

**ELECTRIC CABS IN LONDON.**

On Thursday, August 19, Mr. W. H. Preece inaugurated a service of electrical cabs which are to ply for hire in the streets of London in competition with the ordinary hackney carriages. Thirteen of these cabs are now ready for work, and a staff of drivers have been instructed in the use of them. The cabs will be let out by the proprietors, the London Electrical Cab Company, Limited, just at the same rates and in the same manner as the London cabs. The "cabbies" are, we are informed, quite enthusiastic about the new vehicle.

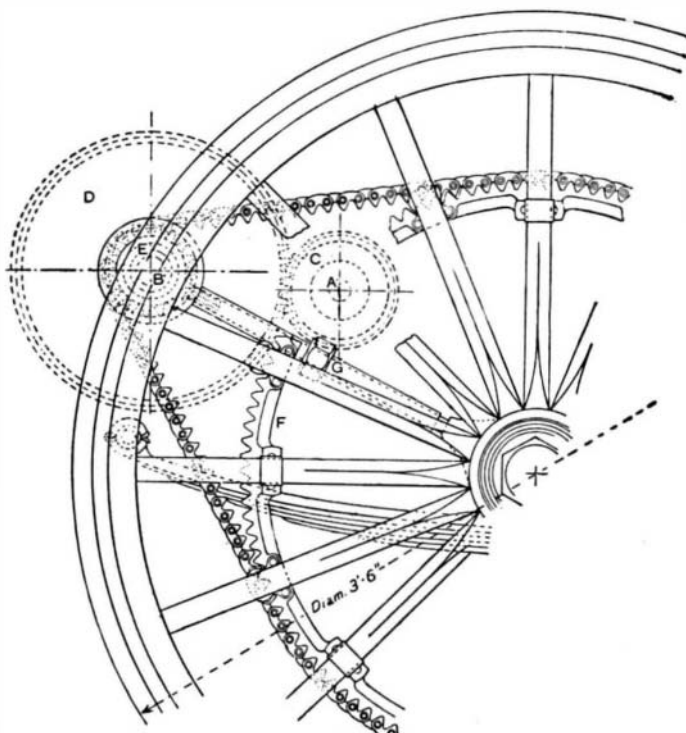
They are being taken out in parties on a special brake, and instructed in the management of the switches, steering gear, etc. In a short time twenty-five more cabs are to be added to the number now ready. The new vehicle resembles very closely a horseless and shaftless coupé. It is carried on four wooden solid rubber-tired wheels. There is ample space for the coachmen. The accommodation within is luxurious. The propelling machinery consists of a three horse power Johnson-Lundell motor, with double wound armature and fields, so that by the use of a suitable switch or controller a variety of speeds can be obtained.

The controller is arranged so as, on the first step, to connect on two armature windings and the two field windings of any series with a small starting resistance. This is not a running speed, but is only intended to start the motor into motion. On the second step the windings are still in series, but the resistance cut out; and with this arrangement the cab runs at a speed of about three miles an hour. The third step places the armatures in parallel, but leaves the fields in series; and with this arrangement the cab runs at about seven miles an hour. The fourth step places the field windings in parallel, and the cab runs nine miles an hour. It will thus be seen that three normal running speeds allow of the full energy of the current being utilized in the motor without any absorption in resistance, and the cab can thus "crawl," using only about the same number of watts per car mile as when running at full speed. In the reverse direction from the stop position the series parallel controller on the first step short circuits the motor through the starting resistance, thereby gently braking the cab. On the second step backward the motor is completely short circuited, bringing the cab to a dead stop; and the third step backward reverses the connections between the armature and fields, all being in series, to enable the cab to be moved at the slowest speed backward. The whole of these movements are produced by the use of one lever, placed at the side of the driver's box. The driver has, besides, a powerful footbrake, which in coming into action brakes the circuit.

The current is supplied by 40 E. P. S. traction type cells, having a capacity of 170 ampère hours when discharged at a rate of 30 ampères. The cabs can thus travel between thirty and thirty-five miles per charge. It is intended, however, to have other electric supply stations besides that at Juxon Street, Lambeth, at other parts of London. The storage batteries are hung on springs underneath the vehicle. The manner of getting them into position is important; in the supply station there are two hydraulic lifts, one of

very short stroke, the other long enough to raise its platform, which sinks level with the ground floor up to the charging gallery. The cab is first put over the smaller lift, and under it is run a small iron trolley; this trolley is then raised until the weight of the batteries, some 14 cwt. by the way, is taken. Four pins are removed and the electric connections broken. The lift is then lowered, and the trolley run on to the second lift, which raises it to the gallery, where it is run off and placed in position for recharging, the charged cells being taken down and attached to the cab by a reverse operation.

