

Some Automobile Novelties.

STORM PROTECTION FOR THE AUTO DRIVER.

The latest addition to the equipment of a well-appointed car is the "cling tight storm apron," manufactured by the Beebe Elliott Company of Racine, Wis., and shown in the accompanying illustration. The storm apron, designed to protect the driver of the car in cold or wet weather, is made of water-proof material, with a spring steel band to encircle the waist and another band to spring about the ankles. The apron cannot slip down from the waist, and if placed over the ordinary lap-robe, holds it snugly about the person of the driver in a manner never possible before. There is perfect freedom for the feet to operate the pedals on the floor of the car. The wind and water are kept out, and the comfort of a warm robe about the body is kept in. There are no straps or buttons or buckles to cause annoyance, and the apron may be put off or on in an instant.



A STORM APRON FOR CHAUFFEURS.

A NOVEL CARRYING CASE FOR AUTOMOBILE TIRES.

One of our illustrations shows a new metal carrying case for automobile tires, which offers several advantages over the ordinary rubber covering that is placed over a shoe. This case is made of pressed steel, and weighs only about 25 pounds. It is hinged so that the outer half can be opened instantly, as soon as the lock has been unfastened. The spare shoe can then be quickly removed if it is needed. In the center of the case there are two spaces, the upper one being for spare tubes, and the lower one for tools. These cases are made sufficiently large to accommodate two $4\frac{1}{2}$ x 36-inch shoes, and the fact that they provide waterproof and burglar-proof holders for the tires and tools is sufficient to warrant almost any automobile user purchasing them. Added to these advantages is that of ready and quick accessibility when the tire is needed. At the recent Automobile Show in the Grand Central Palace, one of these cases made of spun copper was exhibited. Although it had been in use on a car for nearly 3,000 miles, there was practically no indication of this from its appearance. When made of pressed steel, these cases will be even more durable.



A NOVEL TIRE-CARRYING CASE.

A NEW SUSPENSION FOR AUTOMOBILES.

The ordinary elliptical spring, if it could be made flexible enough, would serve as an excellent device for relieving an automobile body of the tossing to which it is subjected in passing over inequalities of the road and would save much tire and machinery trouble. Unfortunately, if the spring is sensitive, it is too weak, so that the body is bound to strike. It has, therefore, been the practice to make the spring so stiff that less comfort is obtainable. Moreover, even the stiff spring is not always able to cope with the violent tossing, for which reason shock absorbers have come into more or less general use. It is the purpose of the shock absorber to relieve the elliptical spring of unusual strains, which purpose it accomplishes either by friction devices, or recoil cylinders.

Mr. Oscar Stolp, of 20 Fletcher Street, New York, N. Y., has adopted an entirely new means of overcoming the suspension problem. In his device he abandons friction devices and recoil cylinders and employs instead a very simple equalizing lever which dissipates the tossing effect, not by causing it to overcome friction or compress air or a liquid, but by changing its direction and causing it to expend itself in holding the car down on the road. The accompanying illustration shows the device. To the chassis 1, an elliptical spring 3 is secured by hangers 2. The axle 6 is mounted not at the center of the elliptical spring, but at the end of an equalizing lever 5, which is fulcrumed at 4 (the center of the elliptical spring). The other end of the equalizing lever is connected with a coil spring inclosed in a case 7. When the car strikes a depression the short arm of the equalizing lever is thrown up and the long arm down, thereby distending the coil spring and pulling the chassis down. The result is that the elliptical springs are entirely relieved of strain, so that they can be made sensitive and responsive. This new lever suspension has the merit of adapting itself to the character of the road, for it is obvious that the arm 5 will be rocked to a degree corresponding with the tossing effect. The inventor of this device has traveled over 20,000 miles on a car fitted with solid rubber tires and claims that he rides as comfortably in his vehicle, if not more so, than would be possible with an ordinary shock absorber on a pneumatic tired car. The device would seem to be particularly applicable to the high-speed roadsters which are now so popular—cars which are apt to leave the road when they strike a very slight obstacle and which obviously need some mechanical device for holding them down.

