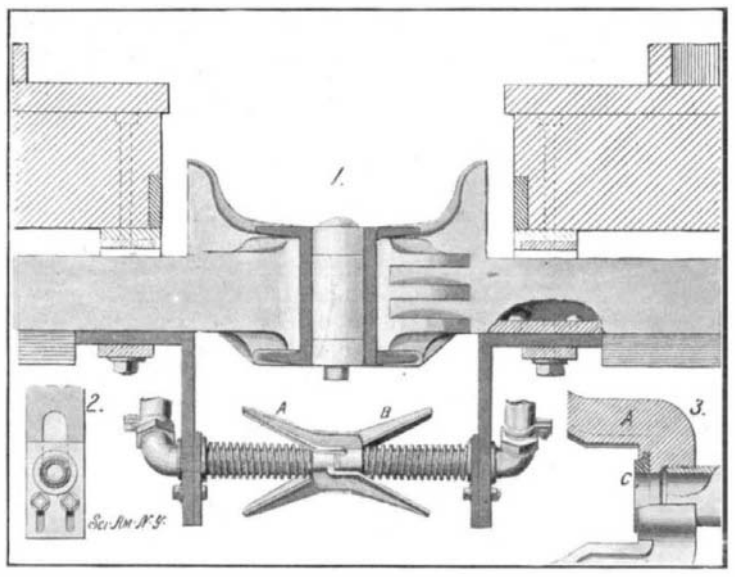
AUTOMATIC COUPLING FOR AIR-BRAKE HOSE.

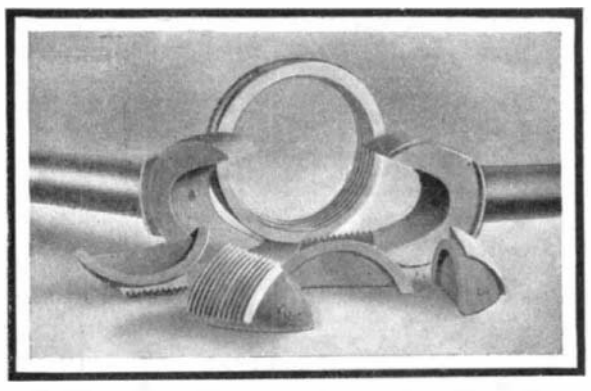
A new form of automatic coupling for the air-brake hose of railway cars has been invented by Messrs. Archibald F. Allen and John A. Lenhoff, of 1906 Scott Street, Wilmington, Del. This coupling is illustrated in the accompanying engraving. Clamped to the ends of the hose are metal elbows, which are supported in hangers depending from the ends of the car platform. Projecting forward from each elbow is a short pipe section, provided at the outer end with the improved type of coupling head. This, it will be observed, consists of a tubular body provided with fingers, indicated at *A* and *B* in the drawing. The fingers of each coupling head are formed with parallel faces, which are slightly concave, to fit closely over the body portion of the opposing coupling head. Beyond this parallel section the fingers diverge, forming an angle of about sixty degrees with each other. In order to hold the pipe sections approximately horizontal when in uncoupled position, they are each provided with a heavy coil spring, which is held under tension between the coupling head and the supporting hanger. When the opposing coupling heads of two cars are brought into engagement with each other, the opposing fingers will ride one upon the other, bringing the coupling heads into perfect alinement with each other. The opposing faces of the coupling heads are provided with rubber gaskets, as shown at *C*, Fig. 3, so that when a coupling is effected, these gaskets will be pressed together under action of the coil springs, and will thus effect an air-tight connection between the coupling heads. This construction will be found sufficiently flexible to allow for all movements of the train; but the coupling heads will be kept in perfect alinement, being held by the broad bearing faces of the fingers. As some cars are considerably higher than others, the construction shown in Fig. 2 is preferably used for supporting the metal elbow. The elbow, instead of being secured directly to the hanger, is fastened to a plate vertically adjustable on this hanger. This permits the coupling section to be raised or lowered any required distance, to bring it into horizontal alinement with the opposing coupling head.



COUPLING FOR AIR-BRAKE HOSE.

AN INGENIOUS ADJUSTABLE UNIVERSAL COUPLING.

