

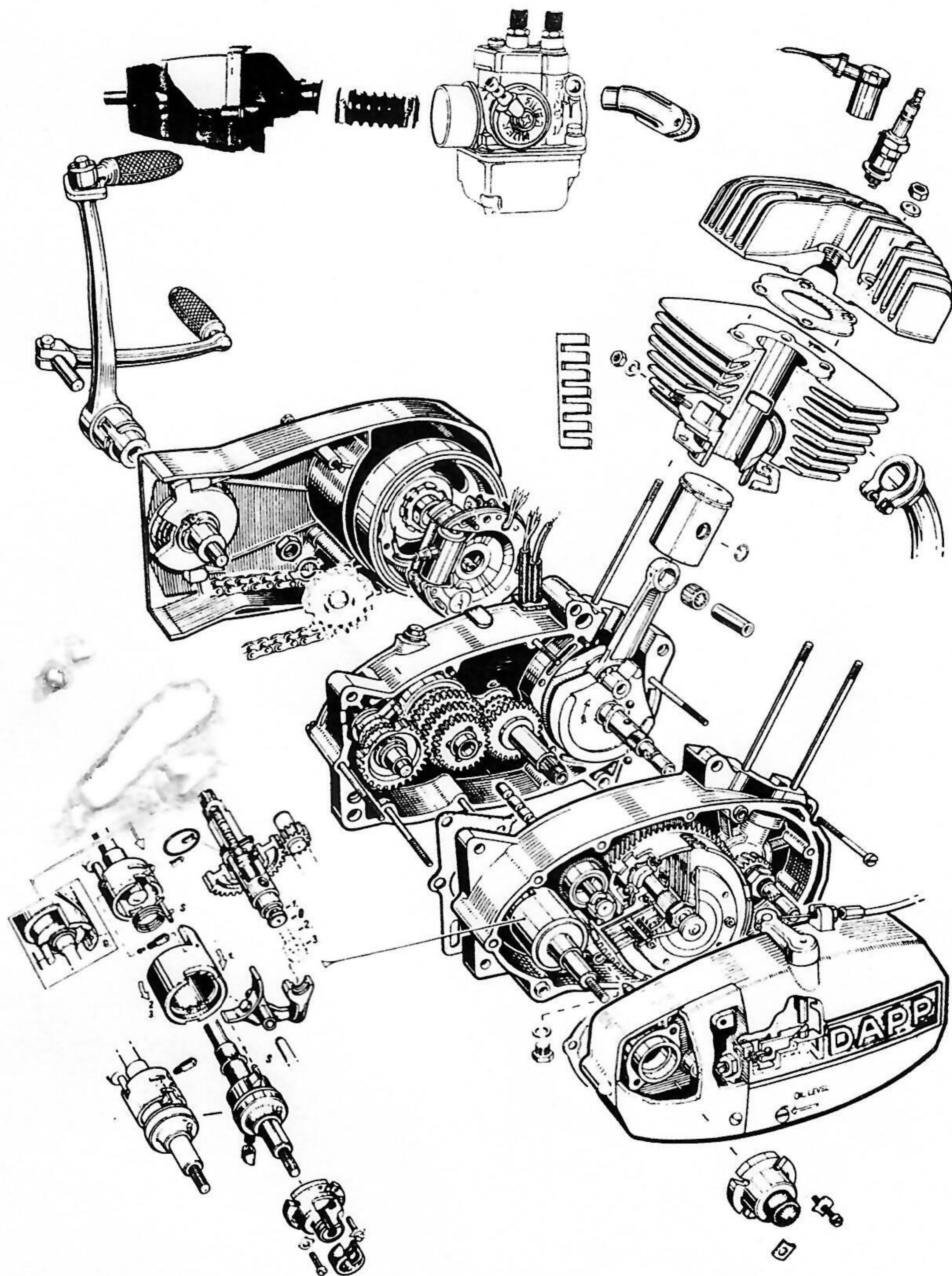
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Workshop Manual



ENFIELD
EXPLORER

EXPLORER



**3-Speed foot operated
Gear Shift**

INTRODUCTORY NOTE

Complete dismantling of the engine is called for, only in case of damage to the Clutch bell, Gear box, Crankdrive, Kickstarter assembly (except for Kickstarter spring), or the manual gear change assembly.

Defects of the Gear selector mechanism, Clutch, Crankshaft drive gear can be remedied after taking off the Clutch cover. Consequently, the engine need not be taken off the frame. But in all cases, the Gearbox oil must be drained. This is preferably done while the engine is still warm.

FOREWORD

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As improvements are introduced from time to time, we reserve the right to alter design and construction.

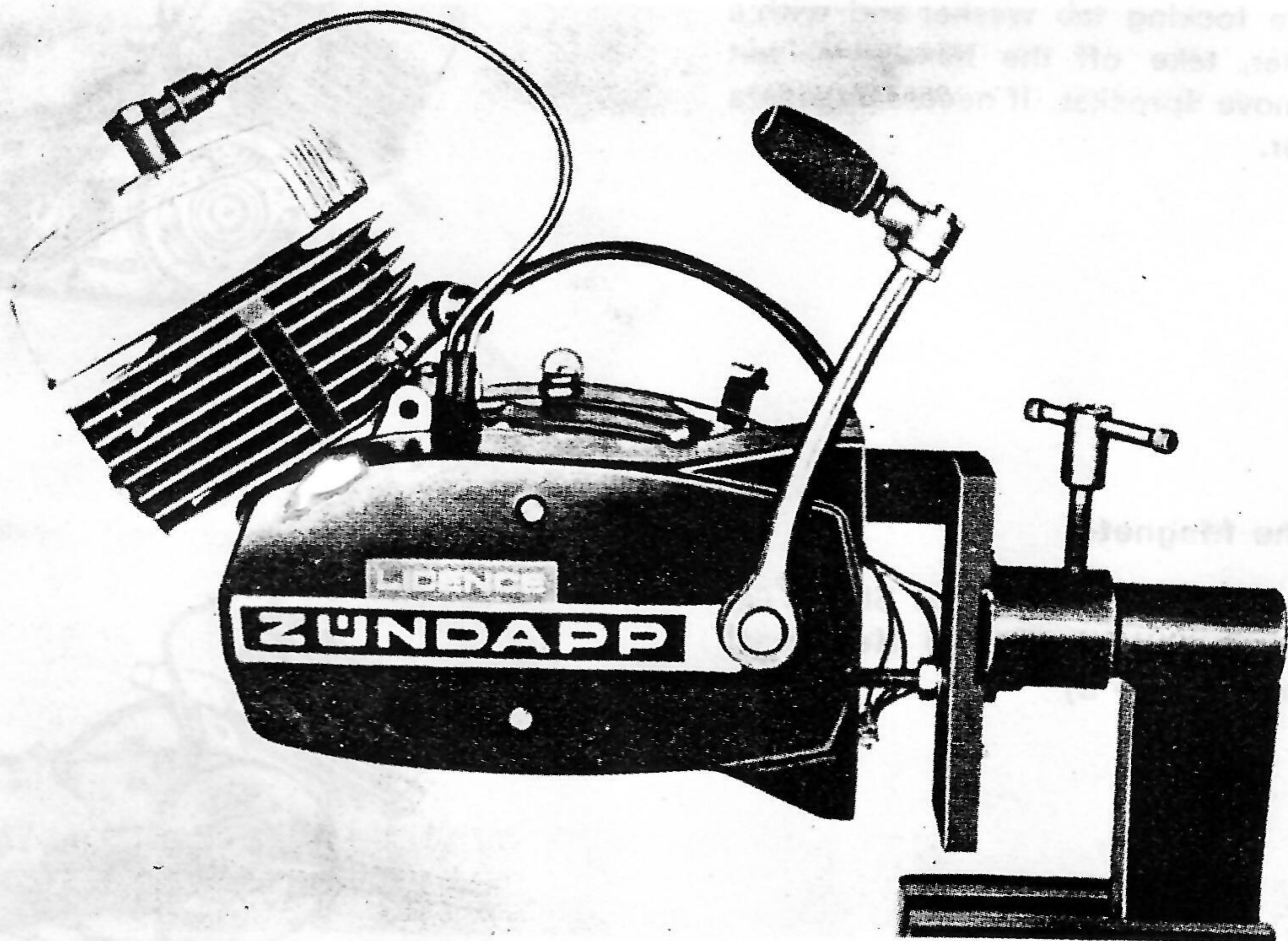
One of the most important factors in ensuring continuing success, is a first-class after-sales-service.

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Engine Clamping Fixture:



Mount the engine onto the fixture SK-A 314 as shown above.

Dismantling the Engine

Note: Before dismantling engine, ensure that the oil has been drained from the Gear Box.

Removing the Crankcase Cover LH

Engage Second Gear. Loosen the Gear change Pedal clamping bolt and remove the gear change pedal. Loosen the two screws (Fig - 1) and depress the Kickstarter lever to release the Crankcase Cover Assembly LH.

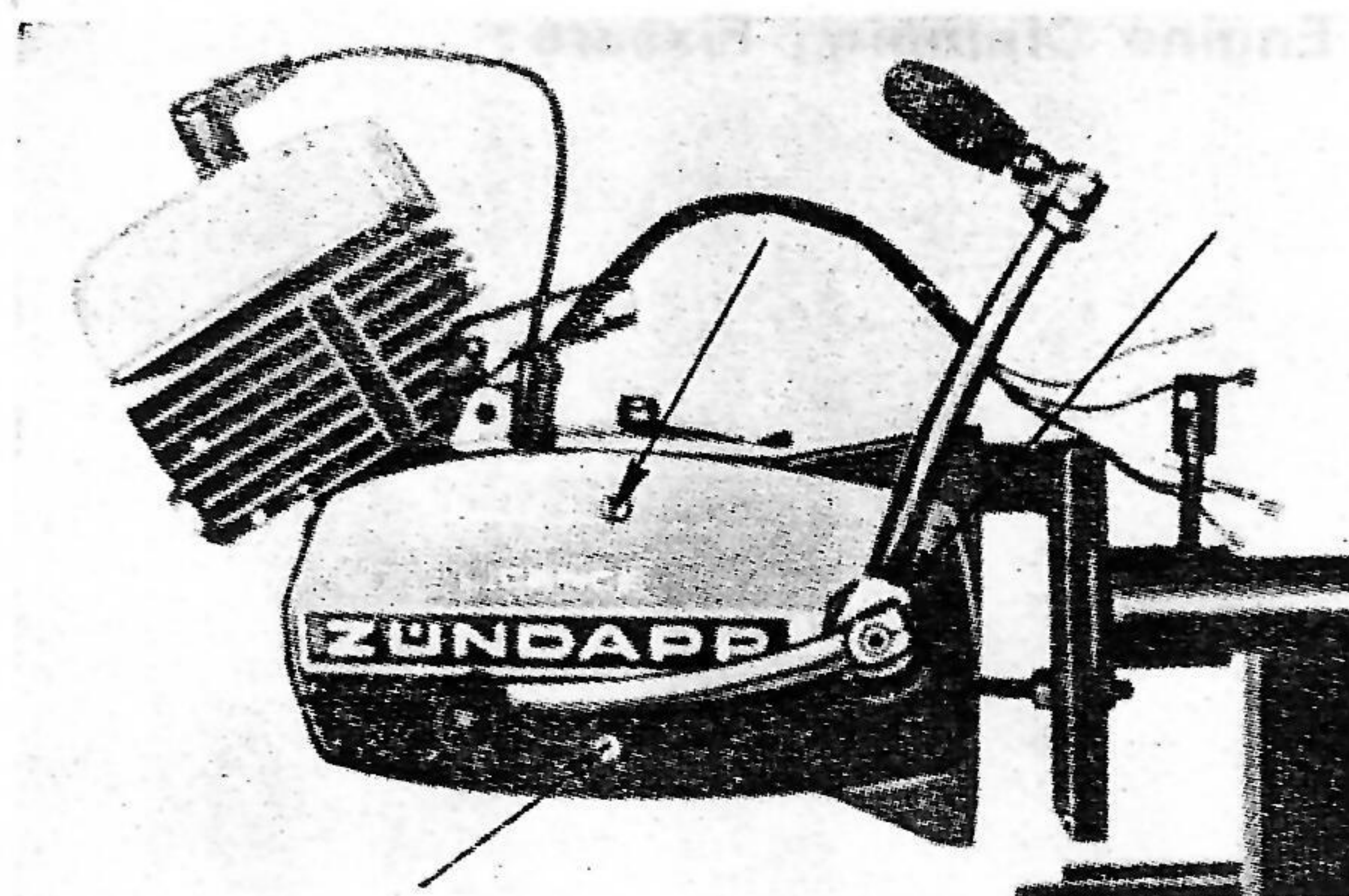


Figure 1

Removing the Drive Sprocket (F. D. Sprocket)

Unfold the locking tab washer and with a socket spanner, take off the hexagonal nut (Fig - 2). Remove Sprocket. If necessary, use a two jaw puller.

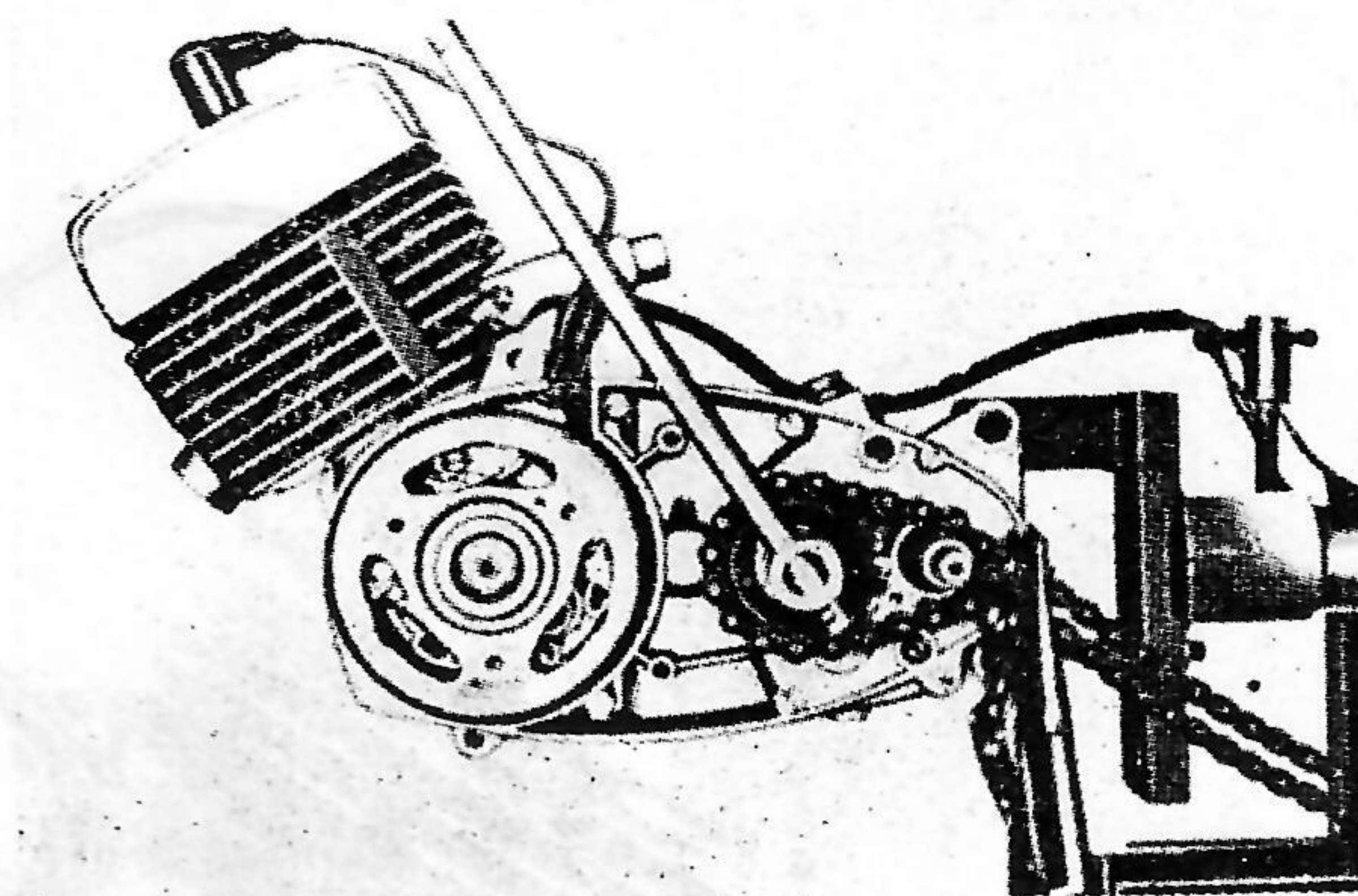


Figure 2

Removing the Magneto

Hold the flywheel firmly using tool SK-A 373/314 - 010, loosen and remove the Hexagonal nut, with a socket (Fig - 3)

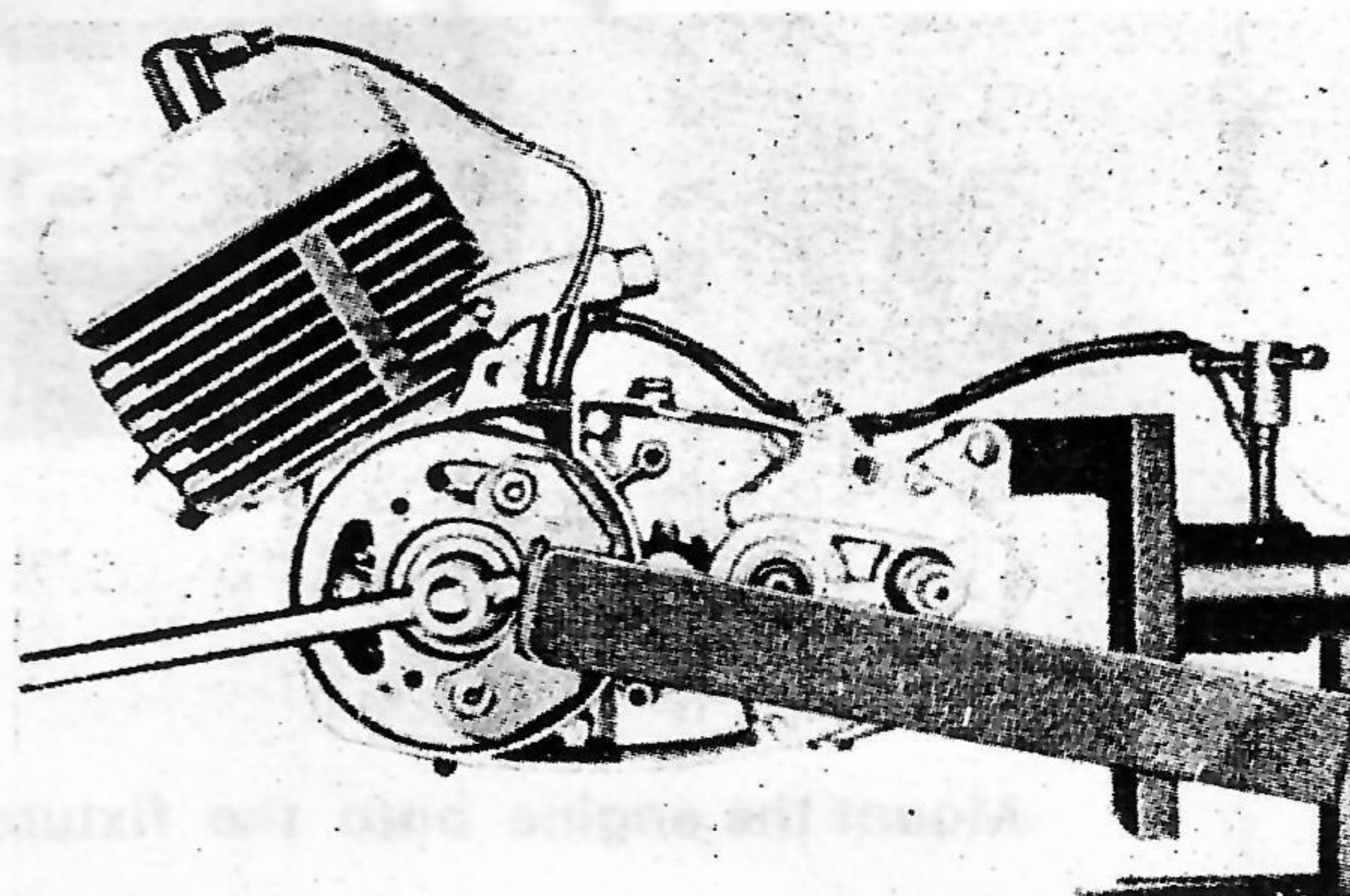


Figure 3

Using the Magneto Puller SK-A 263 (Fig - 4). Remove the Magneto and the Magneto Woodruff key.

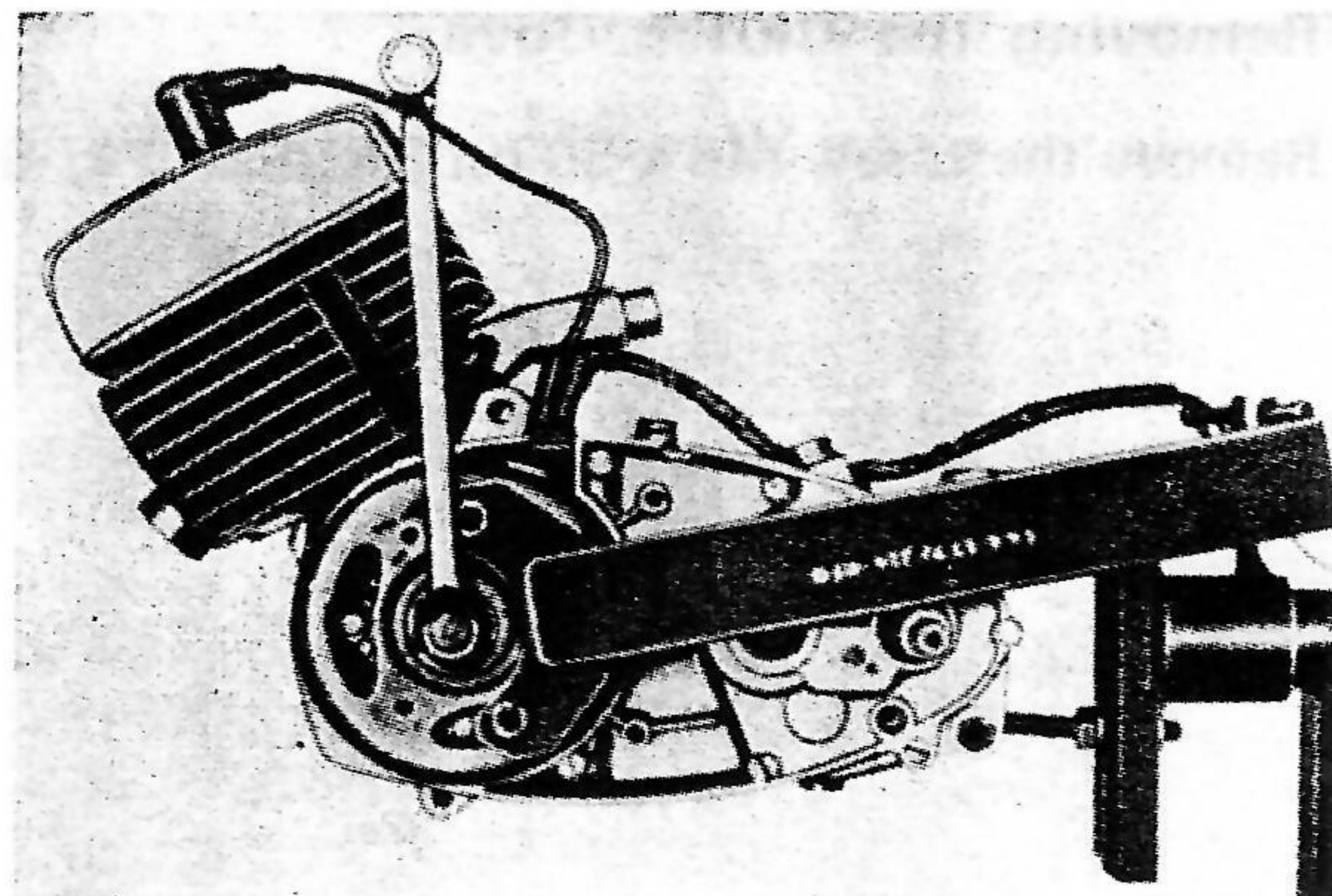


Figure 4

Loosen the screw L (M6 x 98) (Fig - 5) for releasing the Wiring Harness. Loosen the two screws holding the Stator plate (Fig - 5). Remove the complete stator plate assembly.

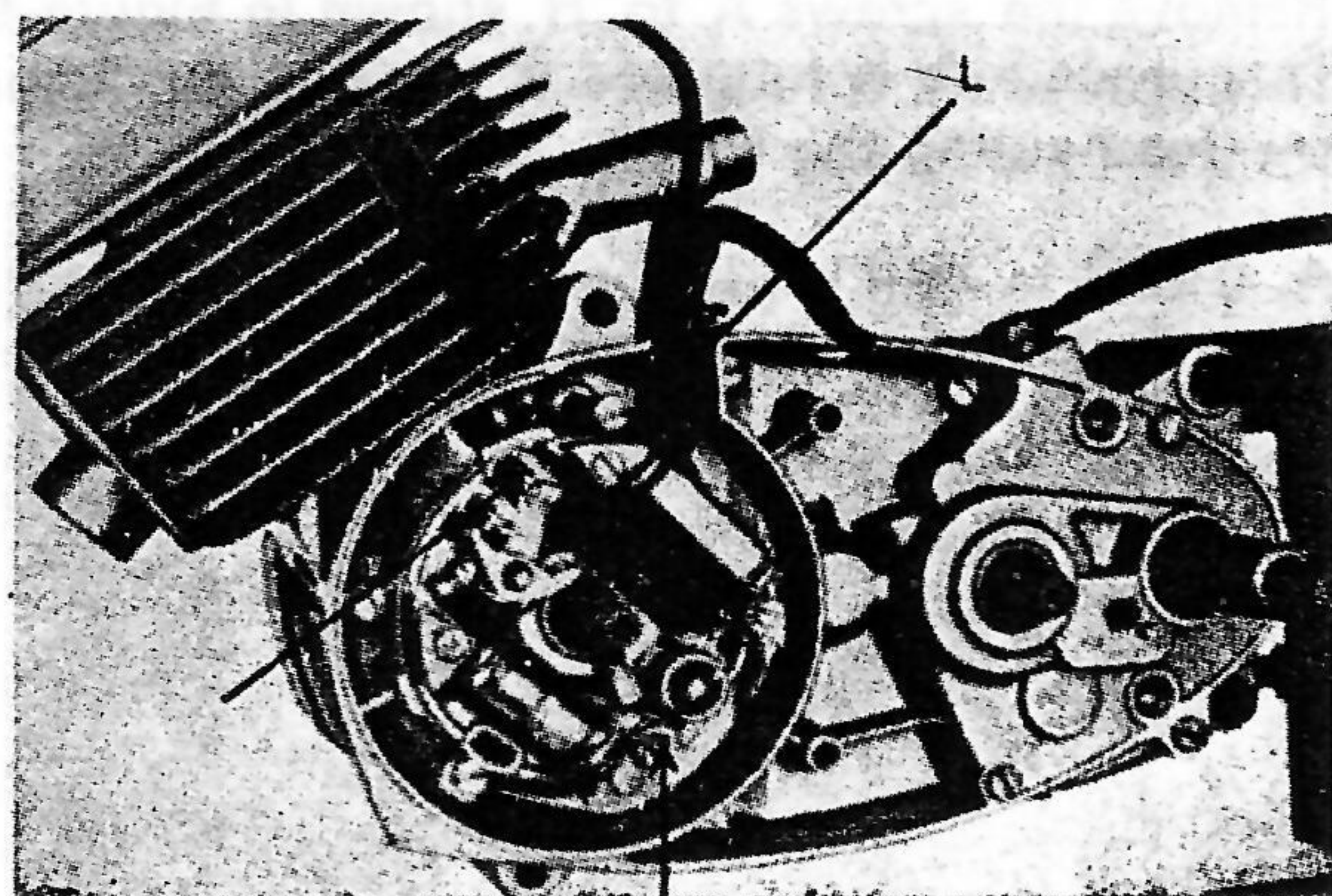


Figure 5

Removing the Clutch Adjustment Inspection Cover

Remove Two screws as shown in figure - 6

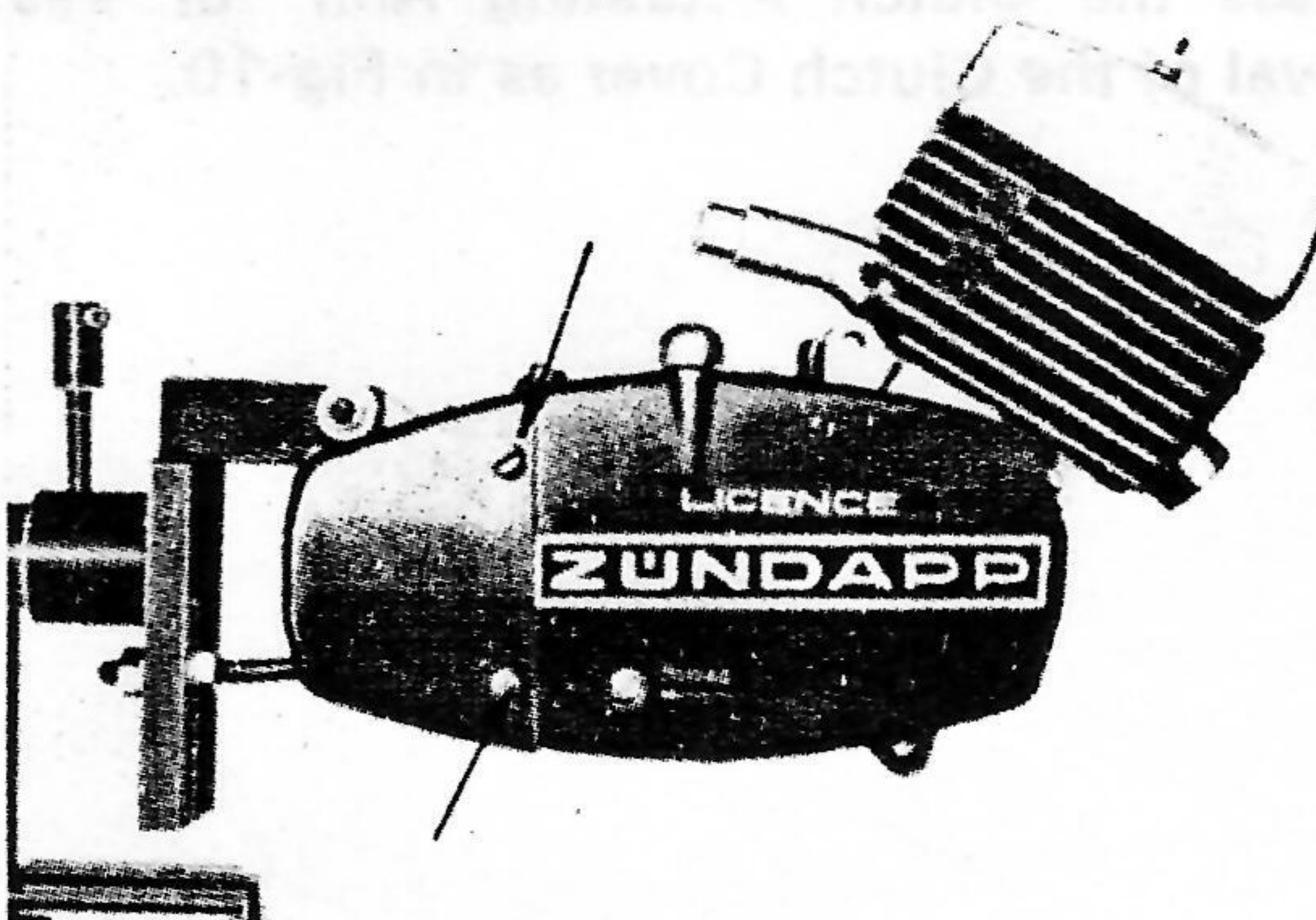


Figure 6

Removal of Setting Dome

Note the location of the punch mark, loosen and remove the two screws (Fig - 7) with the lock plates. Count the number of turns while removing the setting dome, for easy adjustment while assembling.

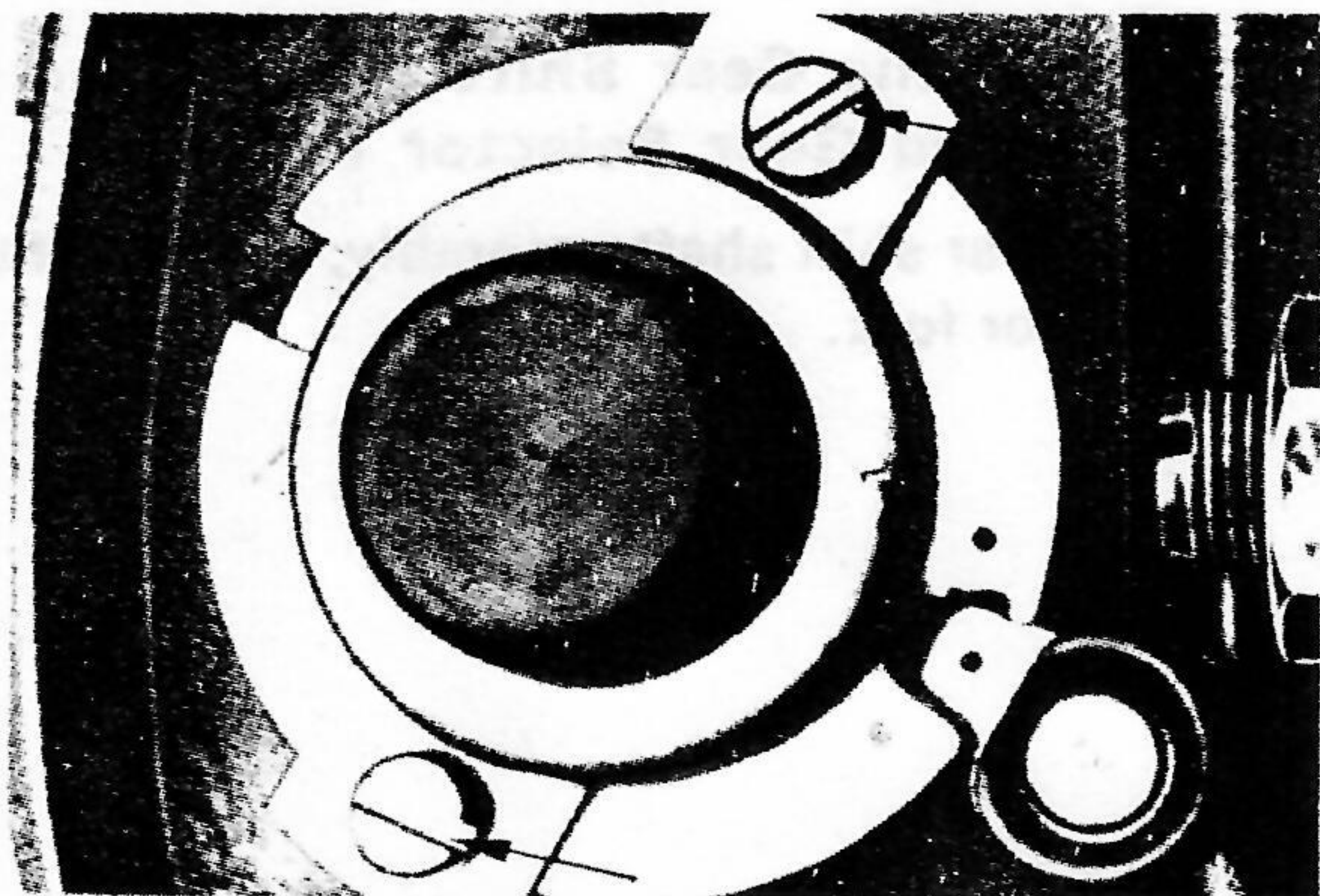


Figure 7

Removing the Clutch Cover

Remove the screw M6 x 50 on RH side (Fig-8).

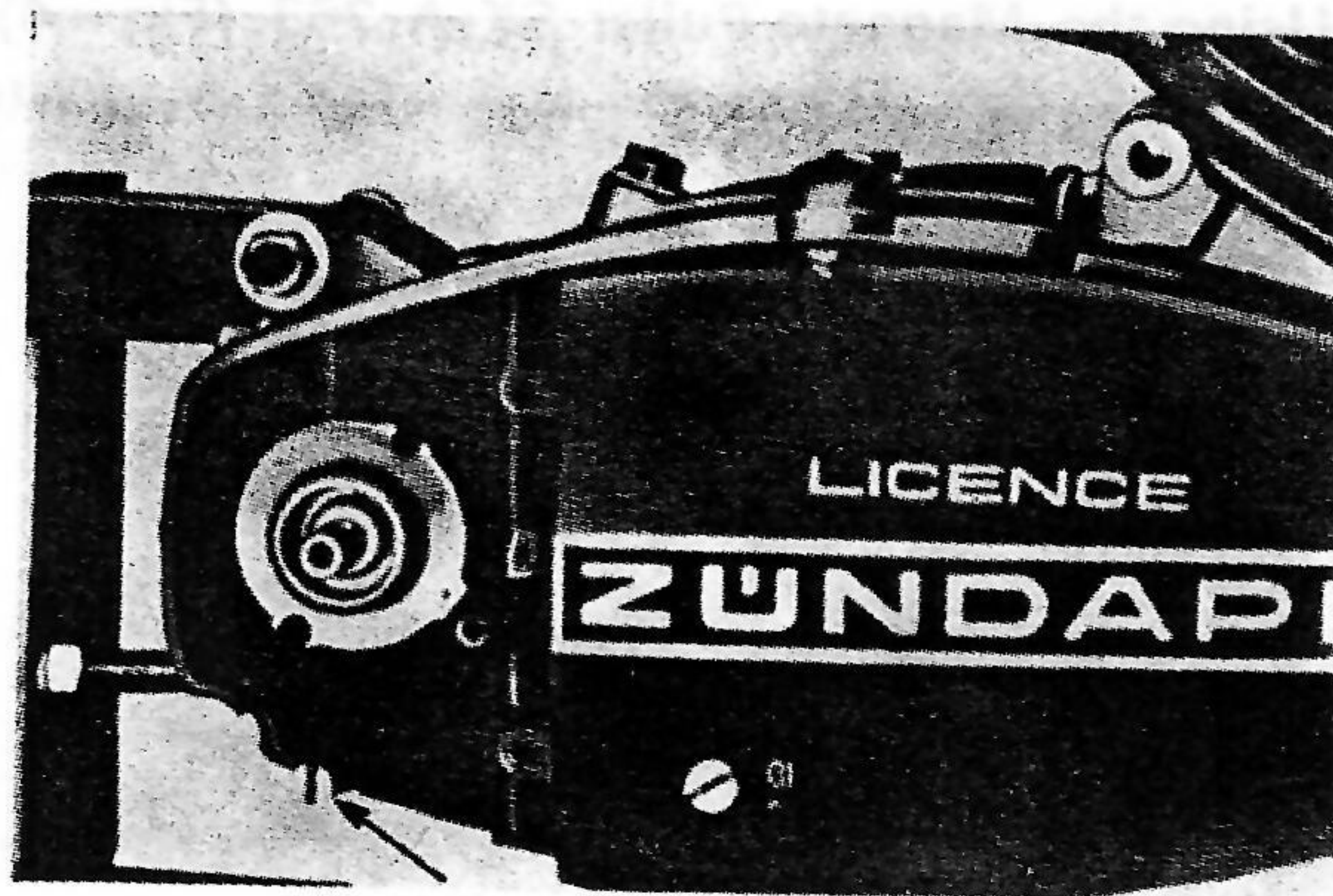


Figure 8

Remove the screws A to H shown in Figure-9. This procedure is followed if there is any need for overhauling the Clutch.

A, B & C — M6 x 120

D, E, F, G & H — M6 x 98

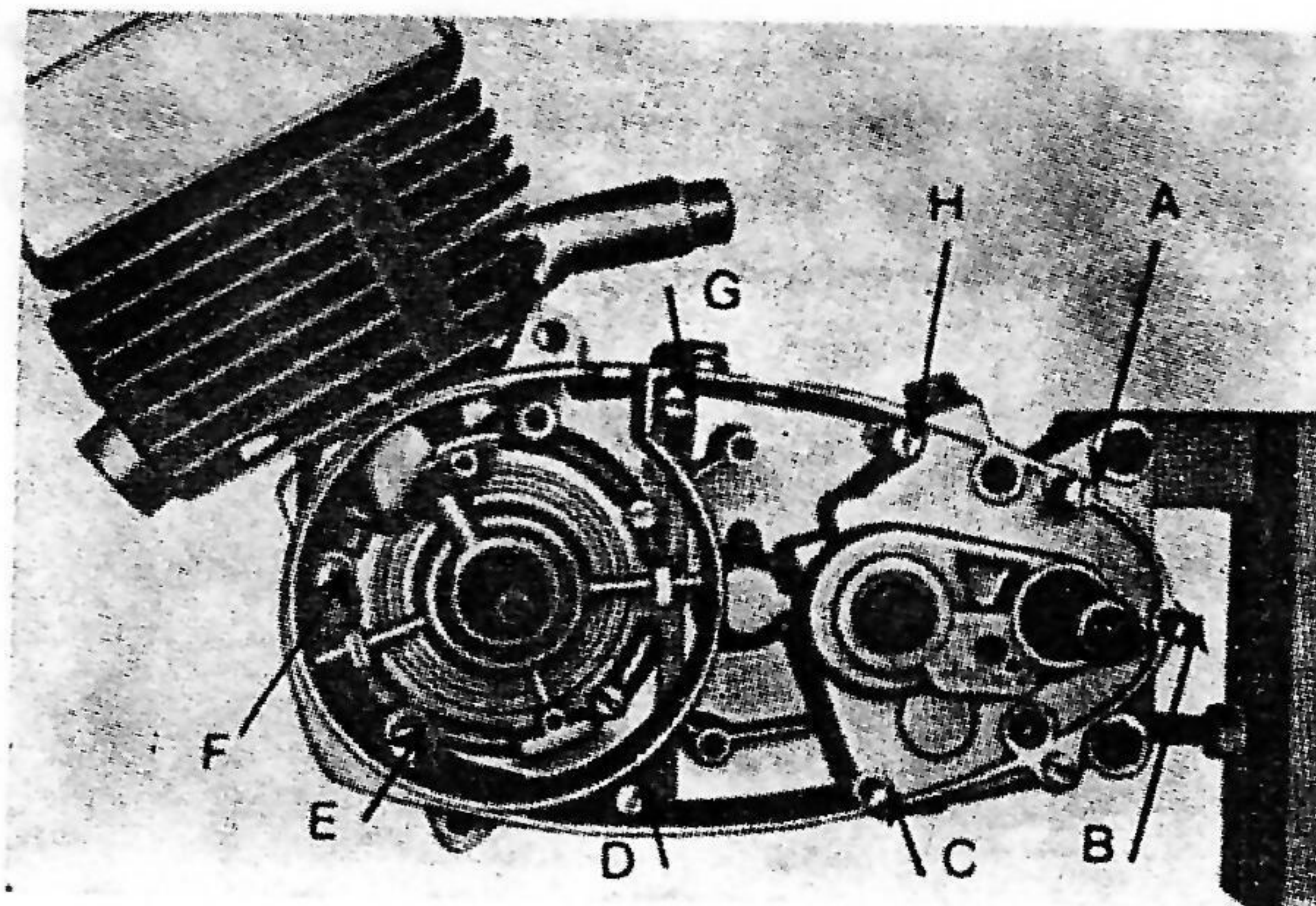


Figure 9

Depress the Clutch Actuating Arm for easy removal of the Clutch Cover as in Fig-10.

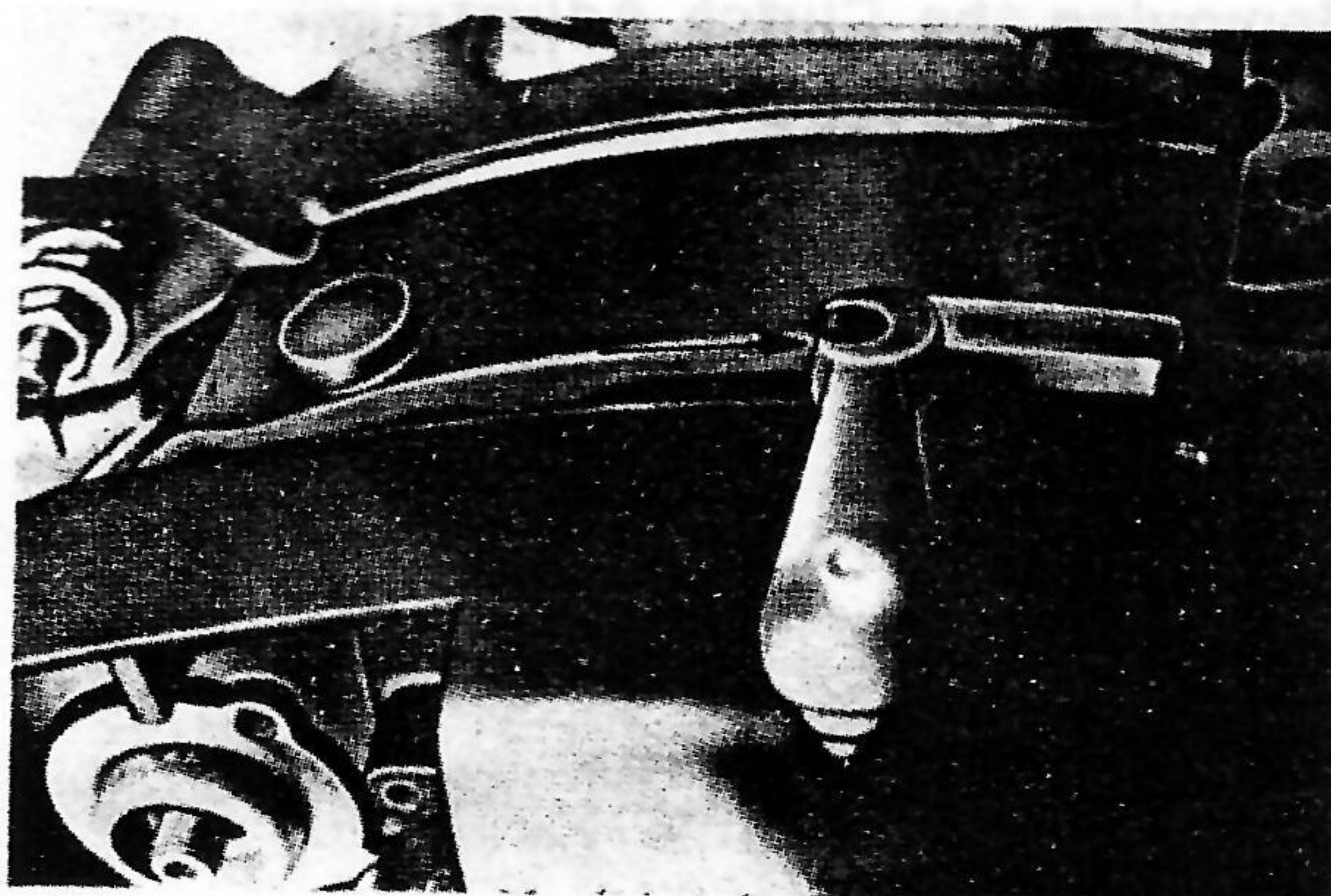


Figure 10

Removal of the Gear Shift Shaft Assembly and Gear Selector Fork

Draw the gear shift shaft assembly, remove the gear selector fork. (Fig-11)

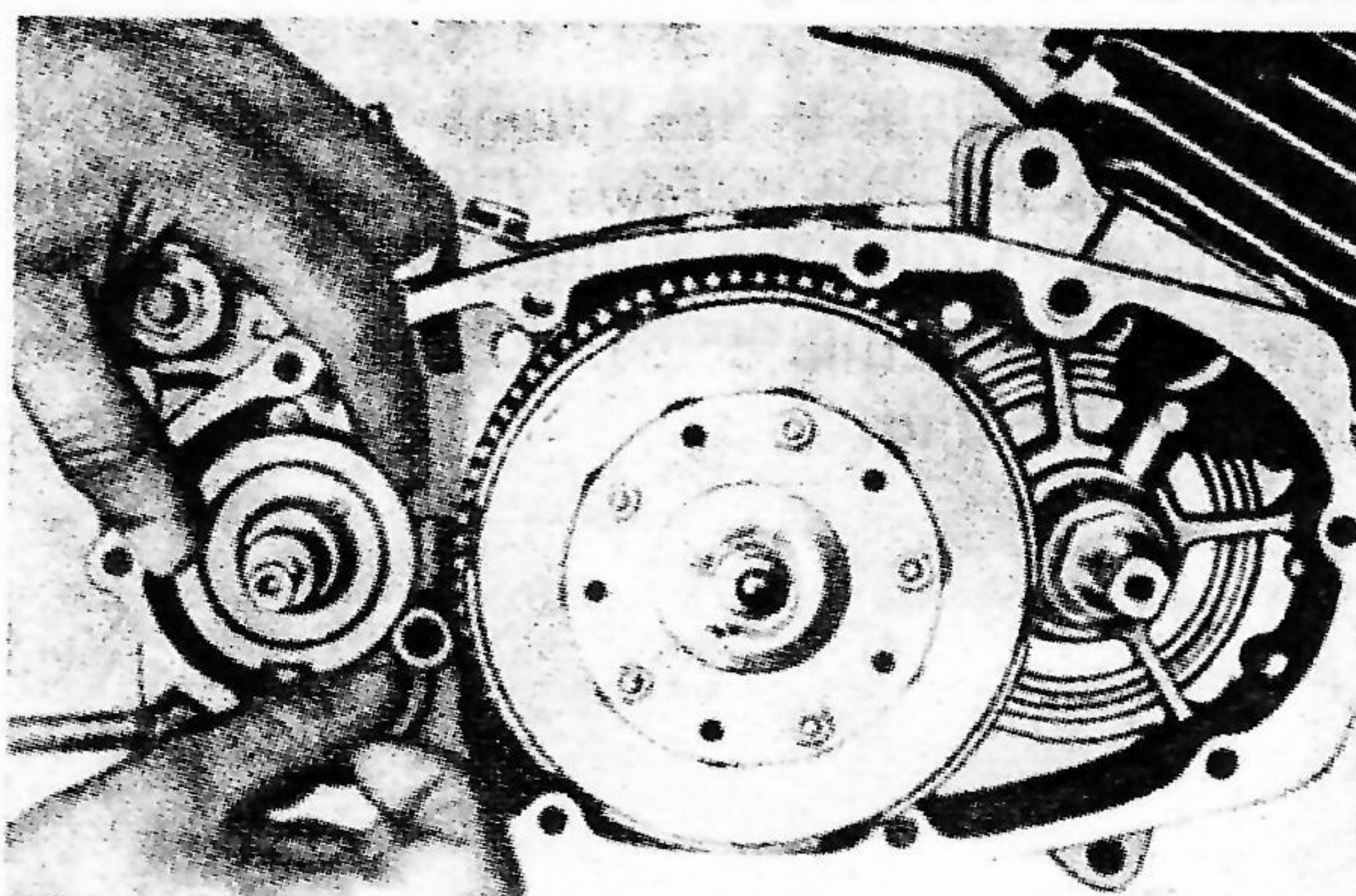


Figure 11

Dismantling the Clutch

Fit Service Tool SK-A 235 with three stud bolts SK-A 292 (Fig-12). Remove the five M4 nuts holding the Clutch Thrust Plate.

Remove the Service Tool SK-A 235 and SK-A 292.

Remove the Thrust Plate, Springs and Spring cups.

Unfold the Tab Washer and loosen the Clutch centre nut using the special tool SK-A 297 (Fig - 13). Remove the Clutch complete with the Clutch pinion and packing washers behind the Hub.

Note : The Clutch Bell remains inside the RH Casing held by an external Circlip inside the Gear Box. In case any overhauling has to be carried out on the Clutch bell and the Gear Box, the Crankcase has to be split open.

Removing the Cylinder and Piston

Loosen the 4, M/ Nuts with the Tubular socket (Fig - 14). Remove nuts and washers. Lift the Cylinder head, Cylinder head Gasket and Cylinder.

Remove the Piston Ring, cover the Crankcase mouth with clean cloth and using a Circlip Plier, remove the Gudgeon Pin Circlips. (Fig - 15) (Do not use a screwdriver).

