

## FRONT AXLE (Continued)

When necessary to change cone and roller assembly, change the cup also, otherwise the new cone and roller assembly will wear rapidly. The old cups can easily be driven out by entering a punch from the opposite end of hub and driving against the back of cup. Use a piece of brass when driving in new cups to prevent damage.

The proper care and lubrication of front wheel bearings cannot be over emphasized. New felts should be installed for each sixty days of operation. Test bearings for end play after each two weeks of operation, and adjust them if play has developed. Lubricate daily when working under average conditions and twice daily if in very dusty or sandy conditions.

## CLUTCH

(Group 280069)

The clutch is of the single plate, dry disc, springloaded type which requires no adjusting of the pressure plate. The driving plate is 12" diameter.

The clutch shaft and pinion(17) extends from pilot bearing (18) in the flywheel into the front end of the transmission case and is carried at the rear end on ball bearing (19). This bearing is held in position on shaft by snap ring (22). Oil thrower(21) and oil seal (20) is installed ahead of snap ring to prevent transmission lubricant from leaking into clutch housing. Always install this type oil seal with the open side toward the oil supply. This assembly is held in position by clutch shifter bracket (9) and four capscrews (10). A recess is machined in the back of the shifter bracket that registers with a hole in transmission case head to allow the lubricant that works through bearing (19) to return to the transmission case. When installing, be sure these two openings register. The clutch shifter bracket extends forward over the clutch shaft and makes the bearing for clutch shifter (4). Throwout bearing (8) is pressed on the forward end of shifter (4) with the polished face toward the front. The shifter and bearing are lubricated through grease fitting (7) and tube (5) and is reached through hole in left-hand side of case just below end of clutch fork shaft (26). The clutch fork (23) which bears against shifter (4) is attached to shaft (26) by capscrew (24) and Woodruff key (27). Spring(29) extends from spring clip (30) on capscrew (24) to spring bracket (28) at top of case and relieves the throwout bearing of the weight of clutch pedal.

The splined center(61) of clutch plate (57) works on splined end of clutch shaft. Clutch facings (58) and (59) are riveted to the clutch plate. Four lever studs(43) are pinned to pressure plate (42). The back plate (46) carries the twelve pressure springs (51) and cups (52). The pressure plate and back plate assembly are held together by four release levers (49) and is attached to flywheel by 12 capscrews (2).

The face of the flywheel acts as the driving member of the clutch. The clutch plate is held to the flywheel by pressure plate(42) against which springs(51) exert a pressure at all times. When the clutch is disengaged by pressure on foot pedal, the clutch fork (23) moves clutch shifter(4) forward, causing throw out bearing (8) to contact the ends of release levers (49). The continued forward movement of the shifter forces the pressure plate back

