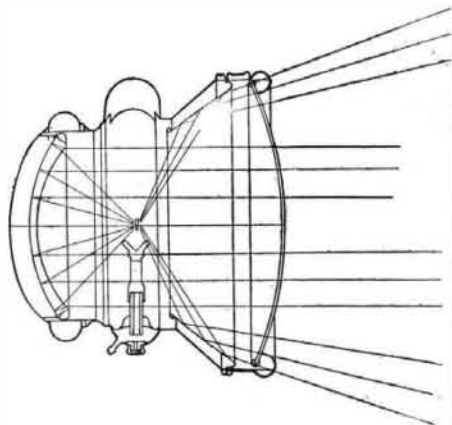


burner is placed at the principal focus of the concave mirror, so that the rays of light after having been reflected will emerge from the lamp in a pencil composed of parallel rays only. The beam of light thus produced brightly illuminates the road, and clearly shows obstacles and depressions. The other beam of light consists of a divergent pencil, and is pro-



A DOUBLE RAY ACETYLENE, WHICH CAN BE SEEN AT A CONSIDERABLE DISTANCE AND WHICH ALSO ILLUMINATES THE ROAD.

duced by first causing the rays from the burner to strike a cylindrical mirror, by which they are reflected through the convex lens at the front of the lamp. As the diagram indicates, the rays are widely scattered, so that they can be seen at a considerable distance.

IMPROVEMENTS IN THE WHITE STEAM TOURING CAR.

The latest model White touring car has been increased in size and power, so that it is now one of the largest and most luxurious automobiles built in America. The increased power of this machine has been obtained both by increasing the size of the engine and generator, and by increasing somewhat the mean steam pressure by means of a thermostatic regulator, which always assures a pressure of 600 pounds. By the addition of a simple feed-water heater, consisting of a short coil of pipe placed between the water tank and generator and surrounded by the exhaust pipe, the efficiency of the power plant has been further increased by about ten per cent. The feed-water heater not only supplies the water to the generator at a higher temperature, but it also increases the efficiency of condensation.

Another radical departure in the new White cars is the location of the gasoline tank in the rear of the car, behind the rear axle. The tank is raised several inches above the axle, so that should the former ever strike obstructions, the tank will be protected. The front axle is of the tubular type, as it is claimed that both theory and practice show that an axle of this type, when properly designed, will best withstand both vertical and horizontal strains. The water tank has been moved to a position under the floor on the left-hand side of the car, where the gasoline tank was formerly located. This tank is provided with a suitable strainer, to stop any oil from passing from the condenser into the tank.

As the new White car is capable of increased speed, and as it is built heavier to withstand the road strains, every part of the frame and running gear has been considerably strengthened. The car is provided with larger and heavier wheels, brakes, and tires, and its every part has been designed upon a new standard of size and strength, which is more than proportionate with the increase in power. A compound steam engine of 3 and 6-inch bore by 4½-inch stroke is used as heretofore. The car is also provided with a disconnecting clutch, so that the engine can be run and warmed while the car is standing. A lower speed can also be thrown in, should the car get stuck in a mudhole, or should there be any occasion for a decided increase in power.

The new touring car can be fitted with

Regular Equipment on the **PIERCE Great Arrow**

Regular Equipment on the **WINTON**

Regular Equipment on the **WHITE**

Regular Equipment on the **THOMAS BUFFALO**

Regular Equipment on the **Cleveland**

The fact that Goodrich Tires have been selected as the regular equipment for 1907 by ten manufacturers of ten leading cars is significant.

It means that Goodrich Quality—which is exclusively a matter of tire construction, material and workmanship—not of words—is an established fact.

The consistent records made by

GOODRICH TIRES

during 1906 and all previous years will be upheld.

The faith in Goodrich tire goodness indicated by Goodrich Records is ever widening—the man with the best car wants the best tires.

If your Tire selection has not been made it is time to get in touch with us at once.

Let us send you fuller information about GOODRICH TIRES

THE B. F. GOODRICH CO., Akron, O.