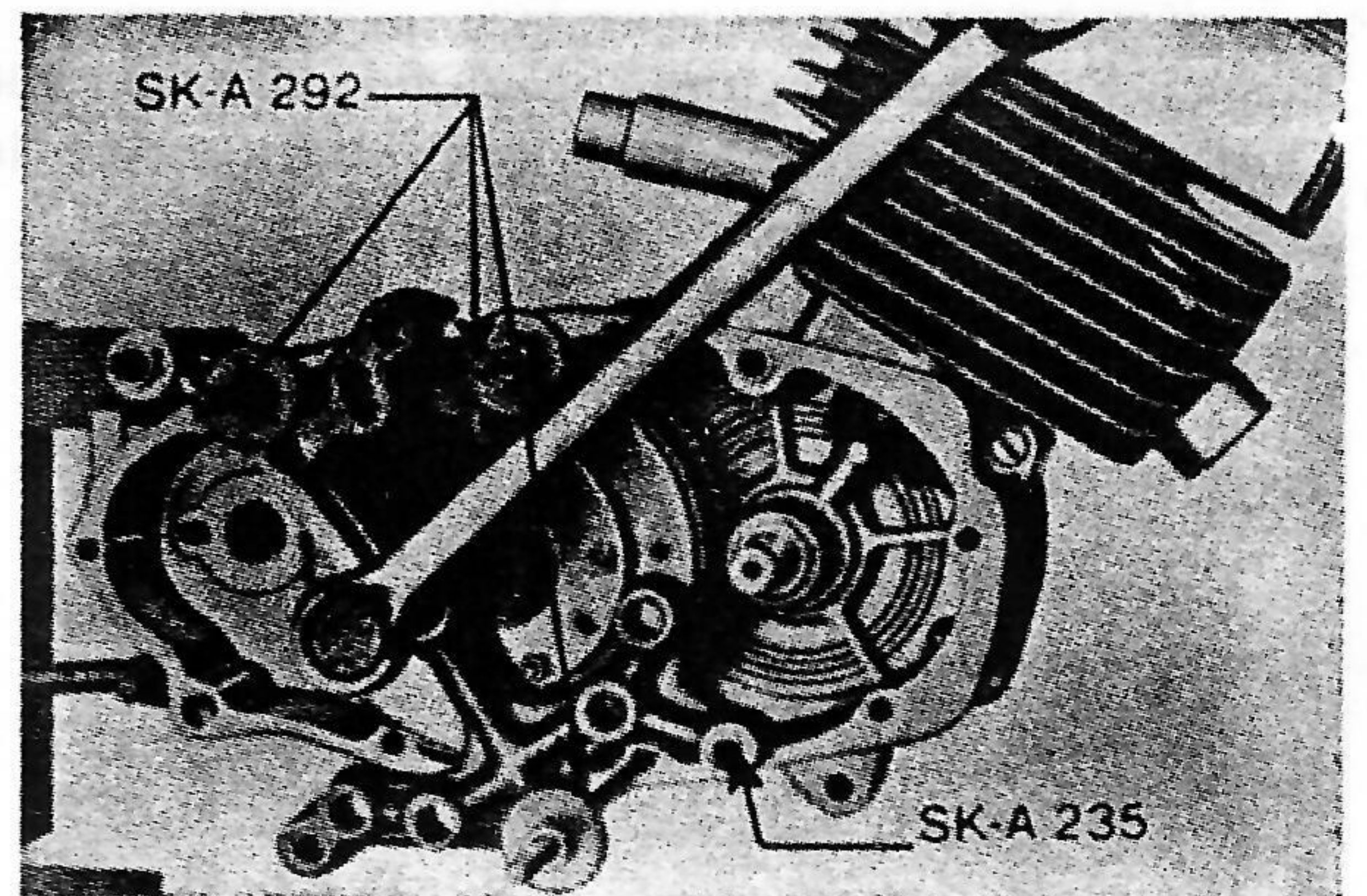


Figure 12

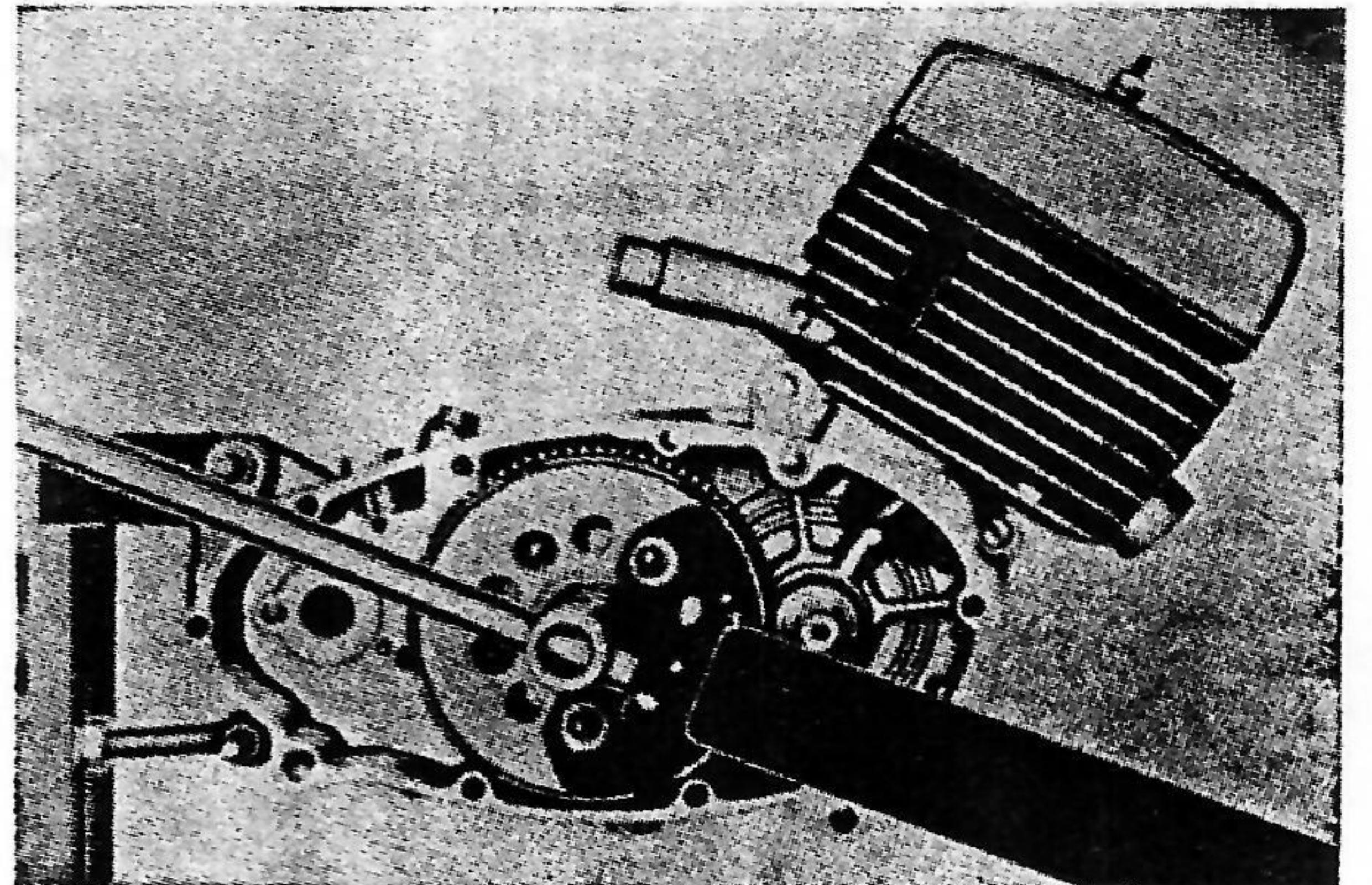


Figure 13

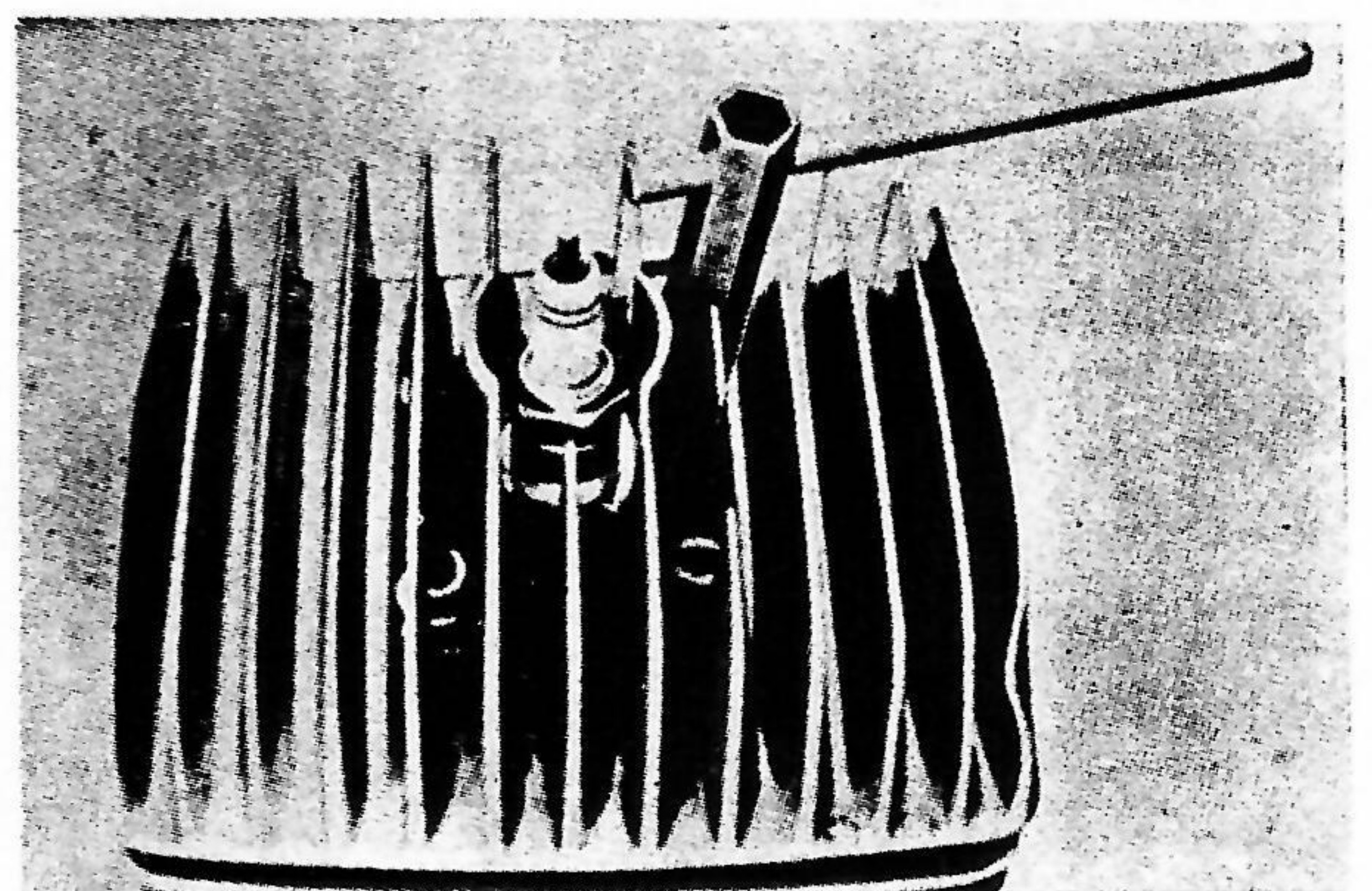


Figure 14

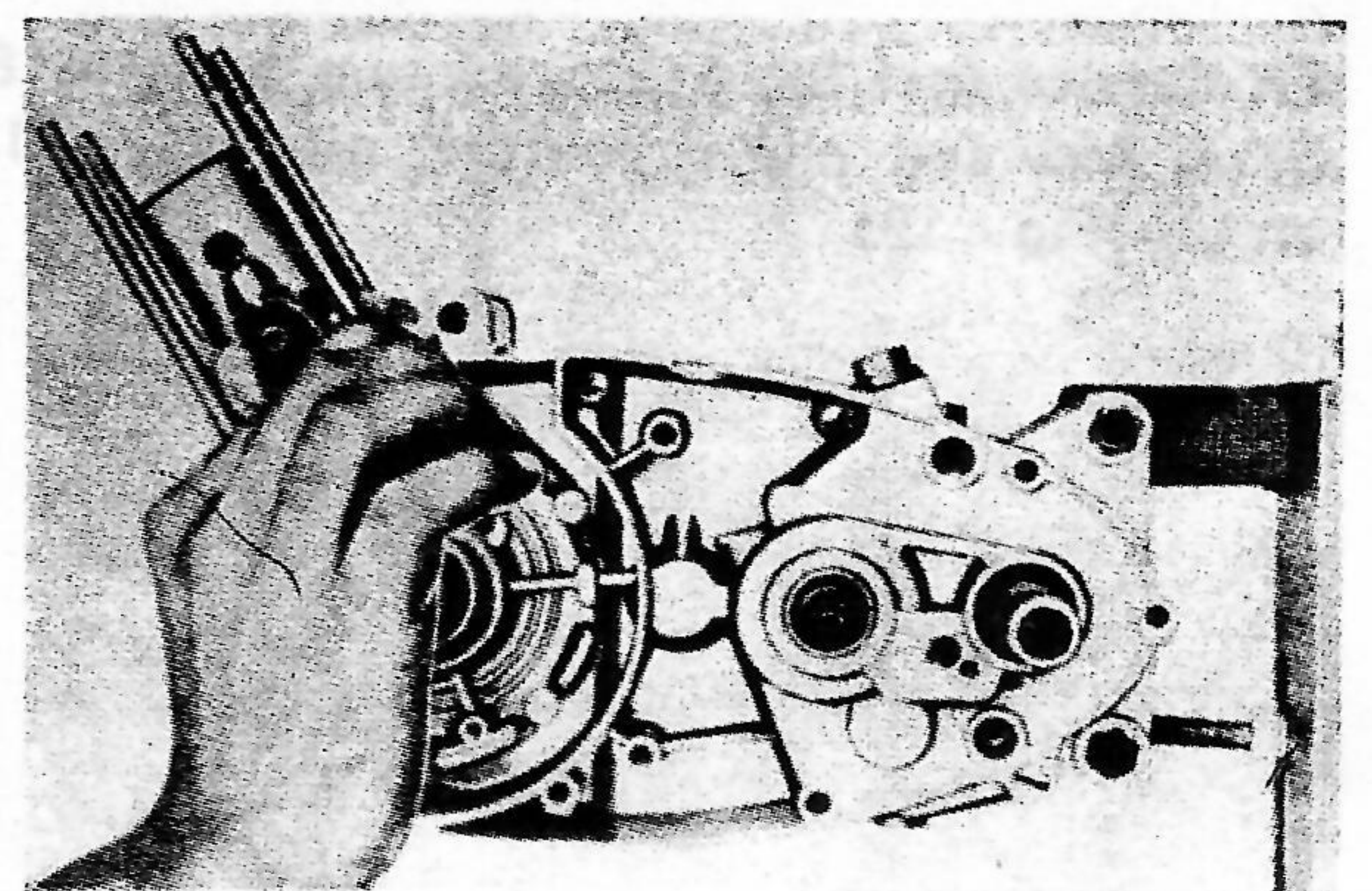


Figure 15

Using the special tool SK-A 64, remove the Gudgeon pin. Lift the Piston off and the needle cage. (Fig - 16)

Remove the Cylinder Base Gasket.

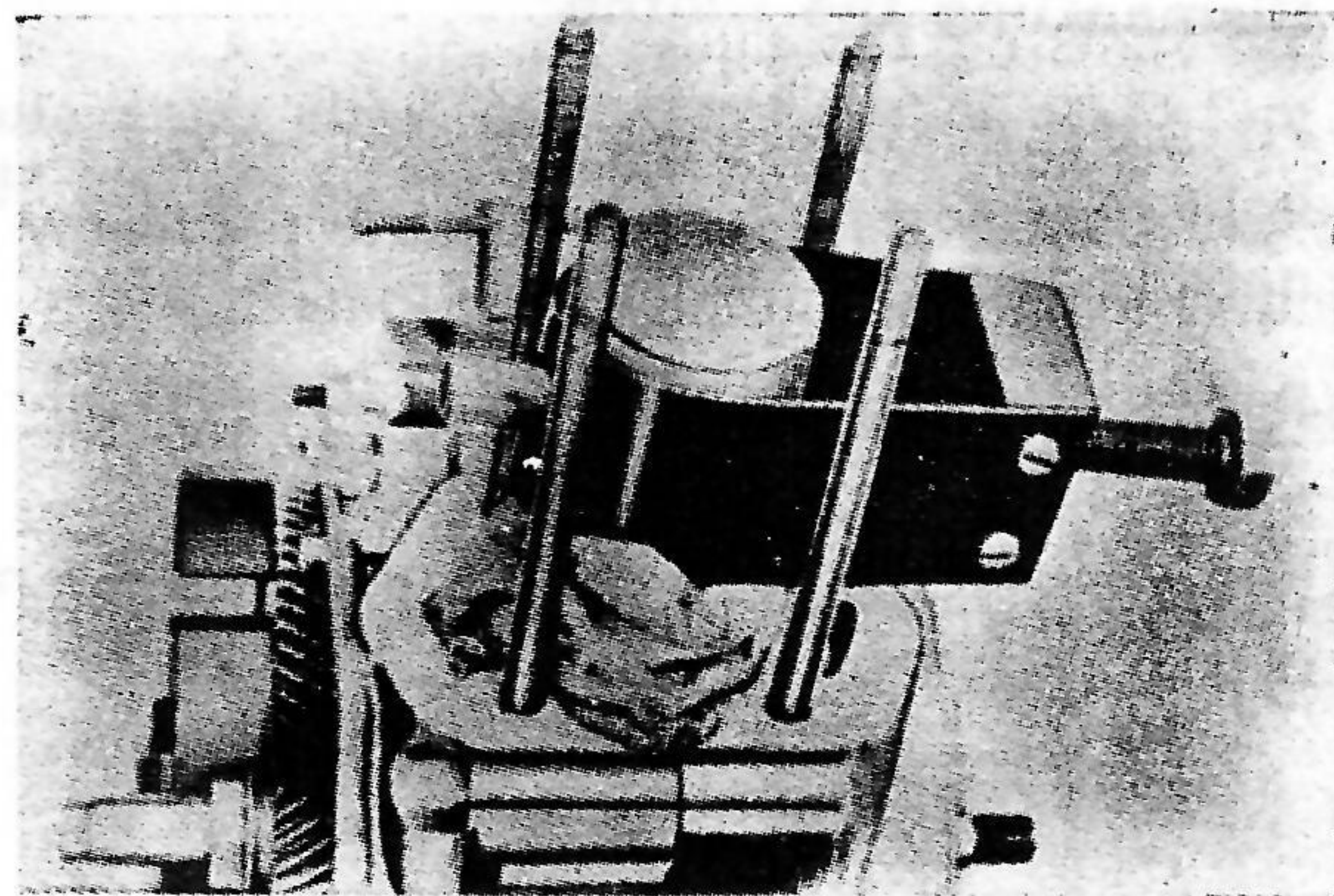


Figure 16

Splitting the Crank Case

Remove the screws I, J and K on LH and also screw M on RH Crankcase as shown in Figures 17 and 18 respectively.

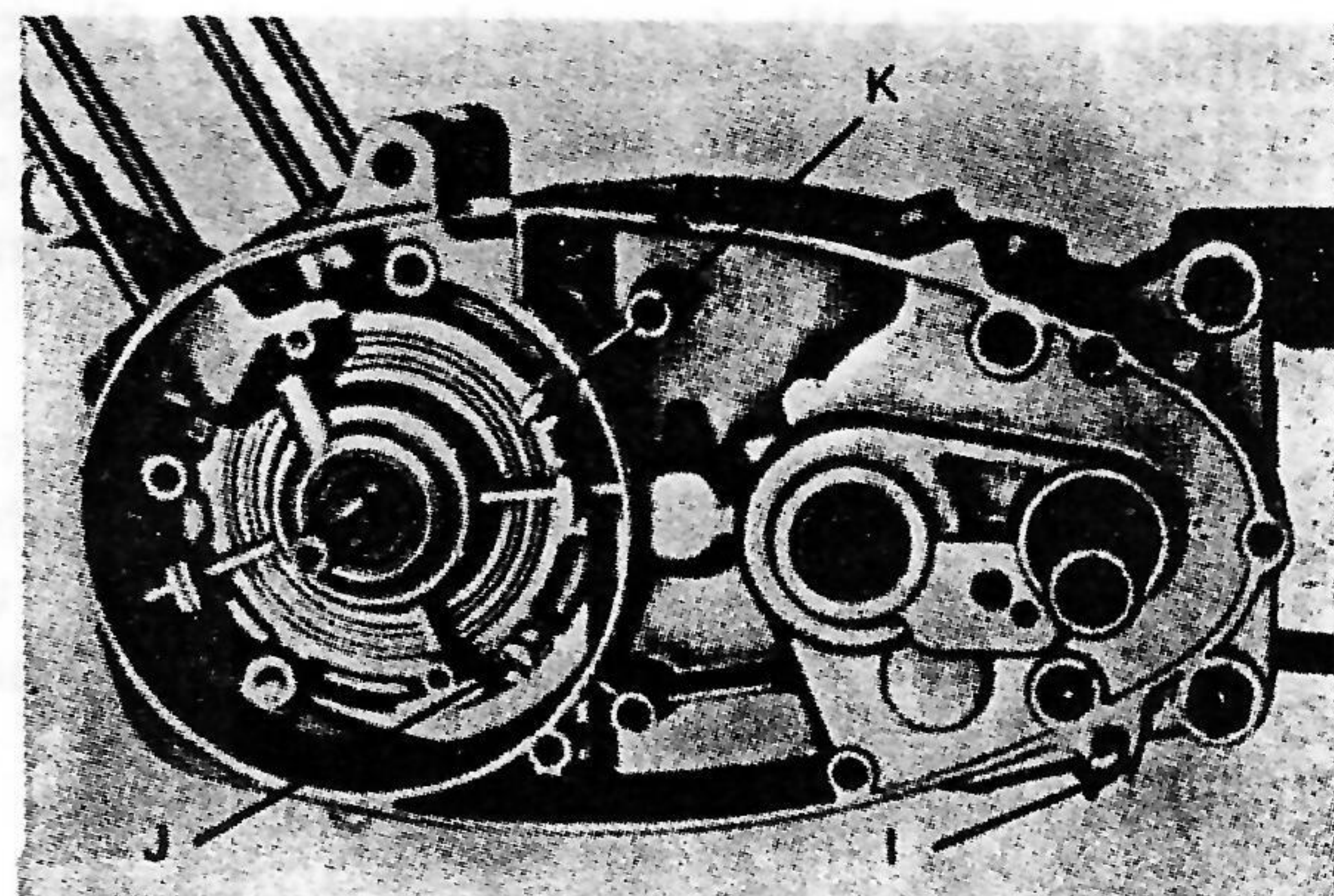


Figure 17

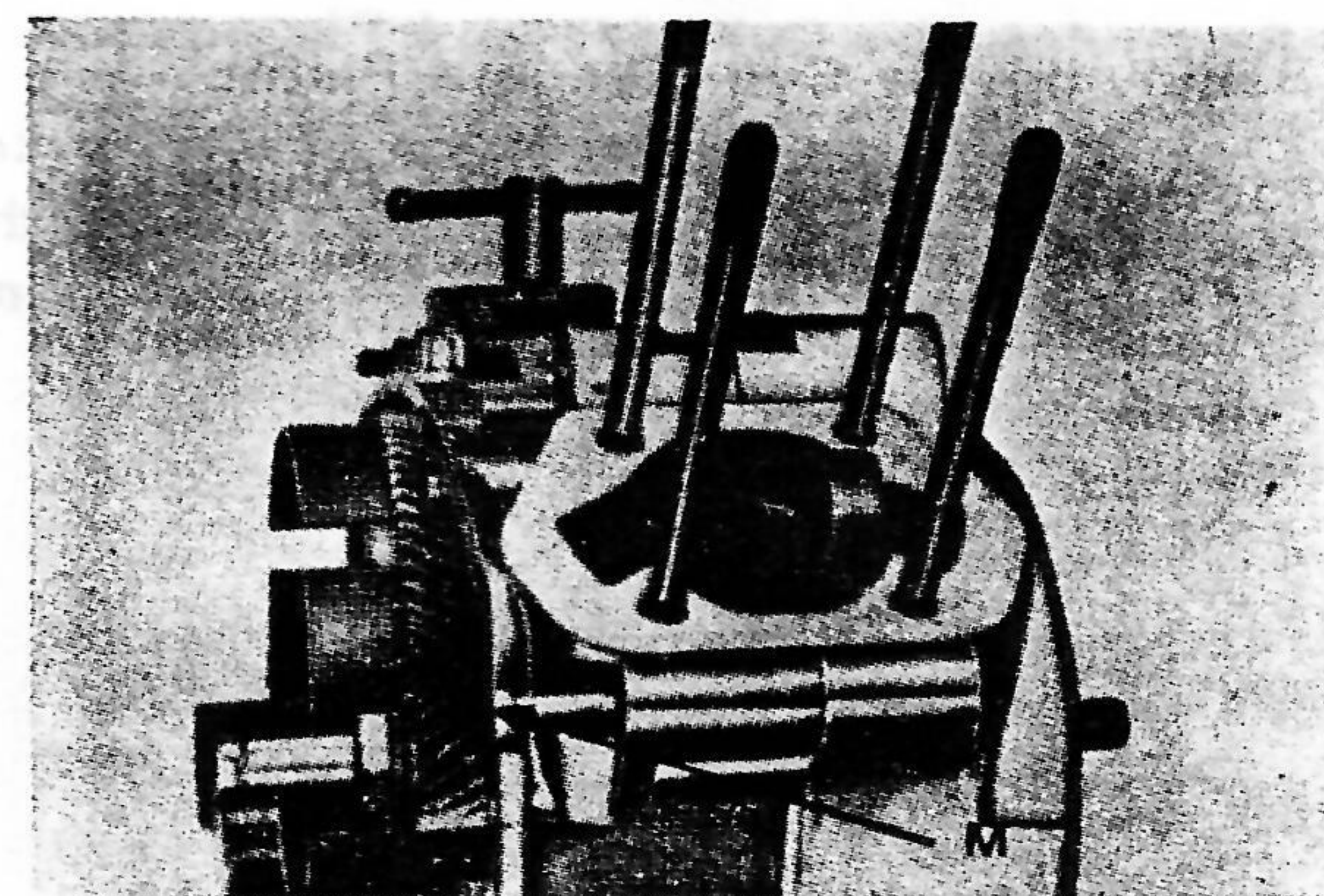


Figure 18

Fit Service tool SK-A 235 by two bolts M 8, SK-A 246 and one supporting pin SK-A 213 on LH (Fig - 19)

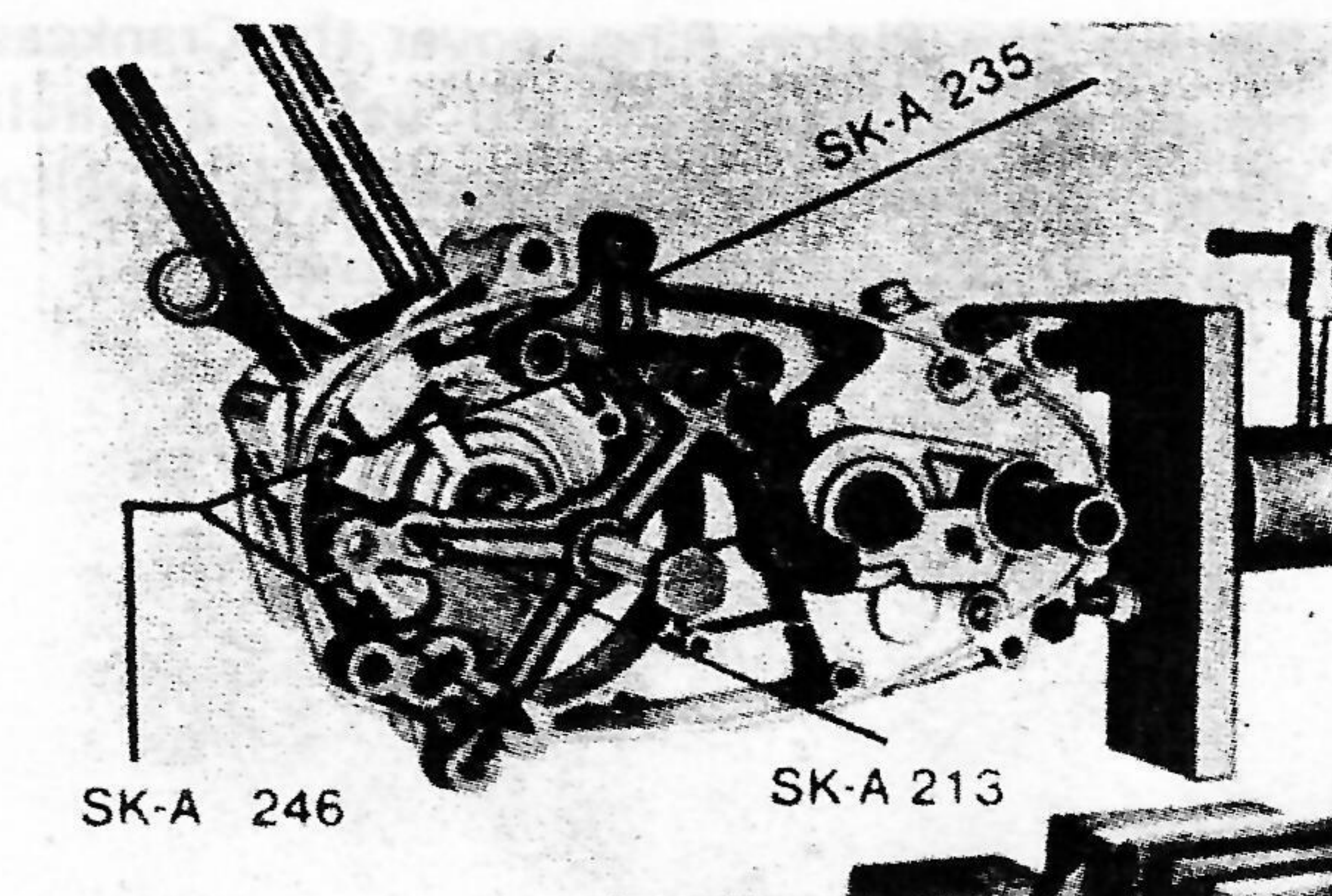


Figure 19

Remove the engine from the clamping fixture and place it on two wooden blocks with the RH Crankcase facing down (Fig - 20). Tighten the puller Bolt and at the same time tap on the selector shaft and the Kickstarter shaft to release the Crankcase halves apart. Carefully lift the LH Crankcase.

Before taking out the various shafts, note the position and number of washers, shims and distance pieces fitted., as well as the correct meshing position of the gears (and mark these with a reference line for easy assembly). This procedure will help you in reducing the guaging and setting work when the engine is reassembled.

Sequence of Removal of the Shafts (Fig-21)

1. Gear selector shaft with selector gears, steel ball assembly, and push rod. While removing, hold the gears tightly, so that the balls do not fall off.
2. Kickstarter shaft assembly.
3. Main drive shaft.

Note: Carefully inspect all shafts and gears for traces of wear and proper alignment as soon as you have taken them out.

Removal of Crankshaft Pinion

Place the RH Crankcase on a wooden block. Open the locking tab washer. Hold the Crankshaft Assembly steady with a 11 mm spanner applied to the Crankshaft flat. Then with a 19 mm spanner remove the hexagonal nut and tab washer. (Fig - 22)

If the pinion cannot be pulled off by hand, use a two jaw puller to remove the Crankshaft pinion. Take care not to lose two 5 mm balls used for locating the gear on the Crankshaft. (Fig - 23)

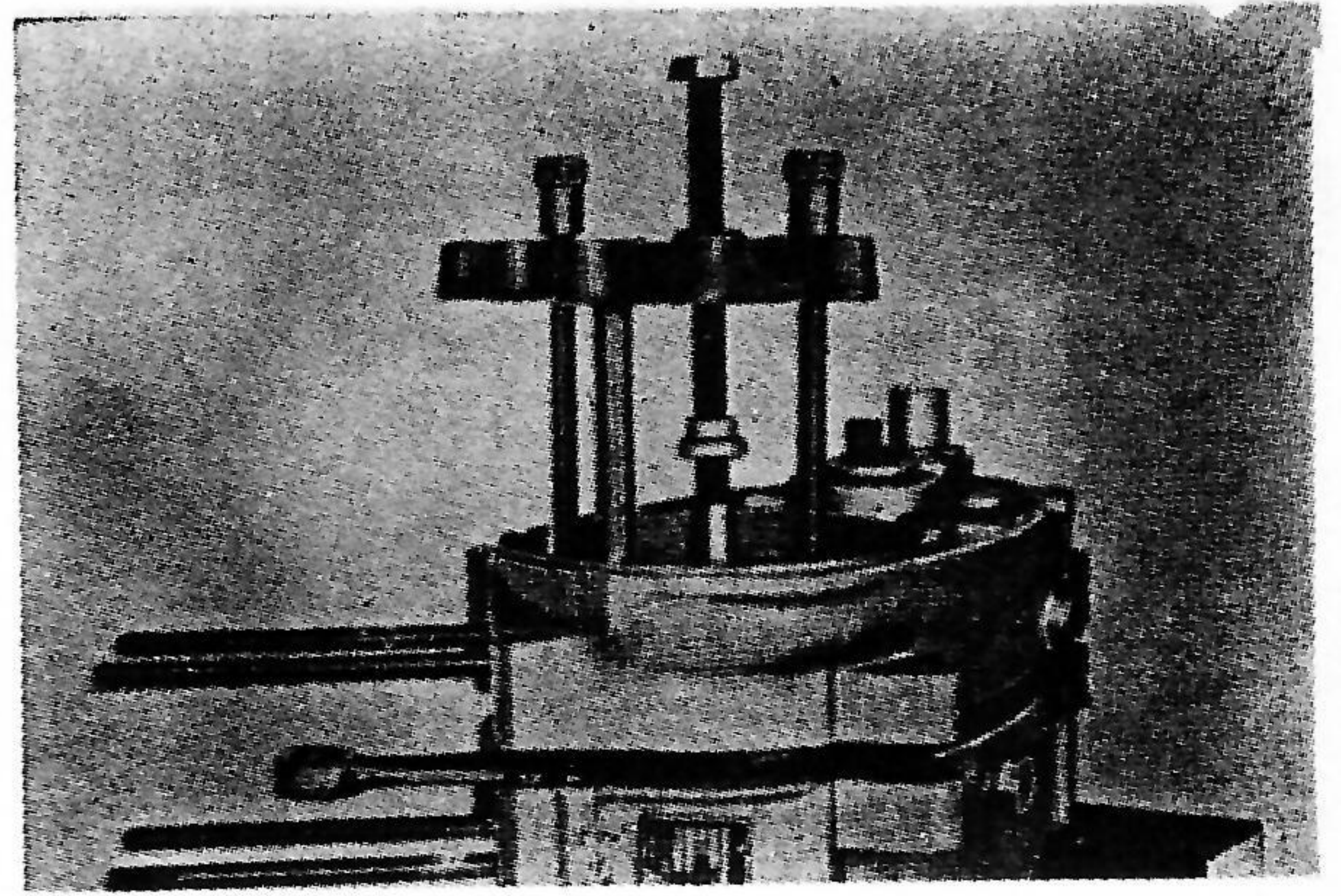


Figure 20

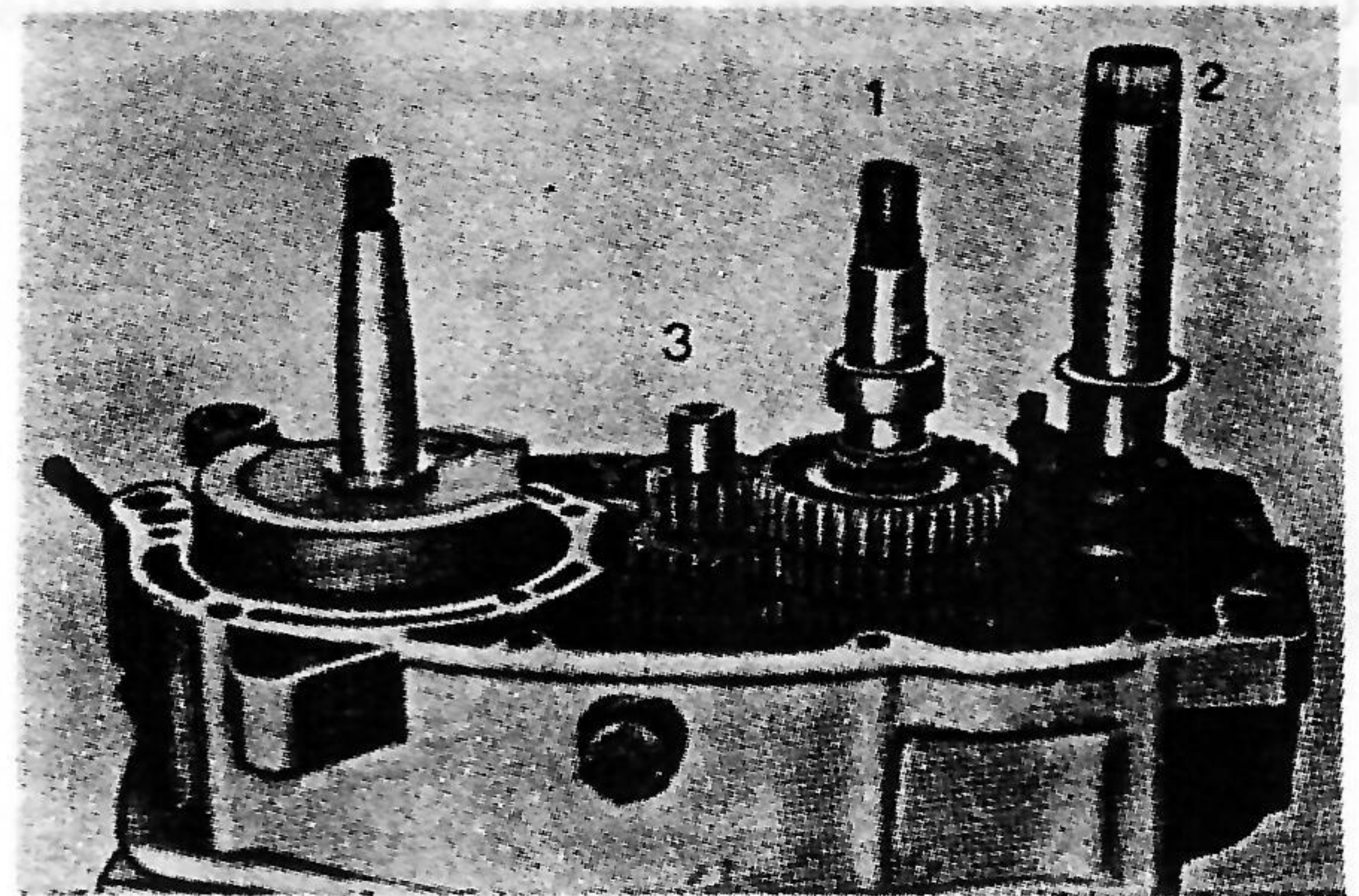


Figure 21

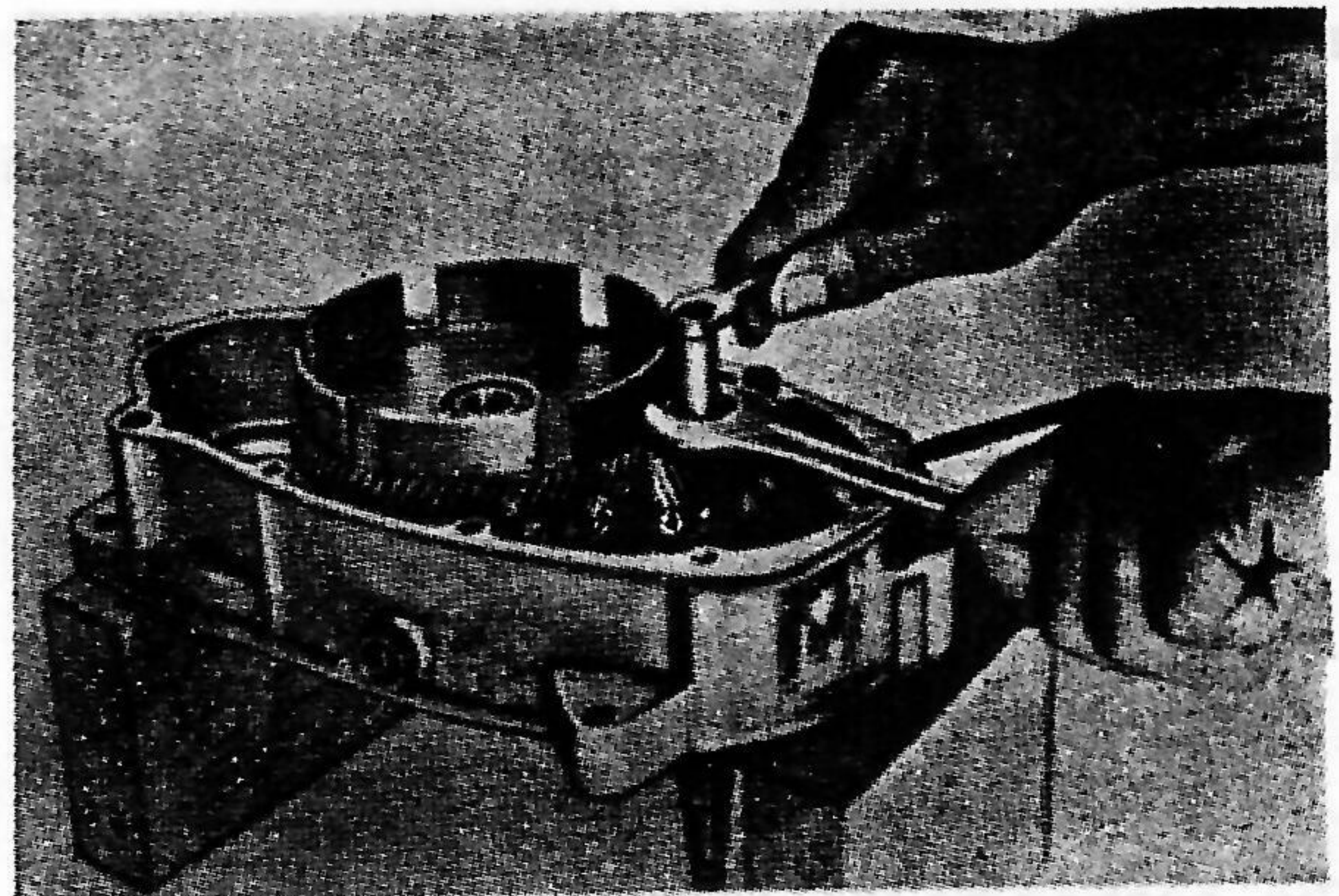


Figure 22

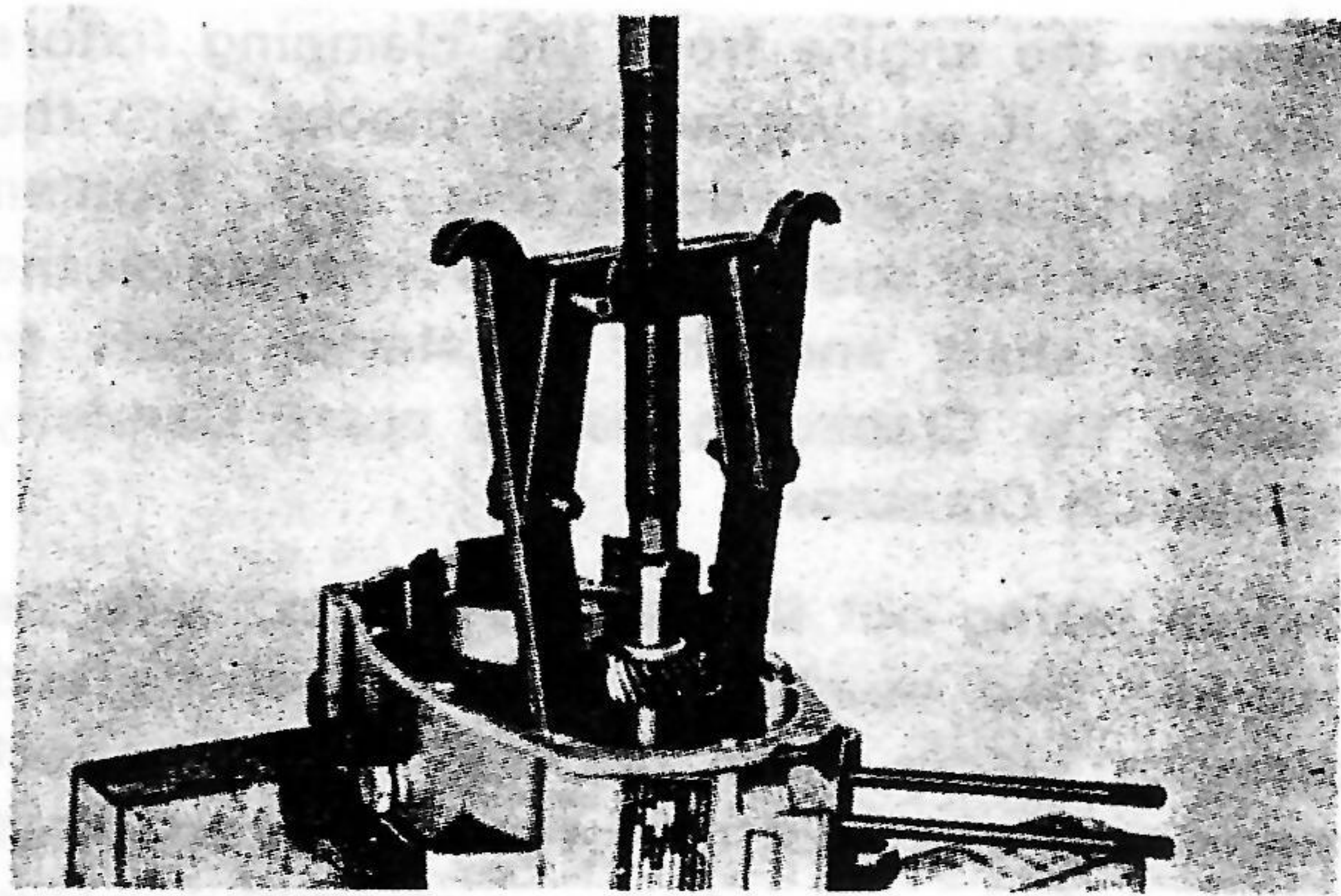


Figure 23

Removal of Crankshaft from RH Case

Using the Crankshaft puller SK-E 004 remove the Crankshaft from the RH case. (Fig-24)

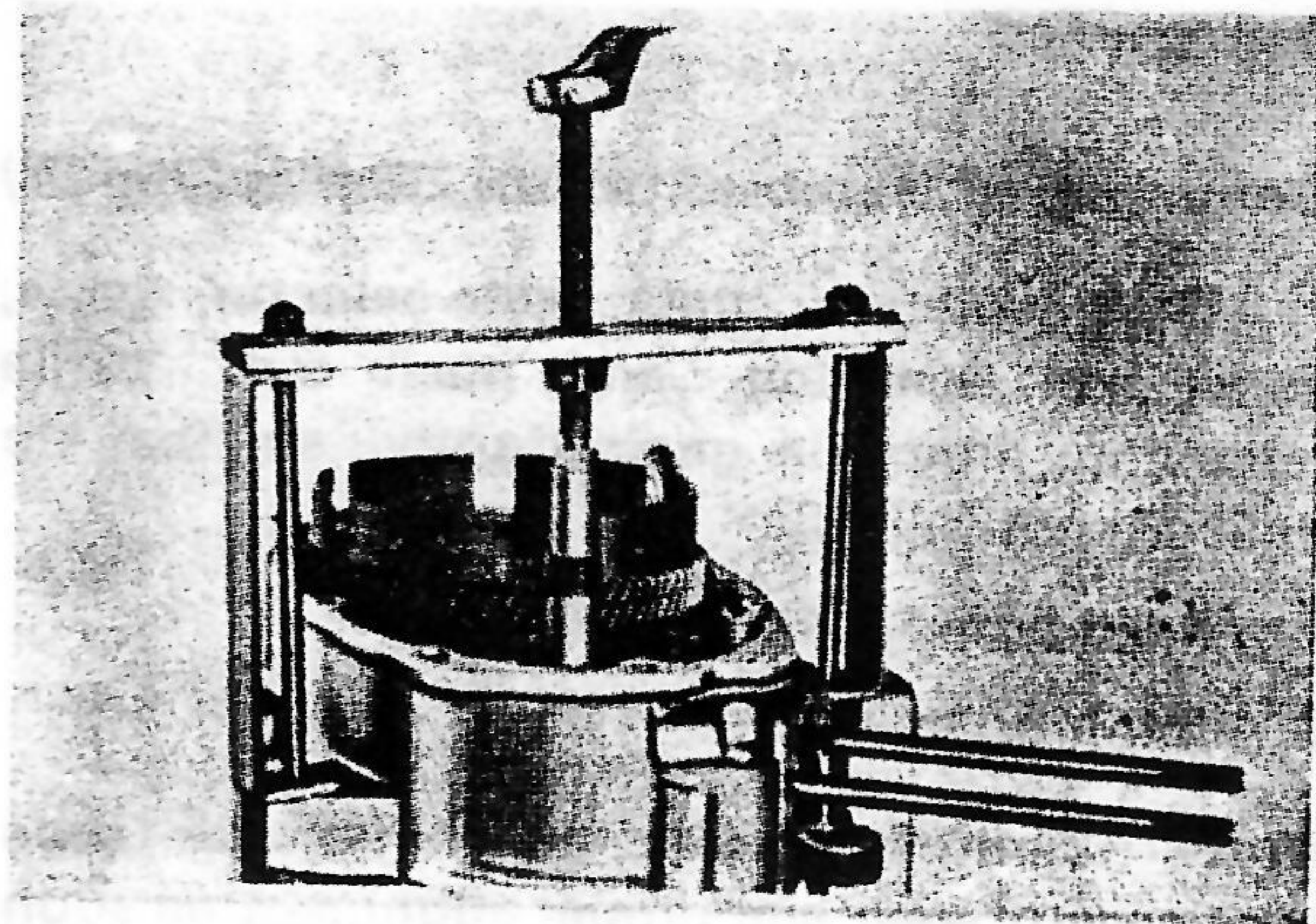


Figure 24

Removal of Clutch Bell

Place the RH Crankcase on wooden blocks. Remove the circlip on the Clutch bell using an external circlip plier. (Figure-25)

Slightly tap the Clutch bell boss with a brass rod for removal from the RH casing.

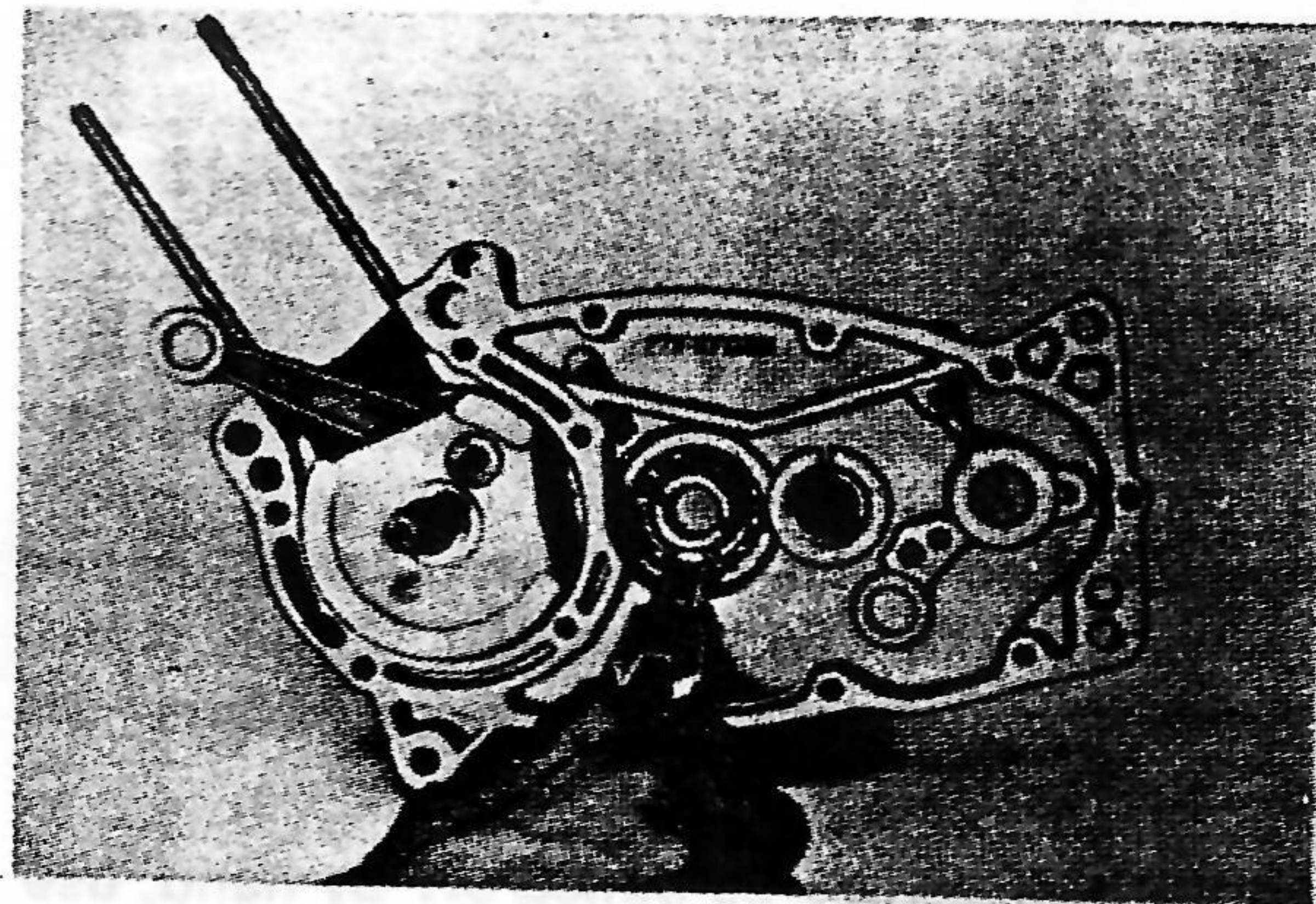


Figure 25

The bearing on the Clutch bell is removed by using a standard bearing puller. (Figure-26)

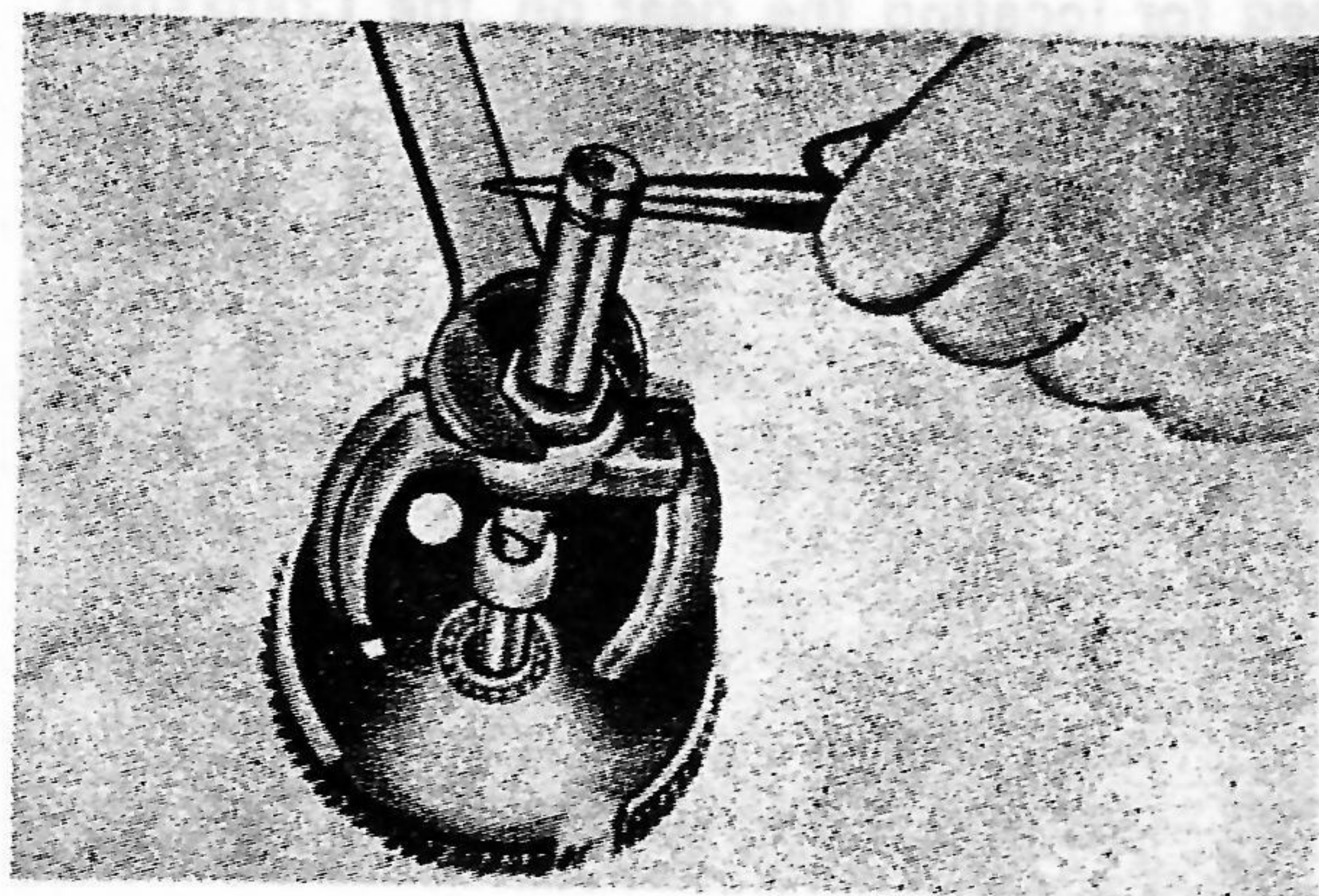


Figure 26

Note : For removal of the bearings on the Crankcase halves, heat the Crankcase between 80°C and 85°C or use a bearing puller as shown in Figure-27.

