Mosquito

INSTRUCTIONS FOR THE USE

PT 2520 E

Mosquito

INSTRUCTIONS FOR THE USE

S. p. A. MECCANICA GARELLI

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CHARACTERISTIC DATA

Bore	35 mm (1" 3/8)
Stroke	40 mm (1" 9/16)
Piston displacement	38.5 cc (2.3 cu. in.)
Maximum number of revolutions on load	4;200 rpm
Corresponding speed	20 mph
Transmission by friction roller . . .	ratio 1 : 2
Magneto ignition	
Ignition advance	25°
As measured on flywheel circumference	30 mm (1" 3/16)
Gap between points of contact breaker .	.4 mm (.016")
Gap between points of sparking plug .	.7 mm (.0275")
Mixture lubrication	
Carburettor diffuser diameter . . .	9 mm (3/8")
Carburettor jet diameter	
Engine number	N°

The auxiliary engine "Mosquito" is designed and built with a view to motorising the bicycle in simple, economical and particularly practical way, for the use of all cyclists. The engine does not cause the cyclist any inconvenience whatsoever. It can be of really great service inasmuch as the cyclist will realize that his vehicle will remain a bicycle anyhow.

With regard to the fixing of the engine on to the bicycle, the working of it and its maintenance, it will suffice to follow the few rules given in this booklet.

Cyclists should always keep in mind that in the event of the engine failing, whatever the reason for it, such as lack of fuel, they can disconnect the engine, the bicycle being thus again free and running without any extra resistance.

HOW TO FIX THE ENGINE

Move lever marked 1. into its DISENGAGED position (fig. 1).

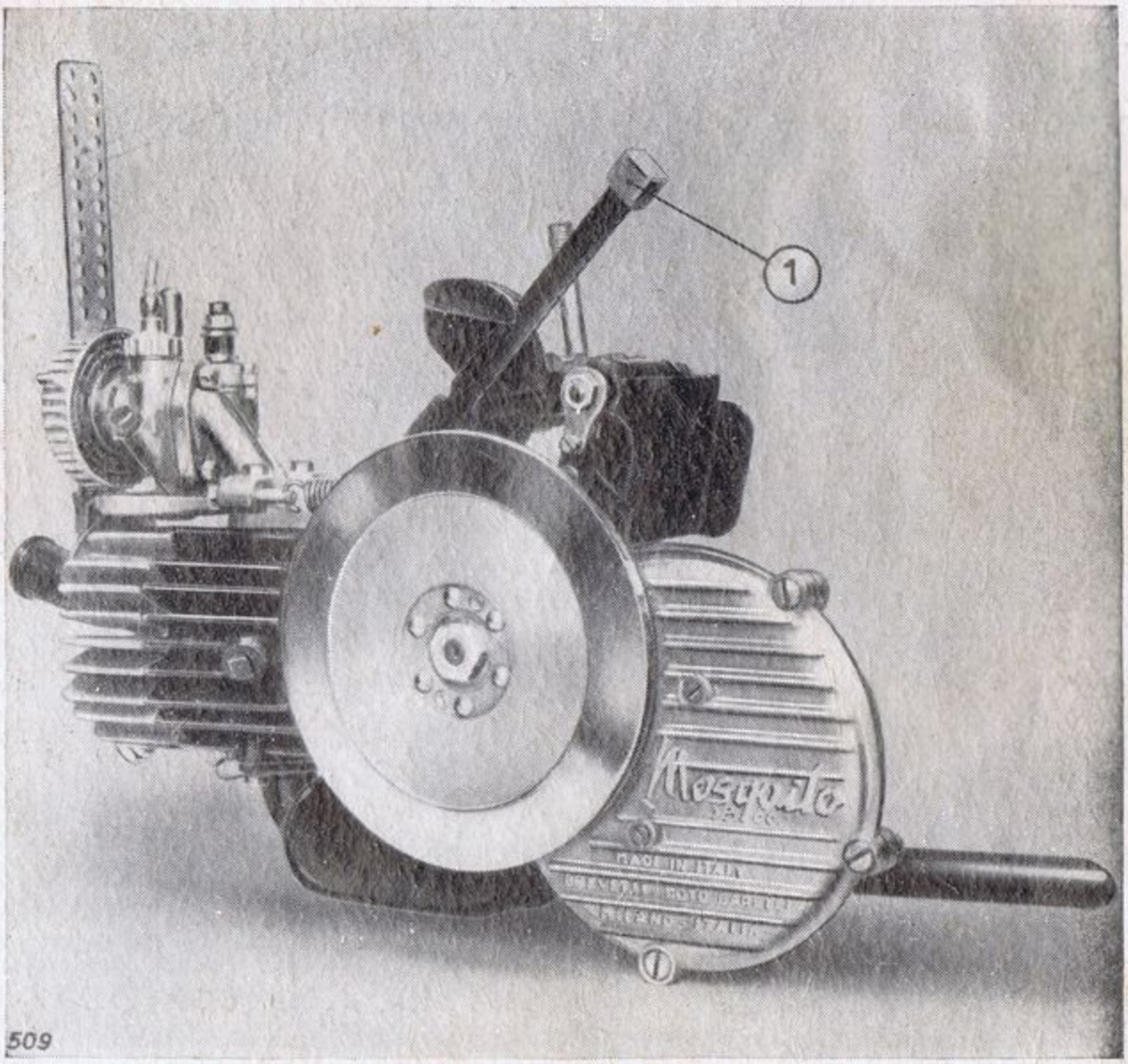

Fig. 1

Fix the motor on the bicycle frame (fig. 2) by means of top-plate marked 3 after checking that blocks marked 2 and blocks marked 4 are a good fit over the tubes of the fork. Blocks, which are not symmetrical, can turn so as to allow them to fit the above tubes, if necessary. Then put on springwasher 5. and nut 6. but do not tighten completely.

Slide the engine over the tubes of the fork (fig. 3) until the roller 7. is just touching the tyre of the back-wheel and the axis of the cylinder is approximately horizontal.

