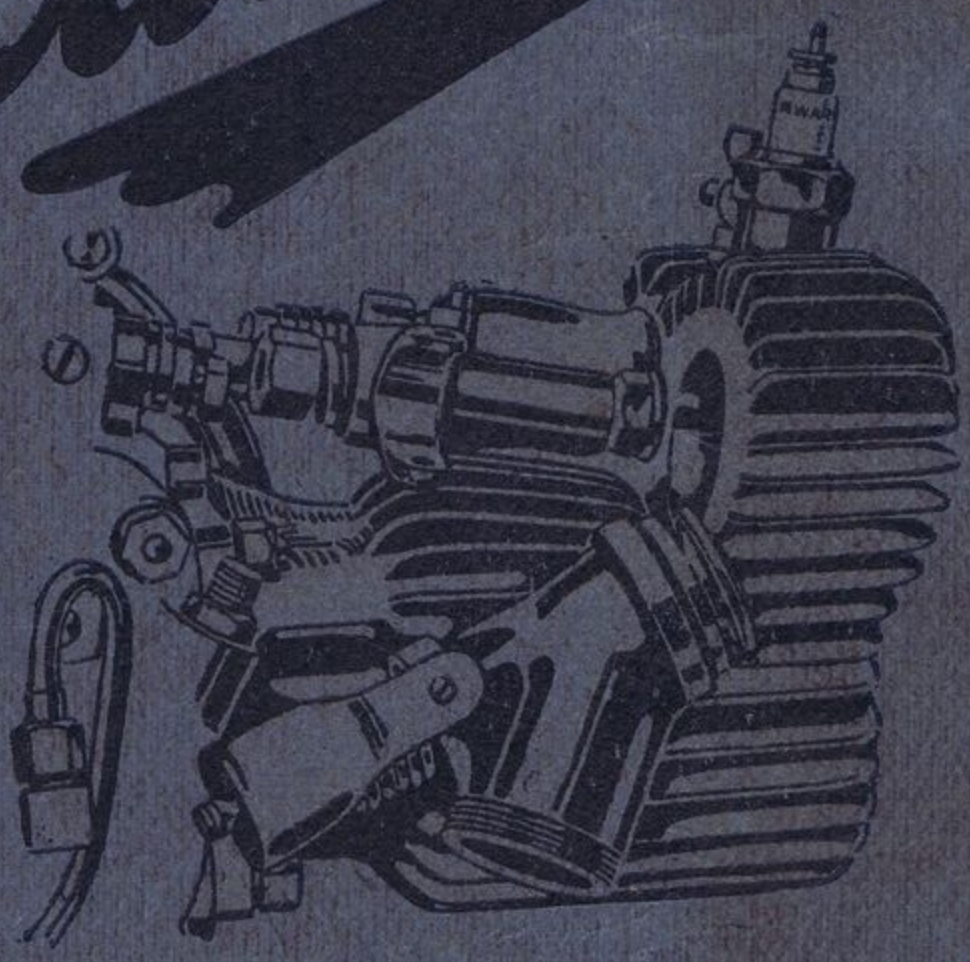
Humber



DETACHABLE VALVE POCKET
SHOWING VALVE SEAT
(PATENT 3187-15)

Motor Cycles

Humber

4½ H.P. Flat Twin
MOTOR CYCLES

HUMBER LIMITED, COVENTRY.

Telegrams: "Humber, Coventry." Telephone No, 522.

LONDON DEPOT ... ... 32, Holborn Viaduct, E.C.1.
Telegrams: "Humber, London." Telephone 166 & 167 Holborn.

EXPORT DEPT. ... Humber House, 94, New Bond St., London, W.1.
Telegrams: "Humbertie, Wesdo, London." Telephone: 2983 Regent.

LONDON REPAIR WORKS ... Canterbury Rd., Kilburn, N.W.6.
Telegrams: "Humberonia, London. Telephone No. 1298 & 1299 Willesden.

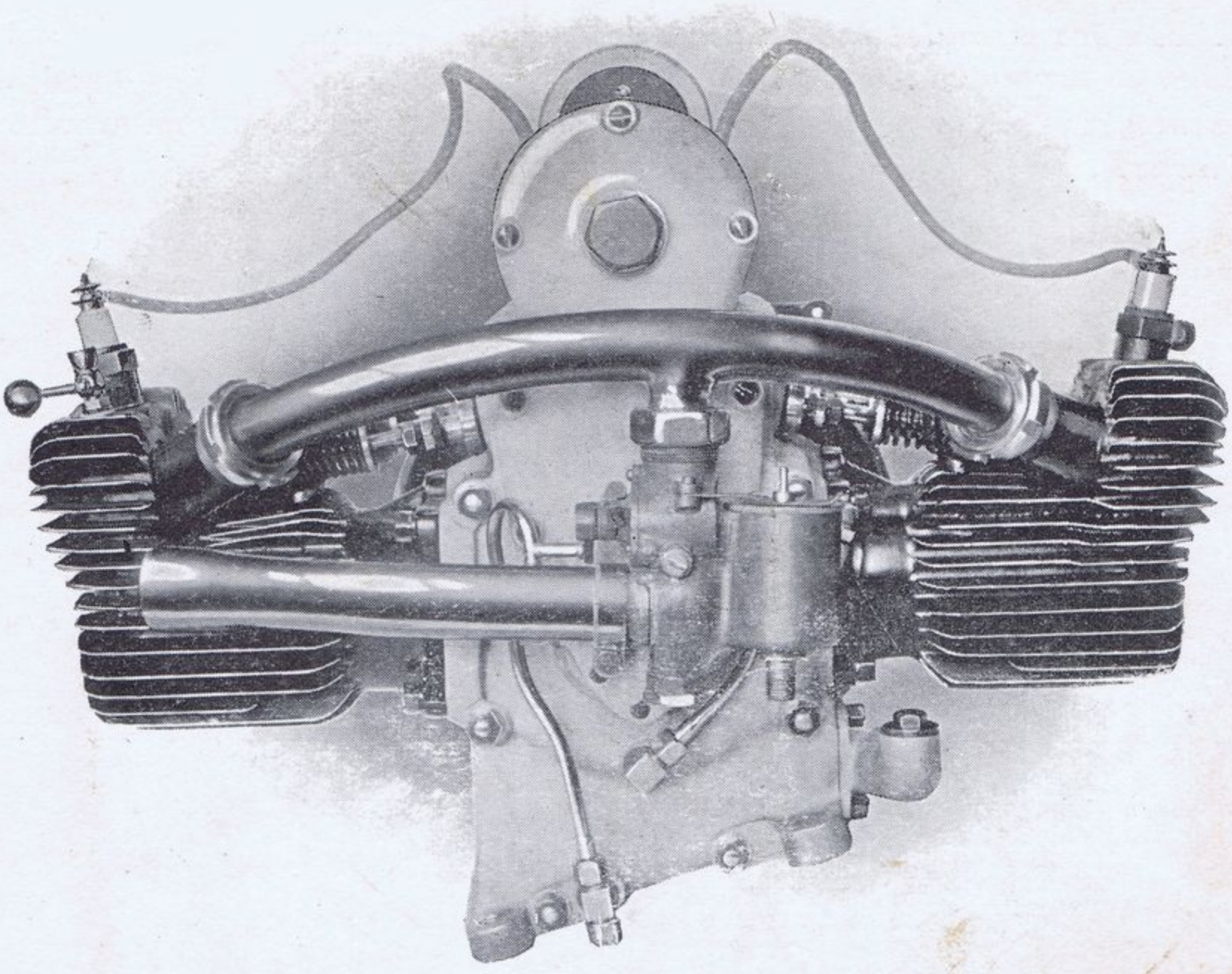
FOREWORD.

"ONE of the quietest machines on the road." This is the attribute paid to the 4½ h.p. Flat Twin Cylinder Humber Motor Cycle, and certainly the outstanding feature of the engine is its almost uncanny silence—a silence that gives cause for comment wherever the machine appears.

The past season has been one of most conspicuous success for the machine in the many trials into which it has been taken, and not once have we been let down with this model which has been described in Motor Cycling quarters as "COVENTRY'S FINEST PRODUCTION." It is suitable alike for Solo or Combination work, and, with the latter there is always an ample margin of reserve power. The opposed-cylinder engine has been adopted in consequence of its even torque, perfect balance of all moving parts and total absence of vibration. Great attention has been paid to the frame, which is made so as to allow easy removal of cylinders. A Kick-Starter is fitted and its direct and instantaneous action is a source of delight to all users. The rear wheel is detachable and can be taken out in one minute for tyre repairs.

Every machine, is subjected to severe engine and road tests before despatch and is pronounced to be all that can possibly be desired for riding comfort and reliability in the Motor Cycling World to day.

Our Special Sporting 4½ h.p. Model is one that will appeal instantly to the Motor Cycle Sporting fraternity. It is specially designed for speed work, its total weight being only 235 lbs. and a speed up to 70 m.p.h. is attainable. The frame etc. is identical with our standard touring model, so that the rider is assured of that great reliability so closely associated with the Humber 4½ h.p. Flat Twin Standard Model which has already passed so satisfactorily through so many of the Severest Open Trials.



THE ENGINE.

THE engine is of the Twin type, with the cylinders horizontally opposed. In construction and principle this possesses many advantages over the V Twin engine, as the cylinders firing alternately at every revolution give regular impulses and an even torque, which, with the perfect balance of all moving parts, ensures a total absence of vibration.

CRANK.

