

C O N T E N T S

SUBJECT	PAGE	SUBJECT	PAGE
DESCRIPTION AND OPERATION	105	Nine or Six Spring Clutch Overhaul	109
MAINTENANCE AND ADJUSTMENT	105	Three Spring Clutch Overhaul	111
Clutch Adjustment in the Vehicle	105	Clutch Disc	113
CLUTCH LINKAGE	107	Crankshaft Pilot Bushing	113
Linkage Removal—Kaiser	107	Clutch Installation	113
Linkage Removal—Frazer	108	CLUTCH RELEASE FORK SHAFT AND BEARING	114
Linkage Installation—Kaiser	108	Shaft and Bearing Removal	114
Linkage Installation—Frazer	109	Shaft and Bearing Installation	114
CLUTCH	109	SERVICE DIAGNOSIS	115
Clutch Removal	109		

DESCRIPTION AND OPERATION

a. DESCRIPTION. Kaiser and Frazer automobiles with standard or overdrive transmissions are equipped with a single plate, dry-disc type clutch mounted on the engine flywheel. When engaged the clutch disc is pressed against the flywheel by the spring loaded clutch pressure plate. The disc, splined to the transmission drive pinion, includes the clutch facings and is designed to cushion shock and chatter through damper springs around the disc hub. The pressure plate cover, assembled to the pressure plate, is bolted directly to the flywheel. Three pressure plate levers, when operated by the clutch release mechanism, disengage the clutch. Refer to Fig. 164.

Three clutch pressure plates are used in Kaiser and Frazer production; they will be identified in this manual as three, six and nine spring type clutches. All three clutch assemblies have proven, through test, to have equal durability, performance and service life when properly installed and adjusted. Differences in appearance will readily identify the type of clutch in any Kaiser or Frazer automobile. The most prominent differences are in the number and arrangement of the pressure plate springs and in the covers (Fig. 165). These clutch pressure plates can be used interchangeably.

b. OPERATION. The clutch assembly is actuated through linkage from the clutch pedal to a release shaft and fork assembly mounted in the clutch housing. A clutch release bearing and sleeve assembly

is attached to the clutch release fork so that the release bearing engages the pressure plate levers as the release shaft is rotated by pushing down on the clutch pedal.

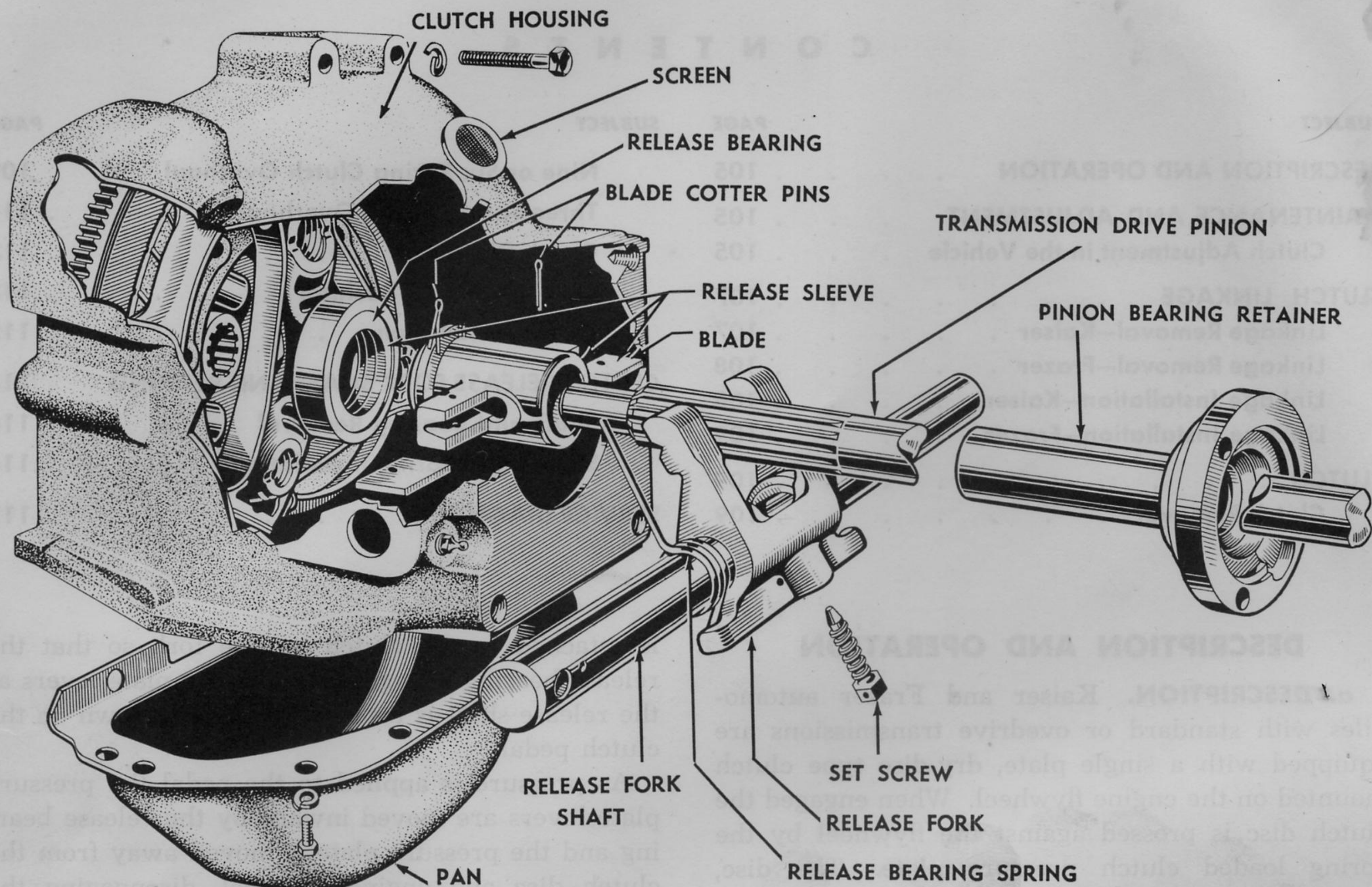
As pressure is applied to the pedal the pressure plate levers are moved inward by the release bearing and the pressure plate is moved away from the clutch disc and engine flywheel, disengaging the clutch. When pressure on the clutch pedal is released the release bearing moves away from the pressure plate levers, releasing the pressure against them. The pressure plate springs then move the pressure plate against the disc and flywheel to engage the clutch.

MAINTENANCE AND ADJUSTMENT

a. MAINTENANCE. The only service maintenance required is regular periodic lubrication of the clutch release fork shaft and linkage. Lack of lubrication will cause "sticky" clutch action and the clutch pedal and release fork shaft will not operate freely. However, it is equally important not to over-lubricate the release fork shaft or the excessive lubricant may work into the clutch housing and onto the disc facings.

b. CLUTCH ADJUSTMENT IN THE VEHICLE. The only adjustment required while the clutch is in the vehicle is linkage adjustment to obtain the correct amount of clutch pedal free movement. Pedal free movement is the movement of the pedal before the

KAISER-FRAZER SHOP MANUAL



SP-1387

Fig. 164—Clutch Release Mechanism—Exploded View

clutch starts to disengage, in other words the distance the pedal moves before causing the clutch release bearing to contact the clutch pressure plate levers. Linkage adjustment is required to restore pedal free movement when it has been reduced as a result of normal wear of clutch disc facings and when new clutch parts are installed. Clutch linkage in Kaiser models differs slightly from that in Frazer models.

1. Clutch Pedal Adjustment—Kaiser. To adjust the clutch pedal free travel, loosen the two lock nuts on the pedal adjusting link (Fig. 166). Turn the nuts forward to decrease or backward to increase the free travel. After pedal free travel of $\frac{3}{4}$ to 1 inch, 1 inch preferred, is established, tighten both lock nuts against the adjusting link guide, being careful not to change the adjustment.

2. Clutch Pedal Adjustment—Frazer. The correct amount of pedal free movement is $\frac{5}{8}$ to $\frac{3}{4}$ of

an inch. To obtain the proper pedal free movement proceed as follows:

(a) Release and remove the clutch pedal return spring (Fig. 167).

(b) Remove the clevis pin and release the clevis end of the adjusting link from the clutch pedal shaft bellcrank.

(c) Turn the clevis end in or out to obtain correct amount of pedal free movement. The pedal free movement may be determined or measured between the underside of the floor pan and the clutch pedal arm, that is, the distance the pedal can be moved before the clutch release bearing contacts the clutch pressure plate levers.

(d) After the pedal free movement has been adjusted install the adjusting link clevis on the bellcrank and insert the clevis pin and cotter pin.

(e) Install the clutch pedal return spring.

