

**Footstarter.**—The footstarter shaft upon which the crank is mounted is splined, and the crank is split at its lower end and provided with a bolt which tightens the crank on the splined shaft. The return spring is carried around outside the shaft bearing tube, one end being anchored to the bolt. If this return spring has been removed, to refit pass a piece of cord under hook of the spring and pull it down until it is again hooked round the bolt. Afterwards tighten up the bolt. Should the footstarter crank be removed, refit so that it is just over vertical, *i.e.*, inclined slightly to the rear of the machine.

## TRANSMISSION.

**Adjustment of Chains.**—To adjust the chain from engine to gear box it is only necessary to slack off the two nuts on top off the bracket and slide the box bodily backwards by means of the adjusting sleeve situated at the rear of bottom bracket. Use the special spanner for this adjustment sleeve.

*It is important that the nuts are screwed tightly again after adjustment.*

**Back Chain.**—Slack off the nuts on each side of back hub spindle and move the wheel backwards by means of the adjusting screws in fork-ends. Care must be taken to adjust each side equally or the wheel will be out of alignment. (see adjustment gauge (Illustration 30). Screw the spindle nuts up tightly again after the chain is properly adjusted. It may be found that moving the wheel back has caused the brake to be "on." This is easily rectified by means of the brake adjustment.

If the chain is too slack it is apt to "whip," which intensifies the wear and tends to break the rollers, especially in the case of the front chain. If on the other hand it is too tight, a crushing effect is produced on the rollers, and the whole chain is strained unduly.

The chains should be adjusted and kept adjusted, so that they can be pressed down in the centre with the finger from  $\frac{3}{8}$  in. on the front chain, and about  $\frac{3}{4}$  in. on the back chain.