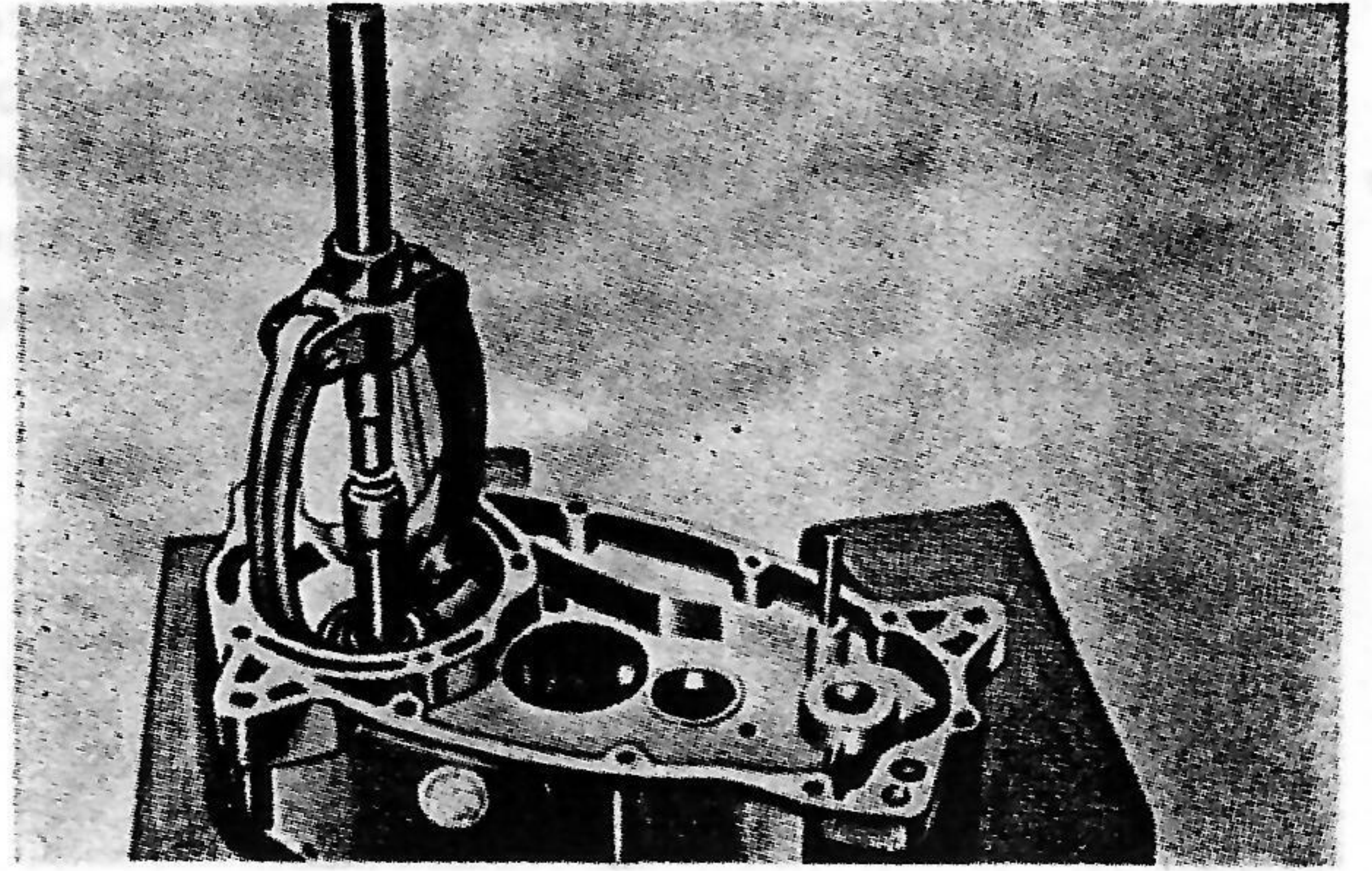


Figure 27

Removal of gears and Push Rod

Hold the selector shaft in a vice with soft jaws. Engage the push rod in neutral position. Remove the gears from the selector shaft, taking care that the balls do not jump out.

With the aid of a thin screwdriver, slide the spring off from the locking pin groove (Fig -28). Remove the spring, locking pins and push rod from the selector shaft.

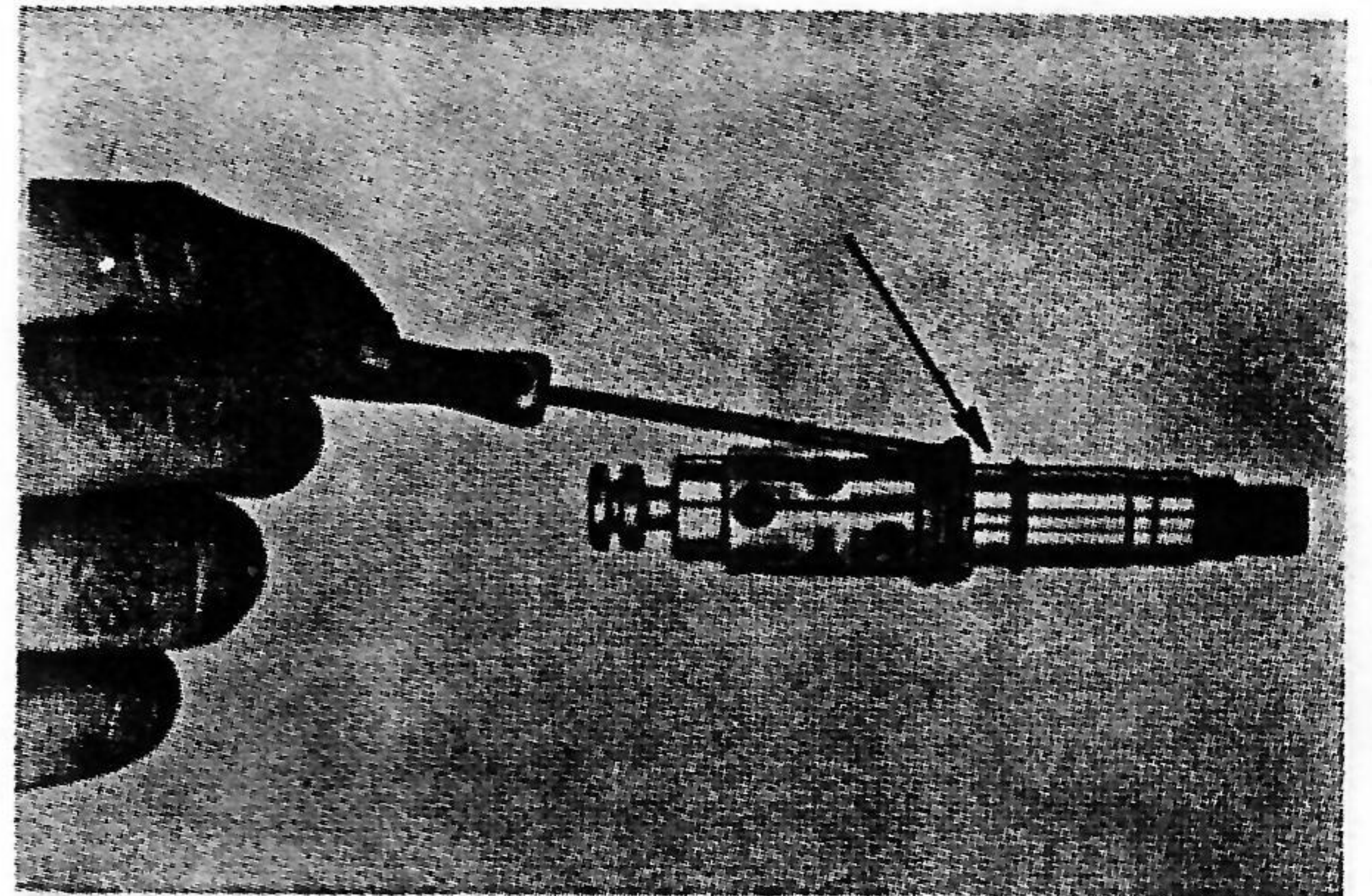
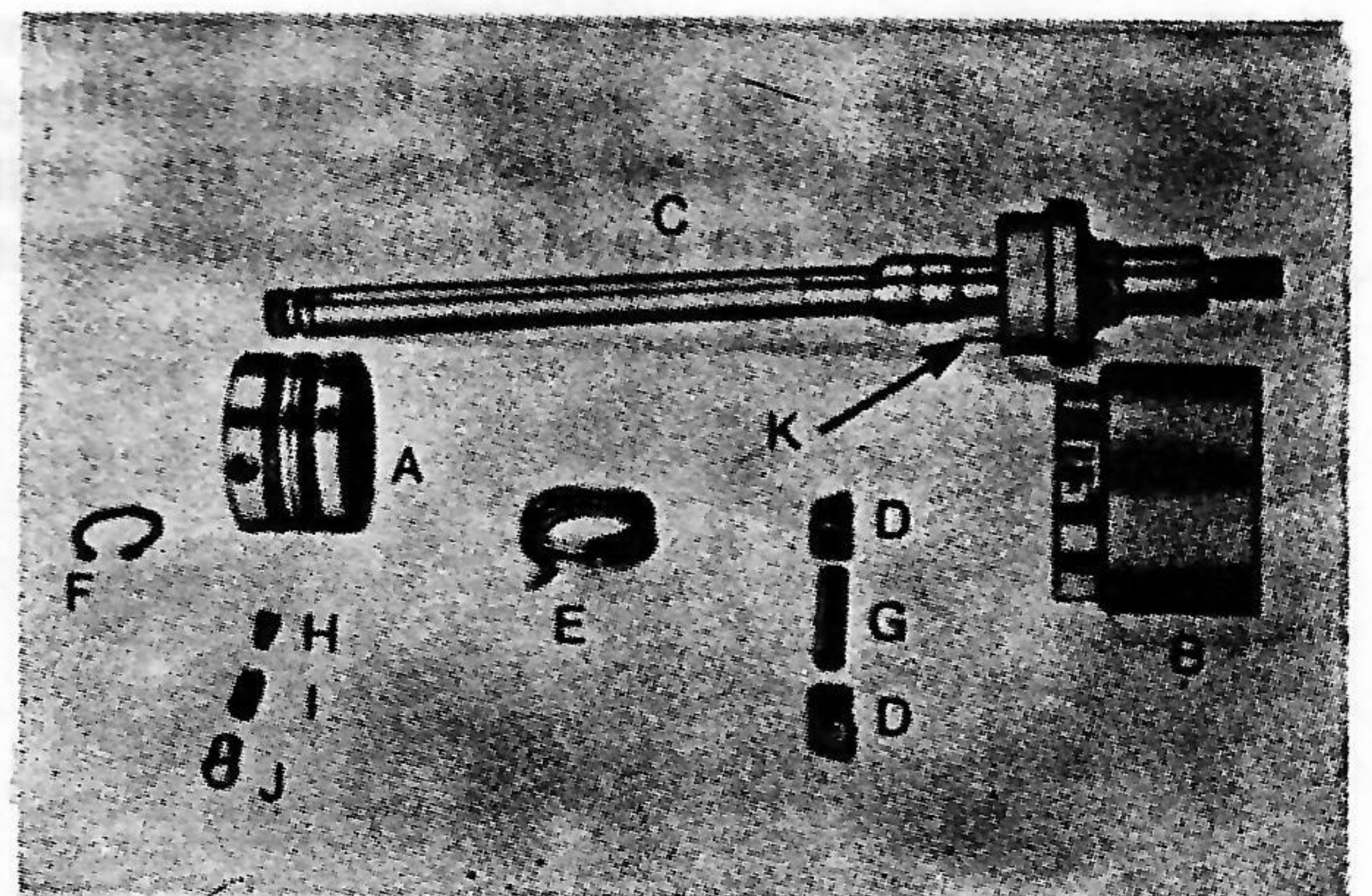


Figure 28

Dismantling the Gear Shift Shaft Assembly

The gear shift shaft assembly consists of the following parts : (Fig. - 29)

- A. Pawl deflector
- B. Selector drum
- C. Gear shift shaft
- D. Pawls
- E. Torsion spring
- F. Circlip
- G. Compression spring
- H. Round head rivet
- I. Compression spring
- J. Locking pin
- K. Locating pin



Hold the Gear shift shaft assembly in a vice with soft jaws. With the help of service tool SK-A 213, rotate the pawl deflector in the clockwise direction (Fig - 30), until the locking pin (J), compression spring (I) and Round head rivet (H) can be removed.

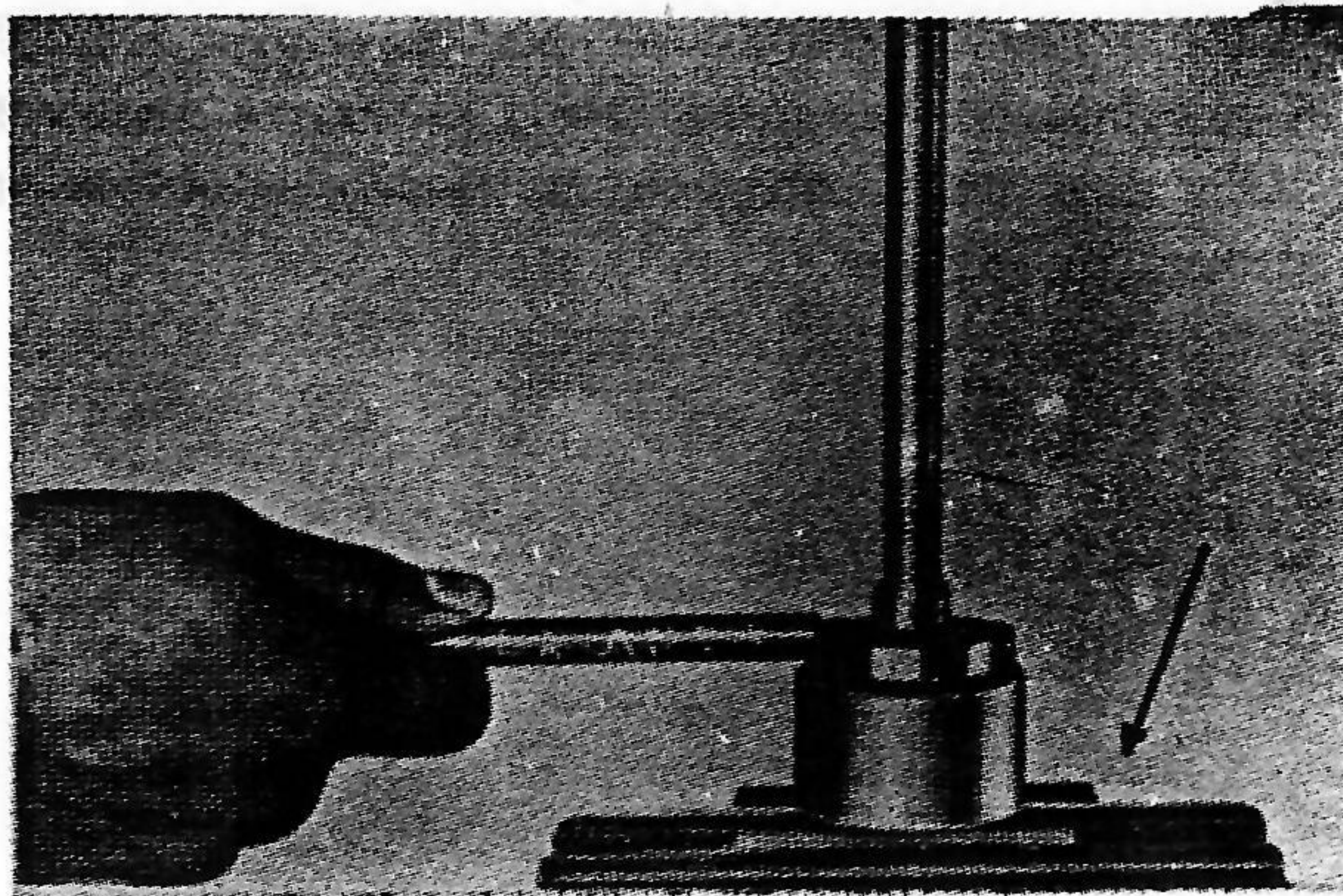


Figure 30

Remove the circlip (Fig. - 31)

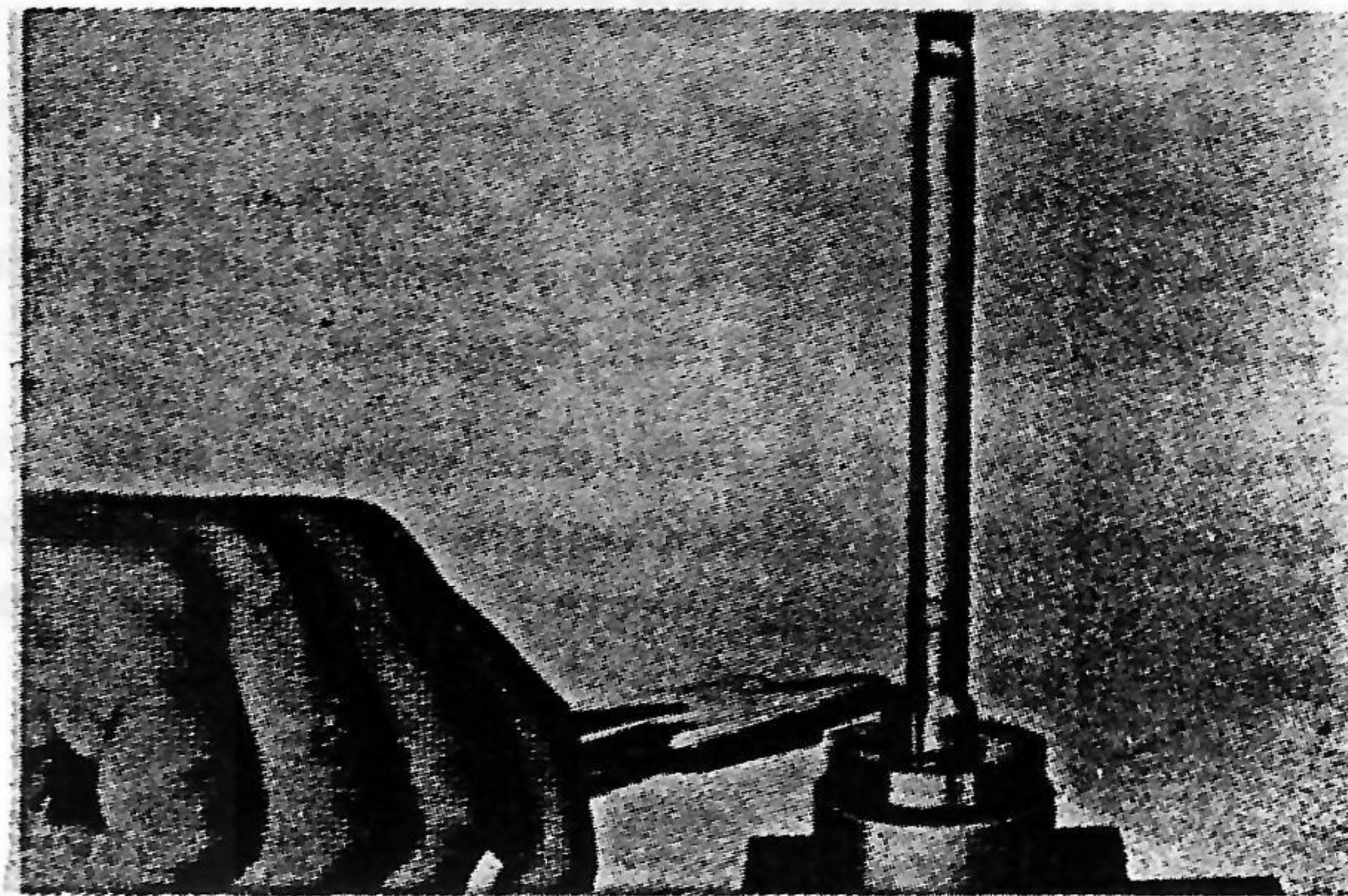


Figure 31

Hold the selector drum with your hand from underneath (Fig. - 32) so that it can be lifted off together with the pawl deflector. This will help in preventing the pawl from dropping out under spring pressure.

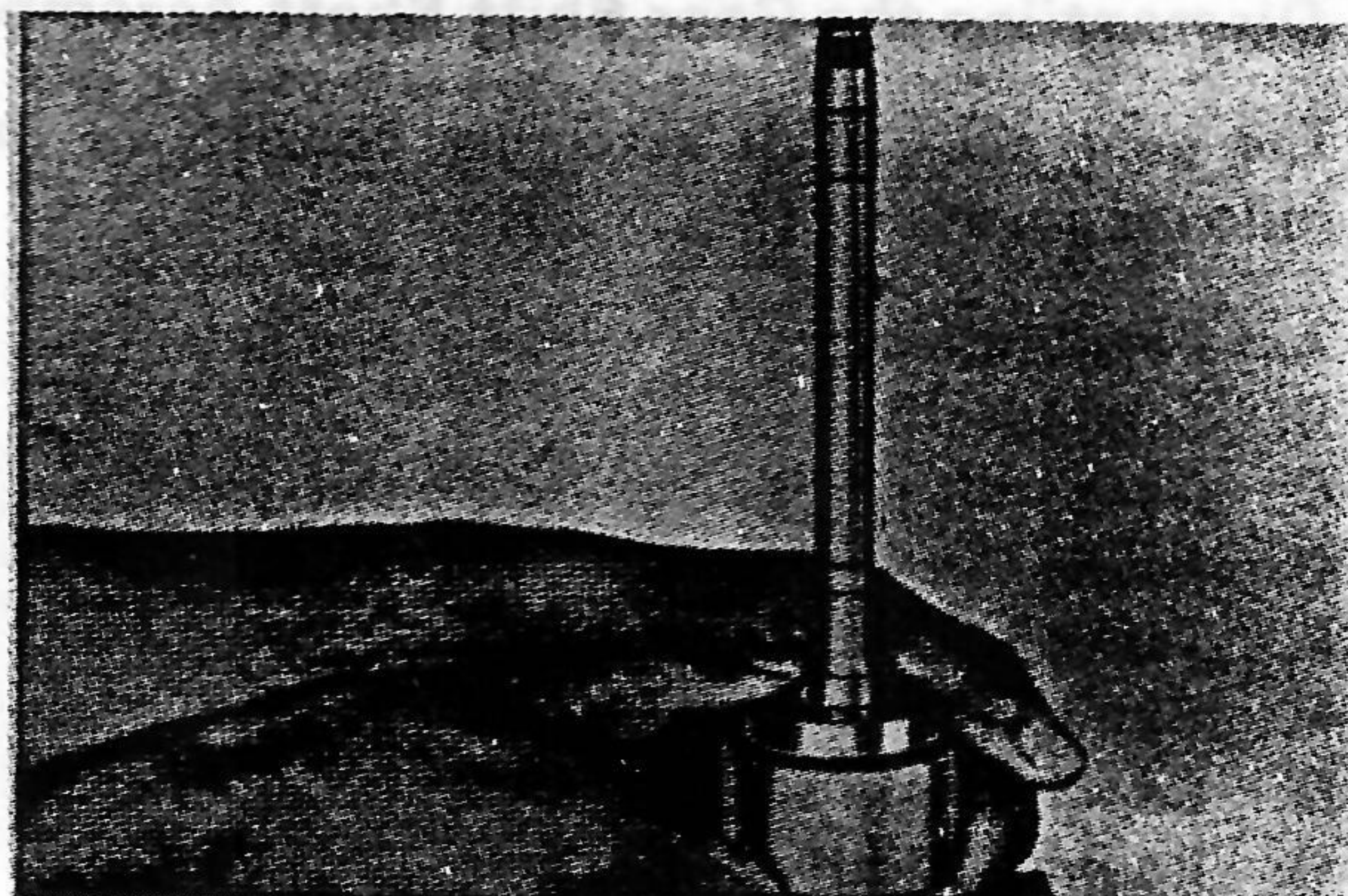


Figure 32

Dismantling the Kickstarter Assembly

Remove circlip (Fig. - 33). Hold the Kickstarter lever firmly and release it slowly.

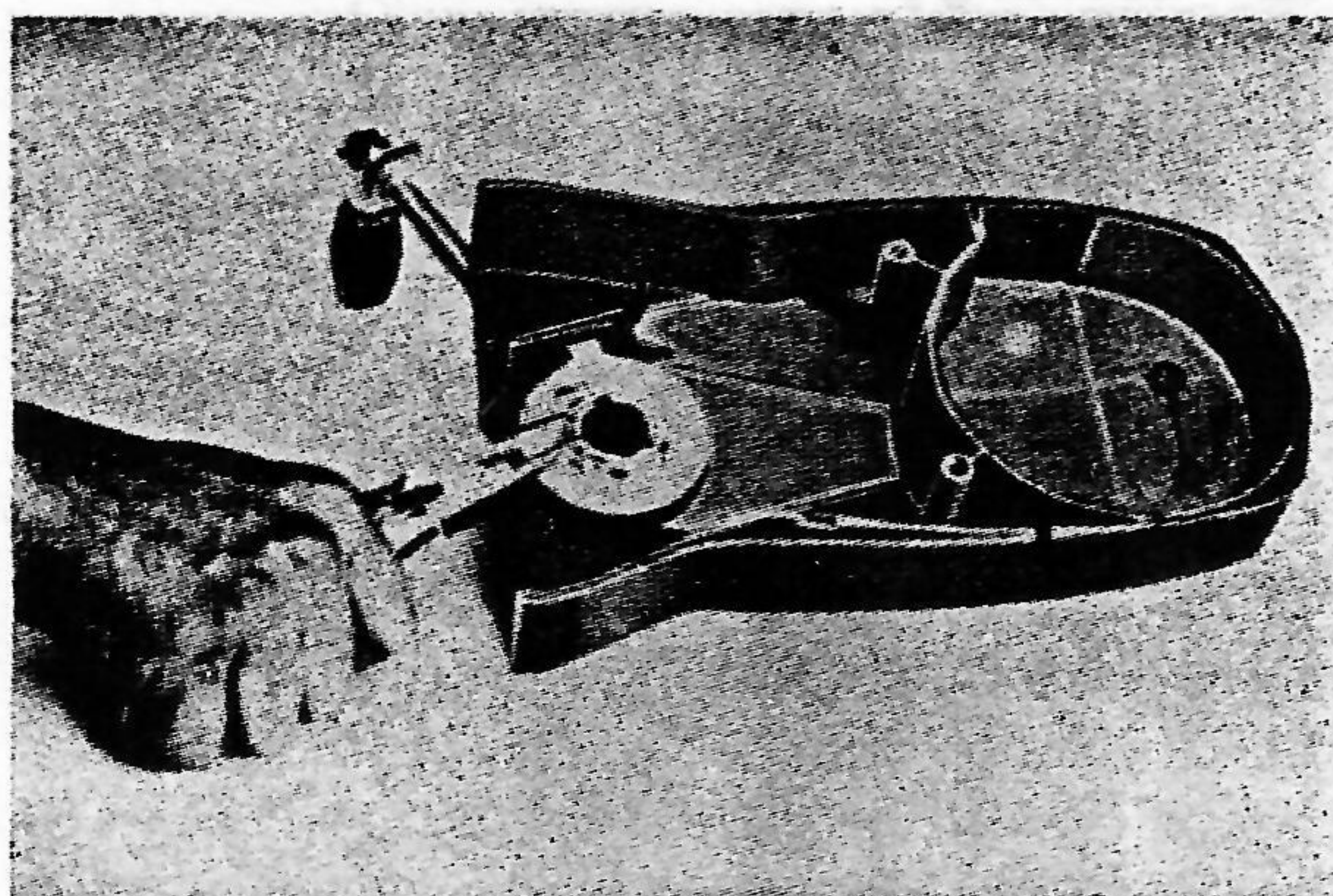


Figure 33

Take off lever (A) and lift the cover plate (B).
(The Kickstarter spring C) can now be removed
(Fig. - 34 and 35).

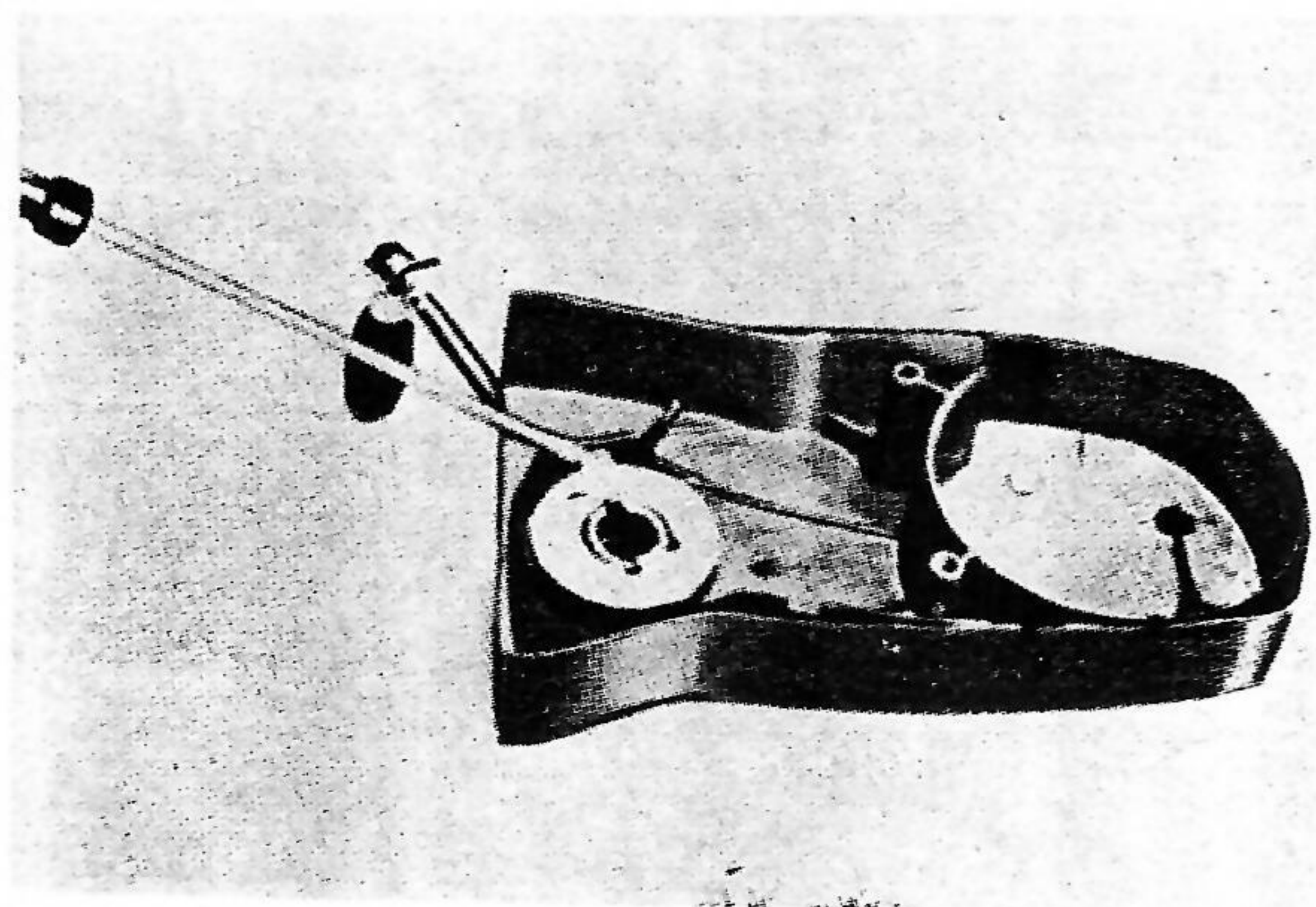
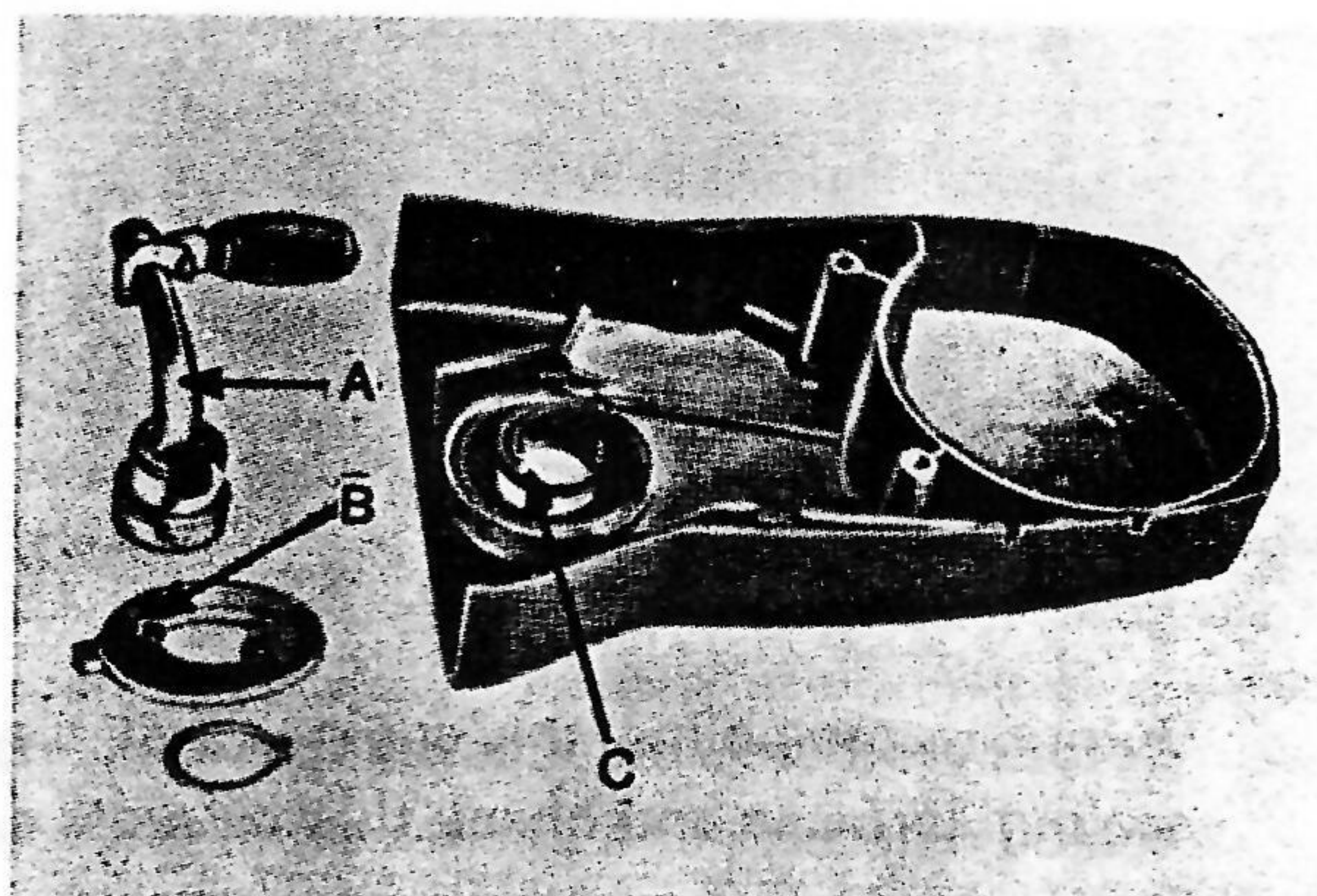


Figure 34



Take off lever (A) and lift the cover plate (B).
(The Kickstarter spring (C) can now be removed)
(Fig. 24 and 25)

Engine Assembly

Before reassembling the engine, first clean all parts thoroughly. Remove the Gasket from the sealing surfaces and check that all parts and sealing faces are in perfect condition.

Replace defective or damaged parts with genuine Enfield spare parts.

Gaskets and oil seals must always be replaced with new ones before reassembling the engine.

Make sure that all parts, such as spindles, shafts and bearings, are pressed home all the way to the stop in their locating bores, seats etc.

To fit all ball bearings, always heat the casing to approximately 85°C. Apply oil to all oil seals, bearings and other moving components.

Shimming of the Crankshaft

Fit the bevel washer onto the Clutch side and the Magneto side shafts (2 mm washer) ensuring that the bevel is facing towards the Crankweb.

Fit a 0.5 mm shim only to the Clutch side shaft (Fig - 36).

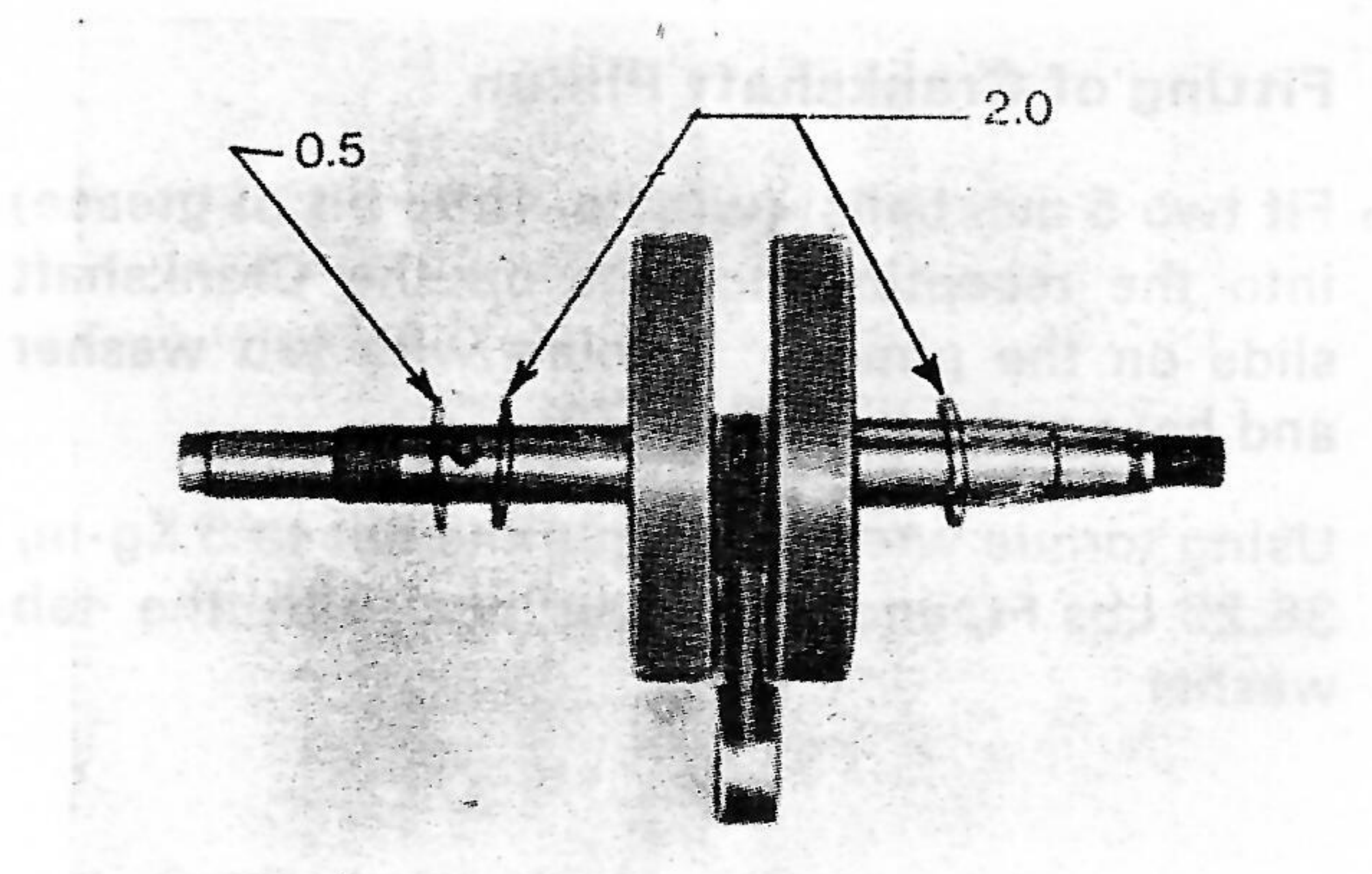


Figure 36

Assembling of the Crankshaft Bearing onto the RH and LH Crankcase

Heat the portion around the bearing bore of the Crankcase to a temperature of 80 to 85°C. Drop the bearing into the bearing bore ensuring that the shielded face of the bearing faces the Crankweb.

Allow the Crankcase to cool before proceeding further.

Fitment of Crankshaft onto the RH Crankcase

Fit the Crankshaft into the RH casing (Fig-37), preheating the inner race of the ball bearing to a temperature of 100 to 110°C with a brass mandrel.

Note: Never hammer the Crankshaft into the casing.

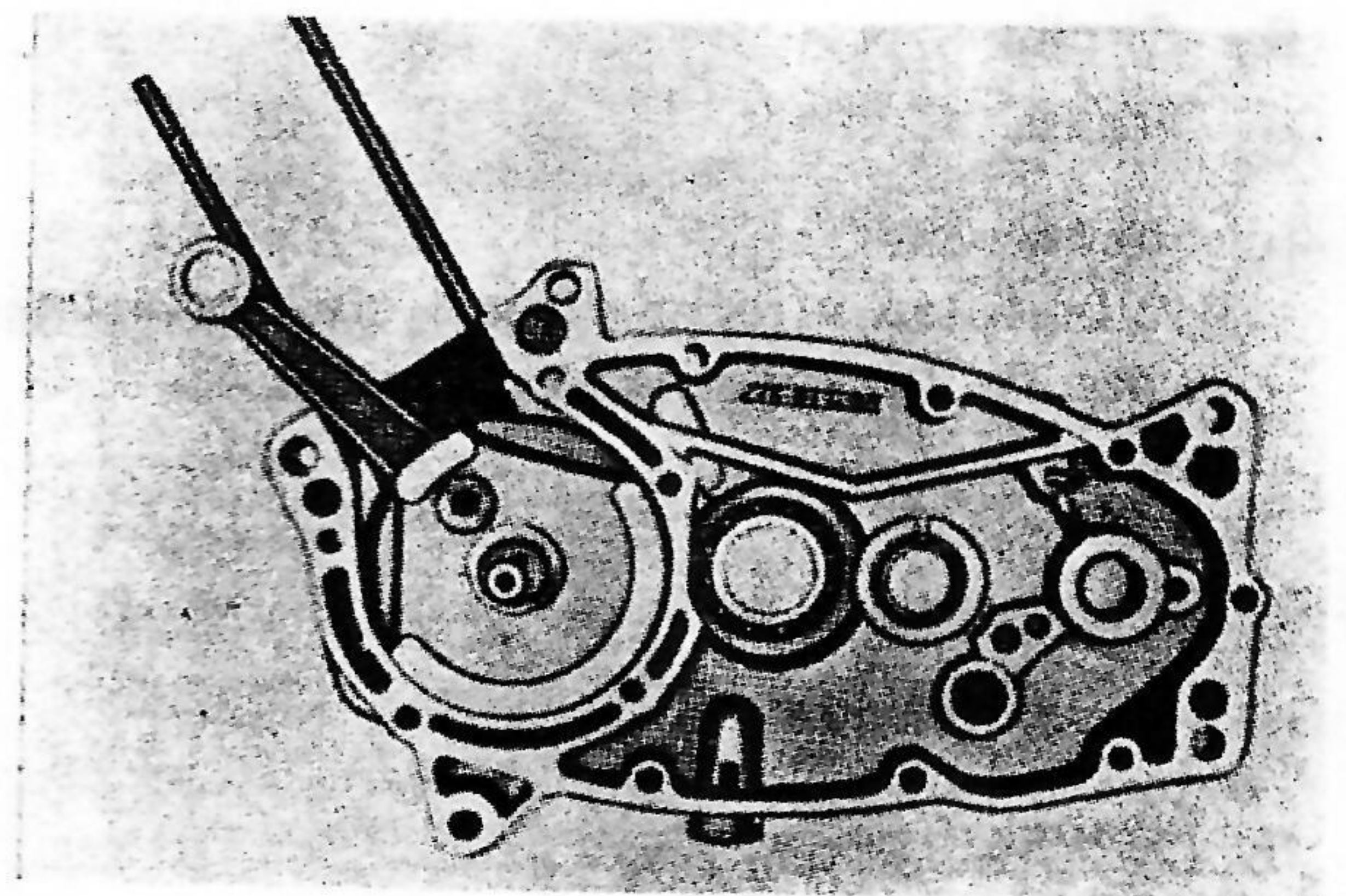


Figure 37

Fitting the Oil Seal on the RH Casing

Fit the oil seal onto the Crankshaft, using the assembly sleeve SKA-339 to avoid the seal lips from being damaged by the Crankshaft threads. Drive seal home with hollow punch SKA-347 (Fig - 38).

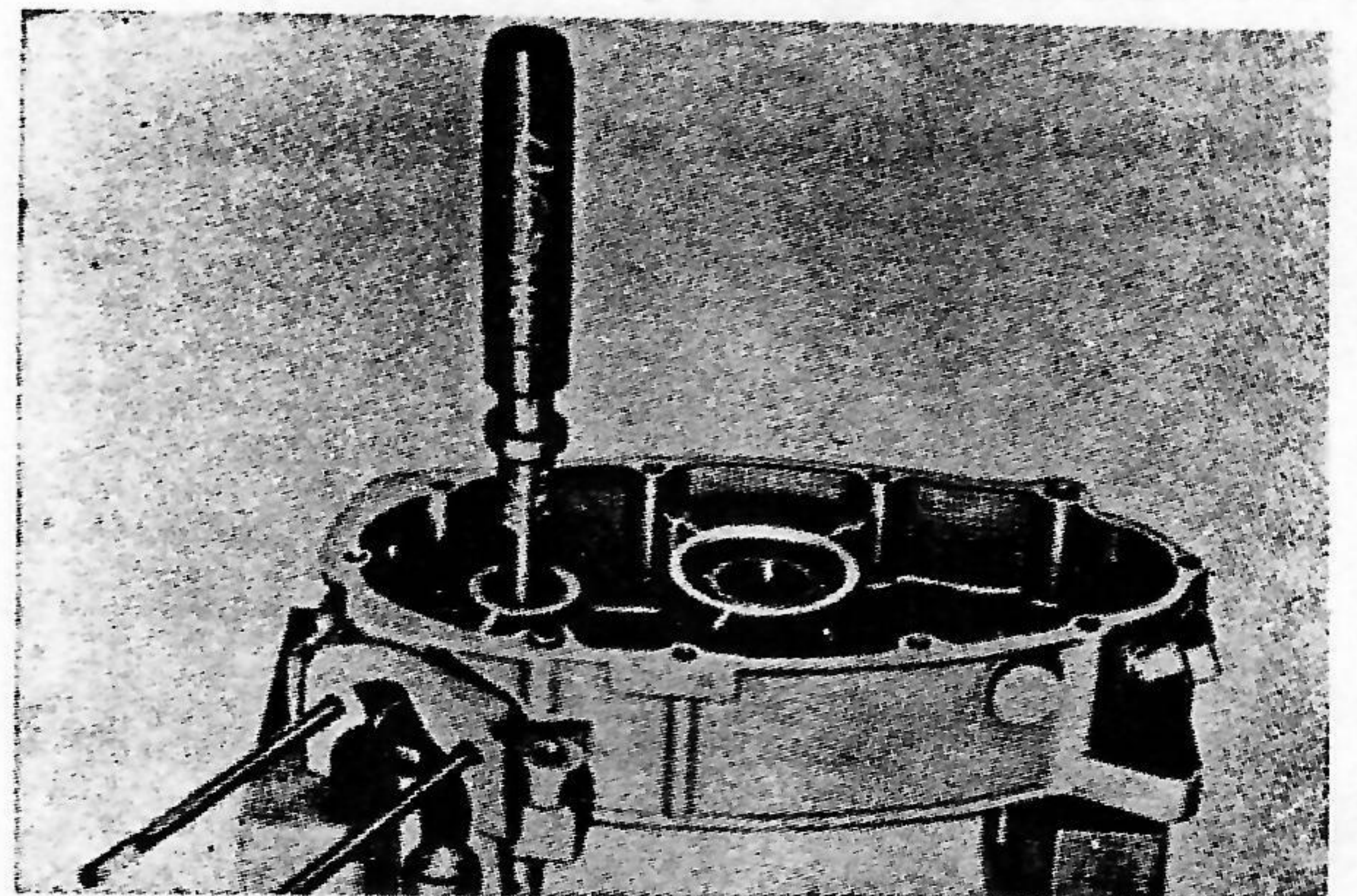


Figure 38

Fitting of Crankshaft Pinion

Fit two 5 mm balls (with a little bit of grease) into the reception pockets on the Crankshaft slide on the pinion. Secure with tab washer and hexagonal nut (Fig - 39).

Using torque wrench, torque the nut to 5 Kg-m/ 36.25 Lbs Ft, and lock the nut with the tab washer.

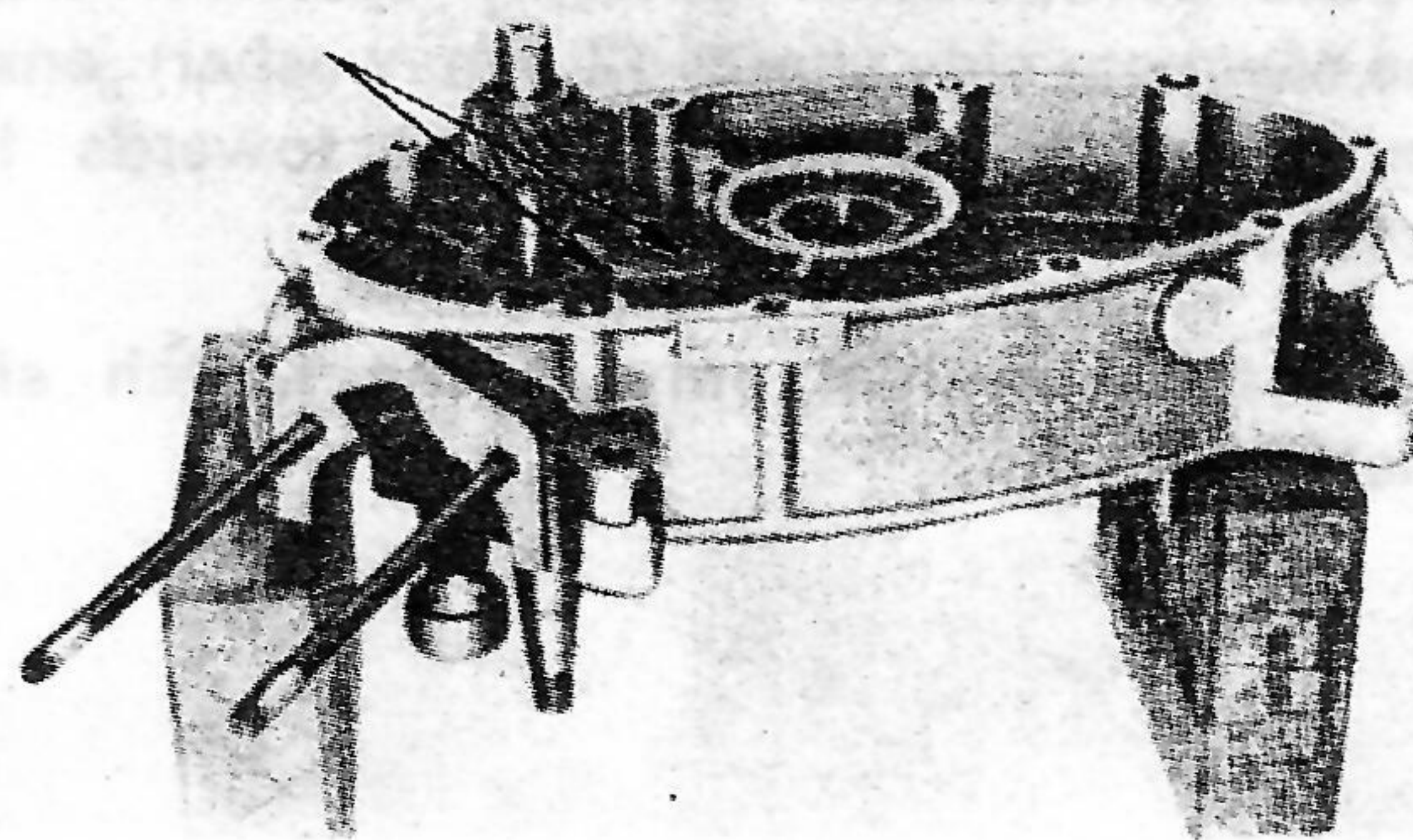


Figure 39

KICKSTARTER

The kickstarter shaft assembly consists of the following components (Fig - 39A).

- A. Shims
(to be fitted after Gauging)
- B. Circlip
- C. Circlip
- D. Shims
(to be fitted after checking clearance between Driver and kickstarter gear)
- E. Driver
- F. Return spring
- G. Kickstarter gear
- H. Washer
- I. Circlip
- J. Shim (1 mm)
- K. Kickstarter shaft

Fit circlip (B) on to the First groove on the kickstarter shaft (K).

Fit circlip (C) onto the Second groove.

Slide Driver (E) with Return spring (F) on to the kickstarter shaft (K) followed by the kickstarter gear (G).

Insert washer (H) and lock with circlip (I).

