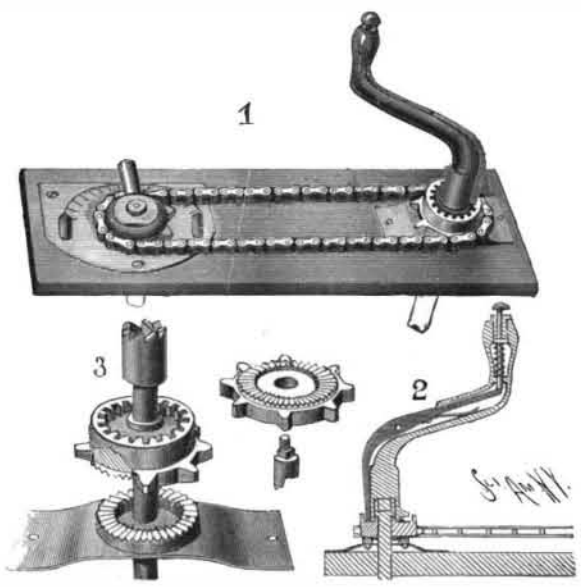
AN INGENIOUS BRAKE AND MOTOR-CONTROLLER FOR ELECTRIC CARS.

The brake-controlling and switch mechanisms of electric cars are usually operated independently, and require the use of both hands. In an invention patented by Adolphe Grossman, of 205 South Peters Street, New Orleans, La., a mechanism is provided whereby the motorman is enabled to control both the motor and brakes with one hand only.

Fig. 1 is a perspective view of the mechanism. Fig. 2 is a longitudinal section of the brake-crank. Fig. 3 is a perspective view, partly broken away, of the brake staff, the portions being shown separated. Fig. 4 comprises perspective views of portions of the upper end of the rheostat shaft.

The two parts of the apparatus, the brake and



GROSSMAN'S BRAKE AND MOTOR-CONTROLLER FOR ELECTRIC CARS.

switch controlling mechanisms, are mounted upon a shelf, secured to the dashboard of a car.

The brake mechanism comprises a shaft and crank, which may be connected at will. The upper end of the brake-staff is provided with beveled teeth (Fig. 3), designed to be engaged by the interior teeth of the crank, the arrangement being such that the staff can be operated in the usual manner. To the brake-staff a sprocket-wheel is secured, provided at its under side with a clutch face engaging a corresponding face mounted on a spring plate (Fig. 3). The sprocket-wheel has an interiorly toothed flange adapted to be engaged by a detent lever fulcrumed on the crank (Fig. 2) and held out of engagement with the flange by a spring. In order to enable the motorman to place the detent lever in engagement with the flange and thereby to lock the sprocket-wheel to the crank, a pusher-pin is provided, normally held in the position shown in Fig. 2 by means of a coiled spring. When the pusher-pin is depressed, the detent lever will be placed in engagement with the toothed flange; when the pin is released, the lever is disengaged by its own spring.

Loosely mounted on the rheostat-shaft, is a sprocket-wheel connected by means of a chain with the brake-staff sprocket-wheel. The rheostat sprocket-wheel has a clutch face (Fig. 4) designed to engage a similar face on the under side of a plate fixed to the shaft. The plate has an arm by means of which the current is turned on and off (Fig. 1).

When the motorman desires to stop his car, he depresses the pusher-pin, in order to lock the brake-staff sprocket to the crank, and turns the crank to the right. By reason of the chain connection with the rheostat sprocket, the motorman, in turning the brake-staff, also causes the switch arm to rotate and shut off the current. When the current is cut off, the motorman releases the pusher-pin in order to disengage the sprocket-wheel from the brake-crank, and continues to turn the crank until the car is stopped. By turning the crank to the left, the brakes are released; by depressing the pusher pin, the two sprocket wheels will operate to cause the switch arm to turn on the current in order to start the car.

Should the motorman forget to release the plunger when the switch arm has turned the current on or off, the continued rotation of the crank can do no harm, because the clutch teeth of the rheostat sprocket will ride over those of the switch arm plate.

