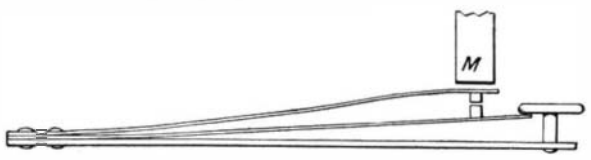
AUTOMOBILE NOVELTIES.

A NEW INTERRUPTER FOR SPARK COILS.

The efficiency of a spark coil depends upon the suddenness with which the contact at the interrupter is broken. The main difficulty with an interrupter of the ordinary spring type is that the break occurs on first movement of the vibrator spring, that is, while the magnetism of the spark coil core is overcoming the inertia of the spring. The movement at this time is comparatively sluggish, and the small spark which

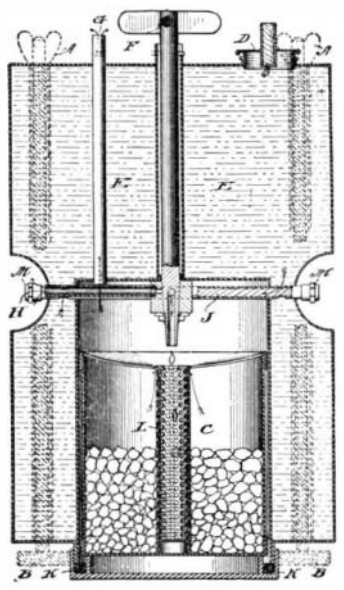


IMPROVED VIBRATOR.

follows the spring for an instant permits a gradual break; for it serves as a path for the current, offering more and more resistance until the spark is finally destroyed by the length of the air gap. A French inventor has produced an improved design of interrupter, which overcomes this objectionable feature by such an arrangement of the parts that the break in the circuit does not occur until the inertia of the spring is overcome. In the construction, the break occurs between the spring and a movable contact piece instead of the usual stationary one. This movable strip is secured to the spring, but is properly insulated therefrom. When, therefore, a current is passed through the coil, the strip travels with the spring toward the magnetized core, *M*, until their inertia is sufficiently overcome and both are moving rapidly, when the contact strip is suddenly checked by a stop. The vibrator spring, however, continues to move quickly forward under the influence of magnetic attraction, and a sharp break in the circuit is made at the contact points. It is claimed that this form of interrupter greatly increases the efficiency of the coil. In a test made by the inventor, a coil which was provided with the usual type of interrupter was barely able to light up a Geissler tube. When the improved interrupter was fitted to the coil, the tube was very brilliantly illuminated.

AN IMPROVED ACETYLENE LAMP.

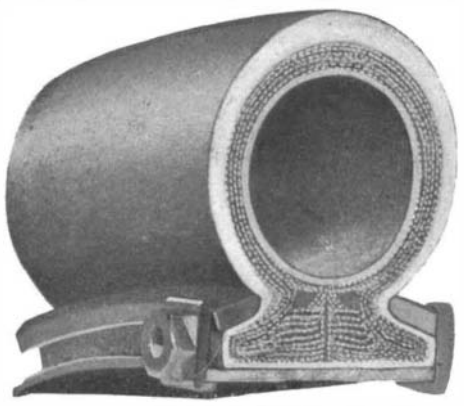
The vibration of automobiles is very harmful to acetylene gas lamps because it tends to accelerate the water feed and produce an excessive generation of gas. A new lamp which is meeting with considerable favor in the automobile world is so arranged that an overcharge of gas acts to choke off the water feed until the gas pressure is restored to normal. This automatic regulation of the gas is obtained in a very novel manner, which may best be explained by reference to the accompanying engraving. The illustration represents a sectional view through the generator. The water is held in reservoir, *E*, which is provided with a gas chamber at the bottom, into which the carbide holder is slipped. The holder is held in place by a cap piece having an annular channel in which is placed the rubber washer, *K*, to effect a gas tight connection. The carbide holder is provided at its center with a screen-tube, *L*, into which water is dropped. Passing through the water reservoir and gas chamber is a tube, *M*, containing a wick, *J*. This communicates with a reservoir, and conducts the water through the two-way valve, *F*, to the screen tube, *L*. The water here attacks the carbide, and the gas generated passes up through tube, *G*, to the tip. In case of an over-production of gas, since no other escape is provided for it, the gas is forced to pass into the wick, checking the water-feed. Thence it bubbles up through the reservoir and escapes through an opening in cap, *D*. This opening is filled with wool to prevent spilling of the water. When the gas pressure is sufficiently relieved, it is evident that normal conditions will be restored. To extinguish the light, the valve, *F*, is turned, shutting off the water feed and opening a vent, *H*, in the gas chamber. The gas already formed in the chamber will pass out through this vent in preference to the smaller vent at the burner tip. This results in extinguishing the light and, at the same time, prevents the storing of a dangerous charge of gas.