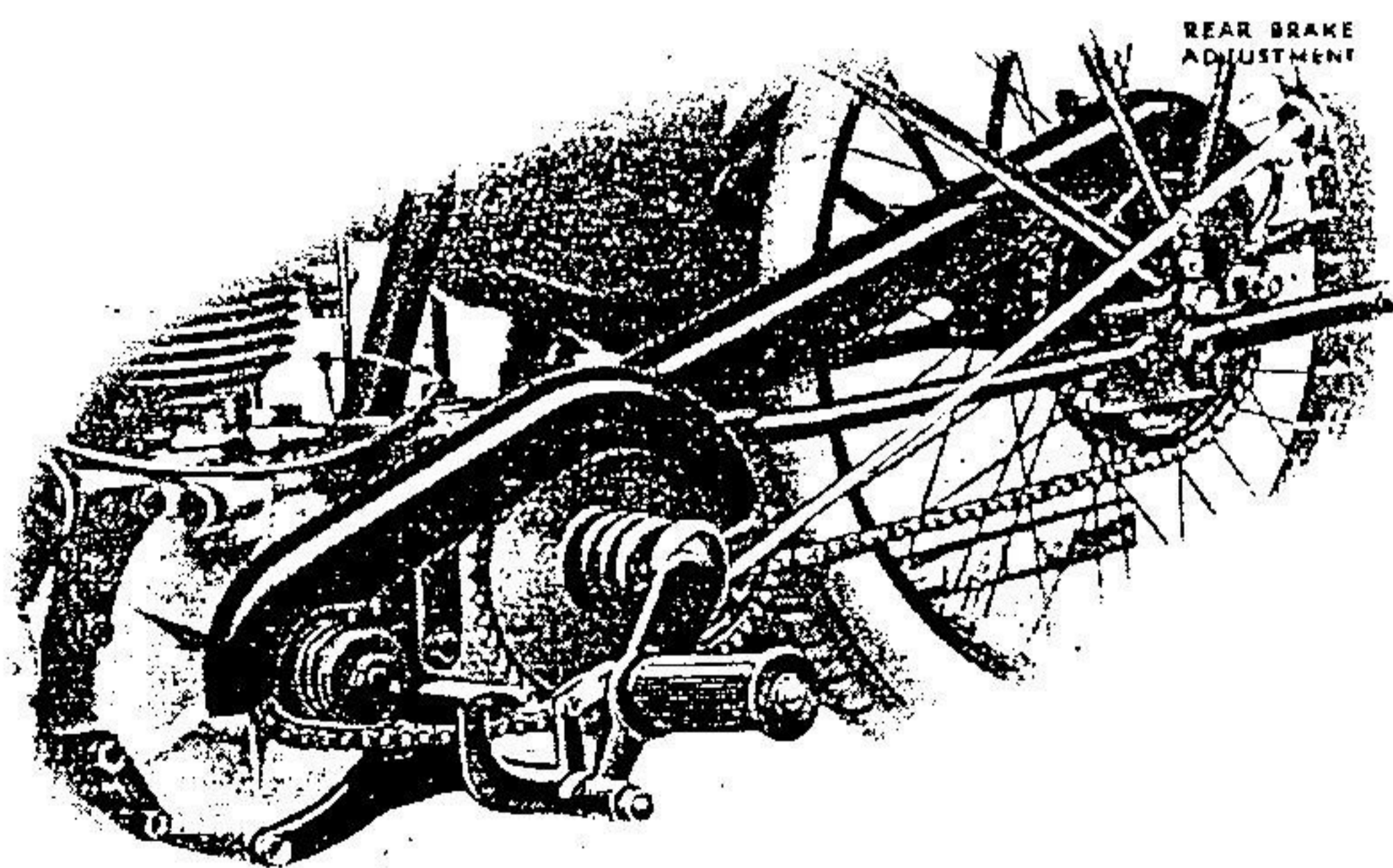


Illustration 26.

CHAIN CASE, AS FITTED TO 2.48 H.P. MODELS.

If lubrication or adjustment is neglected, broken rollers may occasionally be found. The chain can, however, be easily repaired with the Pennant Chain Rivet Extractor (Illustration 28) and a few spare parts. This tool provides a simple means of removing the rivets which cannot be filed down, as they are casehardened. It can also be used for putting in a new outer link.

Outer links can be removed with this tool by pushing the rivet heads through the plate.

The illustration shows clearly the method used in the removal of the outer link by means of this tool.

## CHAIN RIVET EXTRACTOR.

**To Remove Complete Links.**—Screw down the punch on to the head of each rivet in turn through the top plate. Both rivets should be pushed out from the same side of the chain.

**To Remove Broken Links.**—Insert chain roller between the jaws and screw down the punch in order to press the head of the rivet through the top plate. Remove chain extractor, and link will fall out.

**Note.**—Before attempting to extract a rivet, compress the ends of the jaws to obtain a grip on the chain roller.

The illustration on page shows all the parts necessary to effect repairs to a chain.

To shorten a chain containing an even number of pitches replace by parts No. 30 and 26.

To shorten a chain containing an odd number of pitches replace by parts No. 13.

To repair a chain with a broken roller or faulty inside link, replace by parts No. 14.