Another Form of Wireless Telegraphy.

Prof. K. Zickler, according to Ackermann's Gewerbe Zeitung, has devised a new method of telegraphing without wires. Prof. Zickler calls his invention "light-electric telegraphy," because he uses the invisible rays of the ultra-violet spectrum, which have the property of inducing the discharge of electric sparks at a receiving station. These rays are produced at the transmitting station by means of a powerful arc light, and are directed by means of a reflector toward the receiving station. The further property of these rays, of being absorbed by glass, presents a means whereby signals can be so transmitted that the pencils of visible rays emerging from the reflector are not affected in intensity. In front of the reflector a glass closure consisting of a movable glass slide is mounted. The effective invisible rays can be transmitted only by opening the glass slide. The rapidity with which the glass slide is opened and closed will produce synchronous spark-signals at the receiving station, which signals may be made to correspond with the dots and lines of the Morse alphabet. Prof. Zickler, says our contemporary, has experimented with his apparatus at distances of one and one-half kilometers.

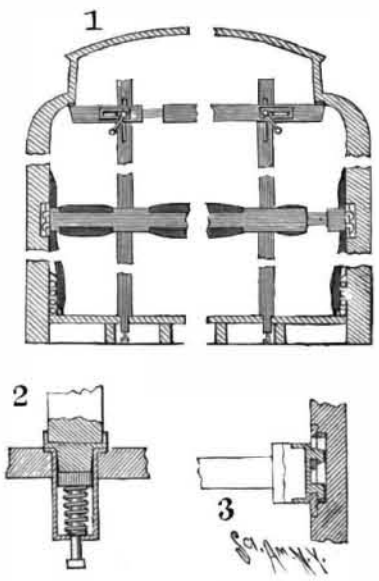
A PORTABLE HORSE STALL FOR RAILWAY CARS.

In order to facilitate the transportation of horses, the New York, New Haven and Hartford Railroad has fitted up several baggage cars with a novel portable horse stall, the invention of the general foreman of the road shops, Mr. John P. Young, of New Haven, Conn.

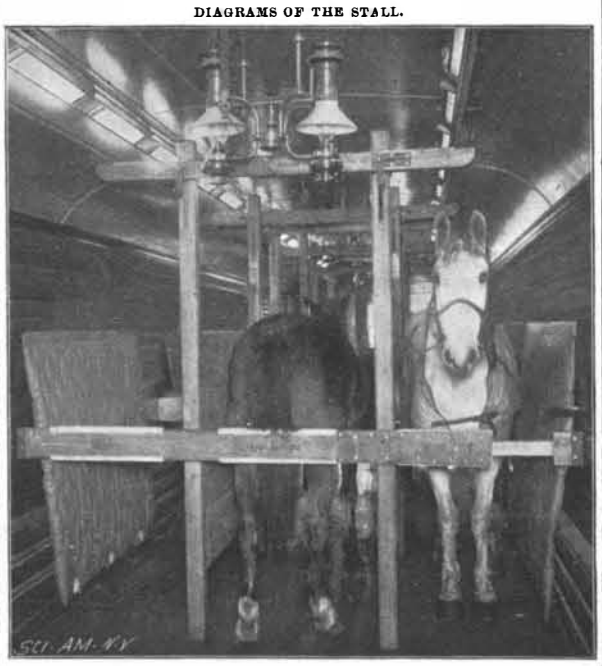
Of our diagrams, Fig. 1 is a vertical, transverse section through a car having the fixtures applied; Fig. 2 is a partial side elevation and section of one of the stanchions and of a socket adapted to receive the stanchion; and Fig. 3 is a sectional view of one end of a cross bar locked in place in a wall socket.

