Autocycles & Cyclemotors

THIRD EDITION
35th Thousand

BY THE MOTOR CYCLE STAFF

Whitcombe & Tombs Ltd.

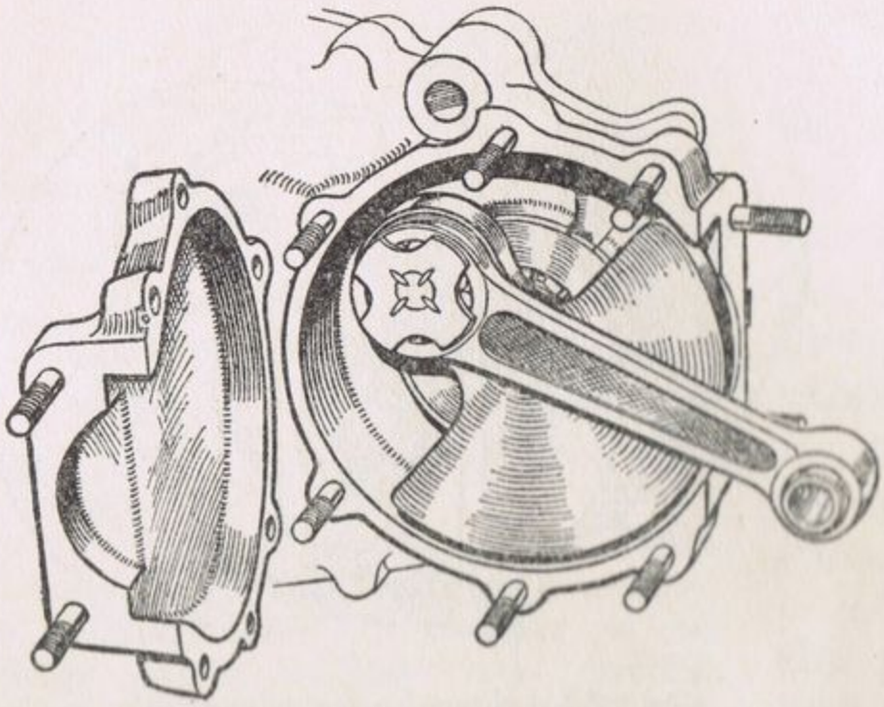

Fig. 16—How the crankshaft assembly is mounted in the crankcase

then, moving down, transferring it via the transfer ports to the combustion chamber.

In Fig. 15 the aluminium casting which forms the crankcase is shown, also the surrounding components. This is for clarity. Fig. 16 reveals how the crankshaft is mounted in the crankcase. Now look again at Fig. 9 (page 26). It shows the crankcase and crankshaft; two ball bearings support the crankshaft, one each side of the chain sprocket which provides the drive to the clutch and back wheel.

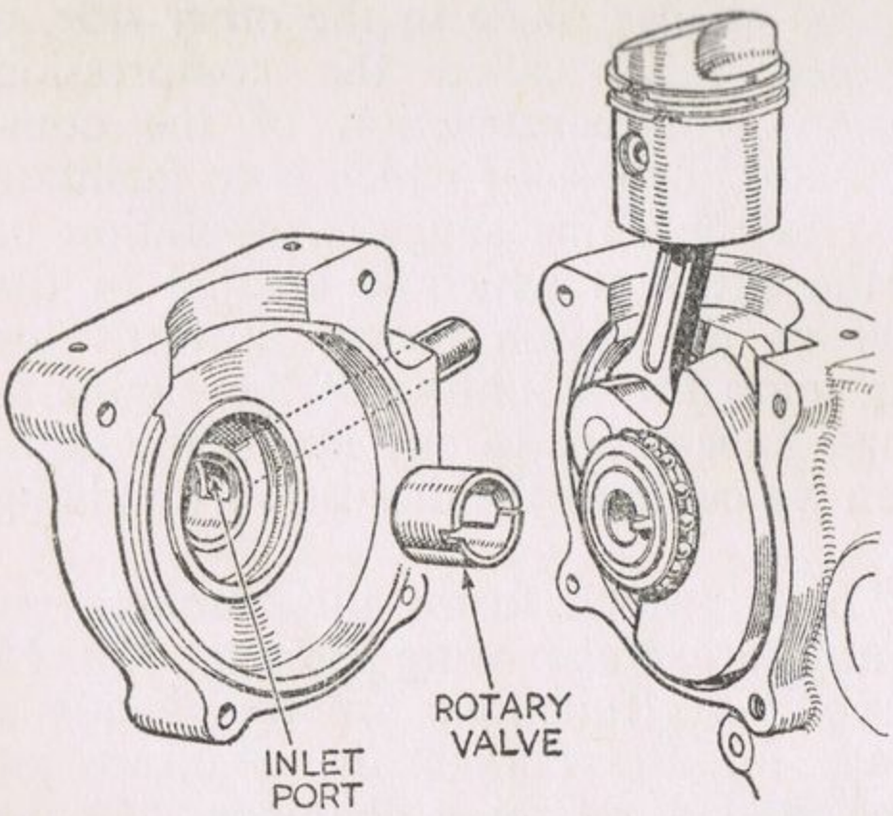

Fig. 17—In some engines a rotary inlet valve is employed instead of a piston-controlled inlet port in the cylinder. The example illustrated is that of the Bantamoto

Between the engine sprocket and the ball bearing mounted in the crankcase is a flanged phosphor-bronze bush. This is a very close fit on the boss of the chain sprocket and is held against the inside face of the crankcase by a bifurcated spring. It is provided in order to prevent petrol-air mixture being forced out of the crankcase

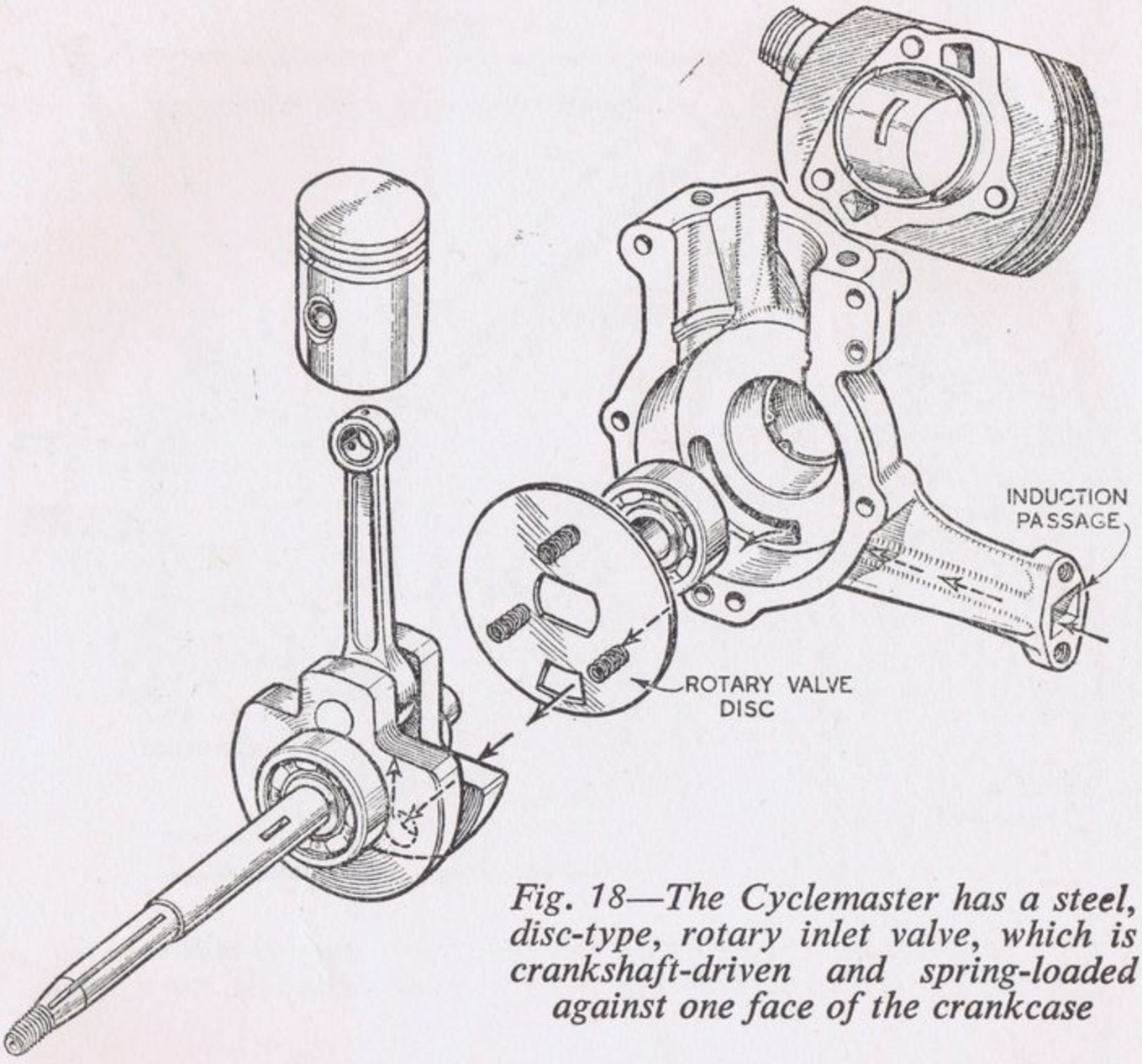

Fig. 18—The Cyclemaster has a steel, disc-type, rotary inlet valve, which is crankshaft-driven and spring-loaded against one face of the crankcase

when the piston descends. In other words, it is what is termed a "gas seal".

