

ZÜNDAPP

200 S



OPERATION AND
MAINTENANCE

www.zundappveteranenclub.nl

ZÜNDAPP MOTORCYCLE

200 S

Operation and Maintenance



Issued February 1956

Preface

We are much pleased that you made up your mind to choose a "Zündapp" as your machine. Our long years of experience in the construction of motorcycles guarantees a vehicle made of top quality material and built with utmost precision. The wide-spun net of Zündapp-dealers offers you a first-class service for your "200 S".

Before your first ride you should not fail to make yourself acquainted with the operation of your vehicle. Each model has its characteristics so that even an experienced motorcyclist will do well to read carefully the chapter "The First Ride".

You will undoubtedly be desirous of retaining the value and reliability of your machine as long as possible. For this purpose the 2nd part of this handbook will help you, containing all that is necessary to know in that respect.

Moreover, we have also thought of the cyclists more interested in technicalities and added for them the chapters "Description," "Remedies" and "Performance Curves".

To our best wishes for a happy ride we add the hope that, in spite of the restlessness of our days, you also may contribute by careful and considerate driving to a smooth run of traffic.

Z Ü N D A P P - W E R K E G . M . B . H . N Ü R N B E R G - M Ü N C H E N
N Ü R N B E R G W O R K S



Fig. 1



Fig. 2

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Fig. 3

Any particular modifications

Data of the vehicle

After the acquisition of your vehicle, please do not omit to enter the special data of your "200 S" in the spaces provided below. We kindly request you not to forget to state these data together with the current mileage also in any correspondence with the Works.

.....
Name of owner

.....
Address of owner

.....
Name and address of dealer

.....
Date of first Registration

.....
Frame No.

.....
Engine No.

Technical Data

Engine

Type of operation	two stroke
Number of cylinders	1
Stroke	62 mm = 2 1/2"
Bore	64 mm = 2 9/16"
Cubic capacity	197 c.c. (according to tax rating)
Compression ratio	1 : 6.5
Output	12 HP at 5400 rpm.
Torque	max. 2.0 mkg (= 14.4 ft/lbs) at 3600 rpm
Piston clearance	0.06 mm (= 2 thous. inch)
Electric installation	battery-lighting-ignition generator (automatic voltage control) make Noris MLZn 60/6/1600 R

Ignition timing	advanced ignition 3.6 mm (.141") before t.d.c. = 25° before t.d.c.
Type of sparking plug	Bosch W 240 T11 or Beru 240/14 U2 or Lodge H/4
Gap of plug electrodes	0.7 mm (= 27 thous. inch)
Battery	6 volt 8 A/H
Cooling system	air cooling
Engine lubrication	by 1 : 25 oil/petrol mixture
Twin-slide carburettor	make Bing 2/24/42 port dia. 24 mm (=15/16") main jet No. 120 needle setting 3rd notch from top needle jet No. 2.70 idler jet No. 50 air adjusting screw 1½-2 turns open
Clutch	multiple slab clutch in oil
Gearbox	Zündapp change-speed gear
Number of speeds	4

Internal gear ratios:

1st speed	1 : 3.14
2nd speed	1 : 1.964
3rd speed	1 : 1.405
4th speed	1 : 1

Power transmission from gear

unit to gear wheel	roller chain, enclosed (½" x 5/16", 116 links)
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Gear ratio from gear unit

to rear wheel	1 : 2.75
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Chassis

Frame	central tube frame
Steering head bearing	ball bearing
Front fork	telescopic fork with 4 helical springs
Rear wheel	rocker swinging fork with 2 hydraulic shock absorbers

Brakes:

Foot brake rod-type brake acting on rear wheel
hand brake cable-type brake acting on front wheel

Wheels:

Size of rims 1.85 B x 16
Size of tyres 3.25-16 front wheel
3.25-16 rear wheel

Vehicle

Length 1990 mm (= 78 1/2")
Width 620 mm (= 24 1/2")
Height 950 mm (= 37 1/2")
Height of saddle 720 m (= 28 1/2")
Wheel base 1300 mm (= 51 1/4")
Turning circle 4800 mm (= 189")
Weight with full tank 131 kg (= 288 lbs)
Peak load (vehicle and loading
combined) 286 kg (630 lbs)
Top speed 100 km/h (= approx. 63 mph)

Quantities of fuel and oil

Power fuel:

Fuel tank 14 liters (Imp. galls. 3.08 = U.S. galls. 3.7),
including 2 liters (Imp. galls. 0.44 = U.S.
galls. 0.53) reserve

Lubricants:

Engine Mobil Mix TT self-mixing for two-stroke
engines, added to the fuel in a ratio of
1 : 25, or any other self-mixing quality oil
for two-strokers or a similar equivalent
commercial type of oil SAE 30 - SAE 50

Gearbox 650 c.c. (approx. 1 pint) at ambient
temperatures above + 15° C (= 60° F)
engine oil SAE 50

at ambient temperatures below + 15° C
(= 60° F) engine oil SAE 20

Telescopic fork 100 c.c. (= slightly less than 1/4 pint)
per fork leg at ambient temperatures
above + 15° C (= 60° F) engine oil
SAE 50

at ambient temperatures below + 15° C
(= 60° F) engine oil SAE 10

Important points at the delivery of the vehicle

After having carried out the tasks mentioned below, your Zündapp-dealer will hand over your "200 S" in a brand-new state. Will you please, convince yourself of the good condition of your machine, for only on these conditions can eventual claims be acknowledged.

1. Check headlight
2. Check slackness and alignment of chain
3. Check hand and foot brakes as well as clutch adjustment
4. Lubricate machine
5. Check level of oil in gearbox
6. Check tyre pressures
7. Charge battery (at your expenses) with another charging plant
8. Check if tools are complete in the tool-box

The execution of the prescribed maintenance works is the basis for the Guarantee granted by us, extending to the exchange - free of charge - of those parts actually showing defects in material or workmanship within six months after first Registration or until a total mileage covered of 10 000 km (= 6000 miles) within this period.

The data and sketches in this handbook are in no way binding; only the details contained in the sales contract are decisive for the extent of the delivery. Alterations and modifications made by us to the model cannot be accepted as a basis for any claims against the manufacturers.

The First Ride

This first ride ought to be made - even if you are an experienced motorcyclist - in a place where you can acquaint yourself with the operation of your vehicle without any hindrance. That is to say: no streets with busy traffic, no through-roads for fast traffic or motorcars.

As your Zündapp dealer has handed over the machine in perfect order, the only thing you still have to do is fill the tank.

The fuel tank has a capacity of 14.0 liters (Imp. galls. 3.08 = U.S. galls. 3.7). You can only use oil-fuel mixture in a ratio of 1 : 25. **At the first filling, however, the mixing ratio is to be 1 : 20.**

As to fuels, all normal or super petrols, generally available in the trade, are qualified. You need not alter the adjustment of the carburettor when passing from normal to super petrols. Also the oils for two-stroke engines, generally traded by the dealers, are appropriate for the preparation of the mixture. In our own works the oil Mobil Mix self mixing has proved very satisfactory. We would recommend the use of an oil with anti-corrosion addition or the admixture of an anti-corrosion preservative. However, we cannot recommend an admixture to the fuel of all other additions which are said to increase the output or to reduce the consumption.

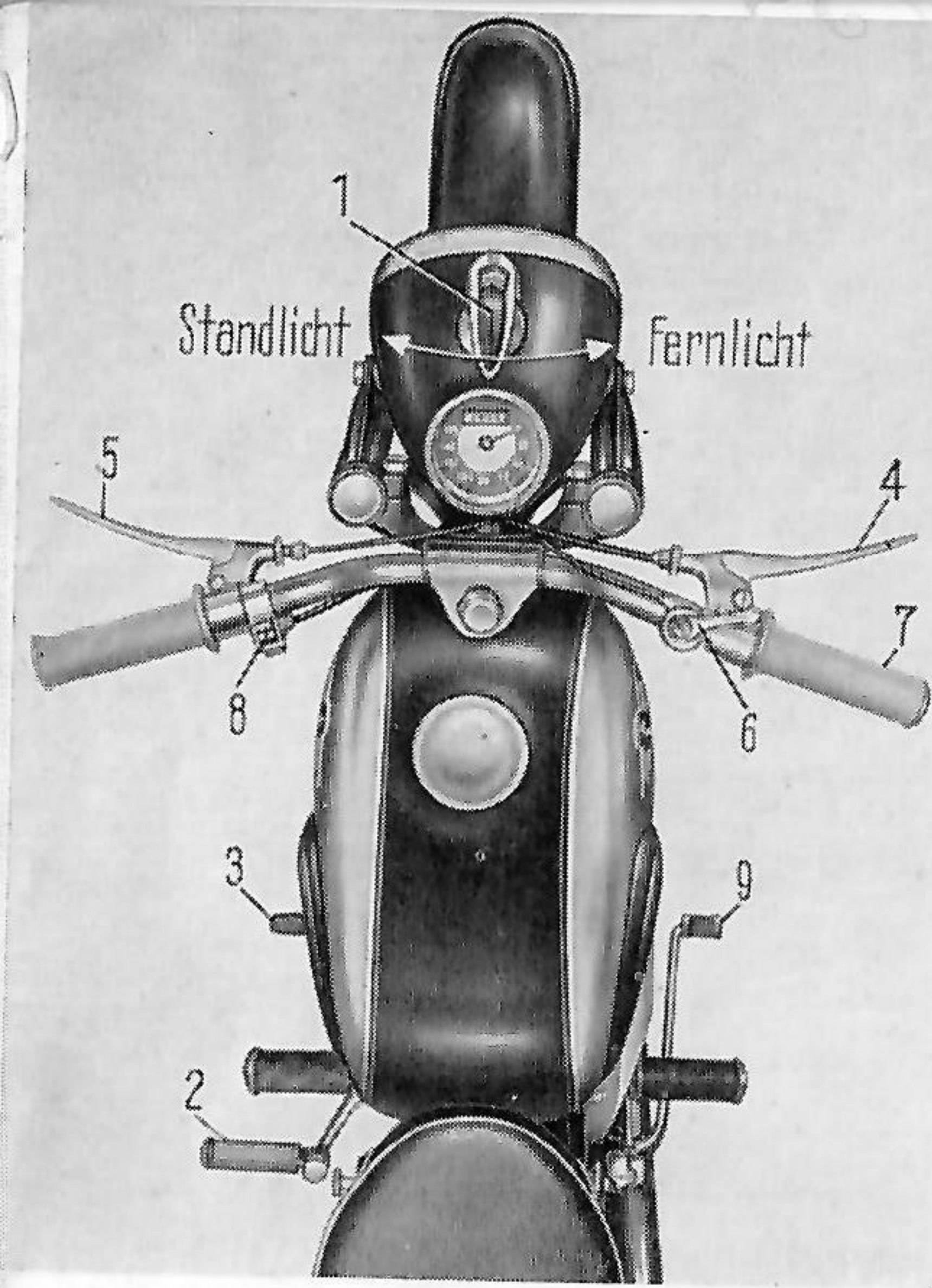


Fig. 4

Standlicht = dipped light
Fernlicht = full beam

Starting up

is no trouble at all to the experienced motorcyclist. However, you will have to make yourself acquainted with all operation levers. The figure at the side will show you under number

1. Electrolock
2. Kickstarter
3. Foot-change lever
4. Hand-brake lever
5. Clutch lever
6. Air lever
7. Throttle twist grip
8. Dipper with Horn Button
9. Foot-brake pedal

Under normal circumstances you will never have any difficulties in starting if you proceed in the following order:

1. Open fuel tap
2. Move foot-change pedal into position "neutral", close air lever
3. Flood carburettor by pressing tickler up and down (until fuel floods between float chamber and its cap)
4. Open throttle twist grip abt. one quarter, depressing kickstarter
5. Switch on ignition (red lamp lights up) and kickstart the engine.

After starting up the engine close throttle twist grip to some extent, for high speed in position "neutral" is extremely harmful to the engine. Then, open air-lever more and more in accordance with the increased temperature of the engine. It is not advisable to have the engine warmed up by running it idle - i.e. without any load. It should rather reach its most adequate running temperature as quickly as possible, the best way being by taking off immediately after starting up.

Starting off

is by no means complicated. After mounting the machine with the foot-change pedal in normal position, i.e. in the position "neutral" between the 1st and 2nd

speed gear, the only thing you need to do is pull the clutch lever, and with clutch pulled-in move into 1st gear by depressing the foot-change pedal and then release clutch lever gradually, opening the throttle at the same time as you release the clutch lever. Beginners are often inclined to declutch too quickly or to open the throttle twist grip not enough. In the first case the motorcycle will start off with a jump, in the second case in jerks. If you hold the clutch lever too long, you will cause excessive wear of the linings of the clutch discs.

Gear Shifting

In accordance with increasing speed by opening the throttle wider, you may move into the 2nd, 3rd, and 4th gear (called "changing up"). On even roads do not, as far as possible, move

from 1st into 2nd speed gear, unless you are riding at least 20 km/h = 12½ mph)

from 2nd into 3rd speed gear, unless you are riding at least 40 km/h (= 25 mph)

from 3rd into 4th speed gear, unless you are riding at least 60 km/h (= 37 mph)

For changing up close throttle rapidly, pull-in clutch lever, and by drawing up the foot-change pedal with the toe until the stop, move into the next higher speed gear; now release clutch lever and open throttle again.

For changing down close throttle quickly, and without declutching at all, press slightly the foot-change pedal (but do not tread through until the stop) so that the respective neutral position - one of which is between each of the speed gears - is engaged. When running in "neutral", open throttle twist grip according to the speed (at high speeds much, at low speeds accordingly less). Now by pulling-in the clutch lever and by depressing the foot-change pedal until the stop, move into the next lower speed, then release clutch lever again.

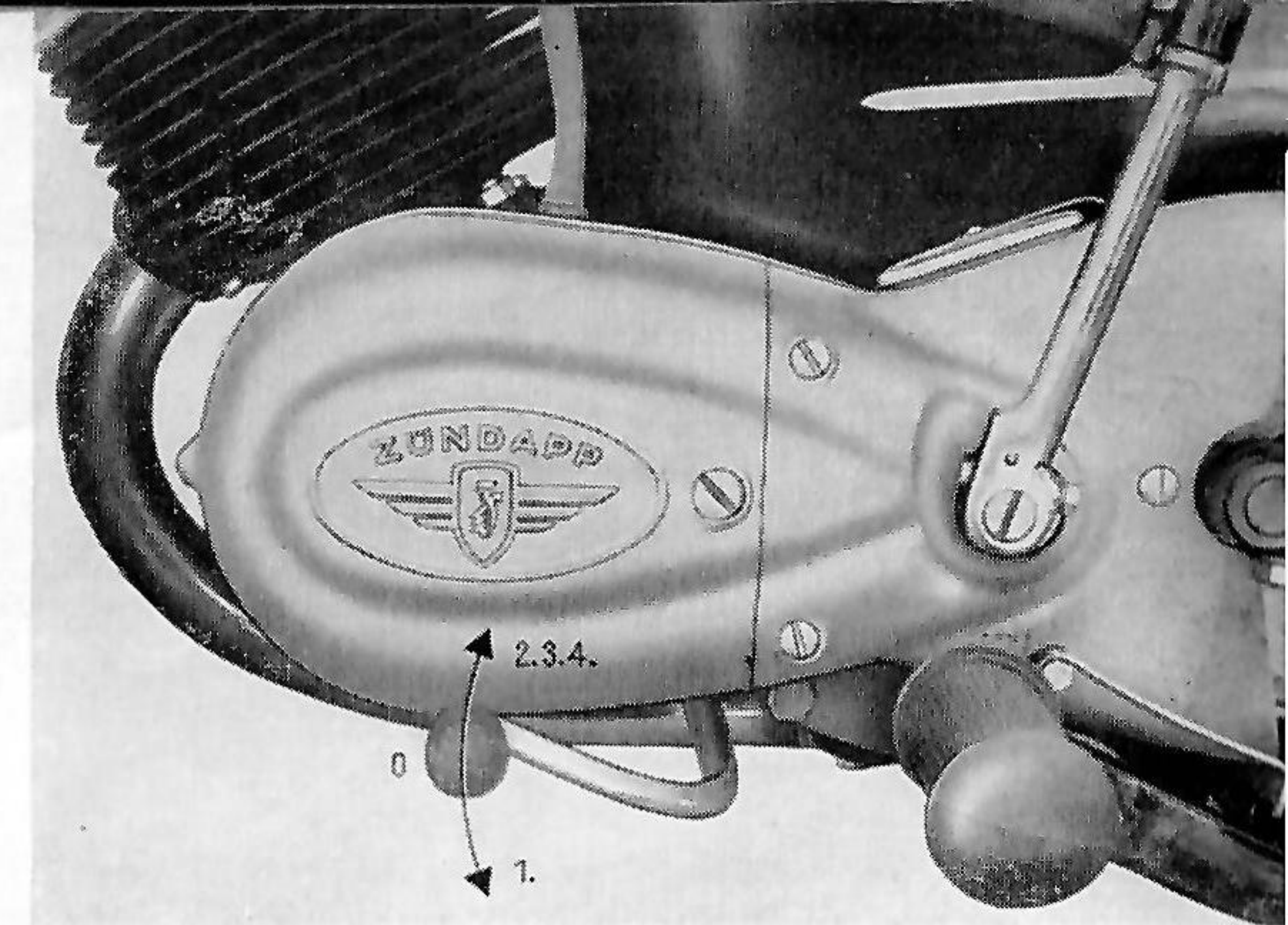


Fig. 5

Driving

For the first 500 km (= 310 miles) we would recommend you not to make use of the total capacity of the engine i.e. not to drive with full acceleration or excessive load. In the following 500 km (= 310 miles) the capacity of the engine may be exploited more and more. After having covered a mileage of 1000 km (= 720 miles), there is no longer any reason to avoid using the total power of the engine. Limits of speed need not be observed during the first 1000 km (= 720 miles); it is, however, not advisable to drive a long time at top speed. But it is important not to have the engine run at too low speed, for

a cool engine causes considerable wear (reduced lubricating facilities of the oil-fuel mixture as well as increased tendency towards corrosion), it also increases carbon deposits, both resulting in reduced performance and shorter life of the engine.