The stall fixture consists essentially of upper cross bars, intermediate cross bars, vertical stanchions, and partitions. The upper cross bars are formed of sections and are arranged for locking connection with the deck sills of the car. The stanchions have their lower ends fitting in sockets in the floor and their upper ends adjustably secured to the upper cross bars. The floor sockets, as shown in Fig. 2, are provided with spring-pressed blocks, upon which the stanchions rest. When the stanchions are removed, the blocks are forced up flush with the floor and thus prevent the entrance of dirt to the sockets. The stanchions are, furthermore, formed with vertical slideways, in which partition boards are held. The intermediate cross bars are formed of sections, and, as shown in Fig. 3, are locked in keyhole sockets in the side walls by means of studs carried on the ends of the bars. These intermediate cross bars intersect the stanchions and serve to hold the upper cross bars in locked position. On the intermediate cross bars, the partitions, and the side walls, pads are secured.

By means of these fixtures, a sixty-foot baggage or express car can be quickly divided into sixteen stalls. The width of the car can be made to accommodate two, three, or four horses. The horse stall possesses the



DIAGRAMS OF THE STALL.



THE HORSE STALL SET UP IN A BAGGAGE CAR.

YOUNG'S PORTABLE HORSE STALL FOR RAILWAY BAGGAGE CARS.

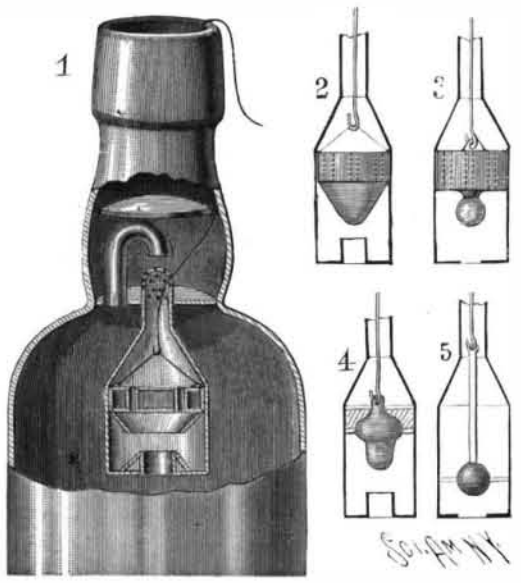
merits of being quickly set in place, of being readily disconnected, and of being adjustable to cars of any size.

A NEW NON-REFILLABLE BOTTLE.

A novel bottle-closure has been invented by Atmaran Abaji Bhise, Ramwadi Market Post, Bombay, India, which closure is primarily intended to prevent the refilling of bottles or the adulteration of liquids contained in the bottles.

Fig. 1 illustrates one form of the invention, and Figs. 2 to 5 represent modified forms of a closure used in the bottle.

At the junction of the neck with the bottle-body a sealing disk, perforated at two points, is held in place. Through one of the perforations a straight glass tube



BHISE'S NON-REFILLABLE BOTTLE.

is inserted, which at its upper end is formed with a screen projecting above the disk, and which at its lower end is enlarged into a chamber. At the bottom of the chamber a valve-seat in the form of a truncated cone is produced, which seat surrounds an opening. Within the chamber a valve, cylindrical in its upper portion and conical in its lower portion, is held to slide, so that it can be seated upon the valve seat. The cylindrical portion is vertically bored to provide passages for the liquid and for air when the valve is raised. To a bail on the valve-body, a wire is hooked, which passes up and out of the bottle. In the remaining aperture of the sealing-disk, the long leg of a bent tube is inserted, the short depending leg being placed above the screen end of the straight tube. On top of the bent tube a circular baffle-plate is secured of such diameter as to leave a circular crevice between the edge of the plate and the neck.

When the parts of the closure are in the positions indicated in Fig. 1, the bottle may be filled. The liquid, after passing the baffle-plate, will enter the bottle-body by way of the screen-head of the straight tube. While the bottle is being filled, air will escape from the bent tube. In sealing the bottle the wire strand is pulled with sufficient force to straighten the hook and to enable the strand to be withdrawn. The bottle is then corked in the usual manner.

When the bottle is to be emptied, the liquid may be readily poured out, for air may enter through the short tube when the valve is unseated by the tilting of the bottle. If it be attempted to refill the bottle, the valve will gravitate to its seat and effectually close the opening to the bottle-body. Since in this position the valve prevents the escape of air from the bottle, it will be impossible to fill the bottle by means of the short bent tube, since the liquid must rise in the bent portion.