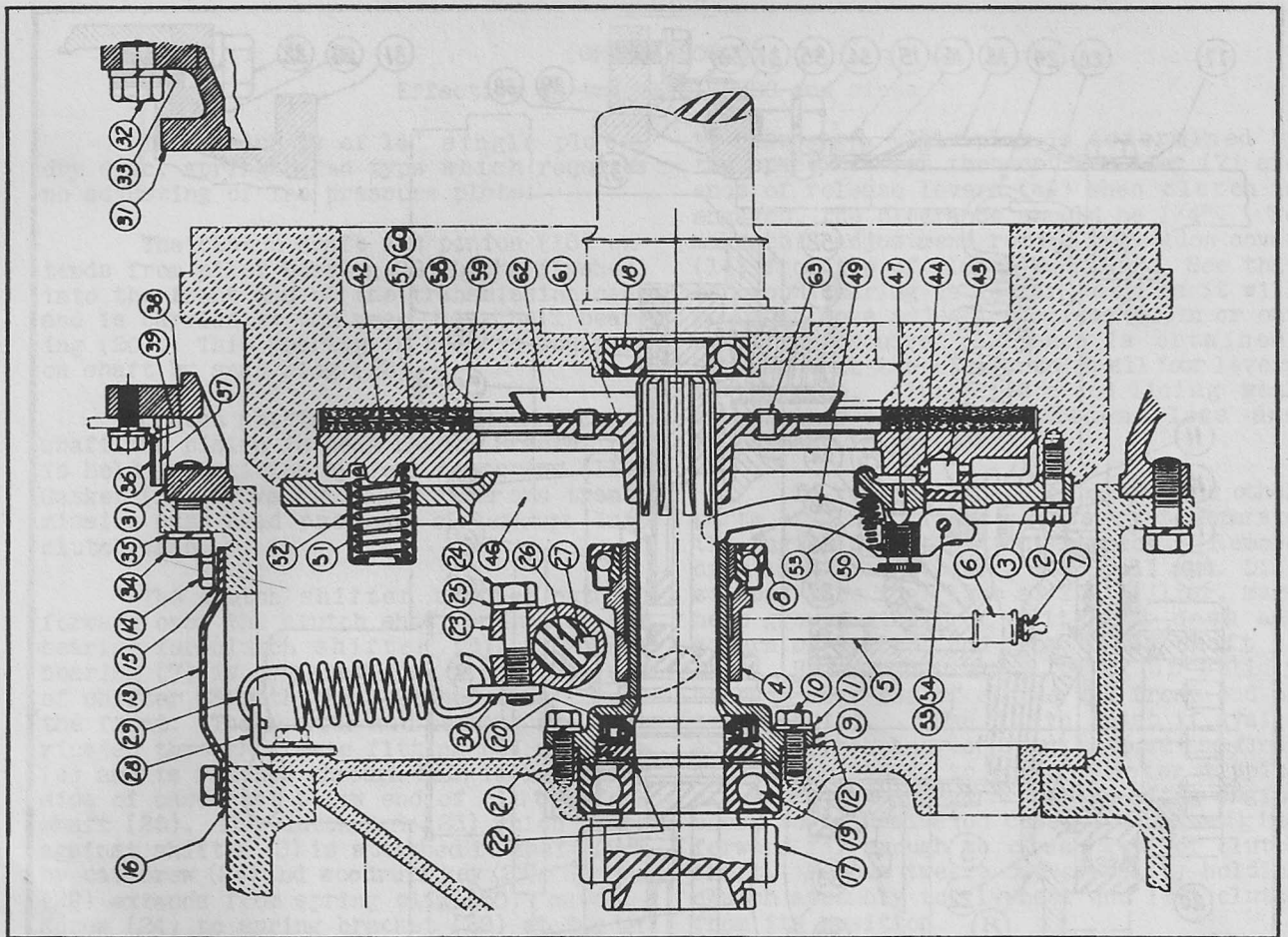
against the spring tension, releasing the pressure on clutch plate and allows the engine to run free.

Clutch adjustment. The only adjustment necessary is to provide play for the clutch pedal. That is, when the clutch pedal is depressed there should be a little movement of the pedal before the clutch starts to disengage. This play is determined by the space between throwout bearing(8) and ends of release levers (49) when clutch is engaged, which should be 1/4". To make this adjustment remove inspection cover(13) from top of clutch housing. See that throwout bearing is as far back as it will go, then move adjusting screws (50) in or out until the required clearance is obtained. Be sure that the clearance on all four levers is the same. As wear occurs this clearance will become less and adjustment is necessary.

To reface the clutch plate or replace other parts of clutch assembly, it is necessary to separate the engine from the transmission. To remove the clutch, remove drag link from steering gear ball arm. Disconnect main fuel line at fuel filter, magneto ground wire from switch at dash and govern control rod from cross shaft at dash. Remove gas tank. Block up solidly beneath rear end of engine and front end of transmission. A chain hoist can be used to good advantage to swing rear end of motor instead of blocking it. Block between front support and front axle, both sides, to prevent motor tipping sideways. Remove all capscrews that hold engine block and transmission case together. Move engine forward far enough to clear end of clutch shaft. Remove twelve capscrews(2) that hold clutch assembly to flywheel and lift clutch from its position.

