

CHAPTER V

Taking up Connecting Rod Bearings

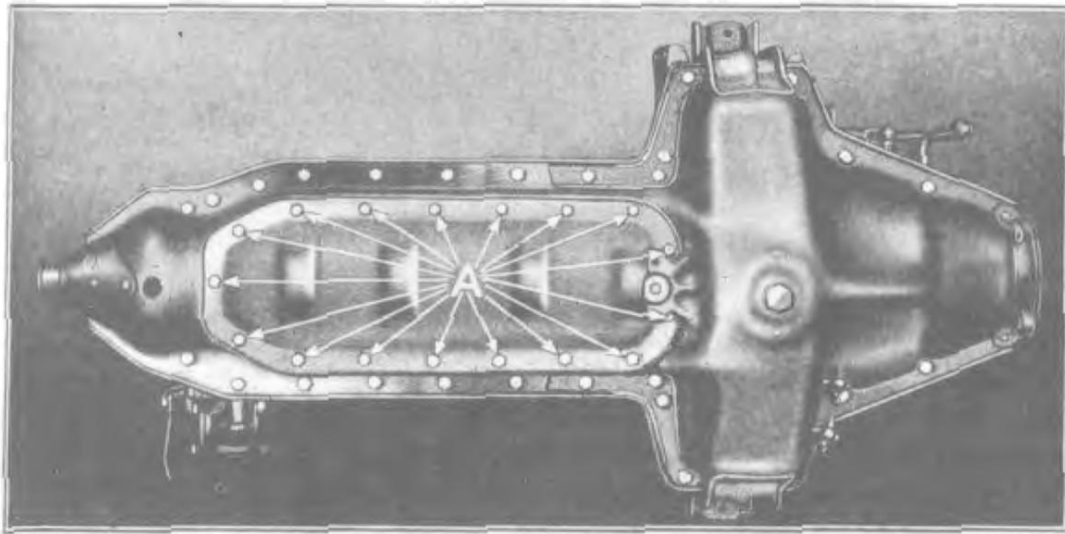


Fig. 228

382 Remove crankcase lower cover and gasket by running out the 17 crankcase lower cover screws which hold cover and gasket to crankcase (See "A" Fig. 228). Turn engine over with starting crank until No. 1 and No. 4 rods are at bottom center. (If the car is equipped with the old design crank case, see "f" Par. 399).

383 Remove connecting rod bearing caps (See "A" Fig. 229) from No. 1 and No. 4 rods by running off the two nuts which hold each cap to rod. Before removing the caps examine both rods and caps to make sure they are plainly marked. When connecting rods and caps are assembled in new engines, they are marked with a file mark which corresponds to the number of the cylinder into which they are fitted. For instance No. 1 rod and cap which are fitted into No. 1