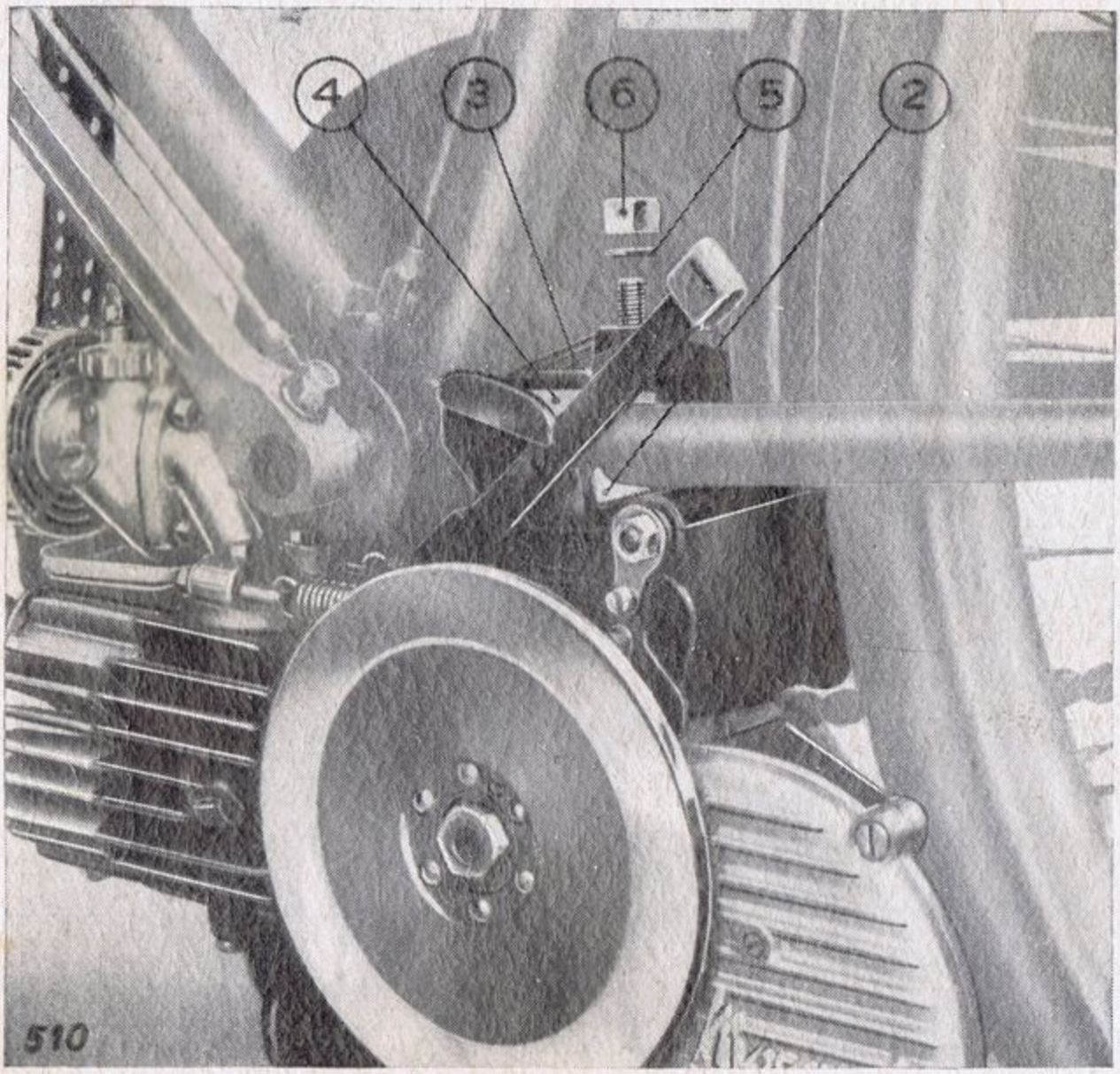

Fig. 2

Make sure that the crank lever of the pedals can turn freely, without fouling the engine and that the back-wheel is centrally placed on the driving roller (the wall of the tyre should be approximately 1/4" (6-7 mm) from the side of the casing). Then tighten nut 6.

Fix bracket marked 9. on the inclined front tube of the frame by means of bolt marked 10. but do not tighten, so as to allow bracket to be moved along the tube.

Thread the perforated strip marked 11 (fig. 4) on to the

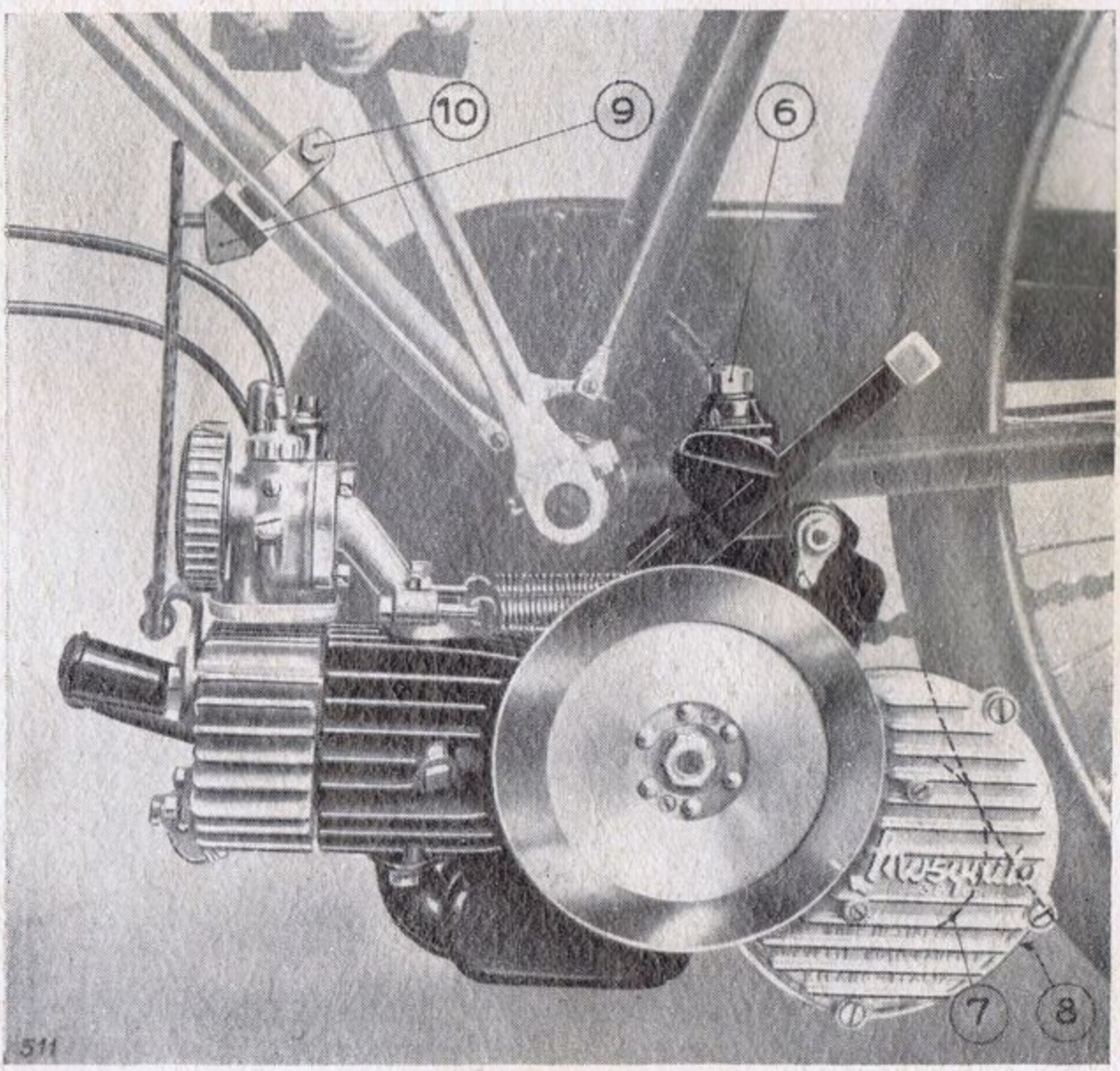

Fig. 3

two studs belonging to bracket 9. and in such a way that THE ROLLER IS NOT MORE THAN 1/8" (3-4 mm) AWAY FROM THE BACK TYRE. In this position the strip should just skim the carburettor air filter marked 12 running for this purpose the bracket along the tube.