The crank is solid and made of best nickel steel. It has wide journals for connecting rod ends, and is supported on ball bearings, a double row being used for the driving side.

CAMS.

The cams are solid with the shaft, so that their relative position cannot alter. They are designed to give a long duration of maximum lift, to enable a full charge of gas to be drawn into the combustion chamber, and its complete scavenging through the exhaust. The camshaft runs on ball bearings, and is gear driven.

PISTONS, RINGS & GUDGEON PINS.

The pistons are light but exceptionally strong, and fitted with two rings at the top. The piston rings are made of special metal, retaining flexibility at high temperatures. The gudgeon pins are a push fit, and gunmetal pads at each end prevent scoring of the cylinder walls.

CONNECTING RODS.

These are manufactured from special steel stampings with extra long bearings of large diameter. The big ends are split and bushes lined with white metal (as in car practice) ensuring maximum life and minimum wear on the journals.

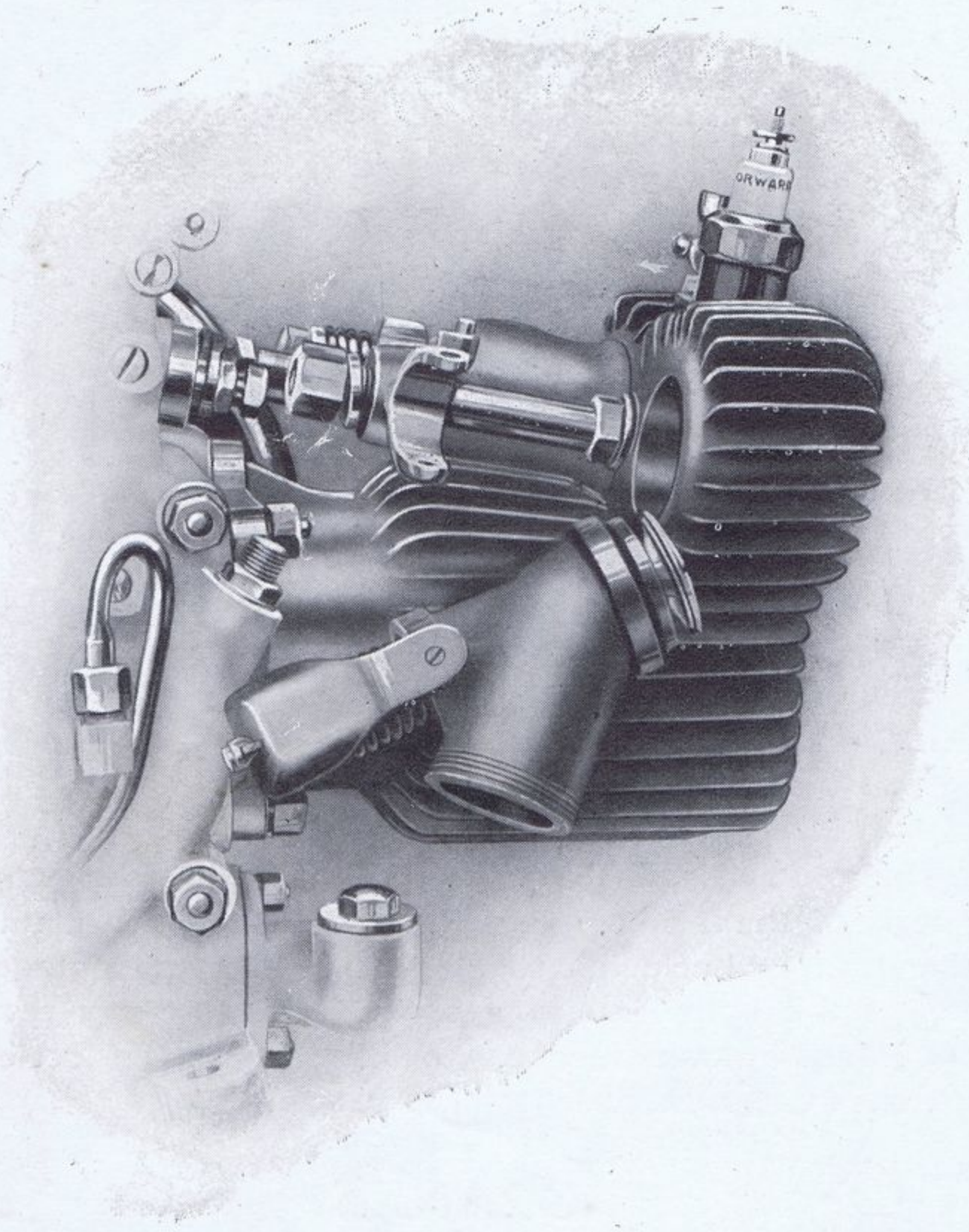


Fig. 2.—Detachable Valve Pocket, showing Valve Seat.

(Patent 3187-15)-

VALVE POCKETS & VALVES.

These are a special feature, being made detachable, which entirely overcomes all difficulty when grinding in and reseating the valves. The condition of the seatings may be inspected with the greatest ease, and the valves may be ground into their seatings in the clear view of the operator.

A valve complete with seating, spring, cup, etc., can be carried as a spare and fitted into position *en bloc*.

The valve pockets are held in position in pairs by a yoke and centre pin. When it is required to remove a valve pocket, take off the nut holding the yoke, turn the flywheel till the valve is at the full lift, then place in position the valve extratctor supplied in the tool kit, which will hold the valve spring in compression (See Fig. 2).

A further movement of the flywheel will allow the tappet to drop back in position, and the valve with pocket can be withdrawn. Care should be taken not to bend the valve stem or damage the packing washer. Should, however, any difficulty in removing the valve pocket occur, the valve tappet adjusting screw should be screwed to the bottom to avoid any straining of the valve. When replacing the valve see that the cam is at full lift before taking the valve extractor off to release the spring.

Valves are interchangeable and have conical seats of a large diameter, ensuring easy inlet and outlet of gases.

Valve tappets are easily adjusted without disturbing any other part of the mechanism. Suitable tools are supplied with each machine. To obtain the best results this must be done with care, and the clearance in each tappet must be the same, viz., .004 or about the thickness of an ordinary piece of writing paper.

It is important that after setting, the tappet screws should be securely locked to prevent them working loose while the engine is running.

TIMING GEAR.

Considerable care is taken in the manufacture of the timing gear, to ensure absolute efficiency and reliability. It is automatically lubricated from the crank chamber. To inspect the timing gear, remove the inlet pipe and oil pipes from pump ; the cover can then be detached after taking out the screws.

IGNITION.

The ignition is by high tension magneto, gear driven, and conveniently placed on top of the engine, where it is accessible and protected from wet and mud. The time between the explosions being equally divided, a hotter spark is in consequence obtainable at each cylinder, which facilitates easy starting with regular and equal firing at low speeds. The magneto is tapped at the moment when the current is at its maximum voltage.

LUBRICATION

This subject is one of extreme importance in the management of a motor cycle, and if these simple explanations and instructions are carried out, in conjunction with careful inspections of the diagrams, the trouble incurred will be amply repaid by the more efficient running and absence of wear of all moving parts. We have so arranged the fillers and drain plugs in the most accessible positions possible to give the minimum amount of trouble when filling up.

The engine is lubricated by a small gear pump driven off the end of the engine shaft, which pumps oil into the crankcase from the sump at the bottom of the engine case. This sump is provided with a filler at the front right hand