When climbing a hill, change in time, always driving with higher revolutions. When going downhill, use the same speed gear you would use climbing it. Always open throttle twist grip to some extent so that the engine will get sufficient lubrication. When approaching **dangerous places and curves**, decelerate in time, eventually by changing down into the next lower gear. Take care when riding on wet or slippery roads (danger of skidding!) Apply your brakes with special care and intelligence in those cases.

Coming to a stop

is effected in case of emergency by closing throttle twist grip, pulling-in the clutch lever, and applying the full braking power simultaneously and steadily. Generally you will move into the position "neutral" - preferably between 1st and 2nd gear because when taking off again you may move immediately into 1st gear - and slow down the vehicle by applying both brakes.

When stopping, do not apply the brakes too abruptly, for skidding wheels will soon wear out your tyres and will impair the efficiency of your brakes!

Stopping the engine

If the engine is only to be stopped for a short time, it will suffice to close the throttle, take out the ignition key, and close the fuel tap. In case of a longer period of standing idle or after a long, strenuous run, stop the engine in the following manner:

1. rev-up the engine, at the same time
2. close air lever and
3. take out ignition key;
4. close throttle twist grip and
5. fuel tap.

By this method the engine is given an additional so-called "internal cooling", besides that, all essential parts for the operation are being covered with a protective corrosion-resisting oil-film.

Engine

Type of operation

The Zündapp two-stroke engine works according to the well-proved reverse scavenging principle. The fuel-air mixture sucked up by the carburettor when the piston moves upward, is compressed in the crankcase when the piston moves downward. Then, the compressed mixture flows over two by-pass ports into the compression chamber, is further compressed by the following upward movement of the piston, and explodes there by effect of the ignition spark. After the piston has moved down again (stroke of operation), the burnt gas escapes through exhaust opening, exhaust pipe, and silencer into the open air.

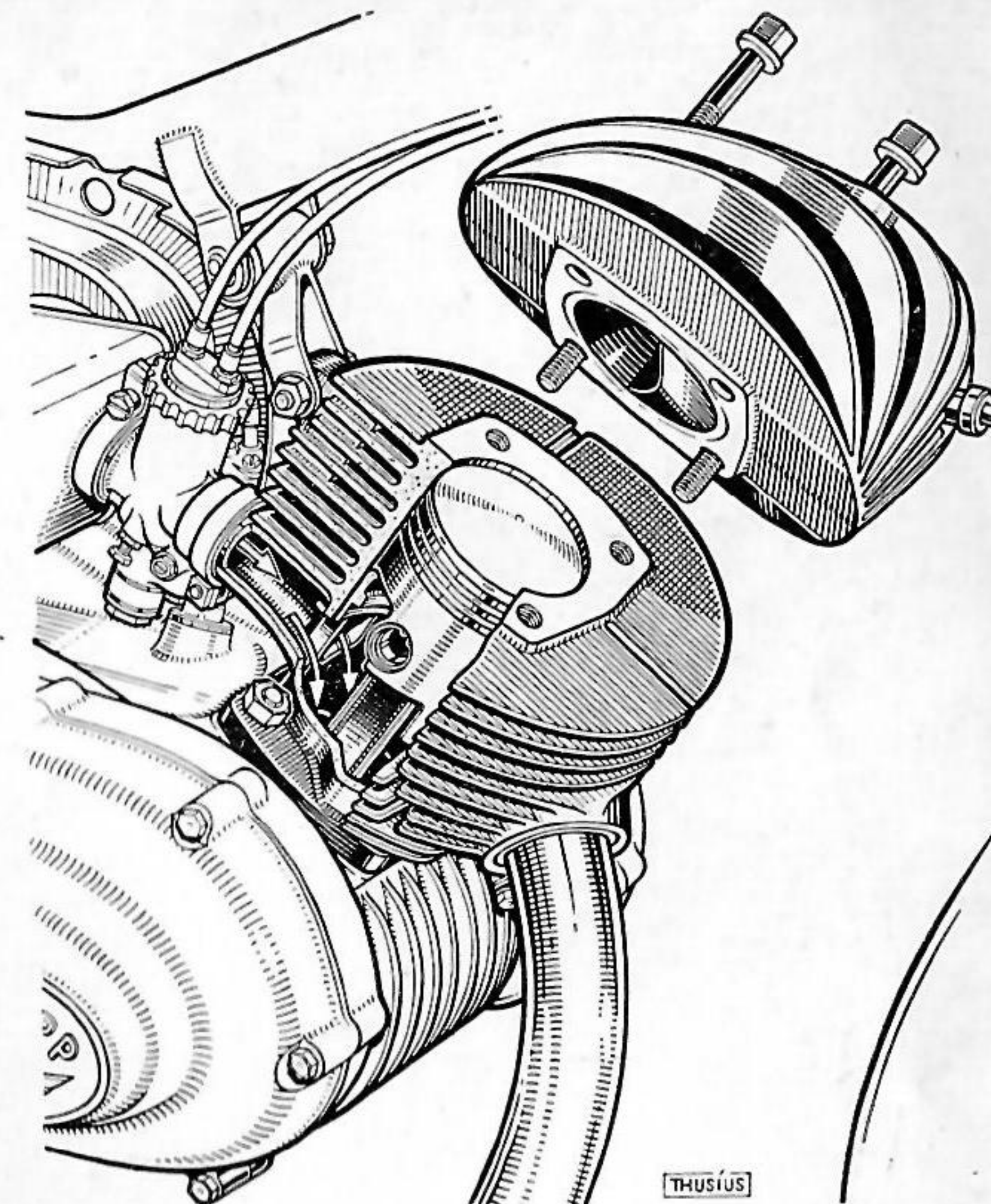


Fig. 6

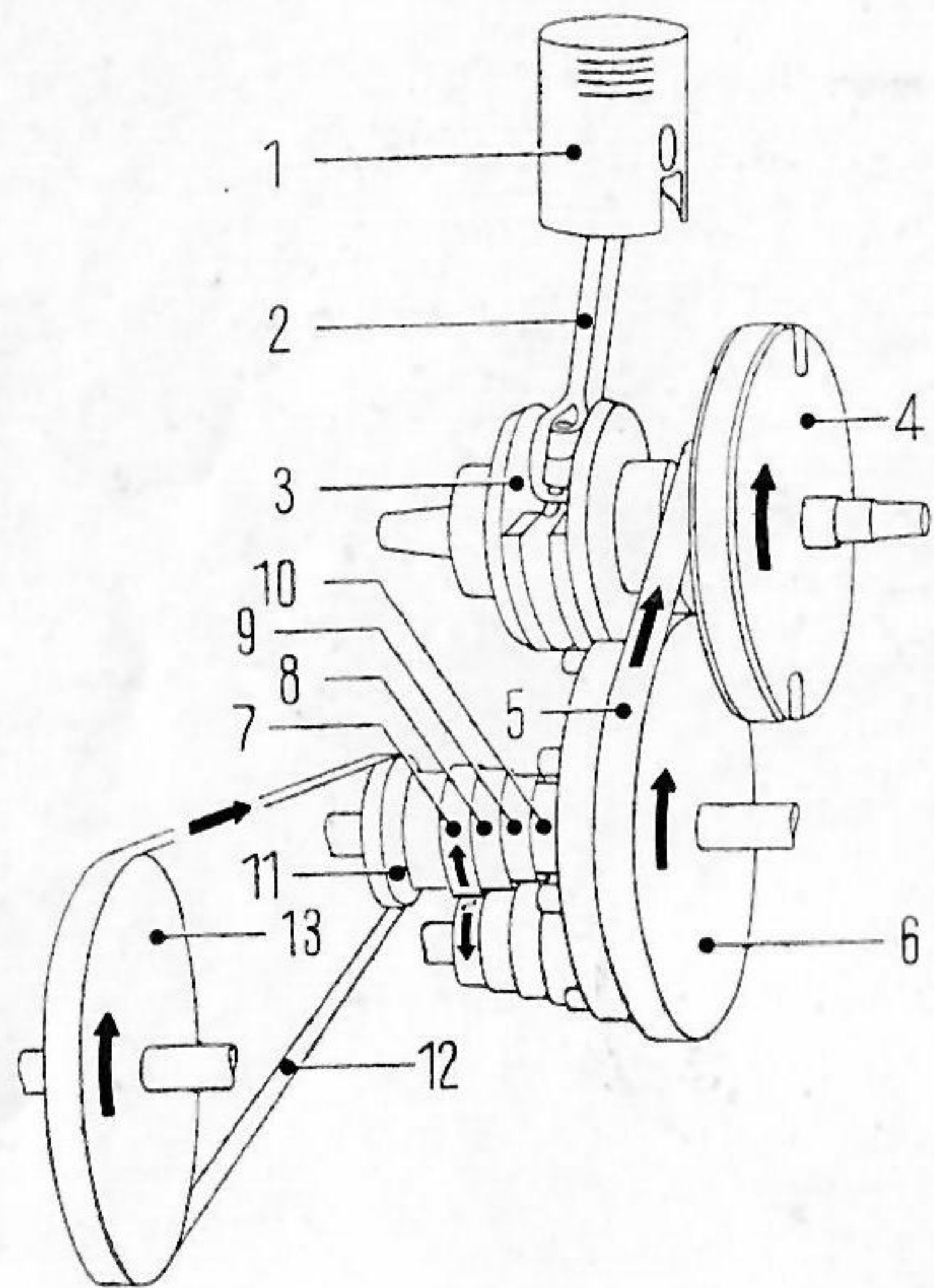


Fig. 7

Drive Mechanism

The pressure caused by the expansion of gas is transmitted over piston, gudgeon pin, and connecting rod to the crankshaft, being transformed into rotary power. The flywheel provides the uniformity of the rotatory movement.

1. Piston
2. Connecting rod
3. Crankshaft
4. Flywheel
5. Chain
6. Clutch
7. Pair of pinions for 1st speed
8. Pair of pinions for 2nd speed
9. Pair of pinions for 3rd speed
10. Pair of pinions for 4th speed
11. Front sprocket
12. Chain
13. Rear sprocket

From the crankshaft to the clutch a reduction of revolutions (= raise of the rotary power) is achieved by means of a corresponding gear ratio. By operating the clutch the transmission of power to the change speed gear may be interrupted. In the change speed gear a further transformation of revolutions and rotary power is taking place in accordance with the chosen gear (i.e. the gear you moved in).

Then, power is transmitted from the change speed gear to the front sprocket outside the gear box unit, and from there over the drive chain to the rear wheel.

Carburettor

serves in connection with the air cleaner for the preparation of the fuel-air mixture i.e. for the transformation of the liquid fuel into a mixture appropriate for combustion.

The Carburettor consists of two principal parts:

Float Chamber and
Mixing Chamber.

The float in the float chamber is connected with the float needle by means of a clamp. The float's task is to ensure that the fuel level in the carburettor is

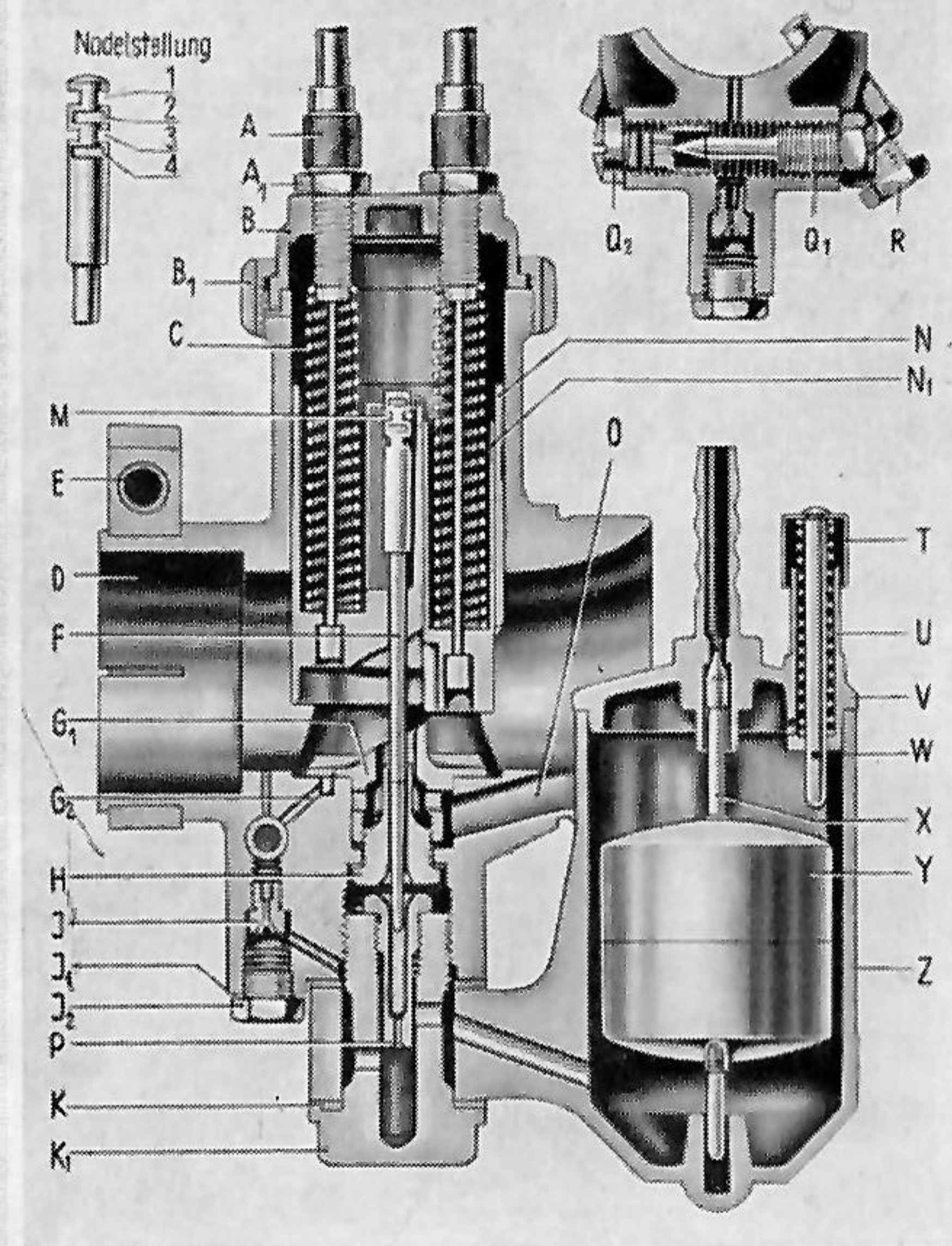


Fig. 8

always the same. When the fuel tap is opened, fuel flows to the float chamber, lifting the float with float needle. This needle is tapered at its upper end so that as soon as the required level is reached, it cuts off in connection with the float chamber cap the flow of fuel from the fuel tube. When the tickler is operated, the float presses the fuel above the normal level in the carburettor, the fuel passing through the opened needle valve. The carburettor's task is to provide the engine with an adequate and correctly measured fuel-air mixture at any range of speeds. For this purpose several jet systems are required, viz. the

Idler Jet System

consisting of Idler Jet J, Idler Air Jet Q2, and Idler Air Adjusting Screw Q1.

When running idle this system works alone, at higher speeds it goes slowly out of action as the other jet units come into use. As the speed increases further

Mixing Chamber Insert (Sprayer) G1 together with Jet Needle F and Needle Jet H come into operation, followed by Jet Needle F and Needle Jet H which then take over alone. Main Jet P only comes into operation at a relatively high speed.

The sizes of the jets as well as the adjustment of the carburettor have been determined by our works after a long period of experiments. For this reason, after the carburettor has been cleaned, only the idler jet systems and cables are to be re-adjusted.

1. Adjustment of Idler Running System

With the engine running idle, screw in Gas Slide Stop Screw R until the engine continues running with throttle twist grip closed; now screw in Air Adjusting Screw Q1 fully and then unscrew it again gradually until the engine runs at its highest speed. From this point screw in the regulation screw again about $\frac{1}{4}$ turn. Now Slide Stop Screw R is to be unscrewed until the engine runs at the required idling speed.

2. Bowden Cables

The adjusting screw for the Bowden cables should be regulated so that between the end cap of the cable and the adjusting screw a play of abt. 1 mm ($= \frac{3}{64}$ "") remains.

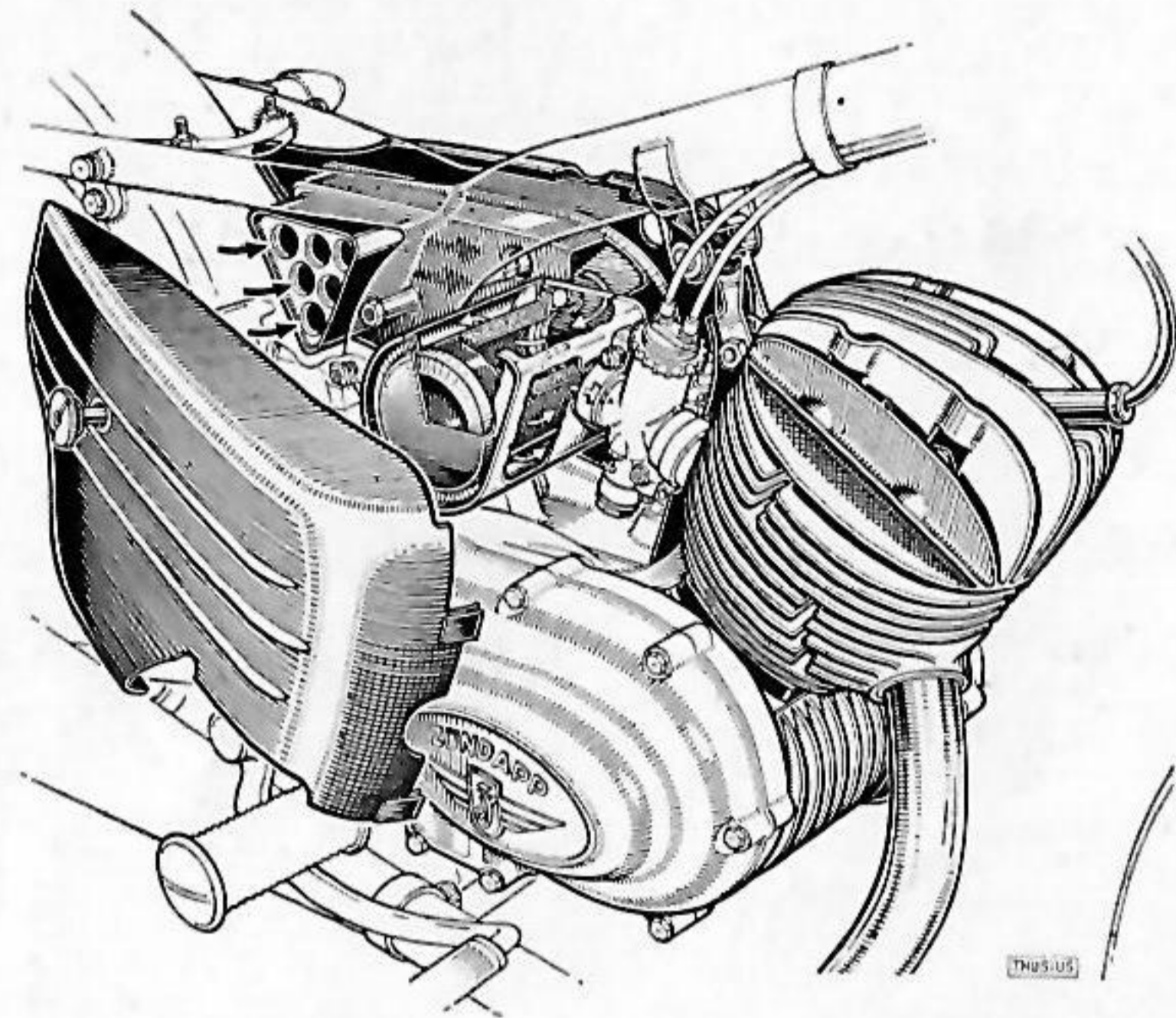


Fig. 9

Perhaps a smaller size of main jet or setting the jet needle into a lower notch may reduce the fuel consumption; however because of lack of "inner cooling", the piston might be seized in this case.

