the existing mail wagons running to and from these great railroad terminals and also to and from the city's mail despatching centres. Therefore some new means of transportation is needed.

The Paterson mail carrying railway has been about seven years in its development. It isn't a pneumatic tube at all, but an electrically driven system. It might be described as a succession of motorless motor trains. It is an adaptation of the elements which go to make up an electric motor or dynamo. A dynamo differs from a motor in this one particular, the motor revolves because of current fed to it, while the dynamo is forcibly turned by some extraneous mechanical agency and in making these revolutions it gives forth electrical energy to run other motors. You have probably seen a motor and you will remember that there was first an enveloping ring of iron and free to rotate inside of this was a cylindrical body apparently made up of wires and copper slabs separated from one another, in short a sort of metallic fagot bound around a core of iron.

This inner body of copper and from the electrician calls an armature, while the big enveloping ring constitutes the field magnet, which becomes in fact such only when a current is sent through it. A magnet has a north and a south pole, so too has the armature, and when current is fed to the armature these neighboring poles alternately attract and repel one another and thus cause the armature to revolve. Motors and dynamos may be variously built, but these principles remain the same. The motor uses current while the dynamo produces it.

Now imagine the surrounding field magnet to be a ring with copper slabs attached to its inner surface. Further split this ring at one point and flatten it out so that the copper cross pieces are uppermost. The result is an iron bar with transverse copper strips arranged like the keys of a piano. A rail of this description runs the length of the system and between the two tracks upon which the cars travel.

Now for the other motor element. On the underside of the car and separated from the roadbed element by a quarter of an inch is a second flat motor unit

made of laminated iron, about which is wrapped a winding of insulated copper wire. It is really a sort of armature. When the current from the powerhouse flows through this wire and the car gets this from overhead rails this enveloped bar becomes a magnet for the time being and creates about it a magnetic field. This effects the underlying element between the tracks and sets up a reaction.

Now neither the part laid between the rails nor the magnet attached to the car can revolve, but an invisible force is aroused which exerts a pull. Because the car is on wheels it moves forward in response to this attraction, and the curious part of it is that the vehicle's own advance creates this zone of impulse. You don't see this, eh? Then let us explain.

The armature unit and the field magnet unit are dead to one another except when the current comes from the distant powerhouse and then it is their nearness that excites their mutual reaction. The copper slabs are not energized directly by connection with the power plant, but the armature

under the car is so connected when the trolleys are touching the charged rails overhead. Therefore the carrier excites only that section of the companion motor element lying below it for the time being and the reaction thus aroused tends to pull the vehicle forward as long as the current reaches the armature.

Perhaps you are not enough of an engineer to see at once the meaning of this so far as it affects the question of propulsive economy. This is not hard to explain, however.

Ordinarily, if the carrier were motor driven, in the usual sense of the word, like a street car, it would have to have a full fledged revolving motor running at high speed and this motion, by means of intermediate cog wheels, would be carried to propulsive tracks in contact with the supporting tracks. This means a lot of additional weight, machinery that has to be continually watched and lubricated and a dead burden that has to be moved along independently of the freight.

But these are not the only disadvantages of such a system. There are

dangers of breakdowns and the tractive wheels cannot get a good grip on the rails if they are wet or if the grade is steep. You have seen this exemplified often in your street car experiences.

In the electric carrier described all these drawbacks are avoided. The supporting wheels follow freely the guiding tracks and their grip upon the rails is immaterial for purposes of locomotion. Because they are not geared to other mechanisms they revolve with a minimum of friction and they obey the irresistible lure of the magnetic field.

Therefore, for a given expenditure of electrical energy at the power house, a higher speed can be maintained because the vehicle is lighter and easier to move. Apart from this, on account of the extreme simplicity of the electrical feature attached to the under side of the carrier, wear and tear is reduced to a minimum and only a trifling amount of supervision is necessary. But, best of all, this leaves the whole interior of the vehicle free for the carriage of mail.

The cars can be run at widely varying speeds, depending entirely upon the nature of the operative current em-

New York, With 8 Inch Pneumatic Tube, Far Behind Demands of Day in Postal Facilities—Can Take Lessons From New Jersey Authorities

ployed. This is one of the features of the installation and is the result of the employment of an alternating current. The period of these alternations dictates just how fast the cars shall go, because these waves of energy intermittently vitalize and devitalize the magnetic field units which affect the armature element beneath the carriers and between the tracks. The quicker the alternations the stronger the magnetic flux from the iron bar on the under side of the car and accordingly the more forceful the tractive impulse tending to pull the carrier forward.