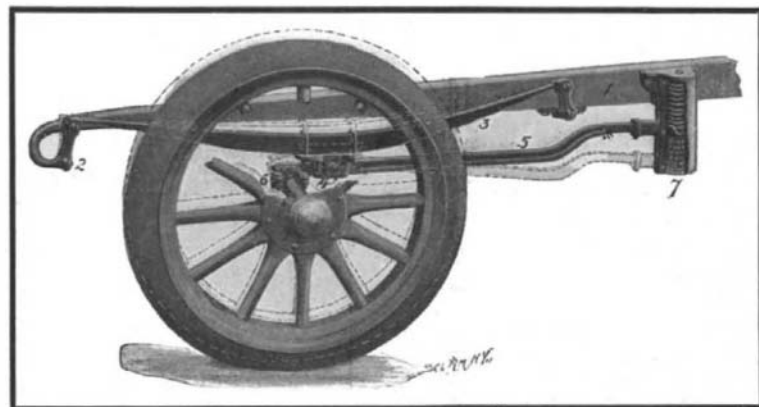
A NOVEL SPEED-CHANGING GEAR.

A novel speed-changing gear has been patented by Joseph A. Wilkin, of Matamoras, Pa., which is adapted for use on machine tools, automobiles, and motor boats. The device has been examined by Prof.

Arthur L. Wiliston, who reports that in his opinion it is "thoroughly mechanical in principle and altogether practical; it is positive in its action; it is simple and effective in its operation; and it has many advantages not possessed by any other change speed mechanism."

In the accompanying illustration the device is shown applied to the transmission of an automobile.

The engine shaft and the shaft to the rear axle or main driven shaft are in alignment but separated. The engine shaft carries a gear *A*; the rear axle shaft carries the gears *B* and *C* and the sprocket *D*. These three gears and the sprocket are loosely mounted on their respective shafts, but any of them can be made fast by moving the lever *a* of the appropriate clutch.



THE STOLP EQUALIZING SUSPENSION LEVER.

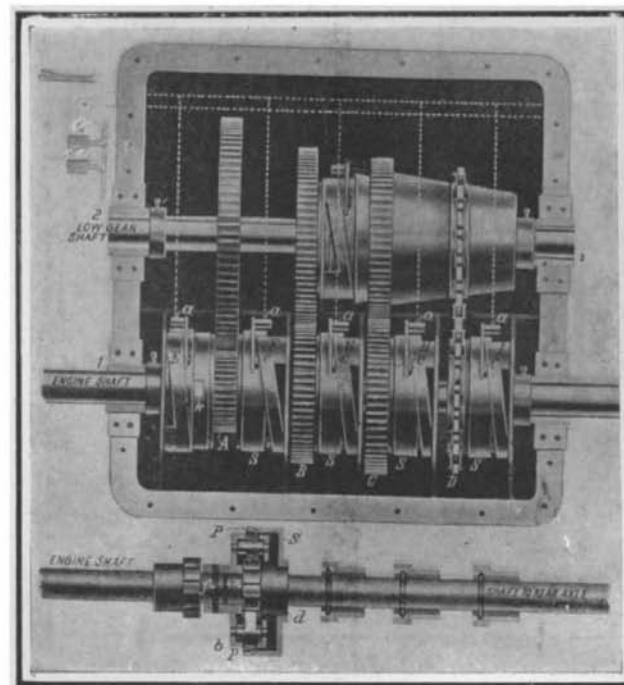
The dotted lines show the position of the parts when displaced by an inequality in the road.

The corresponding or mating three gears and sprocket wheel mounted on the countershaft and low gear shaft above the engine shaft, are all fixed, except for the provision of a slip clutch.

The engine shaft may drive the rear axle shaft through either pair of gears *A* and *B* or *A* and *C*, or may drive it in the reverse direction through the gear *A* and the sprocket *D*, simply by throwing the levers of the appropriate clutches and making the proper gears or sprockets fast to the engine and the driven shaft. The reverse motion of the driven shaft may also be obtained by means of two sprocket wheels and a chain, or by means of two gears in place of these sprockets with an idler running between them on an independent shaft.