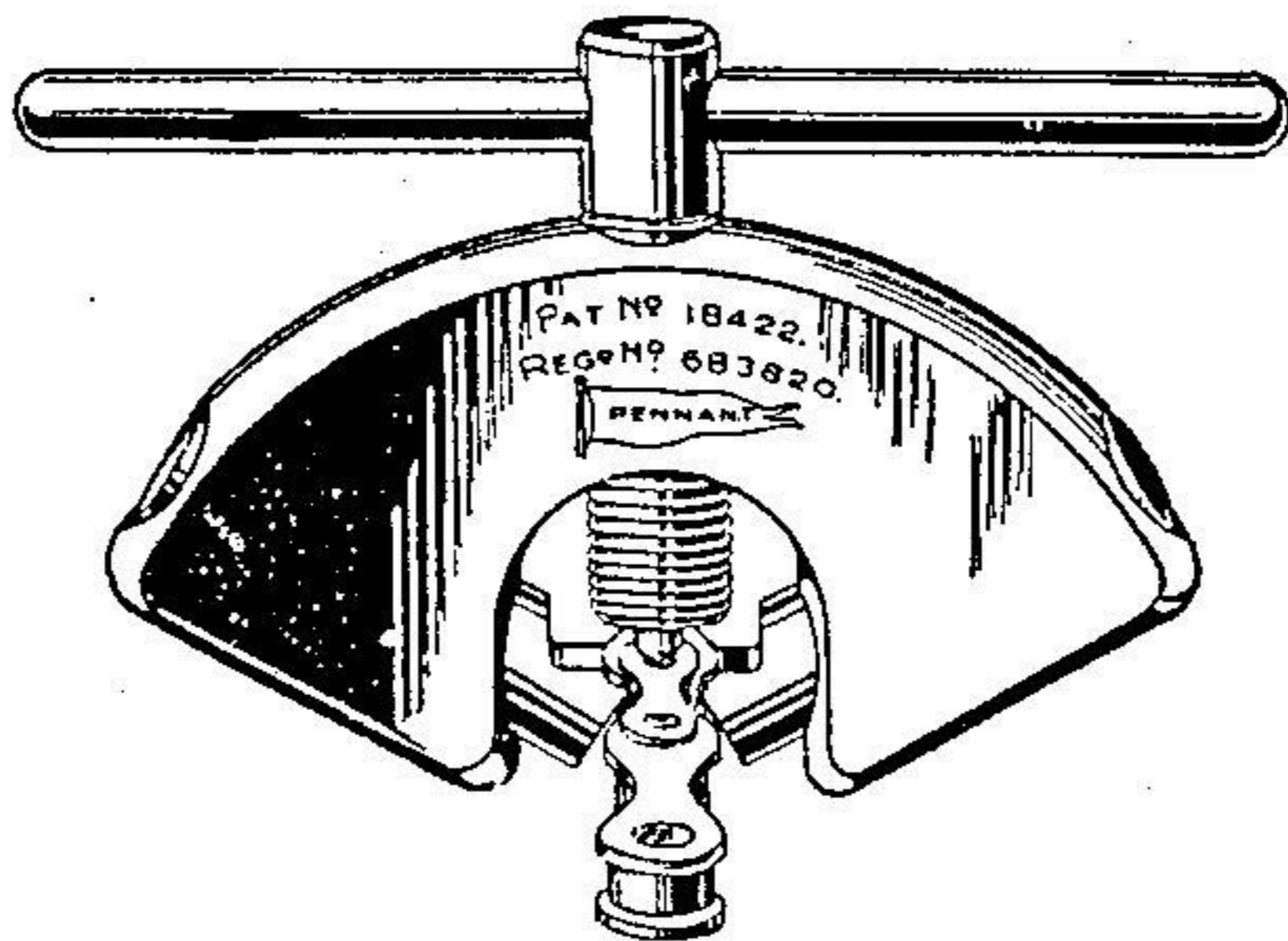


Illustration 28.

### CHAIN RIVET EXTRACTOR.

For joining up any length of chain where extremities are inside links, use part No. 26.

When a chain is joined up with a spring clip, it is most important that the clip is correctly fitted over the cover plate. *The open end should always face in the opposite direction to which the chain travels.* Fit this so that the plate and spring clip are on the inside of the chain i.e., next the spokes.

# STEERING HEAD AND HANDLEBARS.

With the exception of Model M12 all the 1929 A.J.S. Machines are fitted with adjustable handlebars. If the rider wishes to make any adjustment, slacken off the bolts which pass through the the split lugs which connect handlebars to the forks. It is important, however, that these bolts are carefully tightened up after this operation.

In the case of Model M12, unscrew the bolt which will be found in the centre of the handlebars about four or five turns and give this a sharp tap with a hammer. Slacken the nut of the bolt which passes through the split lug round steering head and the bars can be raised or lowered as desired, afterwards tighten up the bolt. To adjust for any play in the ball head, slack off the split lug referred to and adjust by the large hexagon head nut on top of steering column, turning to the right to take up slack and vice versa. Afterwards tighten up the bolt of split lug.