One of the greatest difficulties confronting the automobile engineer, especially in those types of vehicles by which the drive is transmitted from the gear to the rear axle through a live axle, is the designing of



The Coupler Dismantled, Showing the Component Parts of the Conical Screw.

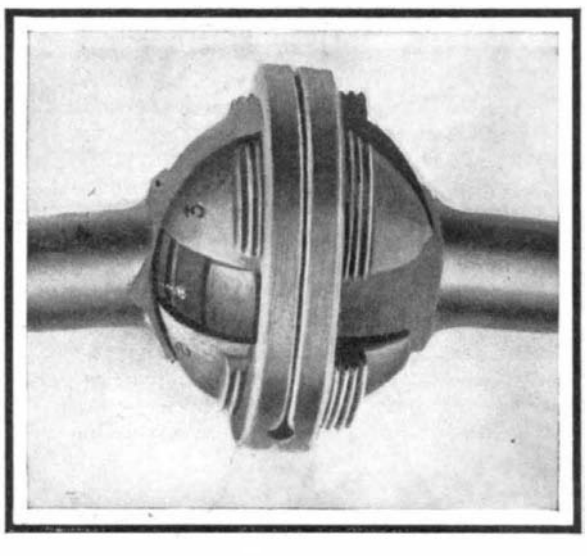
an efficient universal joint or coupling connecting the propeller shaft with the gear and axle. The weakest spot of many cars lies in this section of the mechanism, especially after the car has been in service for a short time, as considerable stress and strain are encountered at this point. Especially is this the case with those varieties of universal couplings in which there is no provision for making any adjustment to take up the wear. The consequence is that when the joints become slack, they cannot be tightened up, and the parts have to be renewed.

This is a serious disadvantage, since, owing to the fact that these couplings invariably work in exposed positions and are not protected from dust and grit, they are liable to wear loose, rattle, and finally, in many cases, break down altogether.

To overcome these deficiencies an ingenious universal coupling has been devised by Mr. W. Newman, A.M.I.M.E., of Totteridge Park, Herts, England. The most distinctive feature of this mechanism is that by means of a simple arrangement the working parts of the joint are rendered adjustable, the effect of which is that the results of wear can be neutralized and the joint can always be kept adjusted to a nicety.

The principle of the design of this apparatus can be realized from our first illustration showing the joint dismantled. The ends of the two shafts are forked and to the sides of these forks are fitted four segmental blocks. A conical screw is cut on the outer surface of each of these blocks, and on this cone is screwed a ring binding the four segmental blocks and forks into one joint. If the screw is screwed right home on the cone, all the blocks are forced in evenly toward the center, thus tightening up the joint. If the ring is unscrewed, the joint is slackened. After the ring has been suitably adjusted in this manner it is locked into position.

The advantage of this mechanism is greater strength over the system involving the ordinary forks pierced with bolts, and durability. Moreover, if necessary, and especially when employed in conjunction with large shafts, it can be tightened up so as to drive as a practically solid shaft and yet yield immediately to any bending stress. The same system, again, with but a slight deviation in the general design, can be applied for coupling the engine to the gear or for connecting any two pieces of shafting together.



THE ADJUSTABLE UNIVERSAL JOINT COMPLETE.

Trackless Railway in Prussia.

A trackless railway is being erected by the community of Mannheim, which will be the first of its kind in Prussia. It will run from Mannheim to Langenfeld and will be about 2½ miles long, with two short branches intended for freighting purposes.

The main line will serve for the transportation of persons, baggage, mail, and freight. An extension is possible at both ends. The roadway from Mannheim to Langenfield is 23 feet wide, with a good basaltic cover about 15 feet in width, running almost in an air line, with the exception of a few curves. A special contrivance for coupling is provided in order to keep the cars exactly in line; this takes the place of wheel flanges in ordinary rail trains. The buildings to be erected for use of the railway are a power house, car barns, repair shop, and offices. For the running of the railway a current of about 550 volts will be furnished. The power will be conducted to and from the cars, which are provided with electric motors, by means of two revolvable poles, placed on the top of the cars, and sliding blocks enabling the train to move sideways from 10 to 12 feet.