That completes the discussion of the engine, since the magneto, the carburettor and transmission are covered in other chapters. It will have been seen that there is nothing very difficult to understand in this simple, most efficient little engine, as regards either its construction or method of operation.

All three-port two-strokes are on similar lines and, if the points raised in this chapter have been grasped, the other makes of engine should be readily understood. For example, examine the special drawings of cyclemotors and other engines on the following pages. An exception to the two-stroke principle is the Cucciolo, a four-stroke, shown on page 39.

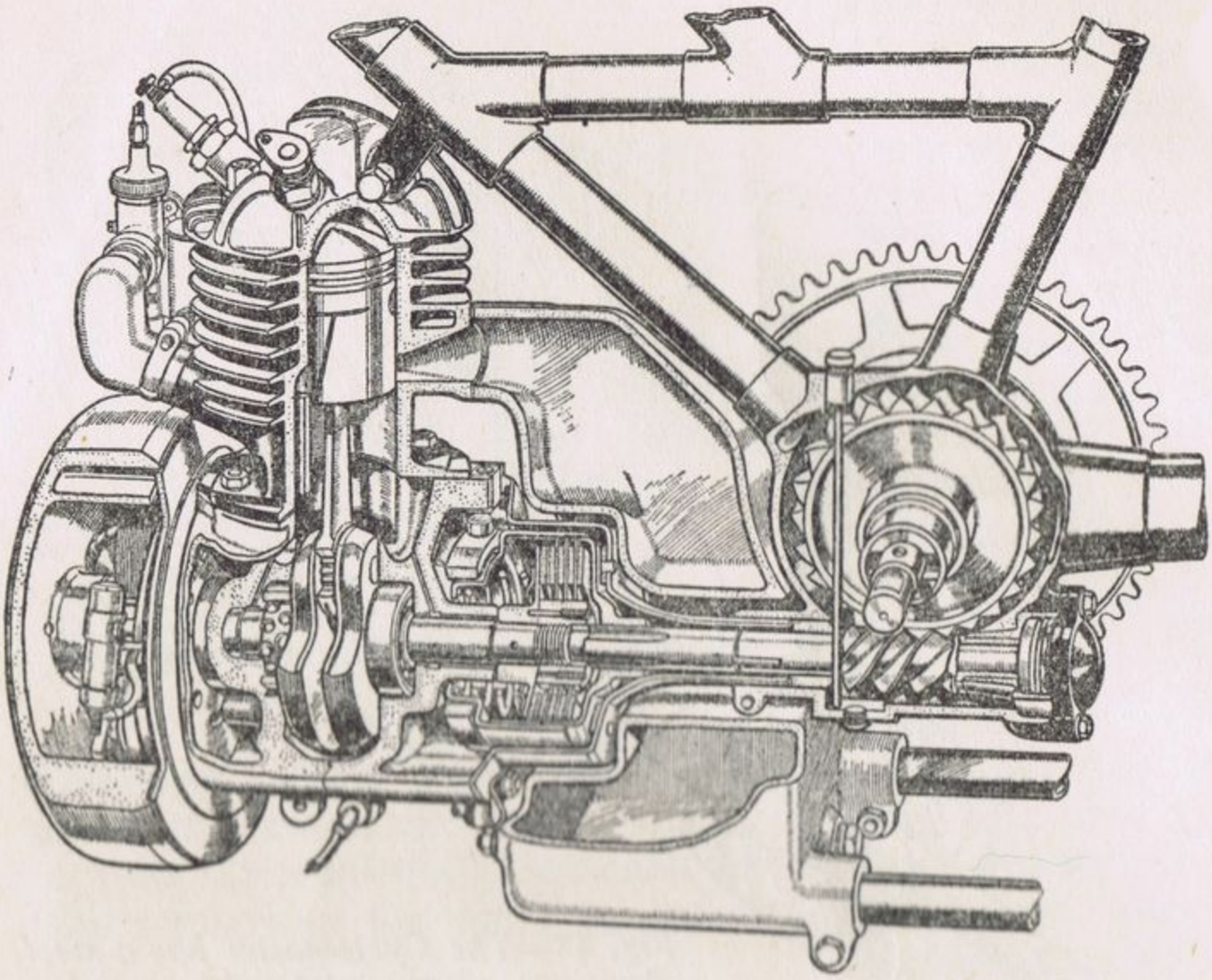

Fig. 19—Detail construction of the Scott engine fitted to a Cyc-Auto. This machine has a worm gear as the primary drive

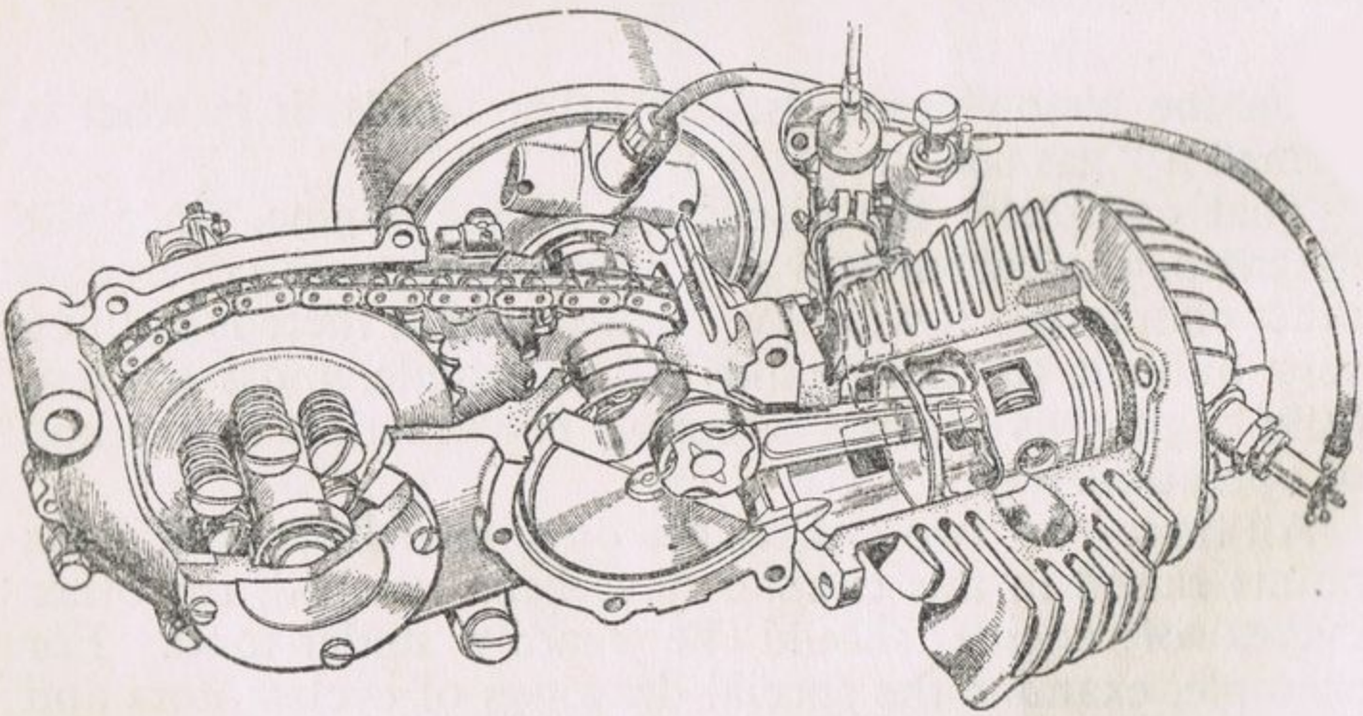

Fig. 20—In the Brockhouse-Excelsior Spryt engine there are special plugs at the transfer ports which are carefully machined to deflect the gas, thus obviating the need for a humped, or deflector, piston