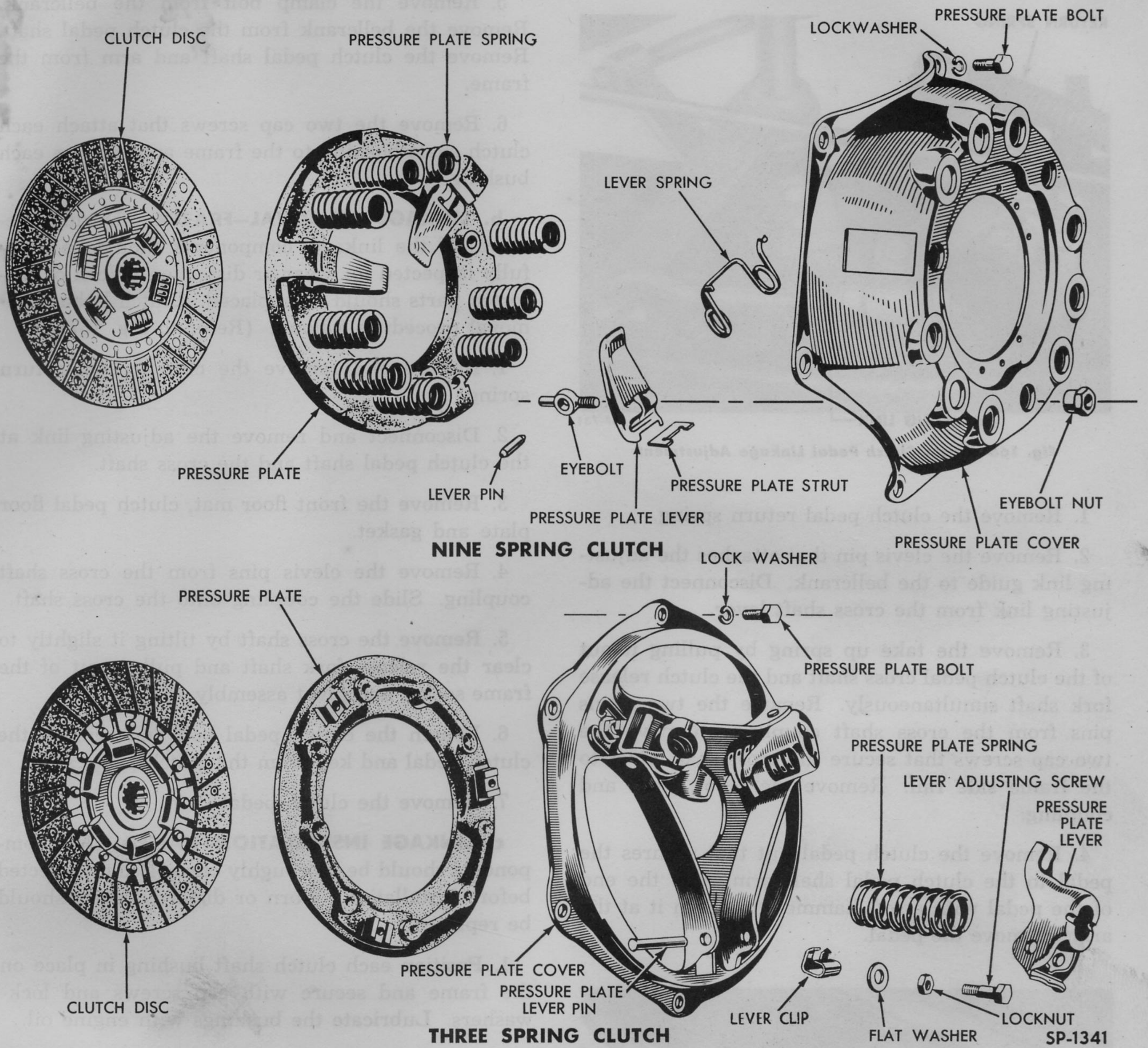


Fig. 165—Clutch Assemblies—Exploded View

CLUTCH LINKAGE

The clutch linkage is designed to provide long trouble-free service. Other than normal linkage adjustment and periodic lubrication, no further service should be necessary. However, should the occasion arise to remove or replace any components of the installation it is extremely important that care be exercised in the proper assembly, alignment, and adjustment of the linkage to assure

proper operation. Linkage in Kaiser models differs from that in Frazer models; therefore, procedures are given separately below.

a. LINKAGE REMOVAL—KAISER. During the removal of the linkage careful inspection of the components should be made to determine if wear or distortion has occurred. Worn or distorted parts should be replaced. Procedure for clutch linkage removal follows (Refer to Fig. 166).

KAISER-FRAZER SHOP MANUAL

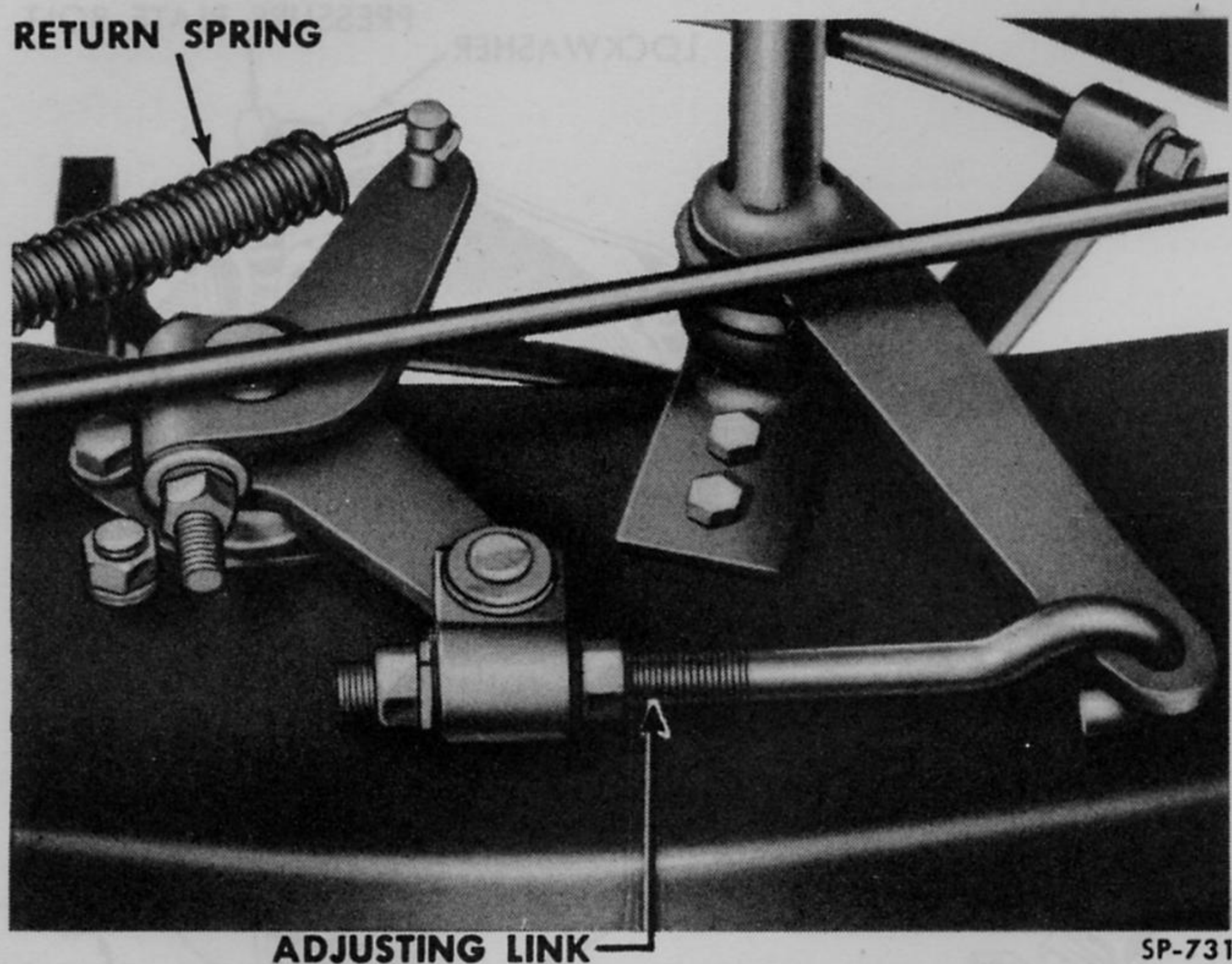


Fig. 166—Kaiser Clutch Pedal Linkage Adjustment

1. Remove the clutch pedal return spring.
2. Remove the clevis pin that attaches the adjusting link guide to the bellcrank. Disconnect the adjusting link from the cross shaft lever.
3. Remove the take up spring by pulling it out of the clutch pedal cross shaft and the clutch release fork shaft simultaneously. Remove the two clevis pins from the cross shaft coupling. Remove the two cap screws that secure the cross shaft pivot to the frame side rail. Remove the pivot, shaft and coupling.
4. Remove the clutch pedal nut that secures the pedal to the clutch pedal shaft arm. Tap the end of the pedal with a soft hammer to loosen it at the arm. Remove the pedal.