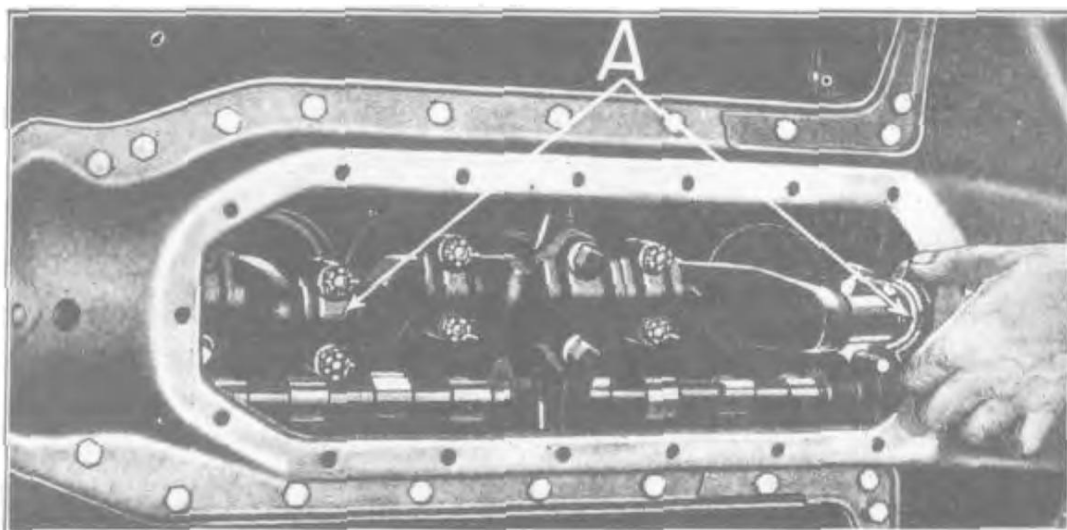


Fig. 229



Fig. 230

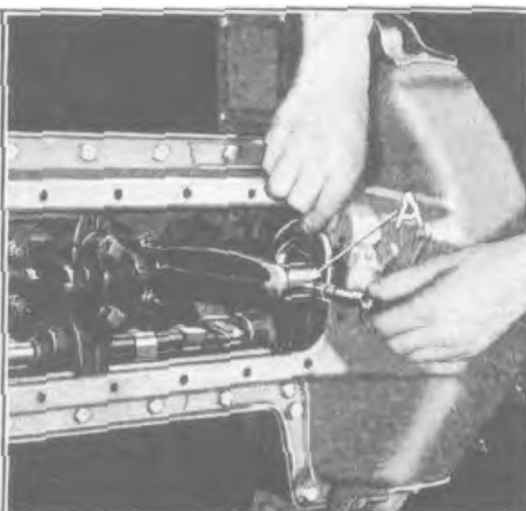


Fig. 231

cylinder (the cylinder nearest radiator) are marked with one file mark, No. 2 rod and cap carry two file marks, and so on up to No. 4 rod, which carries four marks (See Fig. 230). When replacing a cap, the markings on the cap should be made to correspond with the markings on the rod. The markings on the rod and cap should be on the same side as the connecting rod clamp screw.

384 Check pin bearings on crankshaft with a micrometer to see that bearings are not out of round (See "A" Fig. 231). Take the measurement across several different points. If the crank pin shows more than .002" out of round, the shaft should be changed. If the shaft is O. K. and the babbitt in the rod and cap have not been damaged, the cap should be filed with a large mill file as shown in Fig. 232, filing about .002" from face of cap. (If the babbitt has been burned out, see Par. 389.) The repair man must exercise considerable care to hold the file squarely on the cap.

385 When the cap has been dressed down sufficiently, check the cap on a surface plate to make sure that the face of the cap has been filed evenly. (See Fig. 233.)