A larger main jet or setting the needle into a higher notch will in no way result in increasing the power-output but only in increasing the consumption of fuel. Besides that the engine would 4 stroke due to the mixture being too rich.

Air Cleaner

The air cleaner's task is to clean the air required for the process of combustion. For the purpose of a better action of the filter the wire sponge is covered with an oil film. The better the effect of the filter, the less is the wear on the parts of the driving mechanism. — Therefore:

Clean Air Cleaner regularly, dipping it into engine oil.

The Cylinder Head

forms the end of the combustion chamber, being flanged to the cylinder by means of 4 screws. It is made of light alloy and is provided with cooling fins for dissipating the heat of combustion.

The Sparking Plug

is screwed into the cylinder head by means of a thread 14 x 1.5 mm. As to the type of plug we would recommend

Beru 240/14 U2

Bosch W 240 T11

or Lodge H/4.

or an equivalent plug of any other brand.

The Cylinder

is flanged to the light-alloy crankcase by staybolts. It is made of grey iron. In the cylinder there are cast: 1 intake port, 2 by-pass ports, and 1 exhaust port. The piston clearance is $\frac{6}{100}$ mm (= .002").

The Piston

is made of light-alloy and is provided with 3 piston rings for the purpose of sealing against the cylinder barrel and for deduction of heat to the piston. The pressure on the piston caused by combustion is transmitted to the

Gudgeon Pin

which is laterally held at each end by a circlip, and from this to the

Connecting Rod

into the small end of which the bronze bushing for the gudgeon pin is pressed. As big-end bearings in the crankpin there are used two-piece cage-guided needle bearings.

The Crankshaft

is forged in one piece and mounted in three bearings. At the left side of the shaft the armature of the generator is located, at the right side the flywheel. Onto the

Flywheel

there is riveted the front sprocket for transmission of power to the clutch sprocket. — The transmission is effected through the

Gear Drive Chain onto the

Clutch

Two lining covered clutch discs, always connected with the lining-covered clutch sprocket, are pressed by 6 tensioned springs against the adjacent

steel discs which are constantly connected with the gearbox. By operating the clutch lever the spring pressure is suspended with the result that the connection between clutch sprocket and gearbox is interrupted.

The Gearbox

consists of four gear train pairs. Whilst the gear-shift wheels are running free on the selector shaft, the opposing wheels of each pair are forged together to a so-called gear wheel-block fitted on the kickstarter shaft. When this shaft is turned by operating the starter, an engaging piece meshes with the teeth of the smallest gear wheel, thus setting the engine into motion. Gears are shifted by lateral sliding of the toothed selector shaft within the gear wheels which themselves are provided with internal splines. Between the gaps of the gear-shift wheels the selector shaft is always in the position "neutral". From the selector shaft the power is transmitted to the small front sprocket fitted outside the engine.

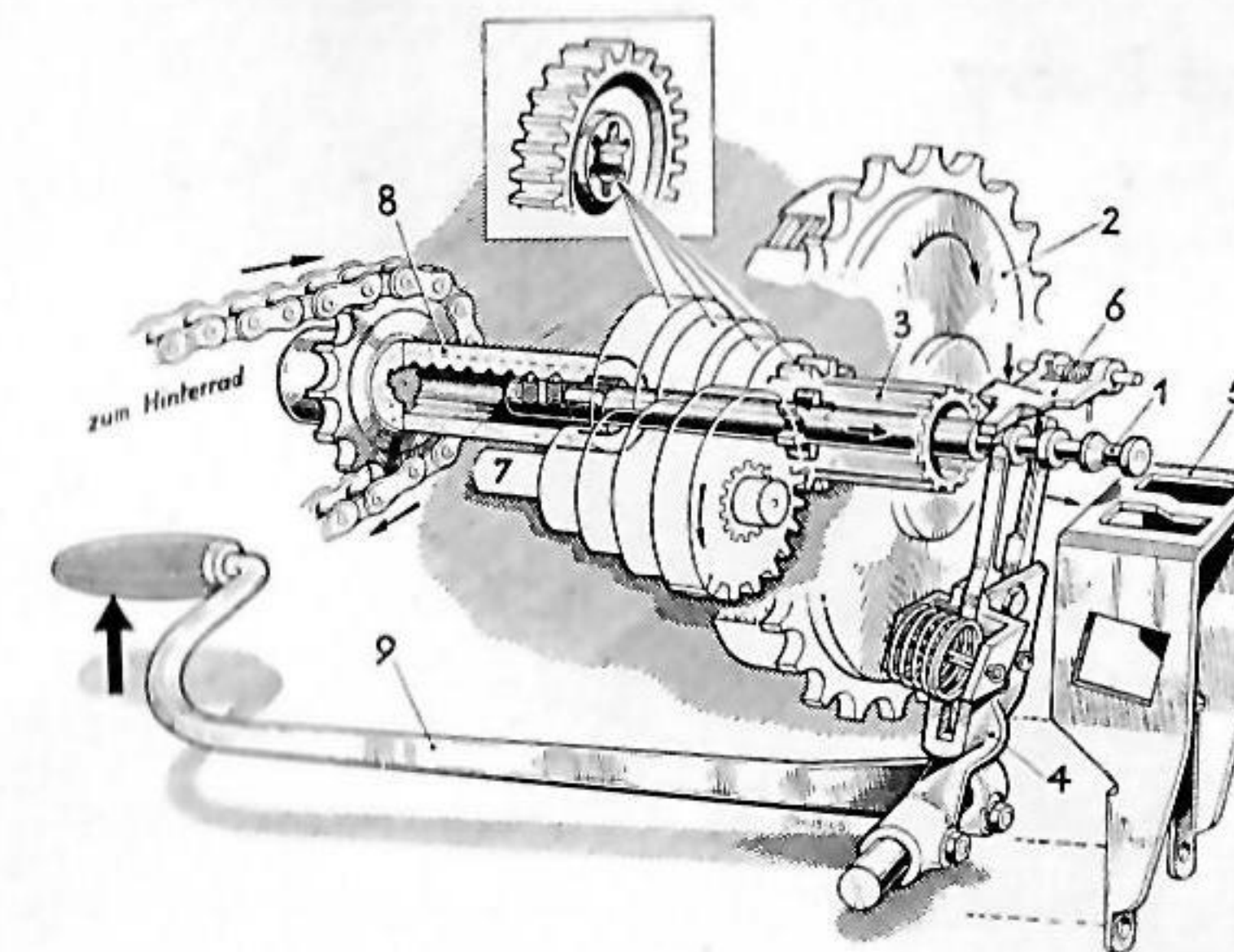


Fig. 10

The Drive

is transmitted from the small front sprocket-through the drive chain ($1/2'' \times 5/16''$, 116 links) — to the large sprocket on the rear wheel. When the machine is used solo, the large sprocket is provided with 44 teeth.

The Generator

is a NORIS D.C. generator with automatic voltage control and a capacity of 60/90 watts. The armature is flanged to the crankshaft. The remaining parts of the generator are mounted to the generator housing, the latter being securely bolted onto the engine block.

Chassis

The Frame Unit

is made of special manufactured material in the form of a central tube frame.

The Telescopic Front Fork

The task of the suspension of any vehicle is to reduce the transmission of the unevenness of the roads to the driver. The front fork contains two pairs of springs of different strength. In case of excessive load there may be mounted stronger springs. Moreover, the oil filling for lubrication may also be adapted to the special conditions of load and weather by choice of the corresponding sort of oil.

The Suspension of the Rear Wheel

is a swinging arm suspension. The rear fork is oscillating around a fulcrum running on bearings and mounted into the frame. The shocks are softened by two springs as well as by two hydraulic shock absorbers at each side.

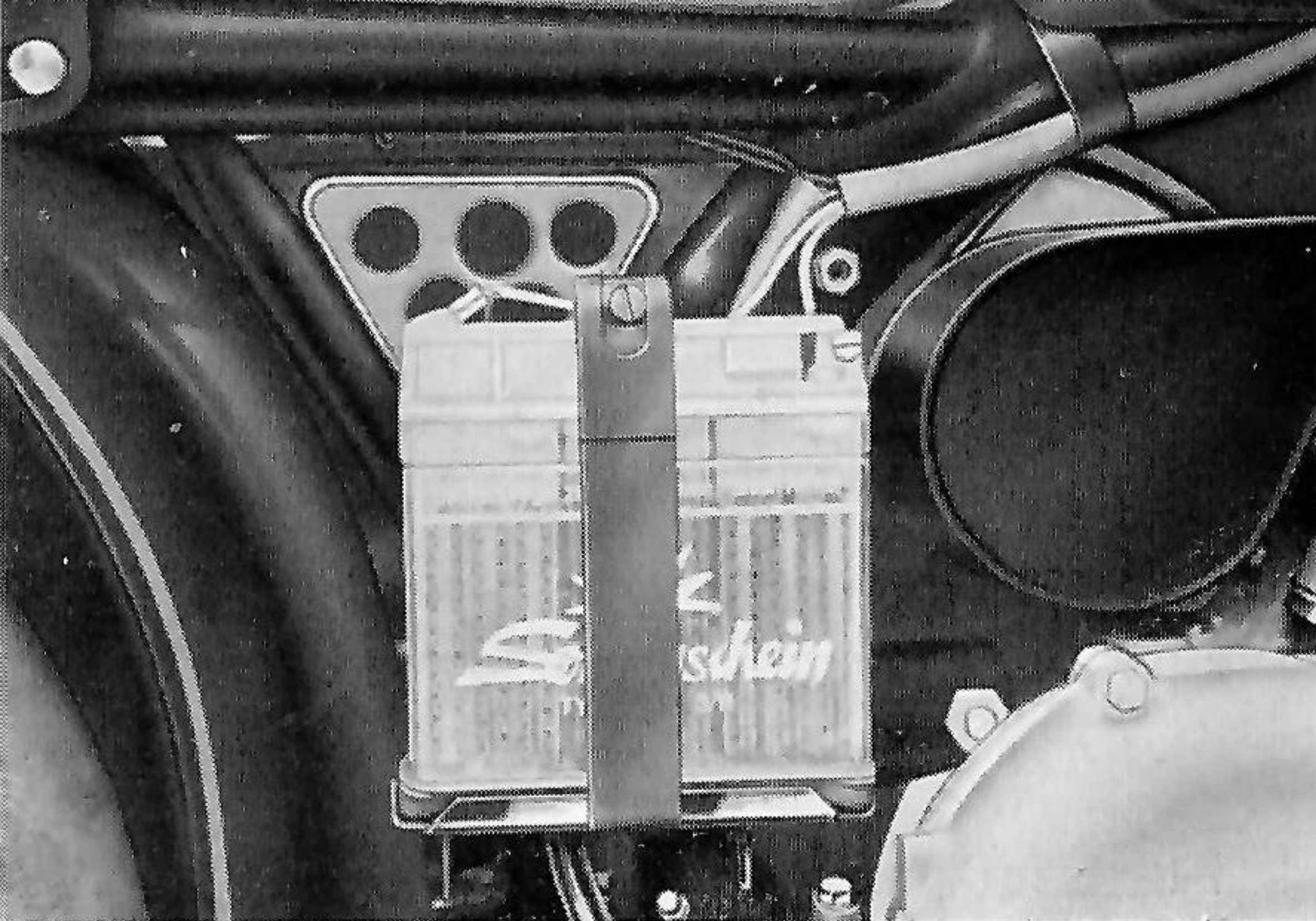


Fig. 11

= U.S. galls. 3.7). It is rubber-cushioned and is clamped tight when the driver's seat is fastened.

The Battery

has a capacity of 8 A/h. It is mounted below the right-hand cover on a bracket welded to the frame, free of oscillation.

The Wheels

are equipped with Rims 1.85Bx16. For both wheels Reinforced Low-Pressure Tyres 3.25-16 should be used. The so-called "Full Width Hubs" are made of light-alloy; a ring of grey iron which is pressed in, acts as a surface for braking.

The Fuel Tank

contains 14 liters (Imp. galls. 3.08

The Headlight

has a diameter of 160 mm (= 6 1/4").

Tools

are stowed below the driver's seat which may be clipped upright after pulling out the mandrel shown clearly in the sketch above.

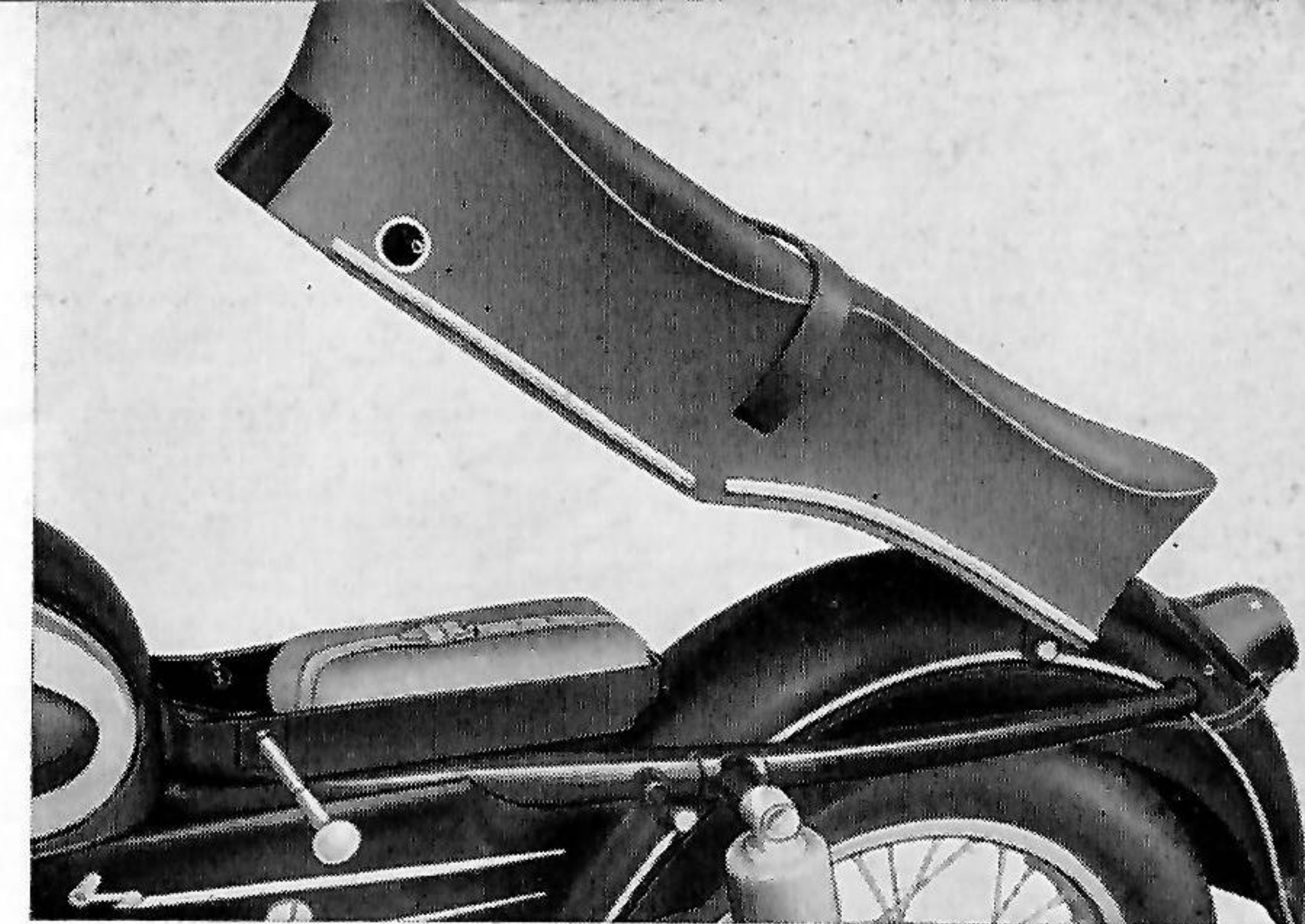


Fig. 12

Regular Maintenance

retains the value and the reliability of your "Zündapp".

Cleaning

Dirt of the roads contains some ingredients which exert a corrosive effect when acting on the artificial resin layer of a vehicle for a long time. We would recommend you frequent washing with clean cold water which is most favourable for the hardness of the surface of the enamel. However, please avoid a harsh jet of water under all circumstances, and when washing cover generator and carburettor with a piece of cloth.