**Adjustment of Steering Head.**—Models M1, M2, M3, M4, M6, M7, M8, M9 and M10. Slacken nut which bolts the split lug round the ball head and adjust large hexagon nut by turning to the right to take up slack and vice versa. It is advisable in all cases when adjusting the steering head to place a box or some other article under the crankcase to take the weight off the front wheel, so that the forks may move freely.

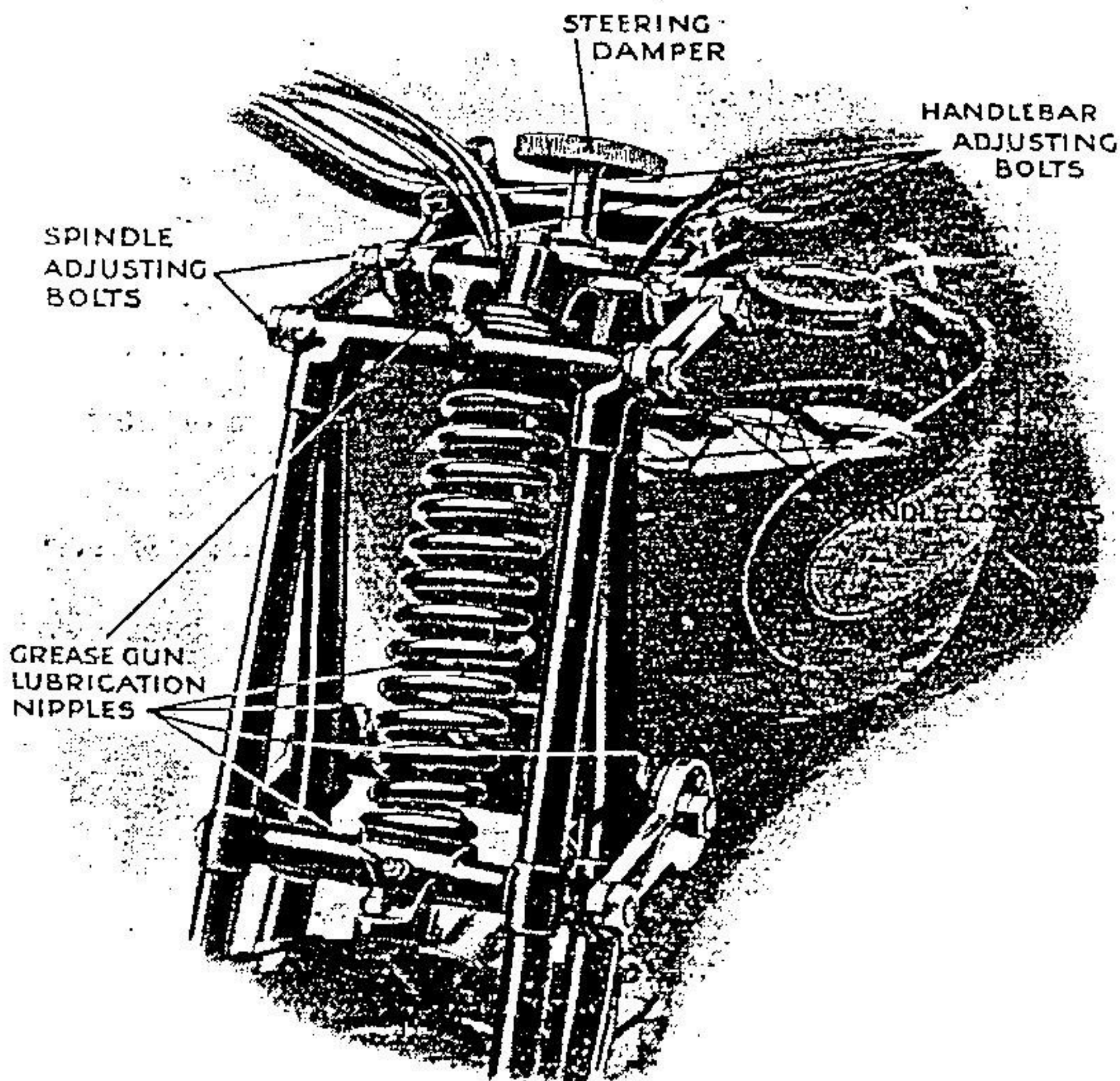


Illustration 29.