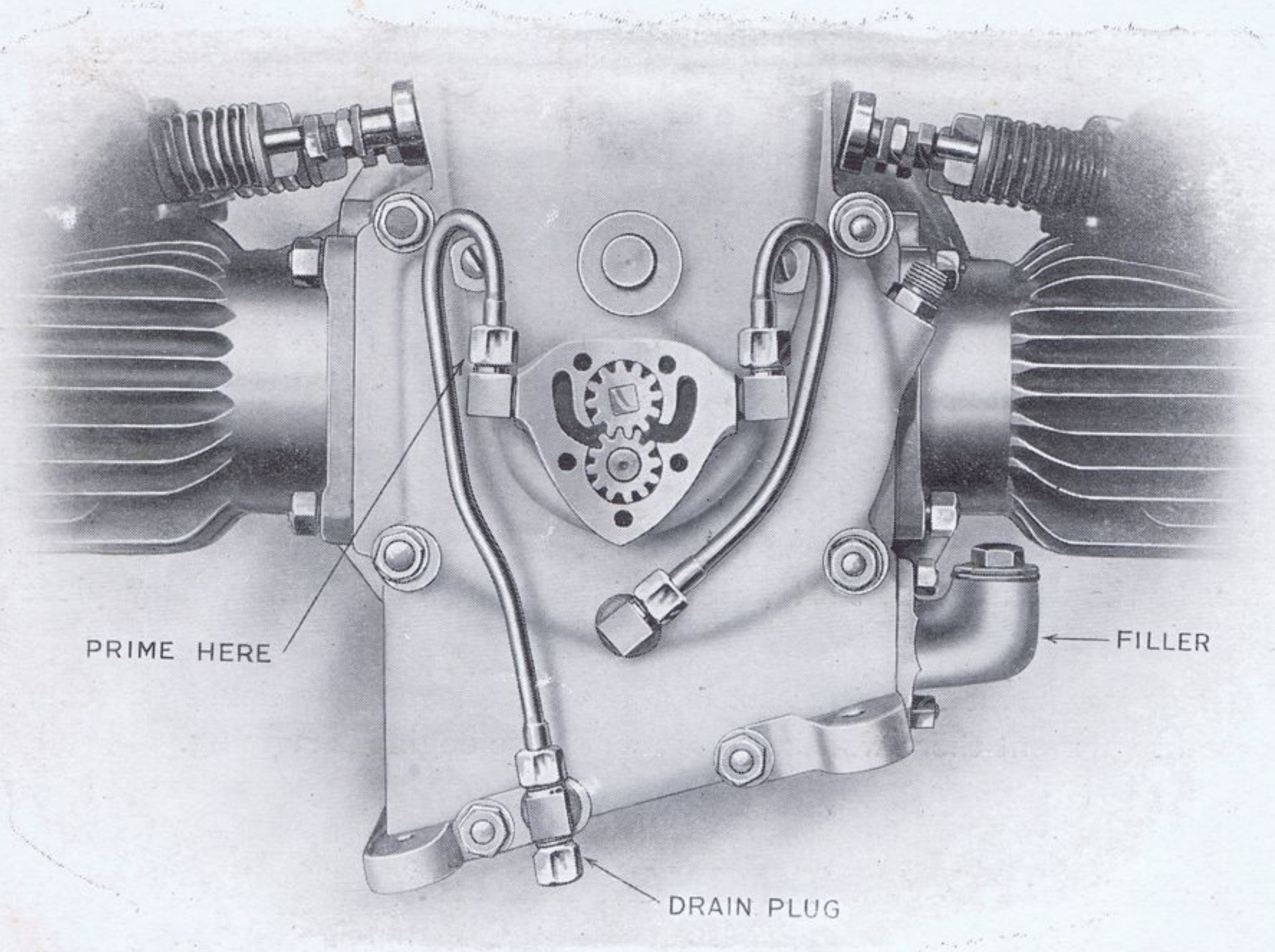


Fig. 3.—Lubrication System.

end and should be filled until the oil is visible in the filler before starting a journey. This should be sufficient with ordinary running for approximately 60 miles, but when a steep hill is reached or any conditions prevail which calls for greater power from the engine, it is advisable to augment the supply of oil by an accasional pumpful from the hand pump on the tank. A small emission of smoke from the tail pipe is an indication of proper lubrication.

The crank is provided with dippers which dip evenly into the oil and provide lubrication for the connecting rod big end bearings and also act as distributors for the rest of the engine. The crank case is provided with an overflow to ensure the oil retaining a proper level, and thus preventing over-oiling, the oil flowing back into the sump.

If at any time it should be necessary to remove the pump cover, or dismantle the pump in any way after reassembling, it will be necessary to prime the pump by removing the left hand connection, and injecting oil till it overflows to ensure its correct working.

Quality of oil is a great consideration in the lubrication of high speed engines, and it should be of the quality that will retain its lubrication properties at high temperature. We recommend that only the best should be used. Cheap oil will result in abnormal carbon deposit on the piston and combustion chambers, loss of power, and excessive wear on the moving parts. After every 1,000 miles drain off the stale oil by means of the plug provided, and fill up as per instructions above.

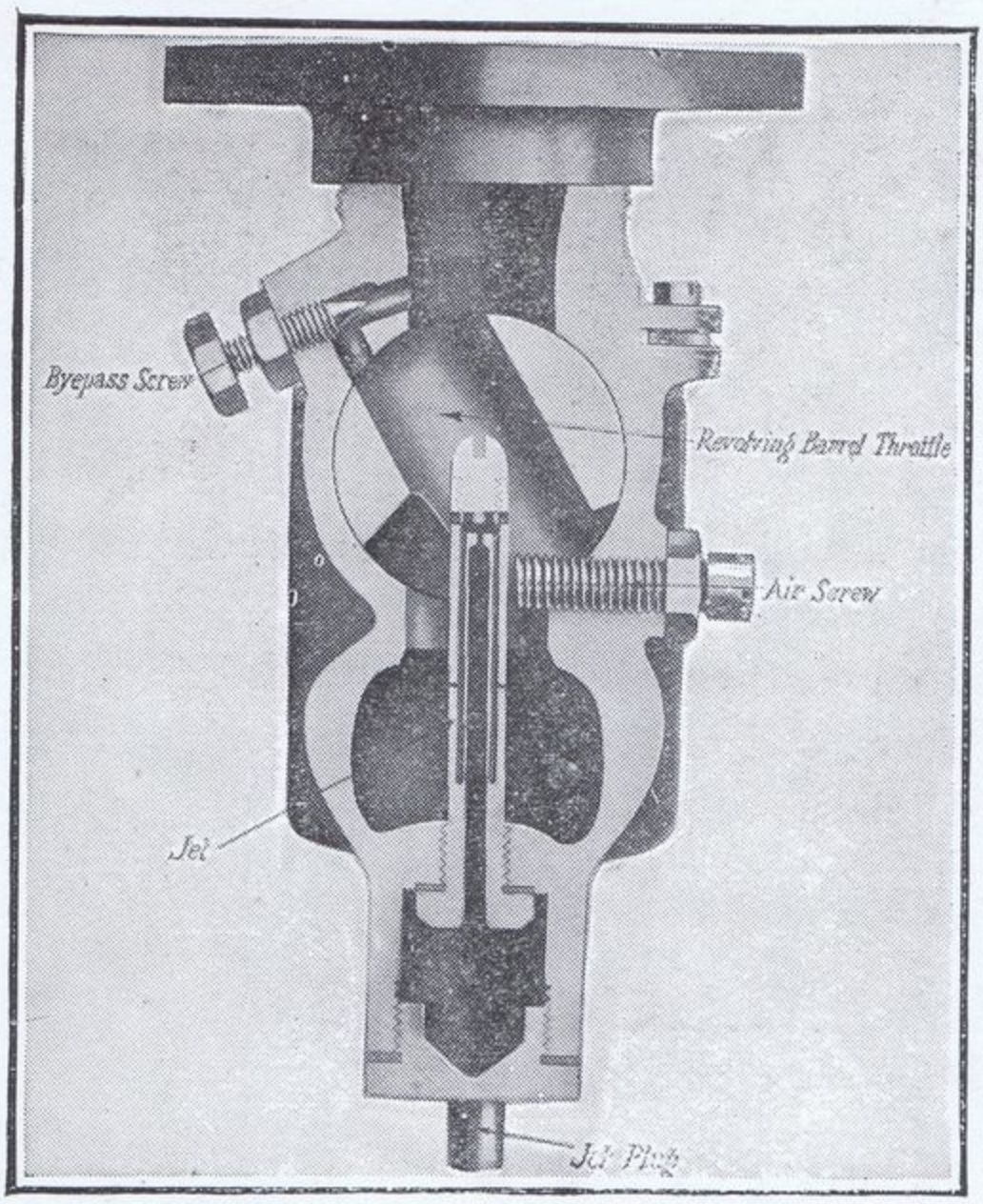


Fig. 4.—*Sectional View of Carburettor.*

CARBURETTOR.

(Claudel-Hobson Type M.I.A,)

The carburettor is used to vaporise the petrol and mix it with air in such proportions as to form an explosive gas. It consists mainly of a float chamber and a mixing chamber. The petrol flows from the tank to the float chamber and the supply is regulated by means of a needle valve which closes the aperture when the float rises. The petrol passes through a small hole in the float chamber to the jet in the mixing chamber which communicates with the cylinders and by the suction stroke of the engine the petrol vapour is drawn in.

The carburettor is of the automatic type, and when adjusted will supply the correct mixture at all engine speeds, and is controlled entirely by one lever on the handlebar.

As the atmospheric conditions alter from time to time which materially alters the carburation, a few notes on adjustment of the carburettor will not be out of place.

The illustration shows two adjustment screws fitted on opposite sides of the throttle chamber. The small screw with the hexagon head regulates the by-pass opening for slow running, while the larger screw with the slotted head is for varying the quantity of air passing through the choke opening.

By unscrewing the by-pass screw the opening is enlarged and causes the engine to run faster when throttled down. This can be regulated to suit the driver, and the position fixed by the lock nut. The object of the air screw is simply to partially block up the choke and enrich the mixture, as it is screwed in toward the jet or *vice versa*.

The choke opening being variable the space taken up by the air screw is much greater proportionately when the throttle is nearly closed than when wide open, and as a considerable percentage of the running is done on the smaller throttle opening, it is evident that in order to arrive at the most economical consumption result, great care must be exercised in the adjustment of the air screw, and it must be kept out as far as possible compatible with the satisfactory running of the engine. At the same time it must be remembered that owing to the small choke in this type of carburettor, the air screw will have considerable effect upon the mixture when running at fuli throttle

Stop screws are provided to regulate the amount of throttle travel in either direction.

Owing to the poor quality of petrol now being sold it is sometimes necessary to take out the jet in order to remove the small particles of dust which collect in its small orifices. To do this first remove the jet plug at the bottom of the carburettor. This will expose the slotted base of the jet which can be removed by the aid of a screwdriver. After removing the small plug at the top of jet it will then be possible to look through the jet if it is clear. Great care must be taken not to use any instrument for unstopping the jet that is at all likely to enlarge the hole. When replacing the jet in its housing great care must be taken to get it into an upright position before screwing up. Replace the plug at the bottom of the carburettor.

If at any time it is necessary to remove the carburettor from the induction pipe or the induction pipe complete from the engine very great care must be taken when replacing to see that the joints are properly made. Any leakage of air past these joints will seriously interfere with the correct running of the engine.

GEAR BOX.