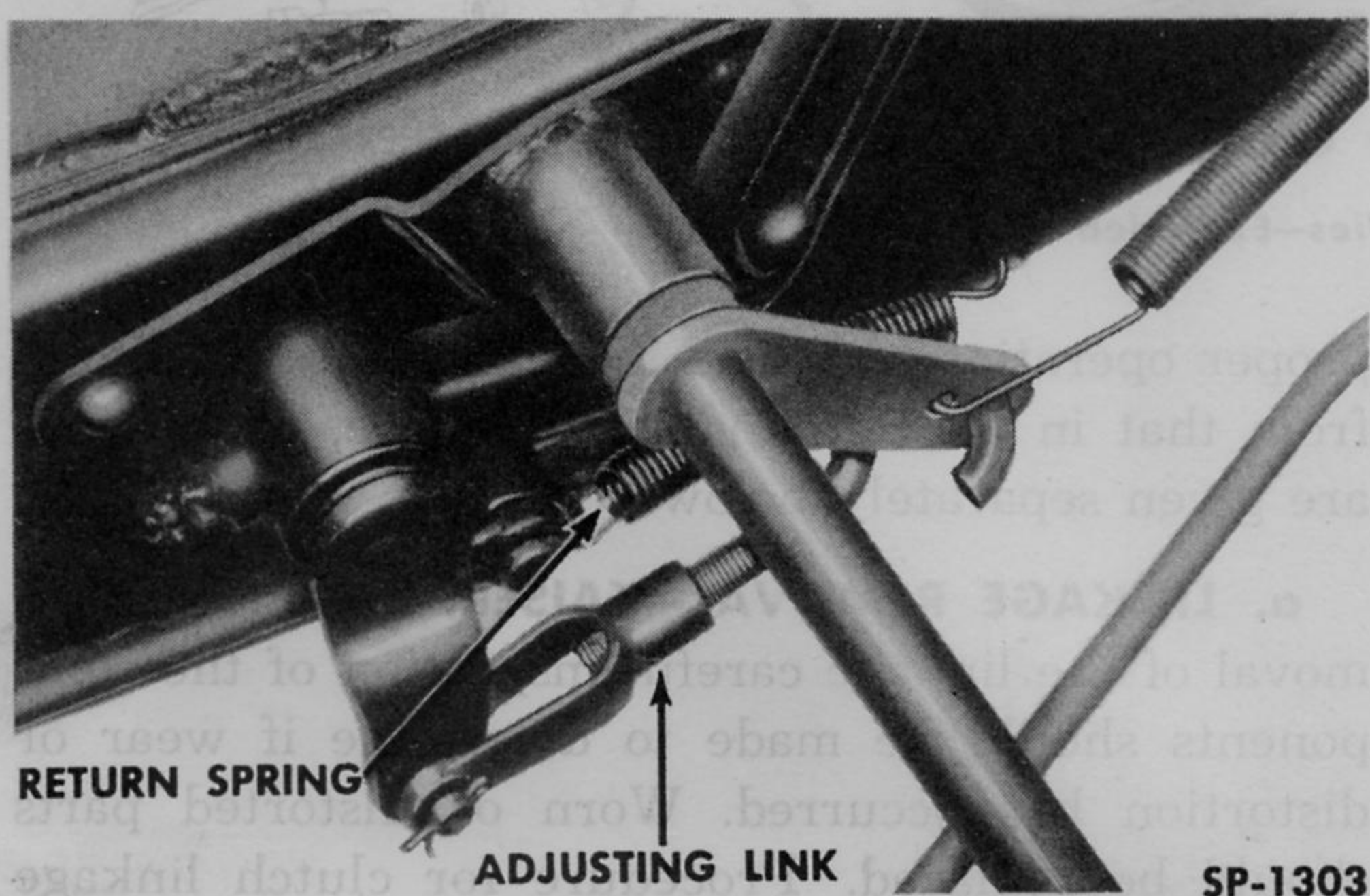


Fig. 167—Frazer Clutch Pedal Linkage Adjustment

5. Remove the clamp bolt from the bellcrank. Remove the bellcrank from the clutch pedal shaft. Remove the clutch pedal shaft and arm from the frame.

6. Remove the two cap screws that attach each clutch shaft bushing to the frame and remove each bushing.

b. LINKAGE REMOVAL—FRAZER. During removal of the linkage, components should be carefully inspected for wear or distortion. Worn or distorted parts should be replaced. Clutch linkage removal procedure follows. (Refer to Fig. 167).

1. Release and remove the clutch pedal return spring.
2. Disconnect and remove the adjusting link at the clutch pedal shaft and the cross shaft.
3. Remove the front floor mat, clutch pedal floor plate and gasket.
4. Remove the clevis pins from the cross shaft coupling. Slide the coupling onto the cross shaft.
5. Remove the cross shaft by tilting it slightly to clear the release fork shaft and pull it out of the frame socket and pivot assembly.
6. Loosen the clutch pedal bolt and remove the clutch pedal and key from the clutch pedal shaft.
7. Remove the clutch pedal shaft.

c. LINKAGE INSTALLATION—KAISER. All components should be thoroughly cleaned and inspected before installation. Worn or distorted parts should be replaced.

1. Position each clutch shaft bushing in place on the frame and secure with cap screws and lockwashers. Lubricate the bushings with engine oil.

2. Install the clutch pedal shaft and arm in the frame. Position the bellcrank on the clutch shaft and install the bellcrank retaining bolt. Install the clutch pedal return spring. Install the clutch pedal.

3. Pack the pivot bushing with chassis lubricant and install it on the frame side rail.

4. Slide the clutch cross shaft coupling on cross shaft. Position the cross shaft in place in the pivot and connect the coupling to the cross shaft and release fork shaft with clevis pins. Install the take up spring on the cross shaft. At this point visually

check the alignment of the cross shaft in relation to the pivot bushing. Misalignment may be corrected by adding shims as required between the pivot bracket and frame side rail to tilt the bushing.

5. Install the clutch pedal adjusting link and link guide.

6. Adjust the clutch pedal free travel as outlined under MAINTENANCE AND ADJUSTMENT.

d. LINKAGE INSTALLATION—FRAZER. All component parts should be thoroughly cleaned and inspected before installation. Worn or distorted parts should be replaced.

1. Install the clutch pedal shaft. If there is evidence of excessive play in the shaft in the frame support assembly, replace the bushings in the support assembly, or if the shaft is distorted or worn it should be replaced.

2. Install the key and clutch pedal on the pedal shaft, tightening the pedal bolt to lock the pedal on the shaft.

3. Install the coupling and dust seal on the clutch cross shaft. Replace the dust seal if it is damaged or distorted. Install the clutch cross shaft, replacing the pivot in the frame shaft support if it is worn or distorted.

4. Install the clutch pedal floor plate, gasket and mat.

5. Install the adjusting linkage temporarily in preparation for linkage adjustment.

6. Adjust the linkage and complete the installation as outlined under MAINTENANCE AND ADJUSTMENT.

CLUTCH

Normal wear or improper operation of the clutch, by the owner or operator may impair clutch function to the point which may necessitate its removal and overhaul.

a. CLUTCH REMOVAL. The clutch can be removed only after the transmission and overdrive (if so equipped) has been removed. To remove the clutch proceed as follows:

1. Remove the transmission as detailed in Section 6, "Transmission and Overdrive."

2. The crankshaft, flywheel, and clutch assembly

are dynamically balanced individually and as a unit. To maintain this balanced condition the position of the clutch on the flywheel must be marked before removal. Make a prick punch mark on the clutch cover and a corresponding mark on the flywheel to identify the proper position for assembly.

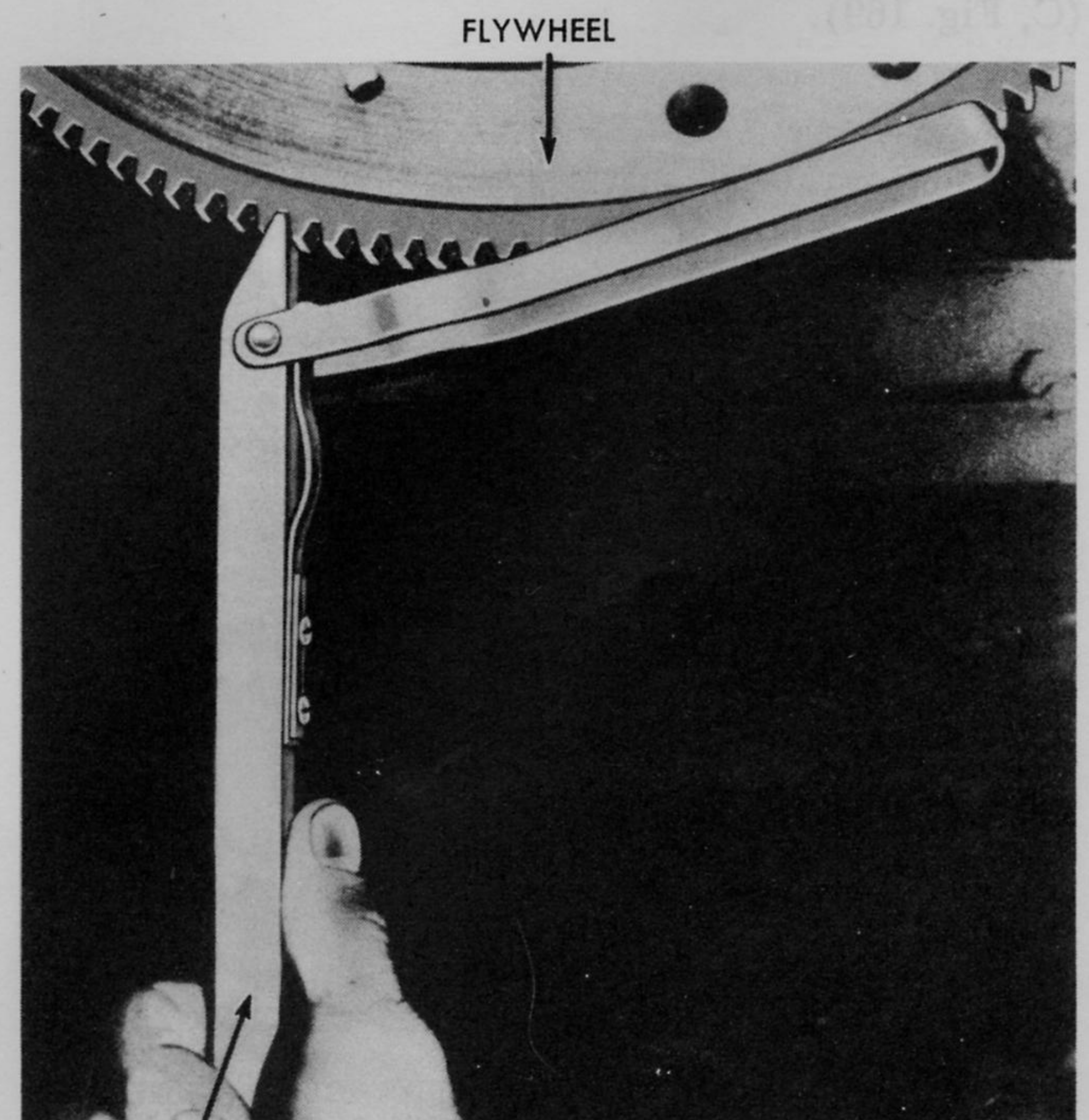
3. Rotate the flywheel, using Flywheel Turning Tool C-771 (Fig. 168) so that each pressure plate cover mounting bolt is accessible and may be removed. Loosen all six bolts equally before removing them to relieve pressure plate spring pressure, to prevent cover distortion. Remove the bolts, at the same time supporting the pressure plate and cover assembly and the clutch disc to keep them from dropping.