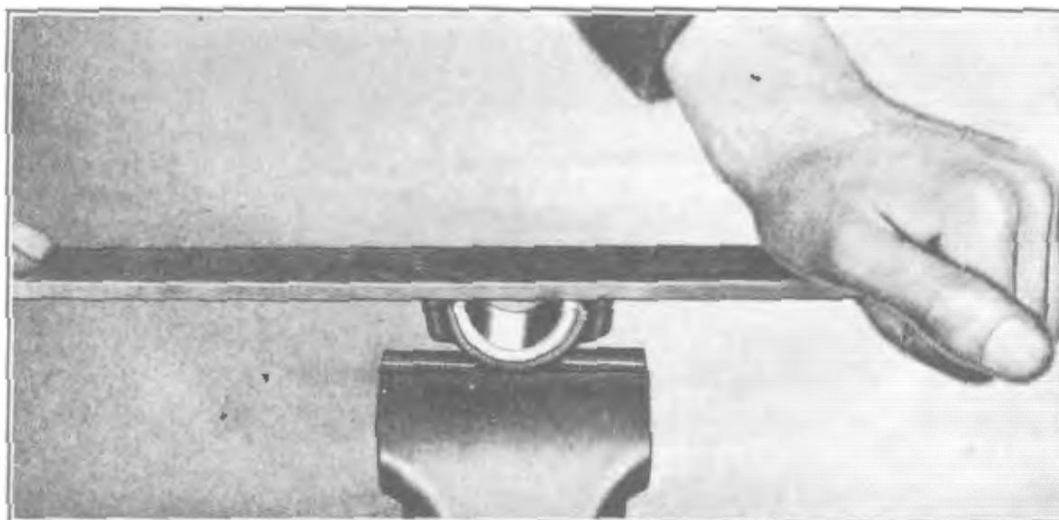


Fig. 232

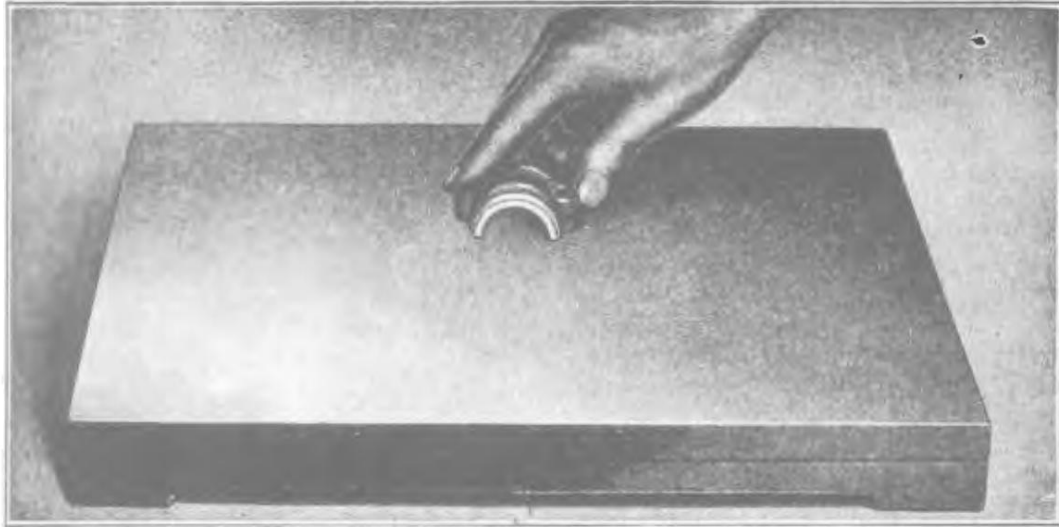


Fig. 233

386 The rod should be fitted to crankshaft so that it will move slightly on the shaft when the side of the bearing cap is tapped with a small brass hammer. The movement of the rod on the shaft can be detected by placing a finger on one side of the cap while tapping opposite side (See Fig. 237). The clearance between connecting rod and piston pin bushings should next be checked. If the clearance is less than $\frac{1}{16}$ ", remove the rod and lightly file end of piston pin bushing. This necessitates removing the piston and piston pin, as described in Pars. 399 and 413. When the filing operation is completed, clean piston with compressed air, assemble rod to piston and install piston and connecting rod assembly in cylinder. When correct adjustment is obtained, lock the two connecting rod cap bolt nuts with cotter keys.

387 When No. 1 and No. 4 bearings have been adjusted, turn motor over with starting crank and repeat the operation on No. 2 and No. 3 bearings.

388 After taking up the connecting rod bearings, examine crankcase lower cover gasket to make sure it is in good condition. Replace cover by running in the 17 screws which hold cover to crankcase (14 screws on the old style cover). If oil has been drained from crankcase, pour in a gallon of fresh oil through breather pipe.

389 If the babbitt has been burned out, a new rod should be substituted. This necessitates removing piston and piston pin as explained in Pars. 399 and 413. When installing a new rod in place of one that has been burned out, make sure that the pin bearing on crankshaft is free from any babbitt left by the burned out rod. If any babbitt remains on the pin bearings it can be dressed off by oiling a strip of fine sandpaper and wrapping it around the bearing, and rotating the sandpaper back and forth with a narrow strap as shown in Fig. 161. It is also a good plan to drain the oil and remove any loose babbitt from the crankcase.

390 Before installing a rod, it should be carefully checked to see if rod is twisted or sprung as a rod which is out of alignment will cause excess wear and knocking.