CROSS-SECTION OF ACETYLENE LAMP.

A NEW DETACHABLE TIRE.

The present vogue of detachable pneumatic tires for automobile use has been increased, if anything, by the invention of a tire that is readily detachable with the use of no tool other than a small monkey wrench. Our cross-sectional cut shows very clearly how this is accomplished. The outer tube, or "shoe," of the tire is formed with two flanges flat on the bottom and slightly tapered on their upper edges. These flanges are pressed against each other and the wheel rim by clamping rings slipped over them from each side. The rings are clamped tightly against the flanges by small clips on bolts that pass through the latter from one side to the other of the tire. The clips engage the wheel rim and the clamping ring, and press the



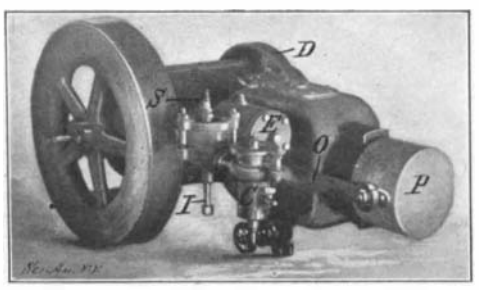
FISK DETACHABLE TIRE.

flanges firmly between the two. The method of clamping on the outer tube is entirely mechanical. As it does not depend on the air pressure in the tire, the latter can not pull off, even if deflated, while the ease and dispatch with which it can be removed, render punctures no longer so much to be feared by the motorist.

A DOUBLE-PISTON GASOLINE MOTOR.

Our illustration shows the double-piston 10 horse power motor used on the Shelby automobile. Although this type of gasoline engine has been used in America for the past ten years, the Shelby is the first to use it here on an automobile, notwithstanding that three or four French machines have used it successfully for some time.

The motor has two pistons, each of which has a 5-inch stroke and works in a cylinder having a 6½ inch bore. The explosion occurs between the pistons and drives them apart. One is connected to the crank shaft in the usual manner, and the other, which is shown covered by a cap, *L*, is connected through side connecting rods, *O*, to two other opposed cranks on the crank shaft. Thus a push and a pull are communicated to it at the same instant by the two pistons, the entire force of the explosion being transmitted directly to the crank shaft. Besides requiring but one set of valves and one spark plug, this arrangement furnishes a well-balanced motor. In the cut, *E* is the exhaust valve chamber, *I* the inlet valve, *C* the carbureter, *S* the spark plug, and *D* the slow-speed gear drum. The inlet valve is suction-operated. The carbureter has a float-feed chamber with cork float and a central inlet pipe rising to the level at which the gasoline is to be kept. As soon as the level falls



DOUBLE-PISTON GASOLINE MOTOR.

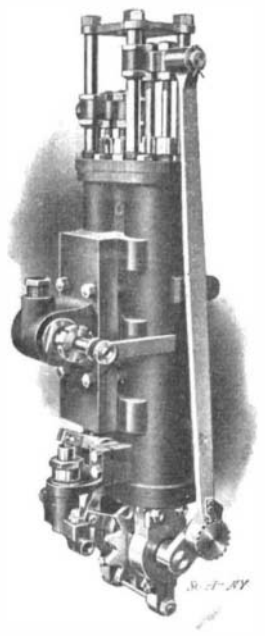
below this pipe, the valve is opened and more gasoline flows in. To speed up the motor a circular plate on top of the carbureter is turned slightly, a screw thread causing it to rise and admit more auxiliary air between its edge and the top of the carbureter proportionally as it opens the needle valve. This keeps the mixture constant, while at the same time feeding more gas to the motor.