The gear box is neatly placed behind the engine and is attached to the engine stays (which are round in section) by four studs. There are three speeds, simple in design and easy to manipulate; the operations are performed by a sliding wheel and dog clutch principle. Two free positions are provided with notches on the gate to correspond.

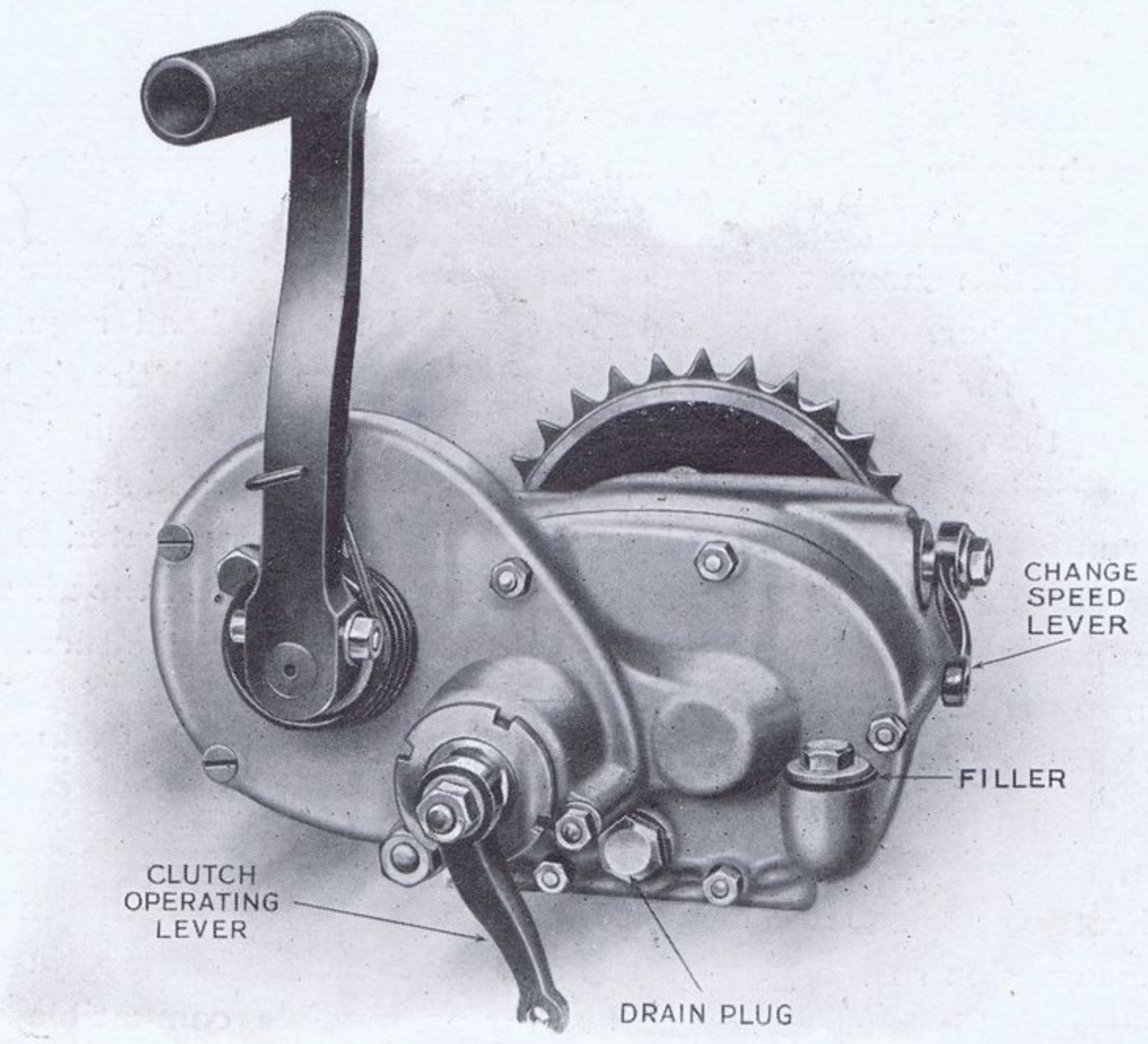


Fig. 5.—*Gear Box* (*Offside View*).

Ball bearings are fitted on both shafts, the one on the driving end of the main shaft being of exceptionally large diameter and double purpose, long wearing qualities and practically entire elimination of friction are ensured.

The efficiency and durability of the gears will be greatly increased if careful attention is devoted to the lubrication. A filler is provided on the right hand side of the box, which should be filled to the top with engine oil (the machine being kept perfectly upright, and not on the stand). This should be inspected periodically to see that the oil level is maintained, and after every 1,000 miles thoroughly flushed with paraffin, which afterwards carefully drain off by means of the plug provided and re-lubricate.

GEAR BOX, SHOWING CLUTCH.

The clutch is of the multiple disc type, mounted on the main shaft of the gear box, and operated by hand lever on left side of handlebar. It is designed to take a heavy load, while the drive is taken up with smoothness. Its simple construction makes it perfectly safe, even in the hands

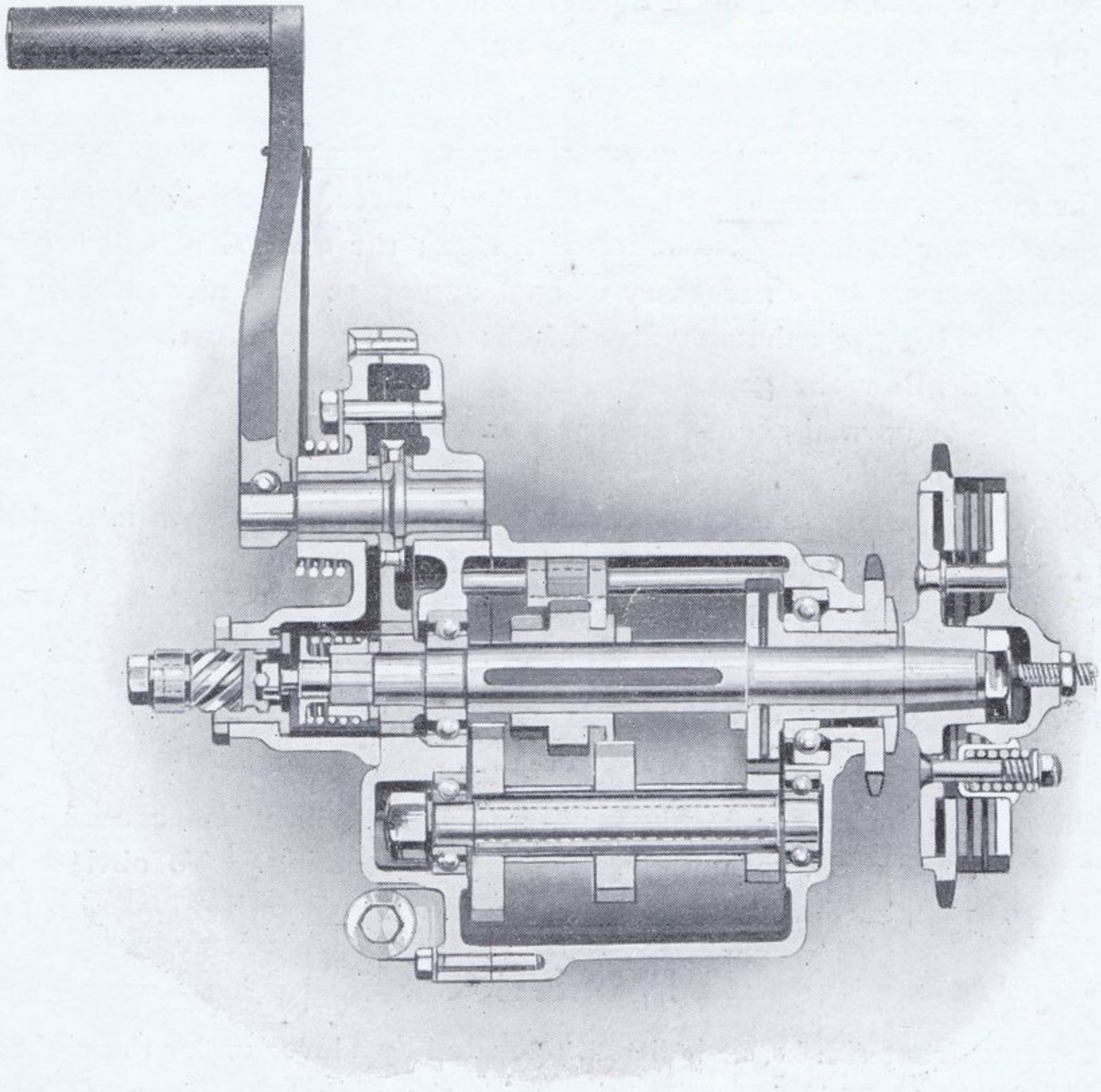


Fig. 6.—*Gear Box* (*Sectional View*).

of the merest novice. It contains a series of steel discs coming in contact with Ferodo discs through the medium of spiral springs, which are adjustable for tension from the outside plate. If the clutch slips, tighten up the four nuts in the outside plate, being careful to put as nearly as possible equal tension on each spring. This will distribute the pressure evenly round the plates. If the clutch becomes too hard, put a

little oil in the lubricator and take a little of the tension off the spring by slackening the nuts. When adjusting the clutch up, care should be taken to see that (when the clutch is in) a small amount of backlash can be felt at the clutch lever; if this is not so, adjust with the centre screw. When leaving the machine after use, always let the clutch in to relieve the spring pressure.