Regular Equipment on the **PREMIER**

Regular Equipment on the **STANLEY**

Regular Equipment on the **Stoddard Dayton**

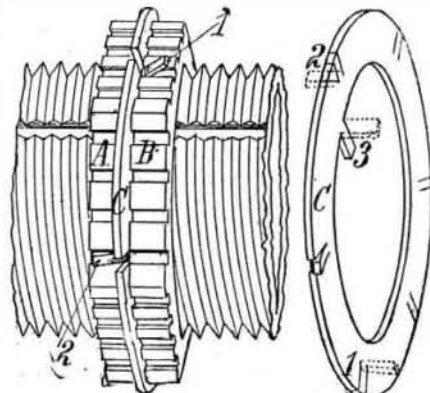
Regular Equipment on the **THOMAS DETROIT**

Regular Equipment on the **MOON**

a Pullman type of body, in which there are two revolving chairs in the tonneau (this type is shown in the illustration on page 33), or it can be fitted with a shorter ordinary touring car body, having extra space on the rear of the frame for carrying baggage. The latter body has ample room for carrying three passengers on the rear seat. It is also considerably lighter than the body which we illustrate.

AN INGENIOUS LOCKING DEVICE.

A locking device that will absolutely preclude the coming loose of nuts is essential for automobile construction. One of the neatest and simplest devices of this kind which we have seen, is found on the Stoddard-Dayton automobile. The arrangement consists of a locking washer, C, having lips such as 1, 2, 3 on its inner and outer surfaces, and which is placed between the usual nut and lock nut that are generally used. The nuts have transverse grooves on their faces for the purpose of receiving the outer lips, such as 1-2, of the washer. After the nut, A, has

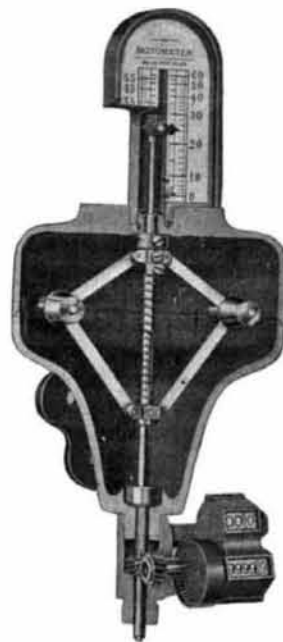


A SIMPLE AND EFFECTIVE LOCKING DEVICE.

been set and jammed tightly, the locking washer is slipped on the shaft with its inner lip, 3, in a groove in the latter, and with an outer lip, such as 2, bent over into one of the notches of A. The lock nut, B, is then set up, and another lip of C, such as 1, is bent over into one of the notches of B. The arrangement, as can be seen, makes it impossible for either nut to turn with respect to the other, or to the shaft.

A SIMPLE TYPE OF AUTOMOBILE SPEEDOMETER.

Among the many kinds of speedometers now on the market, one of the simplest and most positive that we have seen is that made by the R. H. Smith Manufacturing Company, of Springfield, Mass. This motometer, as it is called,



SECTIONAL CUT OF SMITH MOTOMETER.

consists of a vertical spindle driven through a flexible shaft from the wheel of the automobile, and carrying upon it weights similar to those of an ordinary flyball governor, so arranged that the vertical movement secured by the pivoted

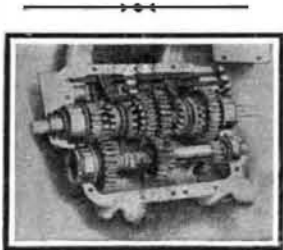
(Continued on page 47.)

lever arms of these weights, as they lengthen out and approach each other under the action of centrifugal force or gravity upon the weights, is communicated directly to an indicating stem carrying pointers that travel over the scales of the instrument. Thus, the action of centrifugal force upon the balls of the governor part of the apparatus is communicated directly to the indicator, which makes it extremely accurate. An odometer is driven off the vertical shaft by means of a worm gear.