The use of soap, shampoos or alkaline detergents may only be recommended when the enamel is really dirty or greasy. But you will have to observe the correct mixing ratio as given in the directions for use by the manufacturers. From our own experience a solution of washing soap (so-called "Kernseife") of 1-2% at 30° C (= approx. 120° F) — by no means higher — has proved most effective.

When washing with a detergent, it is also of utmost importance to rinse the sponge as often as possible because otherwise grains of dust will scratch the enamel surface, grinding it dull. After washing with the sponge, the enamel should be thoroughly rinsed with water in all circumstances in order to remove remaining residues of the detergent. Finally, polish the enamel with a soft chamois leather.. Do not wash under the rays of the sun in order to avoid calcarous drops of water from drying onto the paint which would result in the appearance of spots.

Naturally, the fatty ingredients are deprived from the enamel by cleaning it with a detergent, so that, in the course of time, the enamel will become brittle and tend to crack. Therefore, it is advisable to give it new fats by means of a final polish containing wax or oil ingredients. For this purpose, however, only a polish especially recommended for artificial resin enamels should be used. Vehicles treated in that way may always be cleaned without any difficulty because the dirt is never as firmly attached to the wax or oil film as is the case with enamels affected by detergents or weather conditions.

Chromium-Plated Parts

you will clean best with water, finally rubbing them dry with a woollen cloth. If their brightness is getting dull by the time, it is advisable to treat the parts with some polish generally available in the trade.

The Tyres

Please check them regularly and carefully.

The air-pressure is to be

	solo	pillion
front wheel	1.2 atü (18 lbs.sq.inch)	1.2 atü (18 lbs.sq.inch)
rear wheel	1.5 atü (22 lbs.sq.inch)	1.9 atü (26 lbs.sq.inch)

Incorrect air-pressure results in

bad position of the vehicle on the road,
non-uniform and premature wearing out of the tyres
(getting cracked, etc.)

It is recommended to interchange the tyres about every 5000 kilometers (3.500 miles). Repaired tyres should only be fitted to the rear wheel. Rubber parts can easily be affected by oil, fat, and heat; therefore, keep tyres in cool, damp rooms.

The Oil Filling in the Gearbox

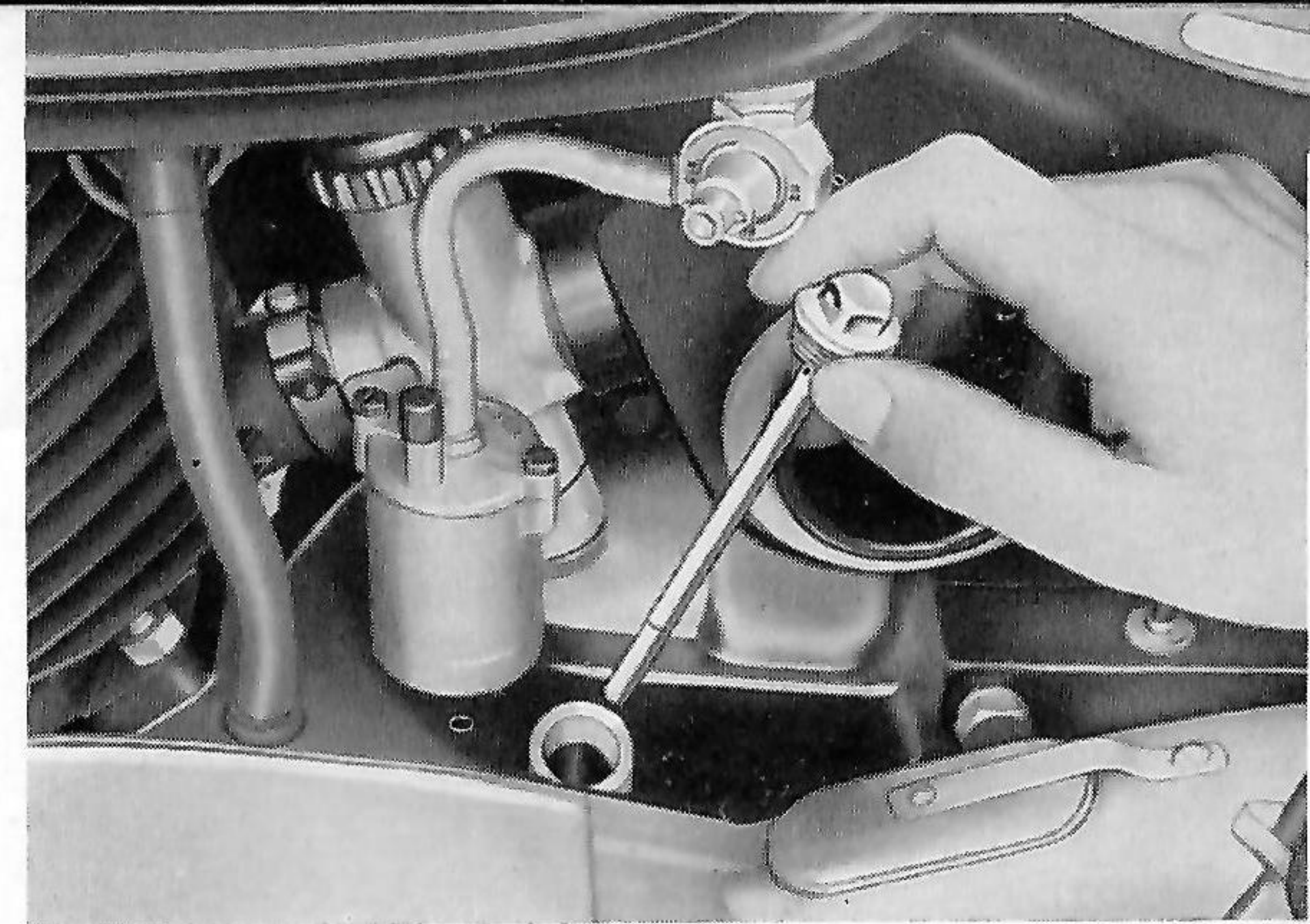


Fig. 13

Please check the oil level in the gearbox regularly and fill when the level is low. For measuring the level, do not screw in the oil gauge but only insert same. The correct level of oil is reached when coinciding with the notch in the gauge.

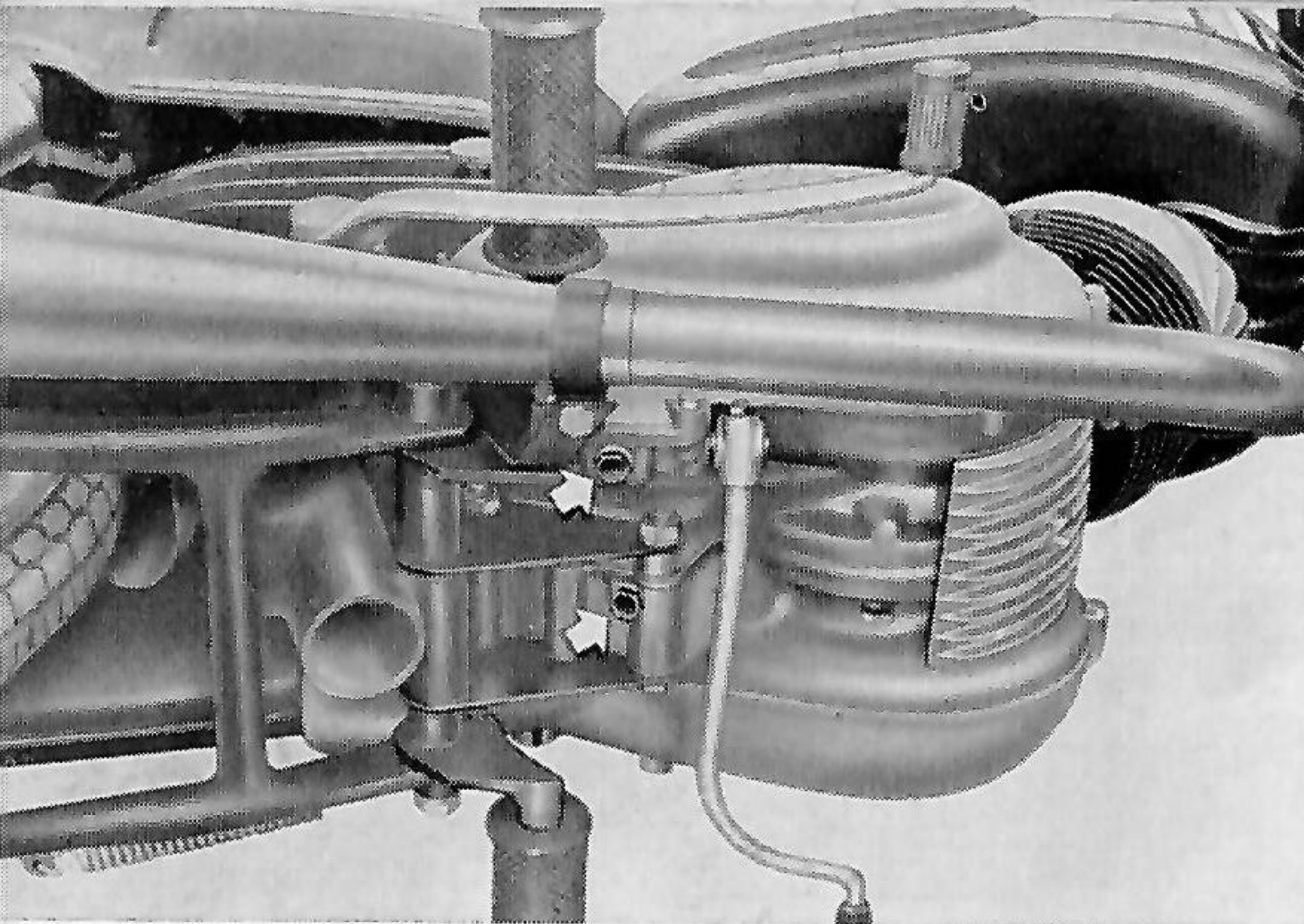


Fig. 14

into the gearbox as well as into the clutch housing, so that the mark at the oil gauge will show the correct level only after a short run. The two oil drain plugs may be seen from the sketch.

The Oil in the Front Fork

lubricates the moving parts as well as damping the fork movements.

Under normal conditions oil is renewed every 10.000 kilometers (6000 miles). For draining off the old oil, remove the two drain plugs. The amount of filling is 650 c.c. (approx. 1 pint), the sort of oil be adapted to weather conditions i.e. to the season of the year.

We recommend

in warm weather SAE 50 oil

in cool weather SAE 20 oil.

Please remember that after renewing the oil, it has to spread out

In accordance with weather and load conditions we recommend

in warm weather with a heavy load SAE 50 oil

in warm weather with a normal load SAE 40 oil

in cool weather with a heavy load SAE 20 oil

in cool weather with a normal load SAE 10 oil

The oil drain plug may be seen from the sketch. It is suggested that you investigate after abt. 50.000 kilometers (32.000 miles) the fork tubes of the telescopic fork at the clamping points of the lower fork connection to see that no corrosion — caused by infiltrated dampness — has taken place. Eventually the fork tubes must be renewed.

Maintenance of the Chain

should never be neglected. Contrary to the motorcycle with rigid frame and large wheels and a relatively low speed, the chain of a modern vehicle with regard to the swinging movement and the considerably higher speeds, is subject to a much greater strain.

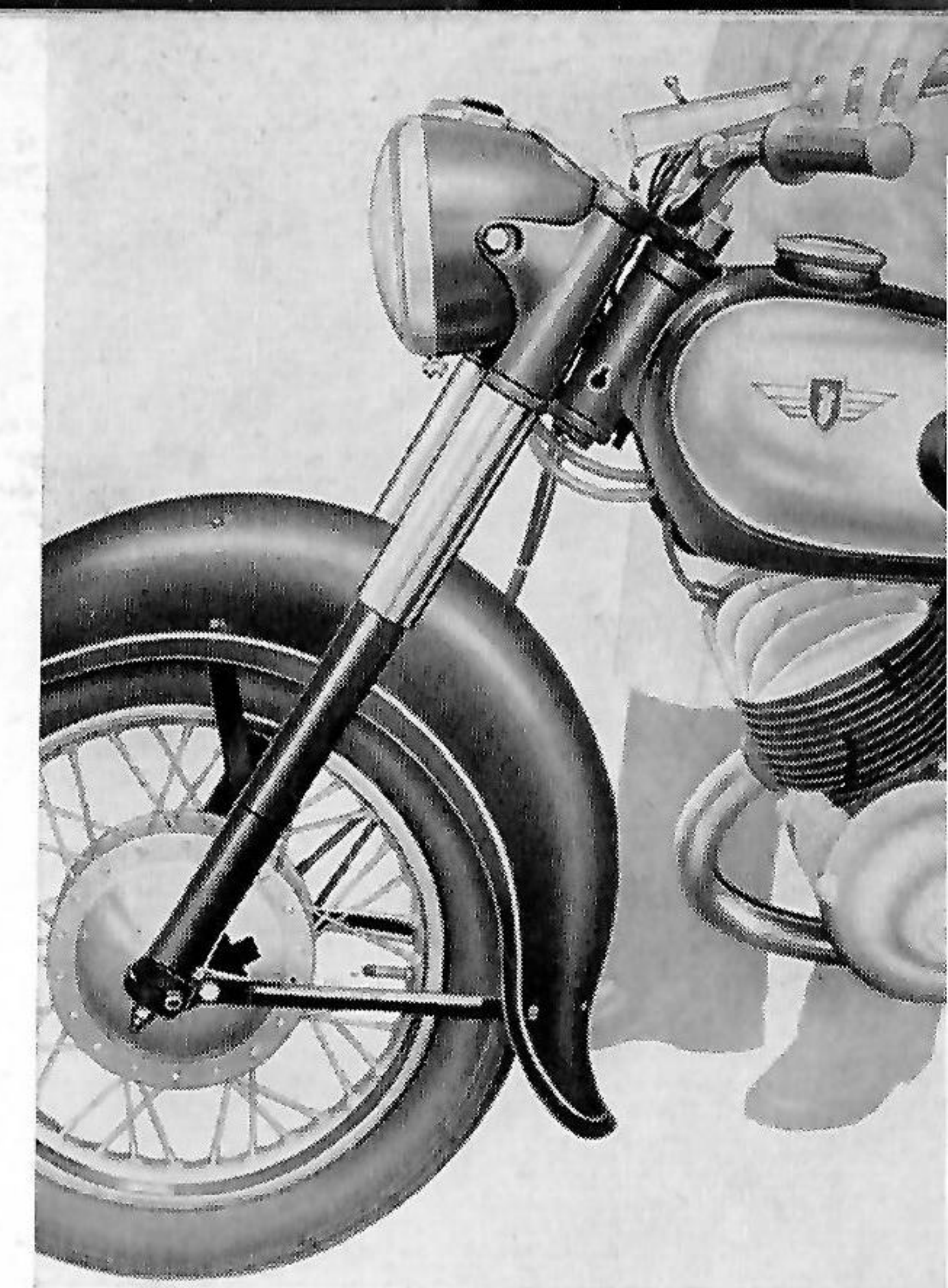


Fig. 15

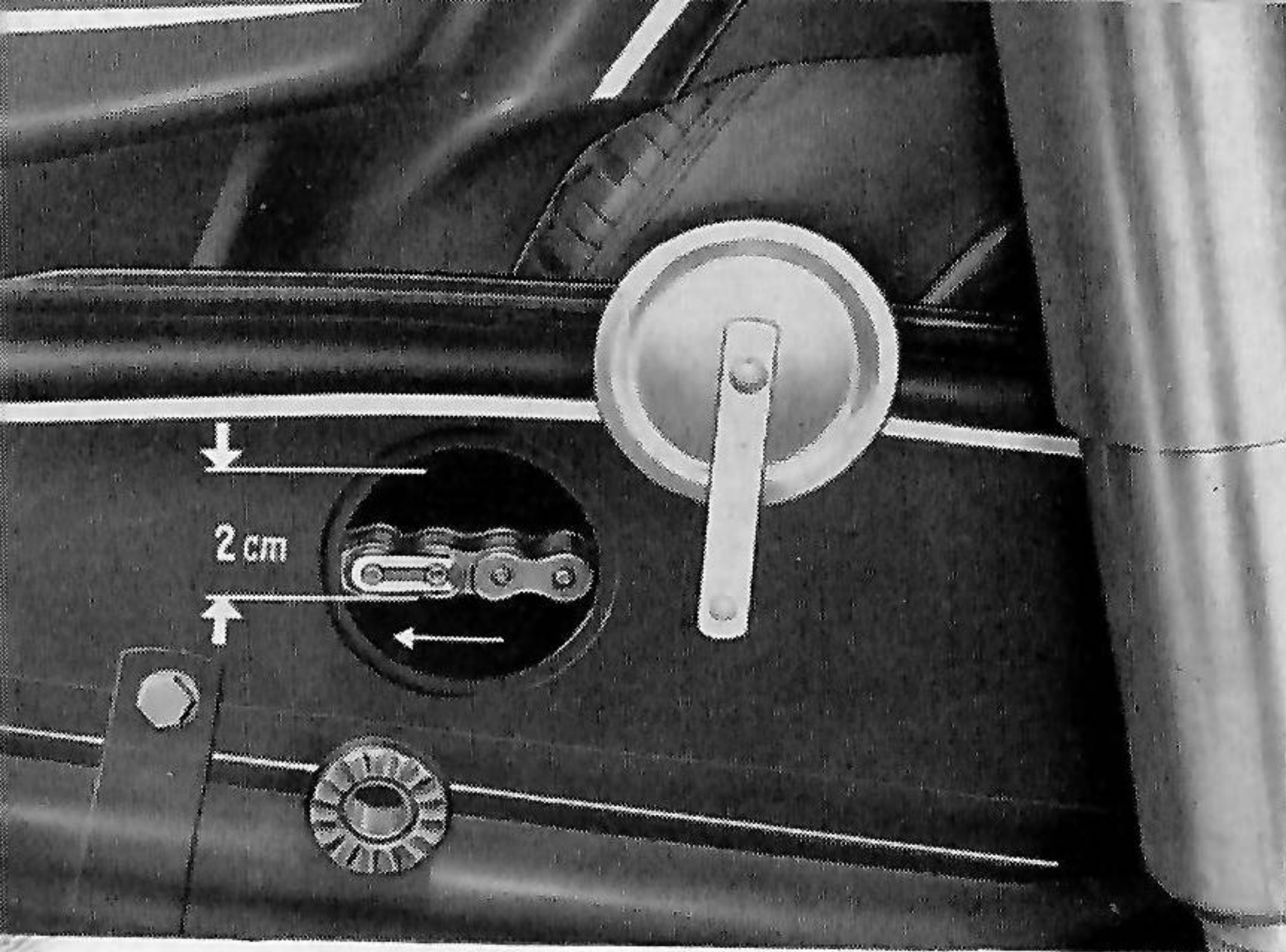


Fig. 16

justment is achieved, tighten again lock nut, chain fastener, and wheel spindle nut.