FRONT FORKS AND ADJUSTABLE HANDLEBARS, etc.

## STEERING DAMPER.

The manipulation of the steering damper will be perfectly obvious. Turning to the right, that is clockwise, has the effect of tightening the steering. The correct tension may be adjusted to suit individual rider's requirements.

## SPEEDOMETER.

**Removal of Speedometer from the Tank.**—The instrument is let into the tank and is held in position by means of a long pin which passes through the tank and is held by a fly nut. To remove the instrument unscrew the fly nut and withdraw bolt and disconnect the cable drive from the gearbox.

threaded studs on the driving sprocket. There are also three plain studs on the sprocket which act as dummy drivers. These fit into the three remaining holes in the hub flange. *After the sleeve nuts have been unscrewed then unscrew the centre pin and draw it completely out, together with distance piece.* The space now left by the distance piece will allow the wheel to be drawn off the driving studs in sprocket.

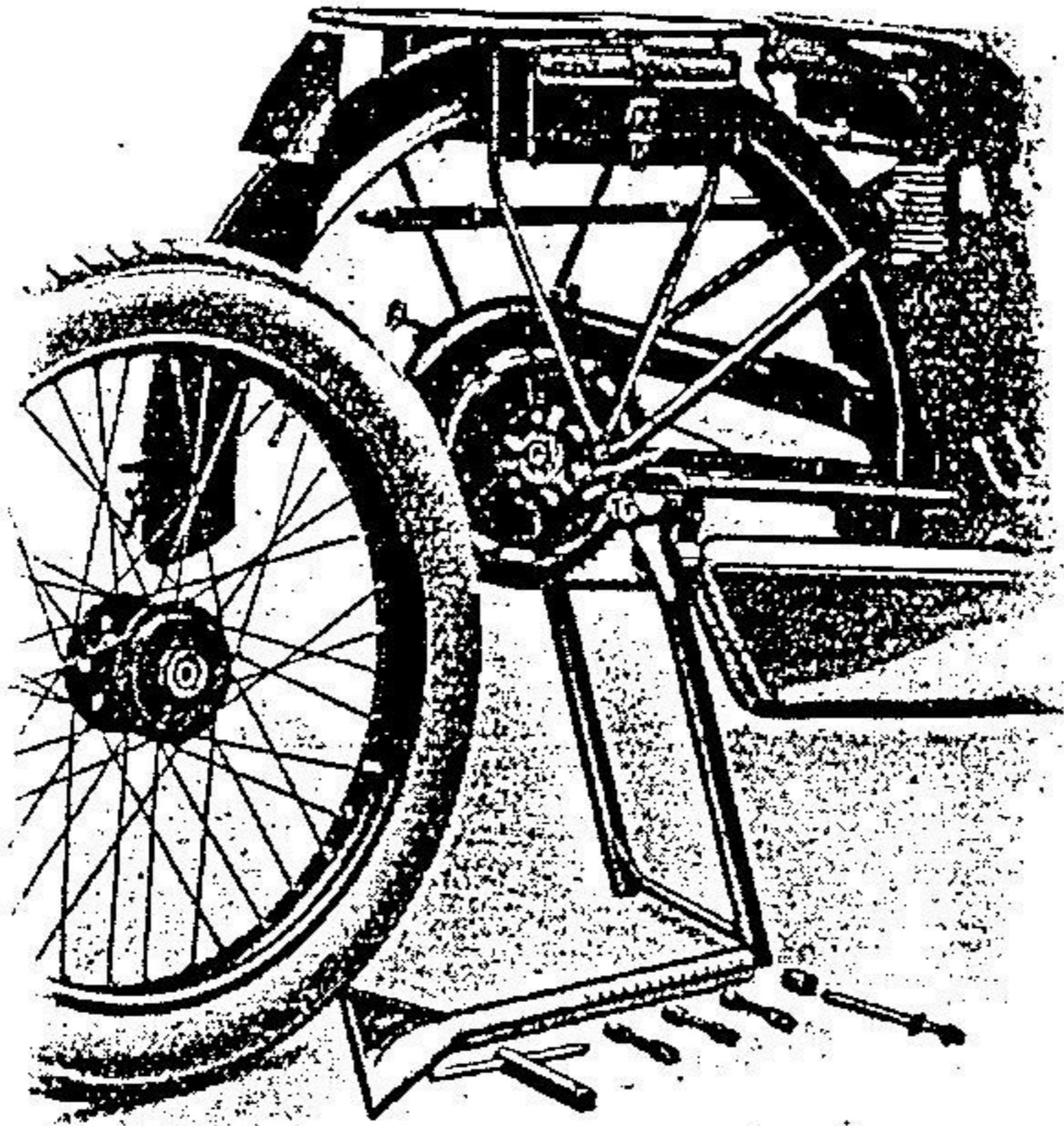


Illustration 31.

### THE A.J.S. QUICK DETACHABLE WHEEL.

To replace the wheel, push it squarely on to the driving studs and *next* (with the distance piece in position) screw up the centre pin moderately tight. *The three sleeve nuts can now be screwed up tightly*, afterwards giving a final turn to the centre pin. It is very important to point out that when the centre pin is removed the wheel is hanging on one fork only, so any rough treatment must be carefully avoided or there is great danger of straining or breaking the fork end. *Under no circumstances must the centre pin be removed until the machine is jacked up on the stand, and the centre pin must always be in position before the machine is taken off the stand again.* If for any reason the wheel should be difficult to pull off the driving studs, screw in the centre pin a few turns (without the distance piece), this will steady the wheel while drawing it off the driving studs.

If the rider wishes to fit a new tube without removing the wheel entire, he must first take off the one side of the tyre and remove the tube in the ordinary way. Next take out the centre pin and distance piece only, leaving the sleeve nuts intact. This will be found to give sufficient space between the hub and the fork end to allow the tube to be passed through and drawn completely out. Now replace the distance piece and the centre pin and proceed to refit tube and cover. Fitting the centre pin first holds the wheel firmly while the tyre is being manipulated.