The clutch which connects the gears with the driving or driven shaft is shown separately. Securely keyed to the shaft is a bushing to which a ratchet wheel *d* is attached. On the face of the gear a disk *b* is fixed, which is provided with four pawls *p*, so located that they may engage in the ratchet wheel simultaneously at four points equidistant on its circumference. By throwing these pawls in or out, therefore, the gears or sprocket may be made fast to or released from the shaft. The pawls may be held in action either by springs or by a pressure created on them through lugs located on their hubs by the driven or the driving gear. The operation of the pawls is controlled by a sleeve *s*, conical on the inside, which moves to the right or to the left longitudinally with the shaft and which permits them to engage in the ratchet wheel or holds them out of mesh with it. These conical sleeves are shown at *s* in the upper view. On their outer surface there

(Continued on page 67.)



A NOVEL SPEED-CHANGING GEAR.

The gears are always in mesh and it is possible to change directly from a low to a high speed.

than it will percolate through chamois skin. Furthermore, chamois skin does not efficiently separate water from gasoline, automobile superstition to the contrary notwithstanding. Water settles, being heavier than gasoline. Hence the pressure of the inpouring gasoline forces the water through the skin, with the possible exception of a few drops left on the surface. Again, only one out of a hundred new chamois skins is thick enough and uniform enough to remove some water from gasoline; on the other hand, gasoline runs through this kind of a skin very slowly.

The new automatic separator mentioned prevents water from entering the carbureter, even if the gasoline tank is full of water and dirt. When a certain amount of water has accumulated in the separator the gasoline line is automatically shut off, until the water is drained by opening a pet-cock at the bottom of the separator. Water being heavier than gasoline, will naturally settle to the bottom. Therefore, when the pet-cock, which is the lowest point in the gasoline tank, is opened, all the water will run out of the tank through the separator, taking the dirt with it. As soon as the water has escaped, the gasoline line is automatically opened. The motor will start on the first turn of the crank. The gasoline flows downward into the separating chamber and thence upward through an extremely fine mesh wire gauze to the outlet. Clogging of this gauze is impossible because the gasoline flows against gravity.

A NOVEL SPEED-CHANGING GEAR.

(Concluded from page 58.)

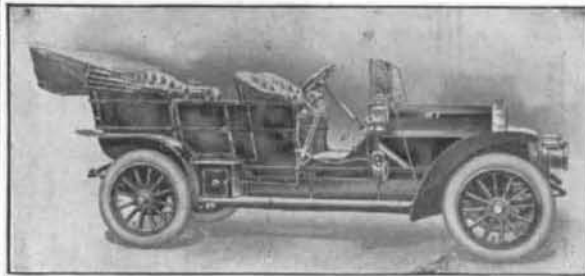
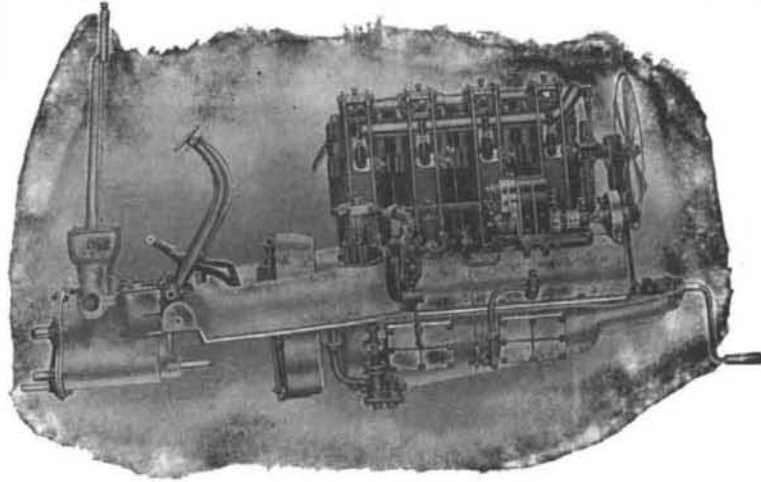
are two lugs which move in the spiral annular grooves in the member c. A twist of the conical sleeve s by means of the levers a will cause them to travel parallel with the shaft and will permit the pawls to engage in the ratchet wheels or will prevent the pawls from thus engaging. The shaft transmits the power through a rigid pin to the ratchet wheel, by which it is in turn transmitted to the four pawls. From the pawls the power is transmitted through the lugs located on the hub of each pawl, or through the disk to which the pawls are attached, to the gear. When the gear is the driver and the shaft is the follower, the power is transmitted in the reverse order.