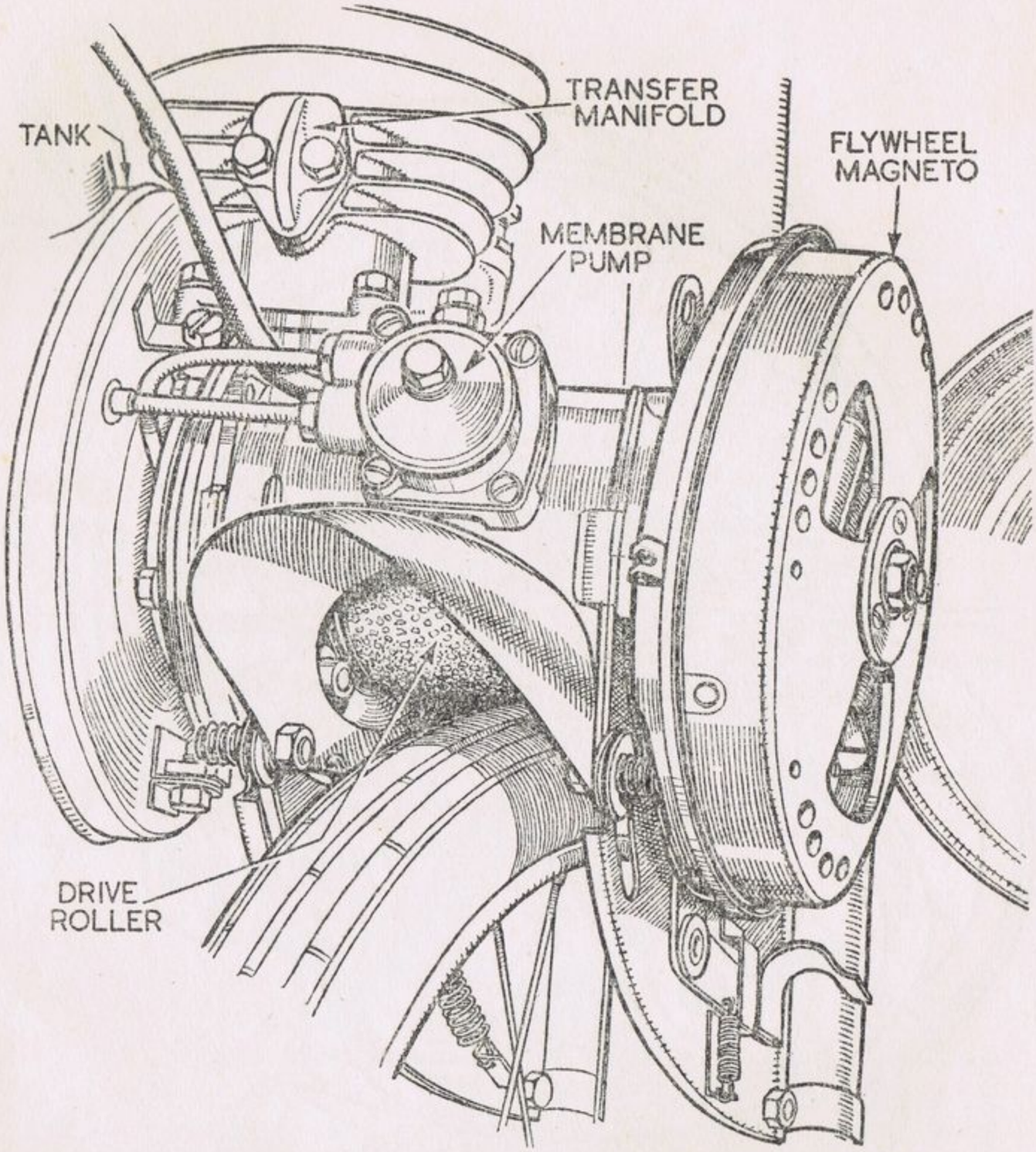

Fig. 21—Although the engine is only of 45 c.c. and drives the front wheel by an emery-faced roller, the VeloSolex is not a cyclemotor for attachment to bicycles but is sold as a complete machine. The frame is of open-type and specially constructed. Unusual features of the engine unit are a membrane pump for lifting the petroil from the 1¾-pint tank mounted on the right of the crankcase (see page 50) and a float-less carburettor, which is illustrated on page 51. The cylinder head is a die-casting in aluminium alloy

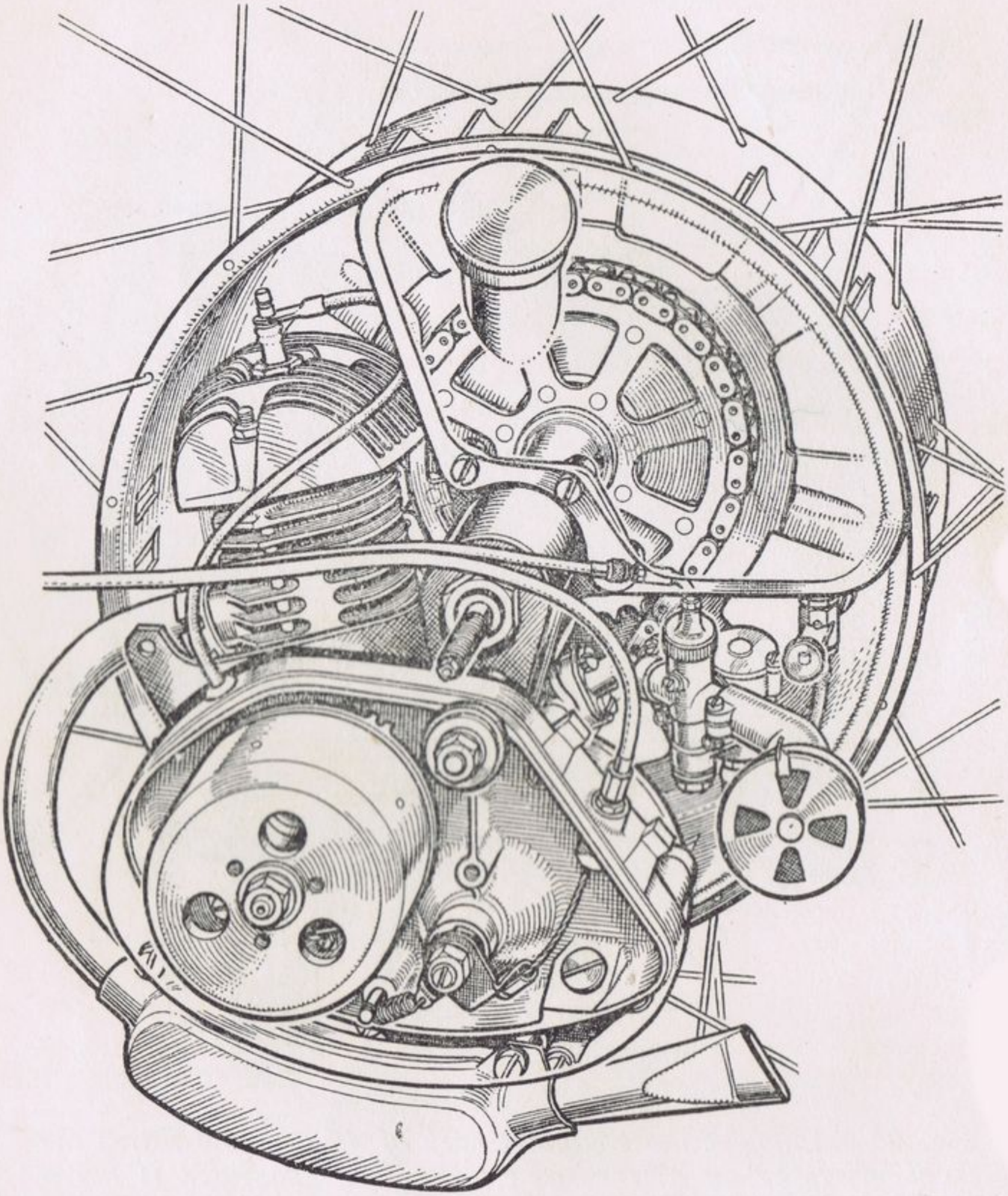

Fig. 22—Of 32 c.c. engine capacity, the Cyclemaster is sold as a complete rear wheel. The engine is contained within an open-sided drum, which forms the wheel hub and is provided with louvres designed to assist cooling by directing air on to the engine. In unit with the engine is a single-plate, cork-insert clutch running in oil. Primary and final drives are by chain. A notable feature of the engine is that the inlet port is controlled, not by the piston, but by a crankshaft-driven rotary valve—illustrated *on page 33*