*Periodically test the centre pin and sleeve nuts with the spanner and keep them tight.* If the sleeve nuts are loose a dull hammering will be felt when driving at slow speeds. If this is noticed, tighten the sleeve nuts at once. When the back wheel is removed, the *wheel only* is taken out, leaving the chain, sprocket, brake, chaincase, etc., remaining in their original position.

If desired, the wheel complete with sprocket, brake, etc., can be taken out, which is quite a simple operation. Remove the back portion of the chain guard, slack off spindle nut and detach brake rod from lever. Take the chain off the sprocket by means of the

## “SAFETY FIRST” HINTS.

1. Never drive faster than you can pull up in the distance you can see.
2. Never attempt to overtake another vehicle on a blind corner.
3. Always keep closely to your right side of the road when taking a blind corner.
4. If the machine will not comfortably climb a hill on high gear it is no disgrace to change down, and besides it is faster to do so.

## SIDECAR HINTS.

It is highly important that the sidecar be in perfect alignment with the cycle or all-round satisfaction cannot be obtained.

The sidecar wheel should be dead parallel with the wheel of cycle and also perfectly vertical. The cycle also should be quite upright, and not leaning either outward or inward. Two straight pieces of wood about 7 or 8 feet long should be used to test the alignment. One piece should be placed alongside both wheels of cycle, and the other against the sidecar wheel, and when measured across each end the distance should be equal.

If the machine has a tendency to steer to the right or to the left, other than that caused by the camber of the road, the motor cycle is either not upright or the sidecar is out of alignment.

After the machine has been in use a little time it sometimes happens that the sidecar fittings will take a permanent "set," causing the cycle to lean slightly towards the sidecar. This is easily remedied by means of the telescopic torque rod, between the seat pillar and the sidecar axle.

When turning a corner sharply to the left, lean the body to the left; when turning to the right lean the body to the right. It is not sufficient, however, to simply lean the body, the rider should throw the weight of his body in the direction he leans.