4. Remove the clutch pressure plate and cover assembly and the clutch disc.

b. OVERHAUL OF NINE OR SIX SPRING CLUTCH.

Overhaul of the nine or six spring clutch is accomplished on the Clutch Rebuilding and Adjusting Fixture C-585-C. Procedures for disassembly, inspection, assembly and adjustment follow:

1. Nine or Six Spring Clutch Disassembly. Install the clutch on the C-585-C fixture. Mark the cover and pressure plate with a prick punch to as-



Flywheel Turning Tool—C-771

SP-128

Fig. 168—Rotating Flywheel by Hand

KAISER-FRAZER SHOP MANUAL

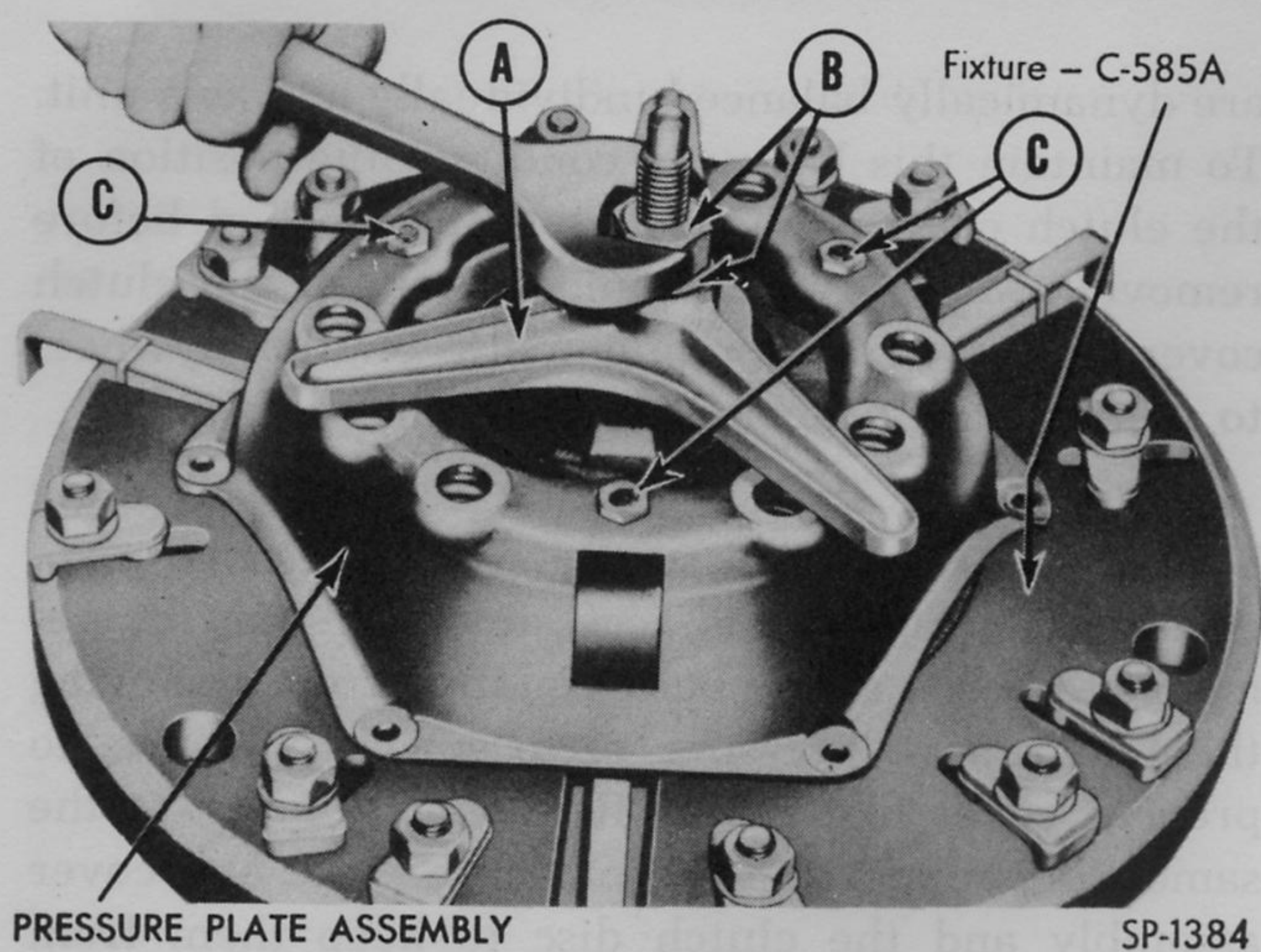


Fig. 169—Disassembling Six Spring Clutch

sure alignment in the original position when assembling.

(a) Install the three-legged spider (A, Fig. 169) so that it rests directly against the top of the clutch pressure plate cover.

(b) Install the plain washer and nut on the fixture (B, Fig. 169), and tighten down the nut to relieve the spring load on the pressure plate eyebolt nuts.

(c) Remove the pressure plate lever eyebolt nuts (C, Fig. 169).

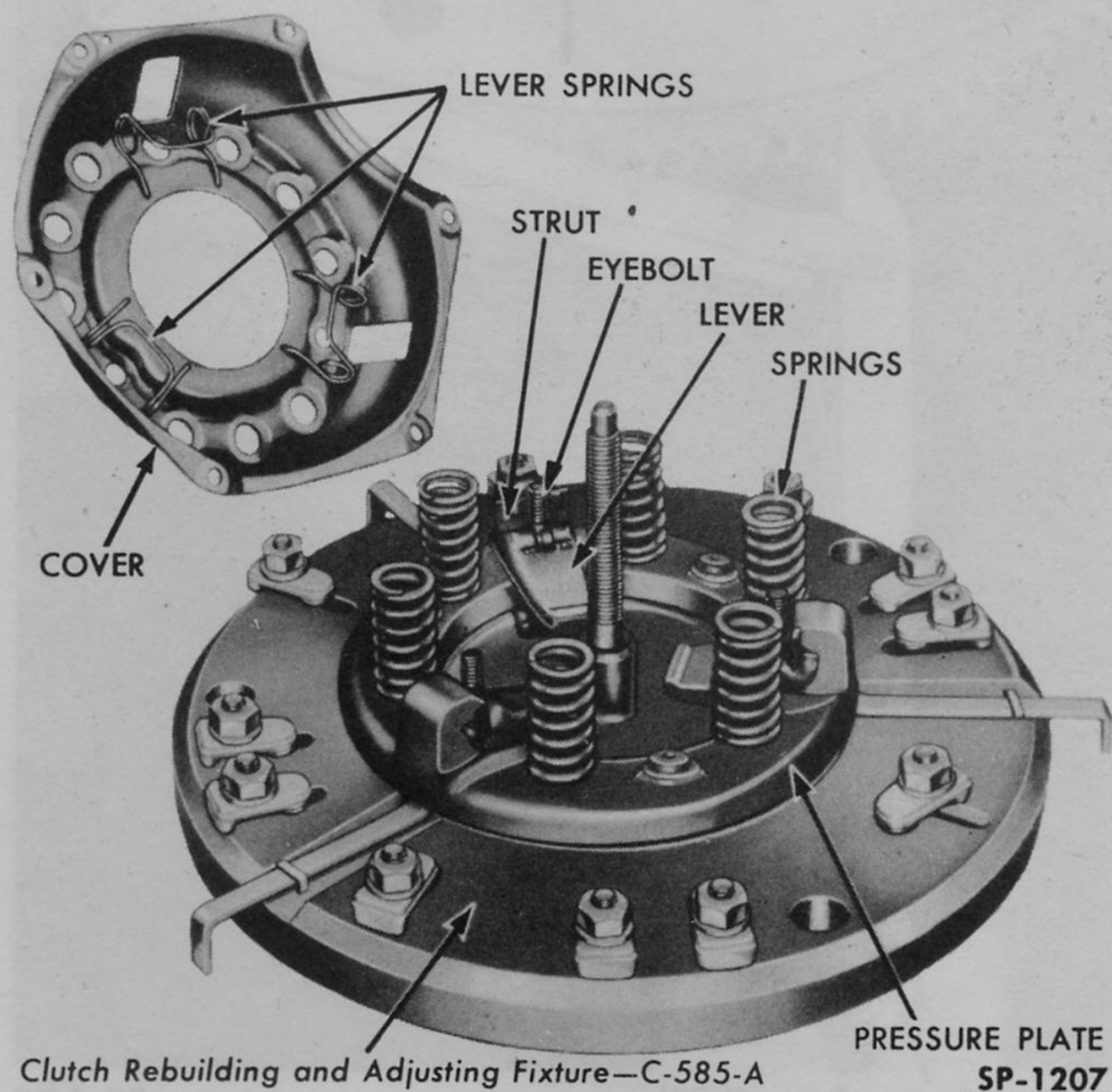


Fig. 170—Six Spring Clutch Cover Plate Removed

(d) Release and remove the fixture nut and washer. Lift off the pressure plate cover exposing the springs, levers and pressure plate for inspection or replacement (Fig. 170).

(e) Remove the pressure plate struts, levers, lever pins and the eyebolts from the pressure plate.

(f) Remove the pressure plate lever springs from the cover.