Do not slip the clutch unnecessarily or run the machine for long periods with the clutch out; put the gear in a neutral position for preference.

Lubricate occasionally to ensure the correct working of the sliding parts.

TANK.

The petrol tank is large, neat in appearance and very strong. It is fitted with large fillers. The lubricating oil is contained in a separate tank or barrel, carried inside the petrol tank, from whence it is conveyed by a pipe of large diameter to the engine.

CHANGE SPEED GATE.

The gears are changed by means of a hand lever, which works in a gate quadrant on the right hand side of the tank; the operation will be found particularly easy. It is necessary when changing gear to momentarily ease the clutch, or lift the exhaust valve lifter; this will relieve the pressure of the drive and allow the gears to disengage easily.

The high or normal gear is in operation when the lever is engaged in the notch nearest the driver, second gear is in operation when the lever is vertical and in the centre notch, and low gear when the lever is in the notch right forward. The neutral positions provided between the top and second gear, and second and low gear, enable the driver to drop into neutral without having to pass through another gear. It is necessary to do this when coming to a standstill.

FORKS.

The spring forks are strong and absorb all vibrations caused by the unevenness of the road, yet maintain rigidity in steering. To obviate wear on the link faces, hardened steel bushes are fitted.

BRAKES.

A strong front rim brake is fitted, operated by a lever under the right side of the handlebar. This, in conjunction with the rear brake operated by foot pedal (which actuates on a special rim fixed securely to the spokes on the opposite side to the chain) enables the machine to be brought to a standstill in a very short distance; less forceable application of both or either will slow down the speed as gradually as desired.

After adjusting the chain should the brake block be found too far from the brake rim, an adjustment either forward or backward can be made by means of an eccentric pin which is fitted, anchoring the brake shoe lever to the frame.

DETACHABLE REAR WHEEL.

Fitted to Standard Touring Model.

Riders of past experience will appreciate this when it becomes necessary to repair punctures or do other work calling for the removal of the rear wheel. The operation can be performed in about 20 or 30 seconds by an average motor cyclist. To remove the rear wheel, take off the nut from the spindle on the right hand side, withdraw the spindle from the left hand side about half-way through the hub, allow the distance piece to drop out of position, further withdraw the spindle, and the wheel can then be removed. When replacing the wheel, insert spindle in the left hand side, hold the wheel as near in position as possible with the right hand while you push the spindle partly through the centre of the hub. This will enable the wheel to move along to engage with the dogs on the chain wheel centre. Then put the distance piece in position and push the spindle right home, replace the nut, and tighten with spanner.

As will be seen from the illustration, the hub works in conjunction with, but independently of, a shock absorber, which is mounted on a separate journal bearing having a double row of balls. The hub itself is mounted on ball bearings of the disc-adjusting type; ample space is provided for lubricating oil, while dust is absolutely excluded.

When adjustment of the hub is necessary, slacken out the locking-ring on the right hand side, adjust the cup, and lock up with lock-ring, taking great care that it is secure.

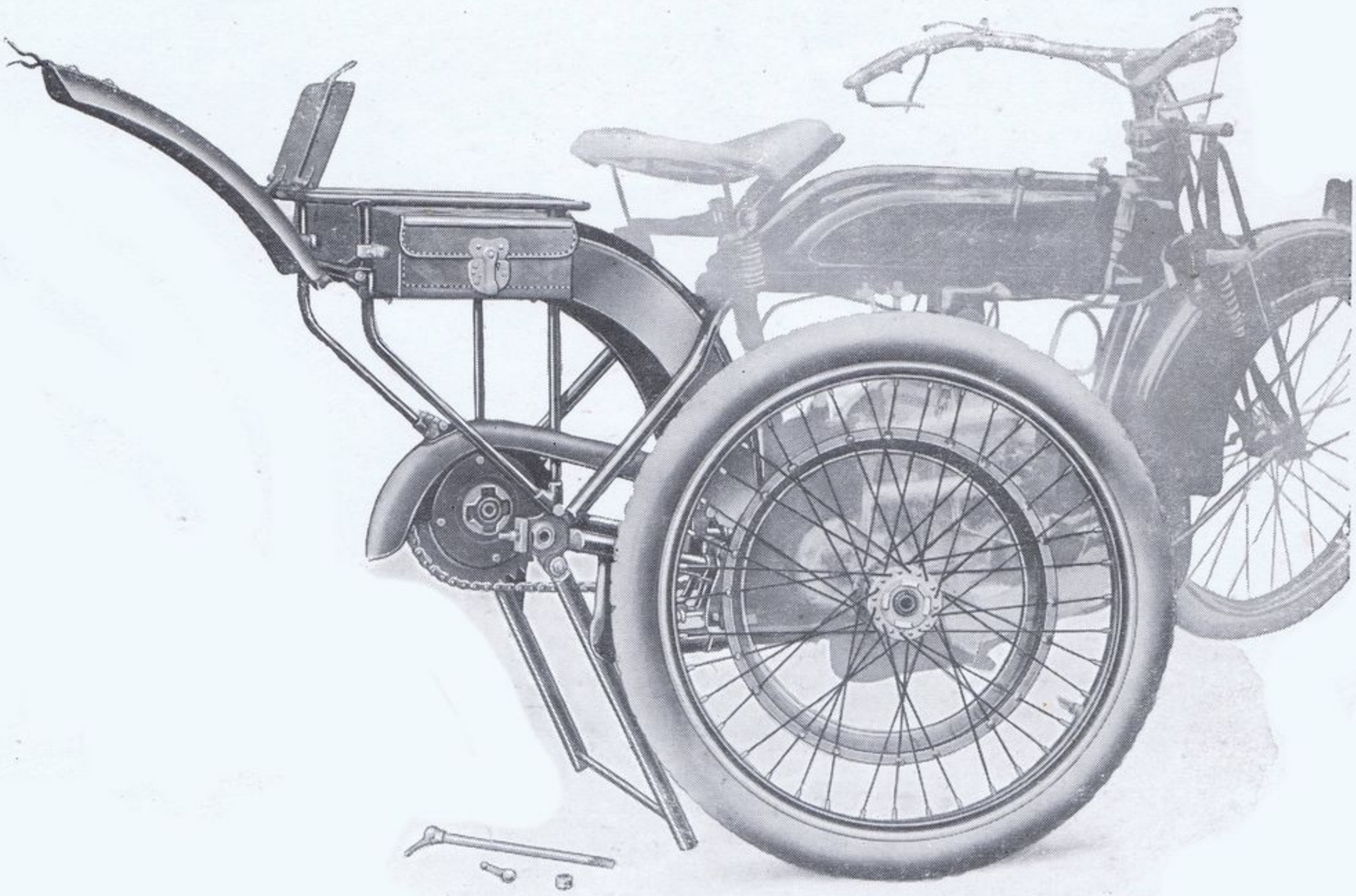


Fig. 7.—Rear Wheel, as fitted to the Standard Model, detached.

MUDGUARDS.

Special attention has been devoted to the thorough and complete protection of all wearing parts, whilst the rider is immune from all weather conditions by the side extensions to mudguards which are provided.

Front and rear wheels are provided with very efficient mudguards, the rear guard being divided so as to hinge upwards, greatly facilitating tyre repair and removal of the rear wheel. The mudguards themselves are worth a special study, so efficiently is their design carried out. Lighter guards are fitted to the Sports Model.

SHOCK ABSORBER.

Shock absorber is fitted to the chain wheel on the rear hub of the Standard Model and ensures an even drive at all speeds. Four powerful springs take up the drive and, absorbing all engine shocks, prevent them being transmitted to the driver.

By its use not only is the possibility of broken chains reduced, but the rear type and transmission gear will give a longer and more satisfactory service.

For lubricating purposes these are filled with grease before leaving the works, and so require practically no attention.

CHAIN COVER.

As fitted to the Standard Model. A lighter cover is fitted to the Sports Model.