MOTOMETERS BEING TESTED AT AUTOMOBILE SHOW.

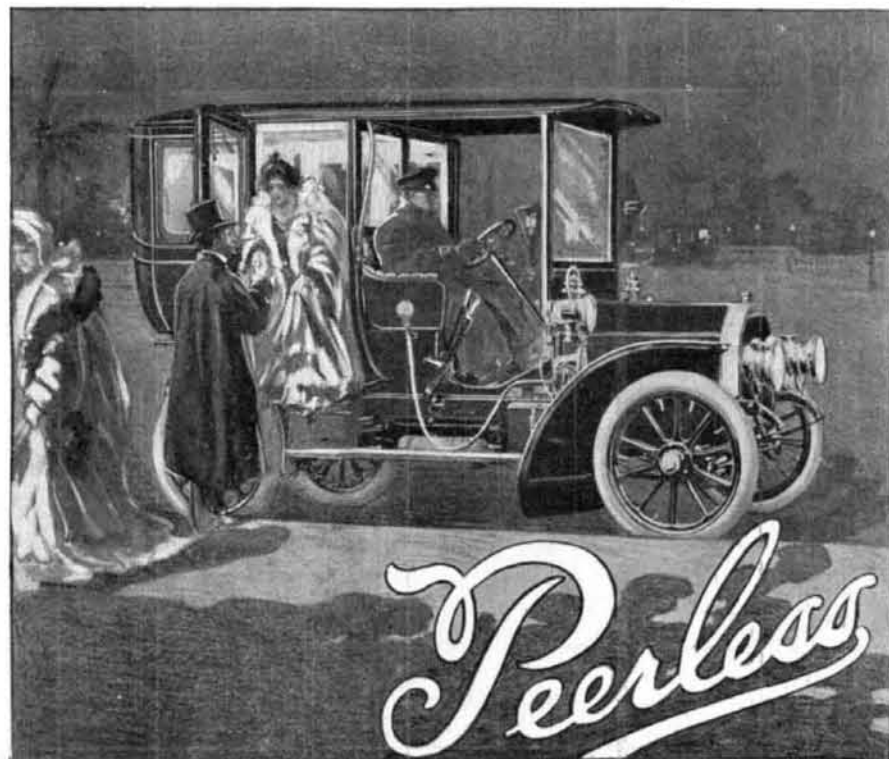
At the recent show the company exhibited three of these meters driven by one small electric motor through three flexible shafts terminating in pinions having 16, 32, and 64 teeth respectively. Consequently, the speeds registered on the different instruments should bear the relation 1:2:4. The fact that this occurred whether the motor was run at low or high speed, showed that the instruments were accurate at all speeds, no matter whether the speeds were high or low. To make the demonstration more complete, the revolutions of a fourth 16-tooth pinion were taken by a speed indicator, and these revolutions, counted by the investigator, were compared with a table giving the miles per hour that the indicator should show at any given R. P. M. of its gear wheel. So exact was the instrument found to be, that it agreed to the thousandth part, or within one-tenth of one per cent.



TRANSMISSION WITH JAW CLUTCHES.

SOME IMPROVEMENTS IN HONEYCOMB RADIATORS.

Several years ago the honeycomb type of radiator began to appear among certain cars of foreign make. This type of radiator has since become very popular, despite the fact that some prominent manufacturers at home and abroad still favor the use of tubes with radial fins or wings. The honeycomb radiator provides a very large radiating surface, over which the hot water flows in thin sheets. In one make copper tubes of square cross section are used, which are separated by



Attained Excellence

Built to satisfy the requirements of the tourist, the Peerless Limousine adapts itself to all conditions.

The most refined and exacting taste finds in this car every requirement perfectly filled. Luxurious comfort and adequate protection; richness of finish and appointments; ease of entrance and egress; safety and responsiveness of control; reliability, stability, durability.

Featured in the Limousine are all the improvements of our 1907 product. Several new features have been added to make the Peerless car still higher in quality and even more thoroughly reliable.