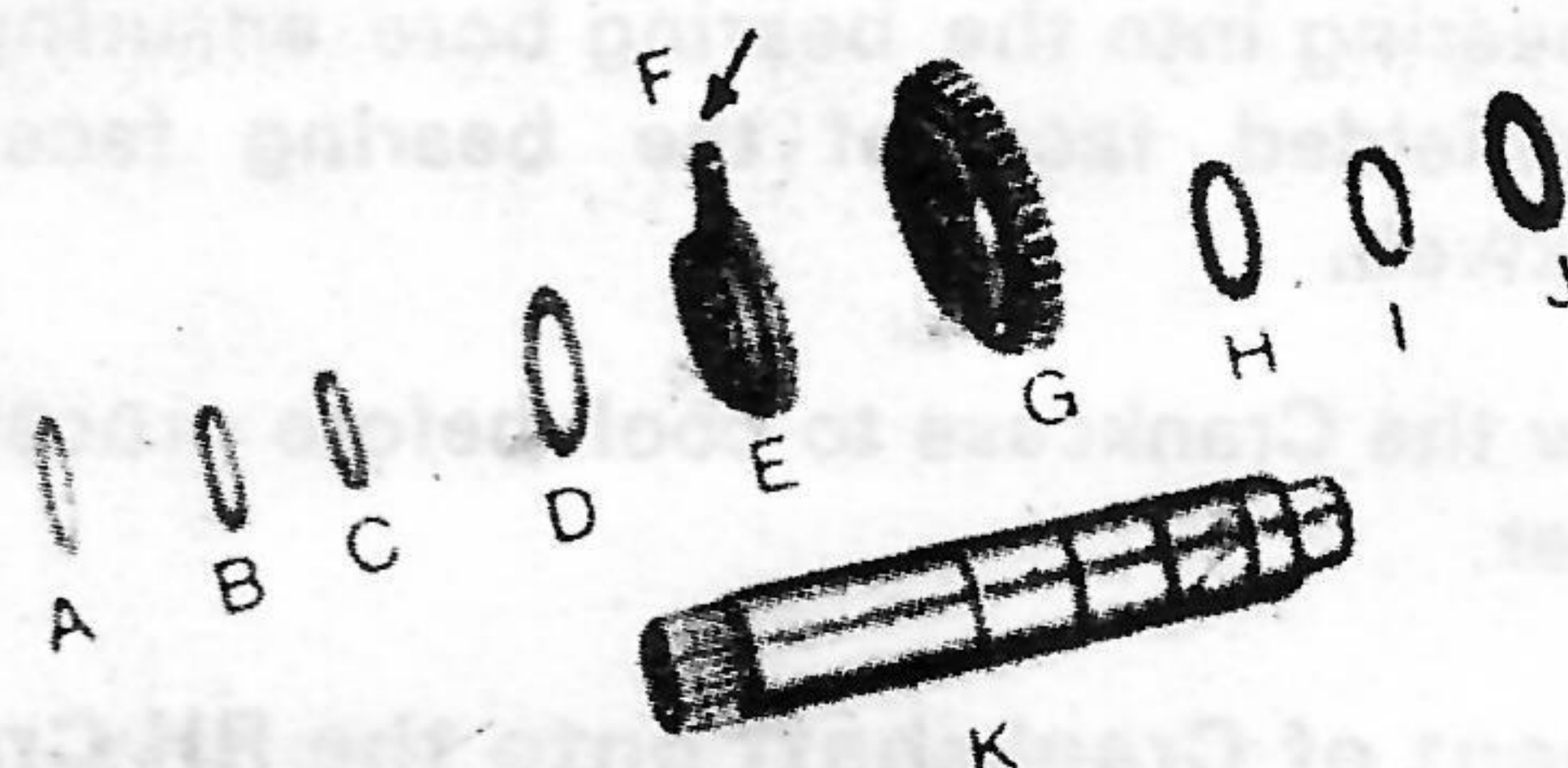


Figure 39A

Pre-Assembling Kickstarter Shaft

Check the clearance (Fig-40) of the opposing teeth between driver and Kickstarter gear on the shaft. It should be between 0.5 to 0.7mm. If the clearance is not as specified, correct it by adding or removing the required shims between circlip and driver. On the short shaft section use a 1 mm shim.

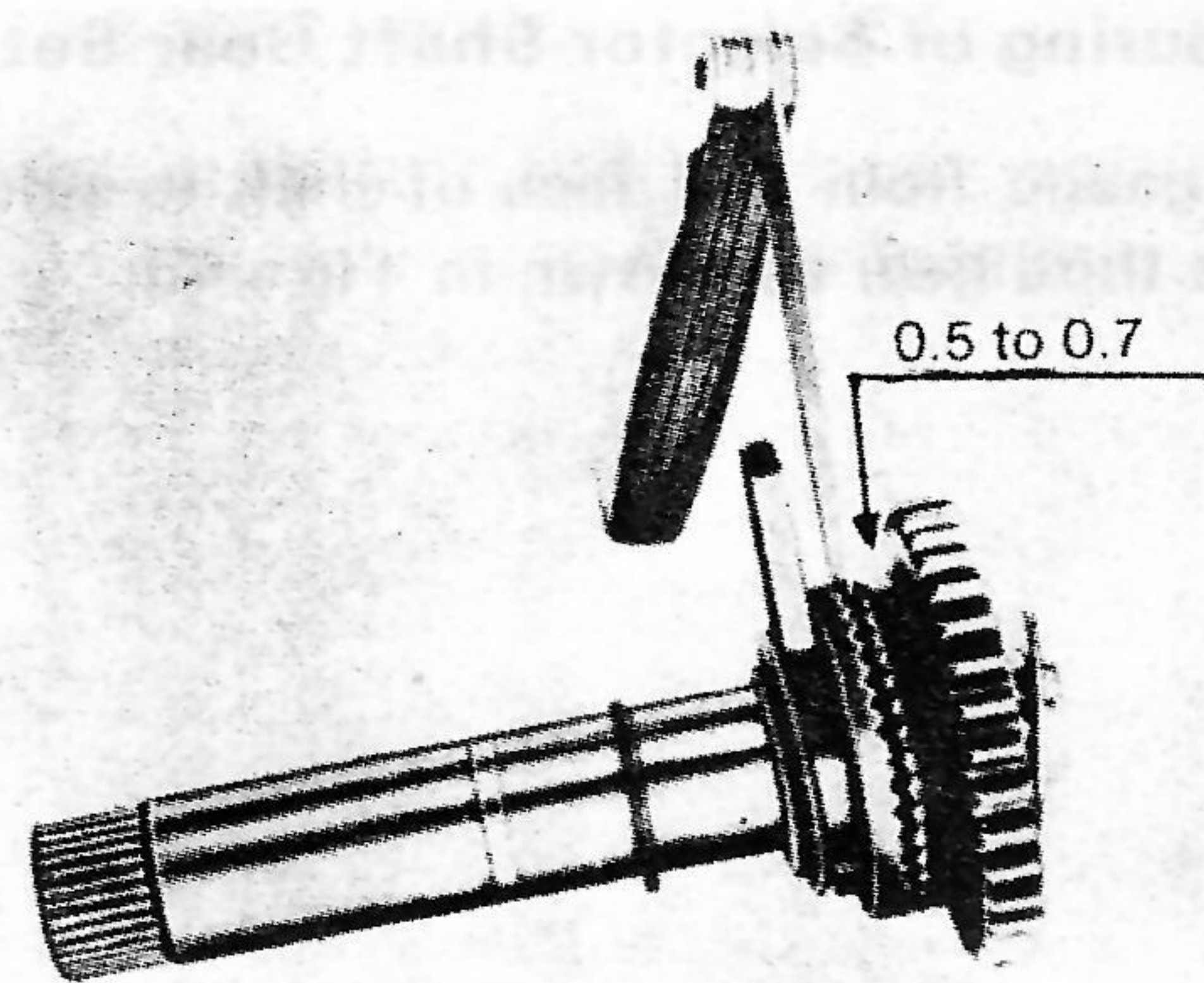


Figure 40

Pre-Assembling Main Drive Shaft

Slide a packing washer of 1 mm on the longer shaft end as shown in Figure - 41 (bevel must face inside).

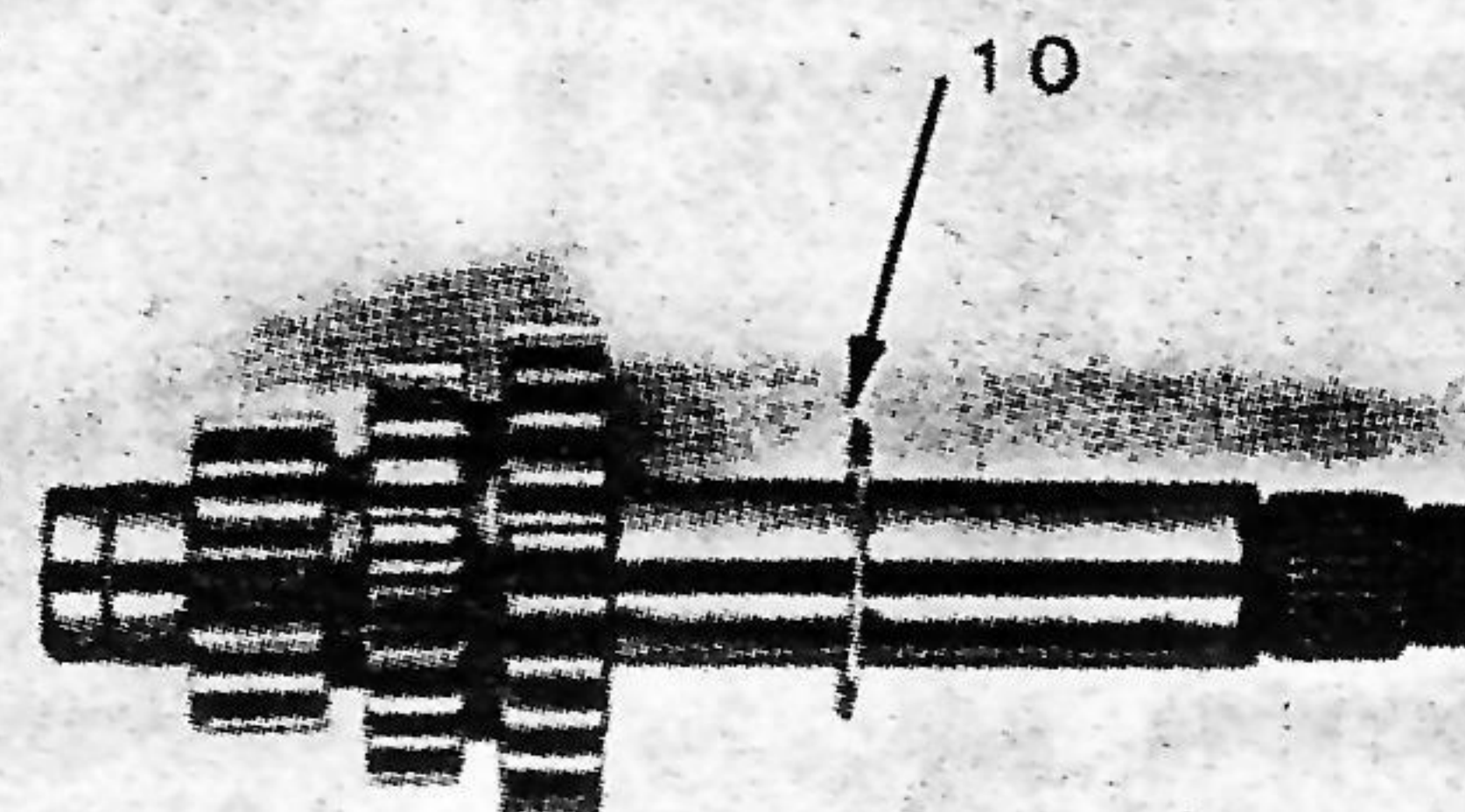


Figure 41

Assembly of Gears

The lubricating groove of first gear faces the projected flat face of the second gear. The slotted lubricating groove of the third gear faces the circular lubricating groove of the second gear as shown in Fig - 42.

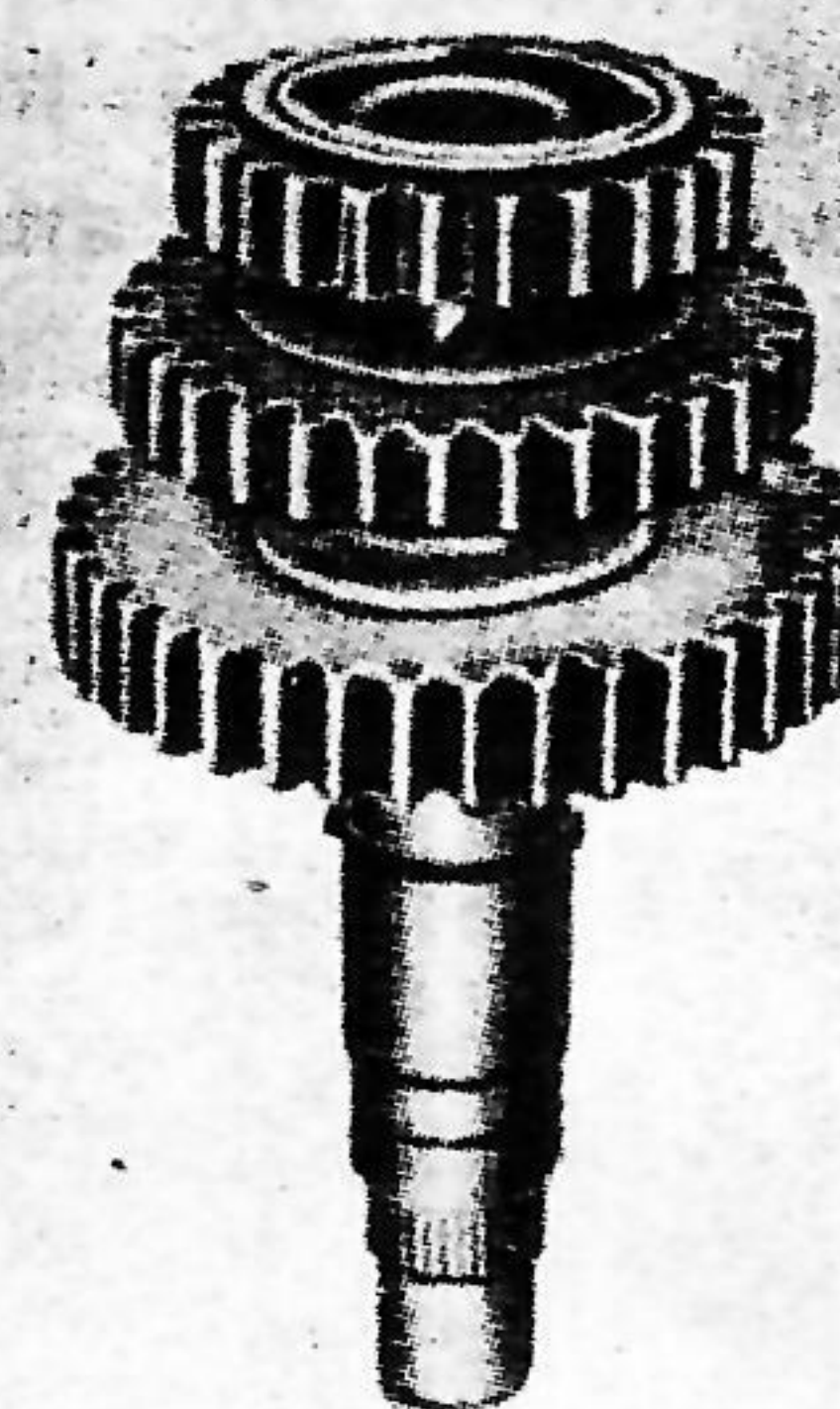


Figure 42

Measuring of Selector Shaft Gear Set

First gauge from end face of shaft to side face of the third gear as shown in Fig - 43.

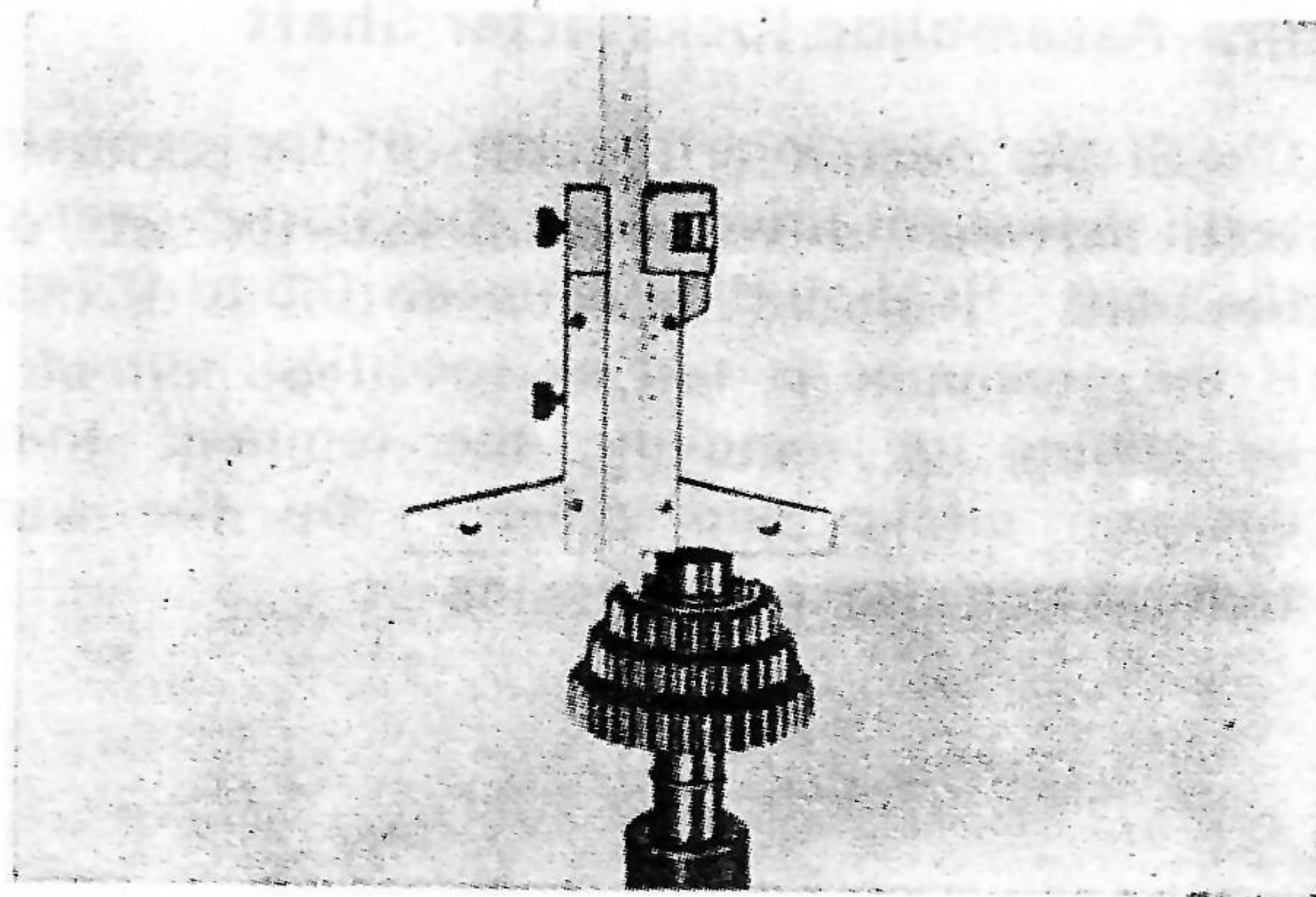


Figure 43

Second gauge from shaft end face to stepped face on shaft as shown in Fig - 44.

Example :

The values given do not necessarily agree with the values actually measured.

First gauging	=	10.5 mm
Second gauging	=	9.2 mm
		<u>1.3 mm</u>

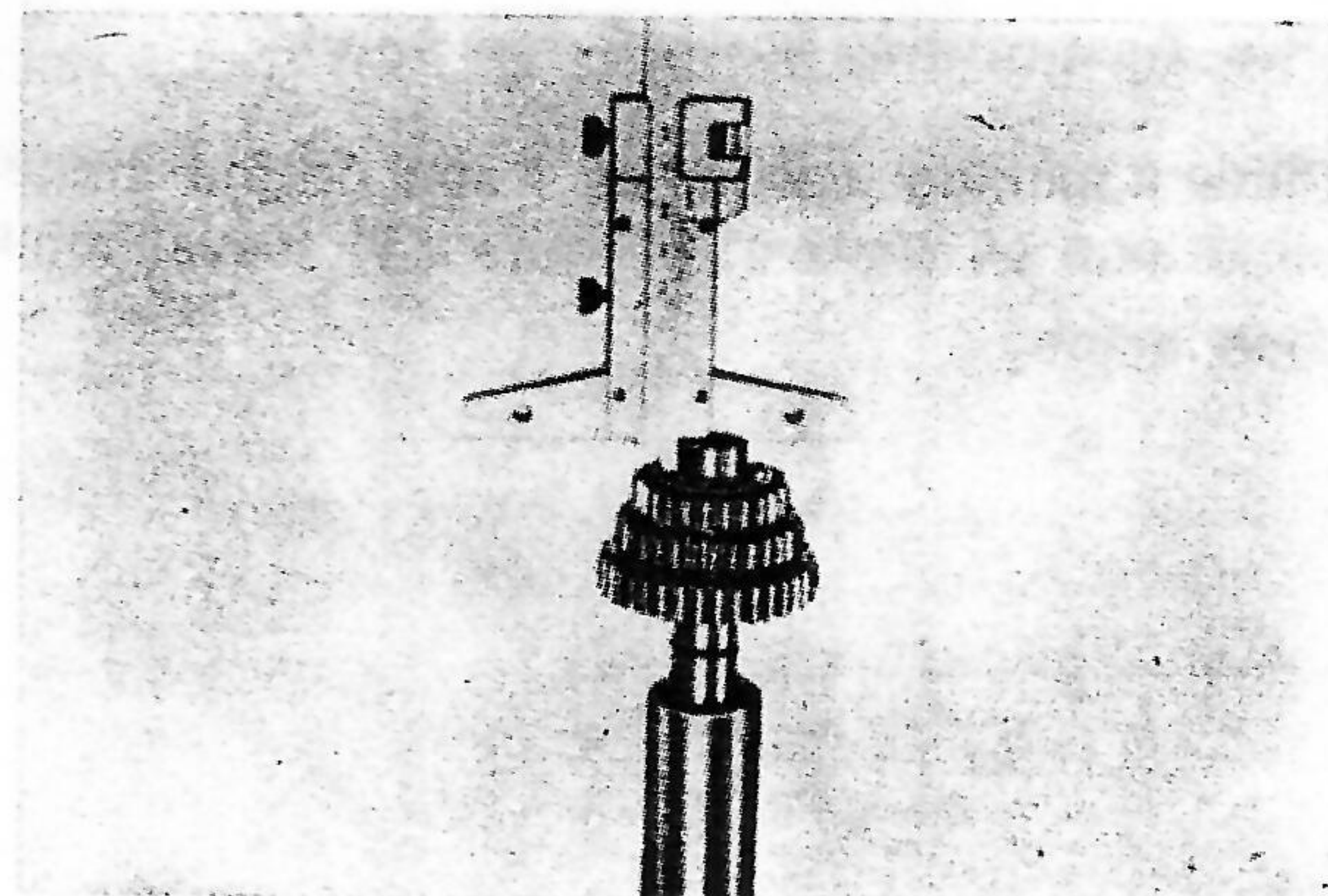


Figure 44

This difference is made up by shims and is fitted, depending upon the meshing of the gears, either between second and third gear or between first and second gear. (Fig - 45)

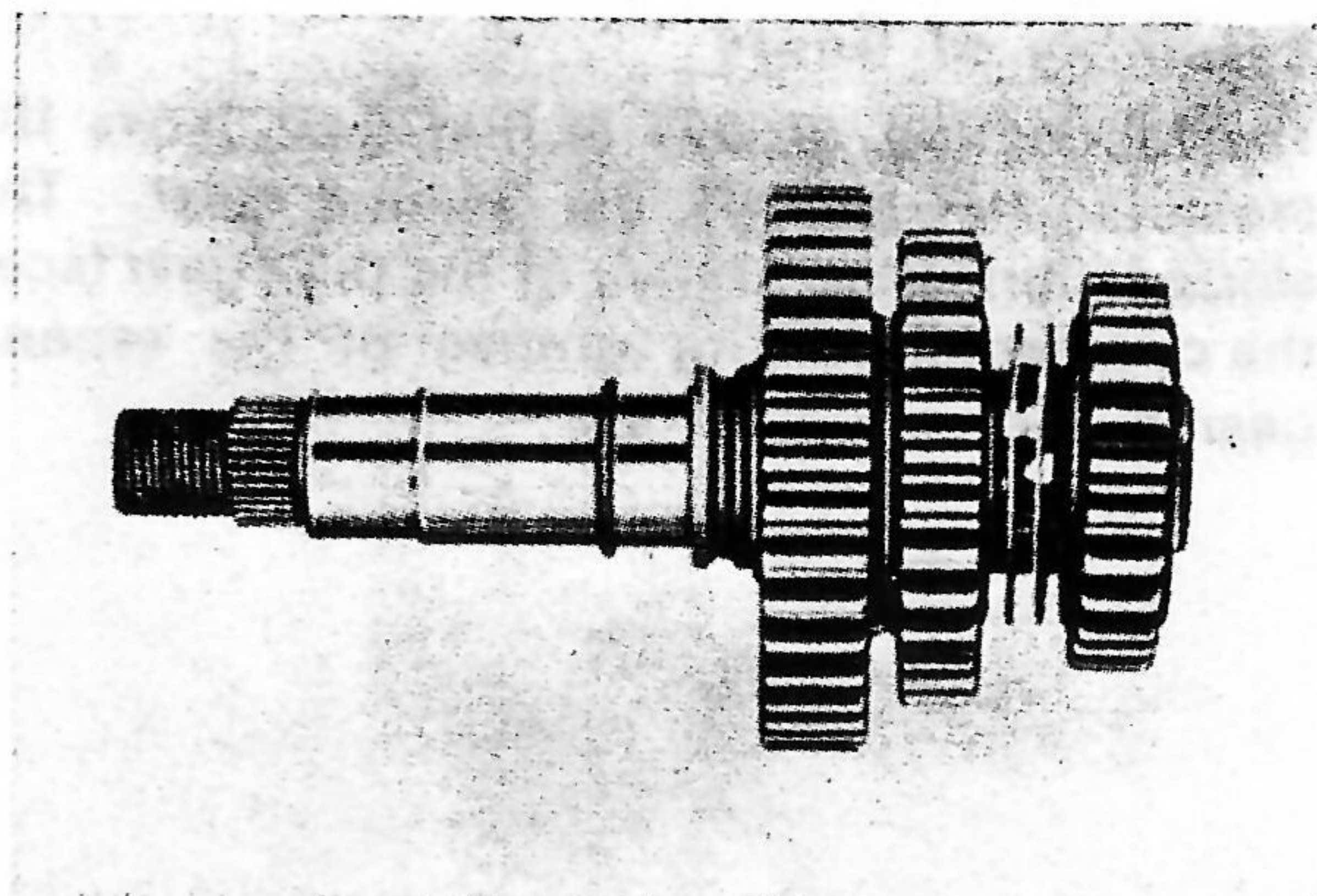


Figure 45

Pre-Assembly of Selector Shaft

Introduce locking spring onto the selector shaft as shown in Fig - 46. Fit the locking pin onto the selector shaft, slide the spring onto the locking pin groove with the aid of a thin screwdriver. Ensure that the joint of the locking spring is not located in the groove of the locking pin.

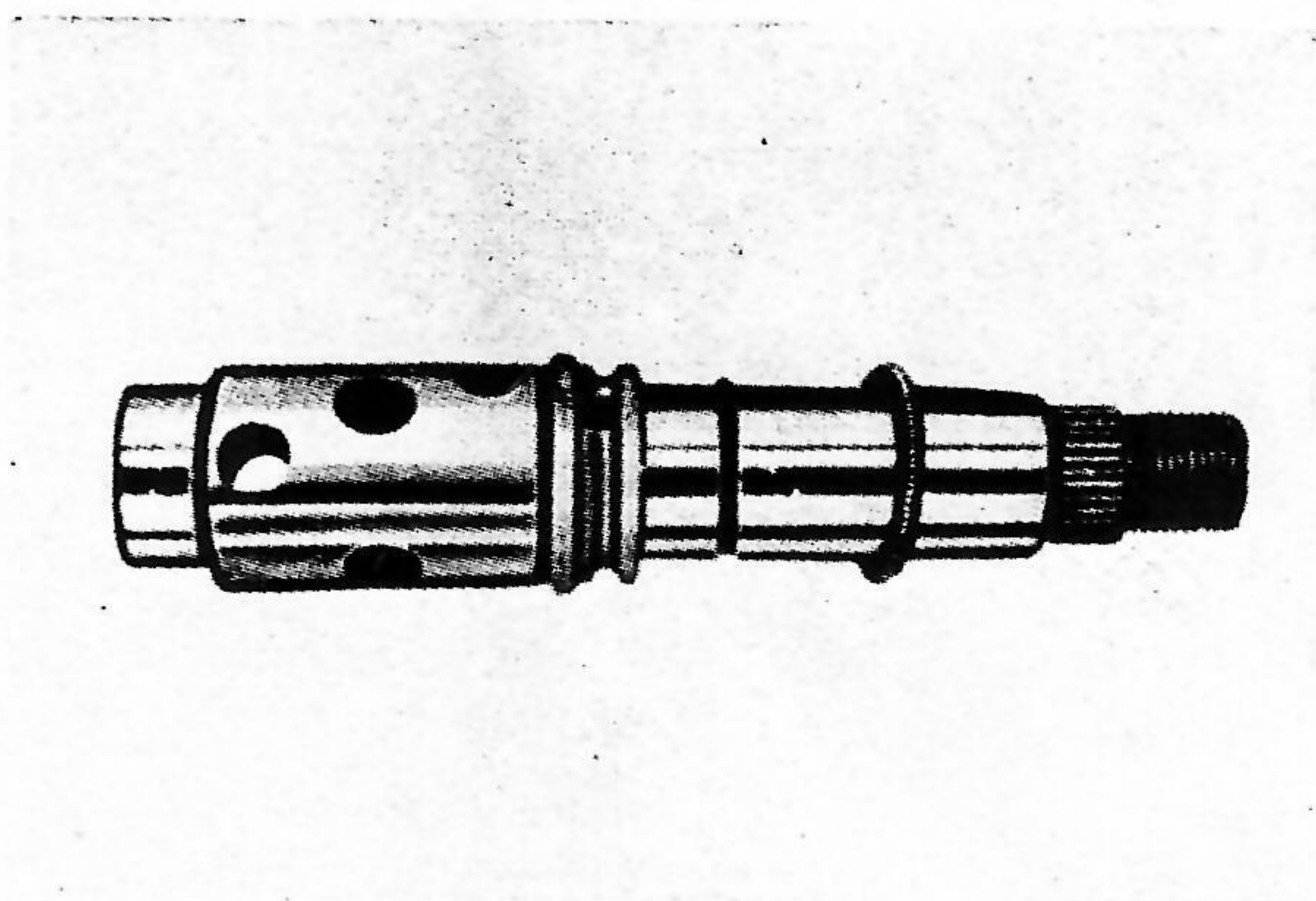


Figure 46

- Hold the selector shaft in a vice with soft jaws. Insert the push rod into the selector shaft such that the flat portion of the push rod faces the locking pin (Fig - 47). Engage the push rod in neutral position.



Figure 47

Before each selector gear is fitted, place four 7 mm dia. balls without grease into the shaft. With the gears correctly gauged, the end face of the third gear should be flush with the collar on the selector shaft.

Gears are correctly assembled if looking at the assembly from above (Fig - 48), the broader flat on the ball reception pocket always points in the clockwise direction.

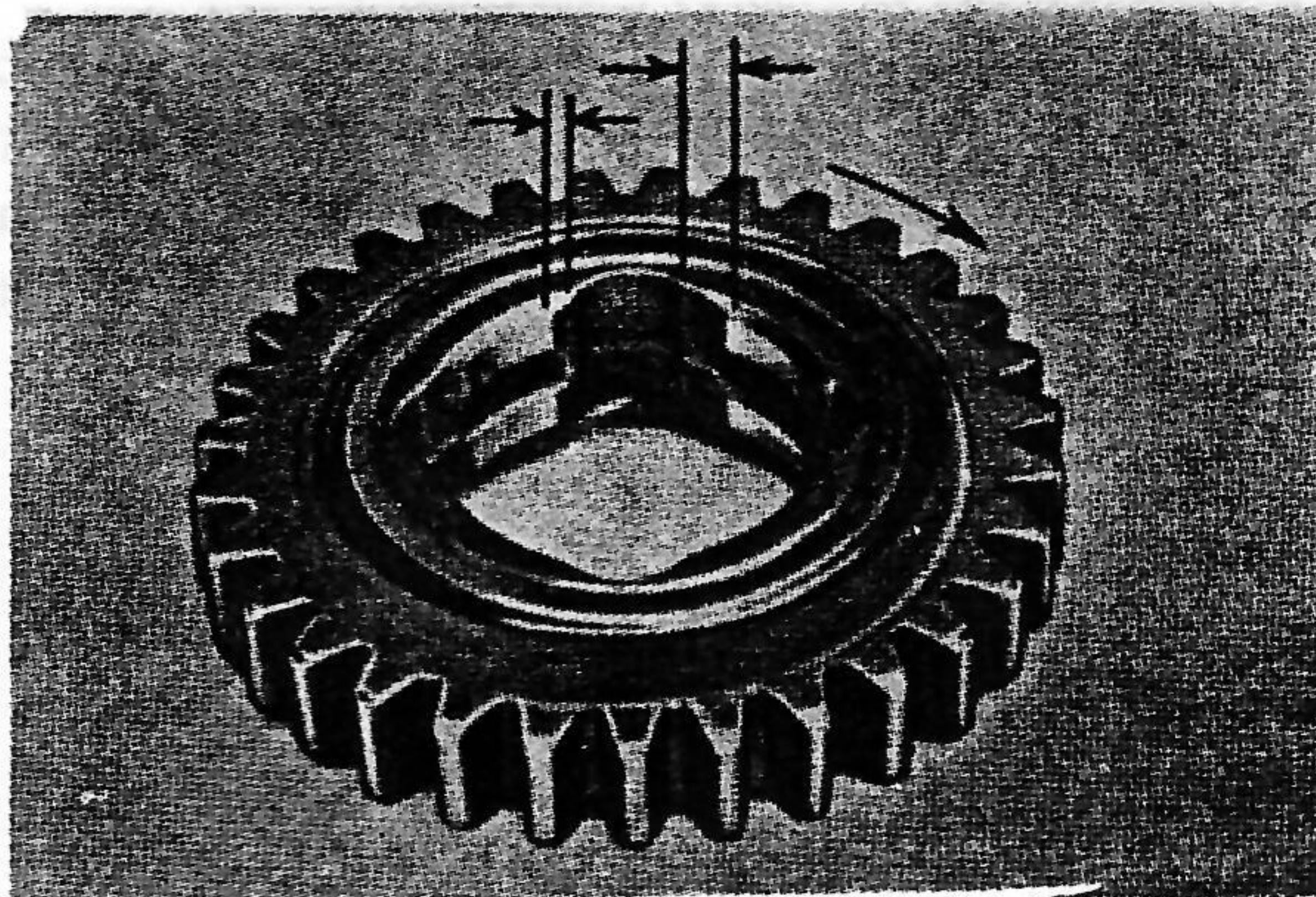


Figure 48

Pre-Assembly of Gear Shift Shaft

Hold the Gear shift shaft (C) in a vice with soft jaws. Insert the pawls (D) with the compression spring (G), such that the larger face is facing towards the locating pin (K) on the Gear shift shaft. (Fig - 49)

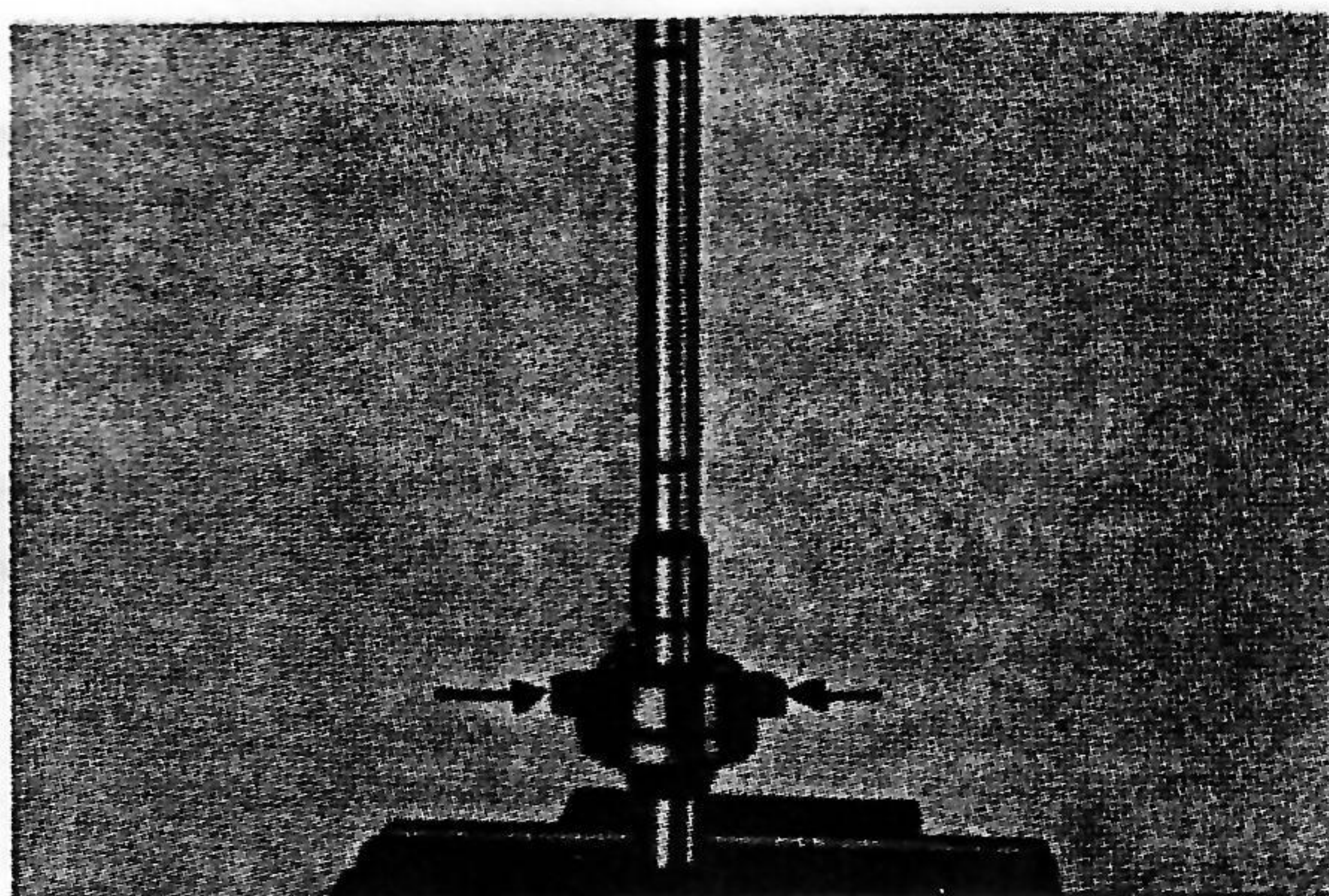


Figure 49

Slide the service tool SK-A 301 over the pawls to keep the pawls pressed in (Fig - 50)

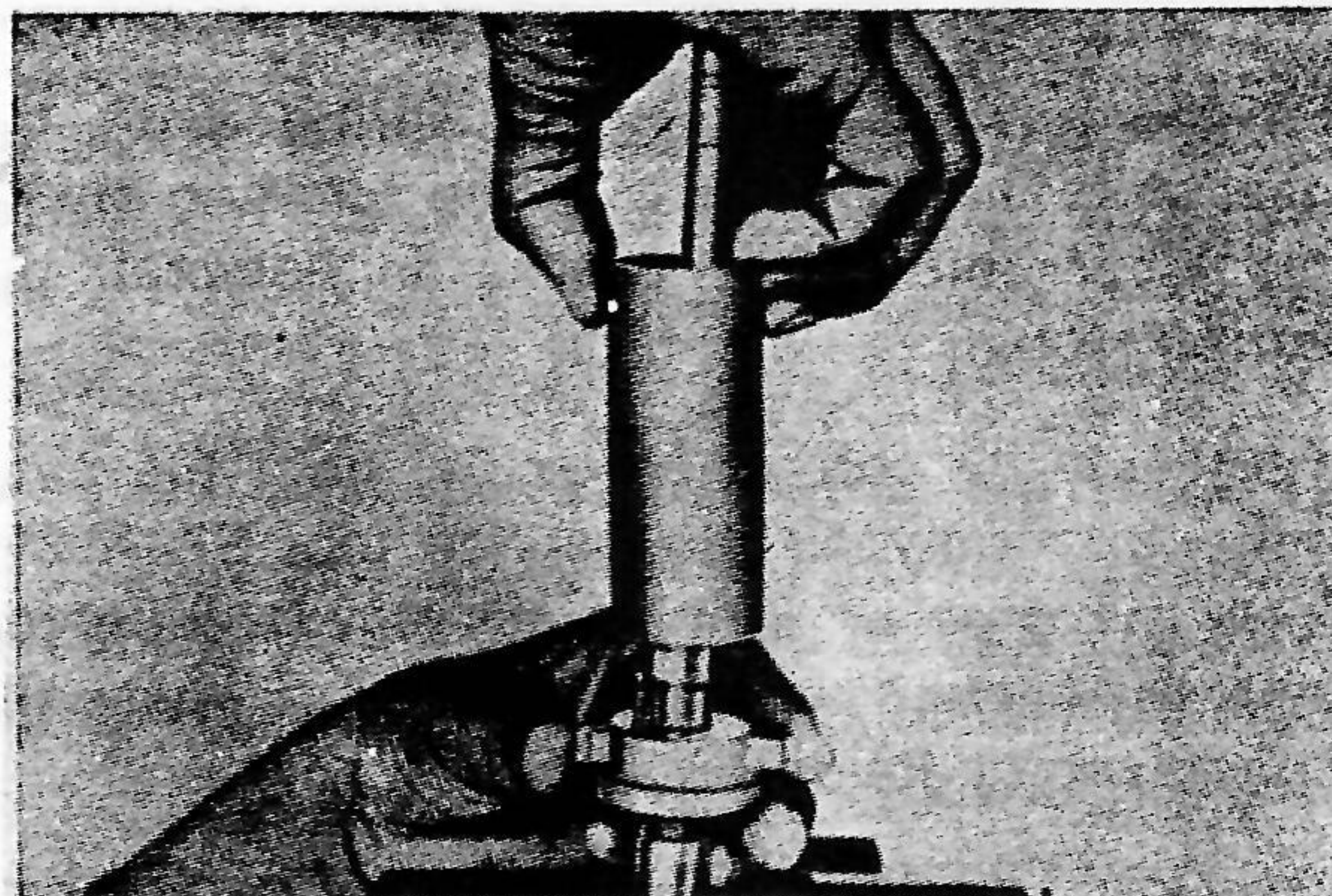


Figure 50

Slide the selector drum onto the service tool SK-A 301, ensuring that the locking tooth on the selector drum faces the locating pin (K) as shown in Fig - 51.

Remove the service tool SK-A 301 thus releasing the pawls.

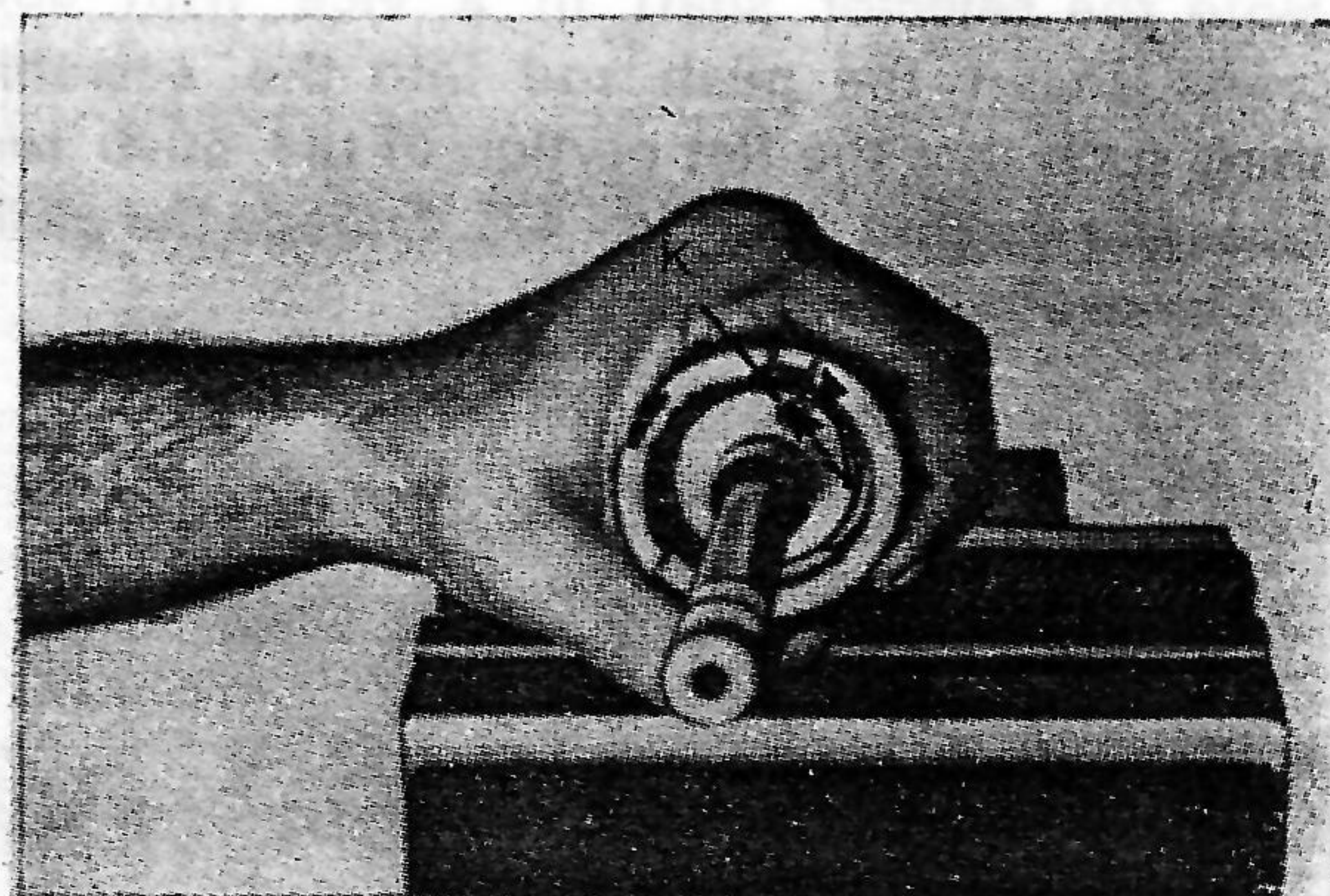


Figure 51

To fit the torsion spring onto the pawl deflector, insert the spring with its top stop into the lower recess of the pawl deflector and the bottom stop into the top recess. The spring should be unloaded as shown in Fig - 52.

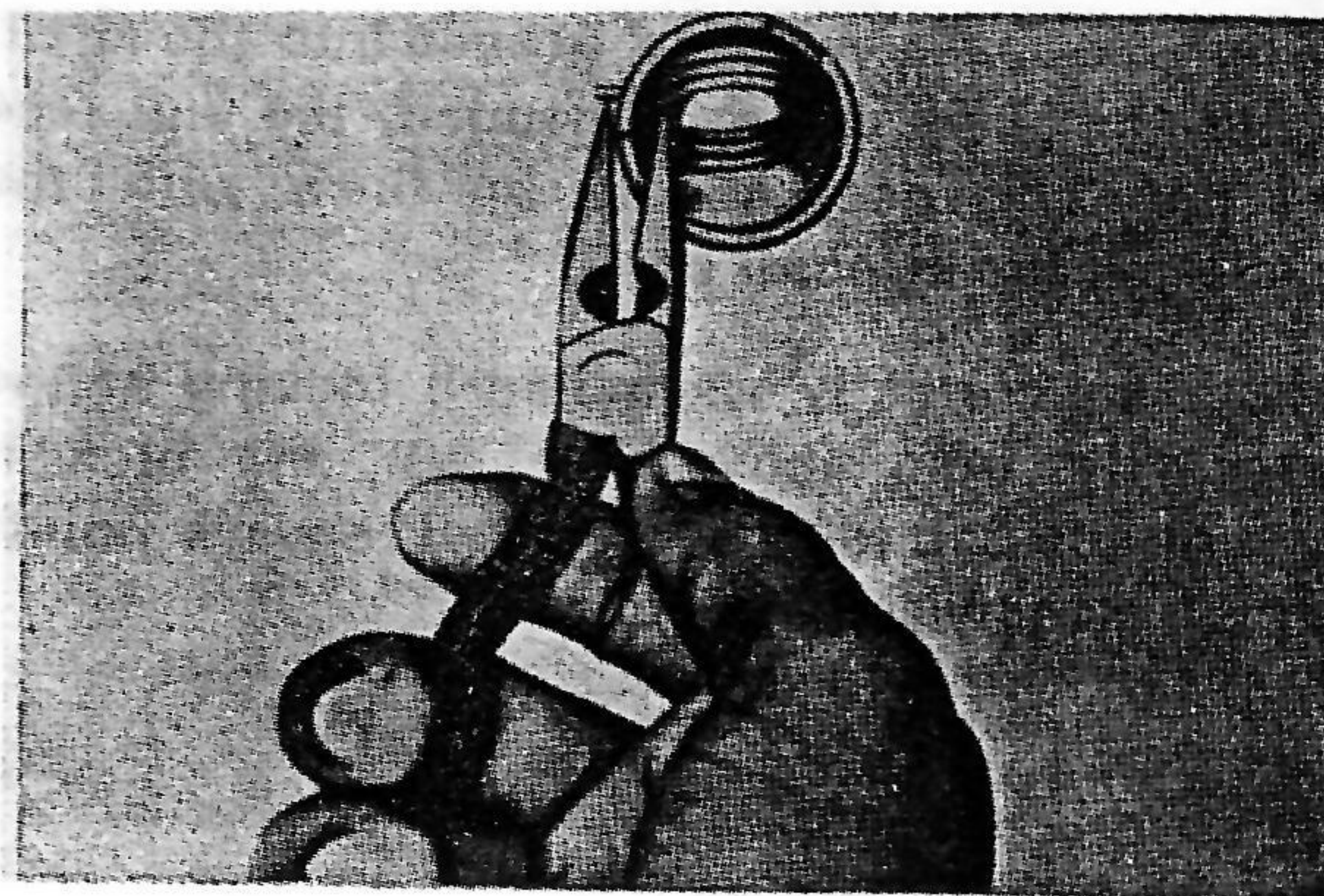


Figure 52

The spring is eased into position with a pair of flat pliers which ensure that the stops enter the recesses far enough. Tension the spring with the aid of a screwdriver and plier as shown in Fig - 53.

To make the fitting easier, a second screwdriver can be used to press the spring against the recesses in the pawl deflector.

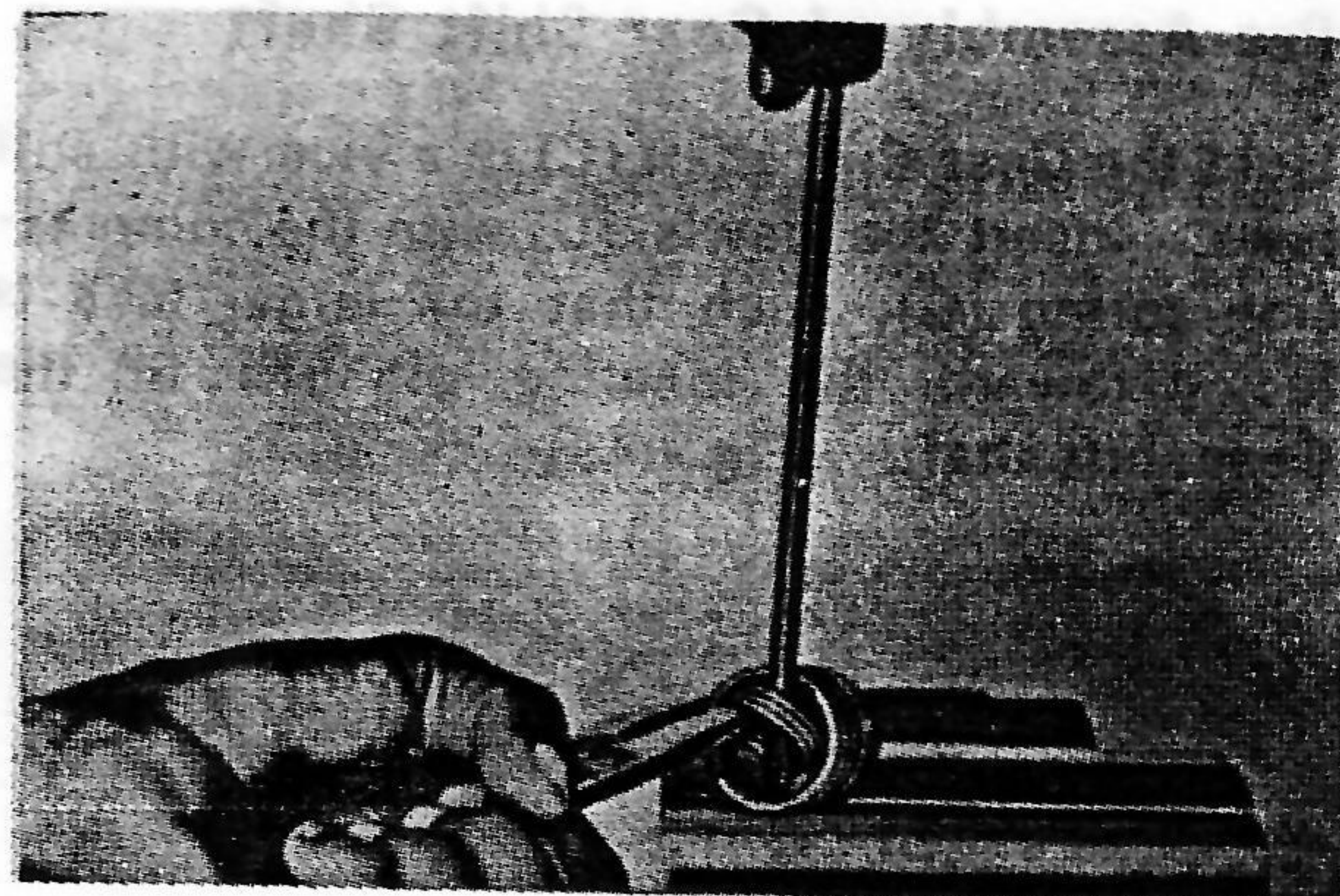


Figure 53

Fit the pawl deflector with spring onto the gear shift shaft. Note that the locating pin on the Gear shift shaft passes in between the spring stops.

To check the correct assembly, hold the pawl deflector firmly, fit the service tool SK-A 213 into the tapered slot of the pawl deflector, shift the service tool both sides and check the spring return action (Fig - 54).