To reface clutch plate. The facings are divided into 12 segments, 6 segments 1/8" and 6-5/32" thick. Place a thin piece, then a thick piece, and so on around the plate. Opposite the thin piece place a thick piece, and so on around. The finished job will have a thick and thin piece riveted together and alternated around the plate. This provides for smoother engagement of clutch. Always install the rivet heads in the thin piece and rivet them in the heavy piece. Be sure the facings are riveted tight against the plate.

To install new pressure plate (42), pressure springs(51), back plate(46) or release levers(49), compress springs(51) forcing back plate against pressure plate. This can be easily accomplished by using four 4"



"C" clamps. Remove lock springs (53). Turn adjusting screws (50) out and remove pins (54) holding release levers to pressure plate lever stud. After levers are removed, loosen "C" clamps evenly until pressure is released and assembly can be taken apart. If pressure plate has been overheated and is scored, warped or cracked, it should be replaced. If pressure springs (51) have taken a set or lost any of their tension, replace them. Their condition can be determined by checking them against a new spring. Examine ends of release levers for excessive wear, also the rounded points of adjusting screws (50). If these parts are worn to a noticeable extent, a good adjustment cannot be maintained.

With engine separated from transmission, clutch shaft (17) may be removed by removing clutch lever and key from left hand end of clutch fork shaft (26). Remove spring (29) and capscrew (24). Drive clutch fork shaft to right, exercising caution not to swell or burr end of shaft or lose expansion plug from hole in right-hand side of case. Remove key (27) when free of clutch fork (23) and continue to drive shaft to right until clear of bracket (9). Shifter (4) with throwout bearing can be removed from front end of clutch shaft. Remove four capscrews (10) and the bracket. Clutch shaft can now be removed from case. Remove oil seal (20), oil thrower (21), snap ring (22) and bearing (19) can be pressed from shaft.

To reassemble, reverse above operation.

When attaching clutch assembly to flywheel, line splined hub of clutch plate (57) with center of pilot bearing (18) to aid in entering clutch shaft. When entering clutch shaft into clutch plate, crank motor slowly to line up the splines. Be sure that oil deflector (62) is towards the flywheel.