The transmission gear is of the planetary type, giving three speeds and a reverse. The latter is obtained by sliding planetary pinions in mesh with internal gears in drum, *D*. The first and second speeds forward are obtained by the application of band brakes, while on the high gear the whole system is locked together, thus allowing of a very efficient and quiet drive by chain to the rear axle.

A double-cylinder motor of this type, with four pistons, is used in the tonneau car of this company, while the neat runabout with let-down front seat is fitted with the single-cylinder engine. Both are very easy, quiet-running cars, due to the improved type of motor.

A VALVELESS AUTOMOBILE STEAM ENGINE.

An exceedingly compact and simple automobile steam engine is the 5 horse power Fox motor illustrated herewith. This engine has no valves whatever, with the exception of the throttle seen on the center of the steam chest in front. The steam is let into the cylinder and cut off at one-half the piston stroke by an arrangement of the parts, whereby each cylinder and piston act as a valve for the opposite ones for both the inlet and the exhaust. The engine has two 2½ x 3-inch cylinders. Two piston rods from each piston project through brass stuffing boxes in the top of the cylinders, and drive crossheads with adjustable bearings, connected to the crank shaft by hand-forged driving arms. The crank shaft is fitted with ball bearings throughout. An eccentric-driven pump at the bottom of the engine supplies water to the boiler.

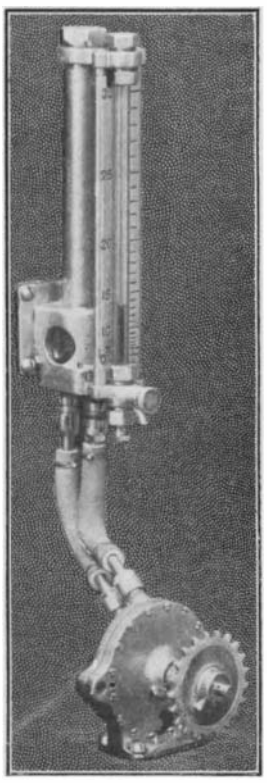


VALVELESS STEAM ENGINE.

This motor has only about one-third as many parts as the ordinary slide-valve engine; and it can not be damaged by sudden reversing, as steam is cut off by the throttle during this operation. The stuffing boxes are readily accessible, and, since they are on the top of the cylinder, the packing is not injured by water from condensed steam, when the engine cools.

A DEVICE FOR INDICATING THE SPEED RATE OF AUTOMOBILES.

A novel form of speed indicator for automobiles is shown in the accompanying illustration. This tachometer, while depending upon centrifugal action for its operation, differs from other types in applying this force directly to a liquid which is raised or lowered in an indicator tube in a fixed ratio to the speed at which the vehicle travels. The centrifugal action is exerted by a small pump consisting of a casing inclosing a paddle-wheel mounted therein. The shaft on which the paddlewheel is mounted projects from the casing and is provided with a sprocket wheel, which is suitably connected by a chain with one of the wheels. The indicator portion of the instrument, which is preferably placed on the dashboard, comprises two vertical tubes communicating with each other at their upper ends. One of these tubes is the reservoir and the other, which is made of glass, is the indicator. These tubes are connected by rubber tubing to the pump, the reservoir communicating with the casing at the center, and the indicator at the periphery. A colored liquid, preferably alcohol, is placed in the tube. Normally, when the pump is not in action, the liquid will stand on a level with the zero mark on a scale placed back of the indicator tube. When the vehicle is in motion, the paddlewheel is rotated. This serves by centrifugal force to draw down the liquid in the reservoir tube and force it up in the indicator tube. The difference in level of the liquid in the two tubes will be proportional to the square of the speed of rotation, and this is allowed for by the graduations on the scale. In case of an excess of speed, the liquid is not lost, but flows over into the reservoir at the top. In adjusting the instrument, the cap at the upper end of the tube is removed and sufficient liquid poured in at the top or drawn off through a stopcock at the bottom to bring the level to the zero mark. Once adjusted, the instrument needs no further attention, for, since it is inclosed and sealed, no evaporation can take place. The absence of springs, pivots, small details, and a multiplicity of wearing parts is a commendatory feature of this type of speed indicator.



VEEDER TACHOMETER.