The chain must also be regularly lubricated. For this, one of the special chain greases with good adhesive and adequate lubricating properties at relatively high temperatures, will answer the purpose best. (We, ourselves, use the "Univis KR 29 B" chain grease, available in tubes from our dealers). At least, every 5000 kilometers (3500 miles) the chain should be removed and washed in petrol or petroleum. After drying up in sawdust, it is to be laid into warm chain

It requires, therefore, not only a precise adjustment of alignment and slackness, but also a most careful observation of our lubricating instructions. The slackness of the chain ought to be with a load of one person of 2 cm ($= \frac{3}{4}$ "'). The alignment may be checked by laying a slat along the sprockets.

For re-adjusting the chain, loosen first the front chain fastener, then adjust uniformly the two chain tighteners. When the desired ad-

grease until the grease has found its way between links, pins, and rollers. Before refitting the chain, do not forget to clean the chain sprockets thoroughly. When renewing the chain, the sprockets ought to be replaced at the same time, for worn-out sprockets will ruin the new drive chain in a very short time.

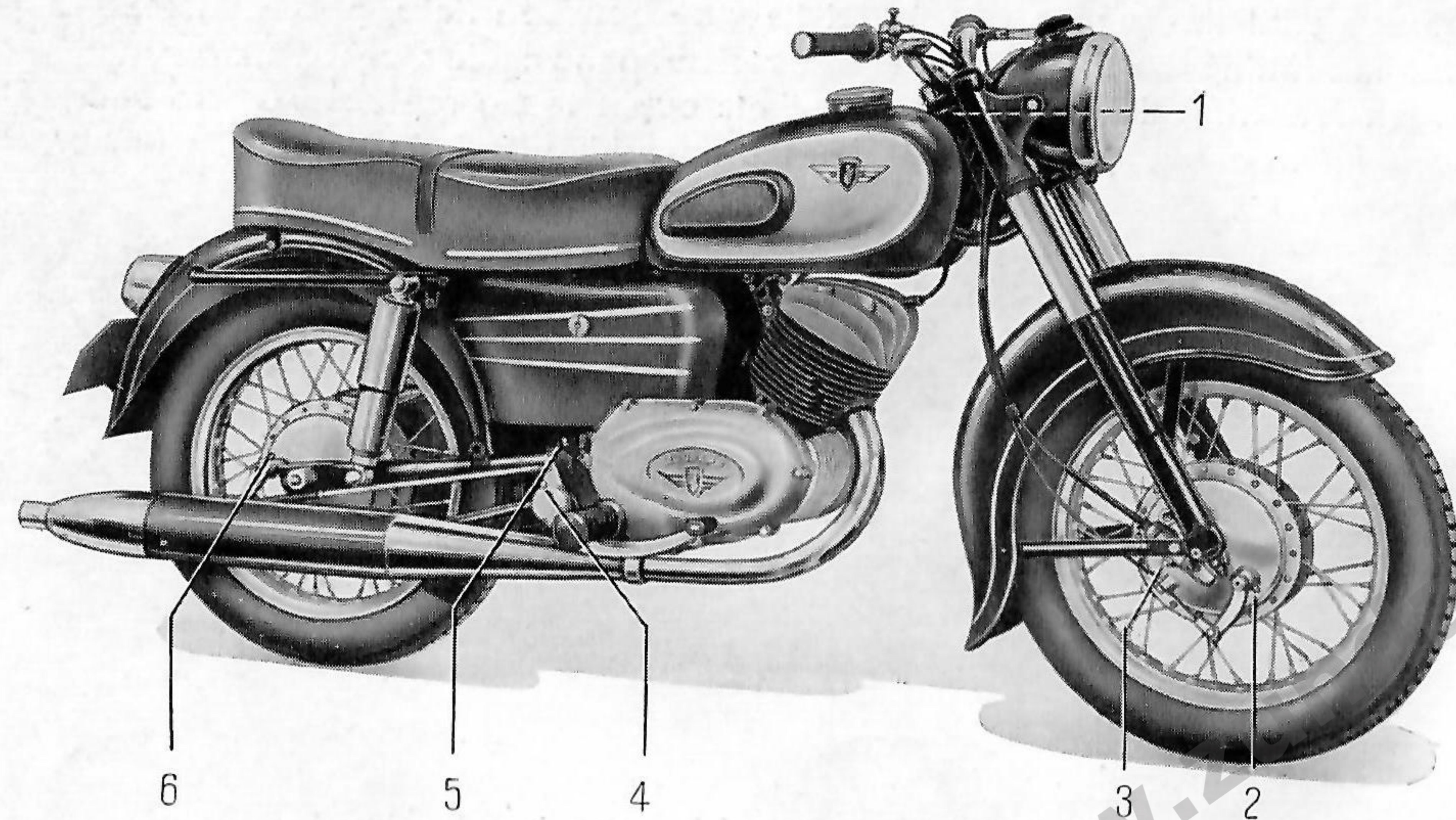


Fig. 17

Lubrication

On the vehicle you will find 6 greasing points which are to be greased regularly every 1000 kilometers (600 miles) with the grease gun, after the grease nipples have been cleaned thoroughly.

Do not omit to

Check Threaded Joints, etc.

each time the machine is greased.

Adjustment of Clutch

The clutch ought to always have a small extent of "play", otherwise there is a tendency towards slipping. Re-adjustment is made on the handlebar by means of the knurled-head nut and the lock nut.

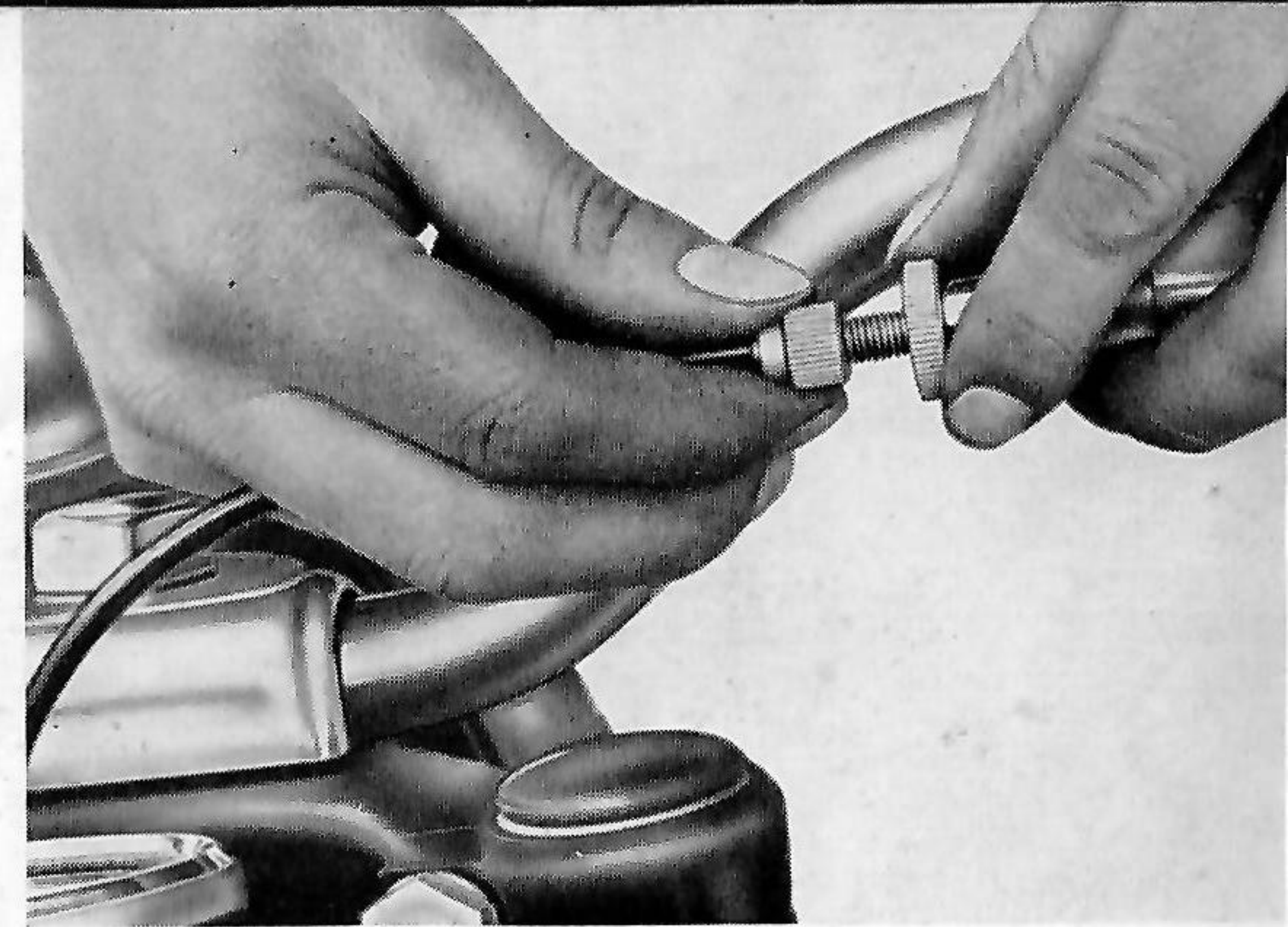


Fig. 18



Fig. 19

Adjustment of Front Brake

The brake is adjusted on the handlebar by means of the knurled-head nut and lock nut, as well as by means of the adjusting screw over the brake drum. Do not adjust the brake too tightly because otherwise the lining may bind slightly during normal running.

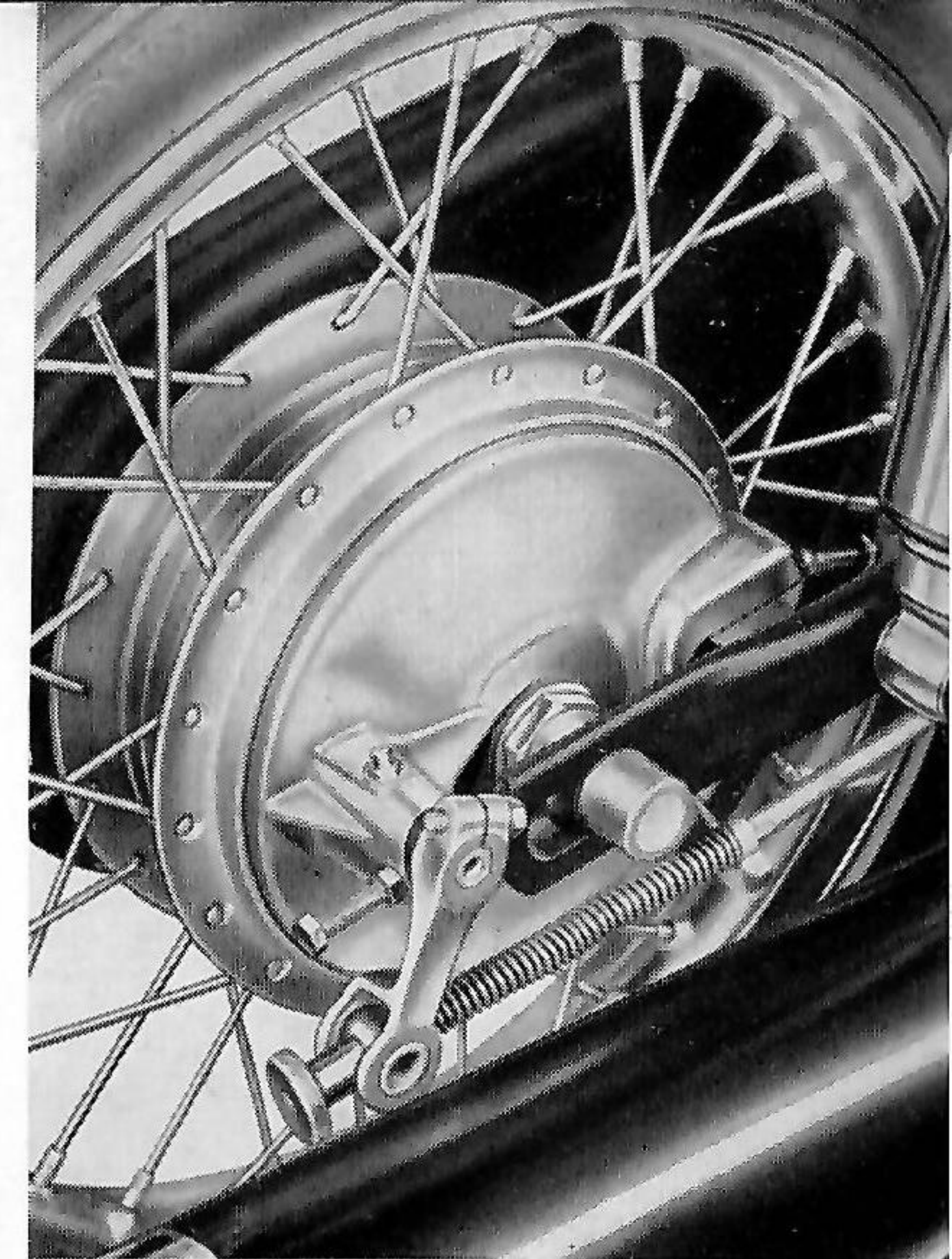


Fig. 20

Adjustment of Rear Brake

may be corrected at the rear wheel by turning the knurled-head nut accordingly. Do not adjust the brake too tightly!

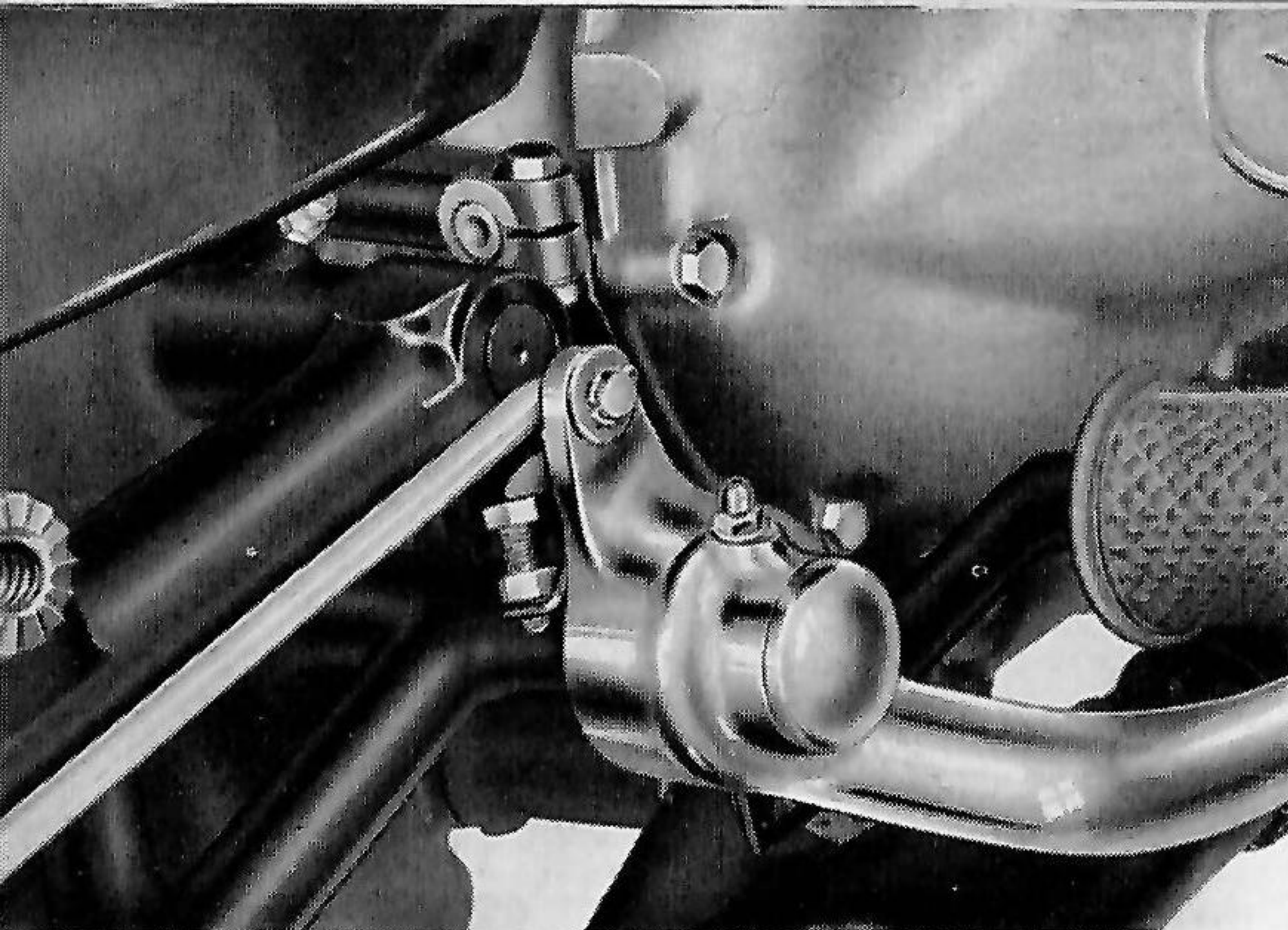


Fig. 21

Adjustment of Foot-Brake-Pedal

The position of the foot-brake-pedal may be modified by means of an adjusting screw with lock nut.

The Generator

Check the gap between the contact breaker points every 5000 kilometers (3250 miles). The gap can be adjusted by loosening the holding screw (1) and then turning the eccentric screw (2) until the gap between the two contacts is 0.3-0.4 mm (.011-.015"). Alteration of the gap of 0.1 mm (.004") = 10° difference of ignition timing.

The lubricating felt as well ought to be greased every 5000 kilometers (3250 miles). The remaining parts of the generator do not require a regular maintenance in that respect.