Then fix cover plate marked 13., springwashers and tighten nuts marked 14.

The extra length of strip marked 11. stretching out of bracket 9., can be bent over as shown in figure 4, or cut off.

Bolt marked 10. can now be tightened.

At this stage ensure that the back wheel turns freely

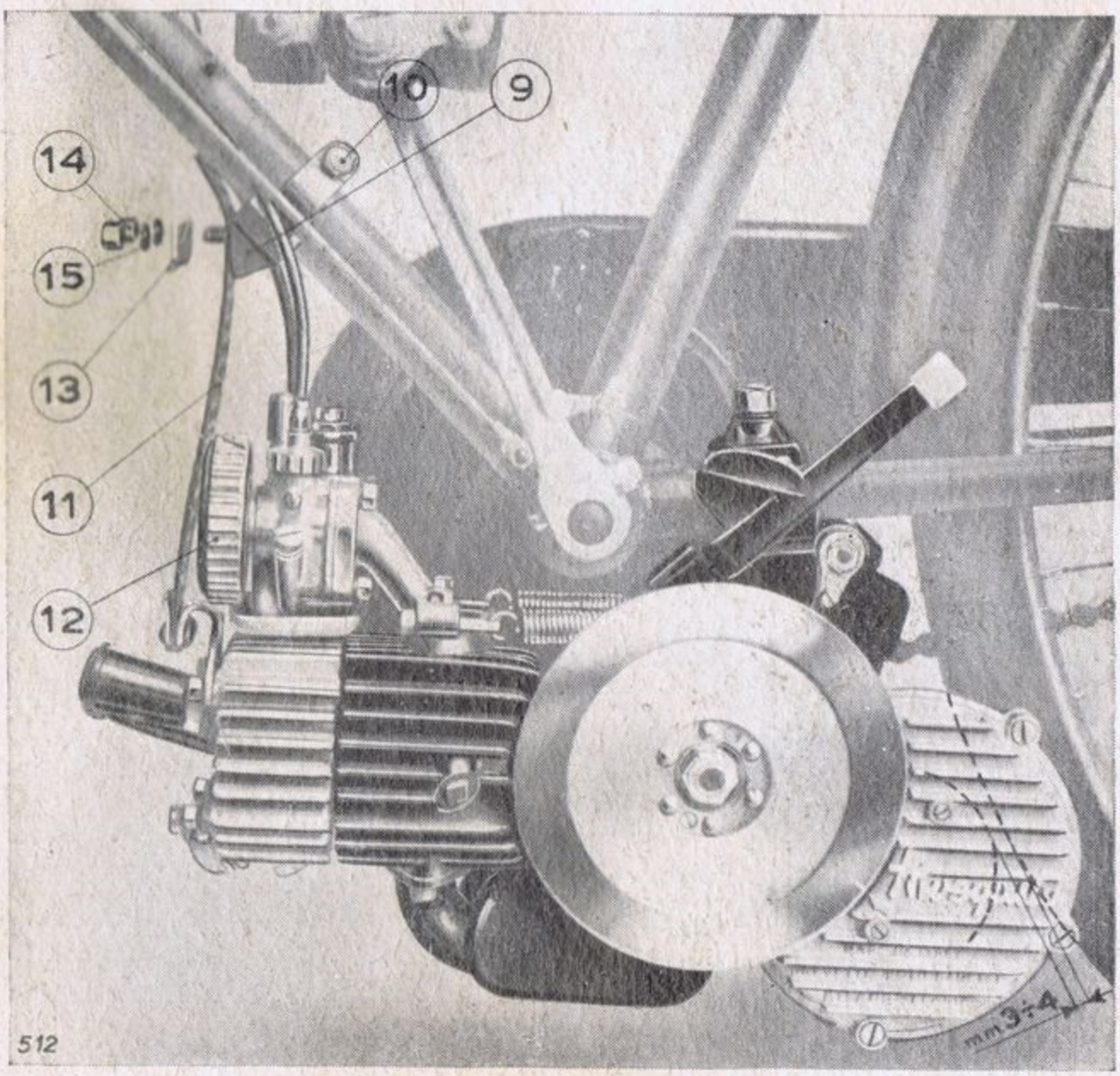

Fig. 4

without touching the roller at any point, and that the cylinder is slightly inclined upwards when lever marked 1. is in the SWITCH-ON position. The perforated trip 11 should now be square to the cylinder.

Please note the two important point at foot of pages (7 and 8).

1) When the engine is disconnected, the driving roller should be quite close to the tyre (well inflated).