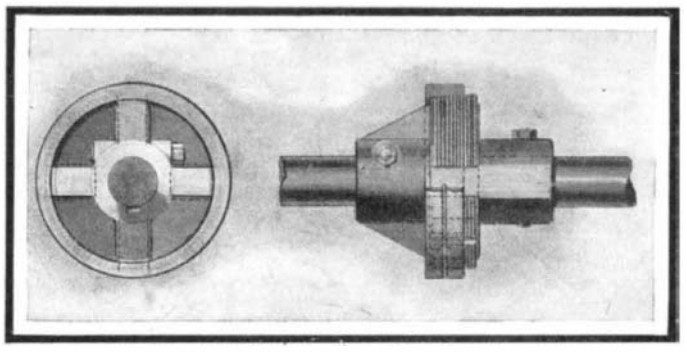
The wiring will consist of two hard copper wires, with hard rubber insulators, carried by iron poles about 18 feet above the middle of the road. For entering farmyards lying close to the road there will be used, instead of the regular wire, a connector and flexible cable 50 to 70 feet in length, by means of which the current will be transmitted to the motor car. Ordinary electric cars have but one pole, and the second pole of these railless cars serves for conducting back the current, which is otherwise done through the rails.

When these trains pass each other, one will remain standing under the wires and disconnect its current until the other has passed. The trains will consist of an electric locomotive for drawing two or three cars, driven by two electric motors of from 25 to 40 horsepower, and will be furnished with the necessary illuminating apparatus and brakes. The conducting crew has its place on the locomotive. The cars for carrying freight have a capacity of about 5 tons. These cars will be coupled in such a manner that the wheels of the car following run alongside the rut of the forward one, thus making a wide rut and avoiding the damaging of the road on wet days. Some of the cars will be open and some closed, and all will be fitted with the necessary brakes. Farmers' wagons can be attached to the end of the train, requiring only that the ordinary tongues of the wagons be replaced by shorter coupling tongues.

For the passenger service a motor omnibus, having a seating capacity of sixteen and standing room for eight, is provided. In case of an increased passenger traffic a similar car, but of lighter construction than the motor omnibus, will be added. Five or six double trips at the rate of 8 to 10 miles per hour will be made daily on schedule time. For the accommodation of the workingmen, in the morning and evening, two labor trains consisting of motor car and one or two passenger cars will be added. Freight will be carried on week days only, as conditions may require, and during the intervals between passenger trains. The fare for the entire trip will be 6 cents. For carrying freight the charge will be $2.38 per carload of 10 tons. Subscribers and parties doing a large freight business will be allowed a discount.

Motor Mail Cars in Germany.

The Bavarian ministry of transportation has recently issued tenders to a large number of firms for the supply of railroad motor cars. For main roads two sizes of motor cars are proposed to be built, and for branch roads one size—however, in two patterns of different capacity. The large motor cars for branch roads are required to pull a trailer of 2 tons, and the smaller ones each about three-quarters of a ton to 1 ton gross weight. The large cars are intended to accommodate the entire passenger, mail, and freight service on small local roads, while the smaller cars are to be used on roads where a separate passenger and freight service may economically be maintained. On these lines the motor cars are to serve for the transportation of passengers' baggage, and possibly also for the transportation of a limited number of passengers, while the freight and regular parcel-post service will be maintained by local trains. All motor cars for main and branch roads will only have one class of passenger accommodation, similar to the third class on regular German railroad trains (wooden unupholstered seats), but the same will also have a special compartment for passengers with heavy baggage, or to be used for standing room in event of emergency during extraordinary rush of passengers.



Section and Partial Side Elevation, Showing the Application of the Joint for Coupling the Motor to the Transmission Gear of an Automobile.

The extreme speed per hour of the large cars (without trailer) is to be 46.6 miles; of the small cars, 37.3 miles; and on branch roads, 31 miles.

The first of the new type of battleships for the British navy has been launched at Pembroke. This warship is a combination of the battleship and cruiser, possessing the most prominent features of each, being larger and more heavily armed than the cruiser of the latest design, and resembling the battleship in many respects. The armament is particularly formidable, comprising six 9.2-inch guns, ten 6-inch, and twenty-eight smaller quick-firing weapons. There are three submerged torpedo tubes. The main armament is carried in a citadel amidships. Under all the 6-inch guns are small auxiliary magazines and shell rooms. The maximum speed is to be 22.33 knots per hour. The battleship cruiser, as it is called, will cost $5,659,410 to complete.