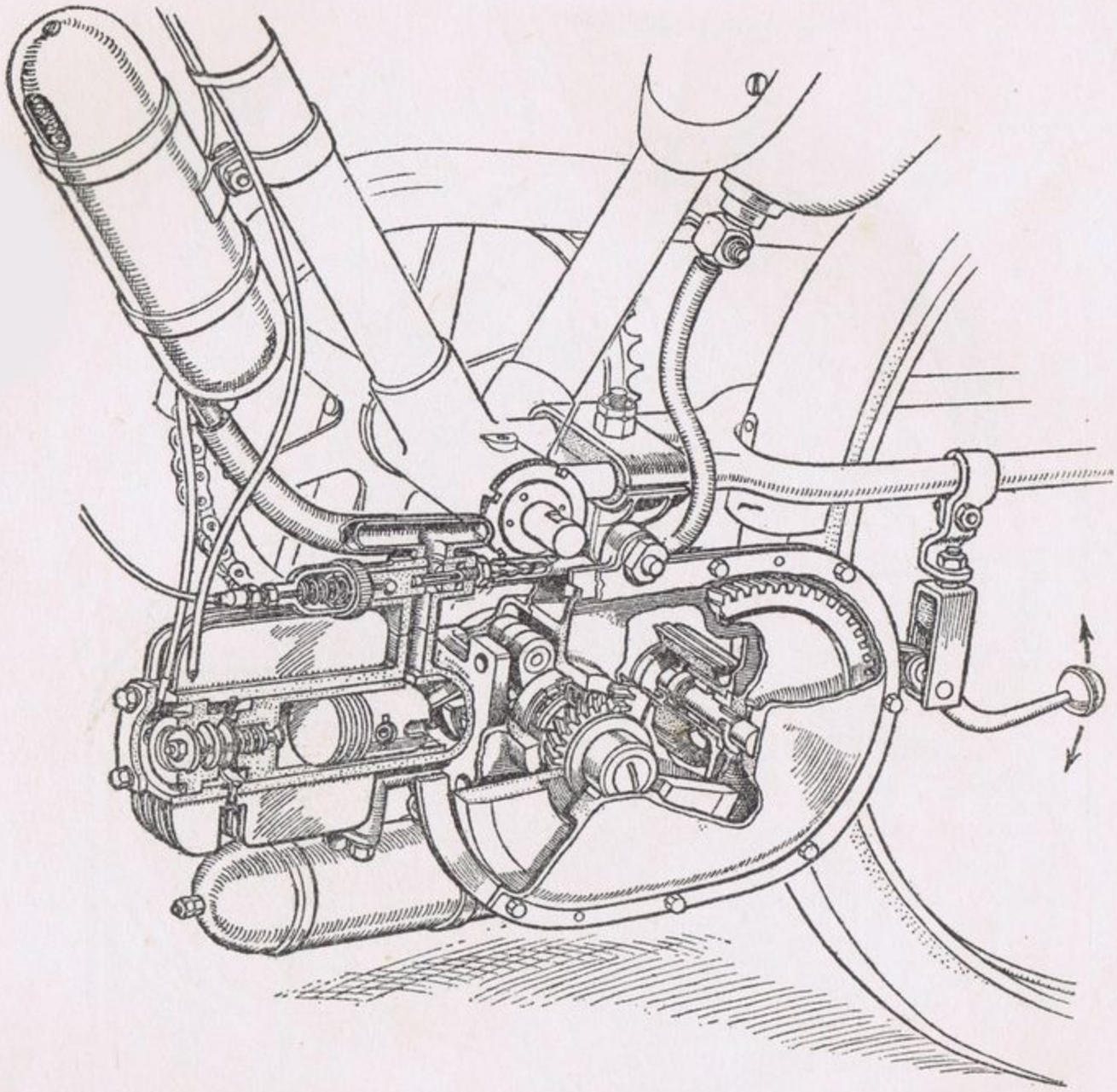

Fig. 23—Unlike the majority of cyclemotors, the Lohmann, which is of only 18 c.c., has a compression-ignition engine. There is neither carburettor nor spark equipment. Engine control is by two twistgrips. The right-hand one governs the fuel supply and the left-hand, by means of a quick-thread, varies the compression ratio and port timing

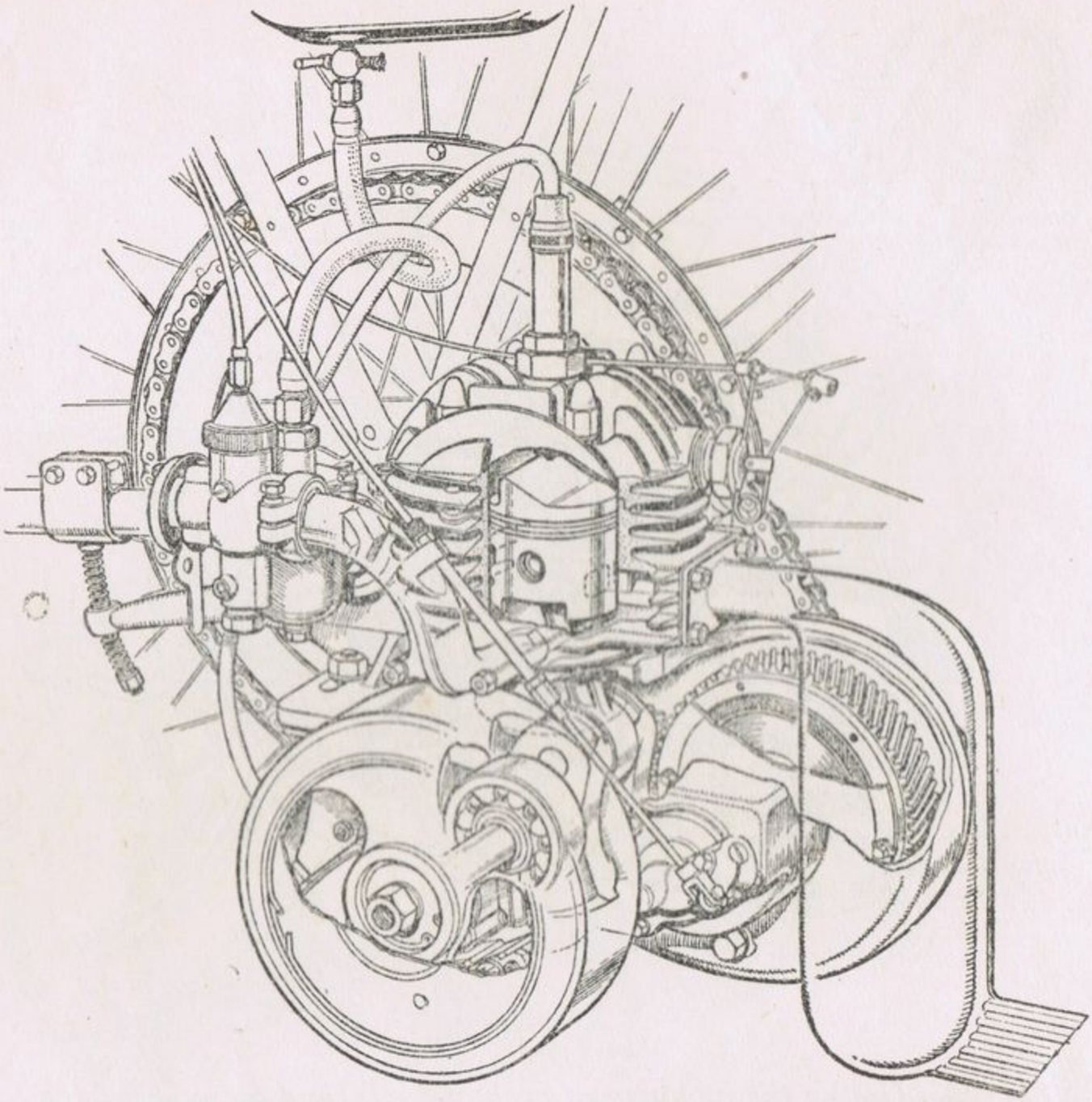

Fig. 24—Of French design and manufacture, the 20 lb, 48 c.c. V.A.P. cyclemotor is mounted on an extension screwed to the rear-wheel spindle and drives through a cone-type clutch and a roller chain. The chainwheel, it will be noted, is clipped to the wheel spokes. Helical pinions between the crankshaft and the chain drive provide a primary gear reduction. The springs just in front of the carburettor's air intake control the pivotal movement of the unit about the rear-wheel spindle and thus act as a transmission shock absorber