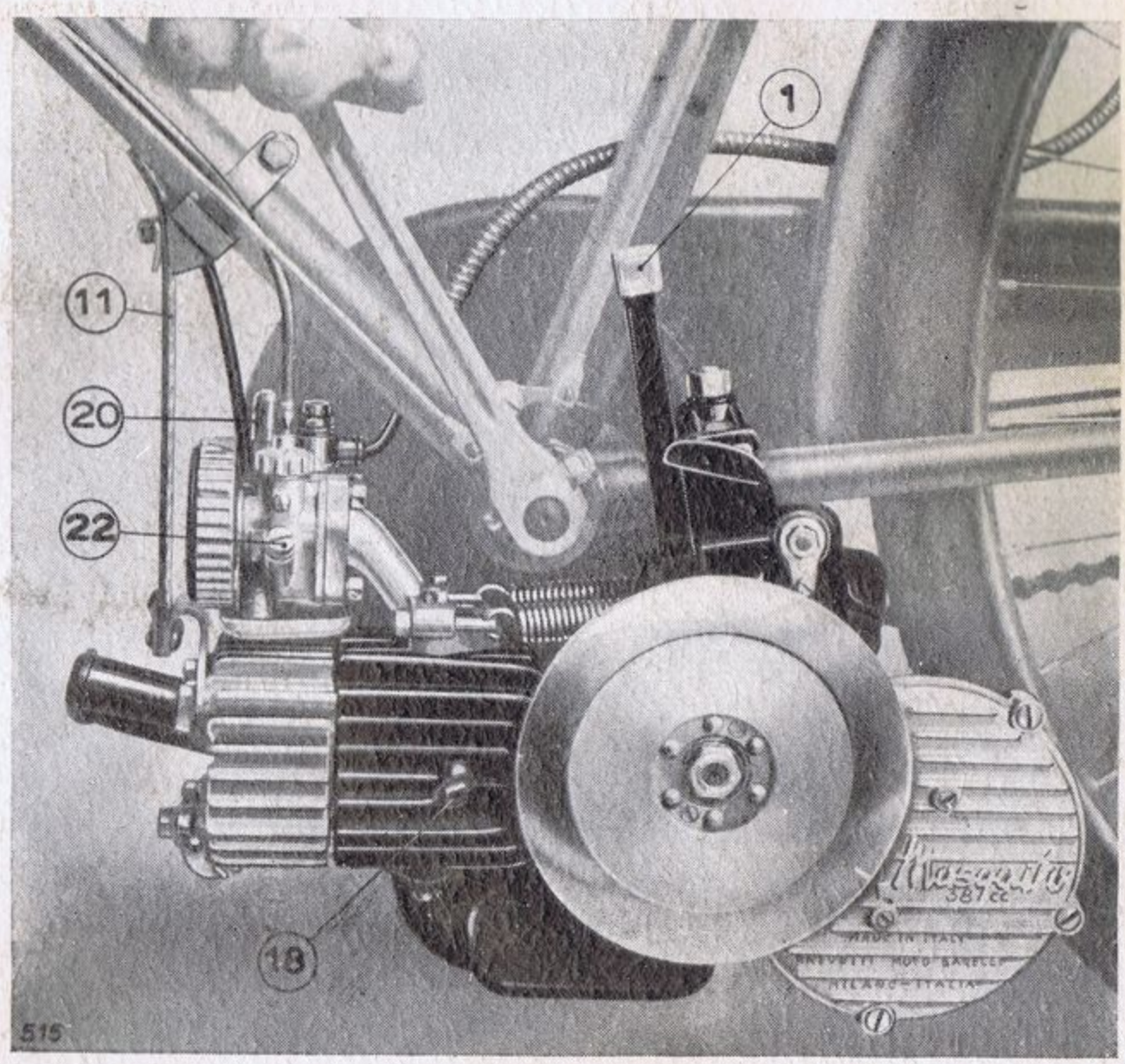

Fig. 5

2) When the engine is switched on, the cylinder should be in a horizontal position or slightly inclined upwards and the perforated strip mar-

ked 11 should be straight on and square to the cylinder.

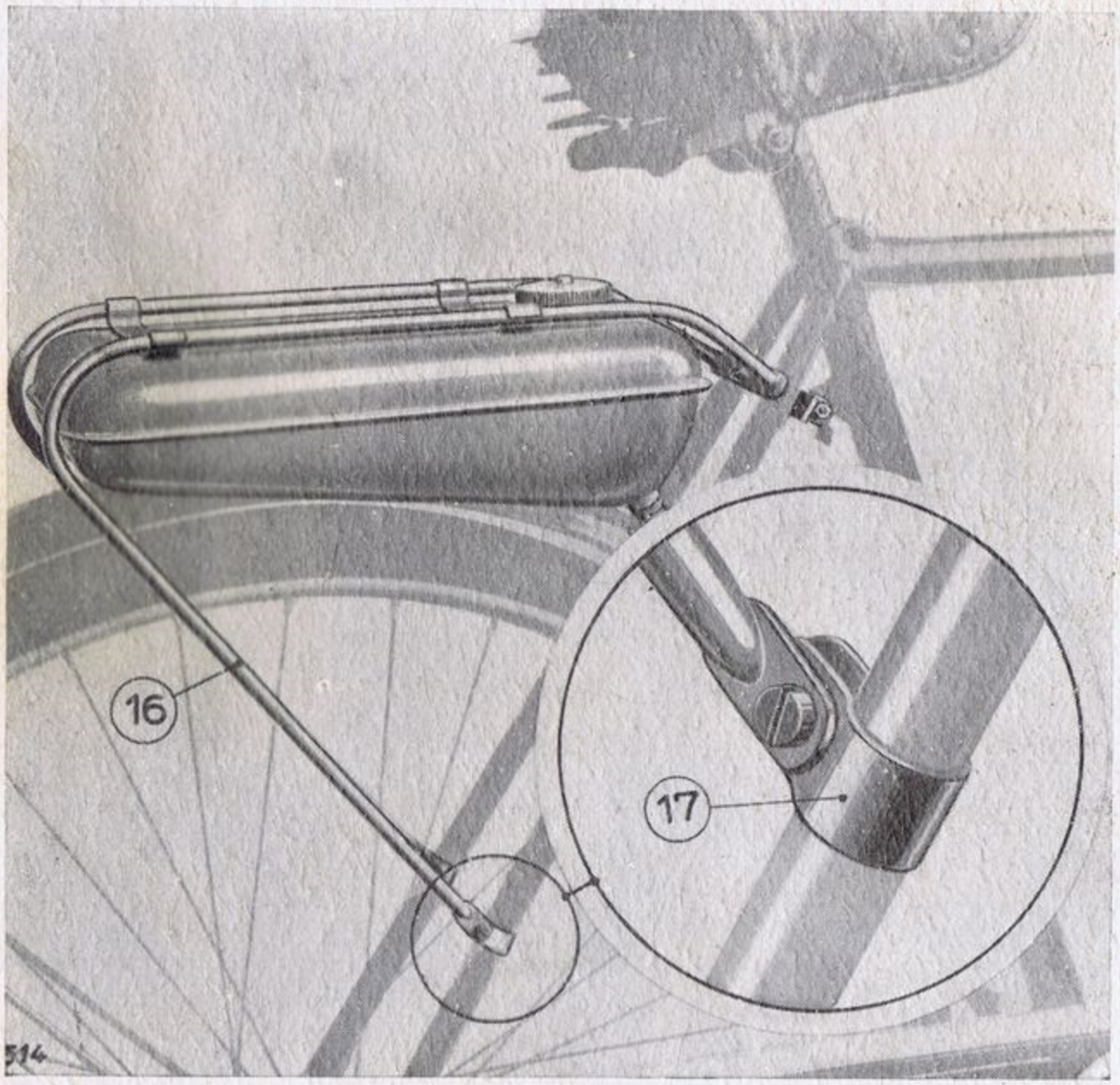

Fig. 6

HOW TO FIX FUEL TANK AND ENGINE CONTROLS

Illustration No. 6 shows how the tank should be fixed. Special attention should be paid in order to ensure that tubes marked 16. are fixed on the outside of clip marked 17.