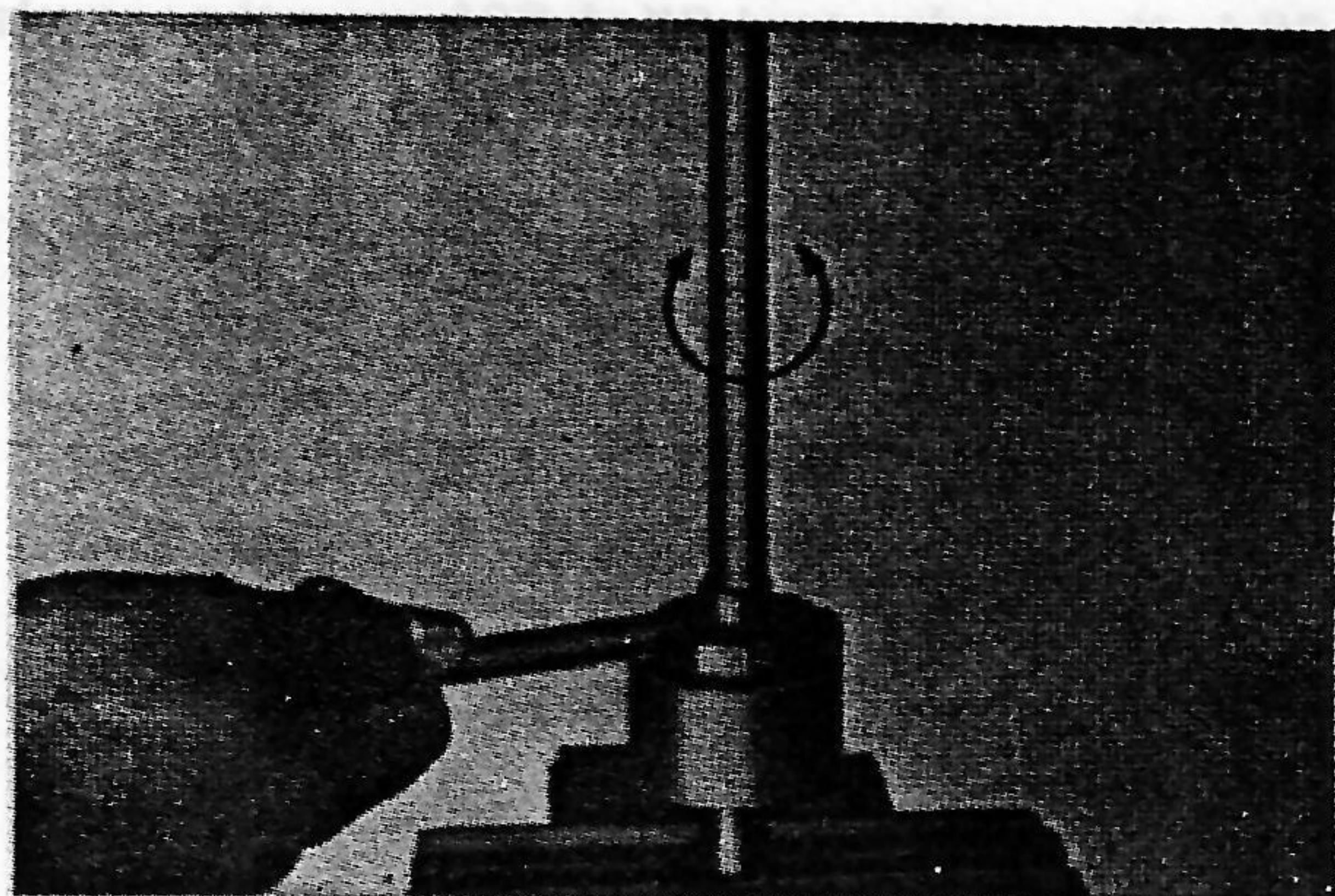


Figure 54

Fit the circlip into groove on the Gear shift shaft. Check axial play of the selector drum and pawl deflector assembly. If the play is found more than 0.1—0.2 mm add necessary shims between the pawl deflector and circlip using the service tool SK-A 213, rotate the pawl deflector and fit the round headed rivet (H) compression spring (I) and locking pin (J) into the hole on the pawl deflector. Rotate the pawl deflector, so that the locking pin is engaged on to the locking slots provided on the selector drum (Fig - 55)

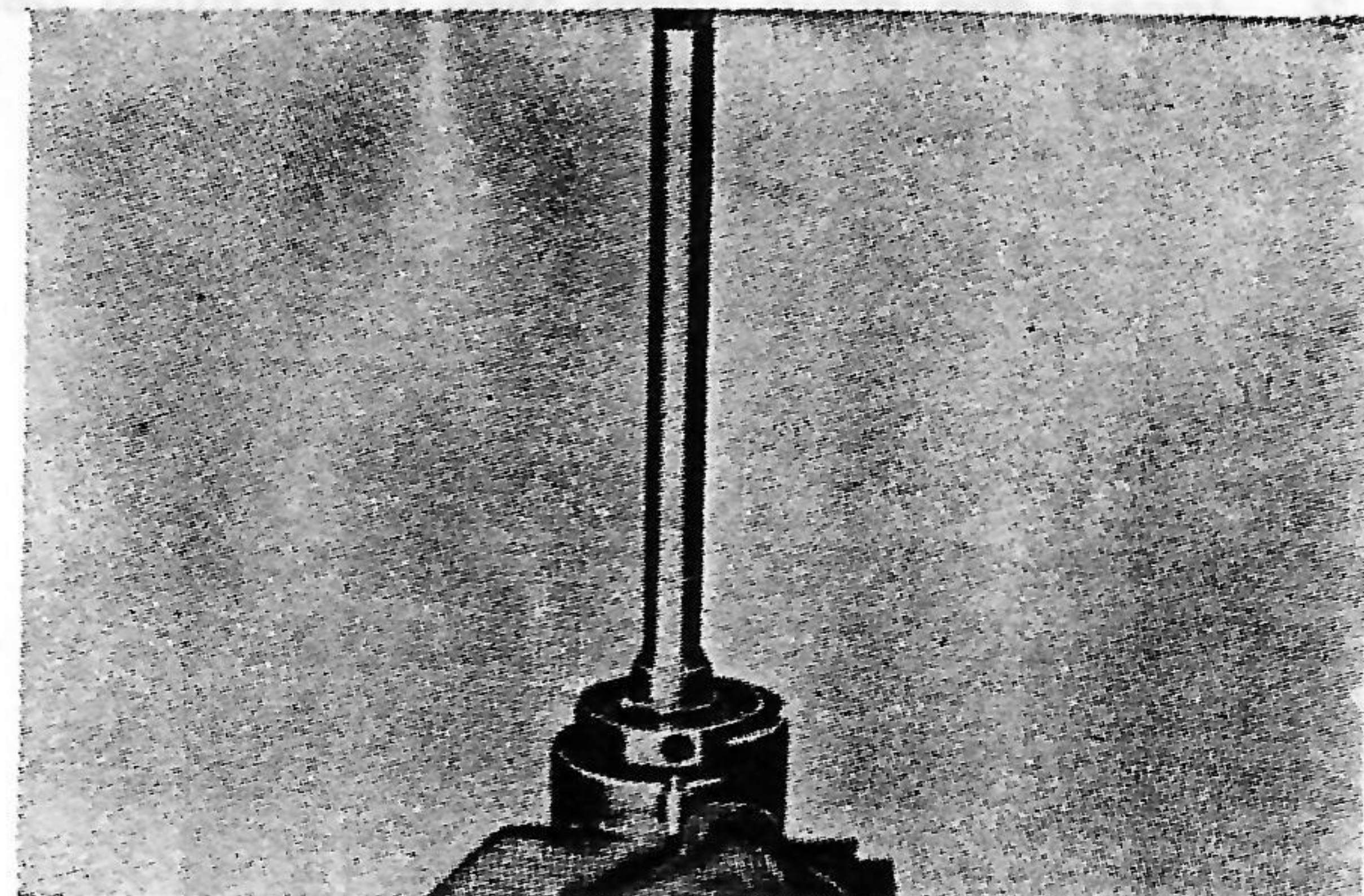


Figure 55

Ensure that the pawl deflector is in the second gear position before it is assembled on to the engine.

Assembly of Clutch Bell

Fit the Clutch bell into the bearing on the RH Crankcase and secure it with the circlip (Fig - 56)

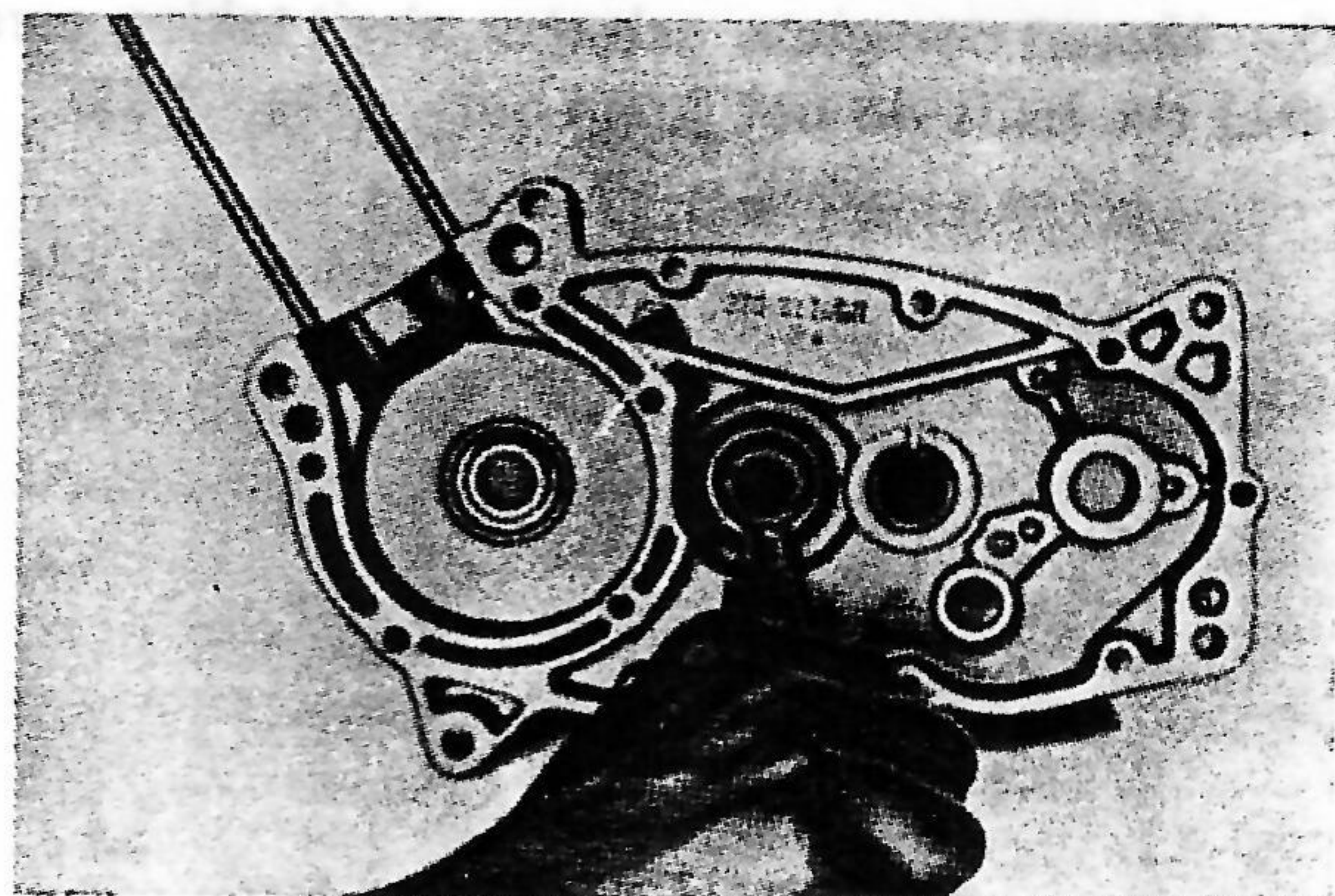


Figure 56

Fitting Kickstarter Shaft, Main Shaft and Selector Shaft onto the RH Crankcase

The following sequence must be carried out when assembling the Gear box after all shafts have been gauged.

1. Fit the gauged kickstarter shaft ensuring that the ratchet spring hooks on to the split spring - dowel (Fig - 57).

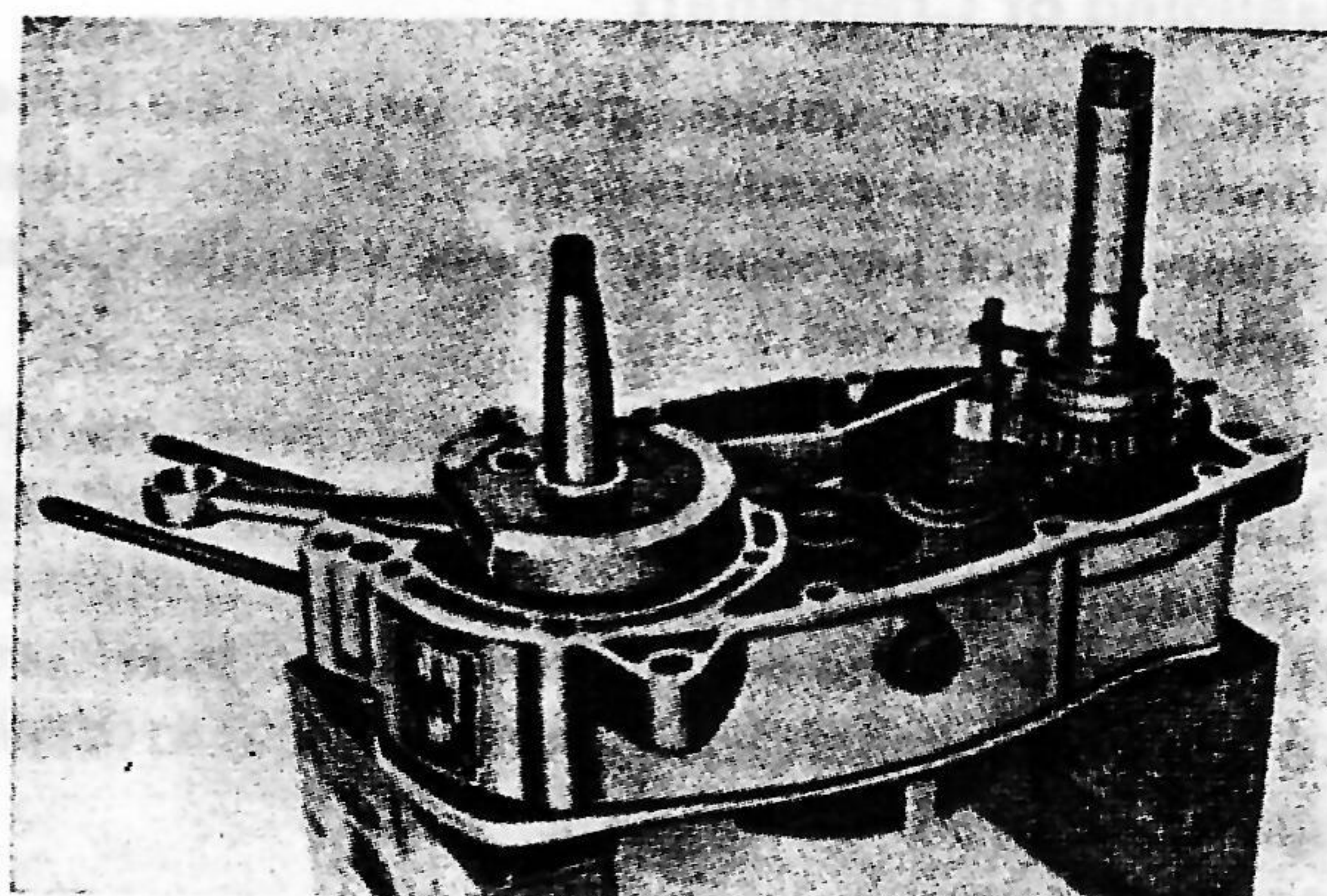


Figure 57

2. Insert the main shaft into the Clutch bell (Fig - 58)

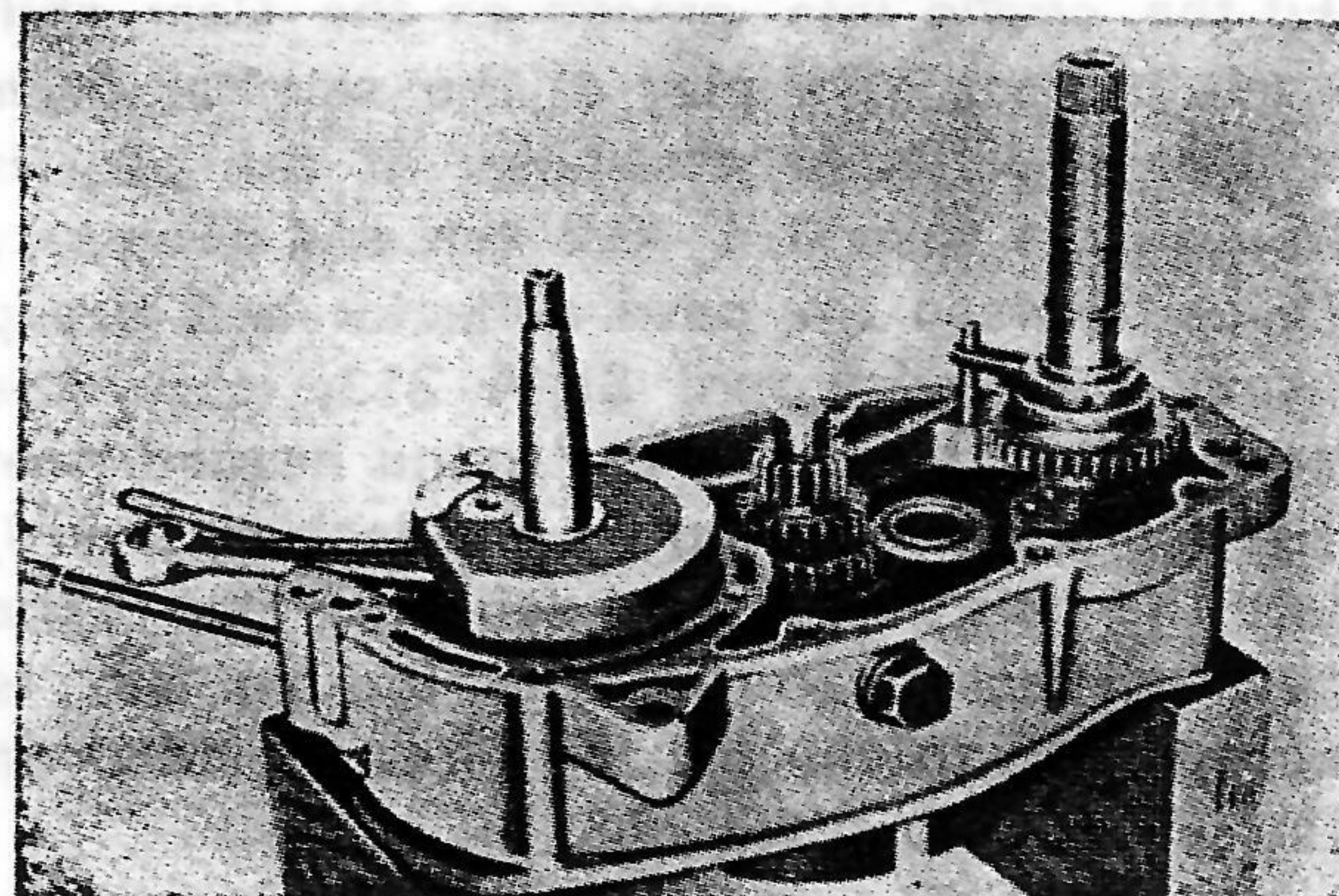


Figure 58

3. Mount complete selector shaft taking care that the balls do not jump out. (Fig - 59)

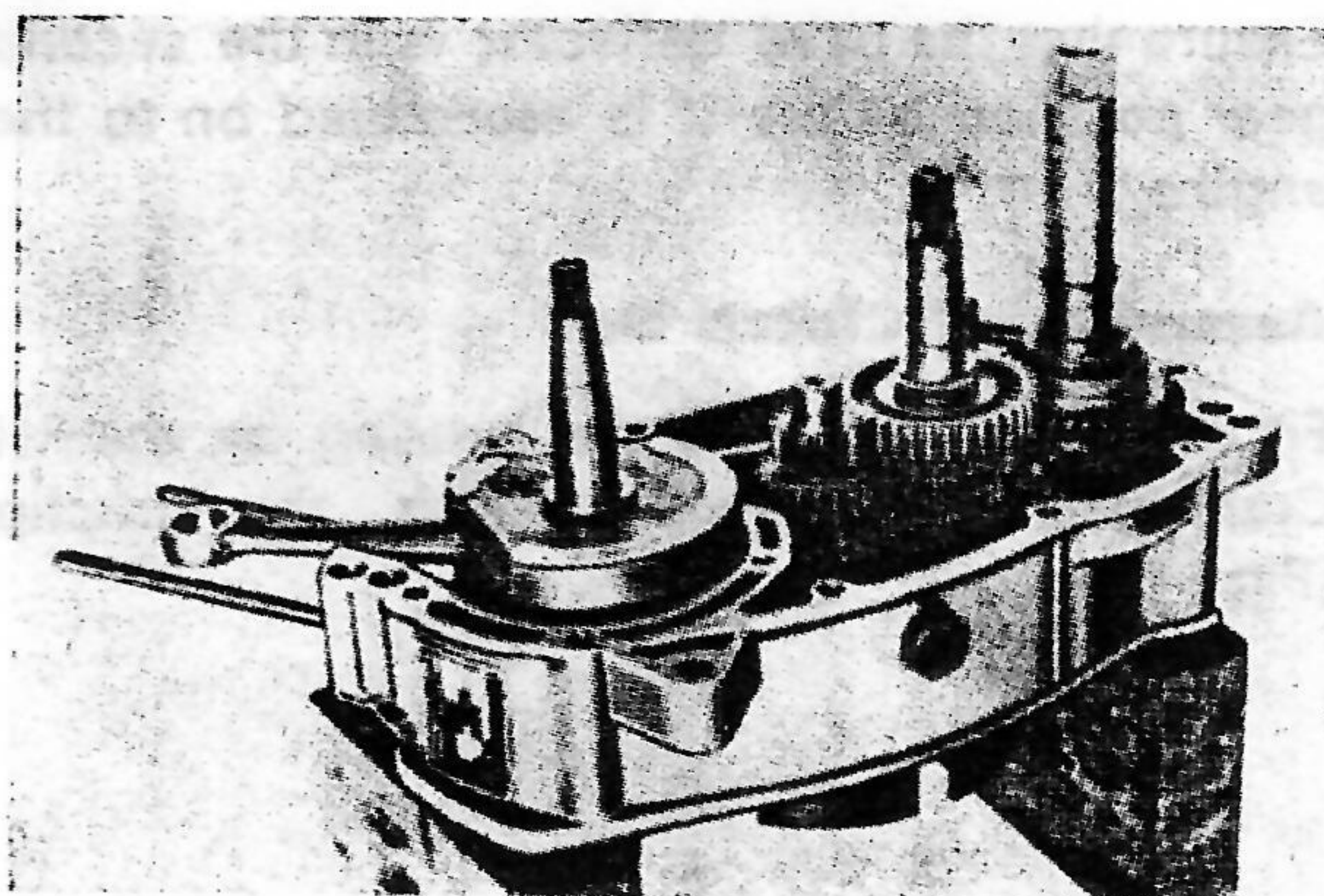


Figure 59

Gauging of Crankshaft

The following values given below are to be understood as examples only i.e. the figures given do not necessarily agree with the values actually measured.

Before fitting the centre gasket onto the LH Crankcase, immerse the gasket for a few minutes in water. Fit the gasket onto the LH crankcase. Measure from the sealing face to the inner race of the Crankshaft ball bearing with a depth gauge (Fig - 60)

Example 18.3 mm

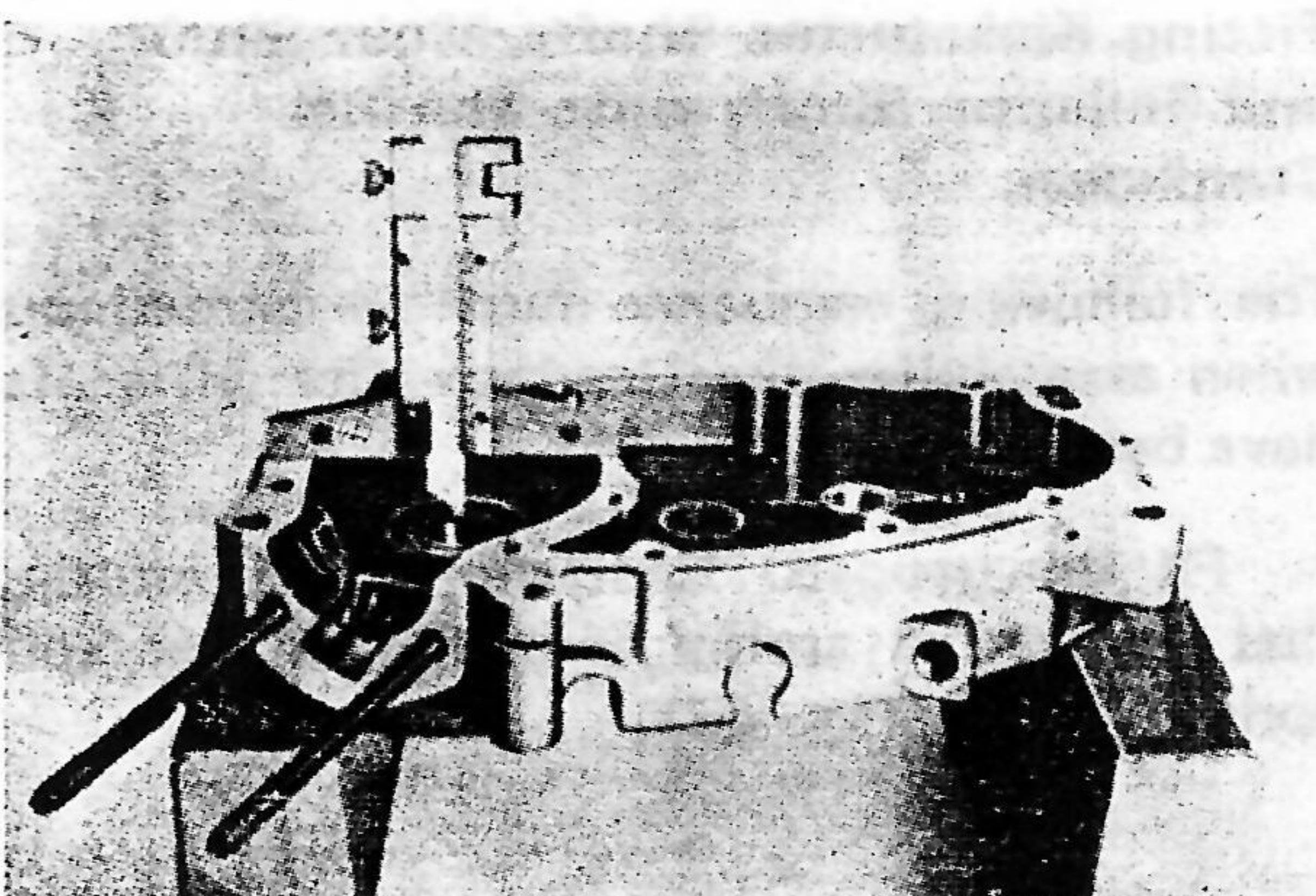


Figure 60

Mount gauging yoke SK-A 206 on the RH casing as shown in figure - 61. Using a depth gauge measure the dimension from the top of the gauging yoke to the washer (Bevelled) on the Crankweb.

Example : 42.3 mm

The height of the gauging yoke is 60 mm

Actual dimension = $60 - 42.3 = 17.7$ mm

Example : $18.3 - 17.7 = 0.60$ mm

To maintain the required axial play of 0.1 mm fit shims of 0.5 mm to the Magneto side of the Crankshaft.

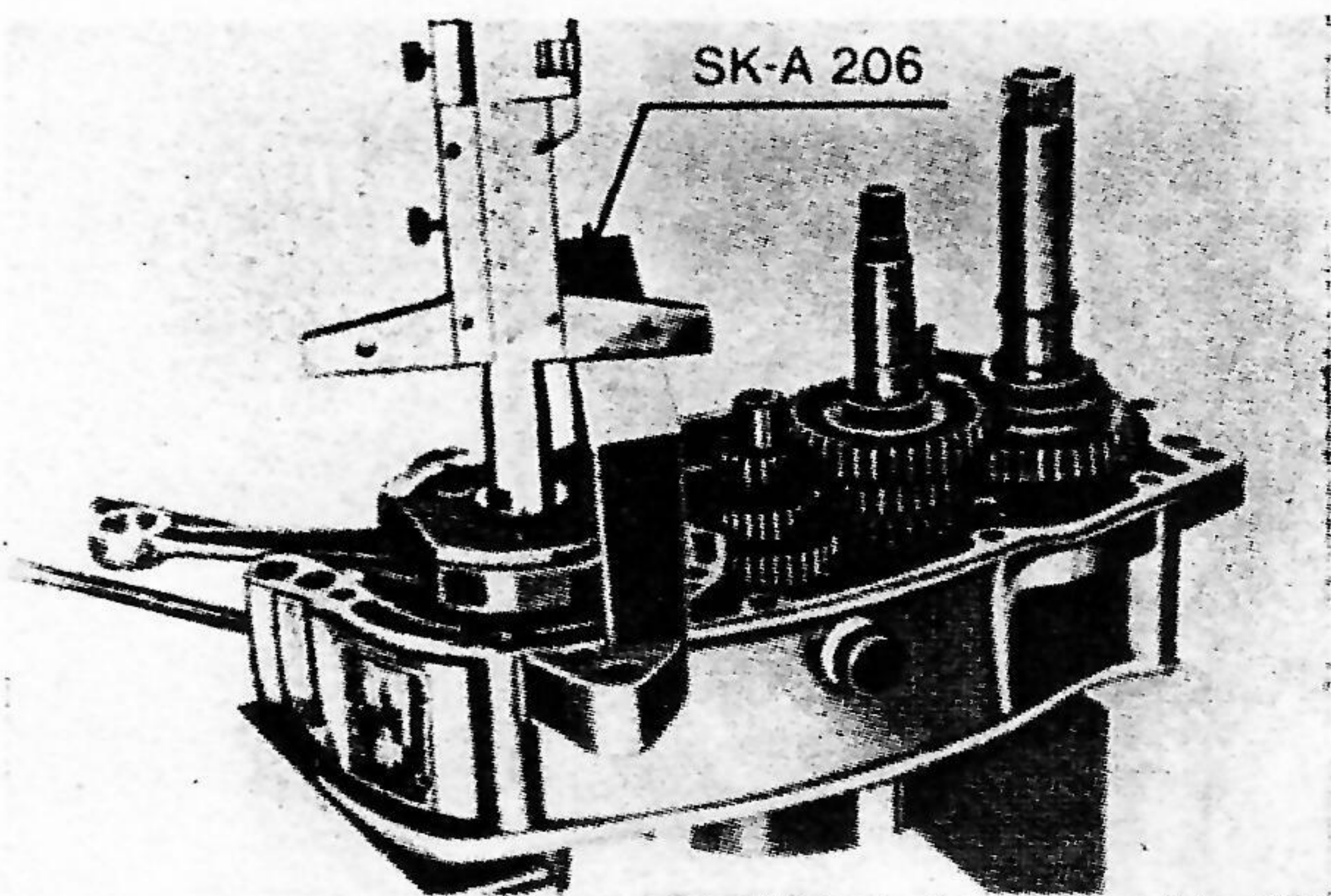


Figure 61

Gauging Kickstarter Shaft

Gauge from gasket face of the LH Crankcase to the face of the Kickstarter bore using a depth gauge (Fig - 62).

Example = 41.1 mm

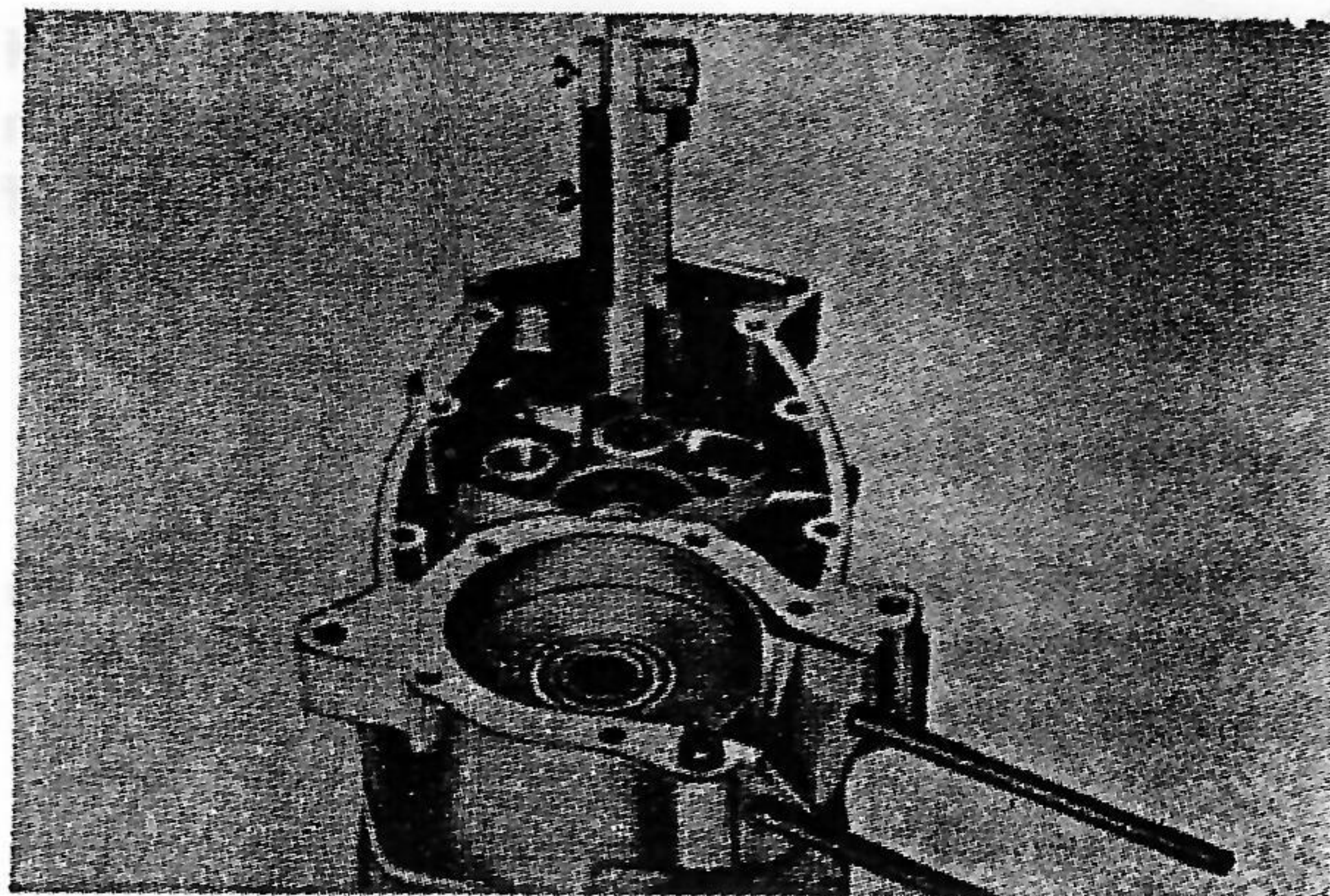


Figure 62

Mount gauging yoke SK-A 206 onto the RH Crankcase as shown in Figure - 63. Using a depth gauge measure the dimension from the top of the gauging yoke to the first circlip from the top.

Example : 19.8 mm

Since the height of the gauging yoke is 60 mm.
Actual dimension = $60.0 - 19.8 = 40.2$ mm

Example : $41.1 - 40.2 = 0.9$ mm

To maintain the required axial play of 0.1 mm to 0.2 mm fit shims of 0.7 mm to 0.8 mm ahead of the circlip on the shaft.

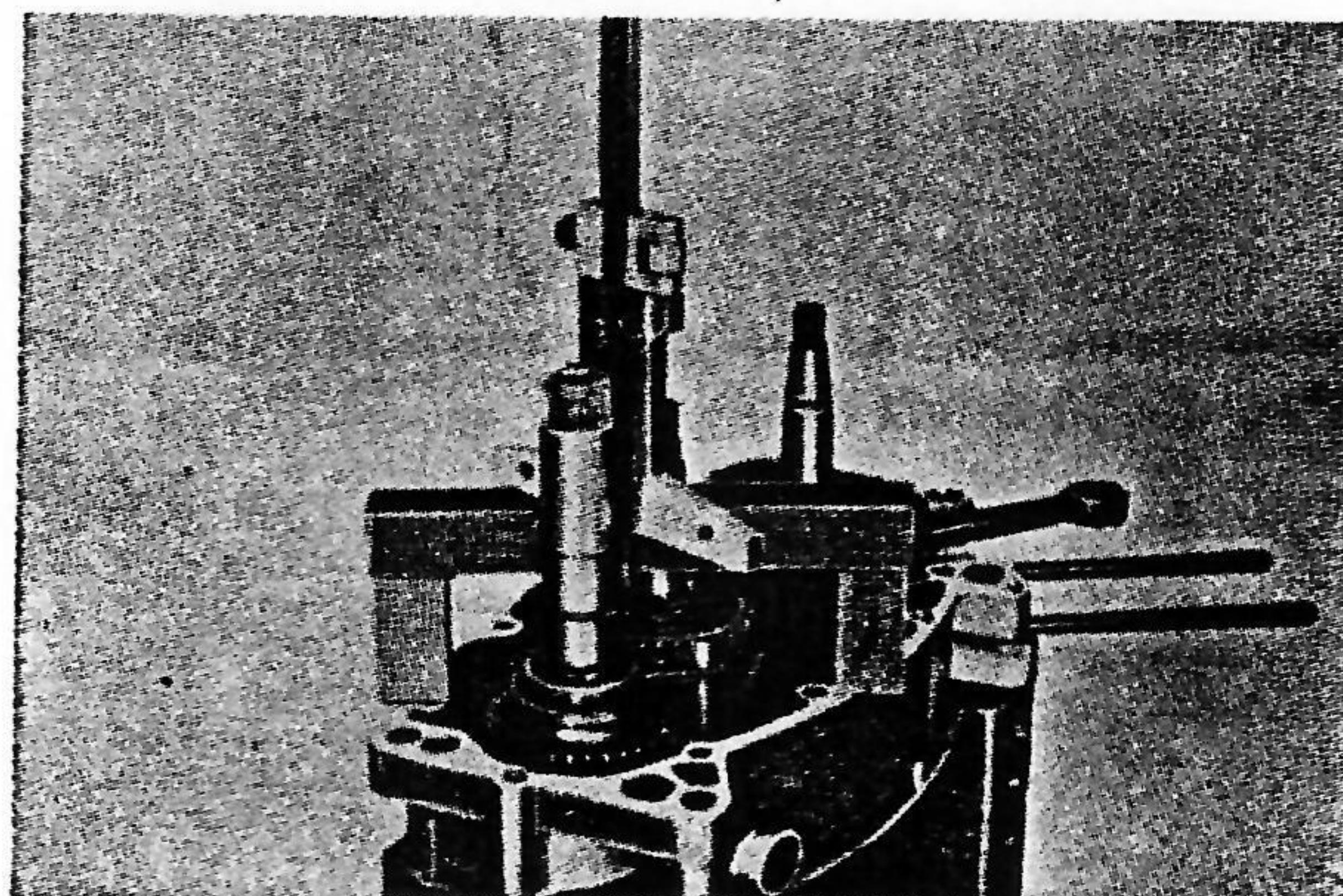


Figure 63

Gauging Selector Shaft

Gauge from gasket face of the LH Crankcase to the inner race of the selector shaft bearing using a depth gauge (Fig - 64).

Example : 41.4 mm

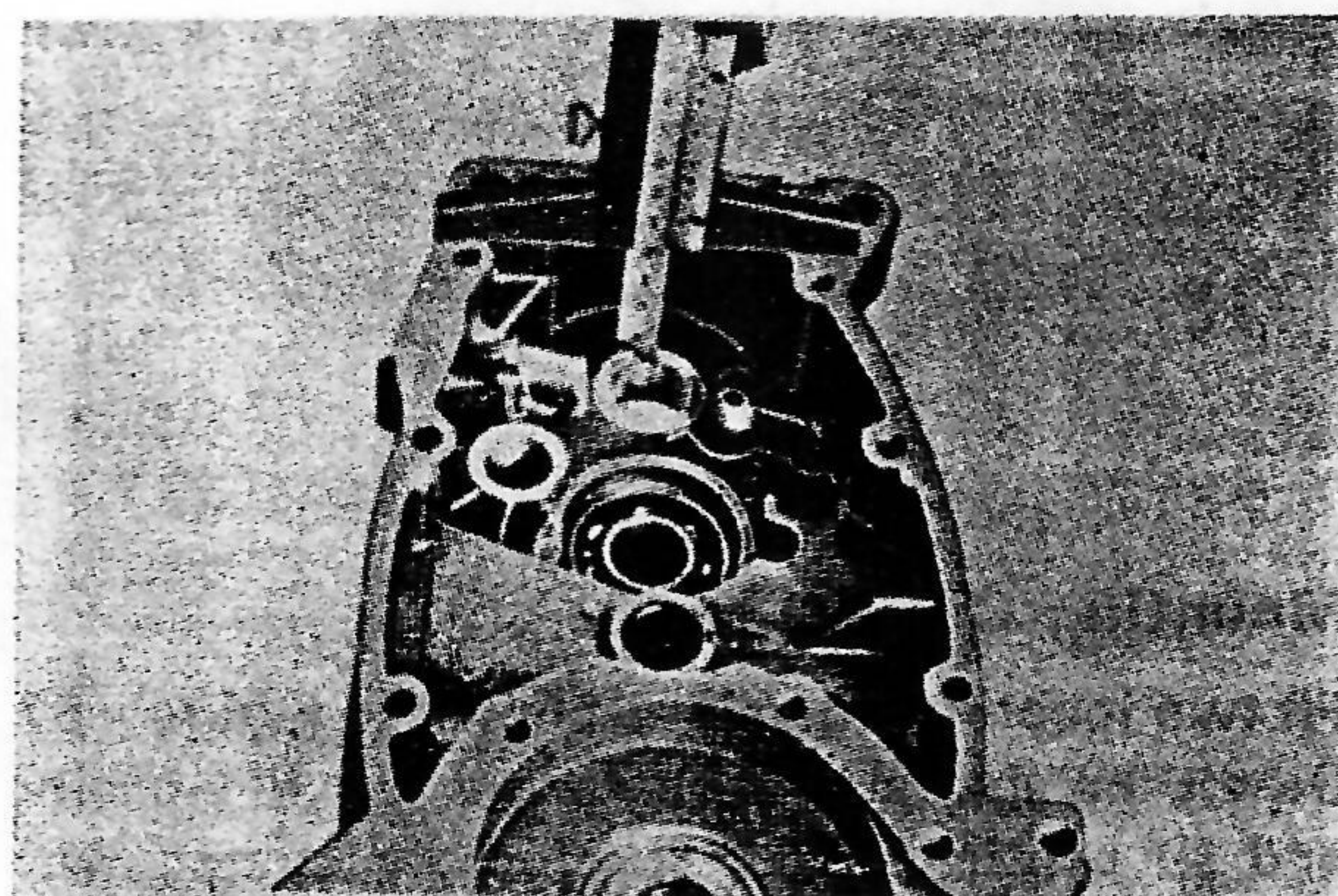


Figure 64

Mount gauging yoke SK-A 206 onto the RH casing as shown in Figure - 65. Using a depth gauge measure the dimension from the top of the gauging yoke to the end face of the distance piece.

Example : 19.2 mm

Since the height of the gauging yoke is 60 mm
Actual dimension = $60.0 - 19.2 = 40.8$ mm

Example : $41.4 - 40.8 = 0.6$ mm

To maintain the required axial play of 0.1 mm fit shims of 0.5 mm at the selector shaft collar.

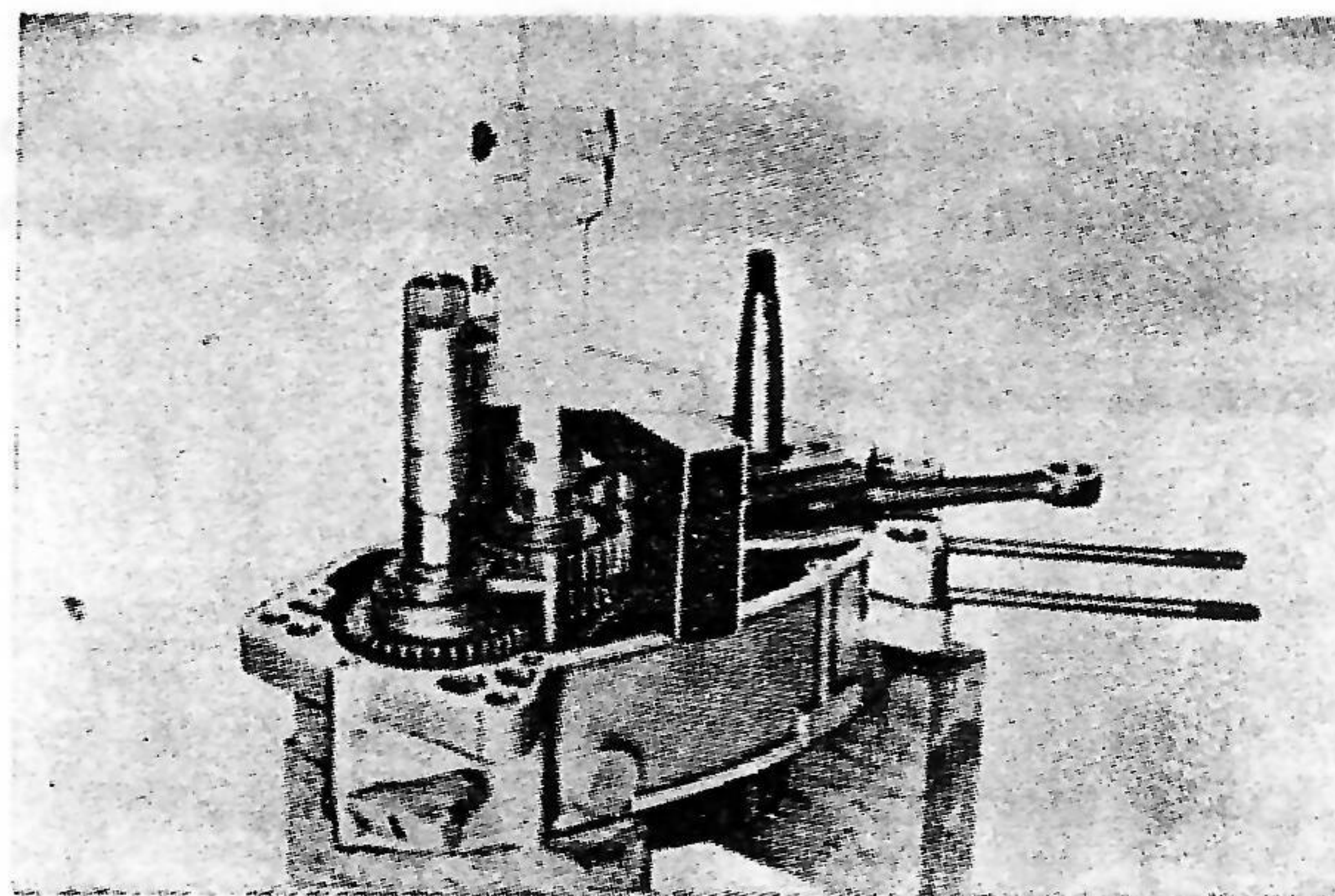


Figure 65

Shimming of Crankshaft, Selector shaft and Kickstarter Shaft (Fig - 66).

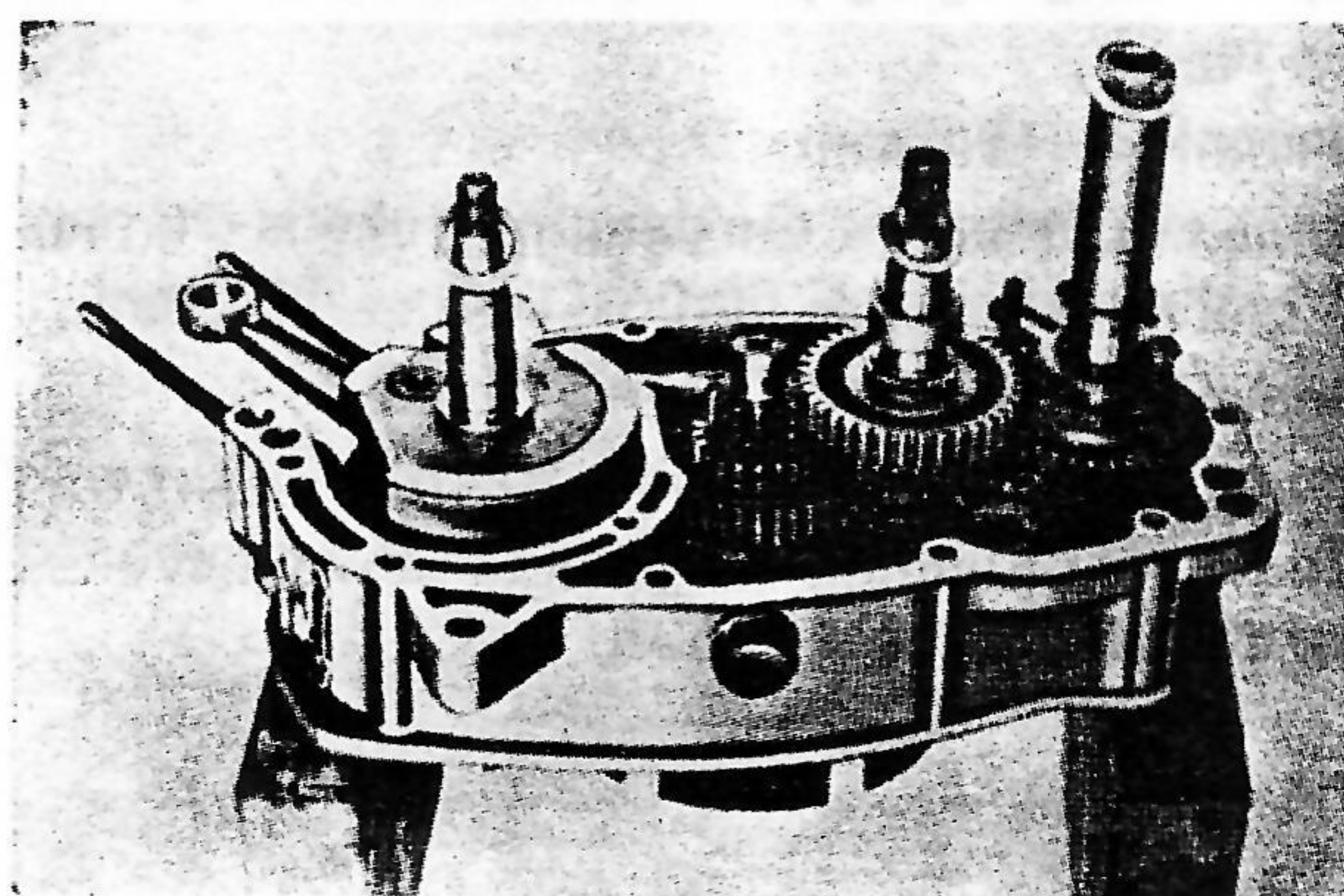


Figure 66

Mounting Crank Case

Fit two locating dowels as shown in Figure - 67. Oil all the shafts and gears on the RH casing and fit centre gasket (preferably coated with grease).

Heat the inner race of the Crankshaft bearing on the LH crankcase with a brass mandrel to a temperature of 100 to 110°C and offer the LH casing onto the crankshaft.

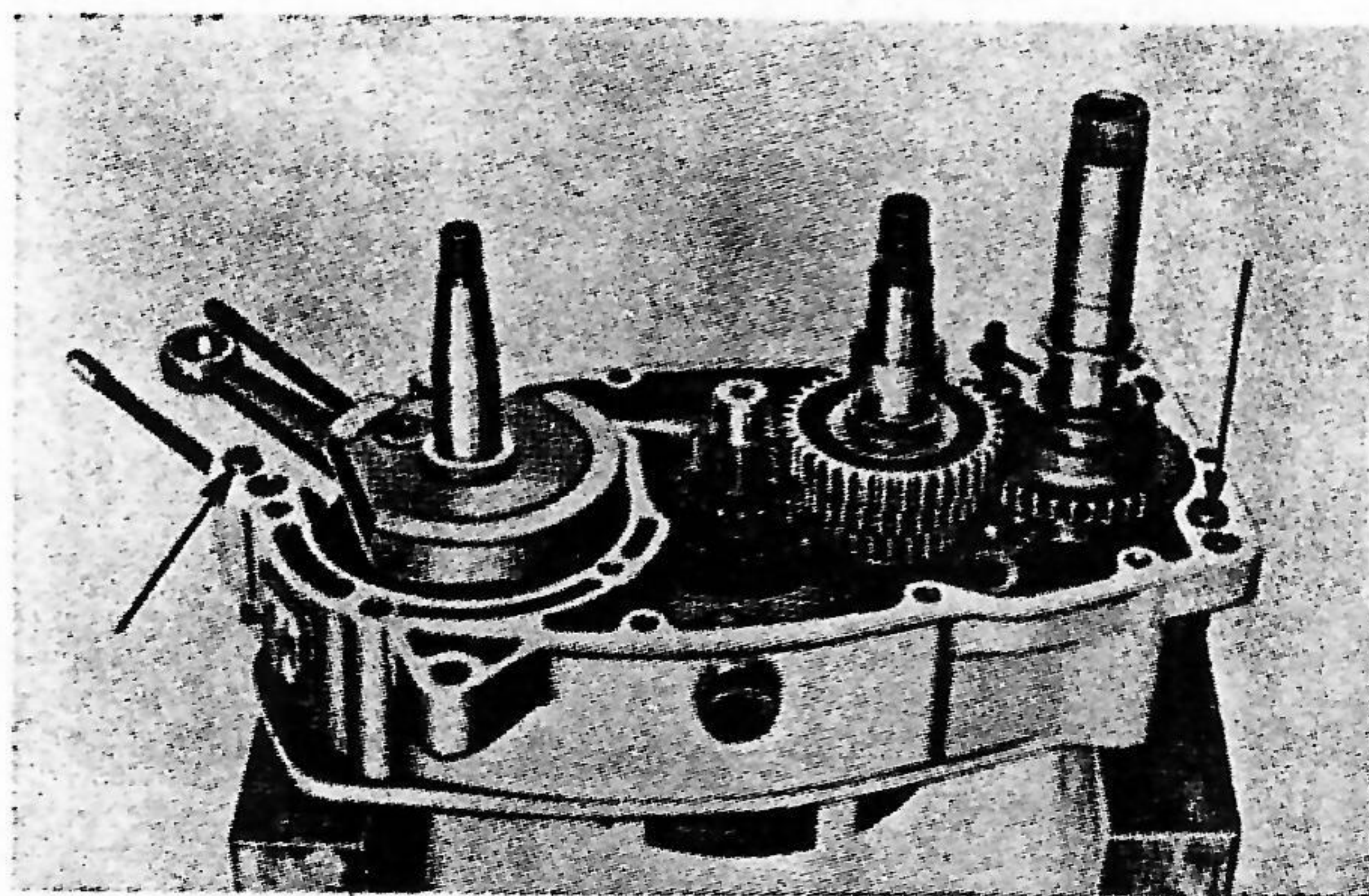


Figure 67

Mount screws as shown in figures 68 and 69.

A = M6 × 35 (2 screws)

B = M6 × 65 (1 screw)

C = M6 × 50 (1 screw)

Check for free rotation of all shafts. If found tight, slightly tap the shaft with a nylon mallet.

Drawing Selector Shaft into Ball Bearing of LH Crankcase

Mount ring No. SK-E 003 onto the selector shaft flush against the casing, fit the final drive sprocket and tighten the nut fully. This is done to ensure that the selector shaft is drawn fully out. Take off the nut, sprocket and the ring. (Fig - 70)

Fitting the Oil Seals on the LH Casing

Fit the engine onto the fixture SK-A 314 and clamp the whole assembly into the vice.

Before fitting the oil seals smear the lips of the oil seal with oil.