2. Inspect all Components. Determine if the pressure plate is scored or warped—if so it should be replaced. Check the clutch pressure plate springs, using the Clutch and Valve Testing Fixture C-647

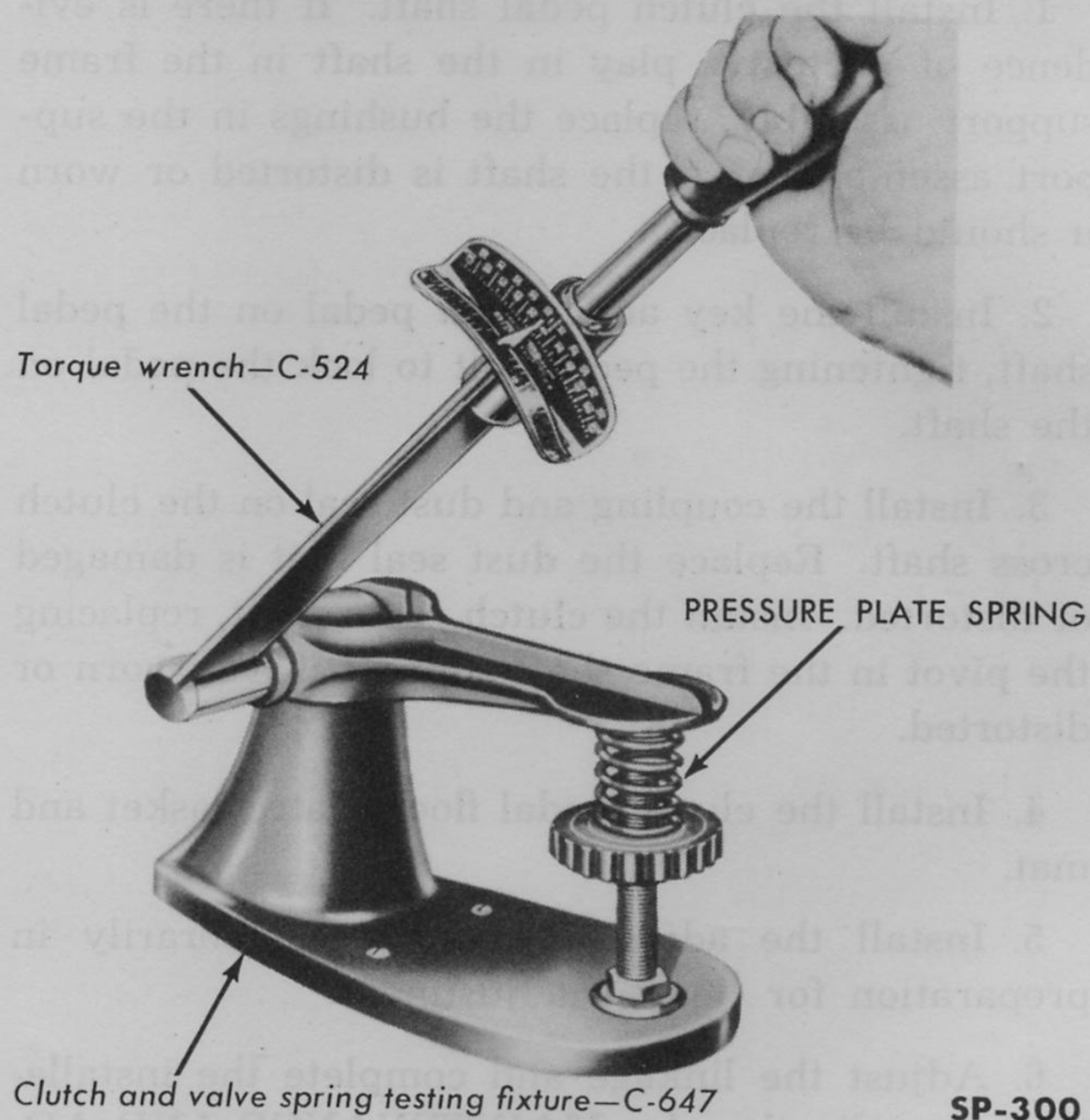


Fig. 171—Checking Clutch Pressure Plate Springs

(Fig. 171). At 1½ inches height the correct spring load is 155 to 165 lbs. for (tan spring) a 9-spring clutch and 239 to 251 lbs. for a (white spring) 6-spring clutch. Check the pressure plate levers for wear and replace if worn.

3. Assemble and Adjust Nine or Six Spring Clutch. Proper assembly and adjustment of the clutch is as follows:

(a) Assemble the clutch pressure plate on the C-585-C fixture.

(b) Assemble the eyebolts, lever pins, pressure plate levers and struts on the pressure plate (Fig. 172). Install the nine or six pressure plate springs

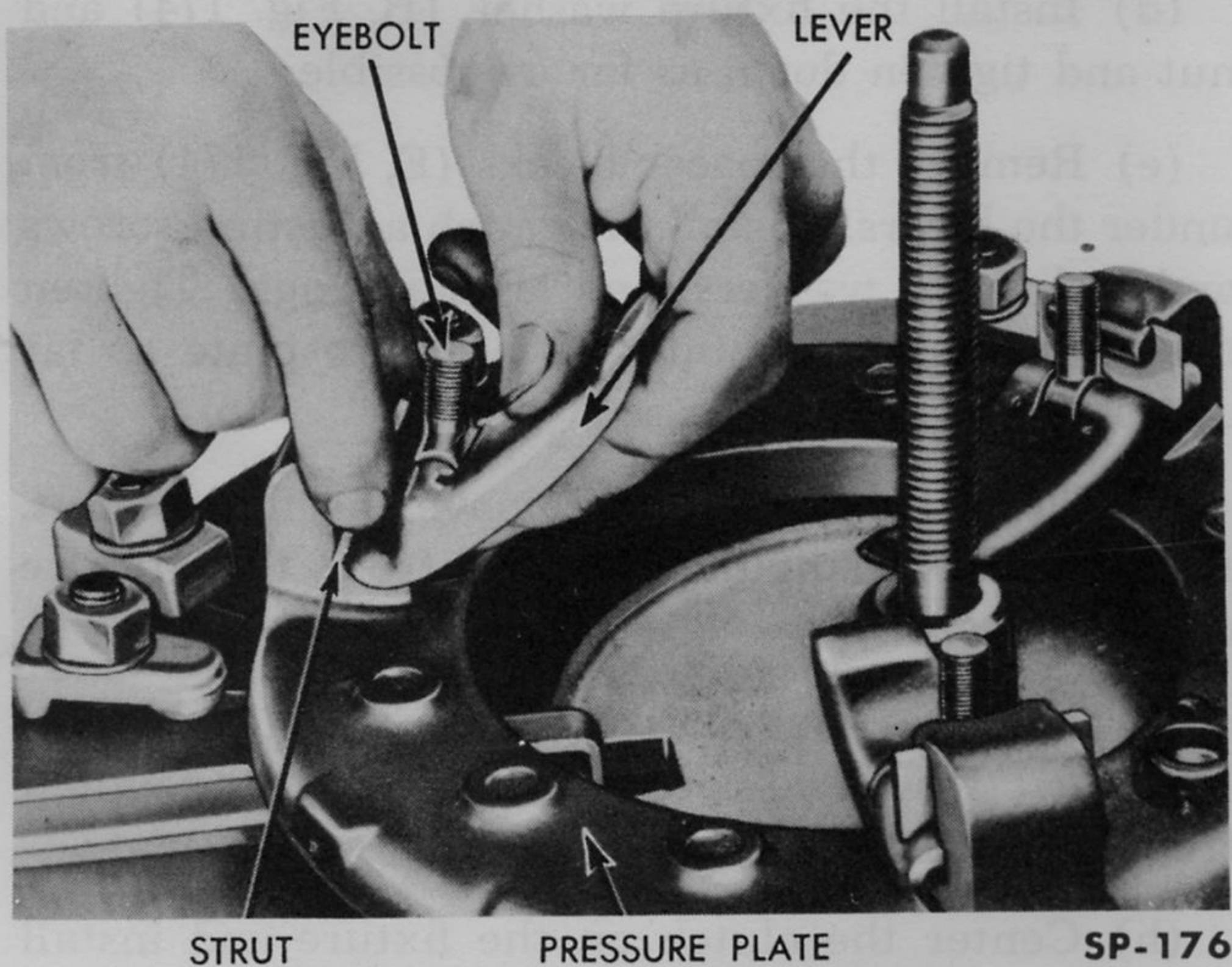


Fig. 172—Assembling Levers on Clutch Pressure Plate

on the pressure plate. **NOTE:** If working on a six spring pressure plate do not install adjacent to each other, install them as shown in Fig. 170. Apply Lubriplate to all contact and pivot surfaces of the eyebolts, lever pins and levers.

(c) Install the three lever springs in the cover. Set the cover in place on the pressure plate, aligning the prick punch marks on the cover and plate to assure proper balance.

(d) Position the pressure plate and cover on the C-585-C fixture so that the pressure plate levers are directly over the feeler blades of the fixture (A, Fig. 173). Install the three-legged spider, washer, and nut on the fixture centering screw and tighten down until the cover is seated on the fixture base and the three eyebolts protrude above the cover.

(e) Install the three nuts on the eyebolts.

(f) Install the fixture clamps to the clutch cover and tighten down to hold the cover securely to the fixture. Release and remove the nut, washer and spider.

(g) Install the thickness spacer C-585-20 (B, Fig. 173), compression plate (C), self-aligning washer (D), plain washer (E), and the nut on the centering screw of the fixture.

(h) Tighten the compression nut its full extent to properly position the pressure plate levers.

(i) Adjust the pressure plate levers (G, Fig. 173) by turning the eyebolt nuts down until each of the three feelers (A), has the same slight drag or "feel"

when pushed in and out. When the proper adjustment is made, stake the bolt and nut (H, I, & J, Fig. 173) and remove the clutch from the fixture. The clutch assembly is now ready for installation.

c. OVERHAUL OF THREE SPRING CLUTCH. Overhaul of the three spring clutch is accomplished on the same C-585-C fixture used for overhauling the nine spring clutch. Procedures for disassembly, inspection, assembly and adjustment follow:

1. Three Spring Clutch Disassembly. To use the C-585-C fixture with the three spring clutch fixture parts that are different than used for the six or nine spring clutch are required.