The way to fix the controls is illustrated on page 12.

It is absolutely necessary to fix a good shield on the front mud guard, as close to the ground as possible, so as to protect the engine from any splash from the front wheel.

WORKING INSTRUCTIONS

It is necessary that the cyclist should keep in mind the fact that his motorised bicycle is not a motor-cycle and it should therefore not be subjected to excessive strain. When travelling over bad roads the speed should be reduced accordingly and the weight put on the pedals.

The engine is bench tested before delivery, but needs to be run in. Therefore one should take care not to travel at a speed exceeding 12-15 m.p.h. (20-25 Km/h) for the first 200 miles. (300 Km).

PRELIMINARY OPERATIONS TO STARTING THE ENGINE

A) Fill the tank with petrol mixed with lubrication motor oil in the following proportions

— In summer: 5 measures - 3 oz. - heavy oil to 1 quart of petrol (ca. 75 grams to 1 liter).

— In winter: 4 measures - 2 ½ oz. - light oil to 1 quart of petrol (ca. 60 grams to 1 liter).

The mixture should be carefully filtered through a clean cloth or preferably chamois leather, and then poured into the tank.

B) Move the lever marked 1. to the engaged position (fig. 5).

HOW TO START THE ENGINE

A) Open the petrol cock. Then if the engine is cold press up and down two or three times, the carburettor pump marked 20 (fig. 5). There is no need to do this if the engine is warm.

B) Rotate the air filter marked 12 in the direction of the arrow marked "Avviamento" (Start).

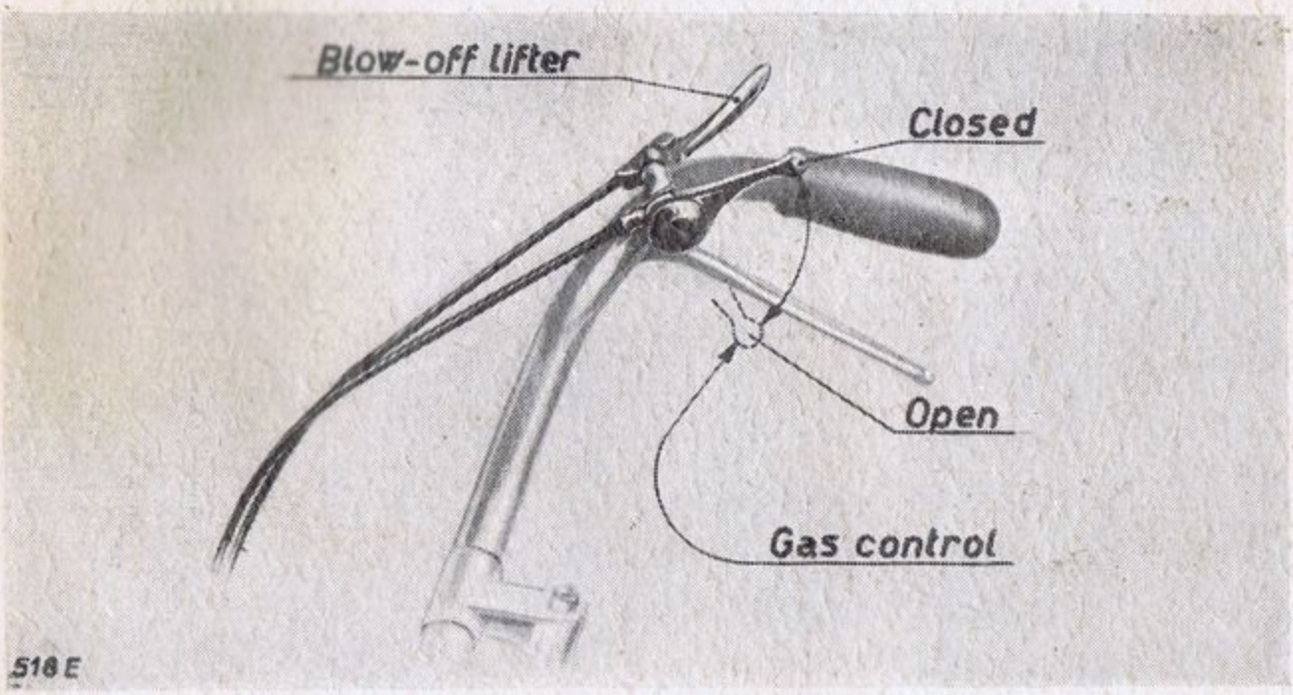

Fig. 7

C) Get on the saddle, open the gas control very nearly fully and pull blow-off lifter. After a few turns of the pedals, release the blow-off lifter. After the engine has started firing keep on helping it with a few more turns of the pedals. Then set the speed by adjusting the gas control. After a few hundred yards the engine will be getting warmer and the exhaust may not be so uniform (four - stroke - working: turn the air filter marked 12. in the position marked "Marcia" (Running). This can be done

with one's foot and therefore there is no need to stop the bicycle.

The blow-off lifter should ONLY be used to start the engine.

D) In winter when the engine is very cold, it may stop after firing a few strokes. In this case press the carburettor pump down again until the engine is running regularly.

HOW TO STOP THE ENGINE

Close the gas control. If the engine is required to stop for several minutes or longer it is advisable to shut the petrol cock and disconnect the engine.

THE CARBURETTOR. Details, the knowledge of which may be useful.

The screw marked 23 (fig. 11) reduces the flow of the fuel into the carburettor and is designed to prevent petrol overflowing the constant level tank, as it may occur or bad roads. The petrol must flow along the thread of the end portion of the screw to get into the carburettor and is therefore slowed down.

Starting pump 20 (fig. 5) which is used to facilitate the starting of the engine, is not to be confused with ordinary devices that help to raise the petrol level temporarily in the constant level tank of the carburettor. Also, the ordinary type of pump is not as efficient as this one, because one cannot usually tell if and how much the petrol level is being raised. Besides, there is a possibility of the fuel overflowing and spilling outside the container.

On the other hand, by pressing down this pump, a small amount of fuel is injected in the jet chamber. By the use of this pump one can also detect two irregularities: if, when pressing the pump one notices that there is less resistance than the average, this means that the fuel is not coming through. It may be that there is no more fuel in the tank or the cock is shut off, or that the filters or the tubes are obstructed, or the screw marked 23. is dirty. If there is a greater resistance than the average, it means that the carburettor jet is obstructed. Sometimes a good squirt from the pump is sufficient to free the calibrated hole of the jet from any dirt which may be obstructing it.

Whenever one dismantles the carburettor whether it is for a periodical clean-out or for any other reason, care should be taken when handling the floating valve which is obviously very light and delicate. Before reassembling, pour some petrol into the container so as to allow the valve to float and to facilitate its conical point (which should be pointing upwards) being located in the recess in the lid.