Fit oil seal for Crankshaft with punch MV-6-961 (Fig - 71)

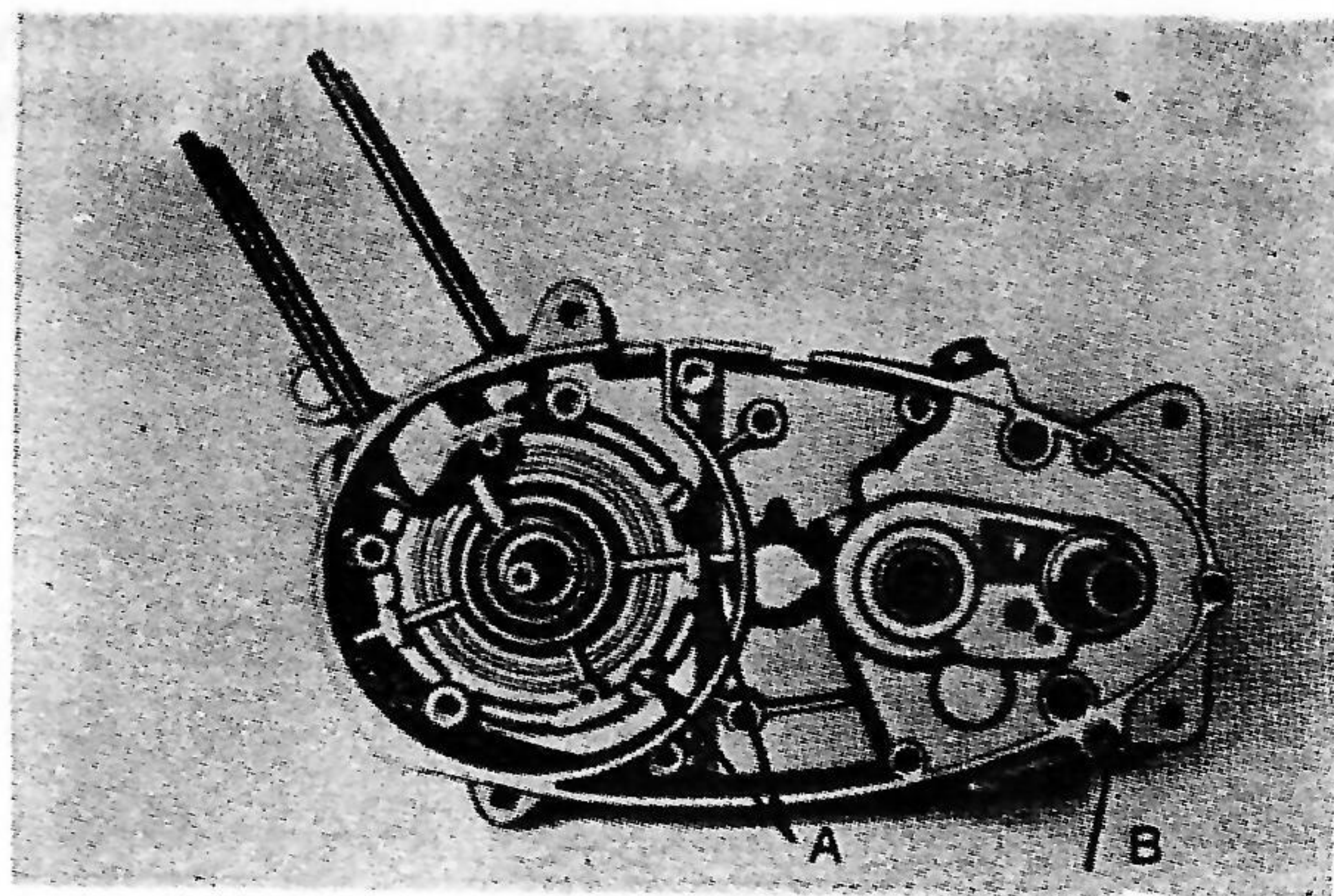


Figure 68

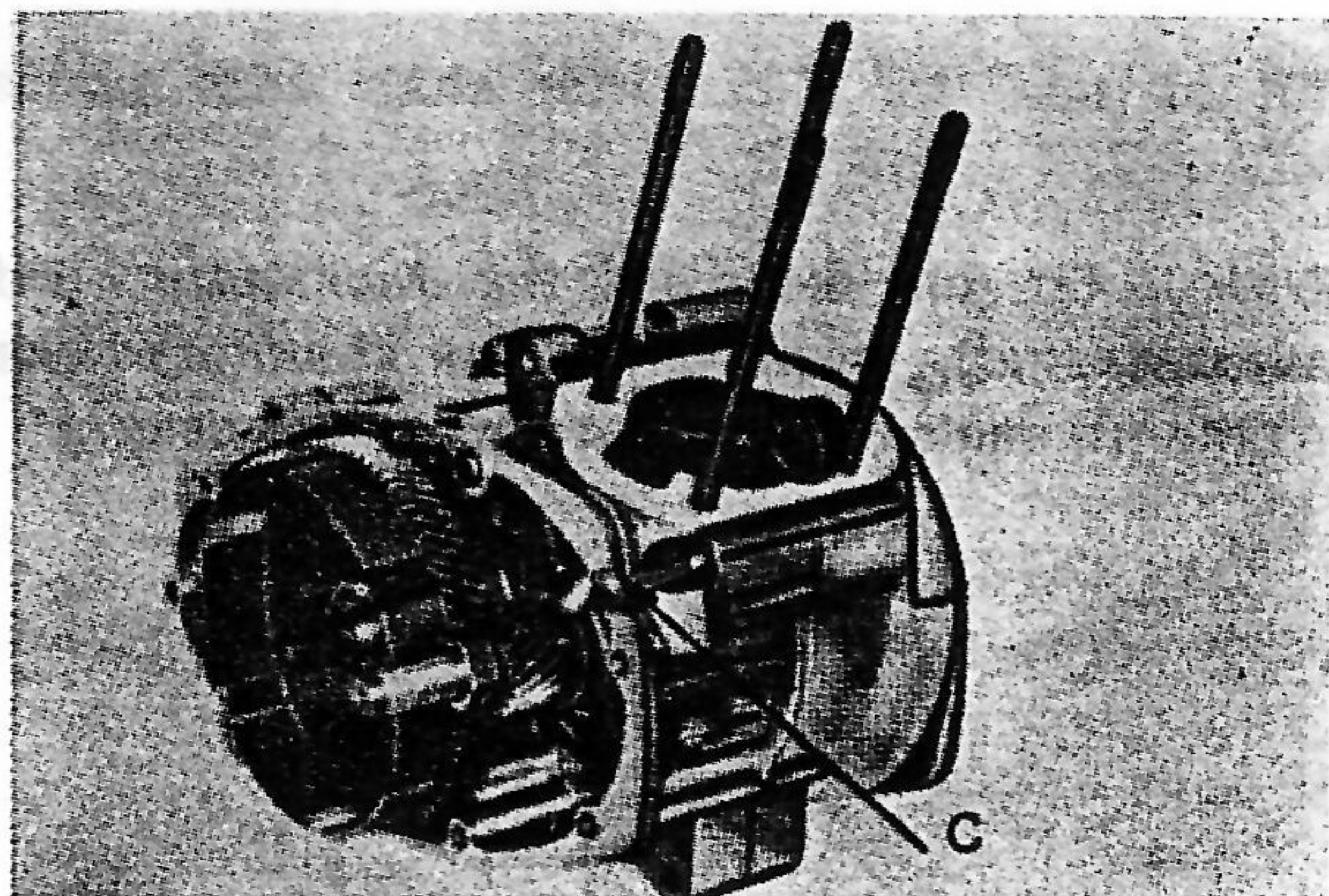


Figure 69

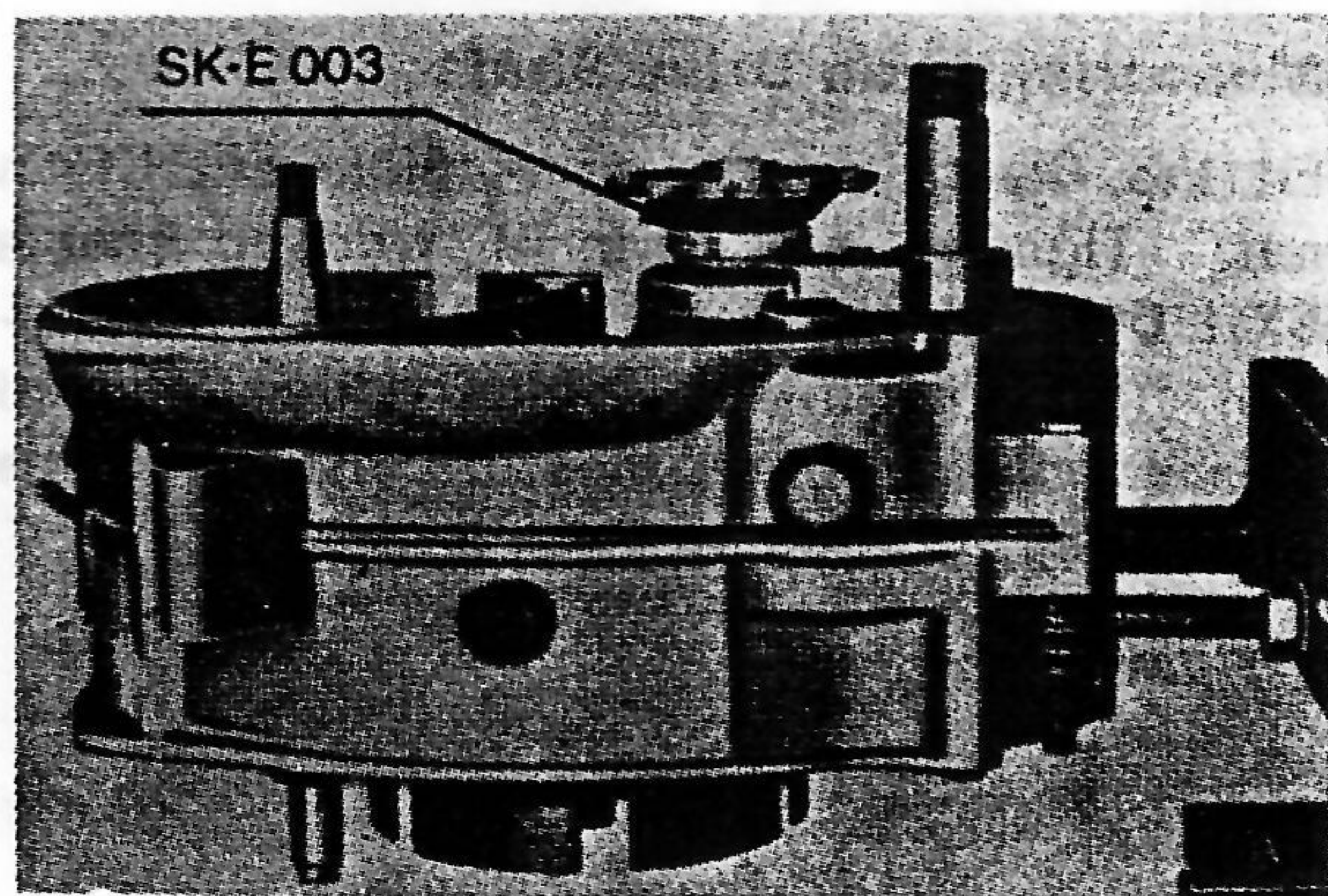


Figure 70

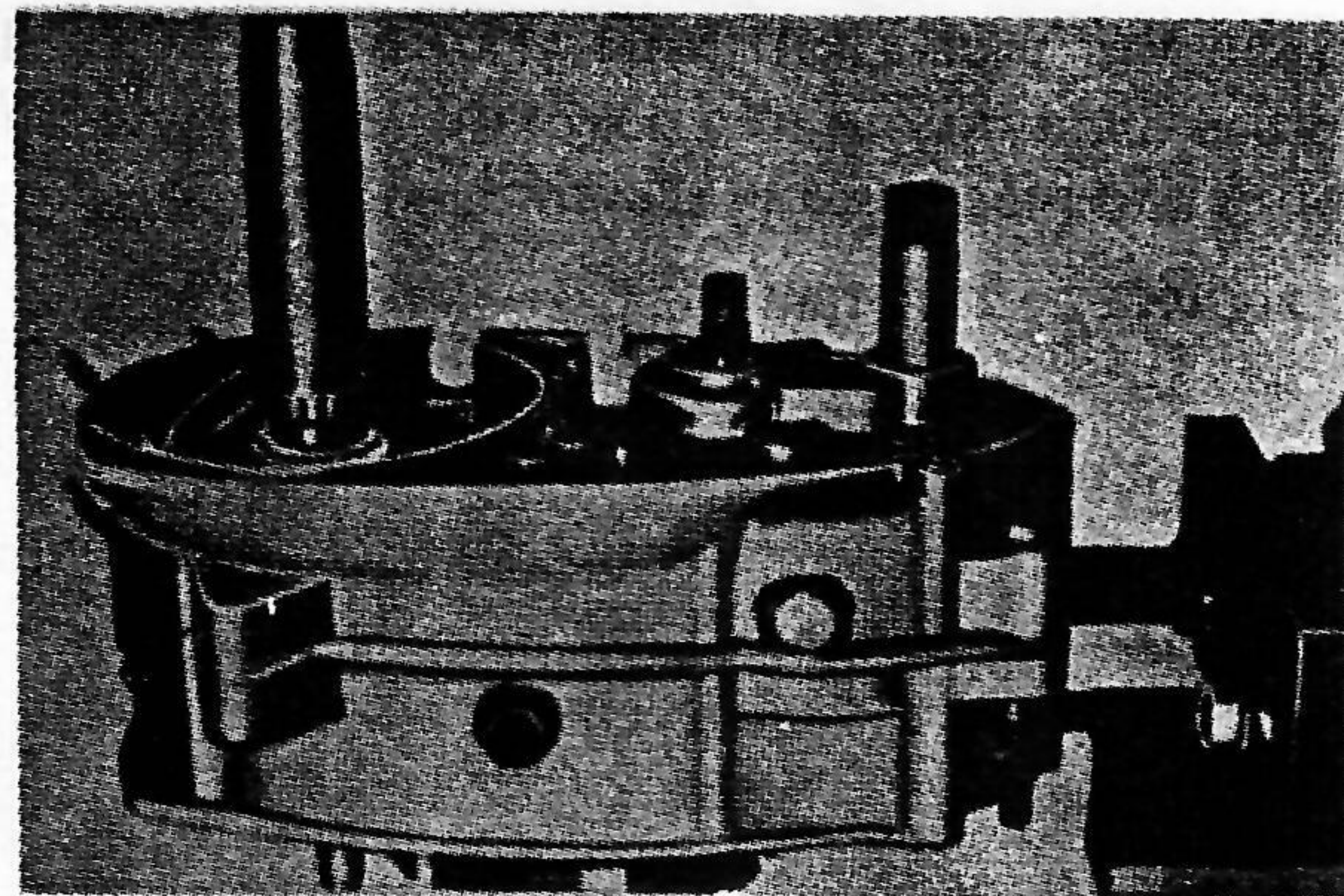


Figure 71

Fit oil seal for selector shaft with assembly socket sleeve SKA-960 and drive it home by tapping with punch MV-6-961. (Fig - 72).

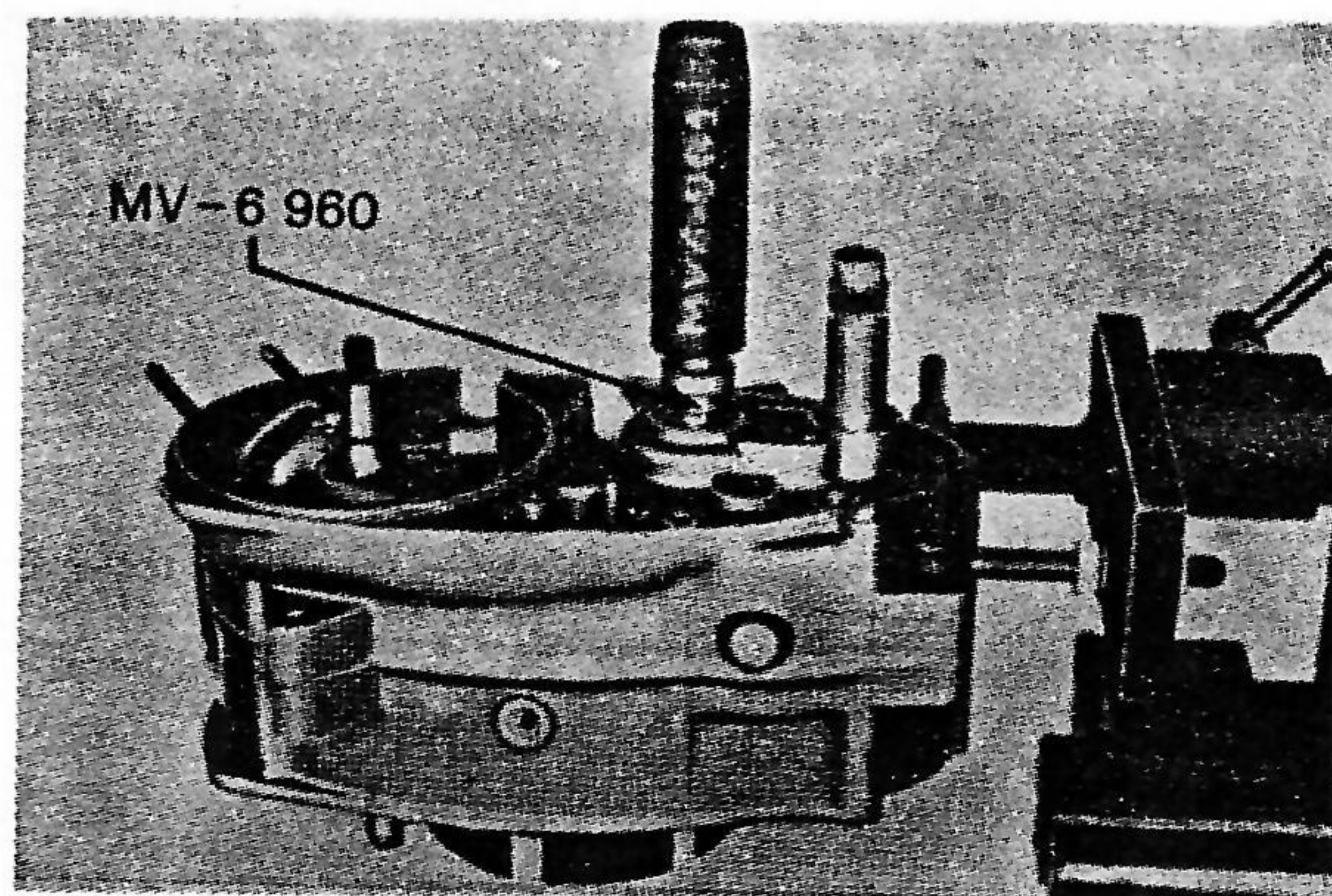


Figure 72

Fit oil seal for Kickstarter shaft with punch MV-6-734 (Fig - 73).

Note: Fit oil seals for the Kickstarter and selector shafts, noting that the chamfered side of the oil seals must face towards the casing.

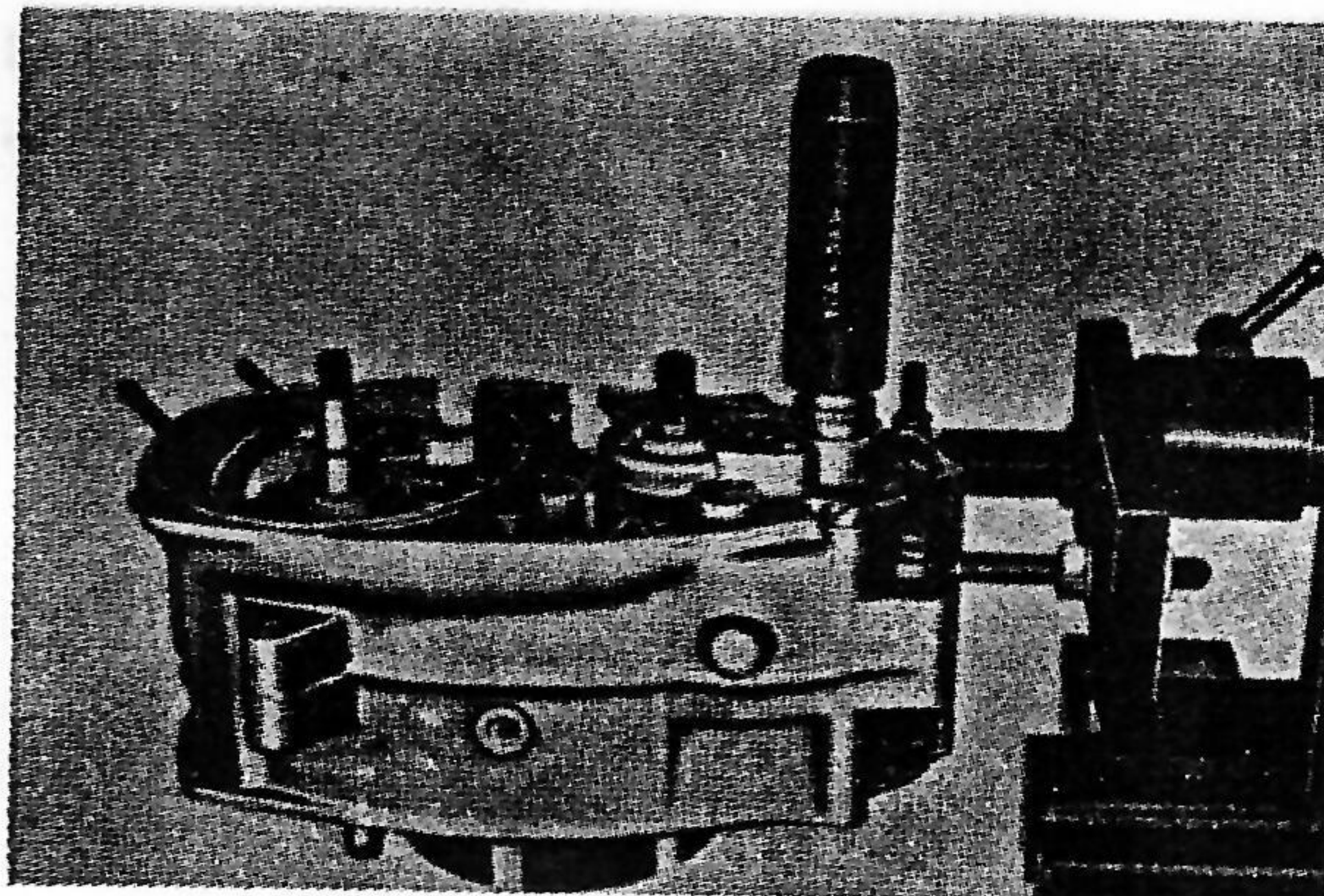


Figure 73

Measuring Main Drive Shaft

Fit the Clutch pinion, cover plate and Clutch nut. Tighten, and with a wooden spatula SK-E 001 shift the cover plate to the top position. Then with the depth gauge inserted through marking bore, measure distance to the Clutch bell. (Fig - 74).

Example: 22.5 mm

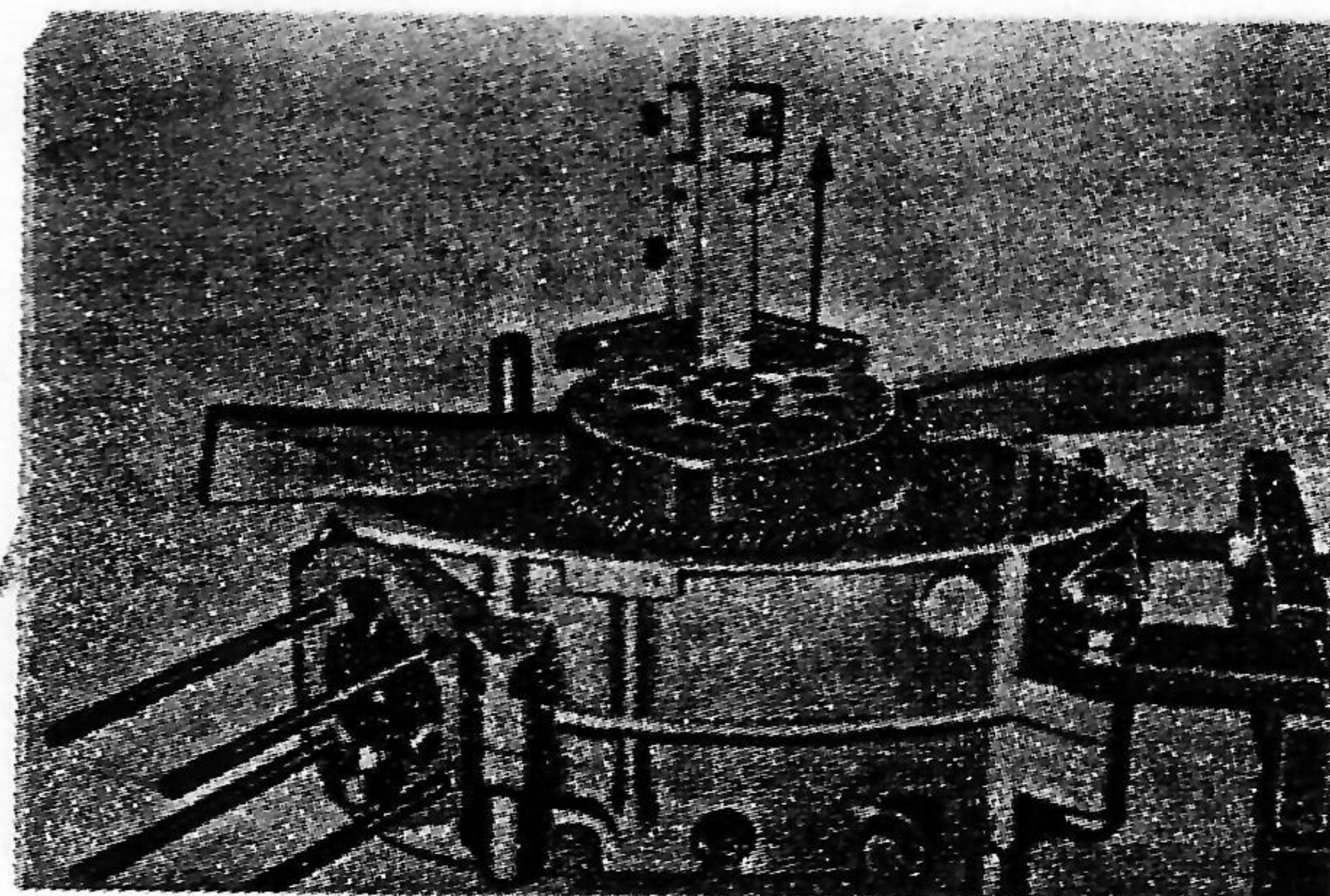


Figure 74

Take the tool away from the cover plate and press main drive shaft down all the way to the stop and measure the distance again (Fig - 75).

Example: 21.8 mm

$$22.5 - 21.8 = 0.7 \text{ mm}$$

(The values listed are only given as examples)

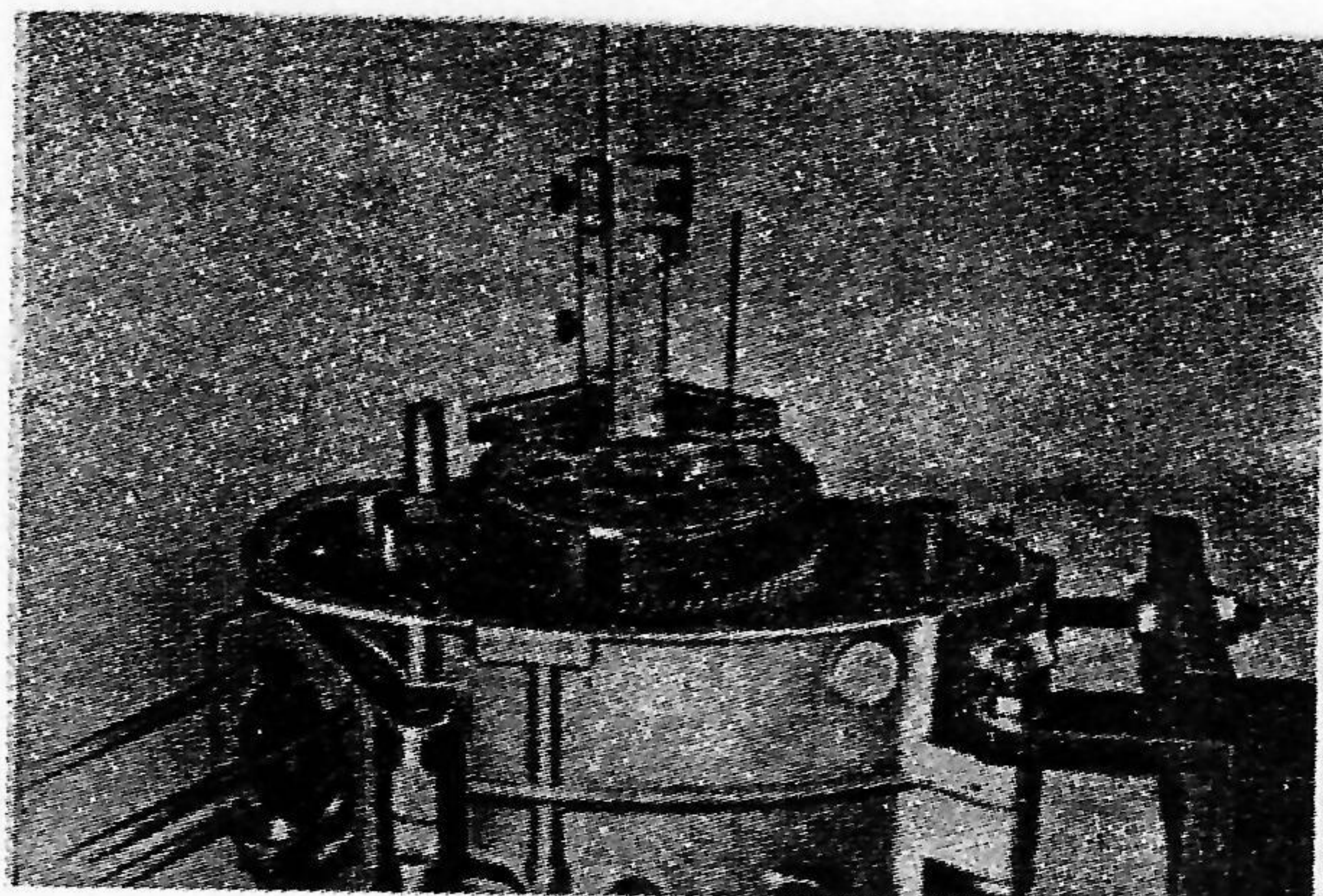


Figure 75

To obtain the required axial play of 0.1 mm, fit 0.6 mm shims between ball bearing in Clutch bell and Clutch pinion (Fig - 76).

Assembling Clutch

Fit the measured shims onto the main drive shaft. Mount the Clutch pinion, Clutch hub, Clutch plates, steel plates, and then fit the cover plate, taking care to align the reference mark on the pinion and Clutch hub. (Fig - 77).

To align bores for the spring cups correctly, the Clutch hub is marked with a reference line and all plates with internal splines have a punched hole for aligning (Fig - 77).

Note that the dished side of the third steel plate must face the gear box. Having placed the fourth Clutch plate in position, fit the cover plate so that dished side again faces the gear box.

Having fitted the cover plate and tab washer, run down the nut, hold the assembly tightly with tool SK-A 297 and tighten nut firmly to a torque of 3.5 Kg-m/25.35 Lbs Ft. (Fig - 78)

Finally, secure nut with tab washer.



Figure 76

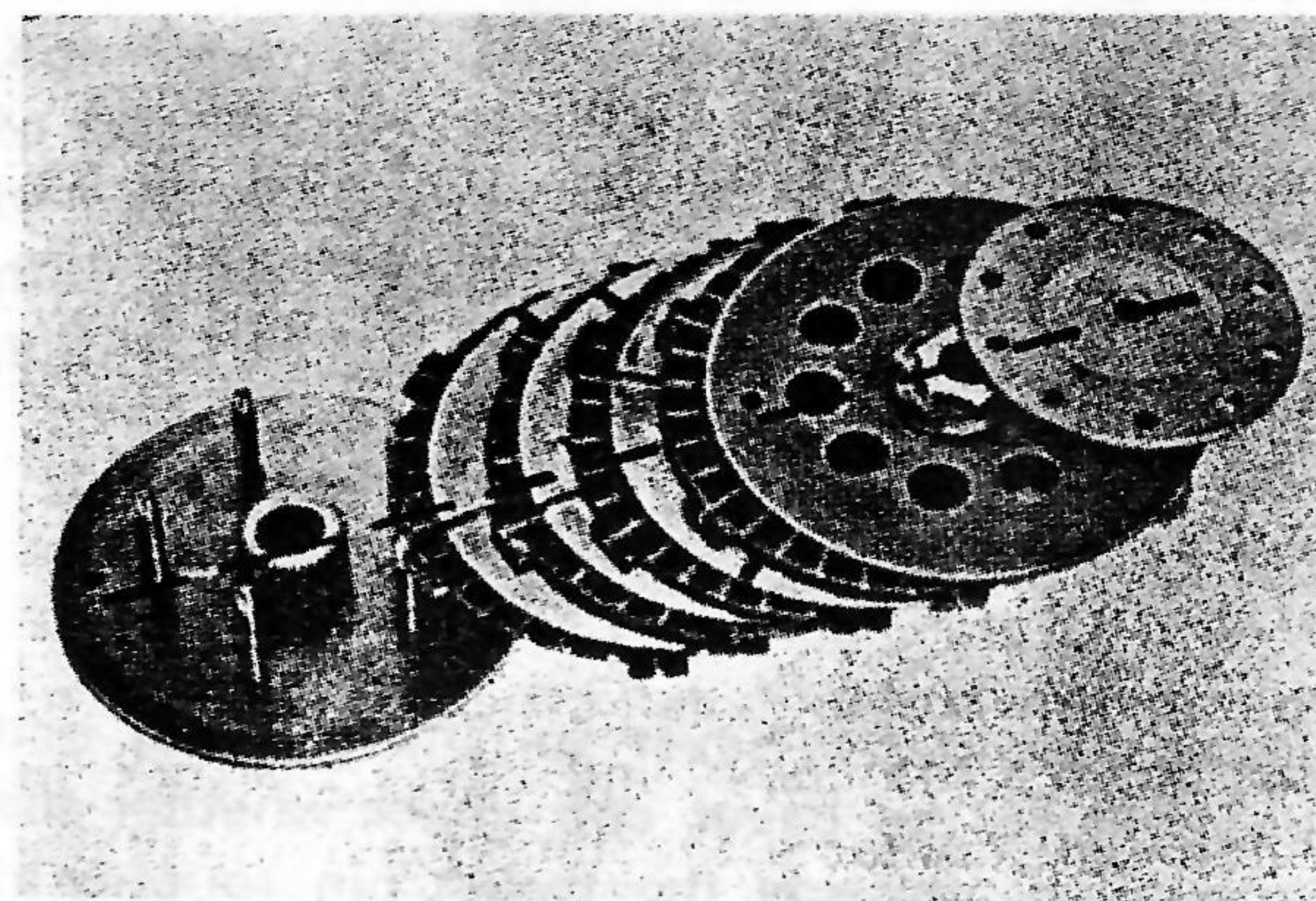


Figure 77

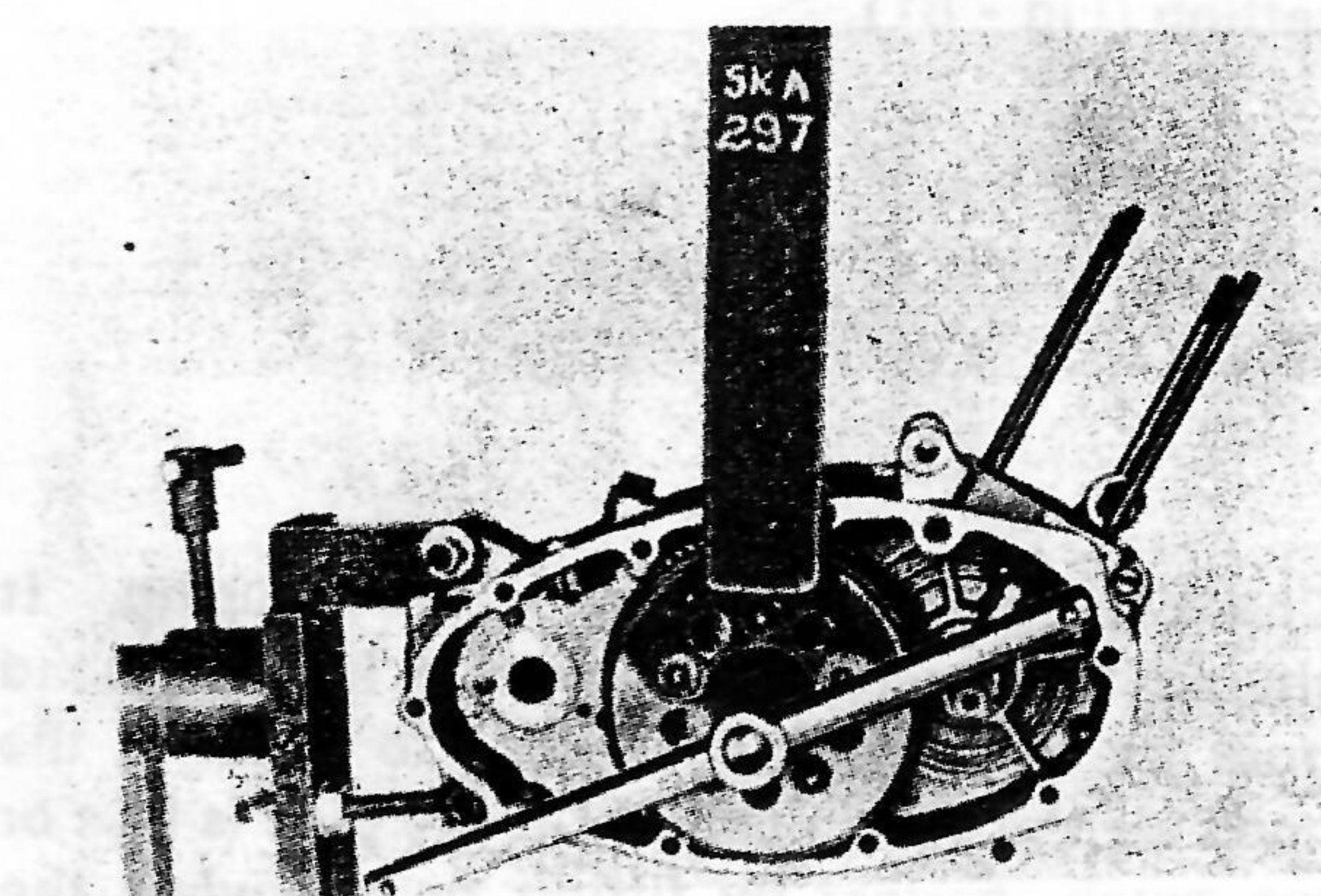


Figure 78

Next, insert the spring cups with clutch springs and fit service tool SK-A 235 with three bolts SK-A 292 and insert thrust plate (with the dished face facing clutch cover) between the clamping bolt of the tool and the clutch springs. Tighten the clamping bolt of the tool and align the thrust plate with the mounting studs till the plate is fully pressed down. Fit the five M4 nuts and evenly tighten. Remove tool and fit thrust pin with washers. (Fig - 79).

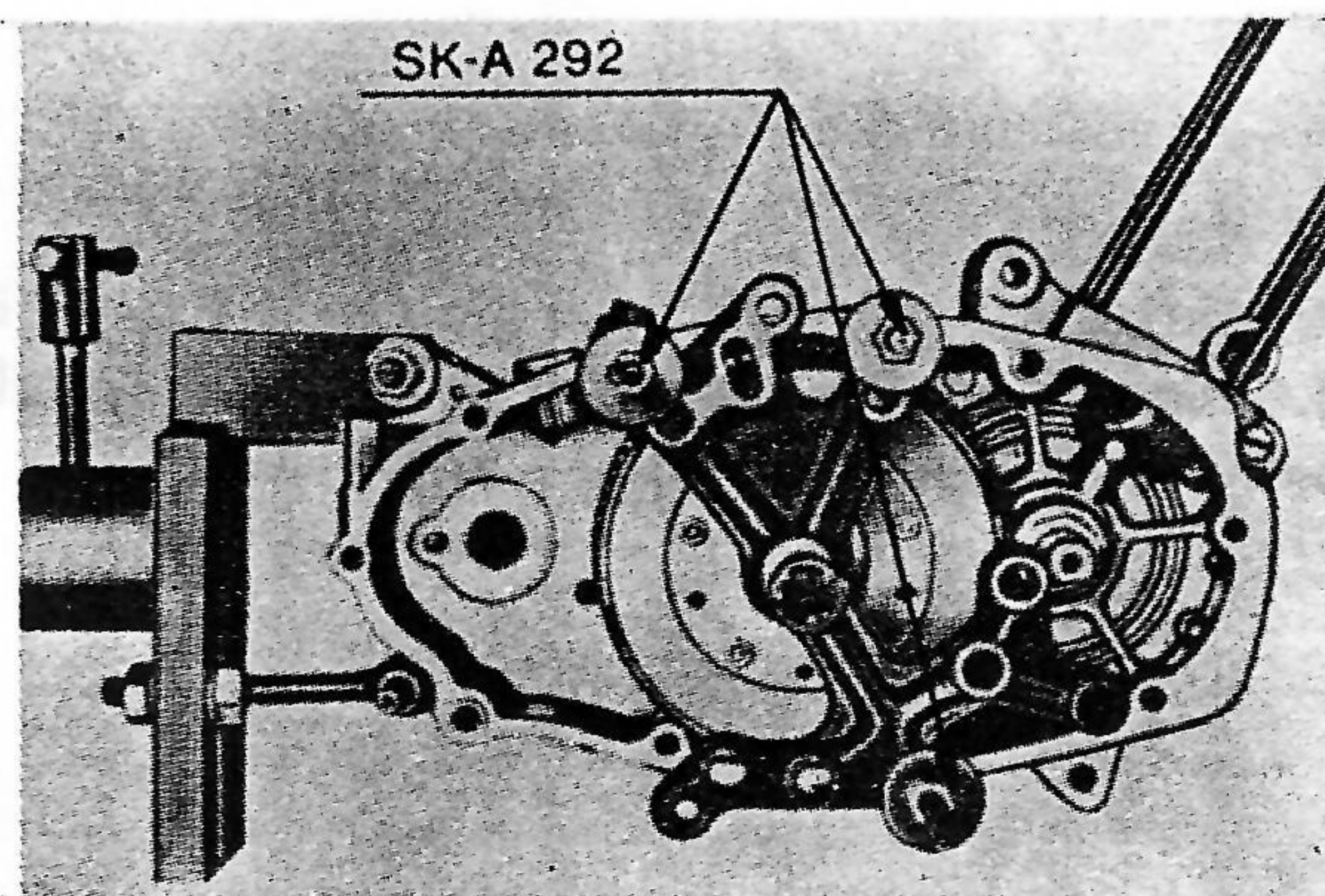


Figure 79

Setting Clutch Tongue and Clutch

To obtain the largest possible resetting range, the thrust pin should contact at the centre of the clutch pad. To do this, first coat the pad with chalk, then fit the clutch cover with gasket and fit four screws (Fig - 80) on LH side.

Operate the clutch lever on the housing and then remove the cover and check whether the clutch pad contacts the thrust pin roughly at the centre. If it does not, reset with the screw for the clutch pad on the cover and check new setting (Fig - 81).

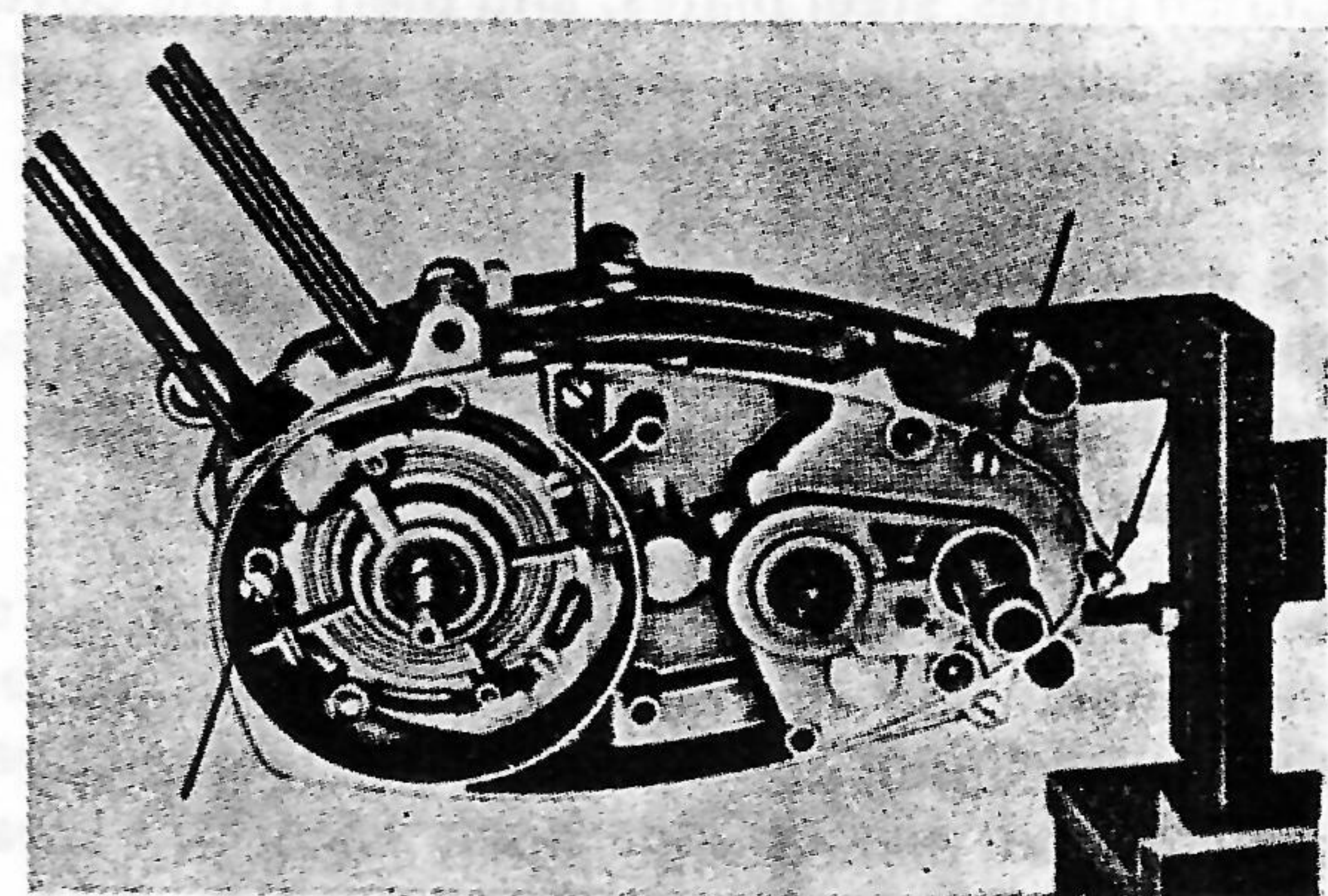


Figure 80

Check the clutch lever play at the housing. It should be possible to move the lever by hand from its rest position about 4 to 6 mm at the hook for the clutch cable. If the play is less or too much, correct by fitting or removing the appropriate number of washers under the thrust pin.

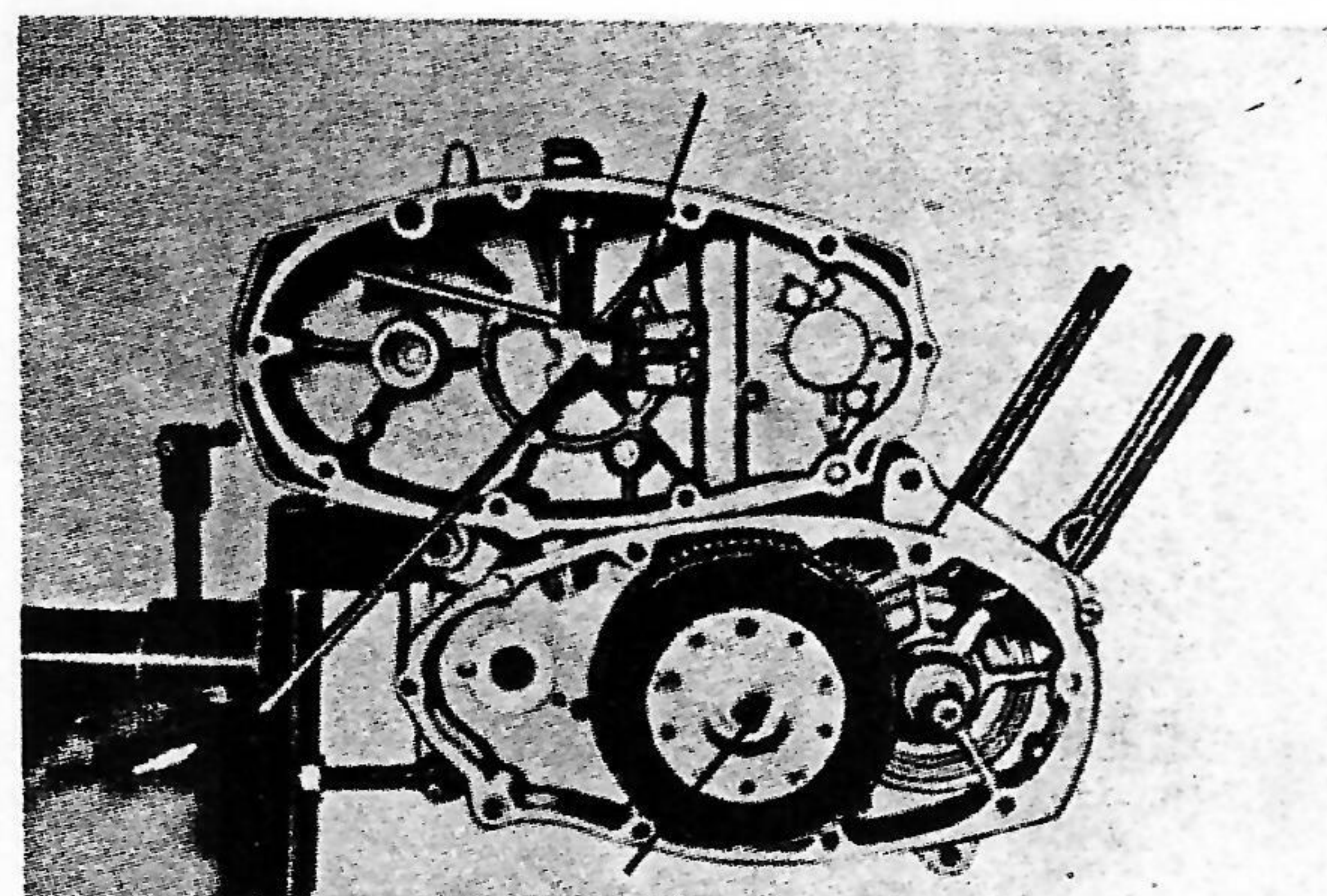


Figure 81

•Assembly of Gear Selector mechanism and Clutch Cover

Ensure that the push rod is in the second gear position.

Position the shift fork onto the push rod. Introduce the Gear shift shaft assembly into the kickstarter shaft. Note that the helical groove engages with the sliding pin on the shift fork and also the tapered groove on the pawl deflector engages with the pin provided in the crankcase (Fig - 82) (The pin in the crankcase should not project more than 7.5 mm from crankcase).

Insert the locking dowels onto the RH crankcase and fit the clutch cover gasket. Then mount the clutch cover onto the crankcase, ensuring that the guide rod in the clutch cover enters smoothly into the shift fork. Check the fitment of the shift fork before closing the cover.

Introduce one screw M6 \times 50, as shown in figure - 83 and run it down firmly.

Introduce the screws A to H shown in figure-84; tighten it.

A, B, & C = M6 \times 120

D, E, F, G, H = M6 \times 98

(Screw bolt L with cable clip to be fitted only after Magneto stator plate has been mounted).