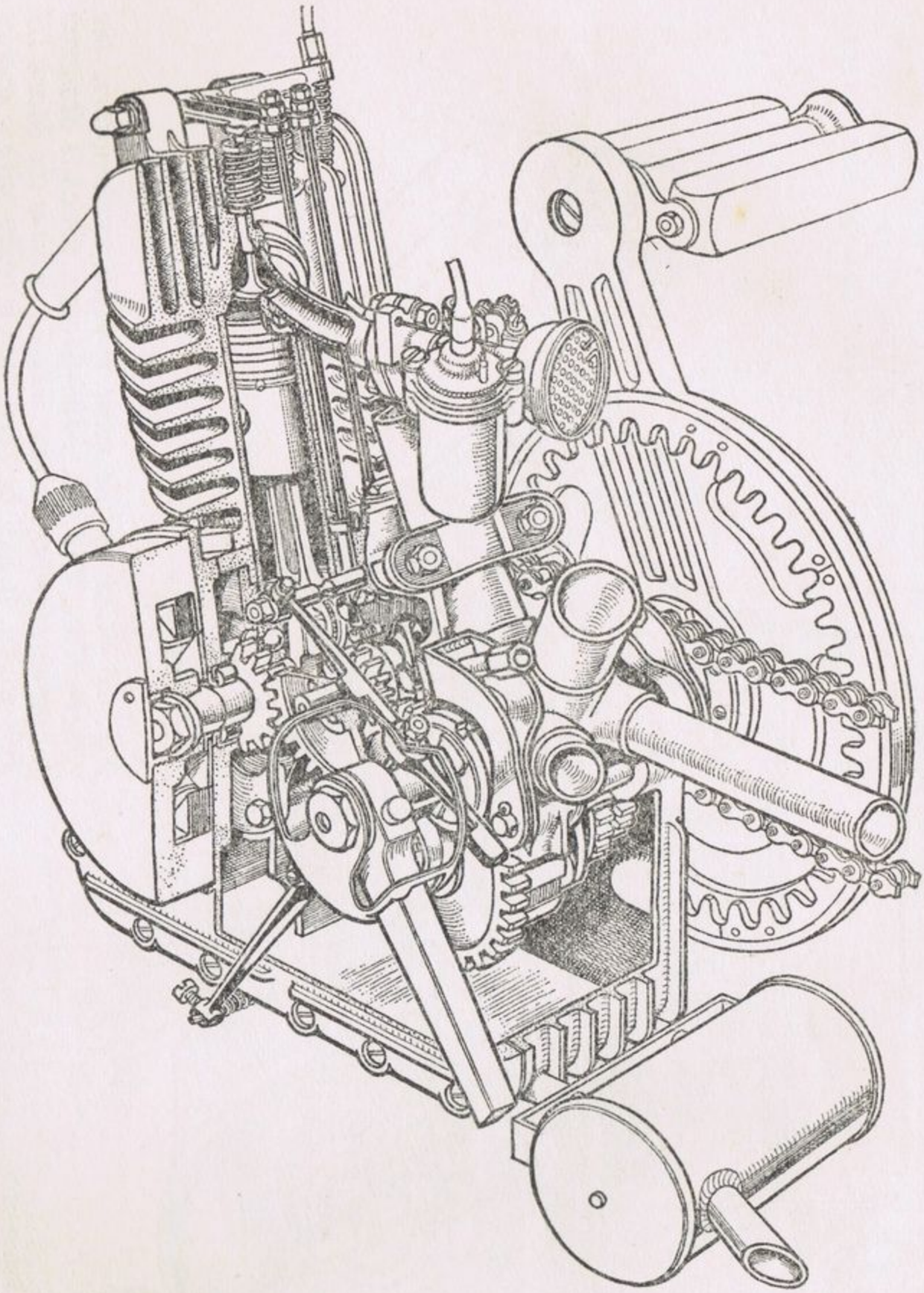

Fig. 25—Unlike the other cyclemotors illustrated, the 48 c.c. Cucciolo is not a two-stroke, but a four-stroke with overhead valves. It is an Italian production designed to give a high performance and has an all-metal clutch running in oil and a two-speed gear. As will be seen, the engine is clipped to the bottom bracket and front down tube of the bicycle. Drive is via the bicycle's own pedalling chain. The overhead valves are operated by pull-rods instead of push-rods, as is usual

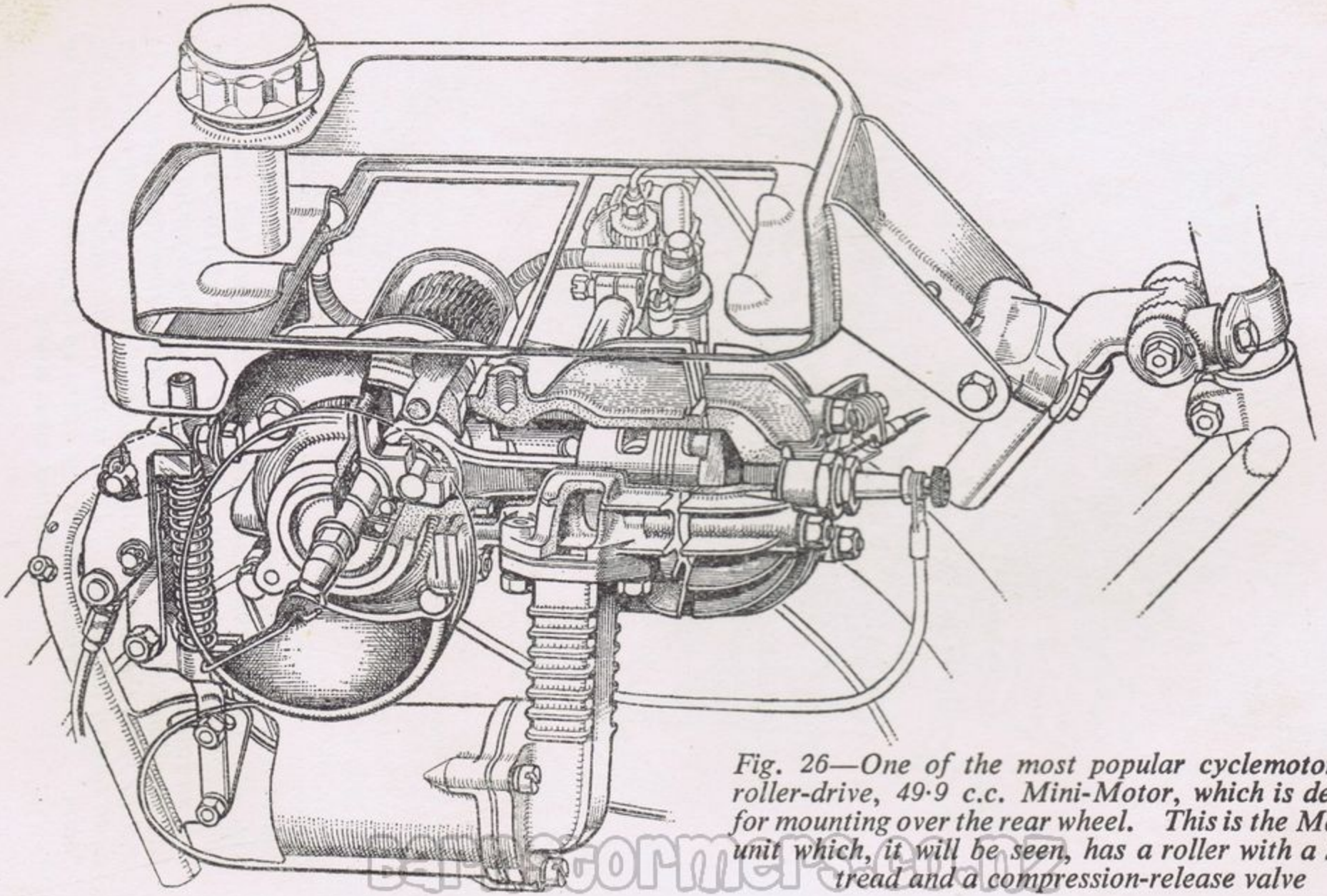

Fig. 26—One of the most popular cyclemotors, the roller-drive, 49·9 c.c. Mini-Motor, which is designed for mounting over the rear wheel. This is the Mark III unit which, it will be seen, has a roller with a special tread and a compression-release valve