The clutch E is operated when it is desired to drive the countershaft through the gear A, but when it is desired to drive the rear axle shaft directly from the engine shaft without going through the countershaft, the clutch F can be operated. The lower view illustrates this. The line x, the dividing line of the shafts, lies inside of the disk b, so that the shaft can never get out of line. The hub of the disk b is keyed to the driving shaft by the pin f, so that b always turns with the driving shaft. The ratchet wheel d is keyed to the driven shaft at e. The disk b forms a part of a casing which holds the pawls p. When these pawls are in mesh with the ratchet wheel d, the rear axle shaft will be directly and rigidly connected with the engine shaft.

When the engine shaft and rear axle shaft are direct connected, the countershaft and none of the gears are running; all the clutches except F are out; and the wheels A, B, C, and D are loose upon their shafts. Any number of gears can be used and therefore any number of speeds obtained.

The device furnishes a positive drive with no chance of slippage, without lost motion and with inappreciable wear because the gears run in oil. There is no possibility of stripping because the gears are always in mesh. The pawls in the opinion of Prof. Williston are "superior in strength and reliability to gear teeth as a means of transmitting power," and transmit the load "more nearly in direct compression than is the case with gear teeth." The conical sleeve is about as simple a disengaging and engaging mech-

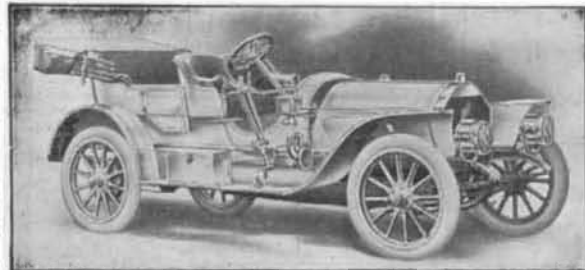
KNOX 1909 MODELS and What Makes Them Go



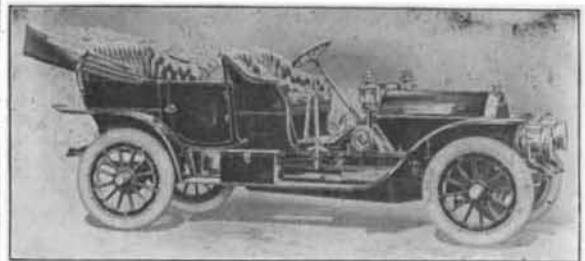
"M" Touring Car



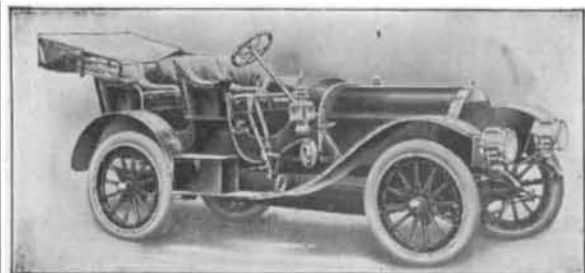
"M" Sportabout (Single Rumble)



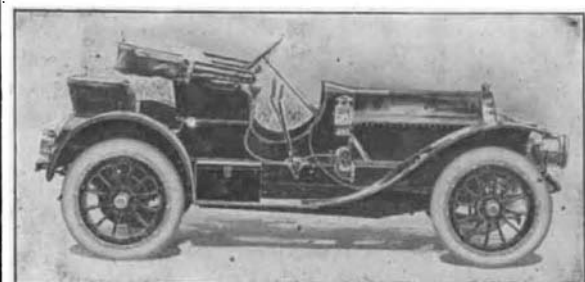
"O" Tonneauette



"O" Touring Car



"O" Sportabout (Double Rumble)