In Figs. 2, 3, 4 and 5 the valve-body and seat are somewhat changed in formation, but the function and operation of these valves are the same as that already described.

THE French Minister of Public Works, in view of some recent serious railroad accidents, now requires all railway trains which carry passengers to be provided with requisites for prompt surgical aid to the wounded, as even when the services of surgeons are promptly obtained they are not always provided with the necessary bandages and other surgical appliances to aid the injured. The Lehigh Valley Railroad has for years carried "first aid packets" on all trains. The amount of suffering which such precautions have relieved and the number of lives which have been saved is very great. All railroad companies should, in their own interest, carry such outfits, and if they do not choose to do this at their own volition, they should be compelled to by proper legislation.

HARVARD University has decided to spend $175,000 of the Henry L. Pierce bequest in the erection of a new building. Two-thirds of the building will be devoted to the courses offered by the Department of Engineering in the Lawrence Scientific School.

Monazite Production in North Carolina.

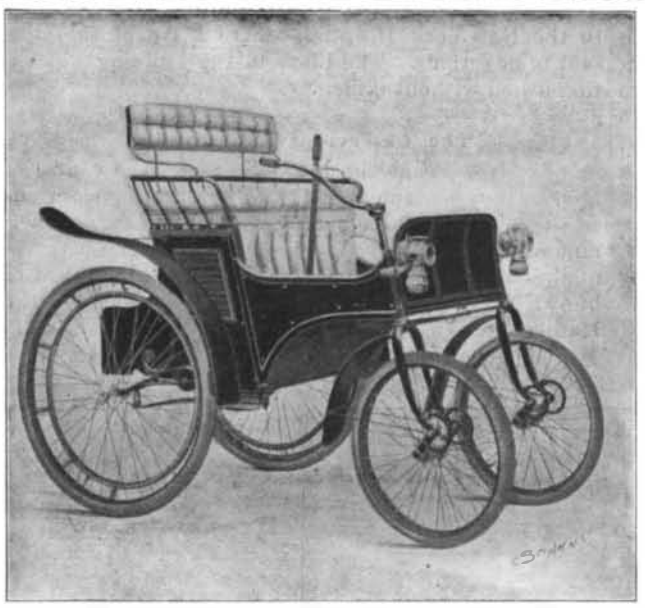
This industry is limited in extent by the lower prices and greater quantities of monazite found in Brazil. After several years of absolute quiet, with neither mining nor shipping, in Cleveland County, North Carolina, in 1897 a spasmodic effort was made to revive the business, says The Engineering and Mining Journal. Several carloads of monazite which had been mined during the period of activity several years ago remained on hand, scattered among a large number of holders. These were bought up early in 1897 and several carload shipments were made. Owing to the length of time this sand had remained on hand, and a total lack of any buyers at any price, it was possible to purchase these mixed lots at a low price. Even with this advantage it was found impossible to meet Brazilian competition; much less can this be done where it is necessary to mine the mineral. Nearly all the mines or streams have been worked over once, and any new work must be at a disadvantage, labor being less skilled, while all the old tools have been lost or worn out. The operations in any case being so small, a price direct from the mines cannot be made which will meet competition. The present inquiry for monazite sand is brisk enough, but the conditions imposed are practically prohibitory.

The first is a guarantee of thoria contents. The nature of monazite mining is such that only comparatively small quantities can be obtained from one locality—at the outside ten tons, and this only after considerable time. Buyers want at least car lots and regular, quick shipments, besides demanding guarantee of thoria. Here is the stumbling block. No producer will guarantee thoria without an analysis, and the sand, having been produced from a dozen properties, may vary from 1·5 per cent thoria to even 6·5 per cent. Each mine will vary as to thoria contents. Hence, to be at all certain of the quantity of thoria, only well known mines which produce a sand high in tenor can be worked at all. About 5 per cent thoria is an acceptable percentage and will always command attention; but it would be far safer to guarantee 4 per cent or less. These lower grades are not wanted at any price. Only an analysis can correctly determine the thoria contents. Some bright yellow 90 per cent monazite sands may be far lower in thoria than seemingly inferior sands.