The Battery

Check the acid level every 1000 kilometers (600 miles). If this level is too low, add some distilled water — but on no account acid —. If the vehicle is left idle for a longer period, it is advisable to remove the battery and to send it for the attention of a specialised workshop every 4 weeks.

During the winter season please pay special attention to the care of the battery. A discharged battery will freeze at — 8° C (abt. 15° F) whereas an

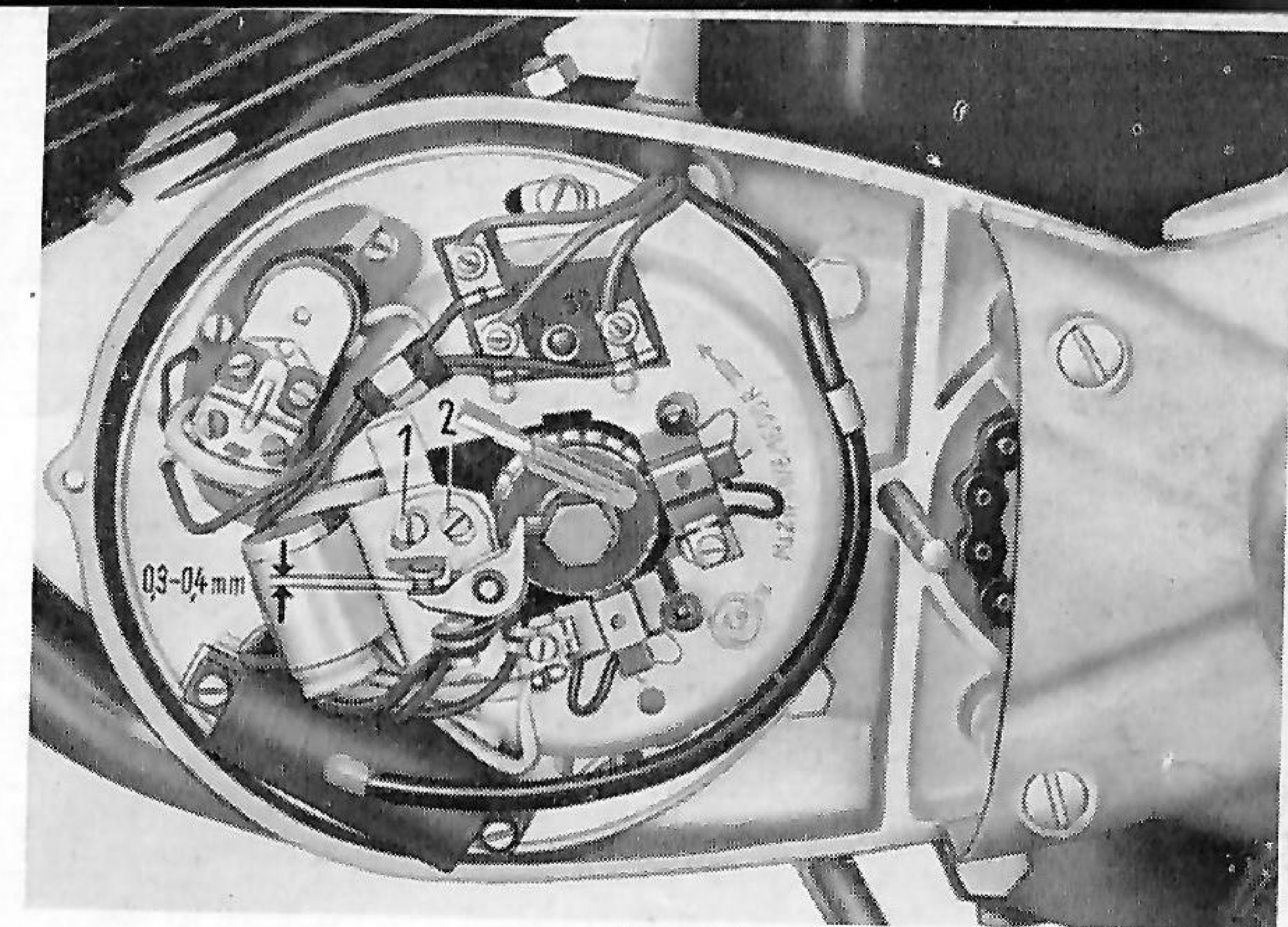


Fig. 22

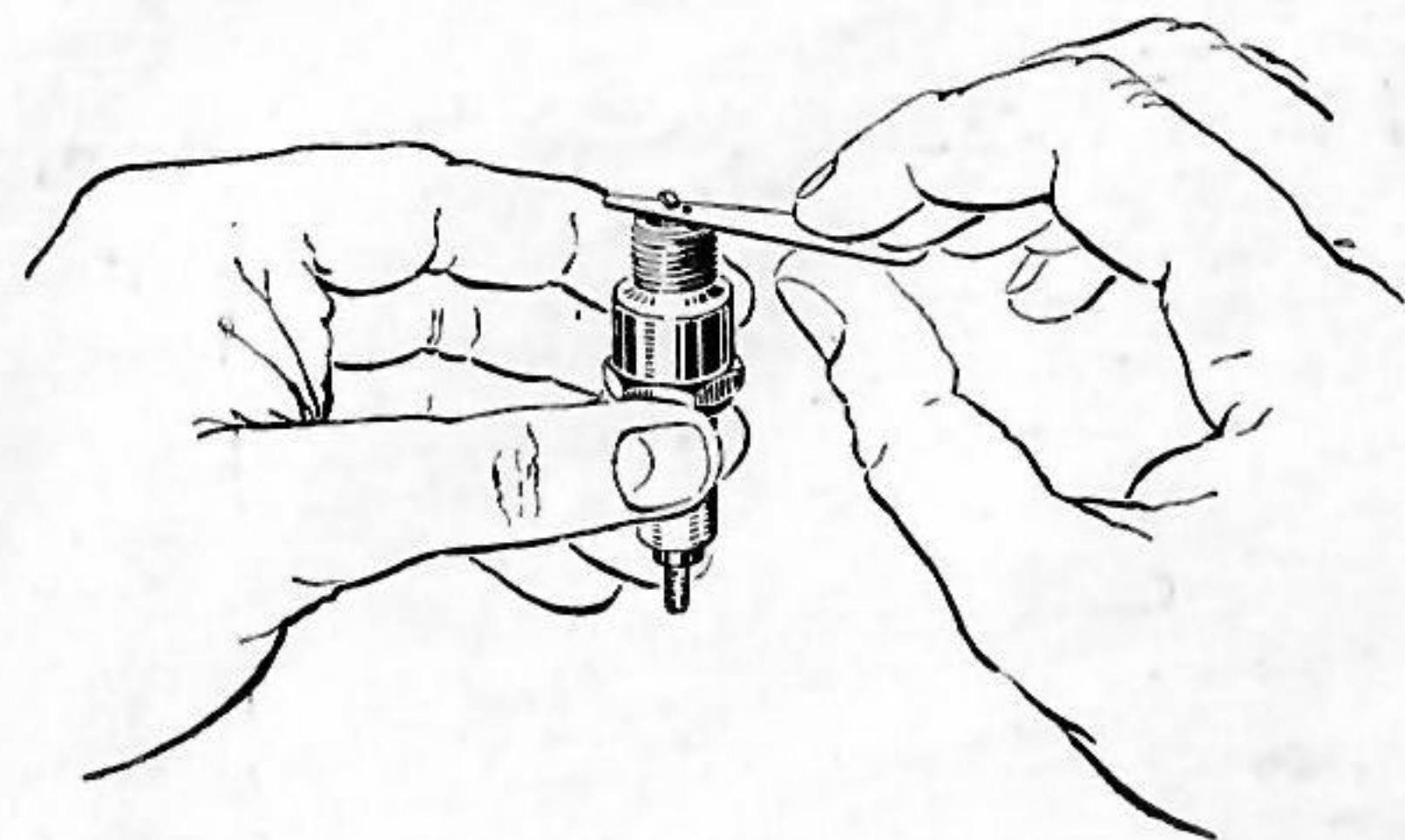


Fig. 23

insufficiently charged battery will freeze at a correspondingly lower temperature.

The Sparking Plug

The gap of the electrodes is to be 0.7 mm (.027"). A glance at the so-called "face of the plug" will give you an idea of the state of the engine and of its running condition.

A sooty plug shows: mixture is too rich or engine is not run sufficiently warm.

A burnt plug shows: mixture is too lean, or ignition timing is not correct, or engine needs decarbonising.

The Lighting Set

Please make sure that the lighting set meets the regulations of the police. Defective bulbs or cables must immediately be replaced. The adjustment of the headlight is made with only one person on the machine.

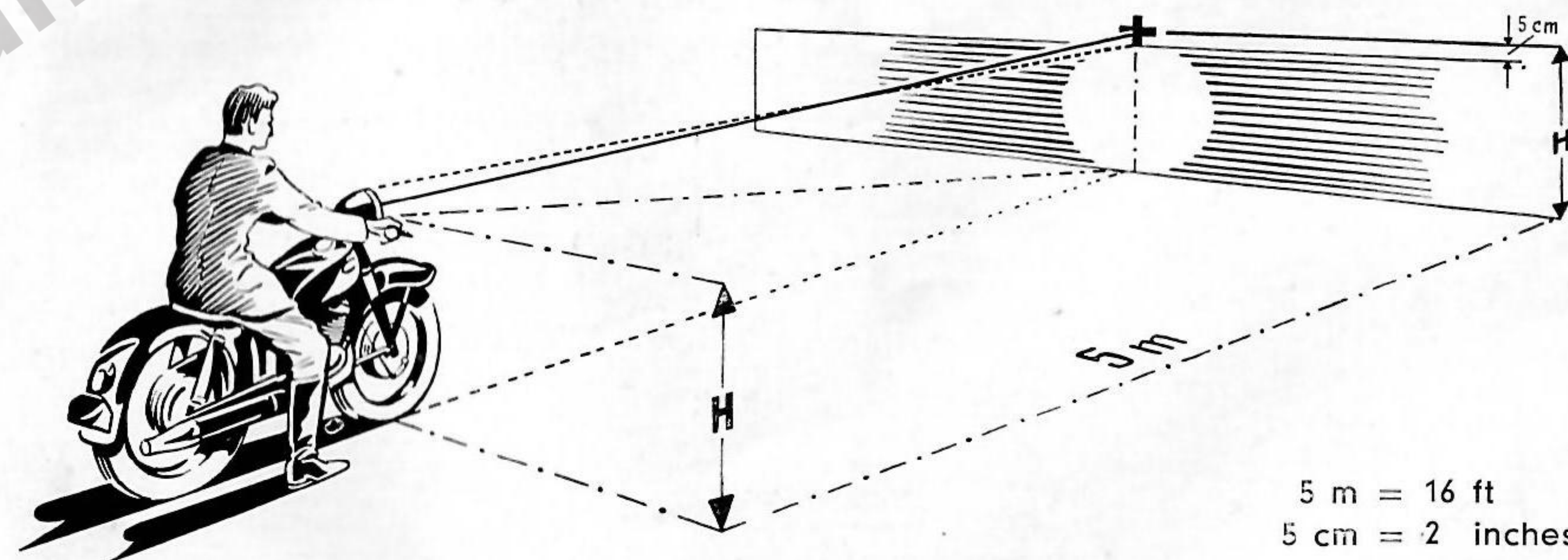


Fig. 24

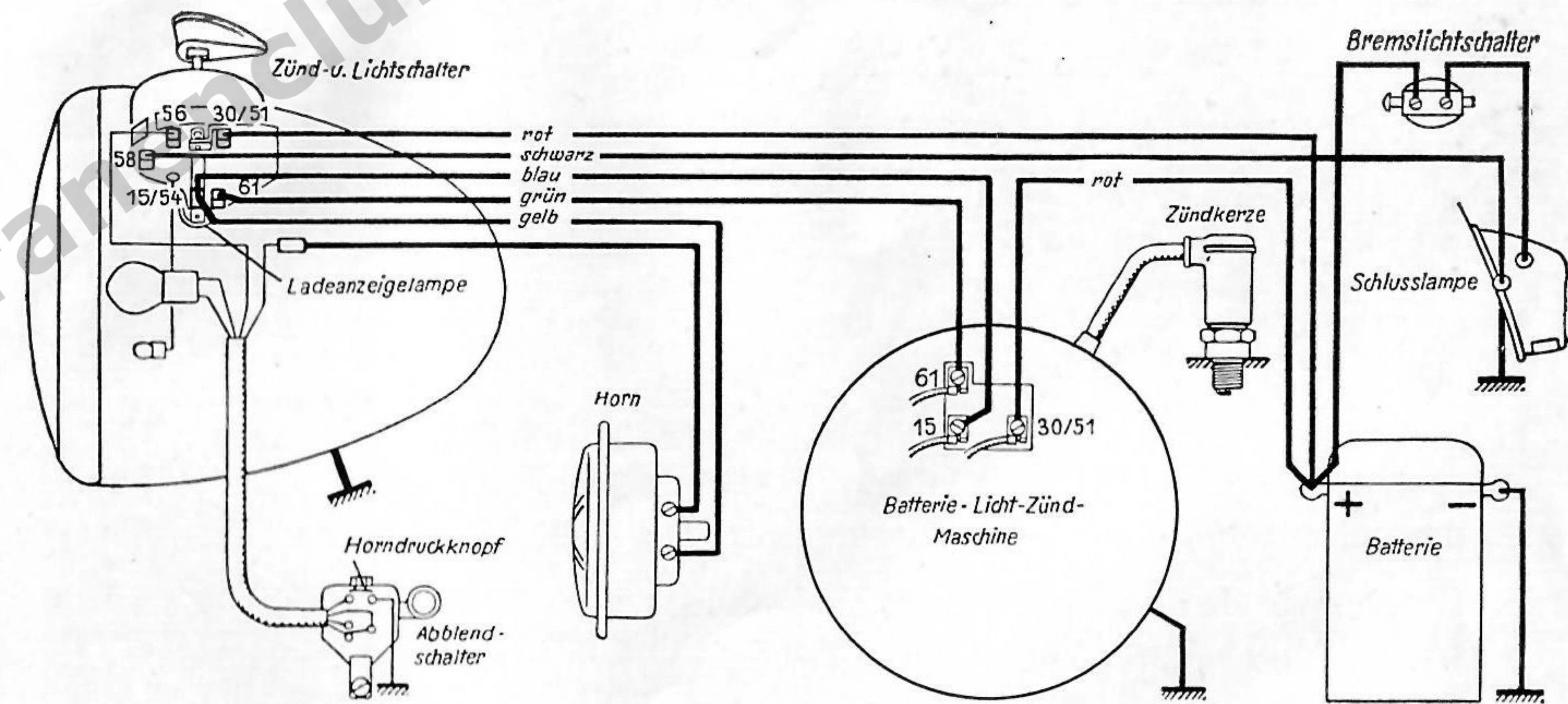
Locate your motorcycle on a level place vertical to a wall of 5 m (= 16 ft) distance. As remarked above, only one person is on the machine.

Now mark by a cross the height of the centre of the headlight— "H".

Adjustment of full beam: With the headlight switched on, the centre of the bright area on the wall must coincide with the cross marked thereto.

Dipped light: The edge of bright — dark area (upper edge of bright area appearing on the wall) must be at least 5 cm below the marked cross and must be horizontal, otherwise the headlight has to be adjusted correspondingly.

Zündlichtschalter	=	ignition-lighting switch
rot	=	red
schwarz	=	black
blau	=	blue
grün	=	green
gelb	=	yellow
Horn	=	horn
Horndruckknopf	=	horn button
Abblendschalter	=	dipper switch
Ladeanzeigelampe	=	charge control light
Bremslichtschalter	=	stop light switch
Schlußlampe	=	tail light
Zündkerze	=	spark plug
Batterie-Licht-Zünd-Maschine	=	battery-lighting-ignition generator
Batterie	=	battery



Wiring diagram of electrical set

Fig. 25

**Measures to be taken to protect the machine and two-stroke engine
when not in use for a longer period:**

The following measures will protect the machine as well as the frame against corrosion and will guarantee your vehicle ready for use the moment you want it. It will answer the purpose to do this work in the following order:

1. Run the engine for some 15-25 km (10—15 miles), until the engine is really warm.
2. Remove the carburettor and whilst the starter is being depressed with the ignition switched off, let the engine suck in 50 c.c. (= abt. $\frac{1}{8}$ pint) of anti-corrosion oil through the intake port.
3. Clean carburettor, air cleaner, and fuel pipes, and refit them. The throttle twist grip remains closed when the machine is not in use.
4. Remove drive chain. In order to facilitate refitting, couple up a length of an old chain to the chain, let the former hang on the gear sprocket so that later on you may easily connect and draw into place the conserved chain. Do not forget to clean and grease the removed original chain in accordance with the Operations Instructions.

6. Dismount battery, store it in a dry place protected from frost and send it for the attention of a specialised workshop every 4-6 weeks (do not empty the battery).
7. Clean all parts of engine and frame stained with oil, using a brush and petroleum.
8. Wash frame and engine with some cleaning material (appropriate materials are available in the trade; please observe directions for use carefully), but do not squirt. Then dry with sponge and leather.
9. Remove generator cap and let it dry. Rub the interior of the generator in order to dry it as well.
10. Smear all chromed parts with acid-proof vaseline.
11. Spray the whole machine with an atomizer (appropriate spraying oils are available in the trade)
12. grease all greasing points in accordance with the lubrication diagram.
13. Prop the machine on its stand in a dry place in the manner that the two tyres do not touch the ground.
14. Reduce air-pressure of tyres to 1 atü (14 lbs.sq.inch.).
15. Cover the machine completely in order to protect it from dust.

Survey of Maintenance Work

Every	Maintenance Work	Remarks	Further Details see page
500 km (350 miles)	primary chain "small" maintenance work	special chain grease	41
1000 km (700 miles)	retighten all screws and nuts lubricate vehicle grease pivots of all foot and hand levers check battery	Mobilcompound No. 4 few drops of engine oil	45 45 49
5000 km (3500 miles)	clean air filter dipping it with oil check contact breaker gap clean sparking plug and check gap primary chain "large" maintenance work interchange tyres	special chain grease	28 49 50 41 38
10 000 km (7000 miles)	change oil in telescopic fork change oil in gearbox	Mobil Oil SAE 10-50 Mobil Oil SAE 20-50	40 39
20 000 km (14 000 miles)	fill wheel hubs with grease	Mobilcompound No. 4	—

Maintenance work may be carried out by yourself if you like. The following works, however, should be done by an experienced Zündapp dealer and workshop:

All work on the engine

Repairs to the braking system,
front forks

frame, swinging arm, and suspension

Decarbonising the engine and cleaning the exhaust set

Repairing damages caused by accidents.