- 1. Drop frame, eliminating side sway.
- 2. Perfect balance.
- 3. Larger cylinders, more power.
- 4. Simple speed control.
- 5. Imported springs, three springs rear.

The new drop frame and its advantages.



Road Clearance not reduced.

The drop frame is an original adoption of the Peerless, in America. With this frame, and without reduction of road-clearance, the bulk of weight is brought down nearer center of gravity. The result is a better balanced car, handled more easily and safely at high speed with greatly lessened possibility of skidding; a saving of wear and tear on machinery and tires, and giving added ease and comfort to passengers.

Our new illustrated book "P" showing new features in 1907 models sent upon request.

PEERLESS MOTOR CAR COMPANY, 2447 Oakdale Street, Cleveland, Ohio



vertical wires at each end, and then soldered together in a block. The water flows through the narrow vertical passages formed between the tubes, and the heat is carried off by the air flowing through the tubes. In another make horizontal as well as vertical wires are used for spacing the tubes, as shown in Fig. 1, so that radiation takes place equally from all sides.

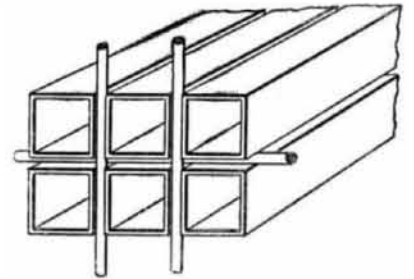


Fig. 1.—RADIATOR TUBES VERTICALLY AND HORIZONTALLY SPACED.

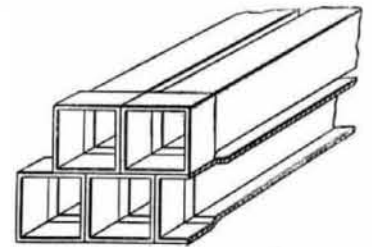


Fig. 2.—RADIATOR FORMED OF EXPANDED TUBES.

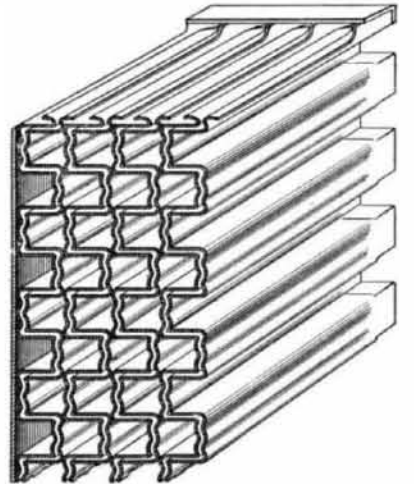


Fig. 3.—RADIATOR FORMED OF CORRUGATED METAL SHEETS.

In one of the domestic makes of honeycomb radiators, spacing wires are dispensed with. Instead the tubes are expanded at each end, so that when they are assembled both vertical and horizontal water spaces will be provided around each tube, as shown in Fig. 2. The rows of tubes are arranged to break joints in the vertical direction, so that the water is obliged to follow tortuous channels in flowing from top to bottom of the radiator. The tubes are then dipped in solder, to seal the water channels at the front and rear of the radiator.

A most ingenious domestic modification of the honeycomb construction is shown in Fig. 3. Square tubes, owing to their expense, are dispensed with entirely. In their place thin sheets of copper are used, these being pressed to form corrugations, the walls of which are rectangular. Alternate corrugations are made somewhat smaller, so that when two sheets are laid together, the smaller corrugations will fit into the larger ones. The corrugations are alternately expanded and contracted at the ends, so that when the sheets are laid together they will be spaced to form continuous but tortuous conduits. The sheets are then fastened together by crimping the cut ends of one sheet over the other. These conduits when assembled form air passages of square section, and when soldered together in a block they are identical in appearance with the European honeycomb radiators, but possess the advantage of a greater radiating surface, because the water is obliged to follow a tortuous course, as indicated in Fig. 3. Furthermore, the construction is far less expensive, owing to the fact that square tubes are not used.