"O" Sportabout (Single Rumble)

KNOX MODEL "M" SPECIFICATIONS

BODY, straight line design, made from steel and aluminum.
 COLOR, auto gray, royal blue, brewster green, carmine.
 UPHOLSTERY, best quality hand buffed leather, in following colors: Gray, black, red.
 MOTOR, Knox water-cooled three-point suspension. 4 cylinders, 5 1/2-inch bore, 5 1/2-inch stroke, made with detachable heads, valves in the head.
 POWER, 55.89 H.P., A.L.A.M. standard.
 TRANSMISSION, selective Mercedes type, four speeds forward, one reverse.
 CLUTCH, three-plate type incased in fly wheel, fitted with cork inserts.
 DRIVE, through bevel gear and side chains.
 IGNITION, jump spark, two complete systems, high tension magneto, vibrating coil and timer, two sets of plugs.
 WHEEL BASE, 127 inches.
 TREAD, 56 inches.
 WHEELS, 36 inch Schwarts make with interlocked spokes.
 RIMS, Flak Demountable, Marsh or Standard Clincher.
 LUBRICATION, De Dion system.
 EQUIPMENT, artificial leather or mackintosh cloth top, side curtains, folding glass front, mirror lens headlights, generator, baggage rack, square oil side and tail lights, mat, extra rim, tire repair kit, pump, tire carrier, tire cover, jack and full set of tools.

KNOX MODEL "O" SPECIFICATIONS

BODY, designed on latest approved lines, made from steel and aluminum.
 COLOR, auto gray, royal blue, brewster green, carmine.
 POWER PLANT, Knox unit construction three-point suspension.
 MOTOR, Knox water cooled, 4-cylinder, 4 1/2 x 3 1/4 inches, made with detachable heads, valves in the head.
 POWER, 38.025 H.P., A.L.A.M. standard.
 TRANSMISSION, selective type sliding gear, three forward speeds and reverse.
 CLUTCH, three-plate type incased in fly-wheel and running in oil, cork inserts.
 DRIVE, straight line shaft through bevel gear.
 IGNITION, jump spark, two complete systems, magneto and dry cells.
 CARBURETOR, automatic.
 WHEEL BASE, 114 inches; front axle directly under radiator.
 TREAD, 56 inches.
 TIRES, 34 x 4 inches.
 RIMS, Flak Demountable, Marsh or Standard Clincher.
 LUBRICATION, De Dion system.
 BRAKES, both acting on rear wheel, separate drums, service brake by foot pedal, emergency by hand lever.
 SPEED, 60 miles with 3 to 1 gear ratio.
 EQUIPMENT, artificial leather top coverings, both seats, side curtains and storm front, 8-inch mirror lens headlights, generator, square oil side and tail lights, floor mat, extra rim, tire repair kit, tire pump, tire carrier, tire cover, jack and full set of tools.

THE KNOX POWER PLANT

The Power Plant is the heart of the automobile and should be the first point to be considered by the purchaser in the selection of a satisfactory automobile.

The motor car with a perfect power plant, although poorly designed otherwise, will give good service some of the time, while the car equipped with a power plant that proves a failure, cannot be depended upon at any time, and is a continued source of trouble, and no matter how perfect the car may be otherwise, it must have a power plant to run at all.

1909 Knox Models not only are perfect in design, equipment and finish, but they have this first and most important step toward the perfect automobile, a POWER PLANT that has proved to be the most efficient and satisfactory, and its ability has been demonstrated fully in contests of 1908.

In Hill Climbs, Speed Contests, long distance races and endurance tests, having defeated 165 cars including every well known make, regardless of power or selling price, and last but not least, THEY ARE WINNERS OF CUSTOMERS.

The Knox Models "O" and "M" cars combine the very latest ideas:

- Unit construction.
- Three point suspension.
- Reliable and economical lubricating system; no smoke or odor.
- Cylinders cast separately, with detachable heads with valves in the head, without cages.
- Straight line shaft drive, made possible by slanting the power plant.
- Three plate clutch, with cork inserts, encased in flywheel.
- Accessibility of all working parts.
- Double system of ignition.