By reason of this arrangement the rate of travel can be regulated to a nicety from the directive station and there is no chance of any of the cars getting beyond control. They cannot run away, because they are subject to an irresistible grip which regulates their rate of advance or halts them at will.

But you will say, that inasmuch as the car merely rests upon freely revolving wheels, and these have apparently no arrangement for braking them, nothing will prevent momentum sweeping it down grade with an ever increasing speed. Of hand, such would, indeed, seem to be the case, but the fact is quite contrary. The same magnetic force that draws the carrier uphill, because of the intermittent impulses of the alternating current, reacts like a check or brake upon the vehicle when it tends to exceed the designed velocity.

In other words, instead of drawing the car forward, these reactions grip the carrier and balance their efforts against that of the momentum impelling the vehicle downward. All this is radically different from the difficulties encountered in cars driven by attached motors, where they are halted by grades that the present installation can mount easily or they get beyond control when travelling down similar slopes. Collisions, too, upon other systems are apt to be far more destructive in their consequences, while a deranged car on this new line would be overtaken by the following one, and shoved along without any further hitch by its sound fellow. There is a reason for this.

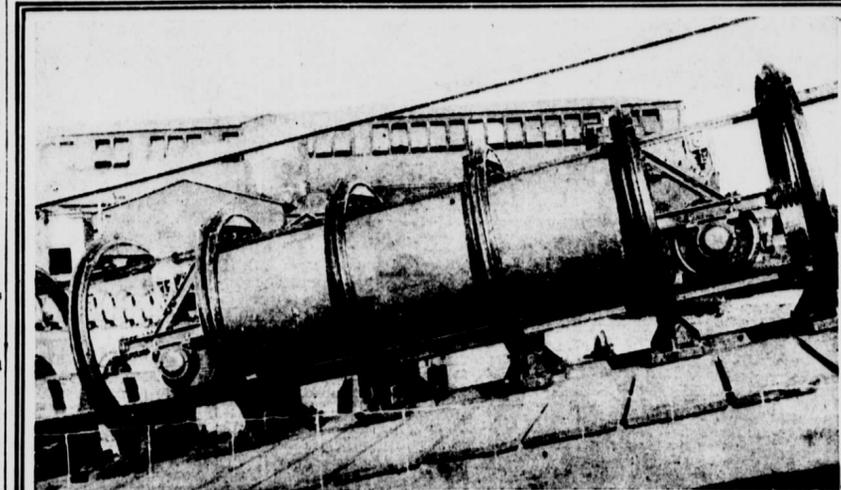
In the best of the rival electric mail carriers, the interval or headway between moving cars can not safely be less than a minute and a half. With this system, a headway of only five seconds is needful, because, the latter

move along uniformly as though pulled by an invisible rope.

Now imagine that either installation is speeding its cars at the rate of thirty miles an hour. In ninety seconds the car driven by its own motor would have come substantially to a standstill and a following live car would strike it with full force. With carriers moving only five seconds apart, the leading one, in case of a breakdown, would have lost so little of its speed when overtaken by the one behind that the collision would be well nigh without any jar.

During demonstrations at Paterson, a car weighing 1,200 pounds, loaded with 1,000 pounds of sand, and with a trailer attached weighing 1,150 pounds and carrying 400 pounds of sand, has been pulled up a twenty per cent. grade at the rate of thirty miles an hour. A 5 per cent. grade is about the best rival systems can negotiate.

An installation of this sort can carry daily by means of single cars, 8,640 pouches with a headway of twenty seconds and running but nine hours. By adding a trailer to each, this could be doubled, and four cars could be handled just as easily.



One of the covered mail cars complete climbing a 20 per cent. grade. Rival installations find it difficult to crawl up a 5 per cent. grade.

Trace It Back Club

IN Albany they have an organization called the Trace It Back Club. It was organized twelve years ago as the outcome of an inquiry as to who had set a certain false story afloat. A party of men were in a cafe when a statement was made that practically accused a well known citizen of crookedness. "I'd like to see that story traced back," said one of the men at the table, "for there's not the slightest truth in it, in my opinion."

"Well, let's organize a club to do it," said another.

So the club was formed and a committee appointed to investigate the statement. The story was run down within two days.

The club, elated over its success, adopted by-laws and arranged to meet regularly. Whenever a man opened his mouth to accuse somebody the president merely began: "I appoint as a committee of investigation—" and he seldom got further. The Trace It Backs have had many ups and downs and the membership has thinned out considerably, but there are enough still on hand to practise and preach their principles.