However, for repair works on the lighting systems, NORIS dealers are competent.

A Number of Tips

have been compiled in order to help you to carry out the respective work in the easiest and quickest manner.

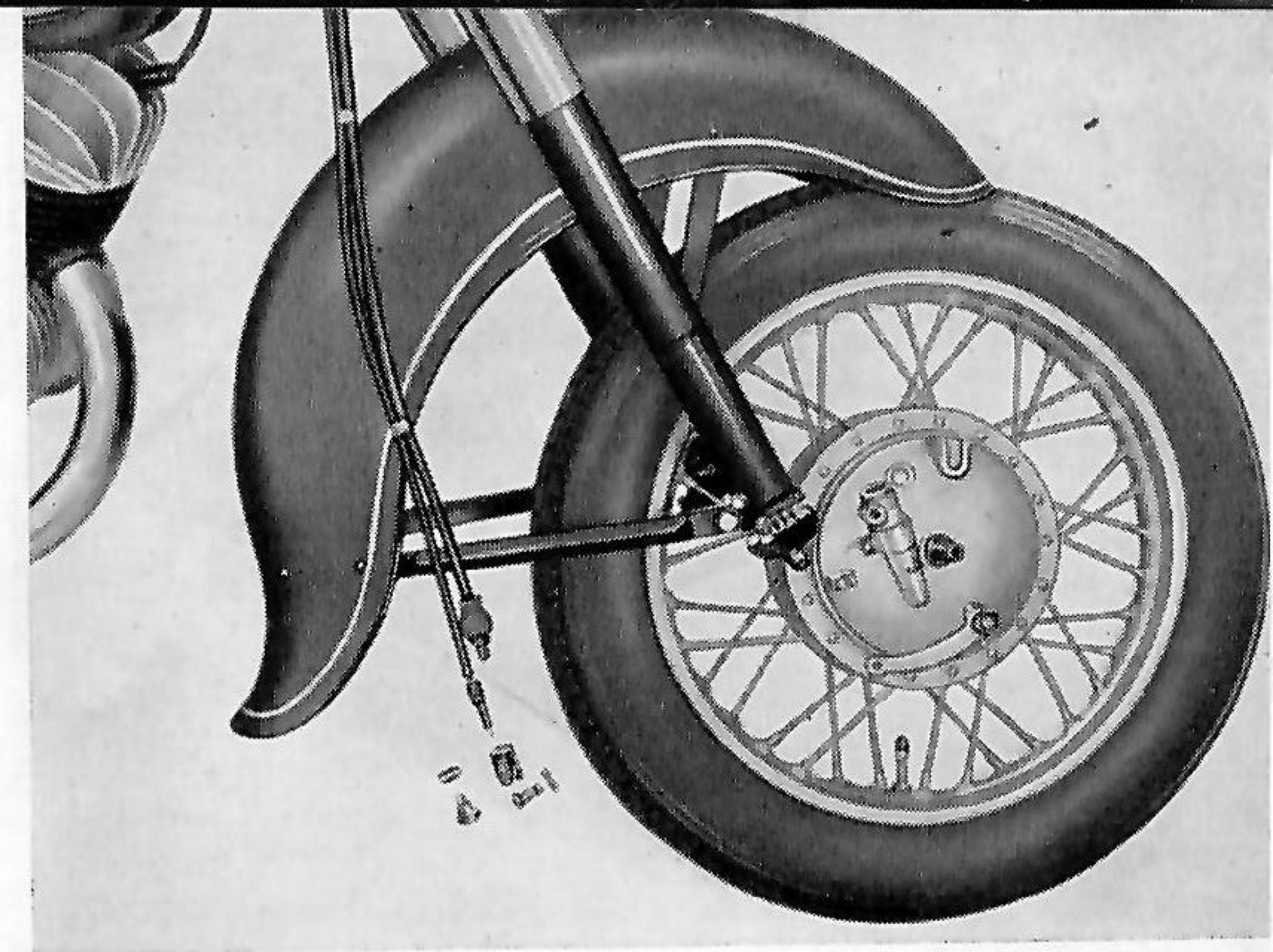


Fig. 26

Dismounting Front Wheel

1. Prop vehicle on its central stand
2. Disconnect brake cable
3. loosen speedometer drive
4. loosen the two nuts at the forks' ends so that the wheel with its spindle falls out automatically.

Refitting is done in reversed order.

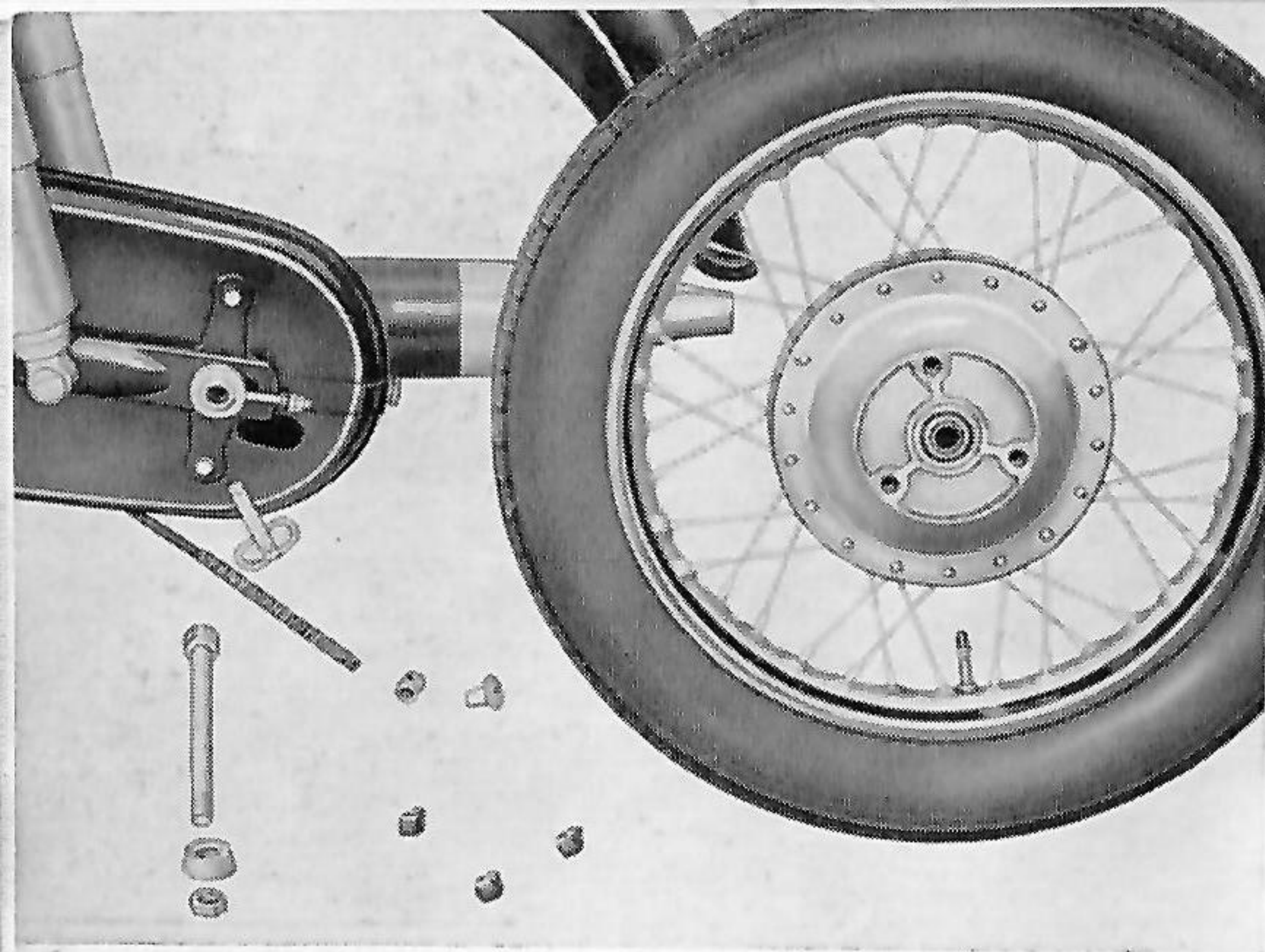


Fig. 27

1. Prop vehicle on its center stand
2. Remove the 3 wheel-holding bolts
3. Loosen the spindle nuts as well as connecting piece between brake lever and rods
4. Push out the hub spindle

Refitting is done in reversed order.

Dismounting Rear Wheel

Dismounting Tyres

is really easy and may be carried out without using force if you proceed as follows:

1. If there is any air still left in the tyre, let it out by removing the valve cap, then
2. screw out the valve
3. detach valve retaining nut
4. press the tyre with your feet at one side into the rim-bed, whilst taking it out at the opposite side by means of the tyre levers.



Fig. 28

Tyres must not be taken off by using force or sharp tools as otherwise the wire or the tube may be damaged.

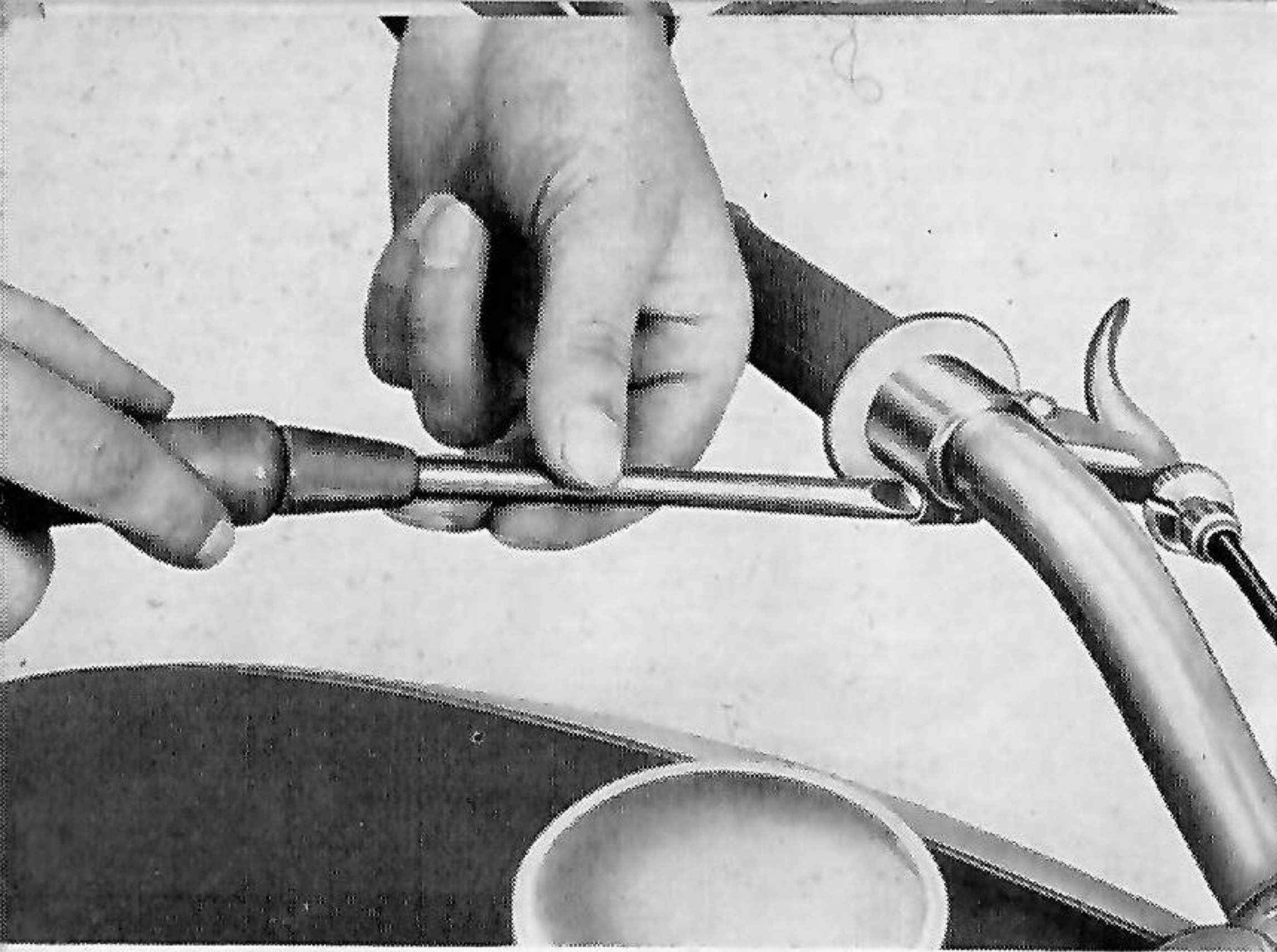


Fig. 29

The position of the hand controls for operation (clutch and hand-brake levers) may also be adapted to your own requirements. For this purpose you only need loosen the fixing screw, turn the lever into the required position, and tighten the screw again.

Setting Hand Controls

Adjustment of Throttle Twist Grip

By loosening or tightening the small screw at the grip, the pressure of a laminated spring may be regulated to the effect that the throttle twist grip will turn either easier or harder.

These Small Parts

you should always carry with you in addition to the usual tools:

- spare sparking plug
- spare bulbs
- insulating tape
- chain grease.



Fig. 30

For larger tours abroad we would recommend you to take with you additionally the most important spare parts (chain, ignition coil, etc.) according to the conditions existing in the country of your travel.

Troubles and Remedies

Obviously your "200 S" machine cannot be expected to start if you have forgotten to insert the ignition key or to open the fuel tap. More than once really experienced motorcyclists dismantled half of the machine because they only omitted to put the fuel tap to reserve. Perhaps you may drive your motorcycle thousands of kilometers (or miles) without having any trouble. Then, suddenly something is wrong with the engine or the frame. In this case the first thing to do is to light a cigarette a few paces distant from your vehicle — then think over what it might be — and proceed systematically, more or less in the following order:

If the trouble is in the engine, first determine whether the defect is in the ignition set or in the fuel set. That is to say:

Screw out the sparking plug. Lay another plug known to be in a perfect state on a part of the machine affording a good earth (e.g. cylinder fin, etc.). Now switch on the ignition, depressing the kickstarter. If sparks keep jumping, the trouble is to be found, in all probability, in the fuel system.

Troubles in the Fuel System

The tank breather is blocked, so that petrol cannot flow to the carburettor.

Remedy: exchange cap or drill a small hole in the old cap (max. dia. 2 mm = $\frac{3}{32}$ "")

Fuel tap blocked

Remedy: Clean — when removing the tap place some vessel underneath so that petrol cannot be lost

Fuel pipes dirty

Remedy: Clean — do not forget to close fuel tap first

Carburettor fails to work properly

Remedy: remove and dismount, wash out with petrol, blow out with compressed air (air-pump if nothing else available). Now assemble again, adjusting the carburettor according to the instructions (see technical details)

It may happen that in spite of the perfect condition of the ignition and fuel systems, the engine fails to start because of excessive pressing of the tickler or by excessive operating of the kickstarter; the engine is over choked.

Remedy: Remove sparking plug, close throttle twist grip, open air-lever, switch off the ignition — then kick the engine several times. After that, start engine as usually. (In exceptionally bad cases it is necessary to loosen the hexagonal nut of the stud in the crankcase under the crankshaft in order that the fuel collected in the crankcase can escape into the open air).

Troubles in the Ignition System

Battery is not charged sufficiently, control light burns only weakly and flickers at starting

Remedy: Start machine by pushing it in 2nd speed gear. Check battery as soon as possible and have it charged up with a charging plant.

Starting the engine without battery

A battery almost discharged or defective, will make starting difficult. In this case it is best to shut off the battery by disconnecting the wire from the negative pole of the battery to the earth terminal on the machine. When the battery is missing or disconnected, the motorcycle has to be started by pushing it. Pushing can be made easier if the terminals No. 30 and No. 61 of the generator are

connected by means of a piece of copper wire. The cables already connected to these terminals must, however, be left in place. After replacing the battery, the piece of wire has naturally to be removed.

Cables to the battery are not making perfect contact (control light does not appear).

Remedy: Clean the battery poles and cable shoes, check the earth connection from battery to engine.

Electrolock defective (control light does not appear). Only your Zündapp-dealer should carry out repairs to the electrolock.

Generator defective. Only your Zündapp-dealer resp. a NORIS agent should carry out repairs on a generator.

Other Troubles

Engine does not start easily

With cold engine:

Turn idler air adjusting screw further in (in winter as well). The engine is getting extra air. Your Zündapp dealer will remedy this trouble.

With warm engine

Turn idler air adjusting screw further out (in summer more air is required for idling).

Seat of float needle is not tight; clean and if necessary fit new needle and cover.

Engine runs irregularly

Sparking plug defective, check plug gap; engine not warm enough, run a short distance with maximum revolutions. Mixture too rich of oil, empty tank and refill with 1:25 oil-fuel mixture. Carburettor adjusted to give not sufficient air, turn idler air adjusting screw further outwards.

Performance of engine drops

Engine not adjusted in accordance with the instructions. Have ignition and carburettor adjusted by the dealer. Engine and exhaust system carboned up, have it decarbonised. Engine leaky, have it sealed in your workshop. Piston rings sticking, have your dealer put this right. Piston and cylinder worn out, have cylinder rebored and new piston fitted.

Engine "pinks"

Machine not driven in the correct manner, change down to a lower speed gear in time; ignition adjusted too advanced and carburettor to give too lean mixture. Incorrect sparking plug, mind that plug has correct thermal value. Unsuitable petrol (octane rating too low). Compression chamber has got too small due to carbon deposits. Engine running too hot due to obstructed ports.

Front fork movement too great

Fill with thicker oil. If this does not improve, have stronger springs fitted.

Front fork too rigid

Fill with thinner oil.

Effect of brakes insufficient

Brake linings covered with grease, wash with petrol, check oil seals, if necessary renew them. If brake linings worn out, renew them.