CARBURATION

In order to ensure that the engine when new may be run in easily, the engine is delivered set for the use of a rich mixture. It is therefore, usually necessary to re-set the carburation after the first few hundred miles. This re-setting should be done when the engine is warm, i.e., after running about two miles with airfilter set in the position marked **"Marcia" (Running).** If the carburation is correct, the exhaust of the engine should gradually turn into a uniform humming, at speeds between 10 and 18 m.p.h. (15-30 Km/h). At a speed below 10 m.p.h. on a level road on a windless day,

it is possible that the firing may not be uniform, i.e., that the engine may be working on four strokes.

If, however, the engine keeps working on four strokes at a greater speed than 10 m.p.h., or if only runs smoothly on two strokes when going uphill or when the brakes are gently applied to the bicycle, or after shutting the petrol cock, then it is necessary to substitute the jet with another one having the next lower number (for example: changing from No. 43 to 42).

If, however, the jet size has been reduced too much, there will be difficulty in starting the engine even if warm, and it may be inclined to stop or to miss firing when one tries to accelerate.

The carburettor is provided with a rotating air-filter marked 12., which consists of a metal grid preventing the dust from being sucked into the engine together with air. This filter, by virtue of its rotating, is also used to regulate the mixture. By rotating it in the direction of the arrow marked **"Avviamento" (Start)** the carburation gets richer, and vice versa if turned to the position marked **"Marcia" (Running).** Use a rich mixture when starting the engine or going up a very steep gradient.

MAINTENANCE

A) Inspect frequently the grooves of the transmission roller and keep them clean.

B) Every 150-200 miles take out and clean the plug. (See page 21, para. 7). Check the gap between the points. (It should be about .0275" - .7 mm).

C) **Every 600-700 miles,** dismantle the exhaust, clean and decarbonise it. The inlet elbow can be reached easily. Clean the internal hole of the outlet tube with the aid of a few stiff iron rods. Remove the cylinder head and scrape the inside of it carefully. Clean the head of the piston, particularly the edges corresponding to the two transfer ports in the walls of the the cylinder. Clean the exhaust-port. The exhaust-port can be opened by turning the fly-wheel until the piston reaches the lowest point on its stroke, (inner dead point).

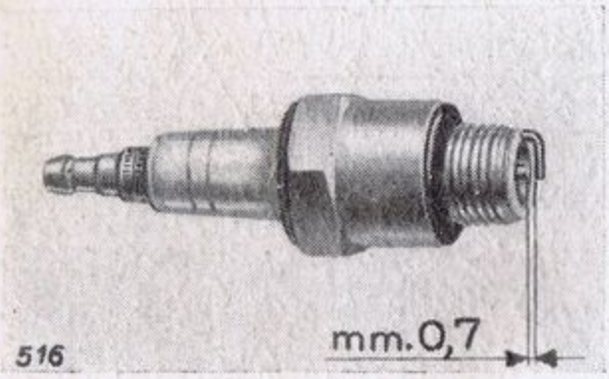

Fig. 8

When re-assembling the cylinder head, the nuts should be tightened little by little, and changing from one to the other diametrically opposite, i.e., cross-like fashion.

Put in some grease (type motor-car gear-case) in the gear-box, through the adequate grease-inlet situated under the driving roller.

D) **Every 1,200-1,500 miles,** dismantle cylinder head, cylinder and the exhaust, and decarbonise thoroughly them. To dismantle the cylinder it is necessary to unscrew the bolts that control the two springs. This is shown in figs. 3, 4 and 5.

The plugs 18 (fig. 5) are pressed in and turned in a determined way. **They should not be removed or turned around, with a presumed view to tighten them thoroughly.** Dismantle and clean the tank and filter of the carburettor. Check, clean and re-set the points of the breaker removing the lid of the box on the opposite side of the fly-wheel. (Gap between points should be .016" - .4 mm).

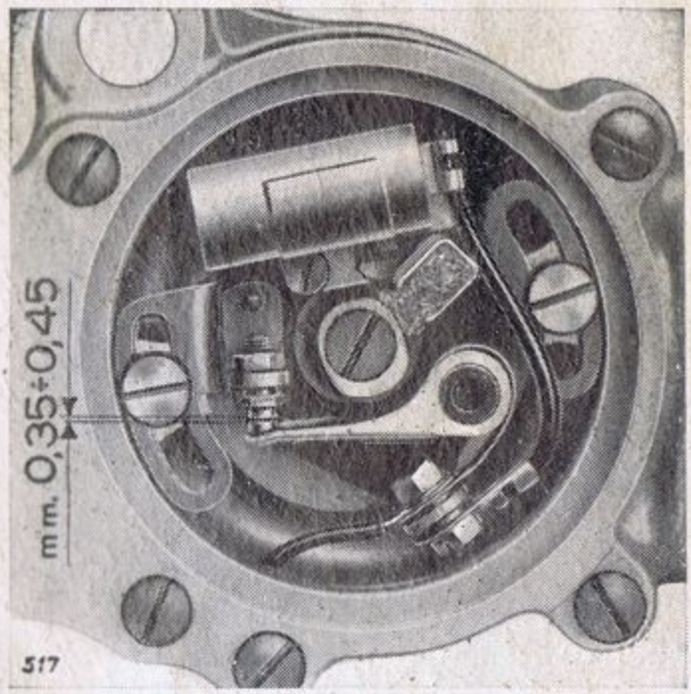

Fig. 9

E) **Every 2,000 miles** approx., remove the fly-wheel and the lid of gearing case. Clean and grease all gears with grease used for motor-car gear-box. When re-assembling take care of the timing. Secure correct timing by rotating the roller until the tooth which is marked is in line with corresponding mark on the case, (same side as the current is taken from), os is lightly lower (not more than one groove of the roller). It should **never** be higher than the scratch on the case. The roller being in this position,

fix the fly-wheel so as to make the arrow engraved on it coincide with the one engraved on the casing, (opposite side as the current is taken from). In this position the points of the breaker should just begin to open.