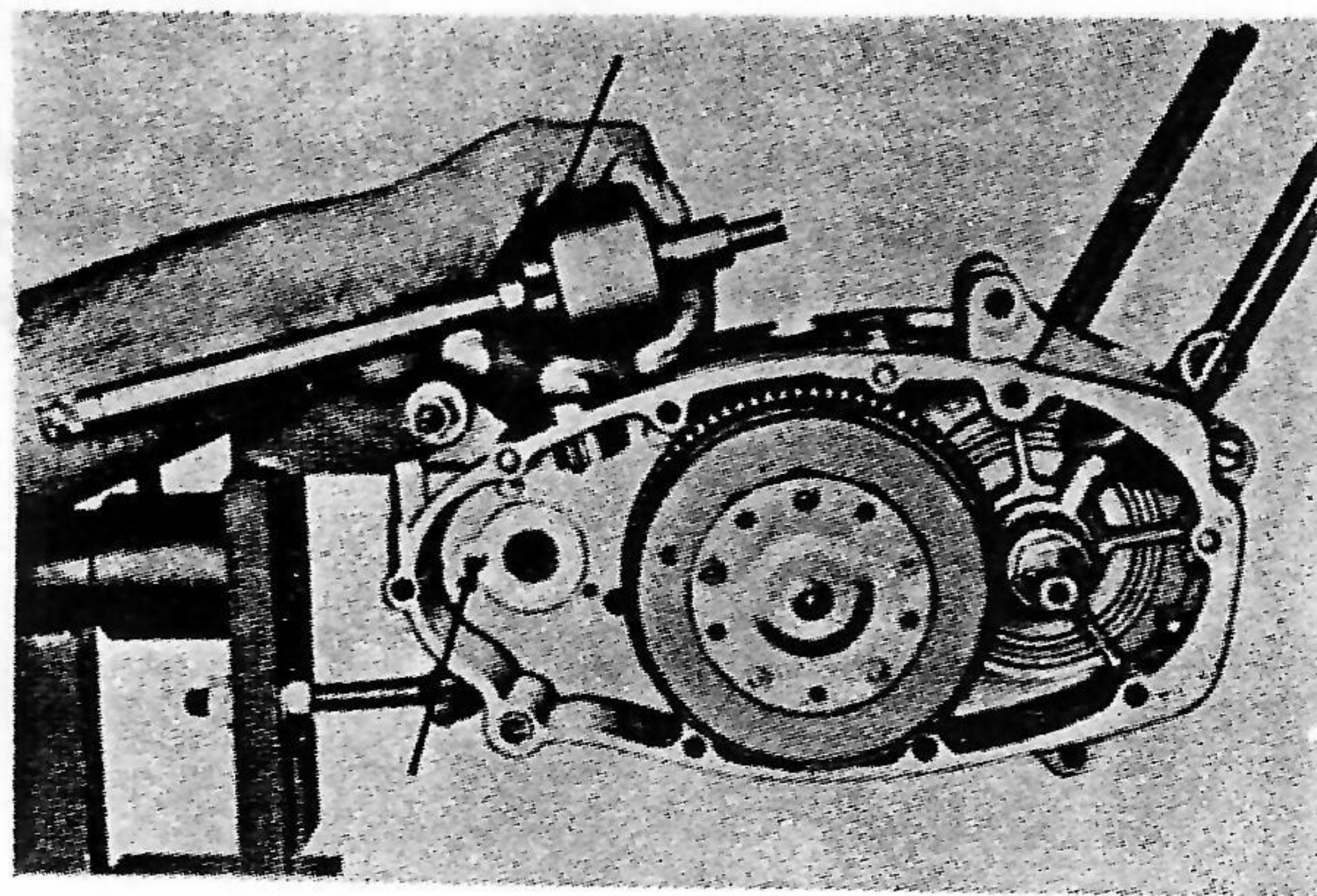


Figure 82

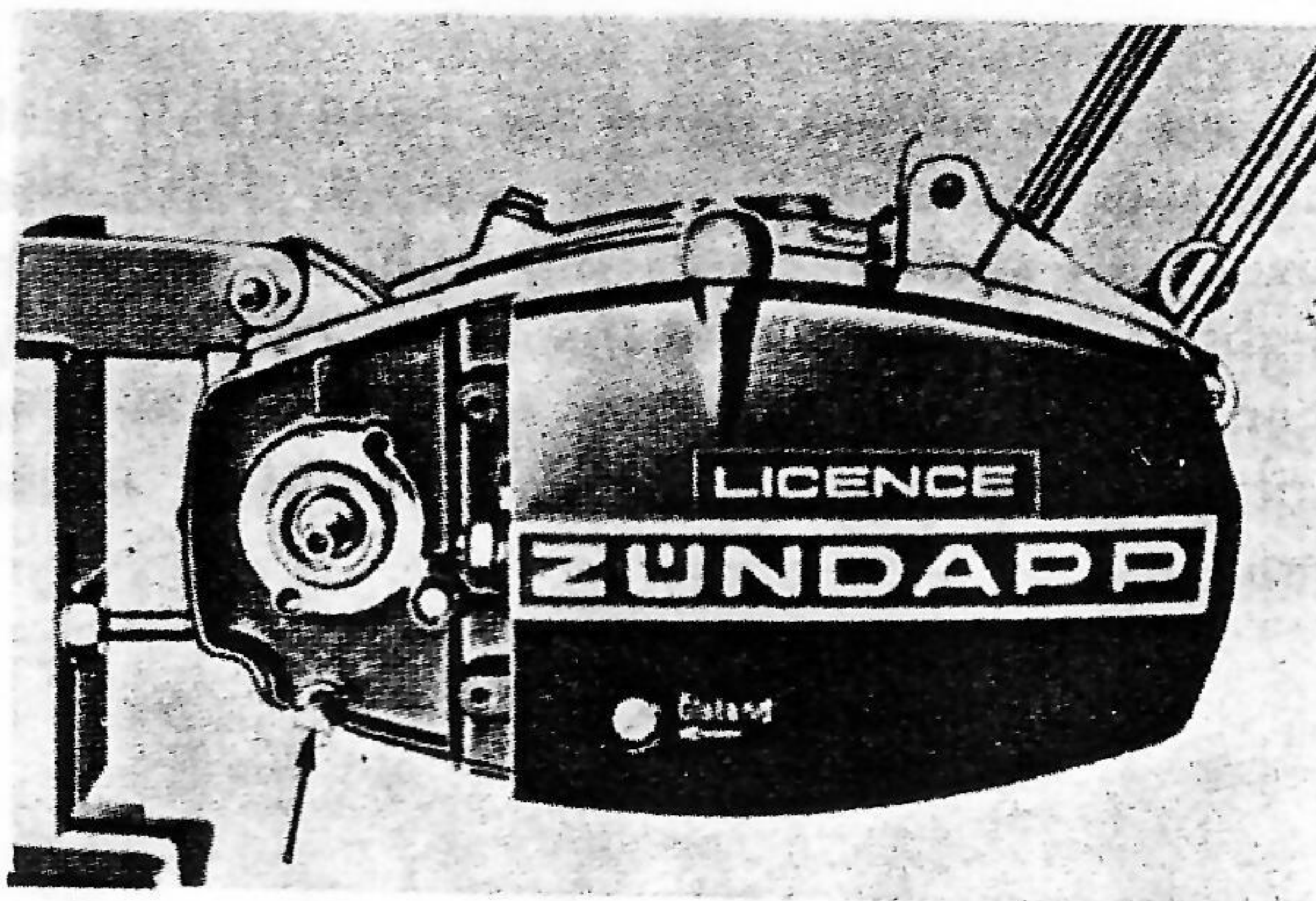


Figure 83

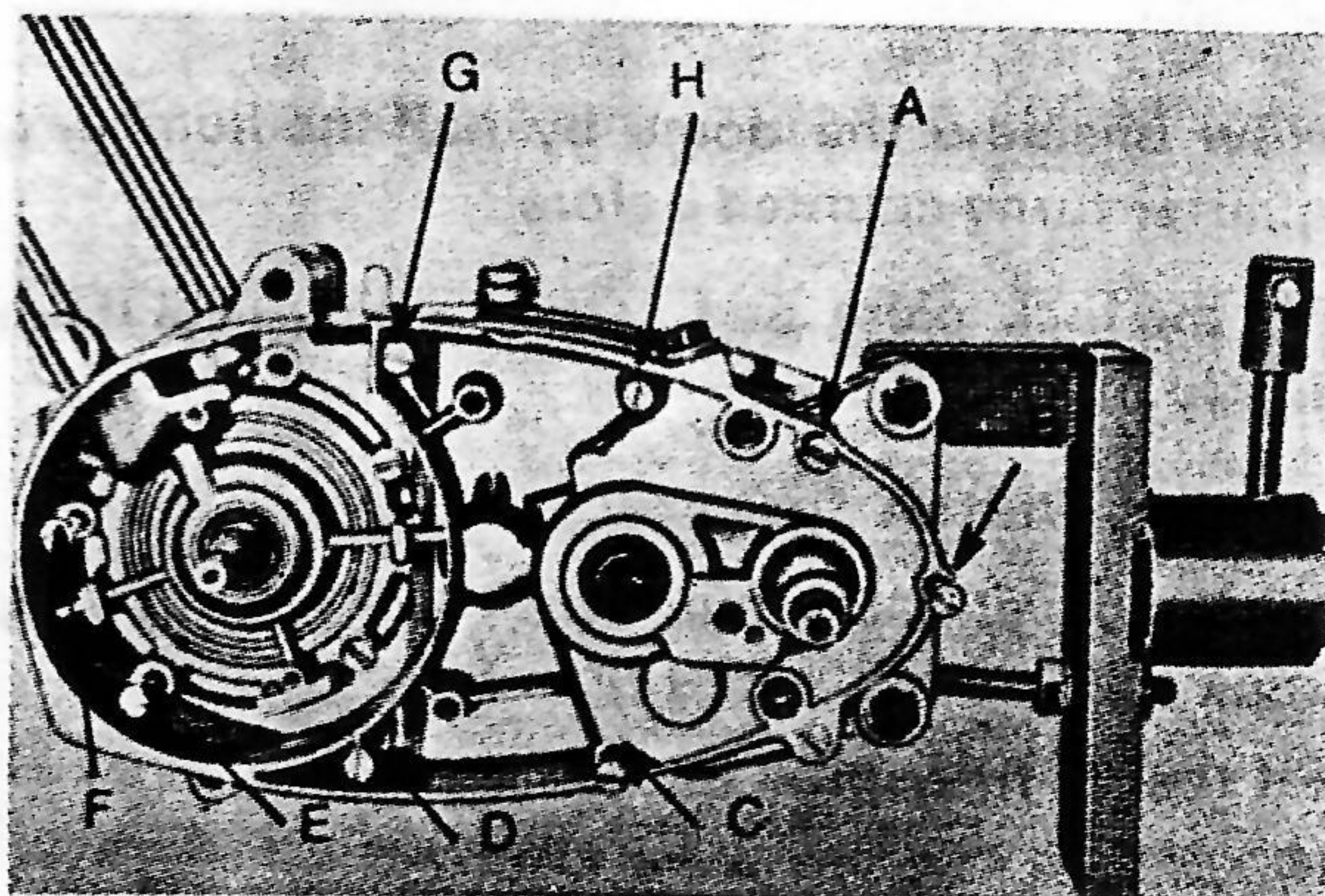


Figure 84

Adjusting the Gear Shift Shaft

Engage second gear before setting the axial play of the gear shift shaft. Pull the gear shift shaft towards the left all the way to the stop as shown in Fig - 85.

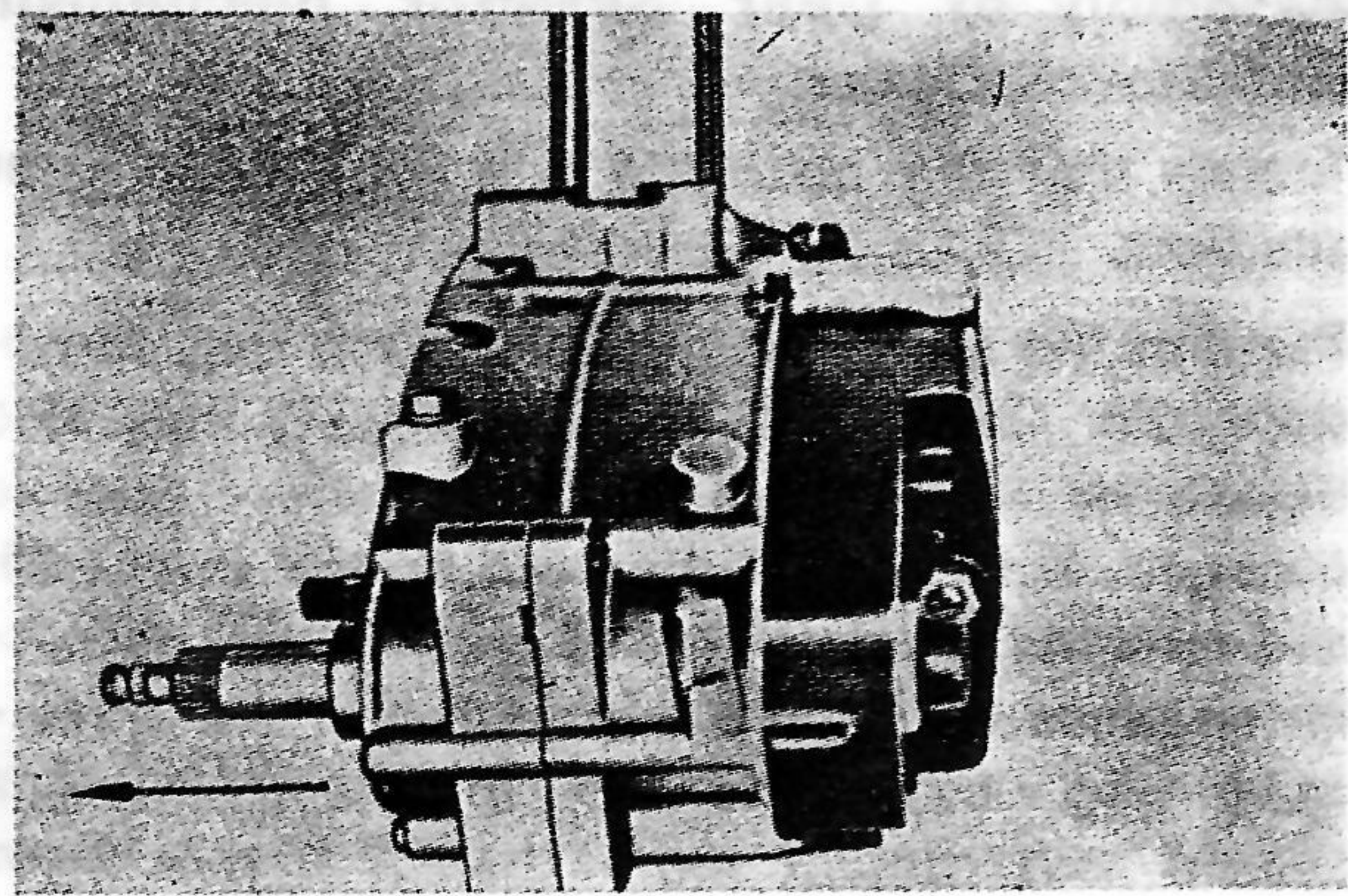


Figure 85

Screw the setting dome by hand till it just contacts the clutch cover casing. Push the gear shift shaft towards the right as shown in figure - 86, and screw the setting dome in by hand again counting the number of quarter turns till it just contacts the clutch cover housing.

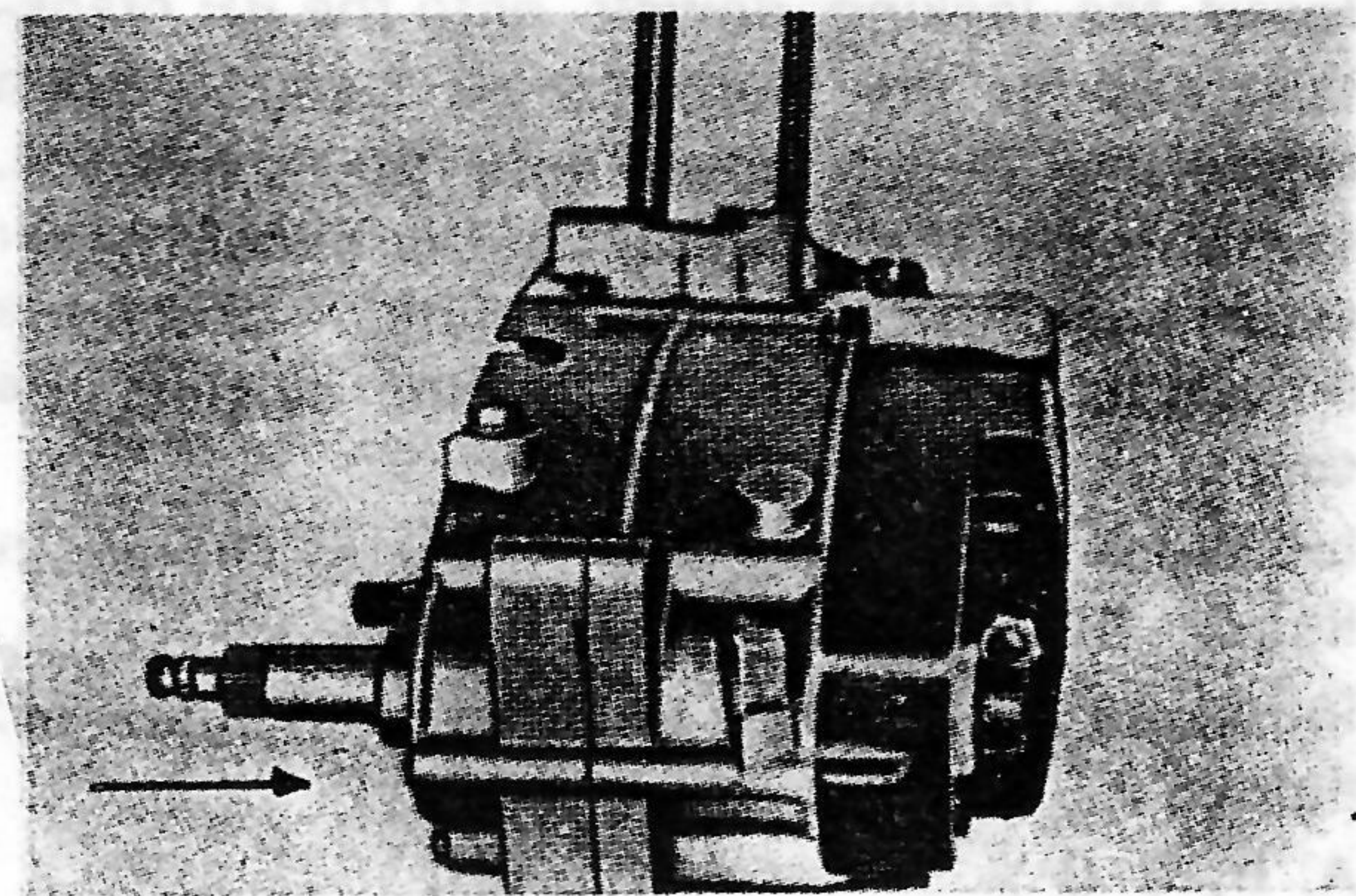


Figure 86

Now unscrew the dome by half the number of quarter turns counted before.

Fix the lock plate and screws and run it down firmly.

Fitting Clutch Inspection Cover

Fit the cover and secure with the two counter sunk screws, M5 x 20 (Fig - 87).

Fit the oil filler plug and oil drain plug.

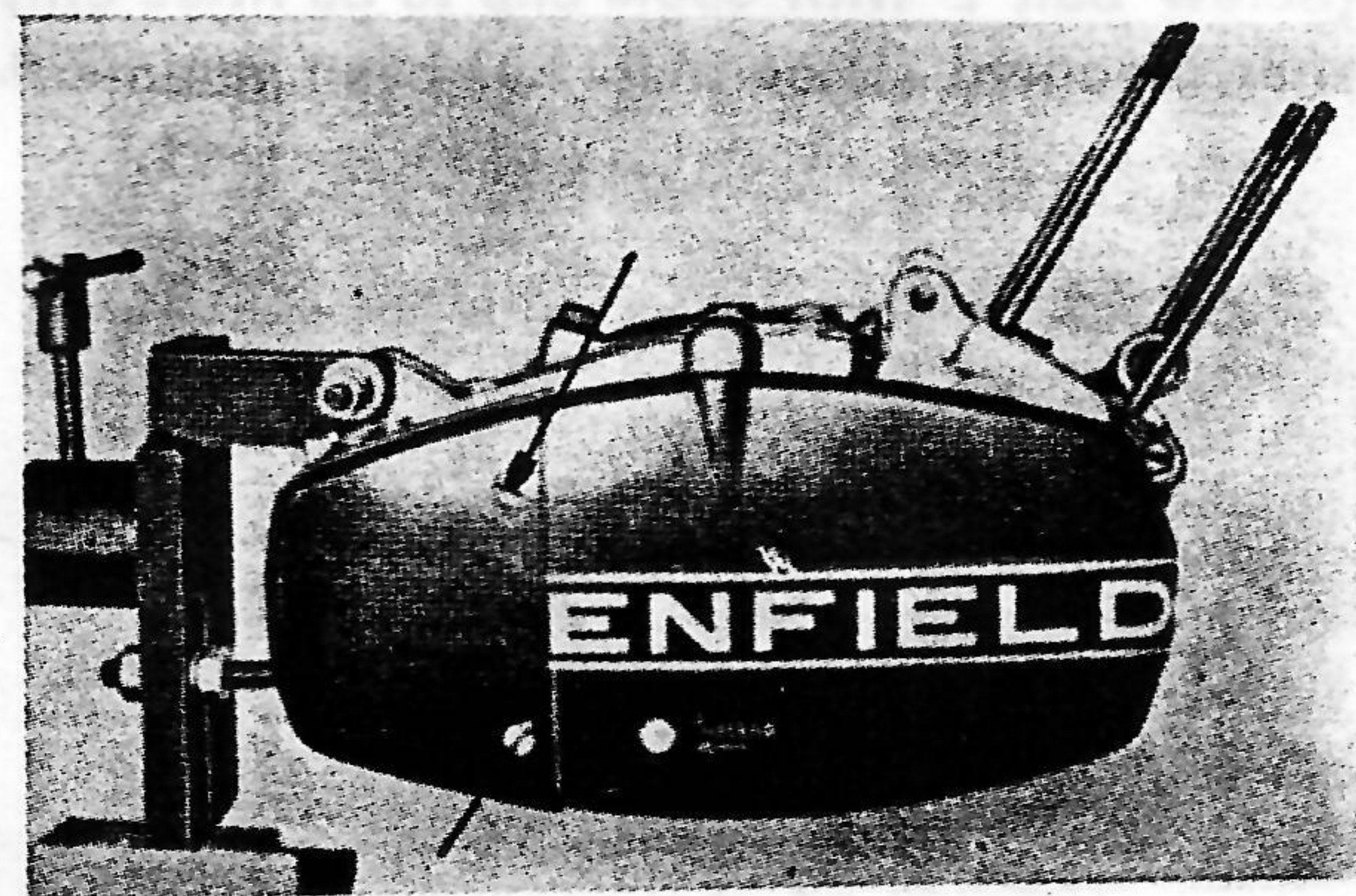


Figure 87

Inspecting Connecting Rod

Fit gauging mandrel SK-A 304 into connecting rod small end. Turn the crankshaft until mandrel lies against crankcase front sealing face. The gap between the mandrel and the face must be the same on both sides. Reverse the mandrel and compare the values (Fig-88). Repeat the above procedure, with mandrel against the rear sealing face of the crankcase. The gap between the two must be the same on either side.

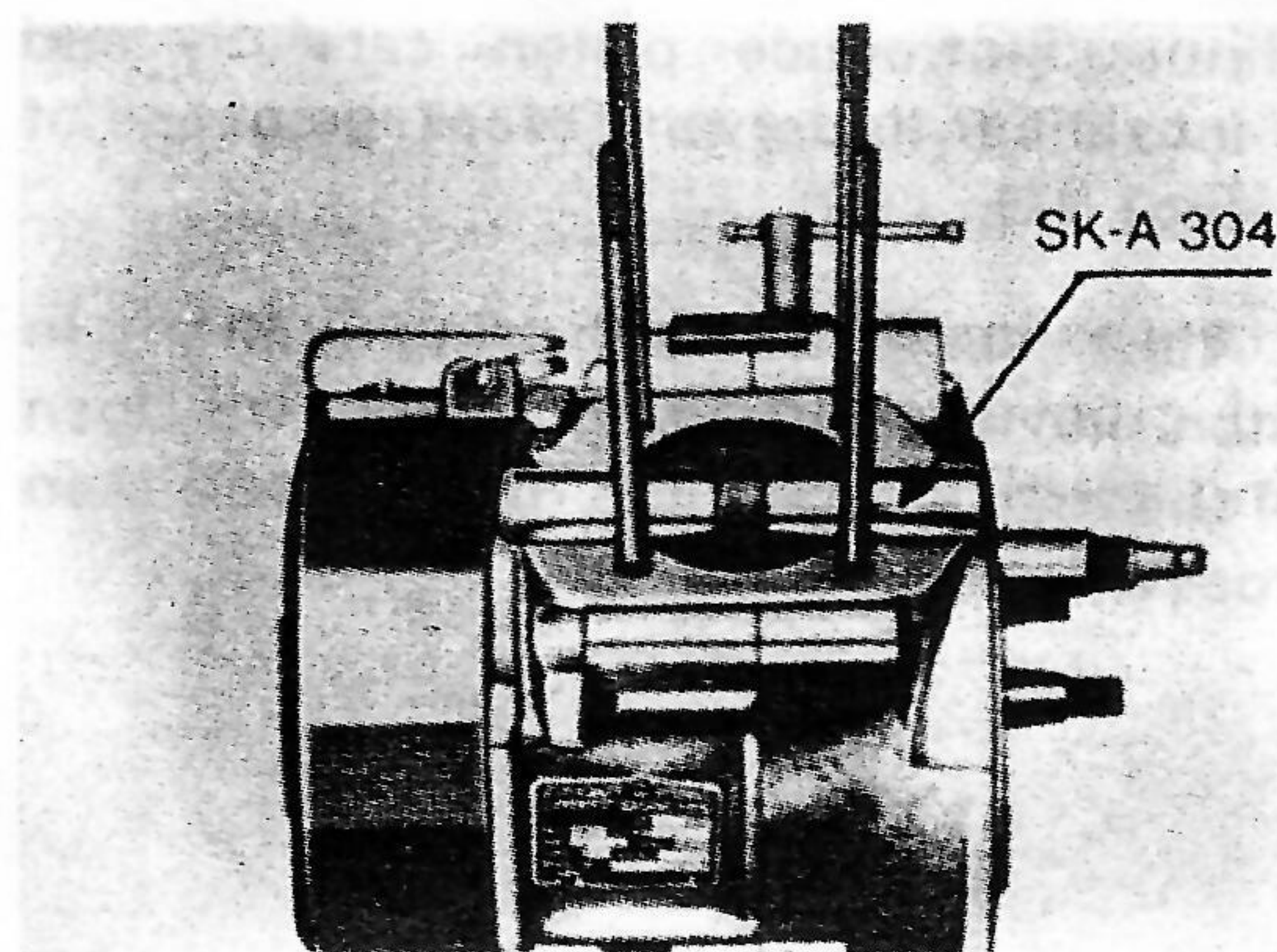


Figure 88

Correct any deviations of the connecting rod by straightening out with the service tool MV-6-115 (Fig - 89).

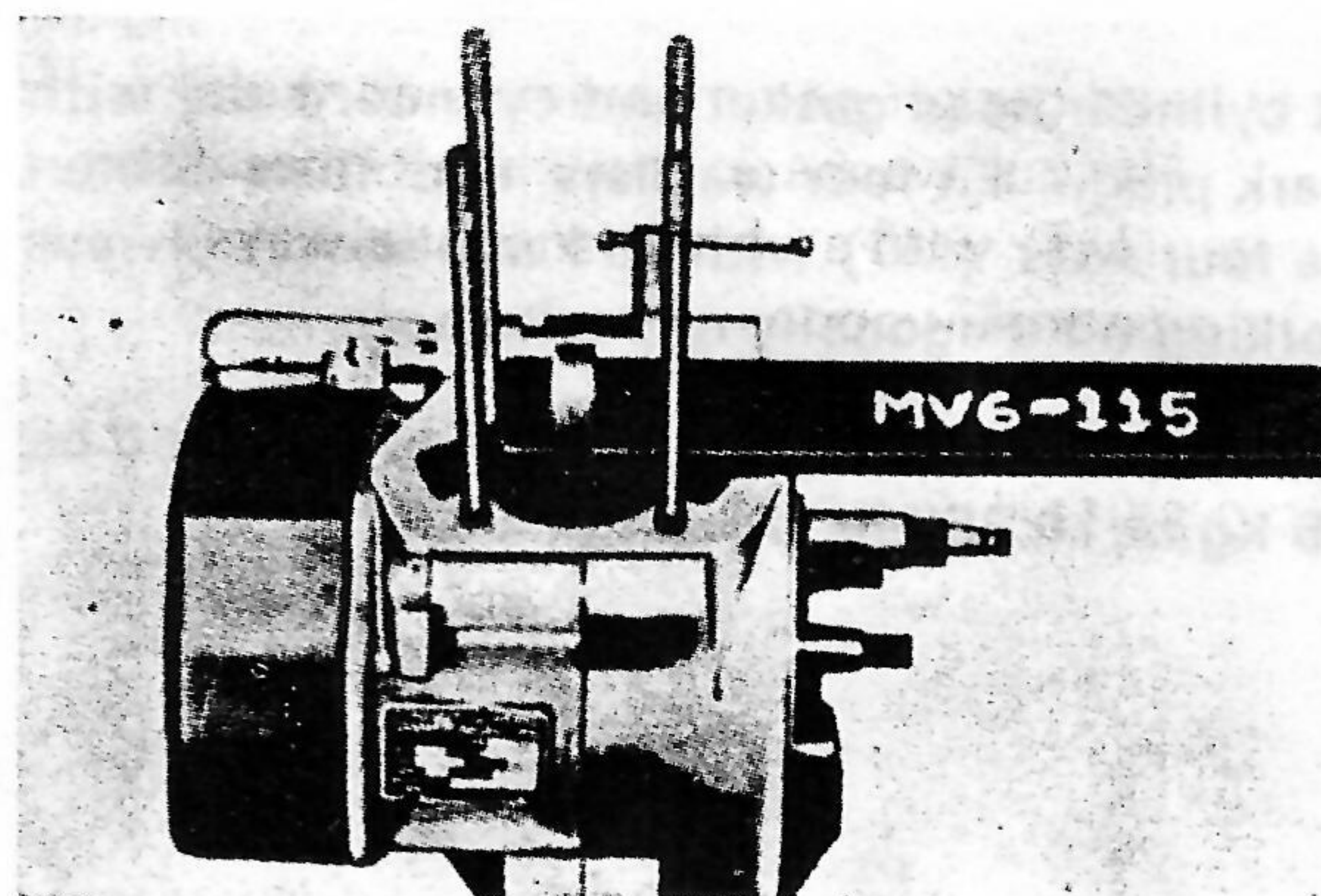


Figure 89

Mounting Piston and Cylinder

Fit the piston with the 'arrow mark' on the piston crown facing towards exhaust port. Introduce small end needle roller bearing in to the connecting rod small end. Then introduce Gudgeon pin with the service tool SK-A 163, taking care to support the connecting rod with your thumb to avoid bending of connecting rod, cover the mouth of the crankcase with clean cloth and fit the circlips. Remove the cloth, and fit the cylinder base gasket without any sealing compound (Fig-90). Fit piston ring and support piston with the special fork tool SK-E 002 (Fig - 91).

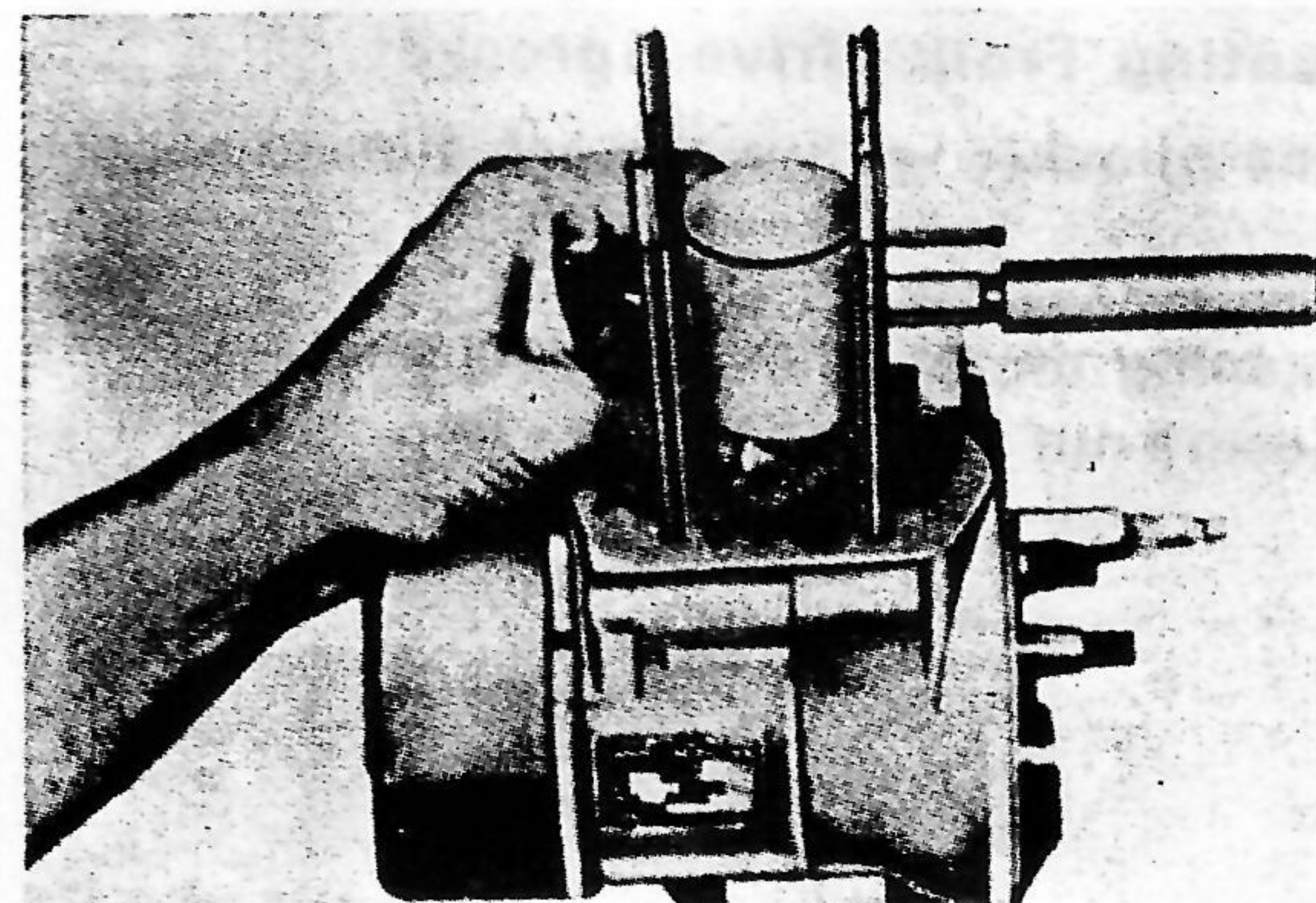


Figure 90

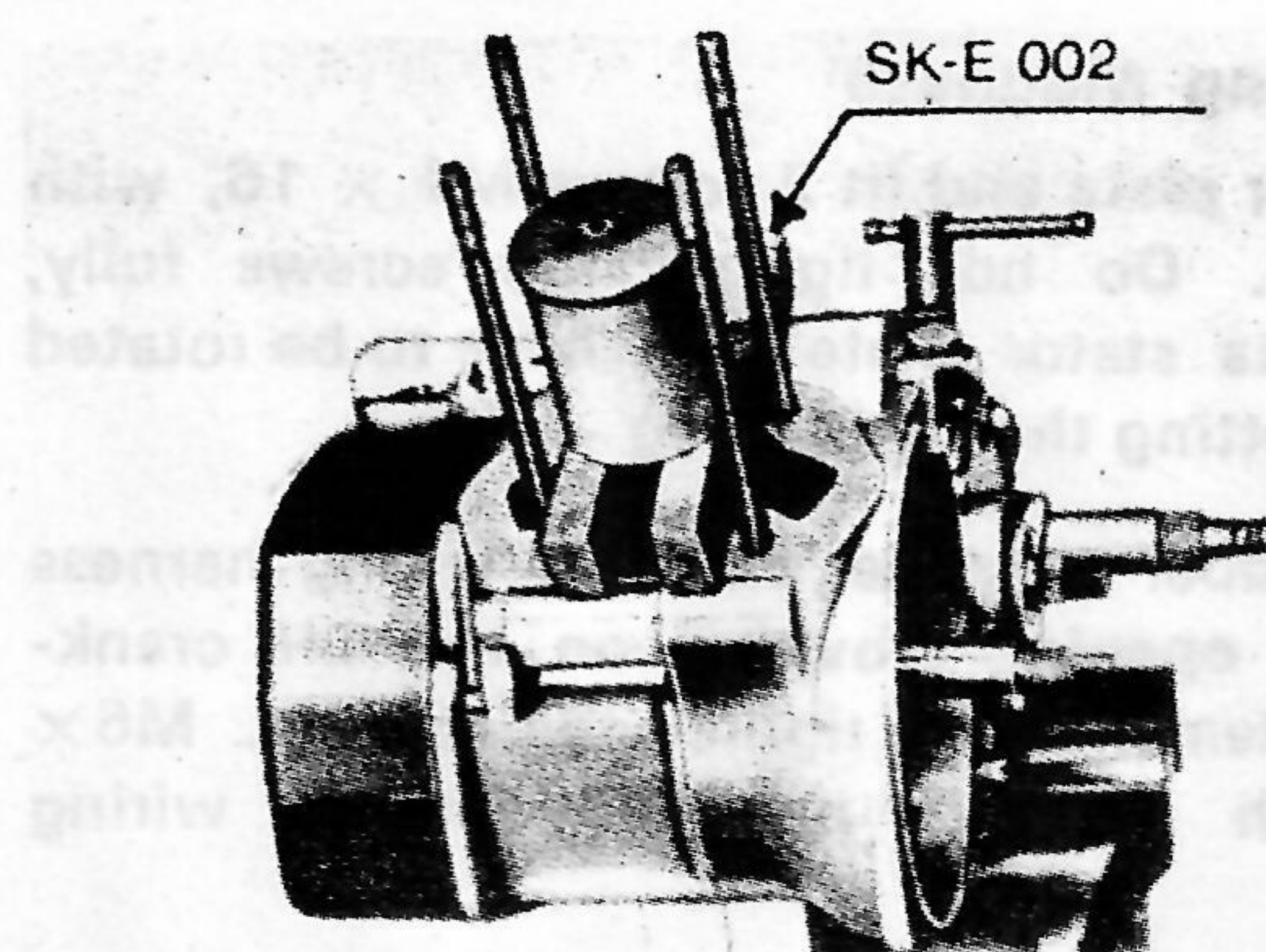


Figure 91

Fit cylinder (Introduce piston carefully and gently into the cylinder to prevent breakage of piston ring) (Fig - 92).

Note: Take care to locate the ring properly in the piston ring groove, ensuring that the open ends of the ring overlap the peg in the piston ring groove.

Fit cylinder head gasket and cylinder head with spark plug. Fit four washers and then tighten the four nuts, (M7) with a 11 mm socket always working on diagonally opposite nuts.

The torque for the cylinder head nuts should be 1.5 Kg.m/10.85 Lbs. ft. (Fig - 93).

Mounting Front Drive Sprocket

Fit the sprocket with tab washer and Hexagon nut.

Tightening torque is 5 Kg m/36.25 Lbs. ft. Secure nut with tab washer (Fig - 94).

Mounting Magneto

Fit stator plate and fit 2 screws M4 × 16, with washers. Do not tighten the screws fully, since the stator plate will have to be rotated when setting the timing (Fig - 95).

Slide rubber grommet onto the wiring harness into the opening provided on the LH crankcase. Remember to tighten the screw L M6 × 98, with the clip provided for the wiring harness.

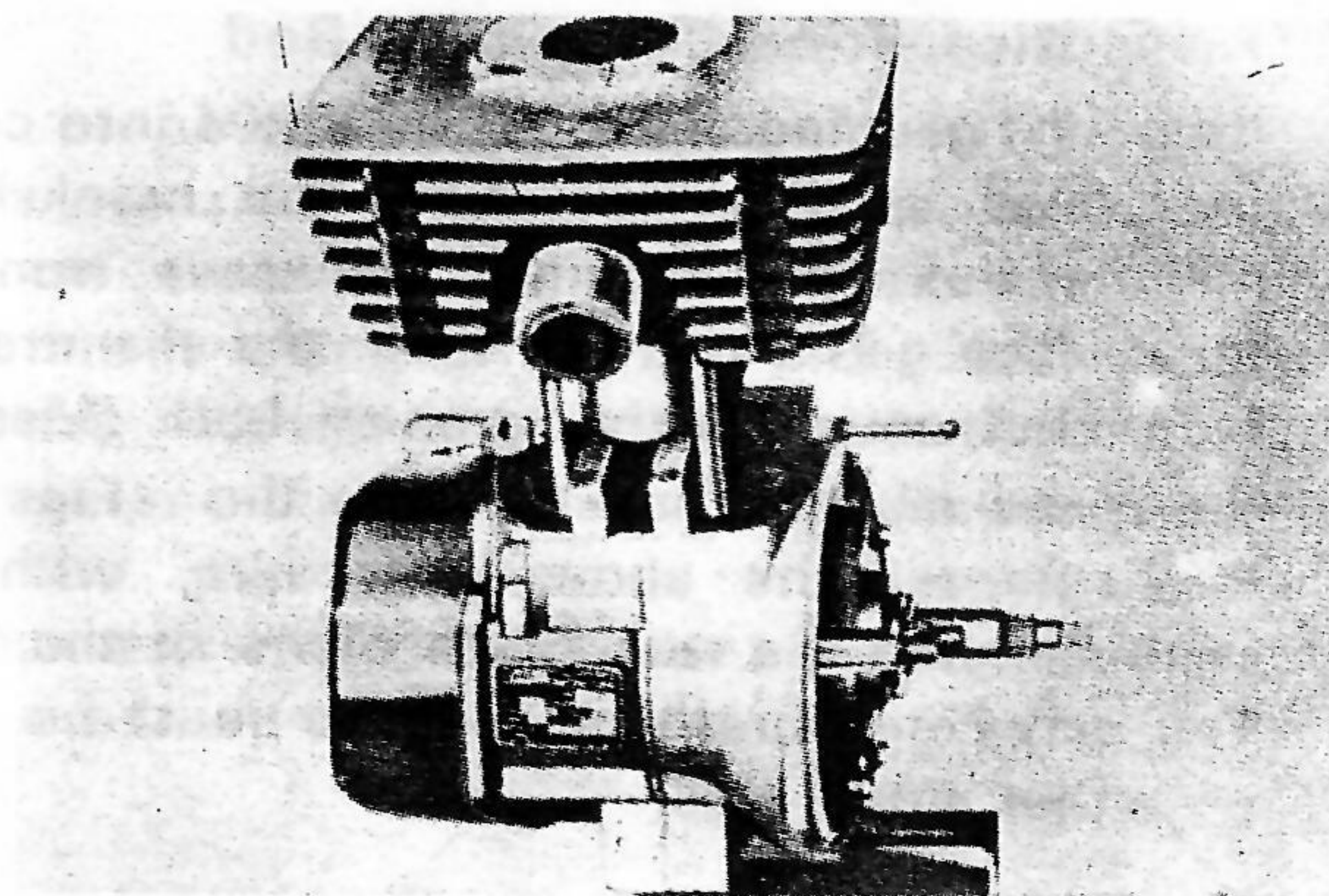


Figure 92

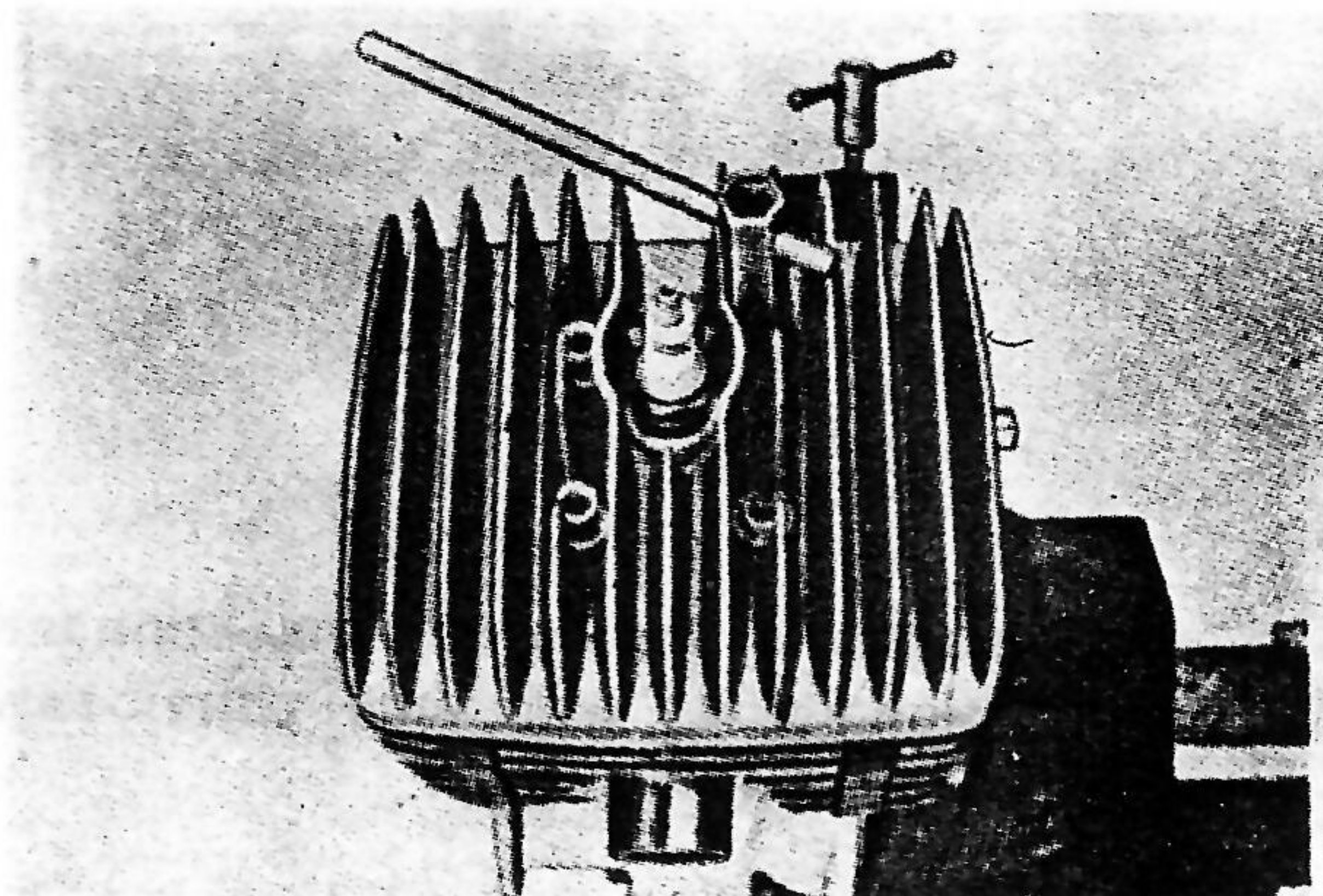


Figure 93

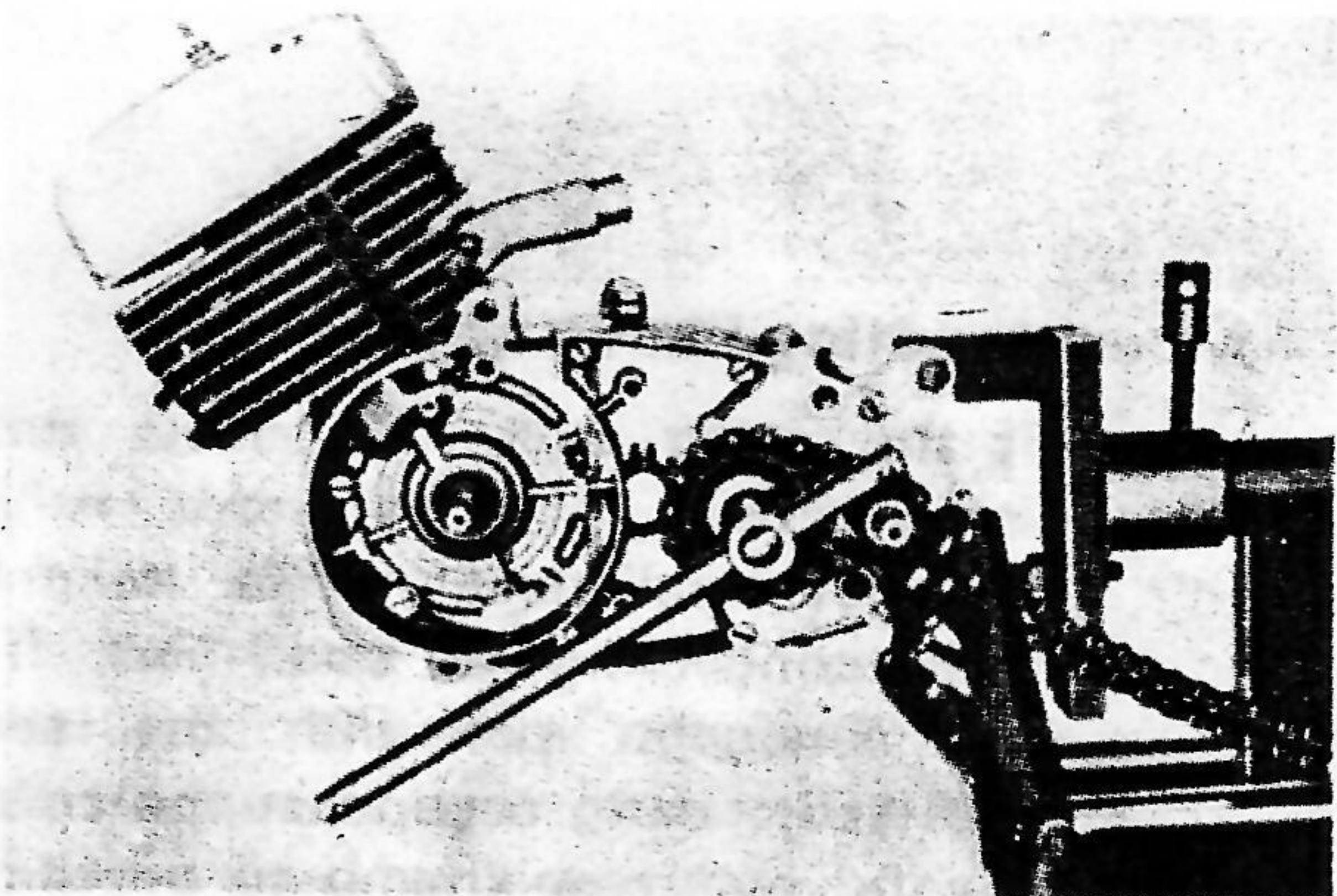


Figure 94

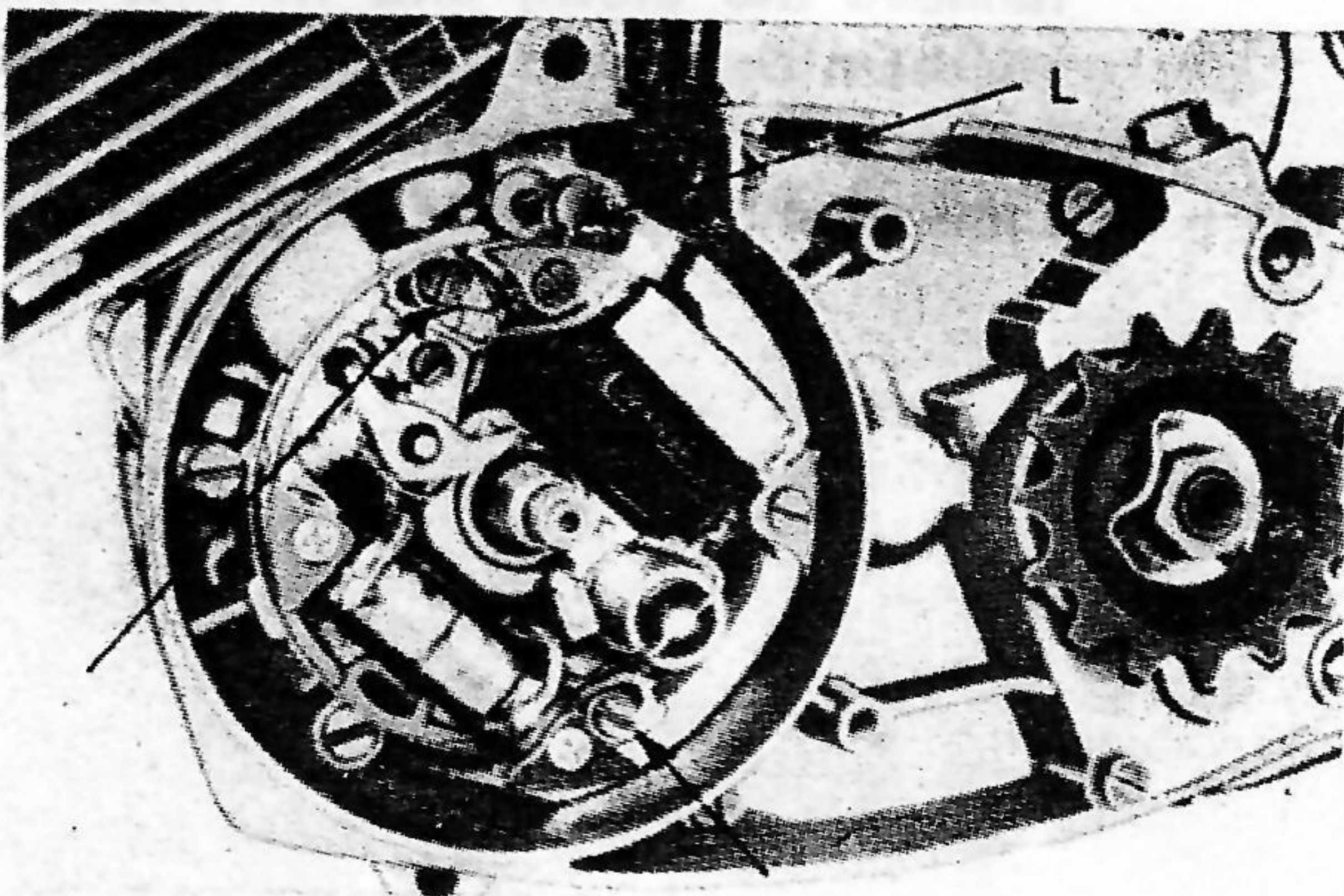


Figure 95

Fit woodruff key into slot on the Crankshaft, then slide the flywheel magneto. The taper must be free from grease. Tighten the flywheel nut with washer, holding the flywheel with service tool SK-A 373/314-010 (Fig - 96).

Torque 3.5 Kg.m/25. 35 Lbs. ft.

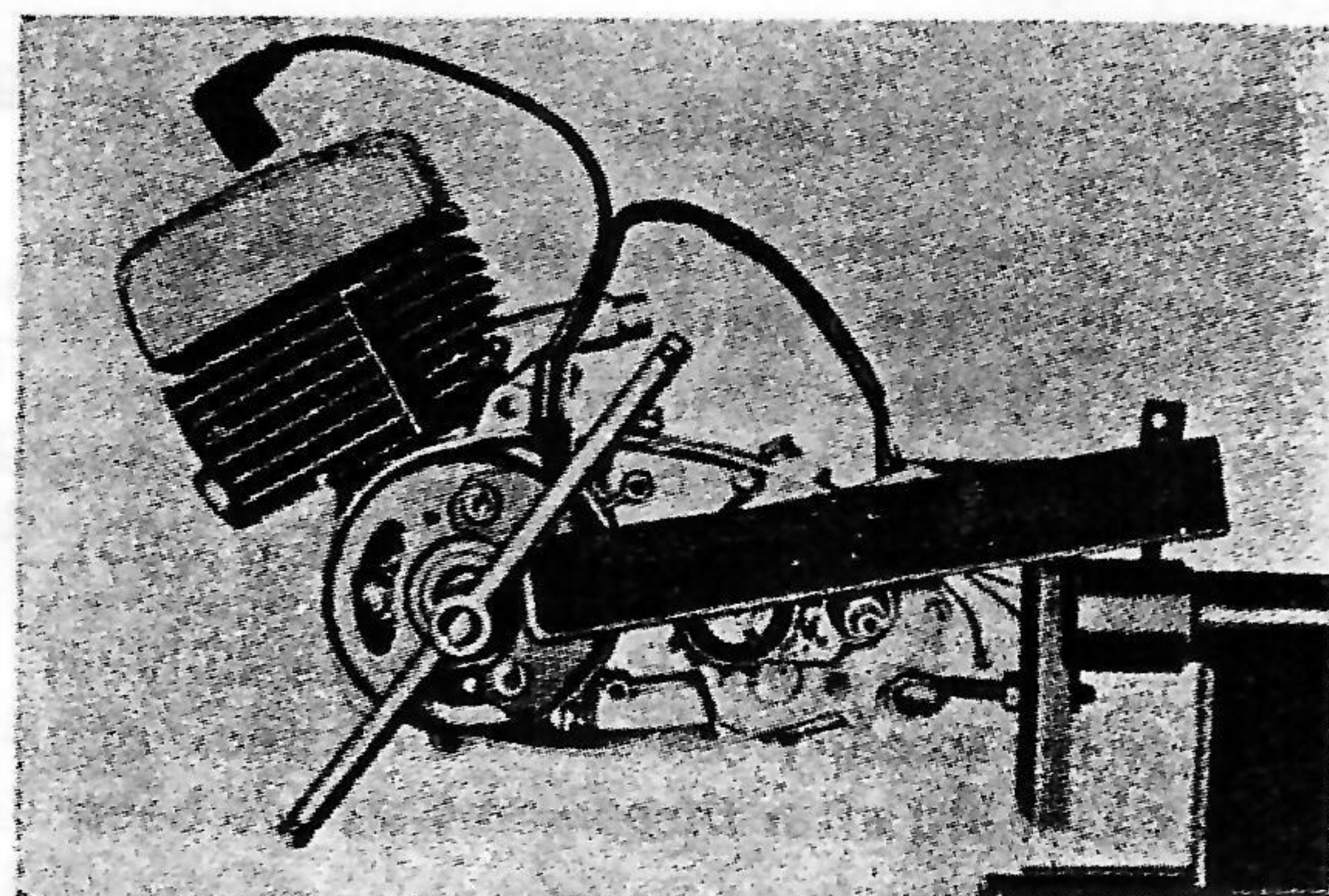


Figure 96

Setting Ignition Timing

Set contact breaker gap to .35 to .45 mm (0.014" to 0.018") then with a dial gauge SK-A 315 determine TDC (Fig - 97).