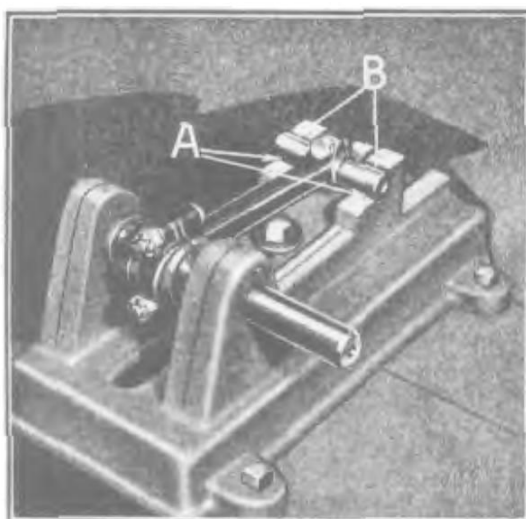


Fig. 234

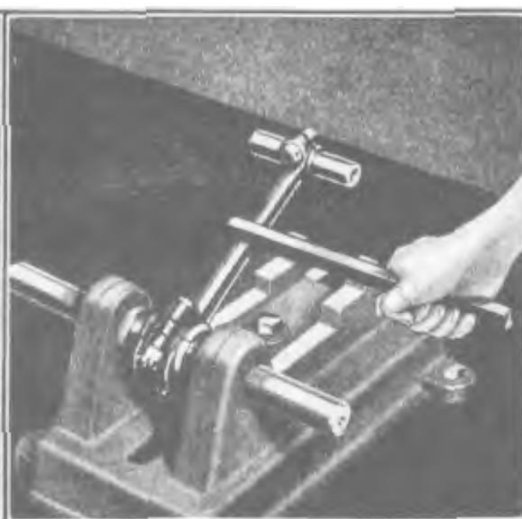


Fig. 235

- 391** The alignment of the rod can be checked by inserting a piston pin through end of rod and placing the rod in an alignment fixture (See Fig. 234). If alignment is O. K., piston pin will fit snugly against fixture at points "A" and "B"; if rod is sprung or twisted there will be a clearance at one of these points.
- 392** If a rod is slightly sprung or twisted it can be straightened with a connecting rod straightening iron as shown in Fig. 235. When rod is O. K. it is assembled in piston and checked for alignment as described in Pars. 418 to 420.
- 393** In fitting a new rod on an old shaft the pin bearings on crankshaft are usually worn undersize. This not only necessitates removing the two paper shims from between cap and rod, but it is frequently necessary to lightly file the face of both the cap and rod in order to properly fit rod to shaft. Before removing cap from rod, the cap and rod should be marked as described in Par. 383, to insure their being correctly assembled. If the pin bearing is badly undersize, in addition to filing cap and the rod, it is necessary to scrape the bearing in until at least a 50% bearing is obtained on both cap and rod.
- 394** To scrape a bearing in—
- Assemble cap and rod to crankshaft by installing piston and connecting rod assembly in cylinder as described in Par. 431 and forcing the piston down until the bearing end of the rod rests on the crankshaft. The connecting rod bearing cap is then assembled to the rod by inserting it over the ends of the two connecting rod cap bolts and running down nuts tightly on ends of bolts.
 - Turn engine over with starting crank.
 - Remove cap and rod from crankshaft and examine the bearings.
 - The spots on the bearing which have come in contact with the shaft, will appear bright. These are the high points and they should be removed with a bearing scraper (See Fig. 236). Scrape very lightly as a deep hole is hard to smooth out.
- 395** When a bearing of approximately 50% is obtained on both rod and cap, place a little oil on cap and rod and assemble rod to crank-



Fig. 236

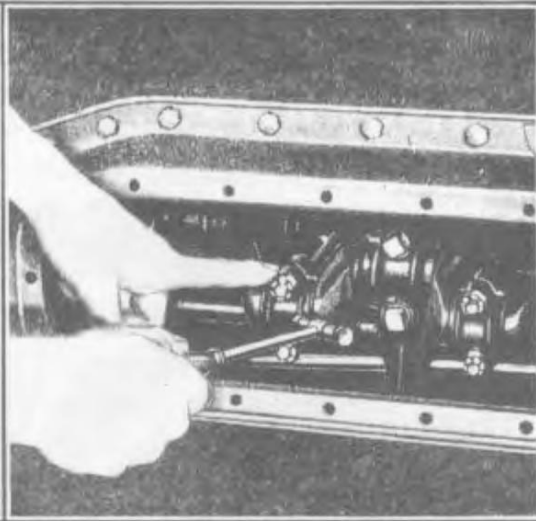


Fig. 237

shaft by installing cap and running down nuts on ends of connecting rod bolts, drawing nuts down tightly and locking the nuts with cotter keys. The crankcase lower cover is then replaced as described in Par. 388.

396

Time Study

Taking Up Connecting Rods

(One man doing the job)

	Hrs.	Min.
1 Install car covers.....		5
2 Remove No. 1 and No. 4 caps, file, replace caps and test for tightness.....		32
3 Turn engine, remove No. 2 and No. 3 caps, tighten and test		32
4 Clean and install crankcase cover and remove car covers..		10
	<hr/> 1	<hr/> 19

The above time applies to cars equipped with the new design crankcase (See Fig. 256). On cars equipped with the old type case, add 15 minutes to the job. If it is necessary to install a new rod owing to the babbitt having been burned out, add 45 minutes to the above time.