Few of the actual miners have any capital, and they would not be willing to carry on hand more than 500 pounds of monazite sand. Hence the business should be handled by an intelligent man with money to take up and pay cash for sands to the amount of a shipment, say $1,500. He would be called upon to give a guarantee.

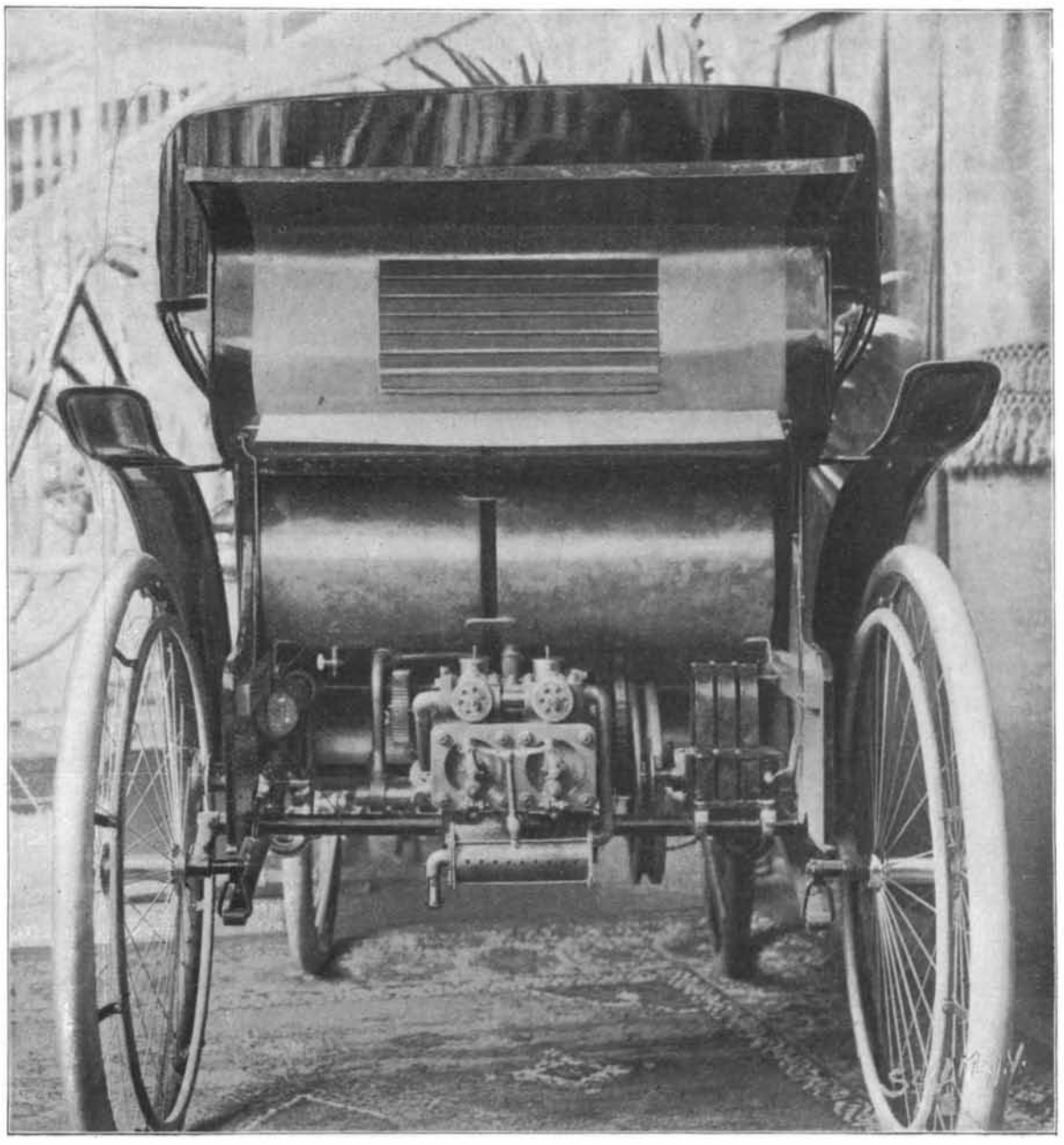
Unfortunately, there is not profit enough in the business to induce anyone with capital to take it up. The monazite industry at one time employed several hundred people and brought much money into the district in Western North Carolina where the sand was found; and its loss is much regretted.