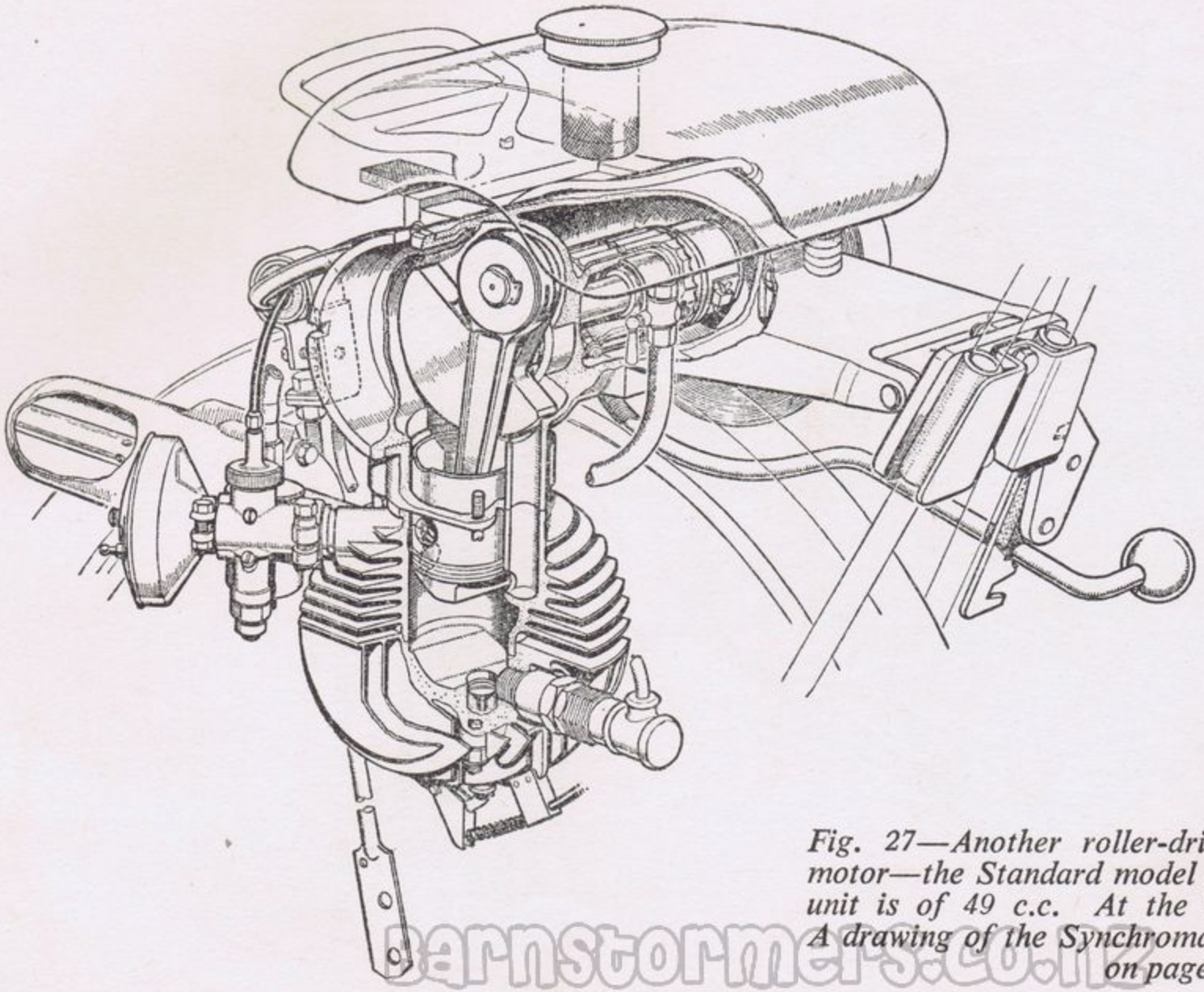

Fig. 27—Another roller-drive, rear-mounted cycle-motor—the Standard model Power Pak. The engine unit is of 49 c.c. At the rear is a lifting handle. A drawing of the Synchromatic Drive model appears *on page 45*

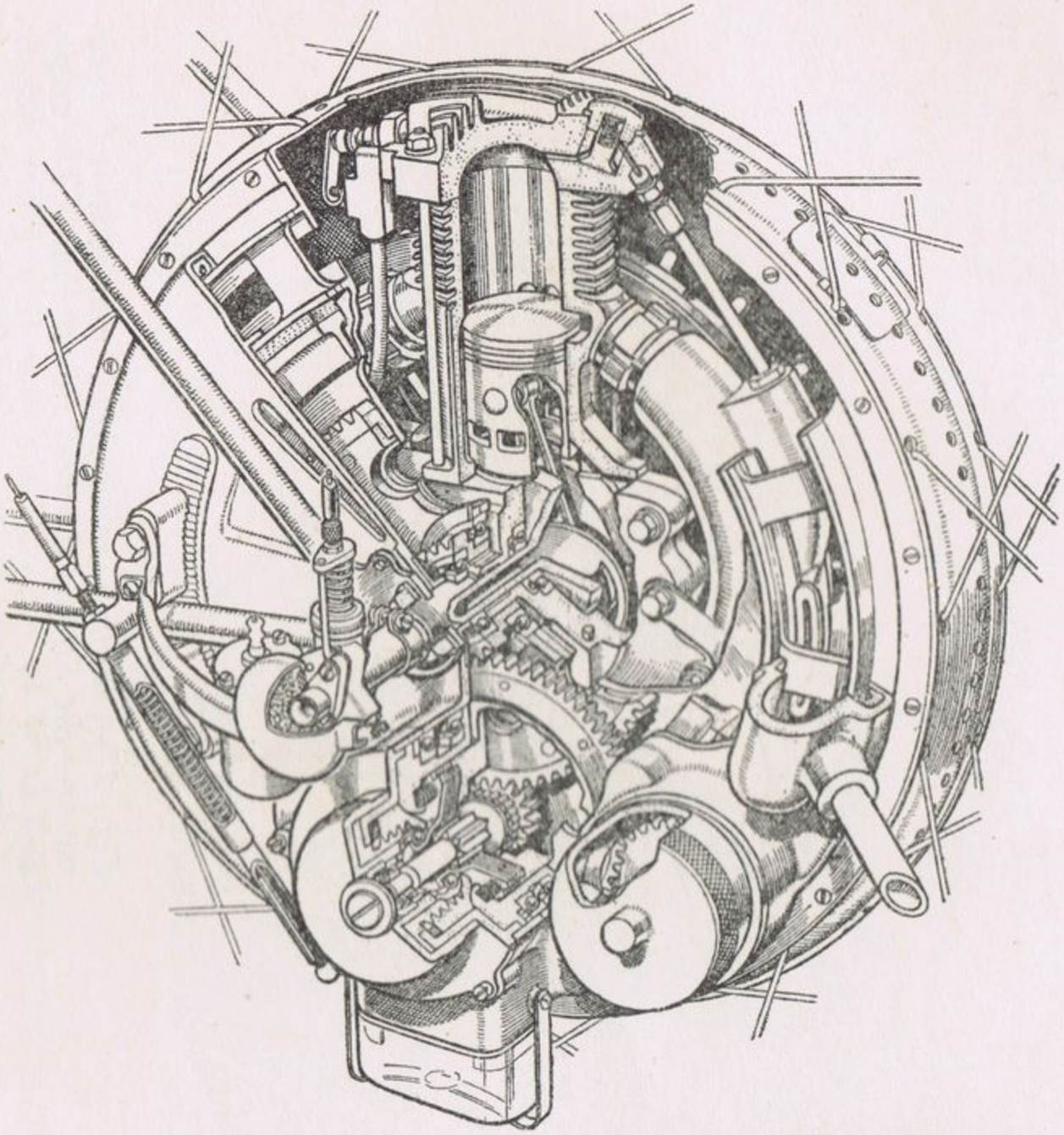

Fig. 28—The T.I. Power Wheel is a 40 c.c., two-stroke rotary engine which spins around a fixed crankshaft (the wheel spindle) and is contained within the drum of the wheel hub. Gear transmission and a five-plate clutch are employed. The design incorporates, among many ingenious features, a rotary inlet valve actuated by the connecting-rod, magneto ignition, a separate gear-driven alternator for lighting, and an internal-expanding brake. Cooling is automatic—the rotating engine acts virtually as the impeller of a centrifugal pump