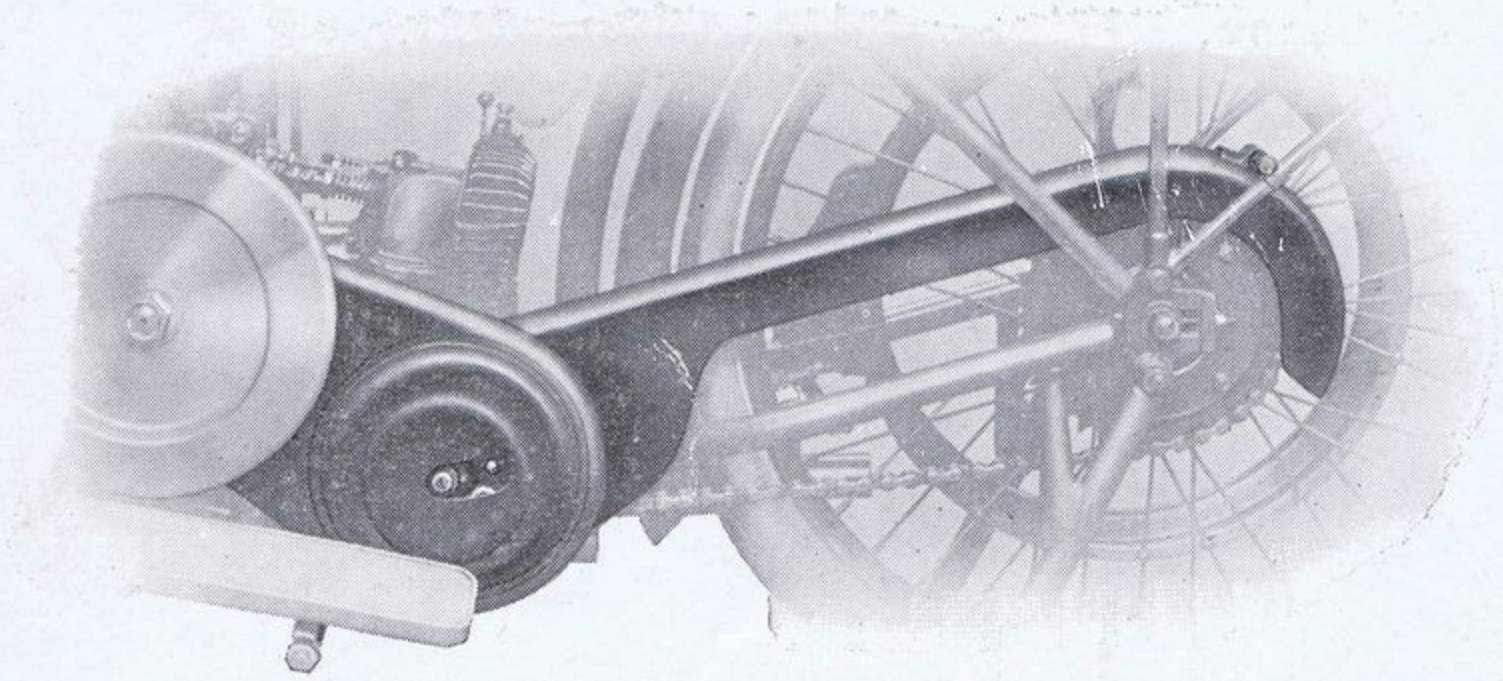


Fig. 8—Chain Cover as fitted to the Standard Model.

STANDS.

A rear stand is fitted to the Standard and Sports Models and so arranged that the back wheel can be removed without detaching the stand. A front wheel stand is fitted in addition to the Standard Model.

CARRIER.

A strong tubular steel carrier is fitted over the rear wheel to each model.

GENERAL FINISH.

The anti-rust process is utilised before enamelling. Machines are enamelled black, the tanks being gold lined. An innovation is the "All Weather" finish. All those inaccessible parts which are usually plated are enamelled thus minimising the chance of rust.

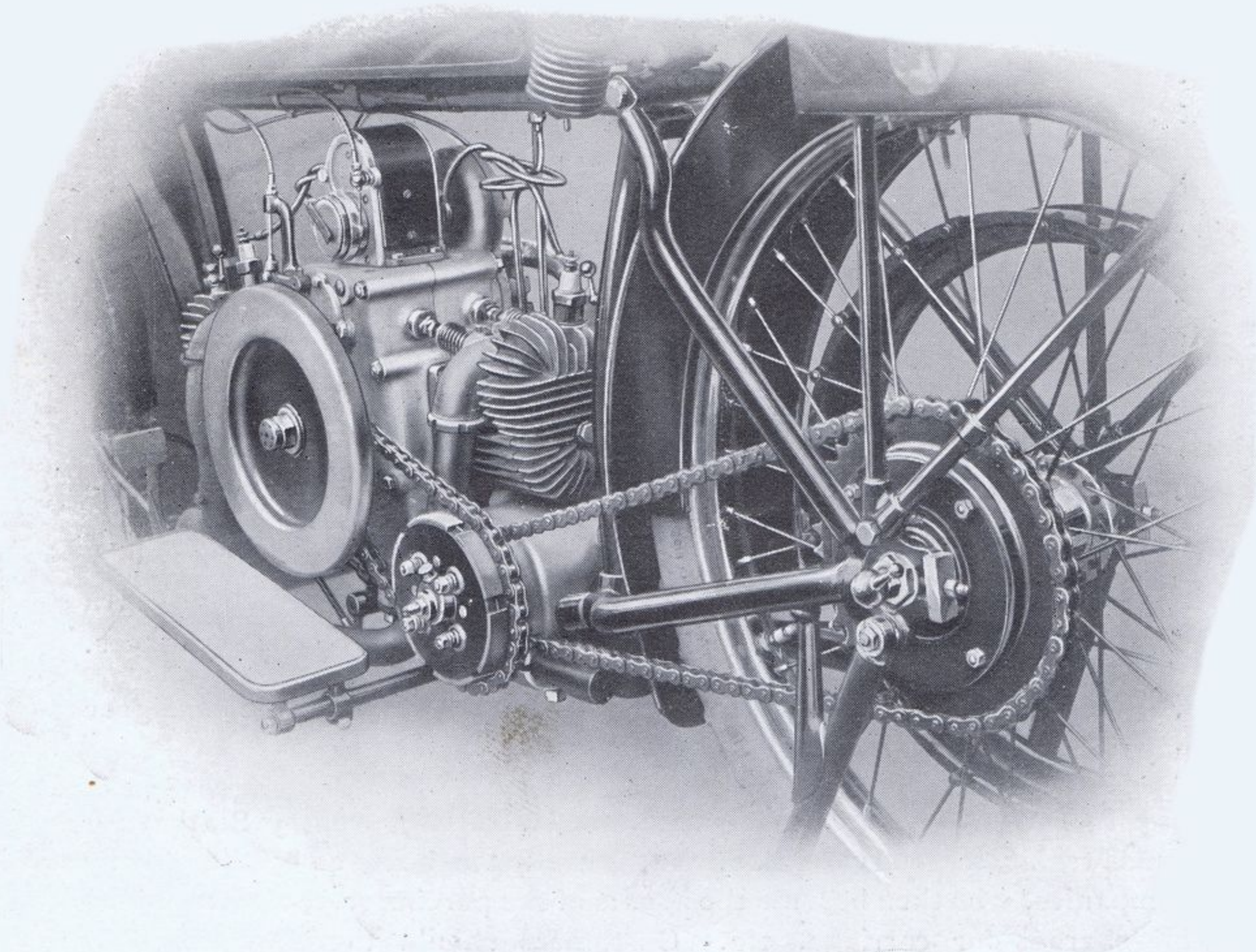


Fig. 9.—*Transmission, showing all-Chain Drive and large diameter Brake Drum.*

A COMPLETE KIT OF TOOLS.

is supplied with the 4½ h.p. Machine as follows :—

TOOL ROLL.
ADJUSTABLE SPANNER.
SCREWDRIVER.
PAIR OF PLIERS.
LARGE OIL CAN.
DUSTER.
HUB SPANNER.
CYLINDER HOLDING-DOWN BOLT SPANNER.
MAGNETO SPANNER.
BOX SPANNER.
DOUBLE OPEN-END SPANNER, 7 M/M.
DOUBLE OPEN-END SPANNER, 8 M/M.
STEERING HEAD SPANNER.
EXHAUST AND INLET PIPE NUT SPANNER,
VALVE CLAMP NUT SPANNER.
VALVE EXTRACTOR.
10 M/M. SPANNER.

TERMS OF BUSINESS.

Conditions of Sale—All goods are sold subject to conditions of Warranty given on page 15.

Remittances—Cheques and Post Office Orders should be made payable to HUMBER LTD., and sent to Humber Ltd., Coventry.

Dealers—We have appointed dealers in all the leading towns in the British Isles, Colonies, and foreign countries. We shall be happy to supply the name and address of the dealer for any district on application.

Packing—The machines are packed in special crates, for which an extra charge is made. These crates are not returnable under any circumstances.

Export—Machines are handed over to the railway company and the consignee pays all further charges.

Railway Transit—All goods are delivered free on rail at Coventry Station for goods traffic, in good condition, and signed for as being so by the railway companies, who then become the agents of the purchaser, the latter paying all charges for carriage, etc. Customers should therefore carefully examine machines when received, and if damaged should sign accordingly, and make an immediate claim upon the carriers. (The railway company make a small charge for collecting and delivering by passenger train).

Repairs and Replacements—All parts sent for repair or replacements must be forwarded carriage paid, bearing the sender's name and address, and, if possible, the machine number and year of manufacture.
Motor cycles which are sent for repair will only be ridden by our employees at the risk and responsibility of the owner.

Alterations in Prices—We reserve t[illegible]t to alter any prices, specifications or terms stated in this list [illegible]me without notice, and all Motor Cycles are subject to prices and [illegible]s ruling at time of delivery.

Exhibitions—All goods are sold on [illegible]on that they must not be exhibited at any exhibition in the B[illegible]sles without our written consent.
Should any further particulars be desired beyond those given in this list, we cordially invite our patrons to communicate with us and we shall be pleased to give every information required.

WARRANTY.

WE give below the following Warranty with all goods supplied, repairs done and replacements by us, instead of the Warranty implied by Common Law, Statute, or otherwise, as to the quality or fitness for their purpose of the goods, repairs or replacements, every such implied Warranty being in all cases excluded.

We Warrant that all precautions which are usual and reasonable have been taken by us to secure excellence of materials and workmanship. This Warranty shall be in force for three months only from the date of delivery by us of the goods sold, repaired or replaced by us, and the damages for which we shall be responsible shall be limited to the cost of the requisite repairs or replacements. This Warranty shall not apply to defects caused by wear and tear, accident, misuse or neglect. The term "goods" shall be construed as including all new machines or parts thereof or replacements. We give no Warranty in respect of second-hand goods sold by us, nor shall any such Warranty be implied. All agreements and quotations by us to supply goods, execute repairs or make replacements shall be deemed to include the above Warranty and the exclusion of all implied Warranties.