Excessive wear of chain

Not correctly adjusted, insufficiently maintained. Adjust and maintain it in accordance with the instructions

Tyre wear one-sided

Incorrect air-pressure. When the centre of the tyre tread is excessively worn, this shows that the air-pressure is too high. On the other hand, excessive wear on both outside edges of the tyre shows that the air-pressure is too low.

Poor road holding qualities

Check and correct tyre-pressures. Select another sort of oil for the telescopic fork.

Motorcycle has a sideward trend

Adjust alignment using a testing slat.

Fuel Consumption Curve

shows the fuel consumption in relation to the speed of the machine in top gear. In order to determine the so-called normal consumption, new standards have been adopted recently which means that the values indicated are corresponding to the actual consumption more than this has been the case hitherto.

You may see from the curve the increase of the fuel consumption in accordance with the increased speeds. However, it would be quite wrong in view of this diagram to trundle along at 40 or 50 km/h (25 or 30 mph) in top gear in order to save fuel. In this case the relatively low number of revolutions would not warm up the engine sufficiently which would result in reducing the lubricating activities of the oil-fuel mixture and consequently cause increased wear of the parts of the engine.

Fuel consumption increases **inevitably** when

- driving in low speed gears
- frequent changes of gears (specially in town-traffic and mountainous regions)
- driving against the wind

l/100 km

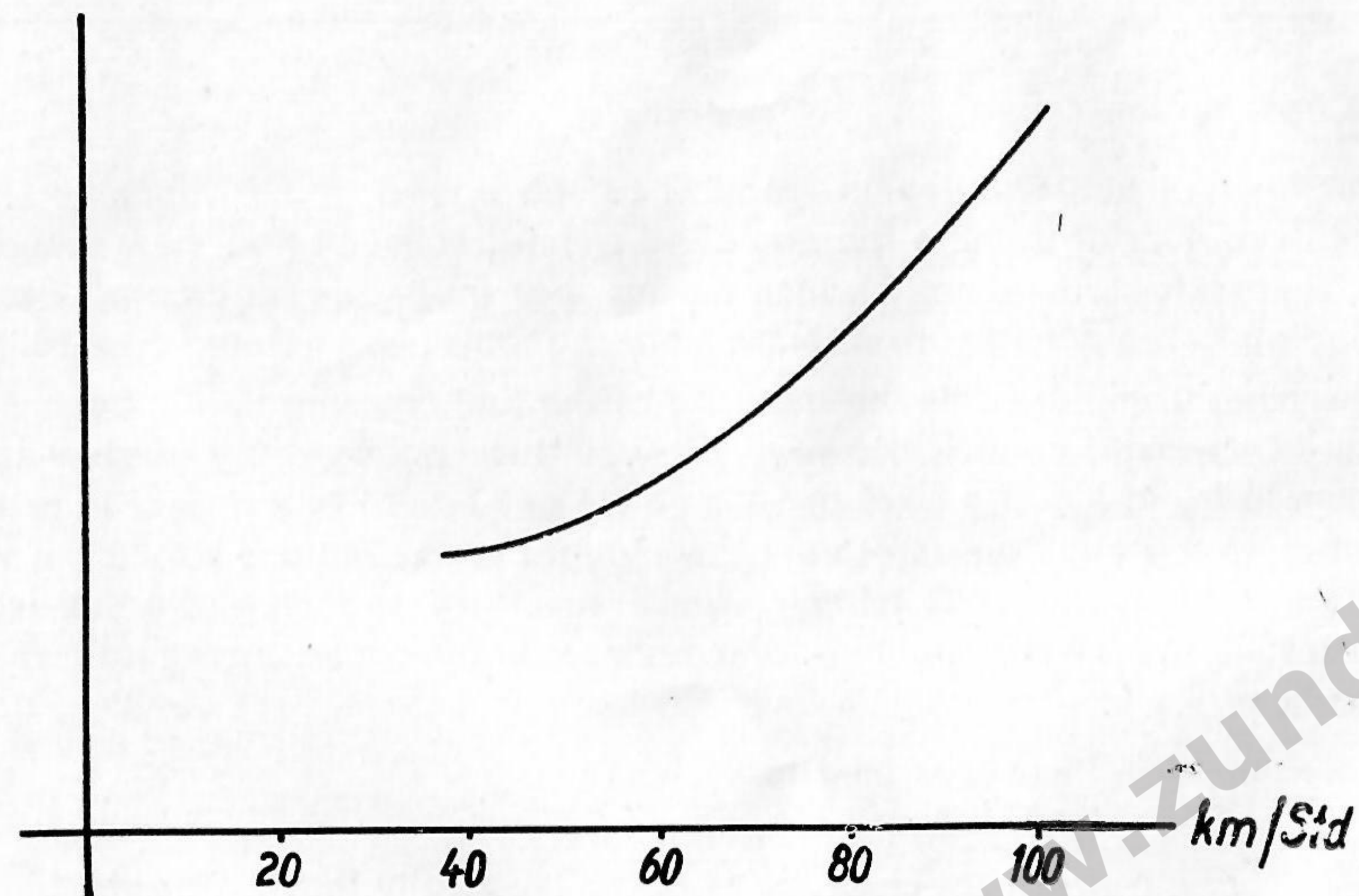


Fig. 31
km/Std. = km/h

Fuel consumption increases — which, however, **could** be avoided — when

running the machine idle,
accelerating too rapidly,
staying too long in the lower gear,
incorrect adjustment of carburettor or ignition,
engine carboned up or too large play of piston,
clutch slipping,
additional load
fitting windscreens or
knee protecting plates, e.g. also a trunk placed
across the luggage rack,
tyre-pressure too low.

You will discover that after having reached the desired speed you may return the throttle twist grip to a considerable extent without losing speed. By taking this fact into consideration you can remarkably influence the fuel consumption of your 200 S.

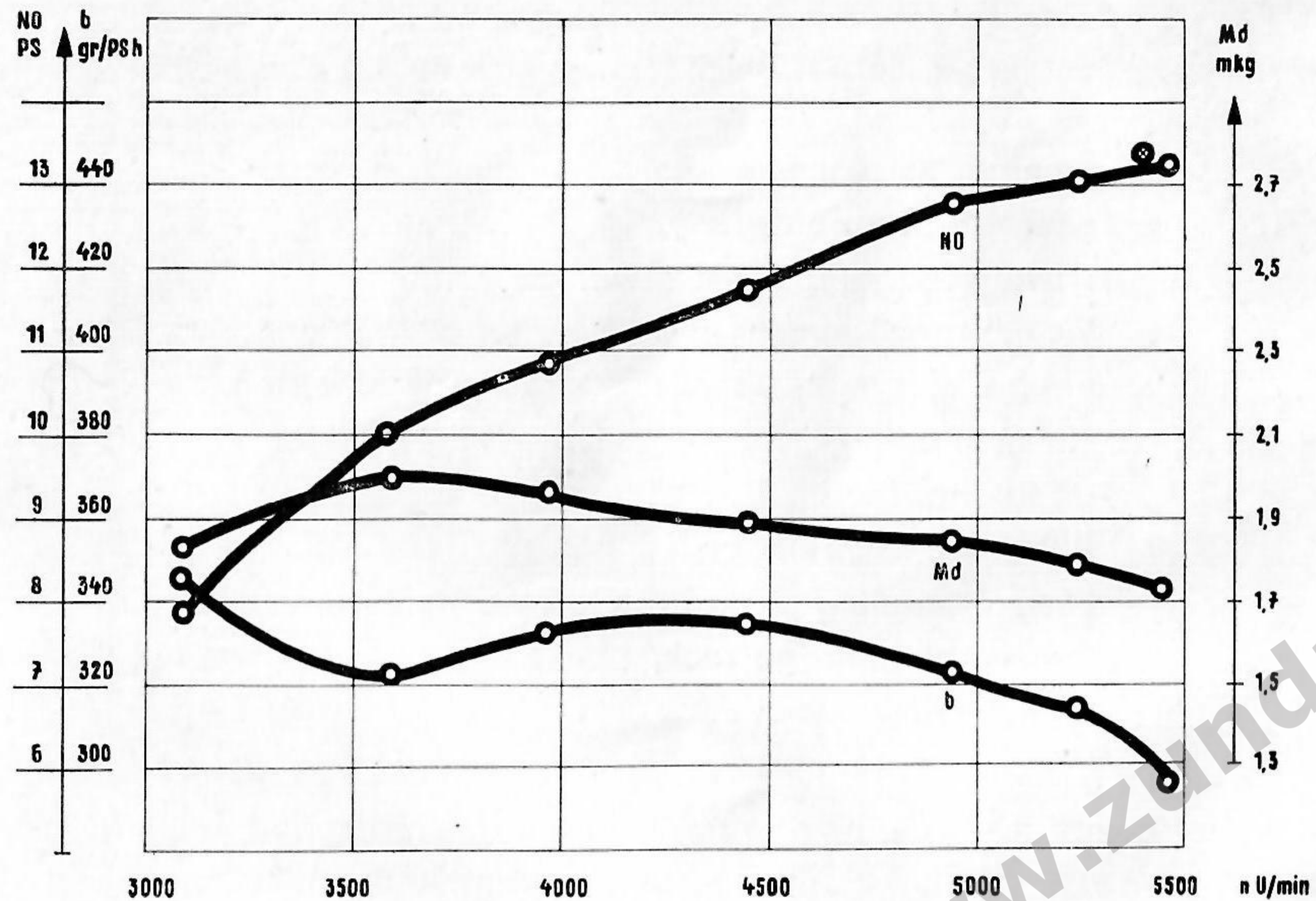


Fig. 32
U/min = rpm

Performance-Torque Diagram

shows the curve of performance and torque in relation to the number of revolutions.

The relatively flat line of the torque-curve (Md) defines the elasticity of the engine (i.e. its excellent "pulling power") over a relatively large range of speeds.

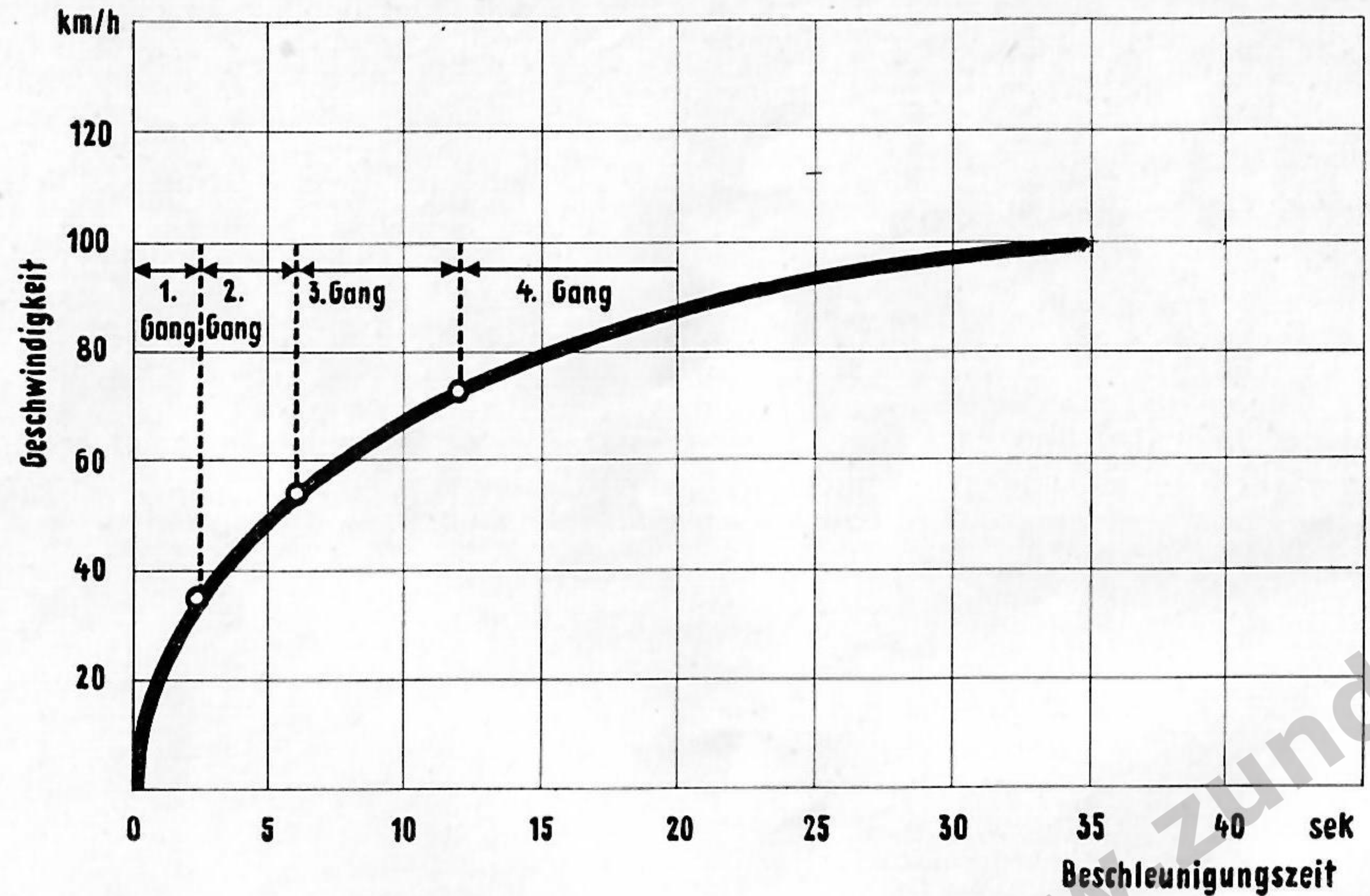


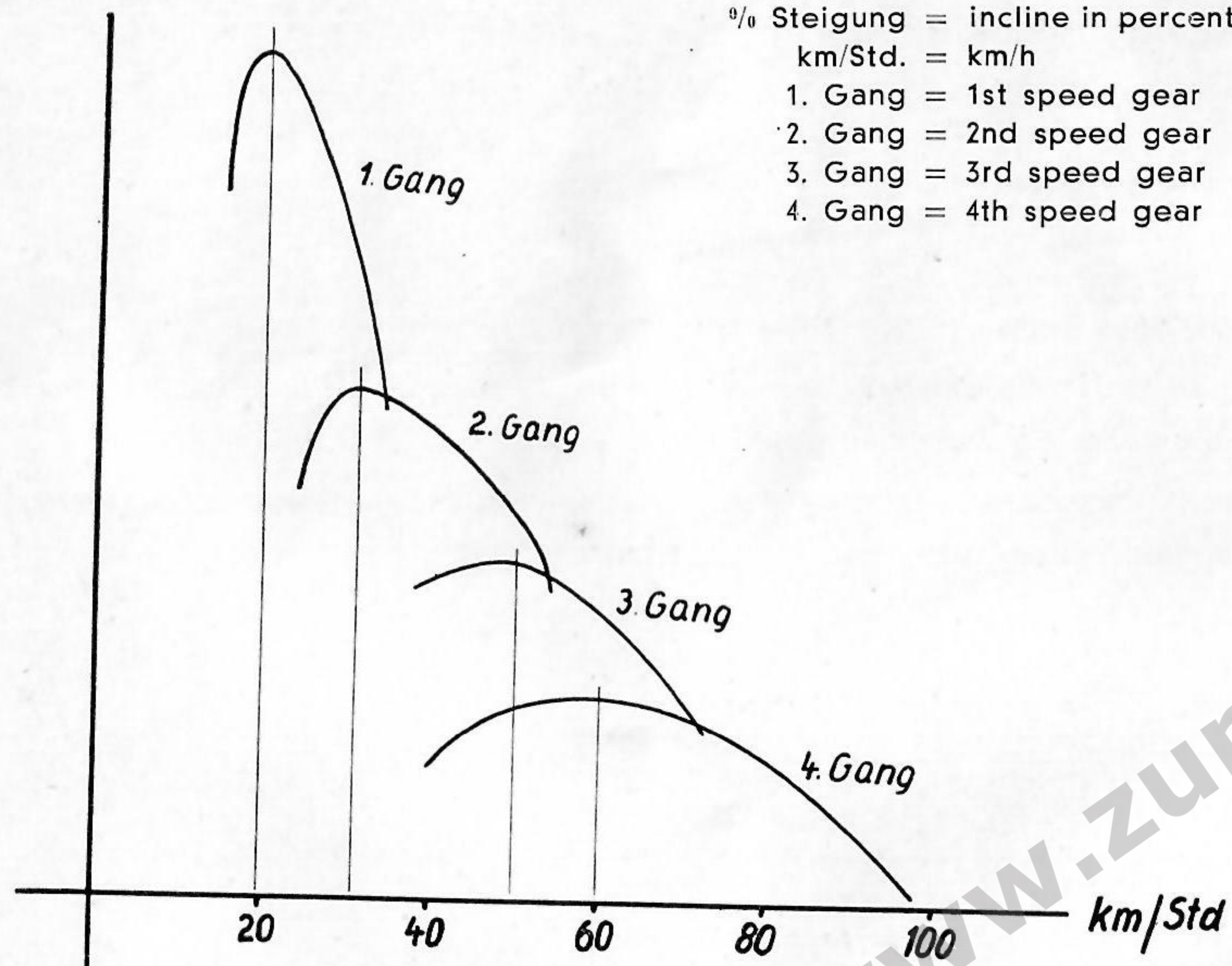
Fig. 33

Acceleration Curve

shows the low acceleration time required to reach high speeds.

- 1. Gang = 1st speed gear
 - 2. Gang = 2nd speed gear
 - 3. Gang = 3rd speed gear
 - 4. Gang = 4th speed gear
- ← Geschwindigkeit = speed
 sek. = sec.
 Beschleunigungszeit = acceleration time

% Steigung



% Steigung = incline in percent

km/Std. = km/h

1. Gang = 1st speed gear

2. Gang = 2nd speed gear

3. Gang = 3rd speed gear

4. Gang = 4th speed gear

Fig. 34

Hill-climbing Capabilities

of your machine may be seen from the last diagram on the opposite page. The highest points of the individual curves show the most appropriate speeds for the respective gears when climbing a hill. At these points your machine has its best climbing capabilities.

The graduation in percentages on the vertical axis has been left because these figures are varying according to the actual load of the vehicle. The climbing capacity decreases with a heavier load, whereas the most favourable speeds shown in the diagram are being maintained.

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