Always endeavour, however, to turn a corner at a reasonable speed, especially when turning to the left, as centrifugal force puts a great lateral strain on the machine and tends to lift the sidecar wheel from the ground. When turning to the right the lateral strain is thrown in the opposite direction and has a crushing effect on the sidecar axle via the torque rod. When taking a corner to the right at high speeds this strain is terrific and is a fruitful cause of sidecar axles breaking.

The A.J.S. sidecar is made specially strong for this reason, but the rider will be well advised if he takes corners at a reasonable and safe speed.

When turning to the left while climbing a very steep hill at a moderate speed it is not so necessary to lean in that direction, as the natural side-drag of the sidecar tends to turn the machine to the left. When turning to the right under the same conditions the driver and passenger should lean well to the right.

When climbing a very steep hill the passenger should get in a position that will put as much weight as possible on the back wheel of cycle. It will prevent the wheel slipping, and will counteract the tendency of the sidecar to drag. When descending very steep hills it will help the steering also if the passenger will put as much weight on the driving wheel as possible. This paragraph only refers to "freak" hills.

With the exception of the instances mentioned above, there is no necessity for the passenger to be continually leaning to the left or to the right, especially if ordinary corners are taken at a reasonable and safe speed. It is not an uncommon sight to see a passenger continually leaning in one direction or the other, even when turning a very slight curve in the road, with the mistaken idea that it helps the steering. It is not only unnecessary but it makes a toil of what should be a pleasure.

## SIDECAR HINTS—Continued.

The old saying "the race is not always to the swift," is very true, when applied to motoring. The careful driver who keeps up a consistent reasonable speed is usually much more certain of reaching his destination, not only in good time, but in comfort and safety.

As a last word on sidecars, we would earnestly advise our friends to order the complete combination (if this has not already been done), and not fit one of the ultra cheap sidecars with which the market is flooded (some of the expensive ones are very badly designed). They not only give continual trouble but in some cases are positively dangerous. However reliable the motor cycle may be, a sidecar which is always giving trouble spoils the whole combination.

## HINTS AND TIPS FOR HILL CLIMBS AND SPEED EVENTS.

As regards Hill Climbs, it is very difficult to give any definite information regarding gear ratios, as everything depends upon the steepness of the hill, but a 19 tooth sprocket on the engine shaft will suit the average hill, but if the hill be fairly steep, an 18 tooth sprocket on the engine shaft would be faster, and as a rule in a hill climb it is better to gear too low than too high. Deciding on a suitable gear for any particular hill can only come from experience. Where the rider is continually competing in hill climb events, it is a great advantage to have different engine sprockets with a chain for each gear, so that an alteration in the gear ratio can be effected with the minimum of trouble. For 3.49 h.p. machines we advise from 18 tooth to 22 tooth and for 4.98 h.p. machines from 16 tooth to 20 tooth.

**Lubricating Oil.** For racing, the oil we use and recommend is Wakefield Castrol "R," other first-class oils are Shell Super Heavy Oil, Mobilol "D," or Price's Motorine "B" de Luxe.

**Fuel.** In the case of the "M6" models, we have found an advantage by using a mixture of first-class Petrol and Benzole in equal proportions, and possibly some little advantage would be derived from this mixture on the other models. There are now several mixtures of motor spirit on the market, some containing alcohol, but we are not in a position to give any advice on these fuels—it is all a matter for individual experiment.

**Sparking Plugs.** A high-class plug is absolutely essential. There are many good plugs on the market, particularly the K.L.G., Type 341. A cheap unsuitable plug usually causes pre-ignition, giving symptoms of the engine apparently seizing up. The engine suddenly falling off in power, as though a piston seizure is taking place, is usually caused by an unsuitable plug.

**Carburettor.** To get maximum power fit a jet large enough to give a correct mixture with the throttle and air levers wide open. The jet, large enough to give best results with full throttle and full air, would probably cause erratic running at slow speeds, but in speed events and hill climbs one is more concerned with high speeds than slow speeds.