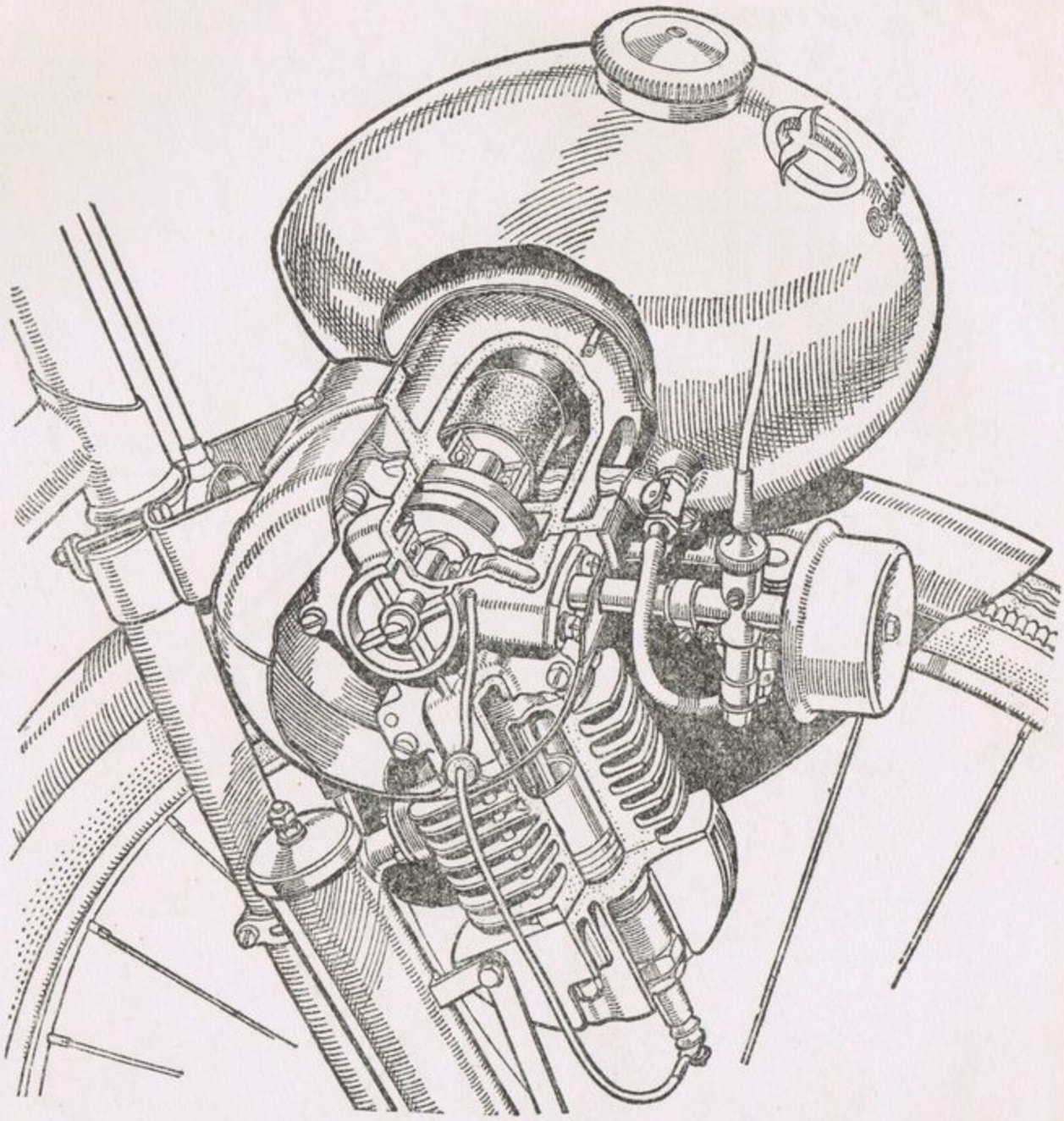

Fig. 29—Of 32 c.c. and weighing 15 lb, the Berini two-stroke drives the front wheel through an emery-faced roller. Brackets clamp the unit to the front fork. Roller contact with the tyre is maintained by coil springs, and the drive is disconnected by means of a lever on the left side of the handlebar

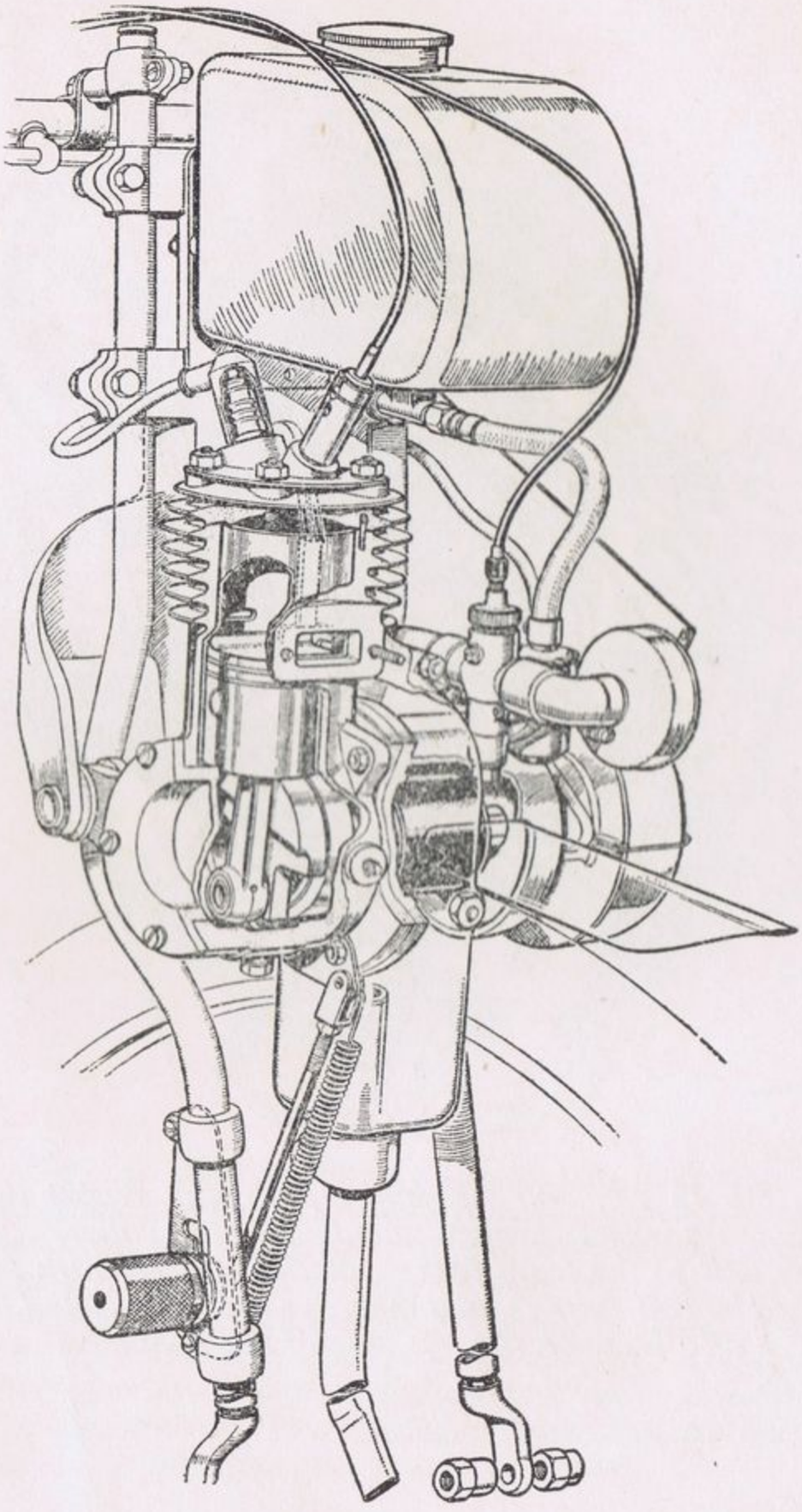

Fig. 30—Mounted over the front wheel on a shock-absorbing sub-frame, the Mocyc drives the front tyre by roller. The sub-frame is attached to the handlebar at the top and the wheel spindle at the bottom, thus reducing the loading on the front fork. The engine is a two-stroke of the flat-topped-piston type with a capacity of 49 c.c.