LIEUT. T. C. DICKSON, United States army, of the Springfield Arsenal, has invented a sight which has been accepted by the Ordnance Department. This sight has a wind gage and is so constructed that the drift is automatically made for all ranges up to 1,200 yards, no matter in what direction the wind is blowing. As fast as the sights can be manufactured they will be supplied to the troops to replace those now in use. The official designation of these sights will be "Model of 1898."



THE HERTEL GASOLINE MOTOR PHAETON.

THE TINKHAM GASOLINE MOTOR TRICYCLE.



THE HERTEL MOTOR PHAETON DRIVING MECHANISM.

AUTOMOBILES AT THE LATE CYCLE EXHIBITION.

Great interest was shown by the public in the progress made during the past year in the construction of automobiles at this exhibition, and these exhibits attracted crowds of visitors.

The motive power of the horseless vehicles was about equally divided between electricity and gasoline, each having distinct advantages of its own.

Our accompanying illustrations show types of most of the vehicles on exhibition.

Every one was attracted by the neat looking one-seated gasoline four-wheeled phaeton adapted to carry two persons, called the "Hertel," manufactured at Greenfield, Mass. Its general appearance will be noted in the small illustration. The forward wheels are of bicycle construction, having spring forks, to allow for unevenness of the road, and are connected together by a rod to the horizontal steering lever just in front of the operator.

The interior mechanism will be seen in the large illustration, showing its accessibility for examination by the entire hinged metal back of the carriage being raised. There are two cylinder heads located horizontally in the center, having attached suitable sparking devices, cams, and levers in plain sight. Directly under the cylinders is the muffler for the exhaust, having a small elbow turned downward at one end. It deadens the sound of the exhaust most effectively. To the right of the cylinder is the small dynamo for sparking, the armature of which is rotated by frictional contact with the main shaft fly-wheel; located on the extreme left is the spark coil, and under the seat is a storage battery. The current for sparking is taken from the storage battery, the latter being kept charged by the dynamo when the carriage is in motion. Above the engine cylinders and under the seat are two tanks separated by a small space; the left is for the storage of gasoline, the right for water. It will be seen that the rear axle is of peculiar construction, in the shape of the letter U, and that the single springs supporting the body at the rear are suspended from stirrups depending from the wheel axles. Also the driving wheels have an interior annular driving rim against which the grooved driving pulleys of the main driving shaft impinge and impart the power of the engine to the wheels by friction. This shaft is manipulated forward or backward by the single lever rising upward in the center of the carriage and is one of the features which make the vehicle distinctive. By means of a latch lever attached to the driving lever the operator starts the engine from his seat by engaging the latch lever in a ratchet wheel under the seat attached or geared with the main shaft, so arranged that when the driving lever is drawn suddenly back it will cause the ratchet wheel to rotate the engine enough to allow the sparking, and thus cause the needed explosions. After it is started the latch lever is released and the driving lever pushed forward, which brings the driving grooved pulleys into contact with the driving wheel rims. The speed may be regulated by this frictional contact or by rotating the top of the handle of the driving lever with the hand, which admits or cuts off the air supply to the engine. A backward motion of the driving lever applies the brake. With this one lever several things are accomplished easily and quickly. It is stated that on a fairly level road this vehicle will travel 75 miles on one gallon of gasoline and at any desired speed up to 20 miles an hour. Its weight is 500 pounds.