CONDITIONS OF WARRANTY.—If a defective part be found in any goods, it must be sent to us, carriage paid, and accompanied by an intimation from the sender, in writing, that he desires to have it repaired or replaced free of charge under this Warranty, and he must also furnish us at the same time with the number of the machine and the name of the Dealer (if any) from whom he purchased it, with the date of purchase, or the date when the repairs were executed, or replacement made, as the case may be.

Failing compliance with the above conditions, goods received by us will lie at the risk of the sender, and this Warranty shall not be enforceable.

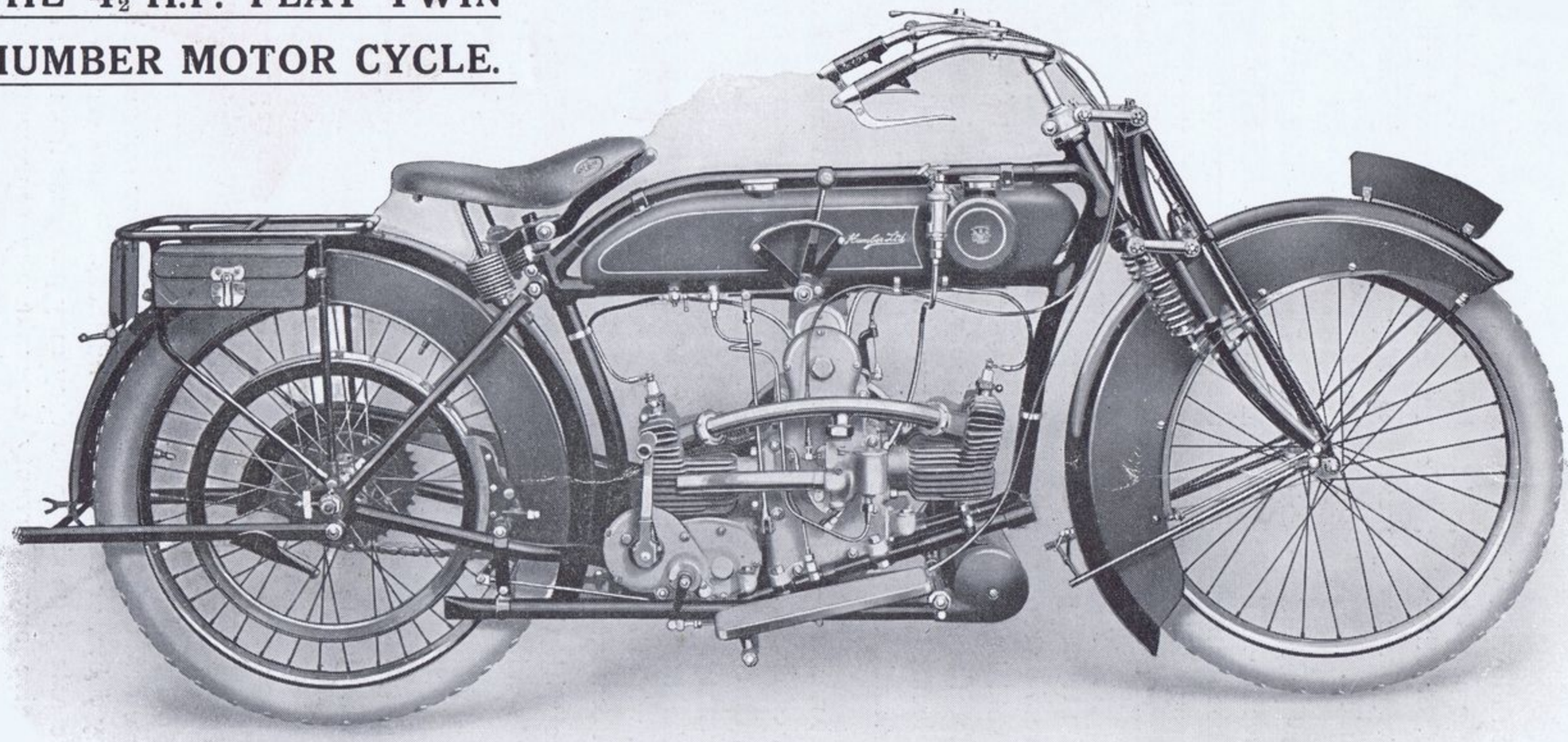
We only Warrant goods bought direct from us, or from one of our duly authorised Dealers.

We do not Warrant the specialities of other firms, such as tyres, electric fittings, lamps and horns, although supplied by us.

We endeavour to secure the best quality in these articles, and the Makers, whose names usually appear thereon, are generally willing to replace any defective part, and we shall be pleased at times to furnish the Maker's name and address.

DEALERS.—Those firms whom we style our Dealers are not authorised to advertise, incur any debts, or transact any business whatsoever on our account, other than the sale of goods which they may purchase from us; nor are they authorised to give any Warranty or make any representation on our behalf other than those contained in the above Warranty.

THE 4½ H.P. FLAT TWIN HUMBER MOTOR CYCLE.

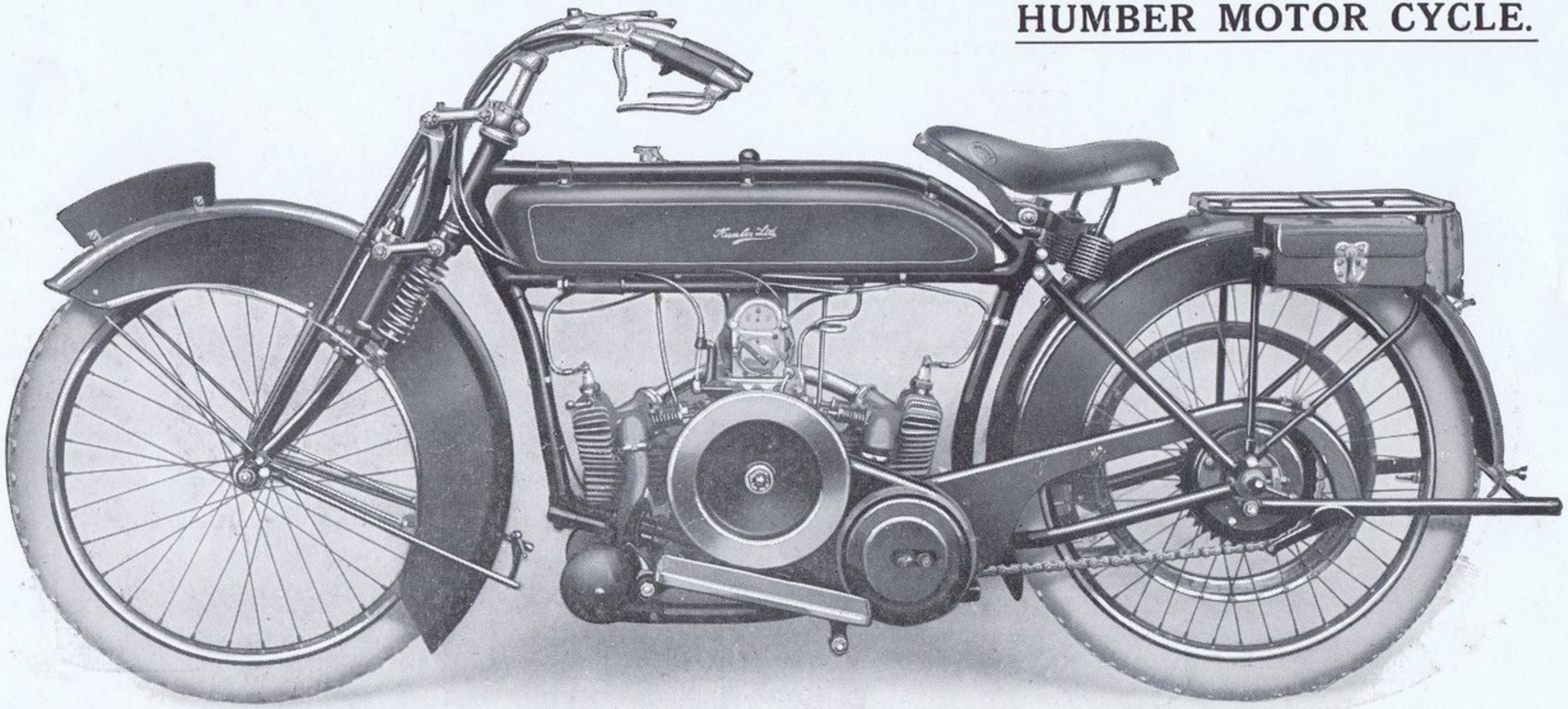


Showing Carburettor, Kick-starter and General Controls. **Price £110**

"ALL-WEATHER" FINISH SUPPLIED TO ORDER WITHOUT EXTRA CHARGE.

For conditions of sale see Pages 14 & 15.

THE 4½ H.P. FLAT TWIN HUMBER MOTOR CYCLE.