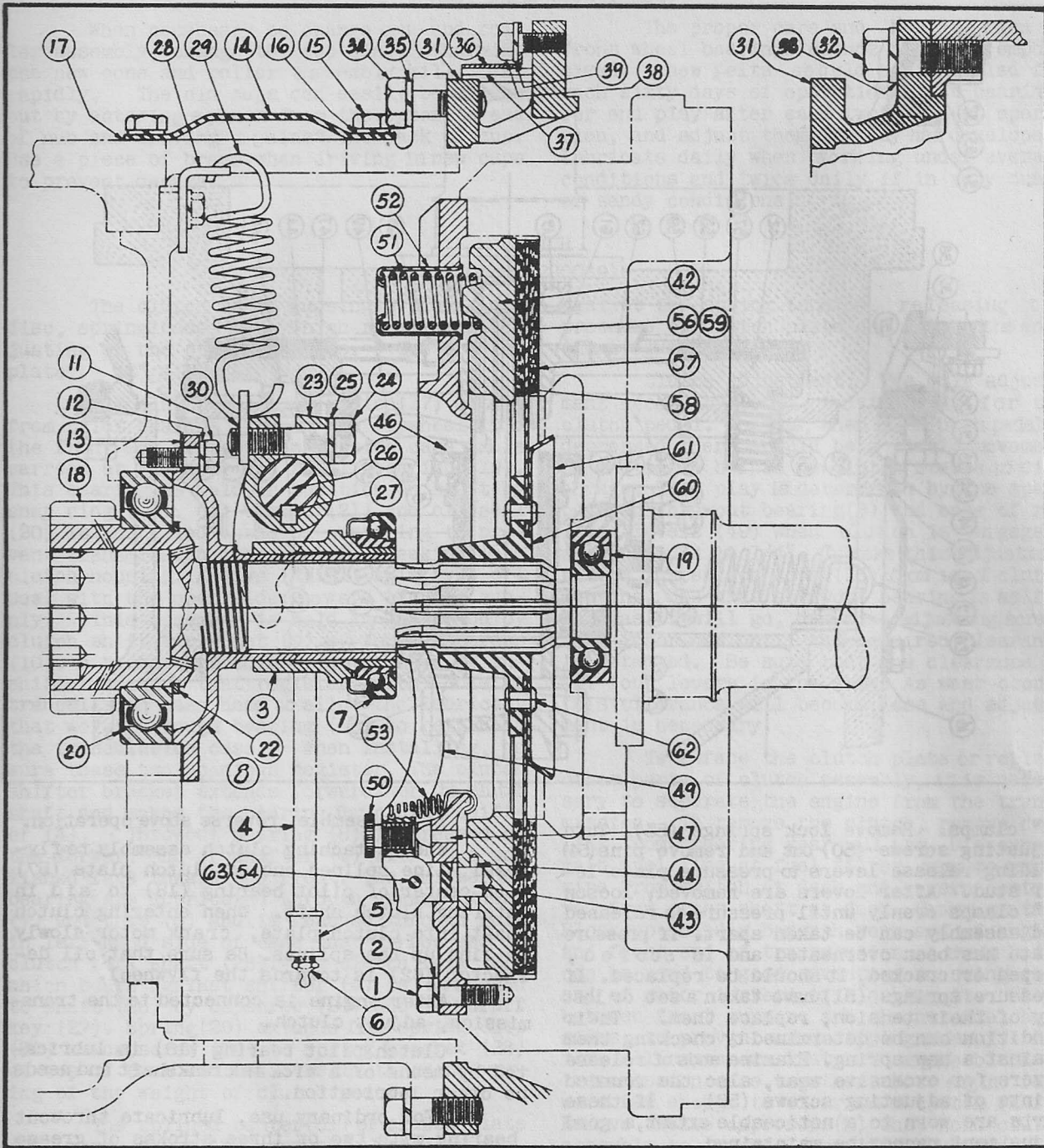
After engine is connected to the transmission, adjust clutch.

Clutch pilot bearing (18) is lubricated by means of a wick in crankshaft and needs no other lubrication.

For ordinary use, lubricate throwout bearing with two or three strokes of grease gun for each 30 hours of operation. If clutch is used excessively, or if tractor is used on belt work and clutch is frequently locked in disengaged position with motor running, it should be lubricated each day.

If clutch slips or becomes sluggish in action because of grease on clutch facings, remove inspection cover (13) and give facings a bath of gasoline. (An oil can may be used for injecting the gasoline). Do this with motor running and engage and disengage clutch several times while applying gasoline. This will have a scrubbing effect on facings and remove the grease. It is better to lock clutch in disengaged position for a few hours after the washing operation so it can thoroughly dry out.





## CLUTCH

(GROUP 280908)

Effective on tractors 26526 and since

The clutch is of 14" single plate, dry disc, springloaded type which requires no adjusting of the pressure plate.

The clutch shaft and pinion (18) extends from pilot bearing (19) in the flywheel into the front end of the transmission case and is carried at the rear end on ball bearing (20). This bearing is held in position on shaft by snap ring (22).

Clutch shifter bracket (8) holds clutch shaft and pinion in case head. Bracket (8) is held in position by four capscrews (11). Gasket (13) between clutch shifter and transmission case head prevents oil leakage into clutch case.

The clutch shifter bracket extends forward over the clutch shaft and makes the bearing for clutch shifter (3). Throwout bearing (7) is pressed on the forward end of shifter (3) with the polished face toward the front. The shifter and bearing are lubricated through grease fitting (6) and tube (4) and is reached through hole in left-hand side of case just below end of clutch fork shaft (26). The clutch fork (23) which bears against shifter (3) is attached to shaft (26) by capscrew (24) and woodruff key (27). Spring (29) extends from spring clip (30) on capscrew (24) to spring bracket (28) at top of case and relieves the clutch pedal weight from the bearing.