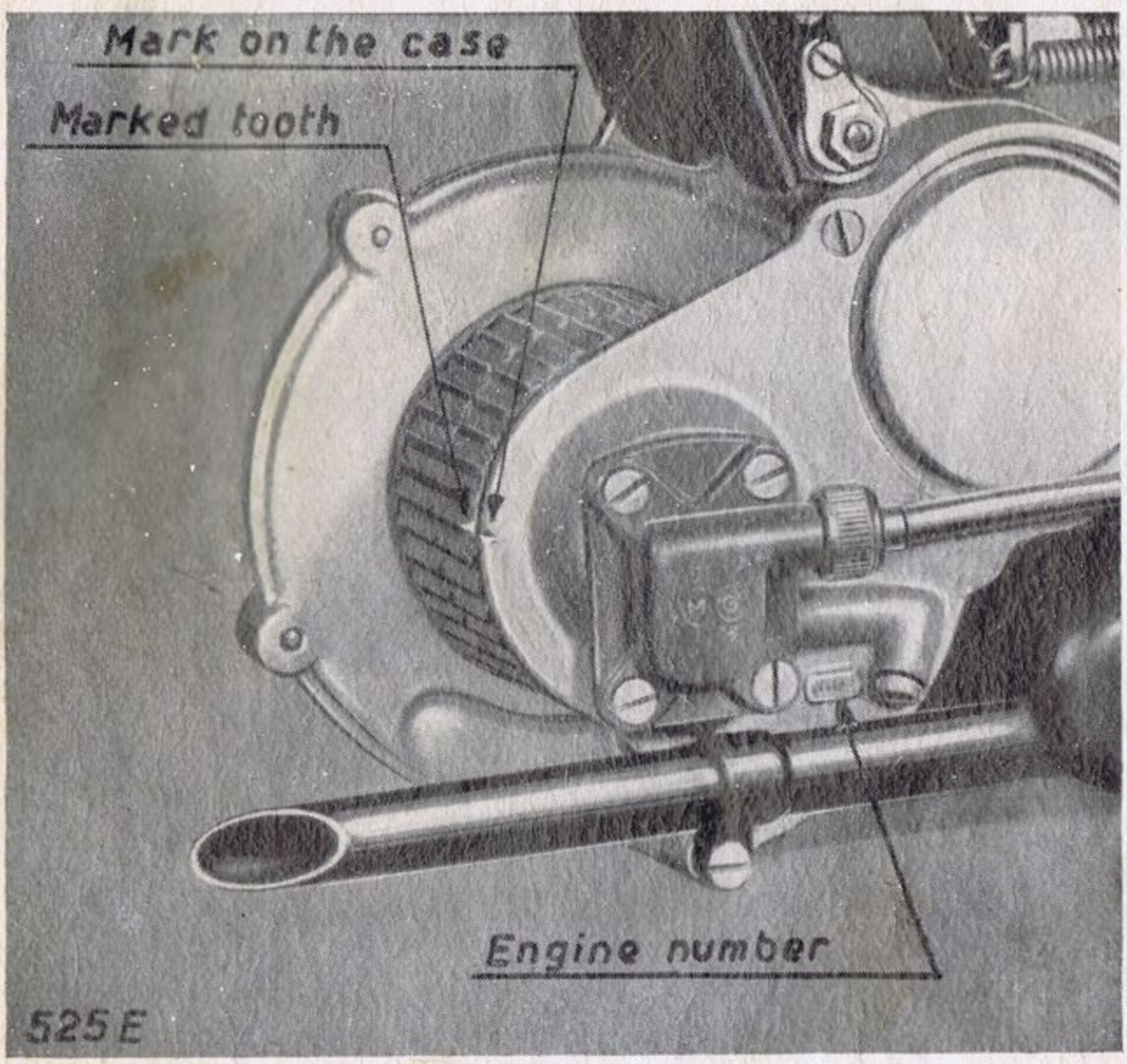

Fig. 10

The work explained in paragraphs (D) and (E) should be carried out only by skilled operators. It is advisable, therefore, that non-competent users get in touch with the agent representing the manufacturer.

OPERATION TROUBLES

A) The engine does not want to start or keeps stopping.

1) The petrol cock may be shut.	**Open it.**
2) There is no petrol in the tank.	**Refill with petrol mixed with oil in the right proportion after filtering mixture through clean cloth or rather chamois leather.**
3) The jet of the carburettor is obstructed.	**Undo the screw marked 22 fig. 5, and take out the jet. Suck the conical end of the jet to extract any dirt that may be in it ,or push through the jet hole the specially supplied rod and clean the jet with it. Look in the jet against the light and make sure that the hole is clear.** Press the pump marked 20 once or twice before re-assembling the jet. The fuel squirting from the jet chamber would drive out any sediment which might otherwise cause the same trouble at a later date.
4) The screw marked 23 which regulates the flow of petrol through the filter marked 24. fig. 11., is dirty (this trou-	**Shut off the petrol cock and unscrew the screw marked 23. and carefully clean the threaded end part of it (marked "a"). Screw it back in its place without tightening it. Open the petrol cock so as to allow the mixture washing away any dirt that might have been**

ble may arise especially during the first days of usage of the engine, because of minute impurities that may be left over in the pipes or the petrol tank).

left on the screw. Then close the petrol cock and tighten the screw.

5) The petrol pipe is obstructed or the filters are dirty.

Dismantle pipe marked 24. and clean the filter that is in it. Before re-assembling open the petrol cock to check if petrol is flowing from the pipe. If it does not, dismantle the petrol pipe and blow through it; check if petrol is coming out of the petrol cock when open. If it does not, dismantle the cock and clean its filter.