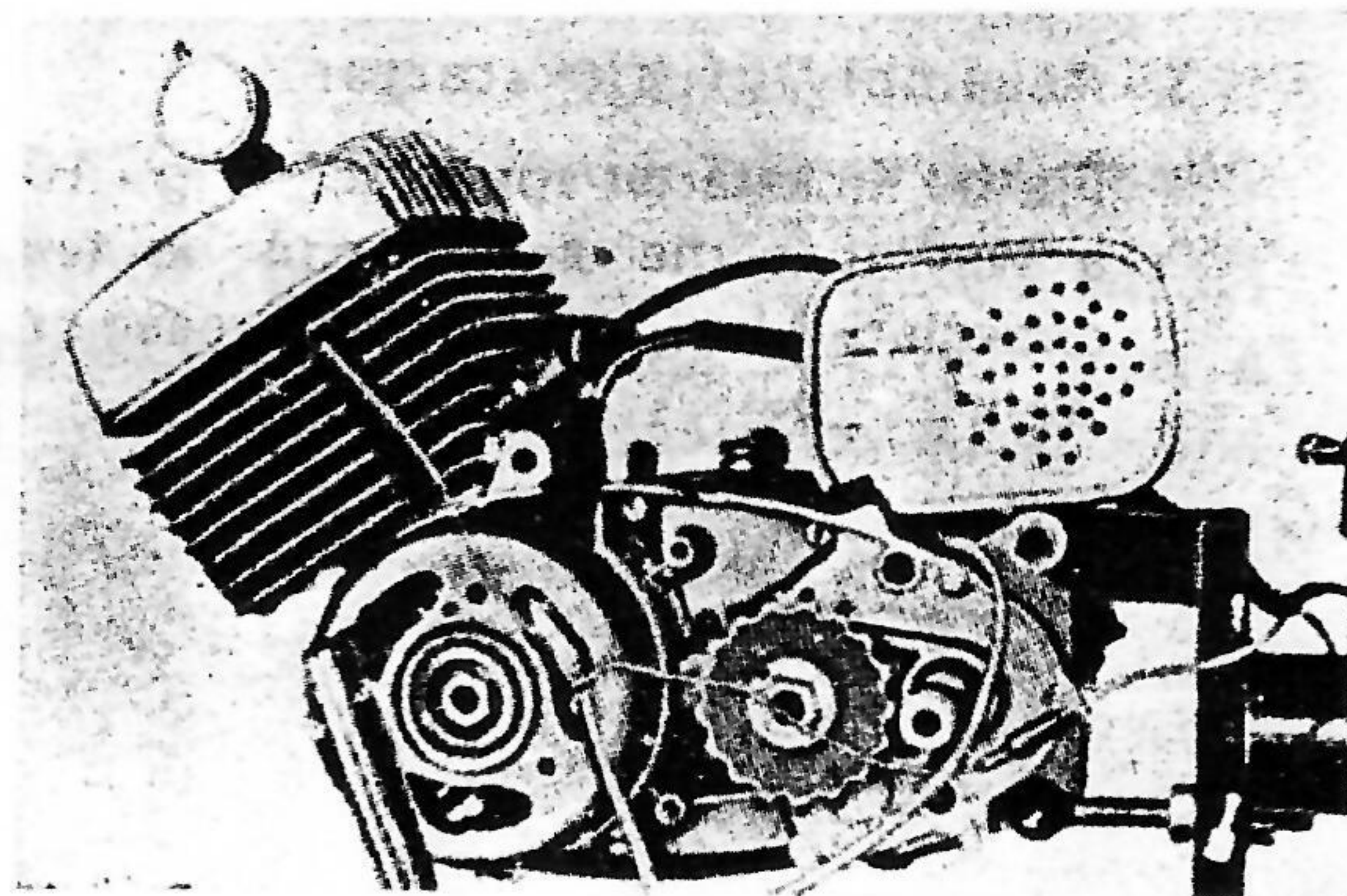


Figure 97

Rotate the flywheel magneto in clockwise direction until the mark B coincides with the ignition advance mark 'A' on the crankcase. At this point the Dial gauge should read 1.1 ± 0.2 mm. If the mark 'B' is before the mark 'A', then ignition timing is over advanced (Fig - 98). Loosen stator screws and rotate the stator plate in anti-clockwise direction. Tighten stator plate screws and check the ignition timing as mentioned above. This procedure must be repeated until the two marks A and B coincide.

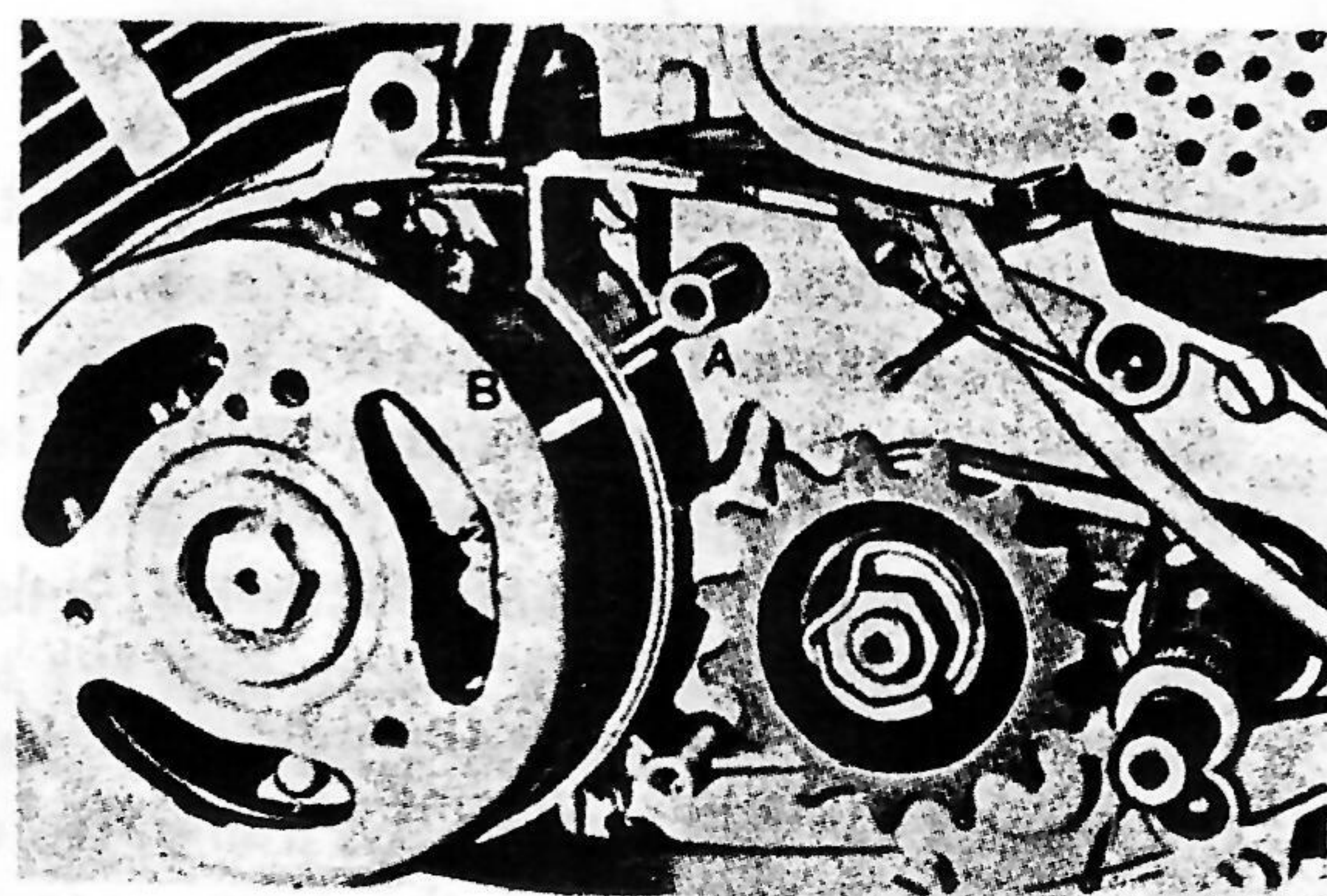


Figure 98

If the mark 'B' is after the mark 'A', the ignition timing is retarded.

Now, loosen the stator plate screws and turn the stator plate in clockwise direction. Tighten the stator plate screws and check the ignition timing. This procedure is repeated until the mark 'A' and 'B' coincide (Fig - 99).

Tighten stator plate screws fully. It is advisable to carry out a second check of the ignition timing after these screws have been tightened.

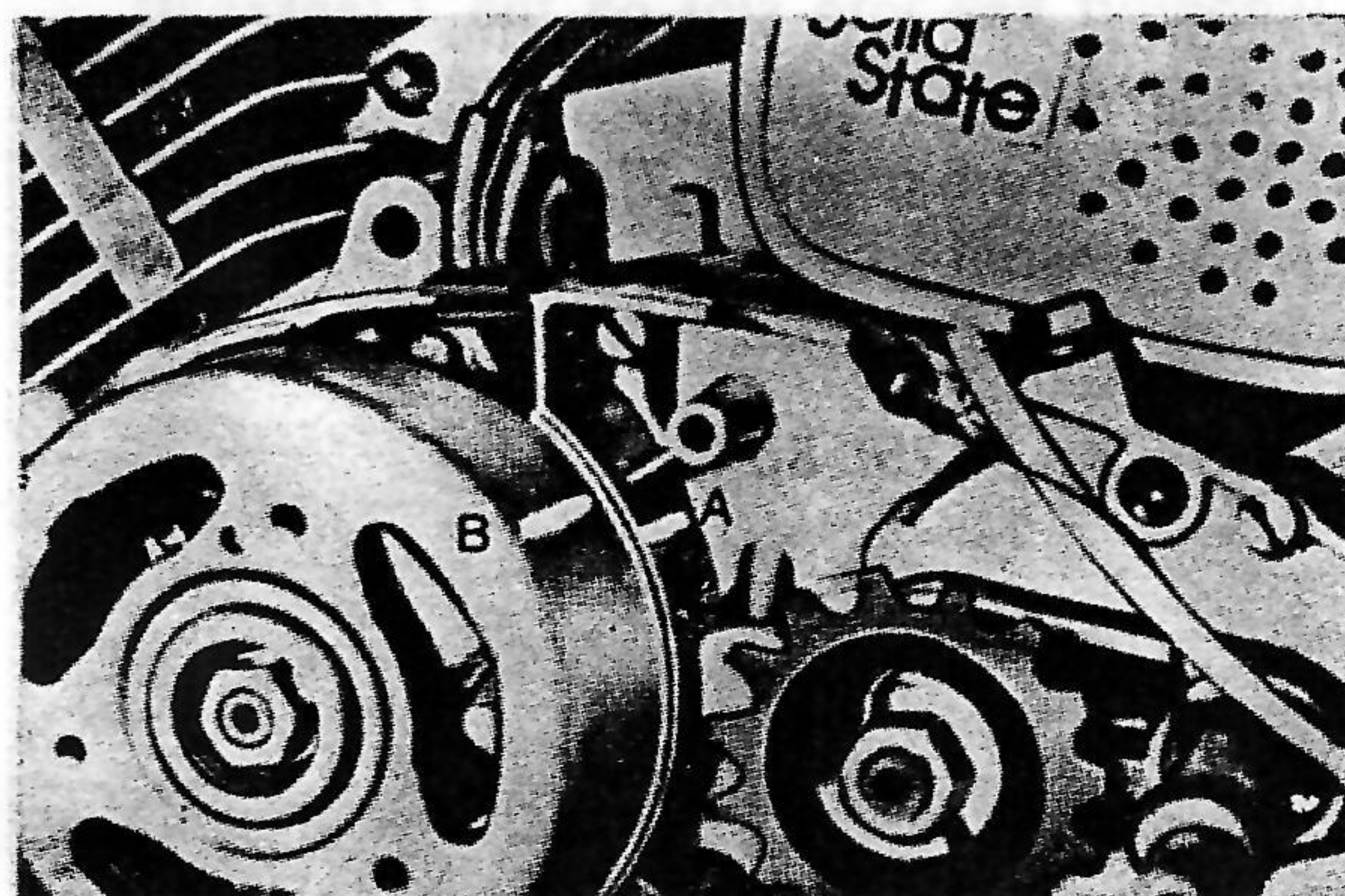


Figure 99

Assembly of Kickstarter

Fit the Kickstarter spring 'C' (Fig - 100) in such a way that the spring can be tensioned in anti-clockwise direction. Grease the spring well.

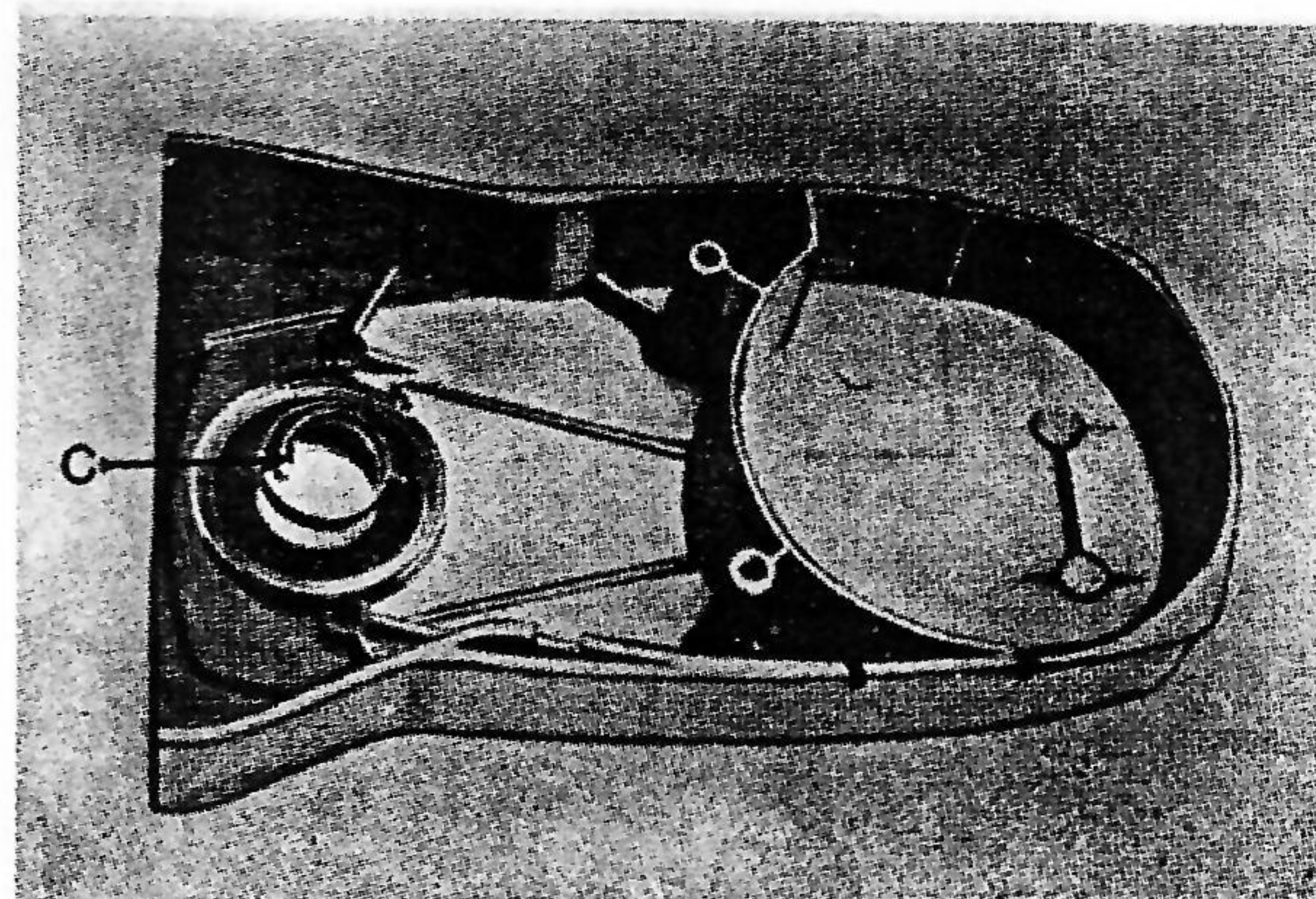


Figure 100

Assemble the kickstarter pedal through the LH cover from the other side, so that, the spring eyelet engages with the larger shoulder. Hold the LH Cover with one hand and pre-tension the kickstarter spring, by rotating the kickstarter pedal in the anticlockwise direction. Now fit cover plate 'B' such that the lug on the inner diameter of the cover plate fits into the eyelet of the spring. Finally fit circlip (Fig. 101). Ensure that the stop nose of the cover plate lies in front of the top stop on the cover.

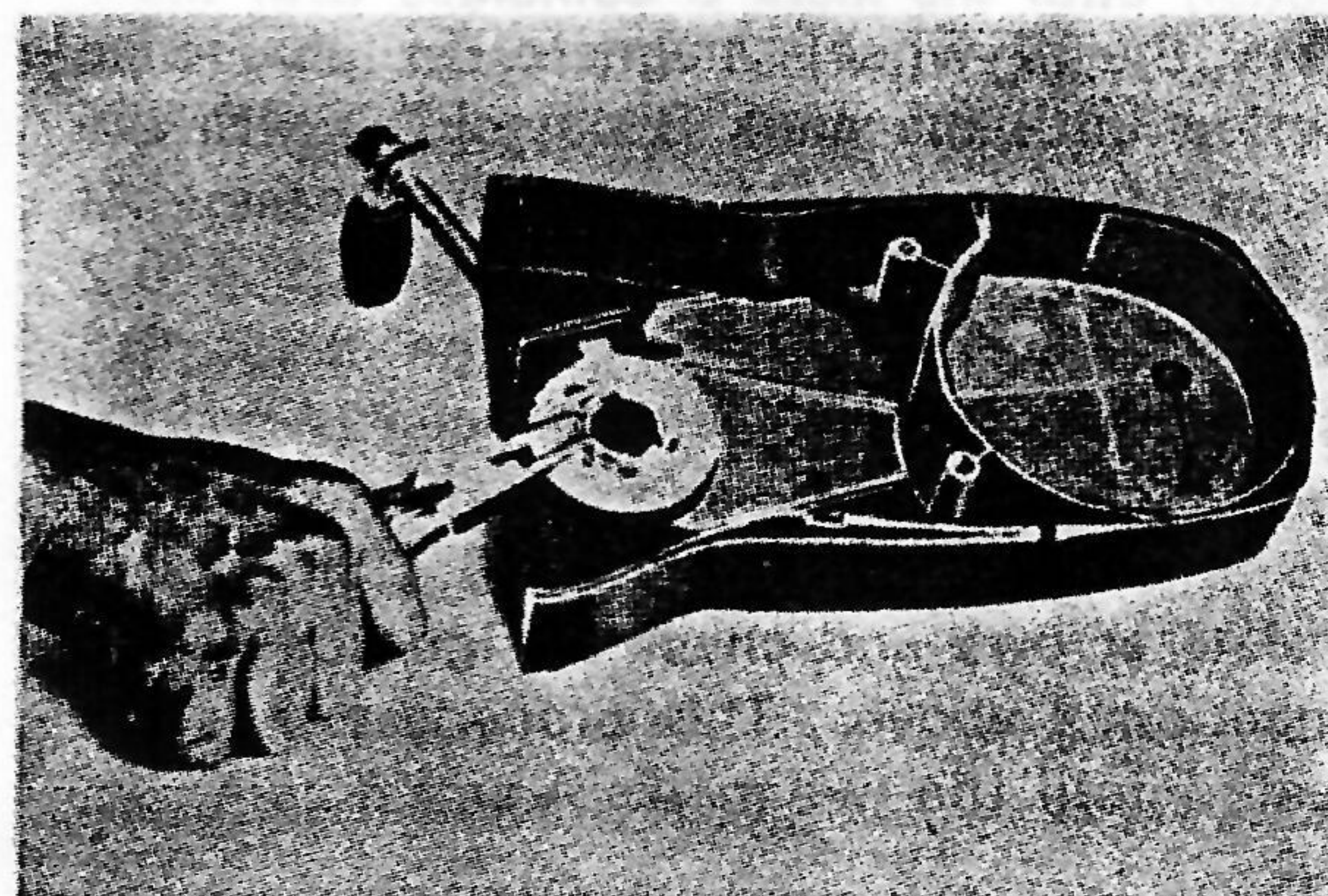


Figure 101

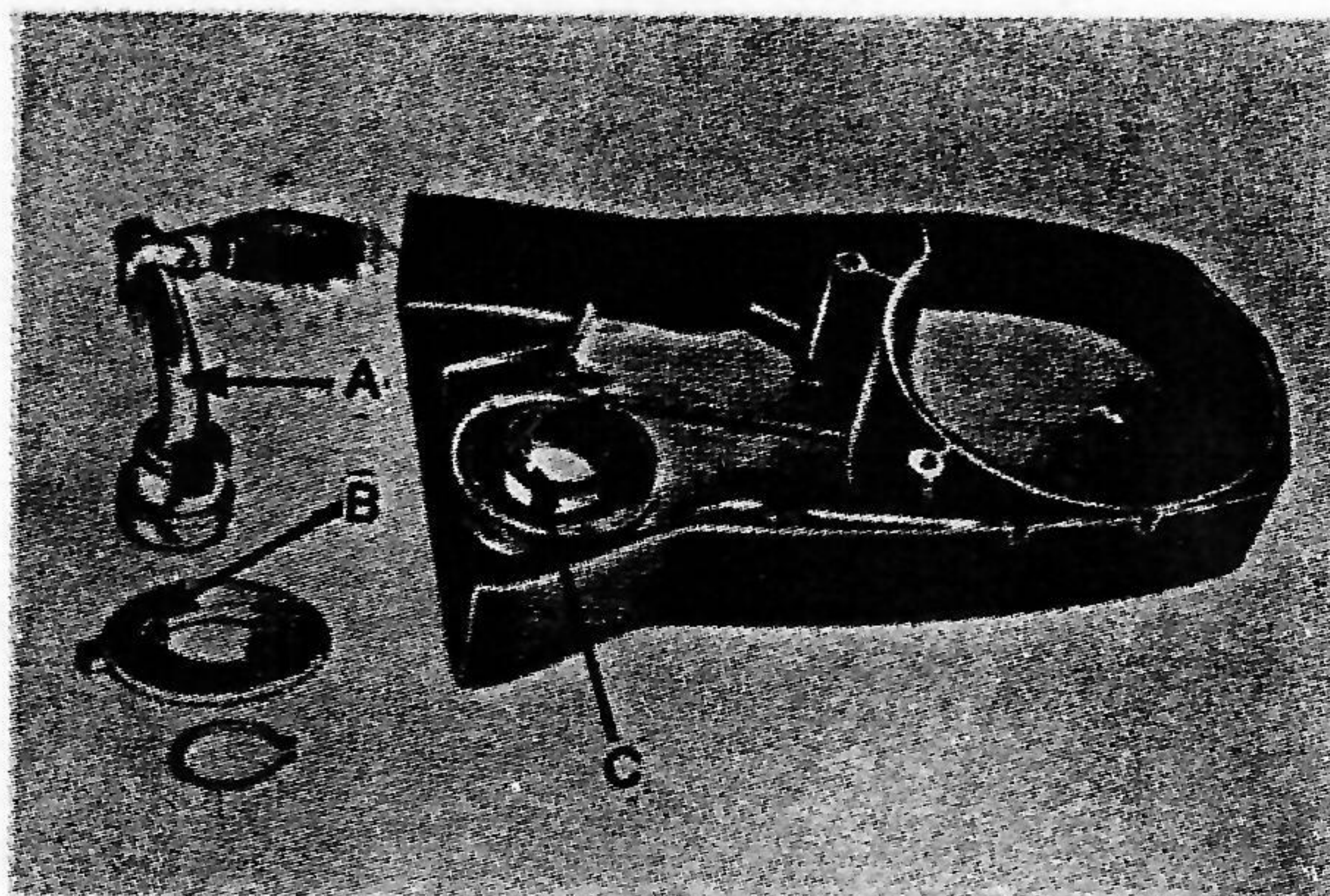


Figure 102

Fitting Magneto Cover

Note: This must be done after the engine is mounted onto the frame and the chain has been assembled on the sprockets.

Mount the magneto cover onto LH crankcase and secure with two screws, M6 x 60 and tighten fully.

Fit the gear change pedal as shown in Fig - 103.

Fill the gearbox oil SAE 90, 400 ml. and check oil level.

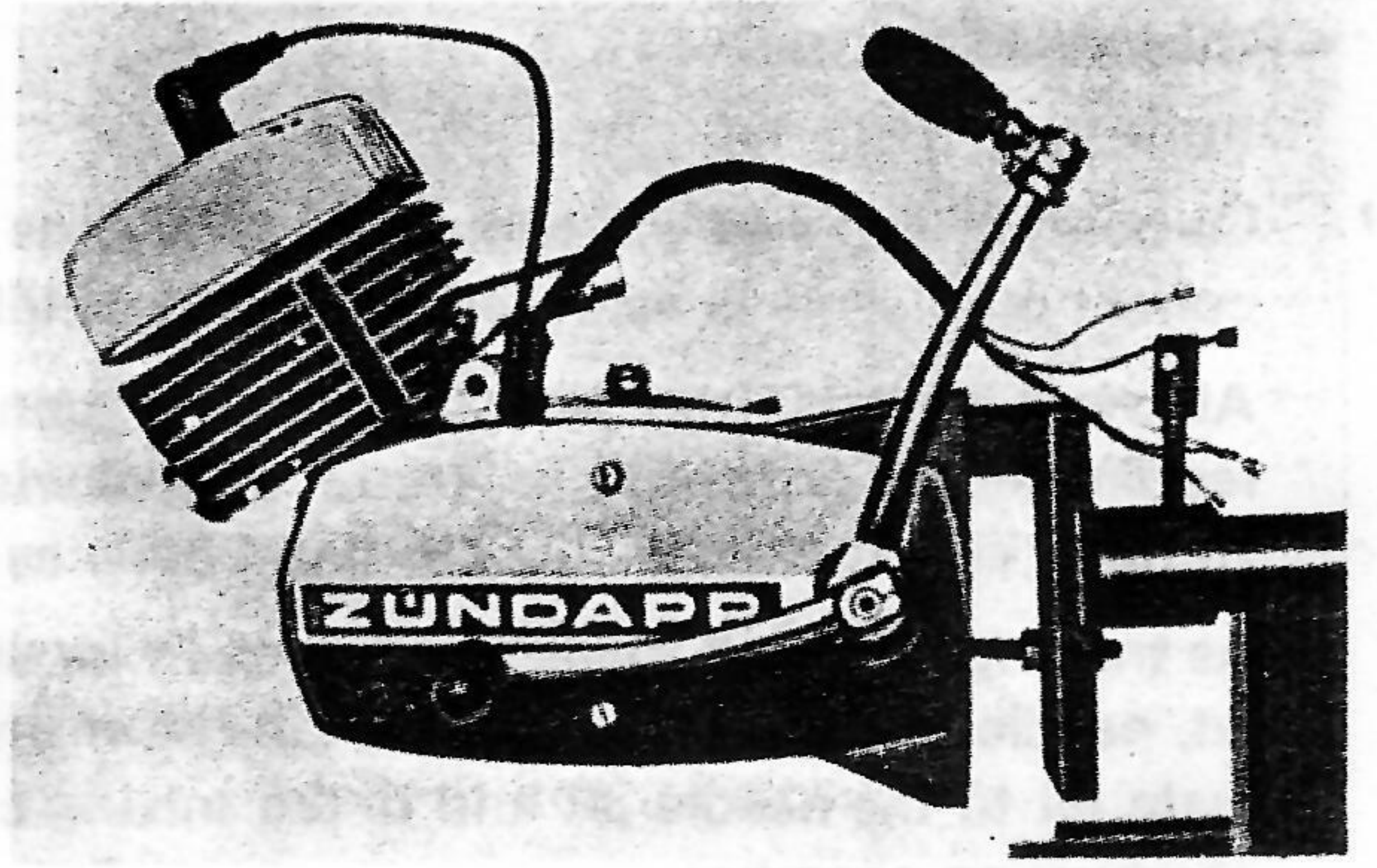


Figure 103

CARBURETTOR

Function

Carburettor supplies the engine at all speeds and load with a well atomised fuel and air mixture in the correct ratio. This is achieved by means of idler jet (pilot) and main jet system.

At lower speeds, the idler jet system consisting of idler jet, air control screw supplies the engine requirements. Screwing in (turning clockwise) the air screw makes the mixture rich and screwing out (turning anticlockwise) the mixture becomes leaner.

As the engine speed increases, the main jet system comes into action. This system comprises of the main jet, needle jet and the needle. When the main jet system comes into action, the fuel flows through the main jet to the needle jet and to the mixing chamber, where it is atomised with air and drawn into the combustion chamber.

A tapered needle fixed to the throttle slide controls the flow cross section of the needle jet. If the throttle slide pushes the needle further into the jet, the gap between the needle jet bore and needle narrows and less fuel passes and vice-versa.

The needle has 4 grooves, so that, the needle can be re-set in relation to the throttle slide. If the needle is set higher on the throttle slide, the mixture becomes richer and if the needle is lowered into the jet, the fuel mixture becomes leaner.

With the throttle fully open, fuel consumption is exclusively governed by the main jet.

Mounting the carburettor

Special care must be exercised while mounting the carburettor. Position the carburettor vertically and sitting flush to the inlet manifold. There must not be any leak at the joints, as otherwise a steady idling speed cannot be set. Avoid sharp bend while fitting air intake bellows and also while laying control cables. Ensure proper operation of throttle slide while operating throttle twist grip and also the choke plunger.

Starting Aid:

A rich mixture is needed during cold starting the engine. For this, one has to make use of the cable operated choke plunger fitted to the carburettor. When the engine is cold, pull the plunger, up through the choke lever and kickstart the engine. Once the engine starts, release the choke plunger. Ensure choke plunger is fully released during vehicle operation, as otherwise it may lead to high fuel consumption.

Idling Speed:

Always ensure that the engine is warm before setting the idling speed with the idling screw.

The air screw which regulates fuel/air mixture should also be set correctly. Recommended air screw setting is $1\frac{1}{2}$ turns open from fully closed position.

Caution:

Once the air screw is set correctly, do not alter the screw position again, as it might affect the fuel consumption.

Carburettor setting:

Manufacturers of carburettors in collaboration with the vehicle manufacturers work out the most suitable design, select jet sizes, taper needle, etc. Which will give optimum performance. It is therefore not advisable to depart from such specification. For technical specifications of this Bing carburettor please refer to Page No. of Workshop manual - Explorer.

Servicing of carburettor:

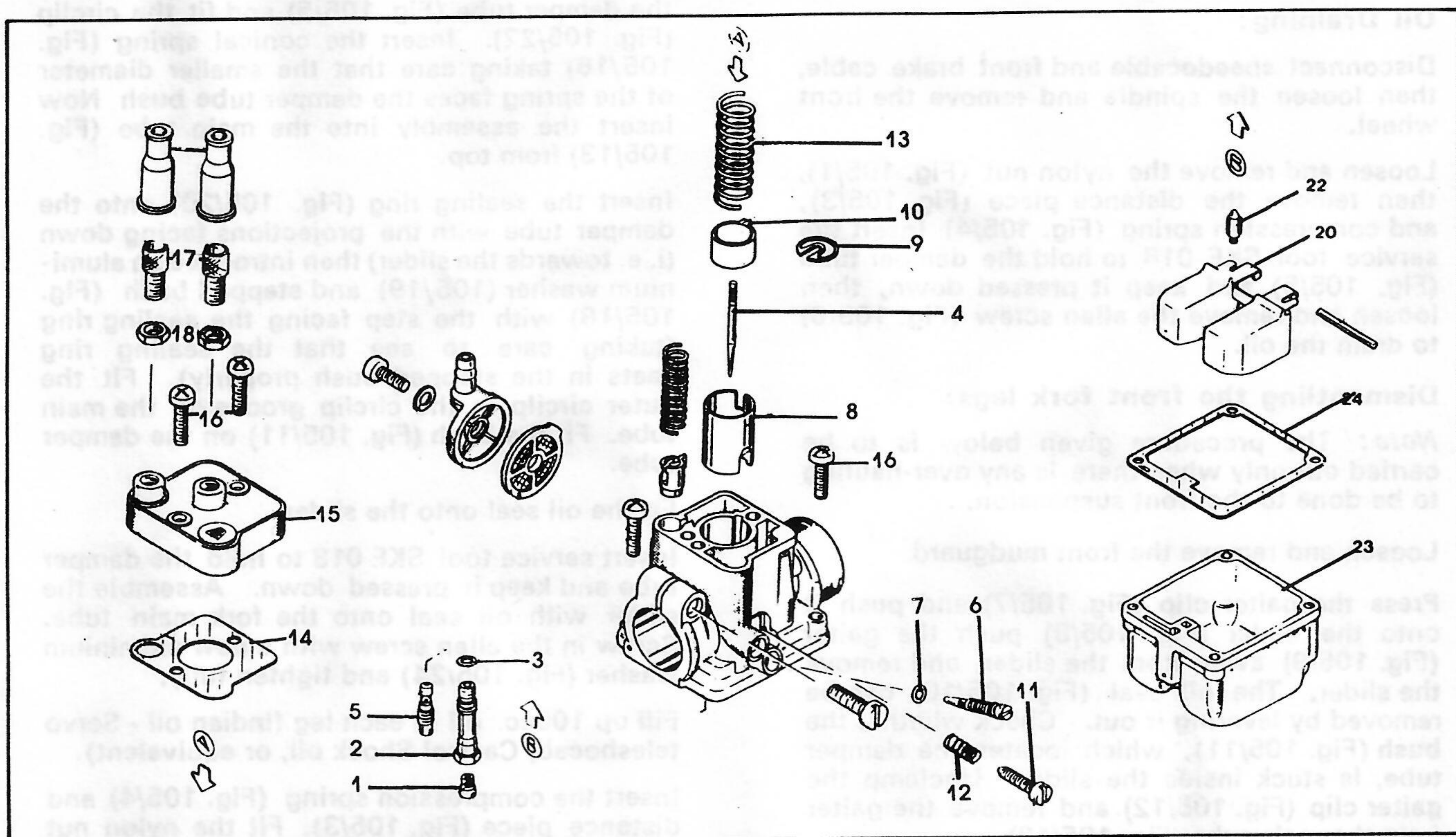
Carburettor needs servicing from time to time, depending upon the operating conditions of the vehicle. During servicing, first clean the carburettor externally with petrol before dismantling.

After dismantling examine carefully all the parts for serviceability. Replace worn out float needle, needle jet, taper needle, throttle slide, main jet, etc. as necessary, as these would affect the power, fuel consumption of the engine.

Never use sharp edged instrument, wire, etc. and clean jets and the carburettor parts. If the passages are blocked, first clean with pure petrol and blow these passages with compressed air. Handle all parts with great care, run down all threaded connections lightly without use of force. Ensure to replace worn out gaskets.

Always use genuine Enfield spares while replacing for satisfactory performance of the carburettor.

CARBURETTOR



S.No.

Description

1 - 31 Carburettor Complete

1 Main Jet — 58

2 Needle Jet 2.12

3 Gasket Ring

4 Jet Needle

5 Pilot Jet — 30

6 Air Screw

7 Gasket Ring

8 Slide

9 Stopper Plate

10 Slide Guide

11 Idling Screw

12 Spring

13 Spring

14 Gasket

15 carburettor top Plate

16 Screw

17 Adjuster Screw

18 Lock Nut

19 Rubber Cap

20 Float

21 Float Pin

22 Float Needle

23 Float Bowl

24 Float Bowl Gasket

25 Filter Disc

26 Filter Cover Body

27 Screw

28 Gasket Ring

29 Choke Plunger

30 Choke Spring

31 Screw

Dismantling of Front Fork Assembly:

Oil Draining:

Disconnect speedocable and front brake cable, then loosen the spindle and remove the front wheel.

Loosen and remove the nylon nut (Fig. 105/1), then remove the distance piece (Fig. 105/3), and compression spring (Fig. 105/4). Insert the service tool SKE 018 to hold the damper tube (Fig. 105/5) and keep it pressed down, then loosen and remove the allen screw (Fig. 105/6) to drain the oil.

Dismantling the front fork legs:

Note: The procedure given below is to be carried out only when there is any over-hauling to be done to the front suspension.

Loosen and remove the front mudguard.

Press the gaiter clip (Fig. 105/7) and push it onto the slider (Fig. 105/8) push the gaiter (Fig. 105/9) away from the slider, and remove the slider. The oil seal (Fig. 105/10) can be removed by levering it out. Check whether the bush (Fig. 105/11), which locates the damper tube, is stuck inside the slider. Unclamp the gaiter clip (Fig. 105/12) and remove the gaiter from the main tube (Fig. 105/13).

Loosen the two pinch bolts (Fig. 105/14 & 15), and draw out the fork main tube (Fig. 105/13). The damper tube (Fig. 105/5) with conical spring (Fig. 105/16) can be removed by inverting the main tube. Note the position of the conical spring for easy assembling.

Note: In case the fork main tube cannot be removed easily, use a screw driver in the slot provided on the fork crown bottom and slightly tap, for easy removal of the fork main tube.

Hold the fork main tube in a vice with soft jaws.

Using a circlip plier remove the outer circlip (Fig. 105/17) at the bottom of the main tube then take out the damper bush (Fig. 105/18), aluminium washer (Fig. 105/19) and sealing ring (Fig. 105/20).

The inner circlip (Fig. 105/21) fitted inside the main tube, need not be removed, unless the the circlip has to be replaced.

Dismantling the damper tube :

Using circlip plier remove circlip (Fig. 105/22) then remove damper tube bush (Fig. 105/23) from the damper tube.

Assembly of Front Fork Assembly:

Inspect all components for wear, and replace if necessary. Ensure that all bushes are lubricated while fitting.

Hold the fork main tube in a vice with soft jaws.

Ensure that the inner circlip (Fig. 105/21) has been fitted onto the fork main tube.

Fit the damper tube bush (Fig. 105/23) onto the damper tube (Fig. 105/5) and fit the circlip (Fig. 105/22). Insert the conical spring (Fig. 105/16) taking care that the smaller diameter of the spring faces the damper tube bush. Now insert the assembly into the main tube (Fig. 105/13) from top.

Insert the sealing ring (Fig. 105/20) onto the damper tube with the projections facing down (i. e. towards the slider) then introduce an aluminium washer (105/19) and stepped bush (Fig. 105/18) with the step facing the sealing ring (taking care to see that the sealing ring seats in the stepped bush properly). Fit the outer circlip in the circlip groove on the main tube. Fit the bush (Fig. 105/11) on the damper tube.

Fit the oil seal onto the slider.

Insert service tool SKE 018 to hold the damper tube and keep it pressed down. Assemble the slider with oil seal onto the fork main tube. Screw in the allen screw with a new aluminium washer (Fig. 105/24) and tighten fully.

Fill up 100cc. oil in each leg (Indian oil - Servo telescocab, Castrol Shock oil, or equivalent).

Insert the compression spring (Fig. 105/4) and distance piece (Fig. 105/3). Fit the nylon nut (Fig. 105/1) with the 'O' ring (Fig. 105/2) and tighten. Fit the gaiter (Fig. 105/9) with upper (Fig. 105/12) and lower (Fig. 105/7) clips. Insert the legs into the fork crowns Bottom and Top (Fig. 105/25 & 26) taking care to see that the main tube is flush with the Top crown. Tighten the pinch bolts on the fork crown Top and Bottom.

Fit the mudguard and the front wheel. Connect the Front brake and Speedocable. Tighten spindle nut.

Key to figure 105

1. Nylon Nut
2. 'O' ring
3. Distance piece
4. Compression spring
5. Damper tube
6. Allen Screw
7. Gaiter clip (Lower)
8. Sliders
9. Gaiter
10. Oil Seal
11. Bush
12. Gaiter clip (Upper)
13. Fork main tube
14. Pinch bolt
15. Pinch bolt
16. Conical spring
17. Circlip
18. Damper bush (stepped)
19. Aluminium washer
20. Sealing ring
21. Circlip
22. Circlip
23. Damper tube bush
24. Aluminium washer.
25. Fork crown - Bottom
26. Fork crown - Top

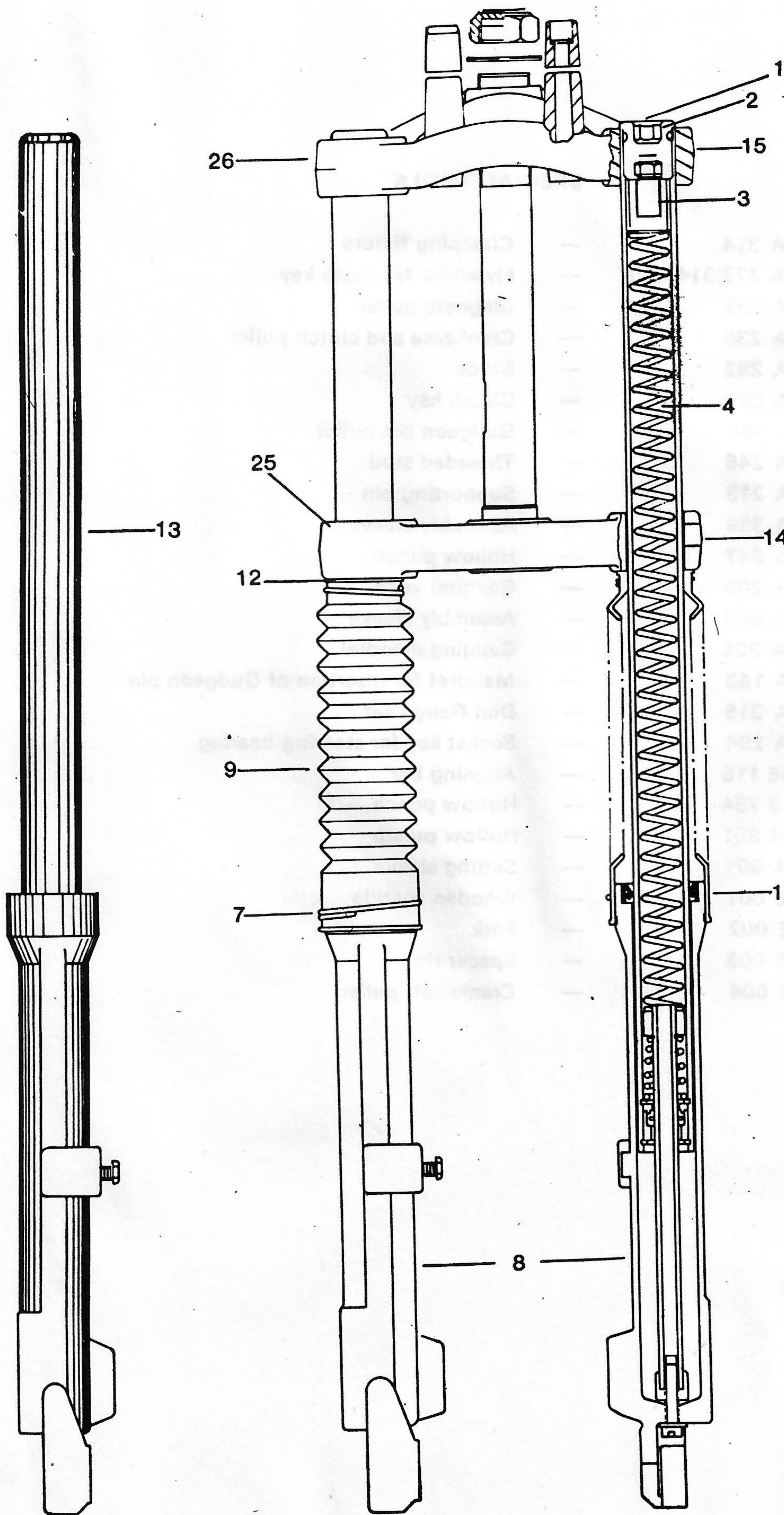
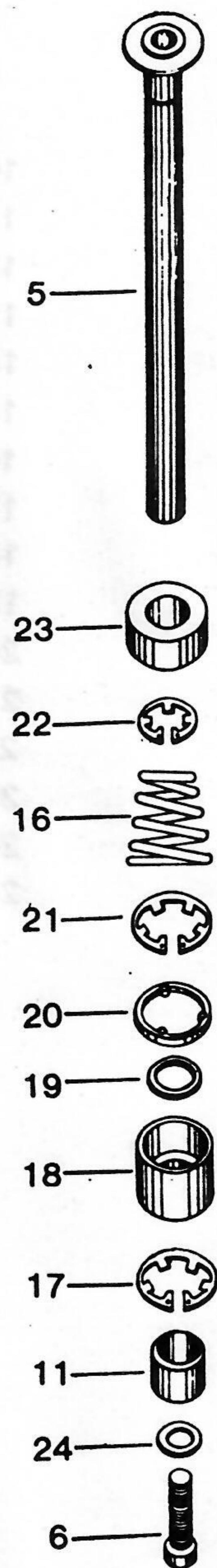


Fig. 105



SPECIAL TOOLS

- | | |
|---------------------|--|
| 1. SK-A 314 | — Clamping fixture |
| 2. SK-A 373/314-010 | — Flywheel Magneto key |
| 3. SK-A 263 | — Magneto puller |
| 4. SK-A 235 | — Crankcase and clutch puller |
| 5. SK-A 292 | — Studs |
| 6. SK-A 297 | — Clutch key |
| 7. SK-A 64 | — Gudgeon pin puller |
| 8. SK-A 246 | — Threaded stud |
| 9. SK-A 213 | — Supporting pin |
| 10. SK-A 339 | — Assembly sleeve |
| 11. SK-A 347 | — Hollow punch |
| 12. SK-A 206 | — Gauging yoke |
| 13. SK-A 960 | — Assembly sleeve |
| 14. SK-A 304 | — Gauging mandrel |
| 15. SK-A 163 | — Mandrel for insertion of Gudgeon pin |
| 16. SK-A 315 | — Dial Gauge set |
| 17. SK-A 294 | — Socket key for steering bearing |
| 18. MV-6 115 | — Aligning bar |
| 19. MV-6 734 | — Hollow punch |
| 20. MV-6 961 | — Hollow punch |
| 21. SK-A 301 | — Setting sleeve |
| 22. SK-E 001 | — Wooden spatula |
| 23. SK-E 002 | — Fork |
| 24. SK-E 003 | — Spacer ring |
| 25. SK-E 004 | — Crankshaft puller |

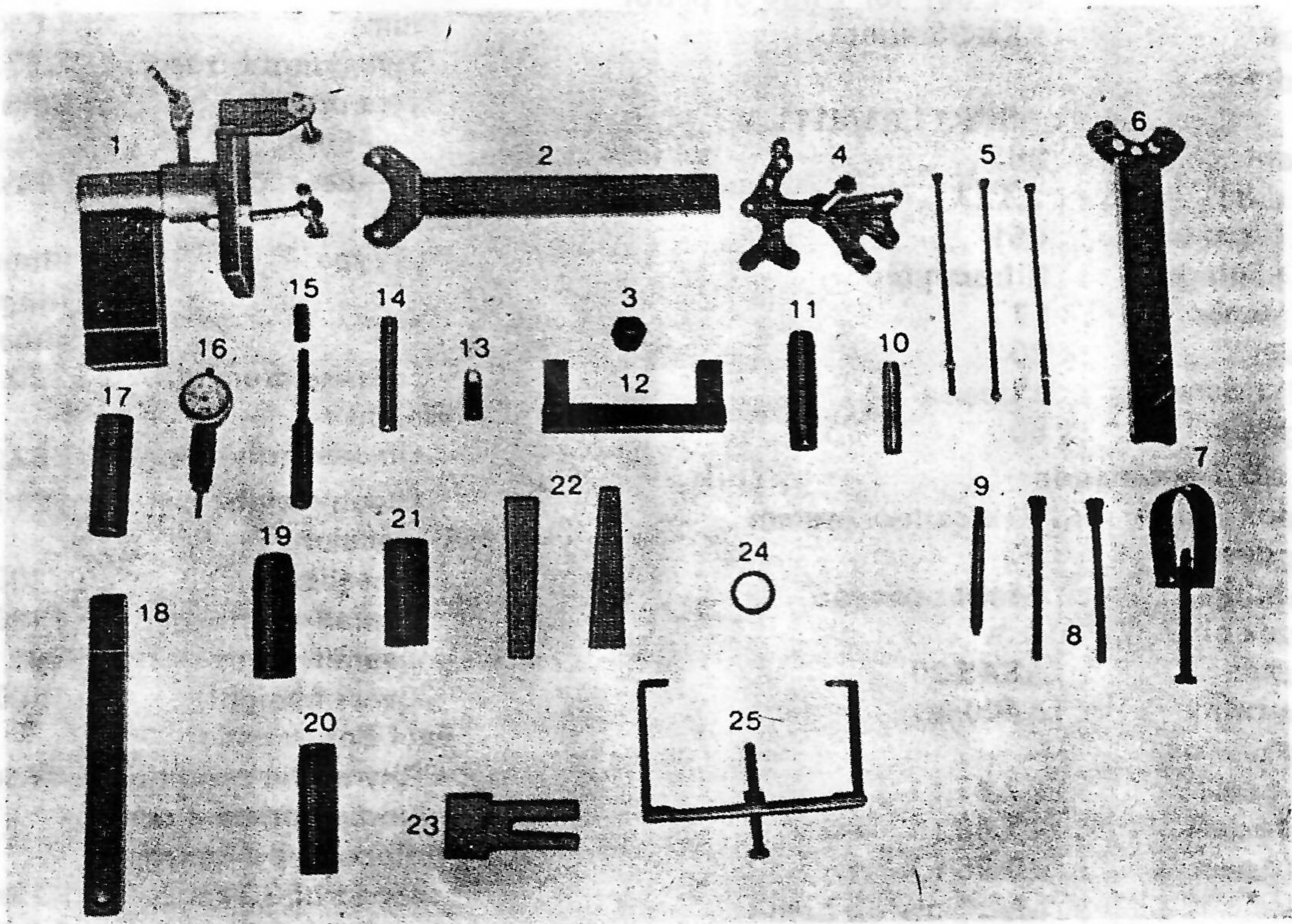


Figure 106

TECHNICAL DATA

Model	: EXPLORER	Stroke	: 130 mm
Make	: ENFIELD	— Oil grade	: Castrol shock oil or Bharat shock absorber oil-PT or equivalent
Manufacturer	: THE ENFIELD INDIA LTD. Ranipet Division, 29, Eldams Road, Madras-600 018	— Oil quantity	: 100 ML in each lug
Engine :	: 2 Stroke, Single Cylinder	Rear	: Swing arm assisted by hydraulic shock absorbers
Type	: (with hard chrome plated barrel) air cooled petrol engine	Stroke	: 82 mm
Bore/Stroke	: 39 mm/41.8 mm	Wheels :	
Cubic Capacity	: 49.9 cc	Front & rear	: Aluminium alloy pressure die-cast wheels
Compression Ratio	: 8.3 : 1	Rims	: 1.6×17
Power	: 3.3 BHP @ 6000 rpm	Tyres (Front & rear)	: 2.75×17
Maximum torque	: 4.1 Nm/3500 rpm	Tyre pressure	: Solo Dual
Petrol-Oil	: 25 ML of oil (2T/Castrol 30/SAE 30) for 1 litre of petrol	— Front	: 24 psi 26 psi
Starting	: Kick-Starter	— Rear	: 34 psi 40 psi
Carburettor :		Brake :	
Type	: BING 17/15/111	Type	: Internal expanding single leading shoe drum type
Main Jet	: 58	Brake drum dia	: 120 mm
Needle Jet	: 2.12	Weight :	
Needle Number	: 051	Unladen (dry) weight	: 82 kgs.
Needle Setting	: II from top	Laden weight	: 210 kgs.
Slide Number	: 17	Dimensions :	
Pilot Jet	: 30	Wheel base	: 1200 mm
Pilot Air Screw	: 1 $\frac{1}{2}$ open	Overall length	: 1860 mm
Starting Jet	: 60	Overall width	: 635 mm
Gear Box & Transmission :		Overall height	: 1080 mm
Gear Box Type	: Pull cotter system	Fuel Consumption	:
No. of gears	: 3	City traffic conditions	: 65 to 75 kmpl
Gear shifting	: Foot operated	Under optimum conditions at a constant speed of 30 kmph.	: 90 kmpl
Gear box oil		Fuel Tank Capacity	: 8.8 litres
— Grade	: SAE 90	Reserve	: 1.25 litres
— Quantity	: 400 ML	Maximum Speed	: 60 kmph
Reduction ratios		Electrical System	: 4 pole flywheel magneto 6V 30-10 Watts
— 1st gear	: 2.47 : 1	Contact breaker gap	: 0.35 - 0.45 mm (0.014" - 0.018")
— 2nd gear	: 1.48 : 1	Ignition Timing	: 1.1 to 1.3 mm before TDC
— 3rd gear	: 0.96 : 1	Spark plug	: W 160 Z2 (MICO)
Clutch	: Multiplate oil bath	Plug gap	: 0.5 mm (0.020")
Primary drive	: Helical gears	Headlamp	: 6 V 25/25W
Ratio	: 4.33 (78:18)	Tail lamp	: 6V 3W
Secondary reduction	: Sprockets	Brake light	: 6V 10W
Ratio	: 2.73 (41:15)	Speedometer light	: 6V 1.2W
Final drive	: Chain $\frac{1}{2}$ " × 3/16"	Horn	: 6V AC Buzzer type
No. of links	: 112		
Overall ratios			
— 1st gear	: 29.20		
— 2nd gear	: 17.50		
— 3rd gear	: 11.35		
Frame :	: Central Tubular		
Suspension :			
Front	: Telescopic fork, hydraulically damped, assisted by coil spring		



ENGINE TIGHTENING TORQUE

- | | |
|--------------------------|----------------------|
| a) Crankshaft pinion | : 5 kilogram metre |
| b) Clutch main shaft nut | : 3.5 kilogram metre |
| c) Cylinder head nut | : 1.5 kilogram metre |
| d) F. D. Sprocket nut | : 5 kilogram metre |
| e) Magneto nut | : 3.5 kilogram metre |