(a) Install the fixture disassembly plate (A, Fig. 174) and the clutch on the C-585-C fixture. Mark the cover and the pressure plate with a prick punch to assure alignment in the original position when assembling.

(b) Install the triangular washer (B, Fig. 174) on the fixture centering screw so that it rests on the pressure plate levers.

(c) Install and tighten down the compression nut to relieve the spring load on the levers (C, Fig. 174).

(d) Remove the pressure plate lever adjusting screws, lock nuts, washers, and lever springs from beneath the heel of the levers (D, Fig. 174).

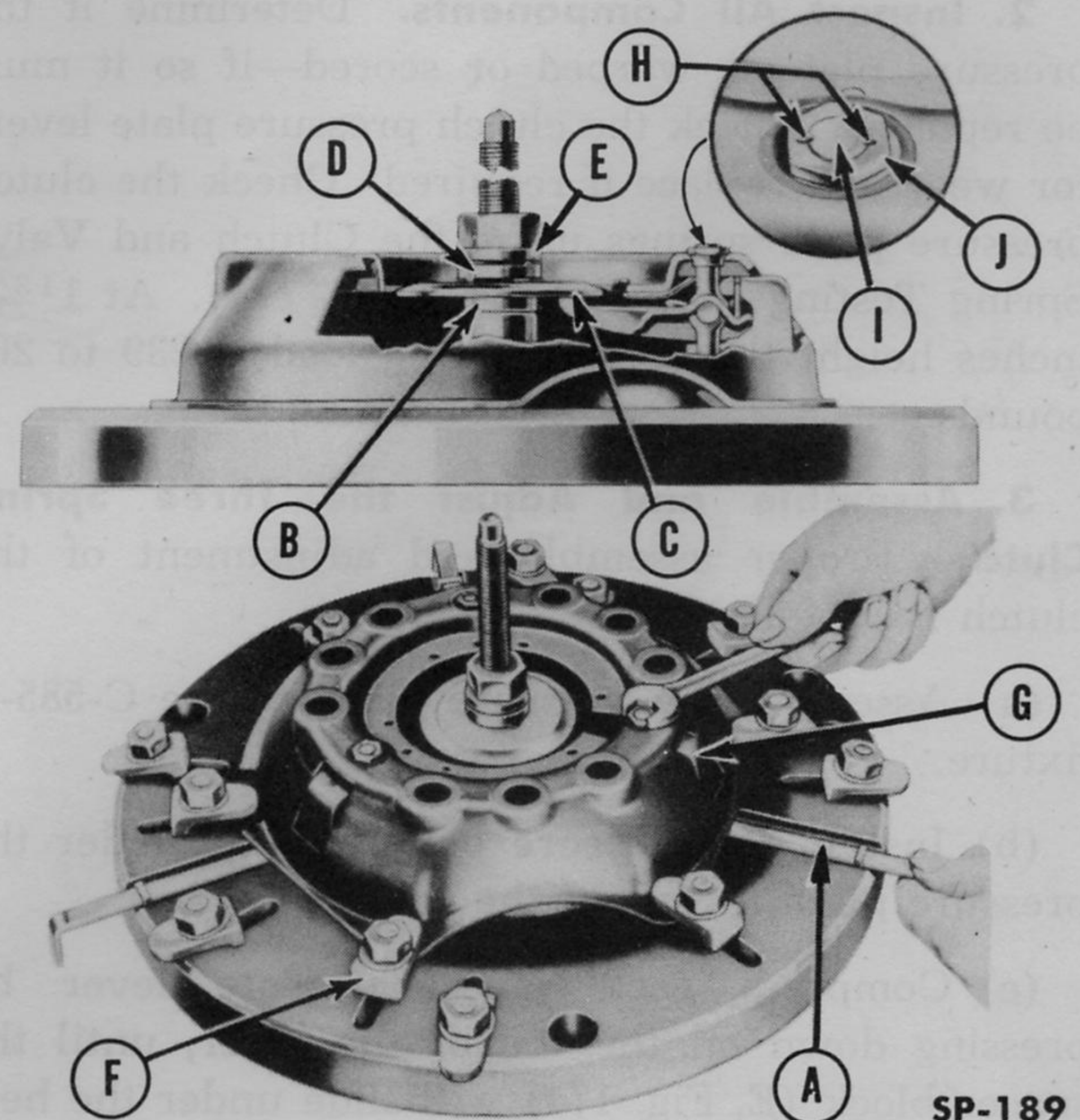
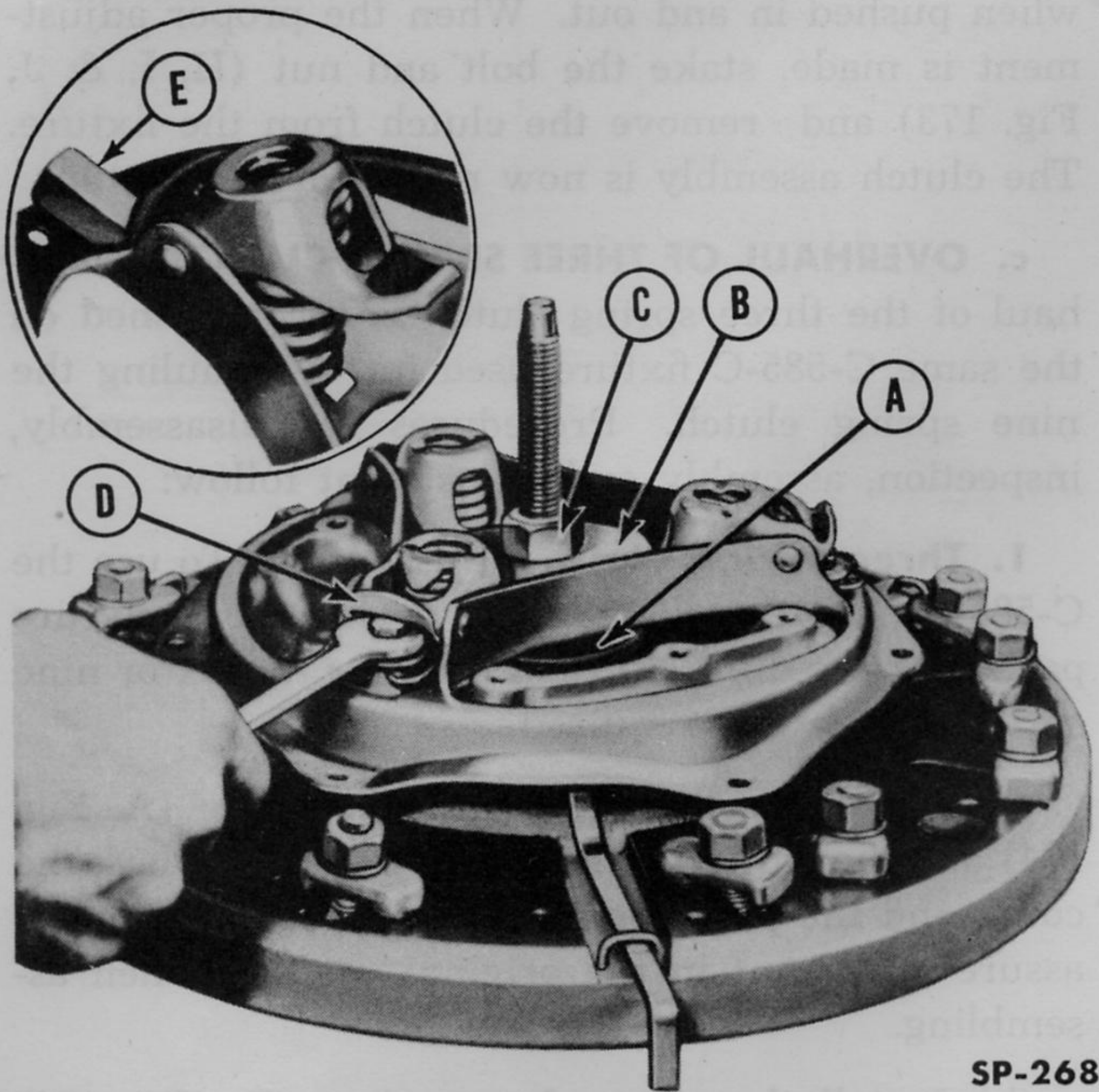


Fig. 173—Adjusting Pressure Plate Levers

KAISER-FRAZER SHOP MANUAL



SP-268

Fig. 174—Disassembling Three Spring Clutch

(e) Slowly back off and remove the fixture nut. Remove the triangular washer from the fixture centering screw.

(f) Remove the pressure plate springs from under pressure plate levers. Lift off the pressure plate cover.

2. Inspect All Components. Determine if the pressure plate is warped or scored—if so it must be replaced. Check the clutch pressure plate levers for wear and replace if required. Check the clutch pressure plate springs using the Clutch and Valve Spring Testing Fixture C-647 (Fig. 171). At $1\frac{3}{16}$ inches height the correct spring load is 239 to 264 pounds.

3. Assemble and Adjust the Three Spring Clutch. Proper assembly and adjustment of the clutch is as follows:

(a) Assemble the pressure plate on the C-585-C fixture.

(b) Install the pressure plate springs under the pressure plate levers on the cover.

(c) Compress each pressure plate lever by pressing down on the toe of the lever, until the spacer block (E, Fig. 174) will slide under the heel of the lever to hold the spring in position.

(d) Install the fixture washer (B, Fig. 174) and nut and tighten down as far as possible.

(e) Remove the spacer blocks (E, Fig. 174) from under the levers. Install the clutch adjusting screws and lock nuts, washers, and lever springs. Tighten the adjusting screws into the pressure plate as far as possible.

(f) Slowly back off and remove the fixture nut. Remove the triangular washer from the fixture centering screw.