The driving power is transmitted from the motor to



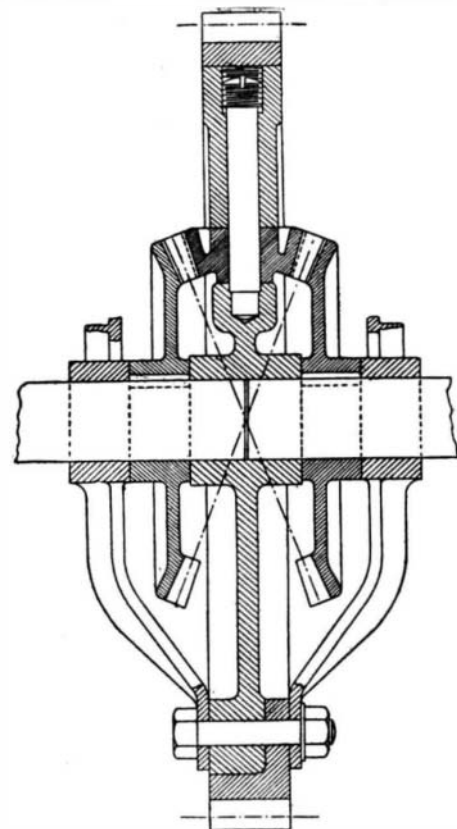
**CHAIN GEAR.**

both of the rear wheels. For this purpose large driving rings are attached to the spokes, Hans Renold's latest laminated chain being used. It will be remembered that this is not a sprocket chain, but resembles very closely an ordinary leather link belt, except that the links are of steel, and terminated at the under side of each end under the pins in V-shaped pieces, which engage in similar V notches on the driving wheels. The "chain" can therefore play sideways, and the wear is more uniform on that account. Very little noise is made by this gearing, and that which would be made by the motor and the jack-in-box gear, which is arranged on the countershaft, and which is necessitated by the fact that both wheels are drivers, is deadened by being inclosed in a case thickly lined with felt.

Steering is done by rotating the entire fore carriage, which turns on a ball-bearing racer, and is actuated by a hand wheel, as seen in the illustration.

The current for charging the accumulators at Juxon Street, Lambeth, is received from the London Electric

Supply Corporation, at 3,400 volts, alternating with a periodicity of 83 per second. To convert this into a continuous current, two alternating motor generators have been provided, each one with an output of 75 kilowatts on the secondary side. These machines consist of a British Thomson-Houston alternator coupled on the same bedplate to a continuous current generator of the same make. The alternator is run up to the speed by the cells, which it is afterward to charge, put in step with the London Electric Supply Company's



**SECTION OF DIFFERENTIAL GEAR.**

current, and the continuous current field then strengthened until the requisite volts pressure is obtained for charging the cells. The transformation from high pressure alternating to low pressure continuous current is thus effected without the use of any intermediate transformers, with an efficiency of about 86 per cent. The Shoreditch Vestry have also entered into a contract with the company for the supply of current at its second charging station, which will probably be in the City.

The engineers of the London Electrical Cab Company are of the opinion that, although up to the present time accumulator traction, as applied to tramcars, has not been a marked success, it will prove satisfactory in cabs, for the simple reason that the proportionate weight of accumulators to load is very much greater in cabs than in trams. The accumulator is thus not hard and uneconomically worked, but gives out its current at the most economical tension. This holds even at a variety of speeds, the regulator rendering it possible. Only when the very severest gradients have to be ascended is the battery to any extent, and then not severely, overtaxed. For our engravings we are indebted to the Engineer and the Electrician.

**The Influence of Music.**

The influence of music upon the respiration, the heart and the capillary circulation is the subject of a paper, by MM. A. Binet and J. Courtier, in the *Revue Scientifique* (February 27). Experiments were made upon a well-known musical composer, and the investigators endeavored to determine effects produced by musical sound alone, as distinct from those due to emotions aroused by pieces associated with dramatic incidents or words. Isolated notes, chords in unison, and discords were first tried. Both major chords struck in a lively manner and discords quickened the respiration, the latter more especially. Minor chords tended to retard respiration. When melodies were tried it was found that all, whether grave or gay, produced quickened respiration and increased action of the heart. The lively tunes produced the greatest acceleration. Where the sound was wholly uncomplicated by emotional ideas, as in single notes or chords, the heart's action was accelerated, but not in so marked a degree as when a melody either grave or gay was played. During operatic pieces, or those well known to the subject, the acceleration attained its maximum. The influence of music on the capillary circulation was tested by a plethysmograph attached to the right hand. The capillary tracings showed that a slight diminution of pulsation was usually produced by musical sounds, the effect being very small when sad melodies were played, but well marked when lively airs were played.

REMAINS of what seems to be a Roman basilica, with columns three feet in diameter have been found in tearing down a shop in the center of the city of Chester, England.



**A PUBLIC ELECTRIC CAB IN LONDON.**