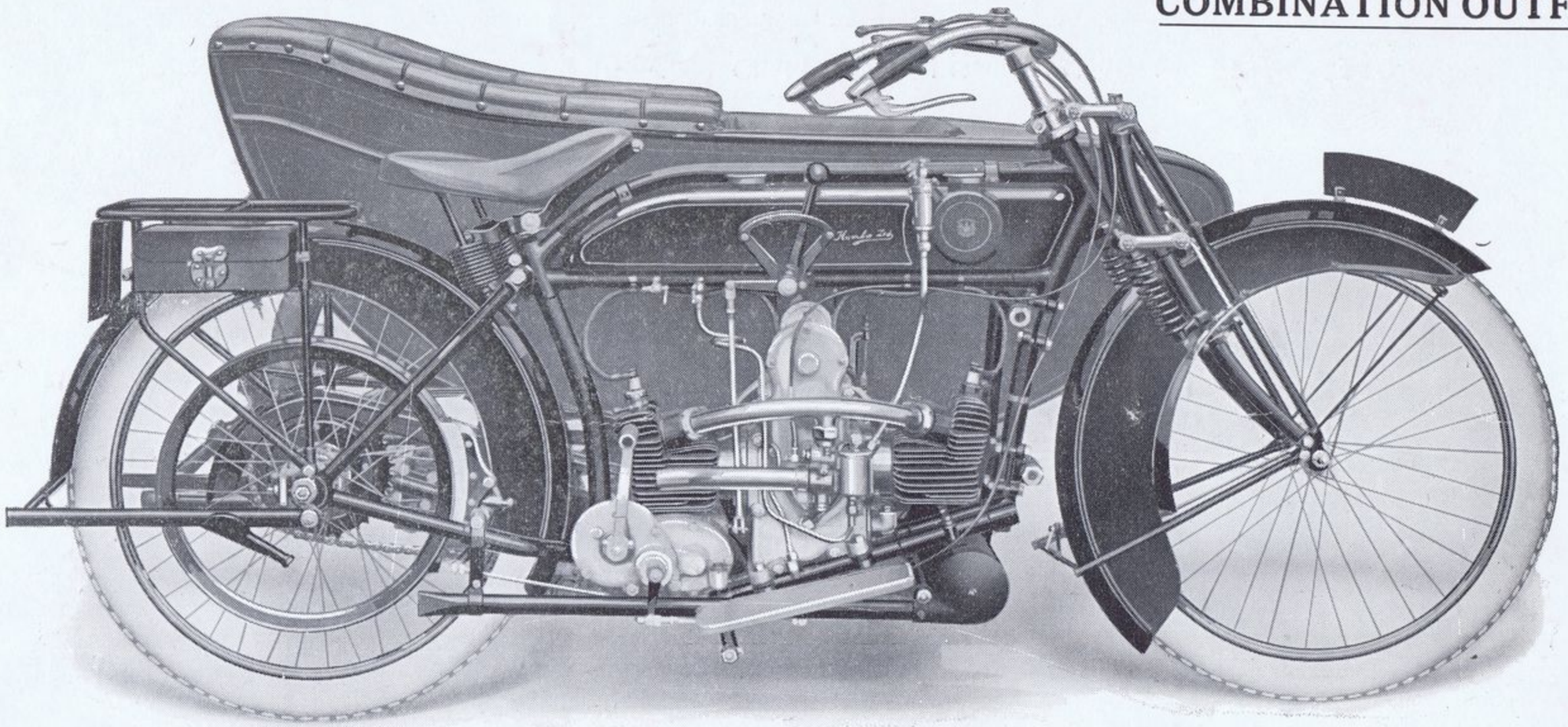


Showing the large outside Flywheel, Chain Case and General Controls. **Price £110**

"ALL-WEATHER" FINISH SUPPLIED TO ORDER WITHOUT EXTRA CHARGE.

For conditions of sale see Pages 14 & 15.

THE 4½ H.P. HUMBER COMBINATION OUTFIT.



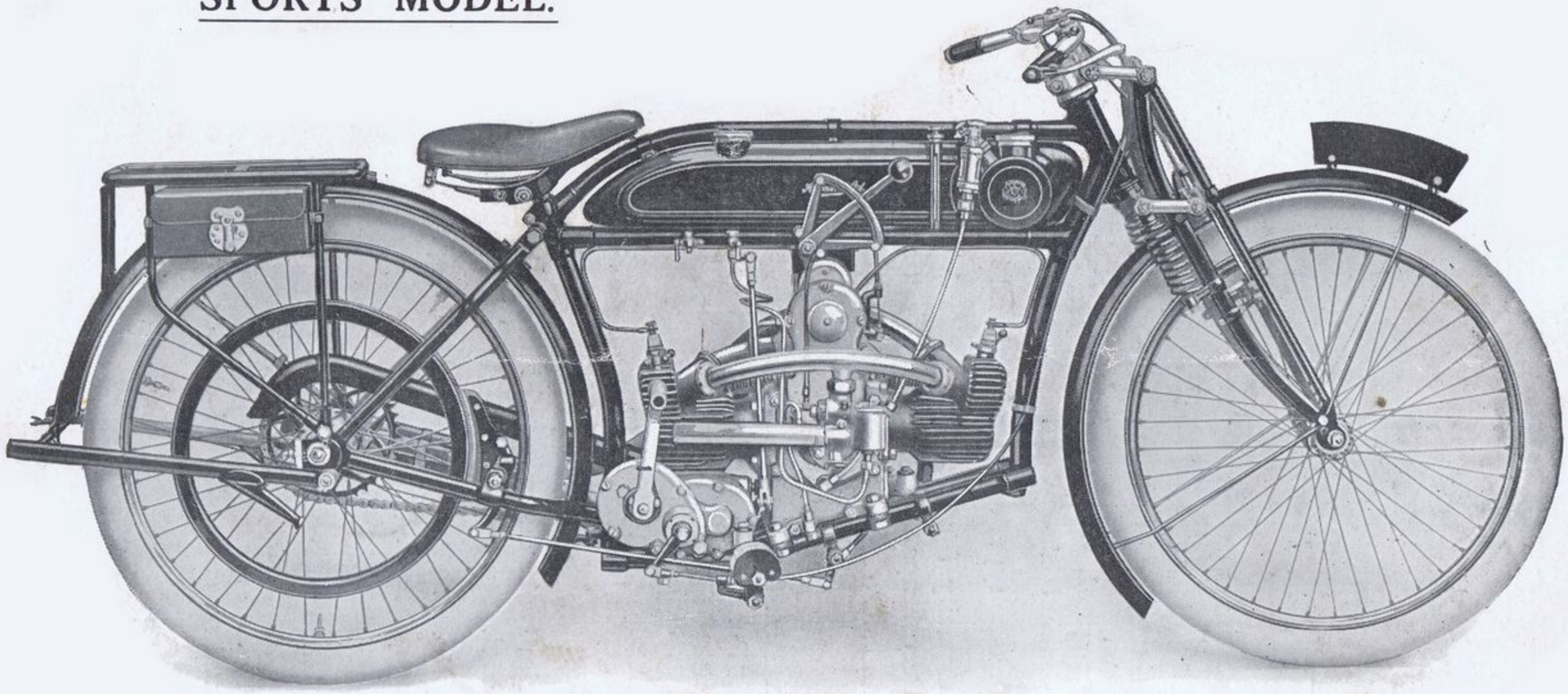
With Grindlay Sidecar (as above). **Price £144**

"ALL-WEATHER" FINISH SUPPLIED TO ORDER WITHOUT EXTRA CHARGE.

(Any make of Sidecar is supplied to make up the Combination Outfit according to Customer's requirements.)

For conditions of sale see Pages 14 & 15.

THE HUMBER 4½ H.P.
SPORTS MODEL.



Showing Carburettor, Kick-starter and General Controls. **Price £100**

"ALL-WEATHER" FINISH SUPPLIED TO ORDER WITHOUT EXTRA CHARGE.

For conditions of sale see Pages 14 & 15.

4½ H.P. FLAT TWIN HUMBER MOTOR CYCLE.

SPECIFICATION.

ENGINE—Opposed cylinders, having bore and stroke of 75 x 68 m/m. (600c.c.), mechanically operated valves fitted with detachable seats, outside fly-wheel, perfectly balanced.

CARBURETTOR—Claudel-Hobson automatic; operated by Bowden wire from handlebar.

MAGNETO—High tension magneto placed on top of engine. Gear driven.

TRANSMISSION—By chain from engine to gear box, and gear box to rear wheel, the chain wheel of the latter being fitted with spring drive.

GEAR BOX—Three-speed, giving ratios for solo riding of 5, 8. 4, and 13.85, neatly placed behind engine and operated by hand lever. Kick-starter.

CLUTCH—Multiple disc type, operated by hand lever.

TANK—Of large capacity for petrol and oil, drip feed lubricator (Best and Lloyd type). Petrol capacity 2¼ gallons, oil one quart.

FRAME—Special strong design, dropped top rail, giving low saddle position; fitted with footboards and specially designed spring fork.

WHEELS—26in. x 2½in. fitted with Dunlop heavy rubber studded tyres with beaded edges. Rear wheel made detachable; the wheel can be removed from frame without disturbing the alignment or adjustment of the rear chain or foot brake mechanism.

MUDGUARDS—Detachable front guard has side extensions from top to bottom. Back guard hinges up to facilitate tyre repair.

BRAKES—Front rim brake and powerful internal "V" rim rear brake, operated by foot pedal.

SADDLE—Lycett No. 5. Pan seat. Brook's spring seat can be fitted to order at an extra charge.

CARRIER—Made of strong steel tube.

STANDS—To front and back wheels; the stands are hinged to fork ends, separate from hub spindle.

TOOL BAGS—Fitted on each side of carrier, in metal case complete with tool outfit.

FINISH—Black enamel relieved by gold lines.

WEIGHT—(Solo) 275 lbs.

We supply Lucas Dynamo Lighting Set complete to either Solo or Combination Outfits to Customer's order.

For conditions of sale see Pages 14 & 15.