(g) Remove the fixture disassembly plate (A, Fig. 174). It will be necessary to remove the clutch from the fixture to remove the disassembly plate.

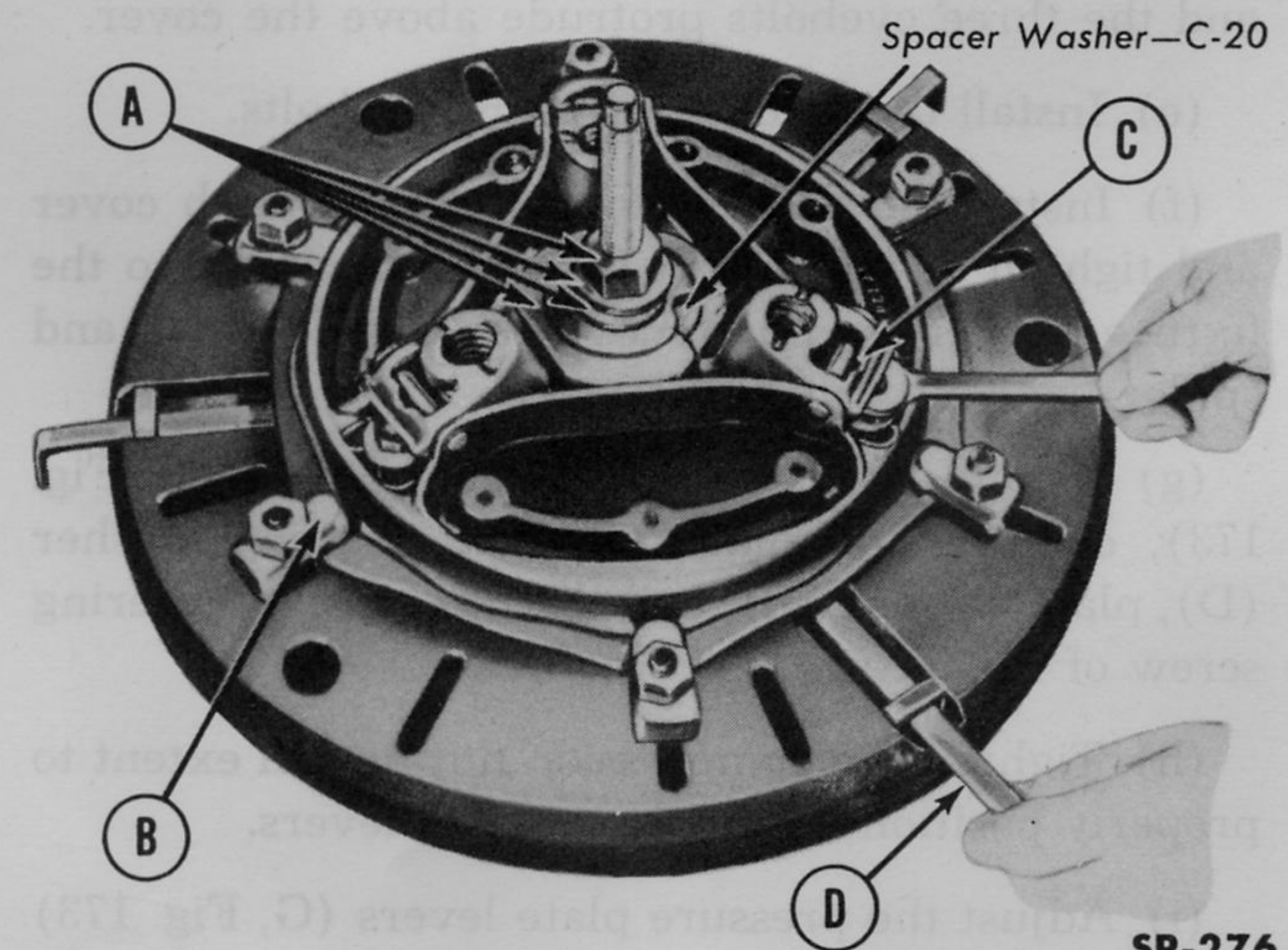
(h) Center the clutch on the fixture and install a C-585-20 thickness spacer on the fixture centering screw.

(i) Install the triangular washer, the aligning washer, plain washer, and the nut (A, Fig. 175). Tighten the nut to its full extent, to properly position the pressure plate levers.

(j) Install and tighten the pressure plate cover clamps (B, Fig. 175).

(k) Adjust the three levers (C, Fig. 175) by turning the lever adjusting screws down until each of the three feelers (D) have the same slight drag or "feel" when pushed in and out. Tighten the screw lock nuts.

1. Remove the clutch from the fixture. The clutch assembly is now ready for installation.



SP-276

Fig. 175—Adjusting Levers On Three Spring Clutch

d. CLUTCH DISC. The clutch discs for the nine or six spring and the three spring clutches are designed for operation with their respective clutches. However, the disc assemblies may be interchanged. Difference in general appearance of the discs may be noted in the method of housing the six torque dampening springs and in the hub design shown in illustration Fig. 165.

After removal of the clutch assembly, the disc should be inspected. The presence of grease or oil on the friction facing will cause the clutch to chatter and grab during engagement and possibly slip at higher speeds. If this condition is evident, the facings or disc assembly should be replaced and the cause of oil accumulation corrected. Excessively worn facings should be replaced. Only factory recommended facings and disc assemblies should be used for replacement. The clutch disc must be installed with the long end of the hub toward the transmission.

e. CRANKSHAFT PILOT BUSHING. Inspect the pilot bushing; if it is worn or damaged it must be replaced. Remove the old bushing, using a KF-5 Clutch Shaft Pilot Bushing Remover (Fig. 176). Install the new bushing on the KF-6 Installing and Burnishing Tool and drive it into place in the crankshaft with a soft mallet. The bushing will contract slightly, holding the tool in place. The rings of the tool will burnish the bushing to a smooth finish as the nut and cup of the tool are turned out and removed. (Fig. 177). Apply a small amount of lubricant to the bushing bore.



Fig. 176—Removing Crankshaft Pilot Bushing

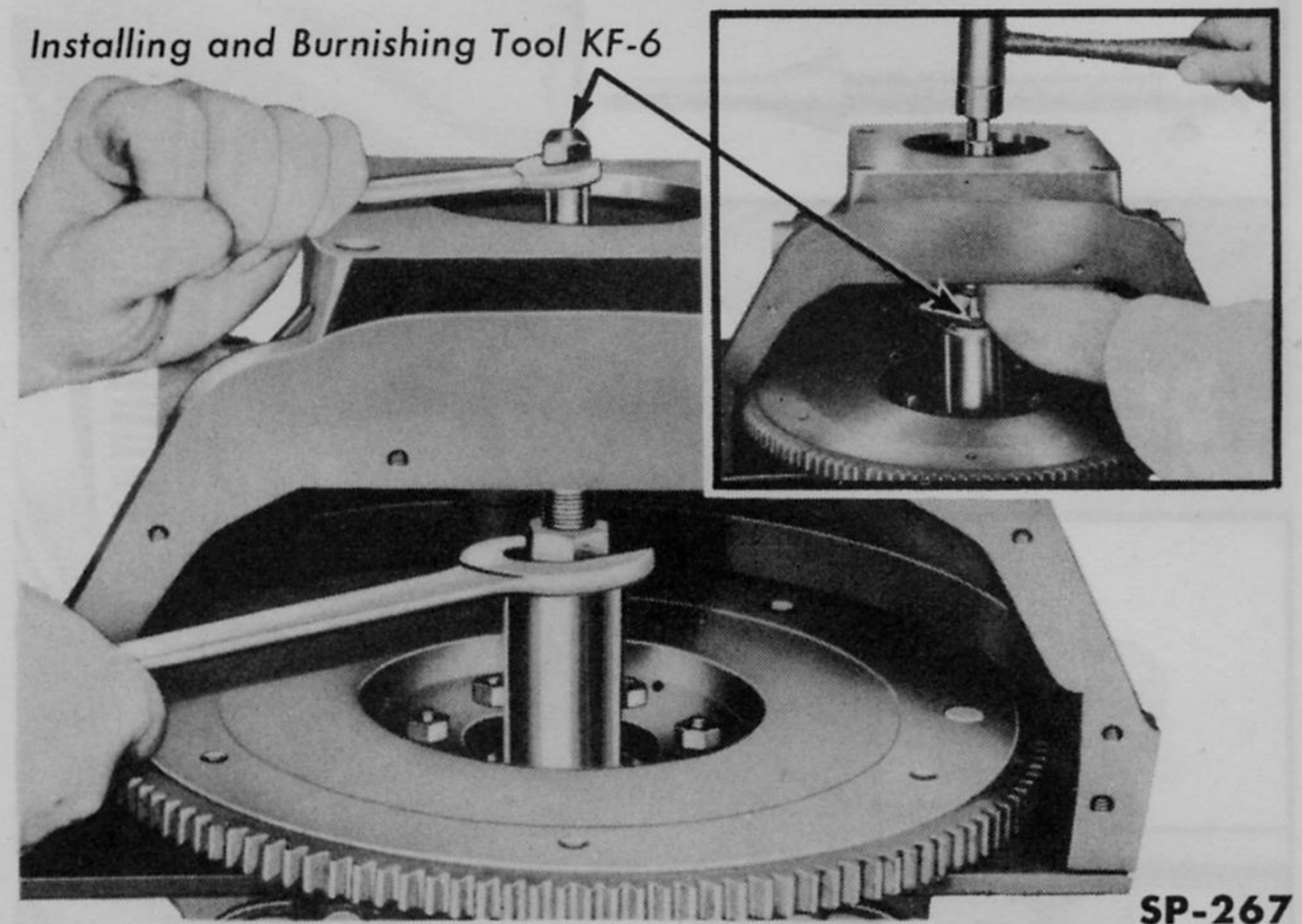


Fig. 177—Installing And Burnishing Crankshaft Pilot Bushing

f. CLUTCH INSTALLATION. The installation of the clutch should be preceded by a thorough inspection of the related components within the clutch housing, such as: release bearing, release fork shaft, flywheel face, etc. If any evidence of wear, binding or misalignment is evident necessary corrections or replacement of parts should be made.