Mr. Dealer: The cars with the most good qualities are the easiest and best to sell.

Write for Catalogue "B."

KNOX AUTOMOBILE CO., Springfield, Mass.

Member A. I. A. M.

anism as can be imagined. The clutch, moreover, can be operated in all positions, which is not the case with sliding gear devices. Any clutch can be operated regardless of the position of the other clutches, so that it is unnecessary to pass progressively from low speed through the intermediate to high speed.

One hand lever only is required to operate all gears. The dotted lines in Fig. 1 indicate shafts leading to hand and foot levers. The hand lever operates clutches E and F in Fig. 1, which it will be noticed face each other, thereby causing pawl K of clutch E to be thrown in at the same time pawl on clutch F is cut out. In this position the spiral grooves run in the same direction. It is possible to connect the small cranks of clutches E and F to the same hand lever, and operate both clutches with one movement of hand lever, thus throwing the power from the direct drive to the countershaft or from the countershaft to the direct drive as desired. The low and intermediate gears are operated by foot levers. The low gear has an automatic reversible clutch. If power is stronger to go forward, the forward pawl will engage, and if the power is stronger backward, the backward pawl will engage. For example: If a car is coasting down hill and the engine is working on the low gear forward, the speed of the car is greater against the low gear and acts as a brake.

RECENTLY PATENTED INVENTIONS. Pertaining to Apparel.

HEAD-COVERING.—W. BERNSTEIN, New York, N. Y. The object of this invention is to provide a head covering for infants and children, arranged to properly fit the head and to allow convenient washing and cleaning of the covering with a view to insure long service and to maintain the covering in a neat and tidy condition.

Electrical Devices.

COMBINED FUSE-PLUG AND CIRCUIT-CLOSER.—F. F. VINDEMORE, Fairview, N. J. Means provide in this case for closing one electric circuit of high potential, by the operation of an electromagnet energized upon the closing of a second circuit preferably of low potential, and more particularly to certain improvements, whereby the circuit closer is combined with the fuse plug, and the two supported upon a single base.

Of Interest to Farmers.

BET-TOPPING MACHINE.—J. N. HANNA and D. K. WAUGH, Ordway, Colo. Swiveled colters are placed at opposite ends of the apparatus and in advance of the guard wheels on the tapping mechanism to cut off tops and trash and assist in guiding the wheeled truck; shovels are arranged having landsides to throw the tops, etc., cut by the colters to the outside of the topping mechanism. Means provide for taking the weight from the wheels as the guard passes over a high beet top and thus prevent the wheels from striking the beet, which avoids breaking the high tops. A mold-board cutter forward of the colters removes to one side all rank tops standing upright.

DEVICE FOR SUPPORTING AND ADJUSTING THE CONCAVE OF A GRAIN-THRESHER.—P. HASTER, El Paso, Wis. The thresher affords inexpensive and convenient means for reliably supporting the toothed concave of the machine in a substantial upright position, in front of the toothed cylinder thereof, and enables the speedy outward rocking adjustment of the concave while the machine is running at full speed, thereby facilitating the tightening of loose teeth thereon or replacing a broken one, as occasion may require.

Of General Interest.

EXTENSIBLE PICTURE-FRAME.—C. VAN DER BOOM, Platte, S. D. The object here is to produce a frame which can be adjusted so as to hold pictures of various dimensions within certain limits. Further, to enable the frame to be hung with its longitudinal axis in a vertical or a horizontal position, and to provide means for removably attaching a supporting leg to the back of the frame in such a way that the frame may rest upon a support with its longitudinal axis in a vertical or horizontal position.

BOTTLE.—F. SONNENFELD and R. FISHER, New York, N. Y. The bottle has a valve-controlled discharge nozzle carried by the neck and communicating within the neck with a tube extending substantially to the bottom of the bottle. In combination with this form a stopper having a valve-controlled passage therethrough is employed, the means for operating the valve being below the top of the stopper, so that it cannot be operated acci-

(Continued on page 69.)