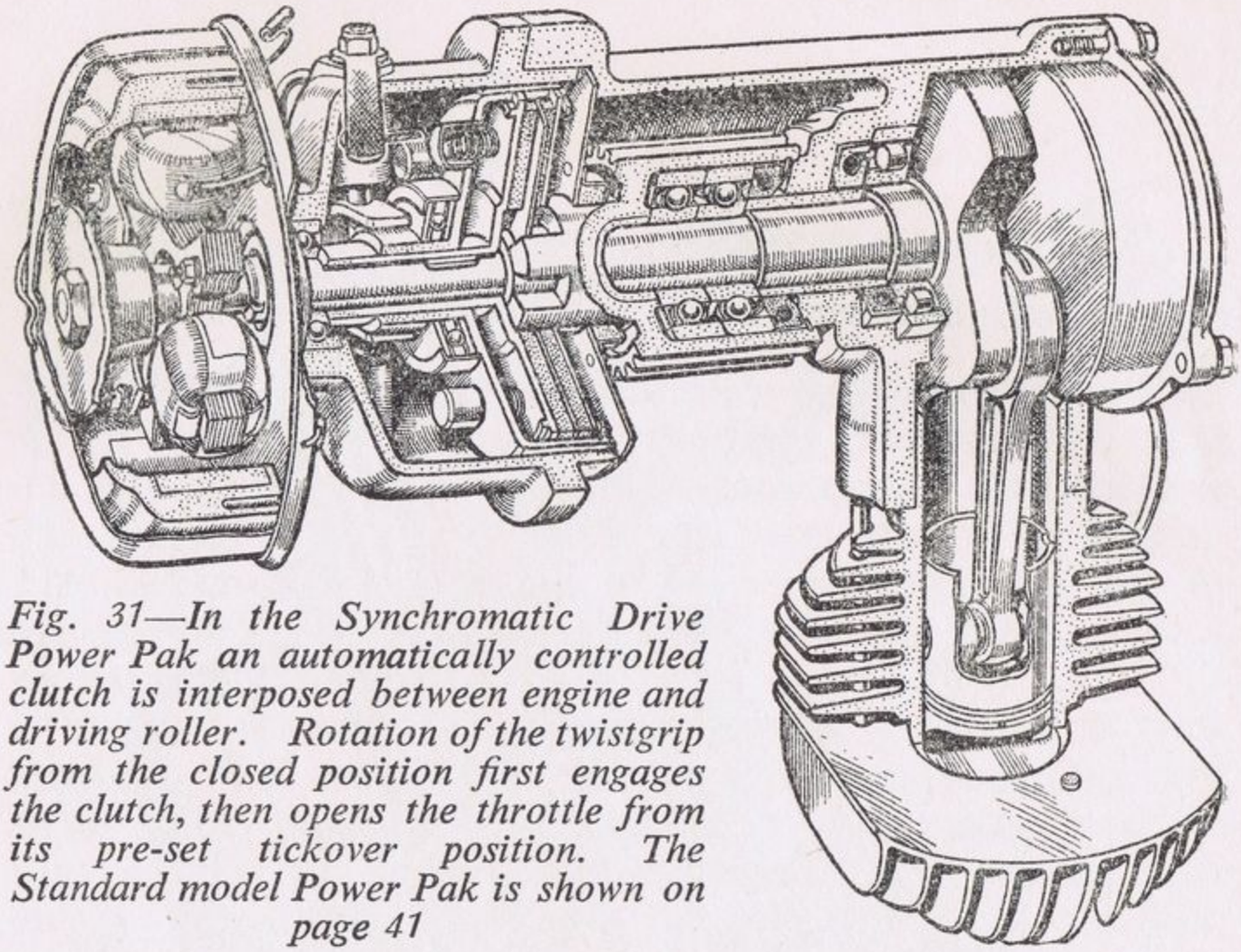

Fig. 31—In the Synchromatic Drive Power Pak an automatically controlled clutch is interposed between engine and driving roller. Rotation of the twistgrip from the closed position first engages the clutch, then opens the throttle from its pre-set tickover position. The Standard model Power Pak is shown on page 41

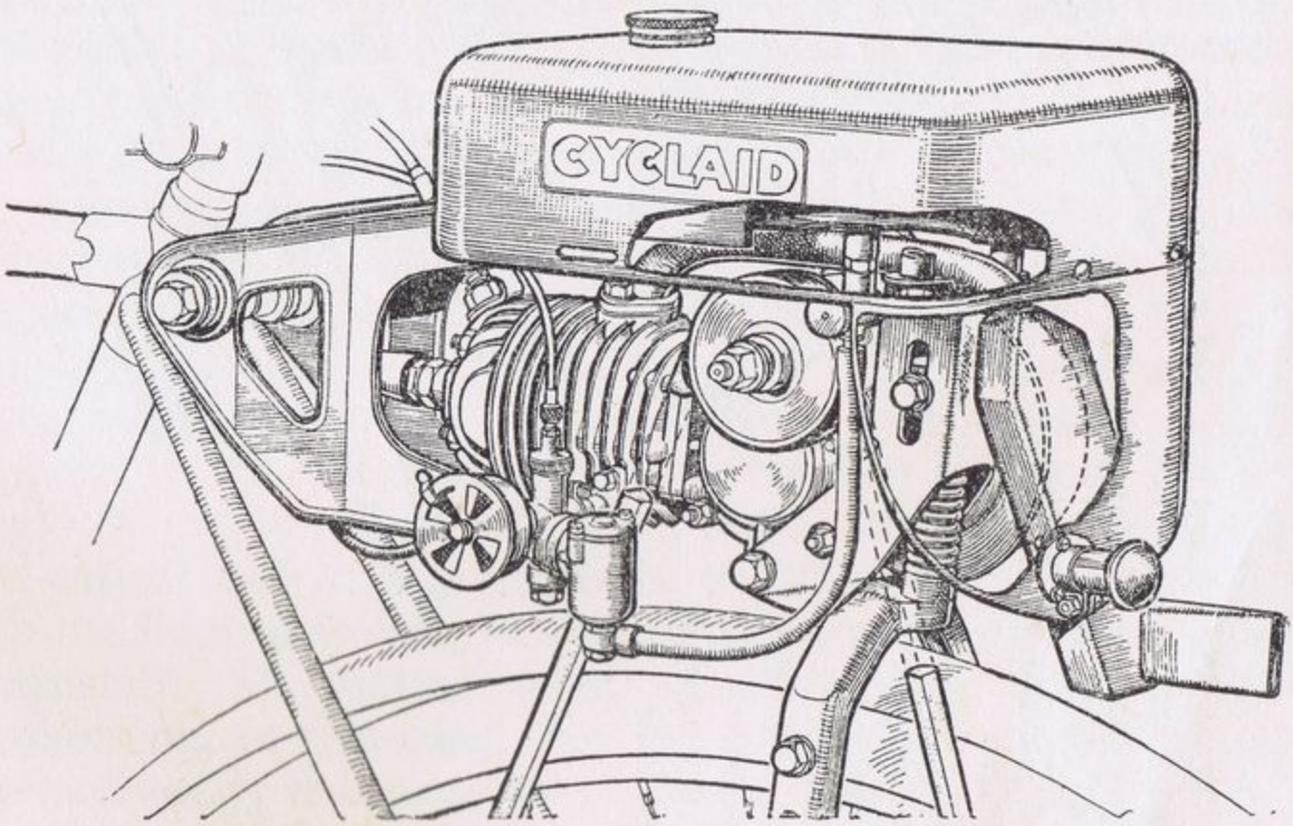

Fig. 32—A vee-belt is employed for the drive between the 31 c.c., two-stroke Cyclaid and the rear wheel. At the front, the engine unit is attached to the saddle pillar by a specially strong pinch-bolt via Silentbloc rubber bushes. A U-shape member attached to special nuts on the wheel spindle supports the rear of the unit. Weight of the unit is 15 lb

Fig. 33—Designed by the Italian Garelli concern, the 38 c.c. Mosquito two-stroke is mounted beneath the bottom bracket by means of a clamp on the chainstays and a clip on the front down tube. Drive is on to the rear tyre by a serrated roller. Overall width of the unit is 3 7/8 in — sufficiently narrow to clear the pedals. There is a helical-type gear reduction drive between the crankshaft and the roller. By means of a lever, the unit can be moved backward or forward to engage or disengage the drive