1. Pressure Plate Adjustment. When installing a new clutch pressure plate and cover assembly the lever heights should be checked on the C-585-C fixture to assure their uniformity and proper setting.

2. Installation Procedure. The clutch pressure plate and cover assembly should be placed together with the clutch disc in preparation for mounting on the flywheel. Proceed as follows:

(a) Mount the clutch to the flywheel using Clutch Aligning Arbor C-360 and install cover attaching bolts and washers (Fig. 178). Tighten bolts alternately and evenly. Use tool C-771 to rotate the flywheel (Fig. 168). To maintain balance, the clutch must be installed in its original position as indicated by prick punch marks.

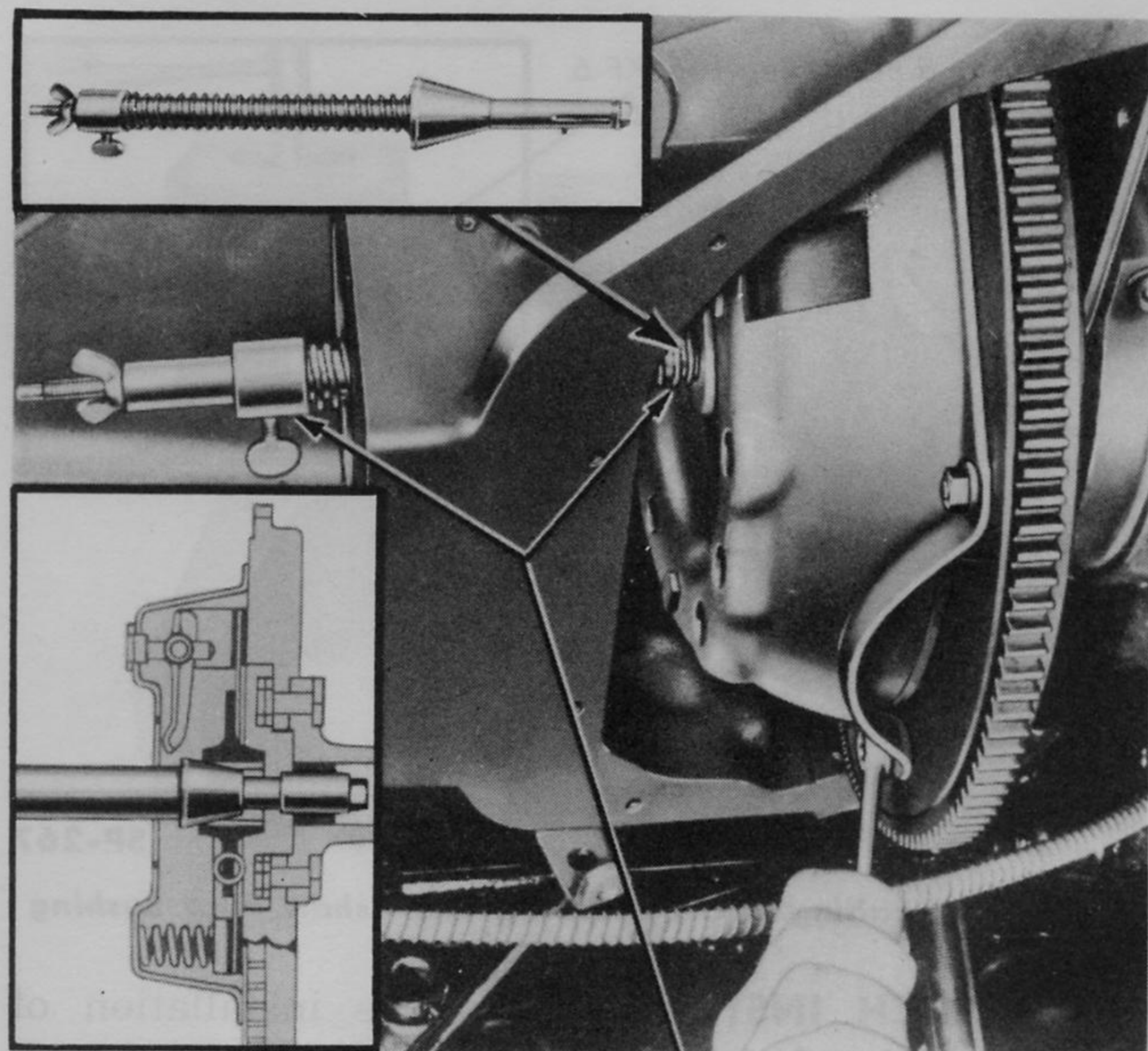
(b) When clutch is installed remove the arbor.

(c) Install the transmission and the overdrive (if so equipped) as detailed in Section 6, "Transmission and Overdrive." Install the clevis pin and cotter pin in the cross shaft coupling.

(d) Adjust the clutch linkage as described under MAINTENANCE AND ADJUSTMENT.

(e) Road test to assure proper clutch operation.

KAISER-FRAZER SHOP MANUAL



Universal Clutch Aligning Arbor C-360 SP-214

Fig. 178—Installing Clutch On Flywheel

CLUTCH RELEASE FORK SHAFT AND BEARING

Rotation of the clutch release fork shaft moves the clutch release bearing and sleeve assembly against the clutch pressure plate levers. This movement is transmitted through linkage by the operation of the clutch pedal.

a. CLUTCH OPERATION. Binding of the clutch release fork shaft in the clutch housing or a defective bearing will seriously affect normal clutch operation and may require replacement of the affected parts. However in the case of a "bind" in clutch release fork shaft, lubrication of bearing surfaces at the lube fittings may remedy the condition. Otherwise, it will be necessary to replace the release shaft.

b. RELEASE SHAFT AND BEARING REMOVAL. When replacing the clutch release fork shaft or the release bearing and sleeve assembly, removal of the transmission and the overdrive (if so equipped), as detailed in Section 6, "Transmission and Overdrive," and disconnecting of the linkage is necessary. Proceed as follows:

1. Remove the cross shaft as detailed under LINKAGE REMOVAL.

2. Remove the lockwire from the clutch release fork set screw (accessible inside the clutch housing).

Loosen the set screw sufficiently to free the release fork shaft.

3. Remove the release fork shaft from the left hand side of the clutch housing. It will be necessary, in some cases, to raise the rear of the engine to provide clearance for removing the shaft (refer to Fig. 184).

4. As the release fork shaft is being removed from the housing the release fork with the bearing and sleeve and springs attached may be removed through the bottom of the clutch housing (Fig. 164). Remove bearing and sleeve, release fork and springs together.

5. Inspect the release fork shaft for wear and alignment. If there is evidence of excessive wear or the bearing surfaces are rough, replace the shaft. Also inspect the shaft bore in the clutch housing—if the bore is rough hone it to provide a smooth surface.

6. Inspect the sealed type clutch release bearing and sleeve assembly. If there is evidence of grease leaks from within the bearing or if it is worn and loose replace the bearing and sleeve as a unit.

7. Clean the interior and bearing surfaces of the clutch housing to remove grease or dirt that might work into the clutch.

c. RELEASE SHAFT AND BEARING INSTALLATION. Refer to Fig. 164. Proceed as follows:

1. Install the clutch release fork shaft, release bearing springs, release fork, and the release bearing and sleeve assembly in the clutch housing.

2. Tighten the fork set screw to lock the fork on the shaft. Be sure the set screw, when tightened, seats in the hole provided in the shaft. Install the lockwire (running through the head of the screw and a hole provided in the fork) to keep set screw from loosening.

3. Be sure the release bearing springs are positioned on the release fork shaft so the bearing and sleeve assembly is held against the release fork. Fork ends must fit against the two blades in the release bearing sleeve.

4. Install the transmission and the overdrive (if so equipped) as detailed in Section 6, "Transmission and Overdrive."

5. Install the clutch pedal cross shaft. Check and adjust, if necessary, the clutch pedal free movement as outlined under CLUTCH PEDAL ADJUSTMENT. Lubricate the release fork shaft at the two grease fittings on the clutch housing.

SERVICE DIAGNOSIS

a. CLUTCH SLIPPING

1. Improper free pedal adjustment.
2. Clutch release shaft binding in the housing.
3. Weak or broken spring in the pressure plate assembly.
4. Worn or burned friction facings.
5. Grease or oil on the friction facings.
6. Improper installation or adjustment of the disc or pressure plate.

b. CLUTCH GRABBING AND CHATTERING

1. Improper driving habits.
2. Improper linkage adjustment.
3. Grease or oil on the friction facings.
4. Use of improper clutch disc or facings.

5. High spots on the friction facings.
6. Warped or cracked pressure plate.
7. Disc facings loose or badly worn.
8. Clutch pressure plate assembly loose on the flywheel.
9. Misalignment of the flywheel.

c. CLUTCH NOISES

1. Release bearing worn out or binding.
2. Crankshaft pilot bearing worn or binding.
3. Pressure plate levers out of adjustment.
4. Clutch disc damper springs weak or broken.

d. CLUTCH PEDAL STIFF OR BINDING

1. Release shaft binding in the clutch housing.
2. Assist spring is too tight causing pedal to stick down or hesitate.
3. Linkage is binding due to lack of lubrication.
4. Linkage or bellcranks bent or misaligned.
5. Pedal return spring too stiff.

SERVICE BULLETIN REFERENCE

KAISER-FRAZER SHOP MANUAL

SERVICE BULLETIN REFERENCE