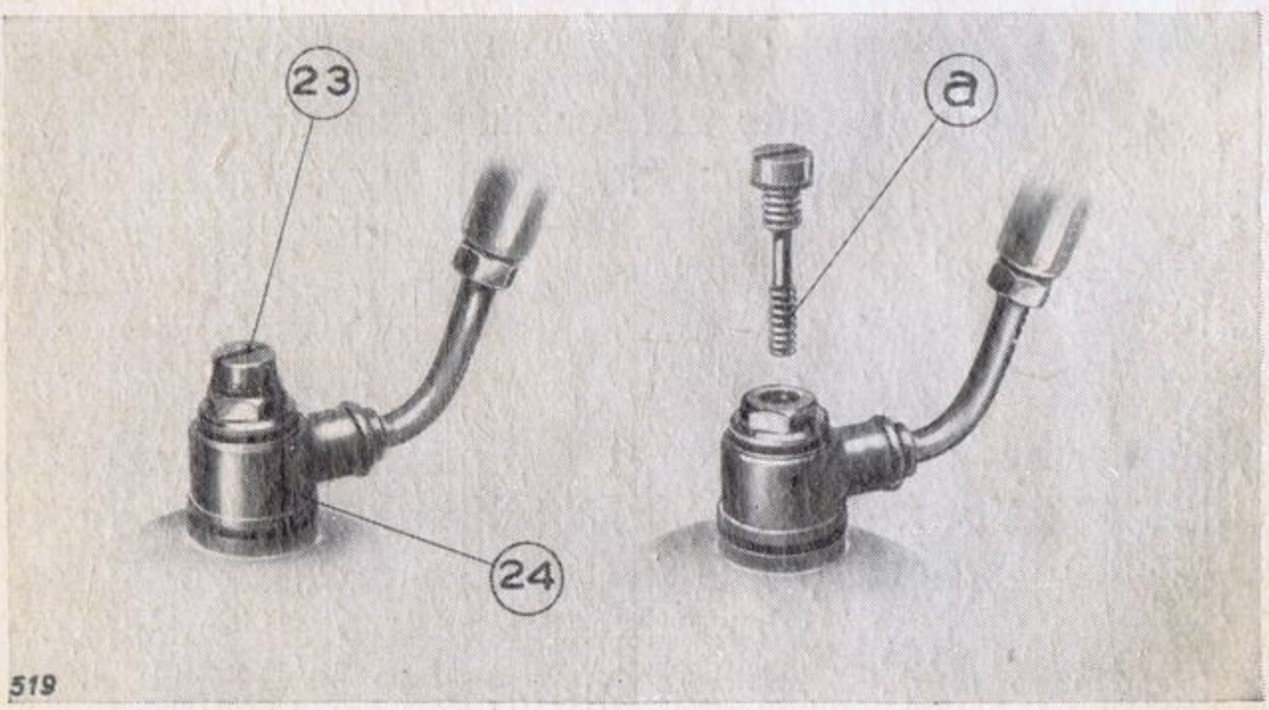

Fig. 11

6) The engine is choked.

If the carburettor, because of excessive use of the pump or defective joint, is choked and the petrol is dripping outside, close the petrol cock and fully open the throttle. Then pedal until the engine starts. If after doing this the engine still refuses to start, remove the plug and having found it wet, dry it, and before putting back, pedal round a few turns in order to free the engine from tre excess of petrol that had penetrated it.

7) The plug is dirty

Remove the plug: clean the points and scrape the insulating part of the centre electrode and its housing. Better still, get the plug sand-blasted at your local garage station. Check the gap between the points (.0275" - .7 mm.). If necessary, use some fine emery cloth to remove from the electrodes points any oxidation. **When fitting the plug again, take care that it is put on at the correct angle. The plug should be screwed on by hand only, the spanner only serving the purpose of tightening the packing.** Before re-assembling the plug, test it as follows: Connect the plug with the cable from the magnet, and hold it against the cylinder block, then raise the back wheel from the ground and turn the engine by half a turn by means of the pedals. There should be a spark between plug points. If on the other hand the spark is in-

ternal, it means that the plug is not properly cleaned or may be faulty. In the latter case, replace the plug with a new one. Should there still not be a spark, it is advisable to get in touch with the manufacturer's agent or seek expert advice.

8) The blow-off valve is sticking. Try and turn the stem of the valve by using a plier. Should this not be sufficient cure remove cylinder head and grind the valve.

B) The engine is not pulling, i.e., it does not reach its normal speed.

1) The engine is missing. When opening the throttle fully, the engine tends to slow down. The carburation is poor. **Turn the air filter marked 12. fig. 4, in the direction of arrow marked "Avviamento" (Start).** If this is of no avail, replace the carburettor jet with one next larger in size. There might be an air leak in the carburettor. Check and tighten all nuts.

2) The exhaust of the engine is not uniform. It becomes so, only at a speed greater than 15 mph. The carburation is too rich. **Turn the air filter in the direction of arrow marked "Marcia" (Running).** If this is of no avail, replace the jet, of the carburettor with one next smaller in size. At times, this trouble might be due to

the carburettor getting chocked owing to the float not working properly. This can be checked readily by shutting off the petrol cock while the engine is running. In this case, dismantle and thoroughly overhault the carburettor. Should the trouble persist, check, under consideration of the run mileage, whether the engine needs cleaning as per chapter "maintenance" (point C).

3) **The noise from the exhaust is fainter. The engine is working on four strokes at all speeds.**

Excessive incrustations. Inlet and outlet ports and exhaust tube may be obstructed. See paragraph C on maintenance.

4) Lack of compression.

Inspect the blow-off valve and make sure it does not leak. (See paragraph A, point 8). Check all the nuts of the cylinder head and tighten them if necessary. Again, if this is of no avail, dismantle the cylinder and check if the piston rings are free in their respective grooves. If they are free, that means that the same are worn out and need changing. Have the engine checked by the authorized workshop.

C) The transmission roller skids, i.e., the engine increases its revolutions without corresponding increase in velocity of the bicycle.

1) **The tyre is unsufficiently inflated.**

Inflate it.

2) The tension springs are not taut enough, or one spring is broken.	Inspect and replace springs with new ones if necessary. On wet or muddy roads, pull the springs completely.
3) The engine has slid forward.	Make sure that the gap between back tyre and roller is not greater than 1/8" inches (3 mm).

STANDARD TOOLS PROVIDED BY THE MAKERS WITH EVERY ENGINE

One box-spanner for the plug combined with screw-driver for inspection for the carburettor jet.

One wrench with feeler-gauges for testing and setting gap between points of the breaker.

One length of wire to clean carburettor jet.

IMN

Certificato di Garanzia

437614

Il micromotore "Mosquito„ portante il n. di matricola è garantito per sei mesi dalla data di consegna per tutti gli eventuali difetti di materiale e di lavorazione.

In base a tale garanzia ci obblighiamo a riparare o sostituire gratuitamente i pezzi che risultassero difettosi, sempre chè non siano stati manomessi e che il micromotore non sia stato adibito a impieghi diversi da quello normale. Le spese di trasporto, quelle di mano d'opera per smontaggi e montaggi, e quelle eventuali per carburante e lubrificanti sono a carico dell'acquirente.

La richiesta di sostituzione in garanzia deve essere fatta col tramite di una nostra Agenzia, e deve essere accompagnata dai pezzi ritenuti difettosi e dal presente certificato. I pezzi in sostituzione di quelli da noi riconosciuti difettosi, vengono analogamente rimessi da noi all'Agenzia per la consegna al Cliente.

La garanzia decade quando:

- vengono applicate parti non originali;
- il motore rechi segni di manomissioni da parte di incompetenti o di riparazioni eseguite non a regola d'arte;
- sia adibito a noleggio o a corse;
- non venga usato lubrificante di buona qualità nella prescritta quantità e gradazione.

Sono escluse dalla garanzia le parti non costruite da noi (in particolar modo le parti elettriche), per le quali noi ci assumiamo solo la eventuale garanzia, che i costruttori assumono nei nostri confronti.

Industria Meccanica Napoletana
S. p. A.

Proprietario:

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TIP. G. MONTANINO - NAPOLI

IMPORTANT!!

Since the use of the motorized bicycl , renders the fair keep-up of the tyres still more necessary, please note that, in case of holing, the patches applied on the inner tubes should be very thin and carefully smoothed on all sides.

If you do not follow this rule, the cotton mantle of the outer cover can get spoiled in correspondence of the patch application area, which would put the same cover out of use in a very short time.