The splined center (60) of clutch plate (56) works on splined end of clutch shaft. Clutch facings (57) and (58) are riveted to the clutch plate. Four lever studs (43) are pinned to pressure plate (42). The back plate (46) carries the twelve pressure springs (51) and cups (52). The pressure plate and back plate assembly are held together by four release levers (49) and is attached to flywheel by 12 capscrews (1).

The face of the flywheel acts as the driving member of the clutch. The clutch plate is held to the flywheel by pressure plate (42) against which springs (51) exert a pressure at all times. When the clutch is disengaged by pressure on foot pedal the clutch fork (23) moves clutch shifter (3) forward, causing throwout bearing (7) to contact the ends of release levers (49). The continued forward movement of the shifter forces the pressure plate back against the spring tension, releasing the pressure on clutch plate and allows the engine to run free.

Clutch adjustment: The only adjustment necessary is to provide play for the clutch pedal. That is, when depressing the clutch pedal there should be a little movement of the pedal before the clutch starts

to disengage. This play is determined by the space between throwout bearing (7) and ends of release levers (49) when clutch is engaged, the clearance should be 1/4". To make this adjustment remove inspection cover (14) from top of clutch housing. See that throwout bearing is as far back as it will go, then move adjusting screws (50) in or out until the required clearance is obtained. Be sure that the clearance on all four levers is the same. Clutch plate and lining wear causes this clearance to become less and adjustment is necessary.

To reface the clutch or replace other parts of clutch it is necessary to separate the engine from the transmission. Remove drag link from steering gear ball arm. Disconnect main fuel line at fuel filter, magnet to ground wire from switch at dash and govern or control rod from cross shaft at dash. Remove gas tank. Block up solidly beneath rear end of engine and front end of transmission. (Use chain hoist if available). Block between front support and front axle, both sides, to prevent motor tipping sideways. Remove capscrews holding engine block to transmission case. Move engine forward far enough to clear end of clutch shaft. Remove twelve capscrews (1) holding clutch assembly to flywheel and lift clutch from its position.

The clutch facings are divided into twelve segments, six segments 1/8" and six 5/32" thick. When replacing these facings place a thin piece, then a thick piece, and so on around the plate. Opposite the thin piece place a thick piece, etc. The finished job will have a thick and thin piece riveted together and alternated around the plate. This provides for smoother engagement of clutch. Always install the rivet heads in the thin piece and rivet them in the thick piece. Be sure the facings are riveted tight against the plate.

To install new pressure plate (42), pressure springs (51), back plate (46), or release levers (49), compress springs (51) forcing back plate against pressure plate. This can be easily accomplished by using four 4" "C" clamps. Remove lock springs (53). Turn adjusting screws (50) out and remove pins (54) holding release levers to pressure plate lever stud. After levers are removed, loosen "C" clamps evenly until pressure is released and assembly can be taken apart. If pressure plate has been overheated and is scored, warped or cracked, it should be replaced. If pressure springs (51) have taken a set or lost any of their tension, replace them. Their condition can be determined by checking them against a new spring. Examine ends of release levers for excessive wear, also the rounded points of adjusting screws (50). If these parts are worn to a noticeable extent, a good adjustment cannot be maintained.



## CLUTCH (Continued)

GROUP 280908

With engine separated from transmission, clutch shaft (18) may be removed by removing clutch lever and key from left hand end of clutch fork shaft (26). Remove spring (29) and capscrew (24). Drive clutch fork shaft to right, exercising caution not to swell or burr end of shaft or lose expansion plug from hole in right-hand side of case. Remove key (27) when free of clutch fork (23) and continue to drive shaft to right until clear of bracket (8). Shifter (3) with throwout bearing can be removed from front end of clutch shaft. Remove four capscrews (11) and the bracket. Clutch shaft can now be removed from case.

Bearing (20) can be pressed from shaft when snap ring (22) is removed.

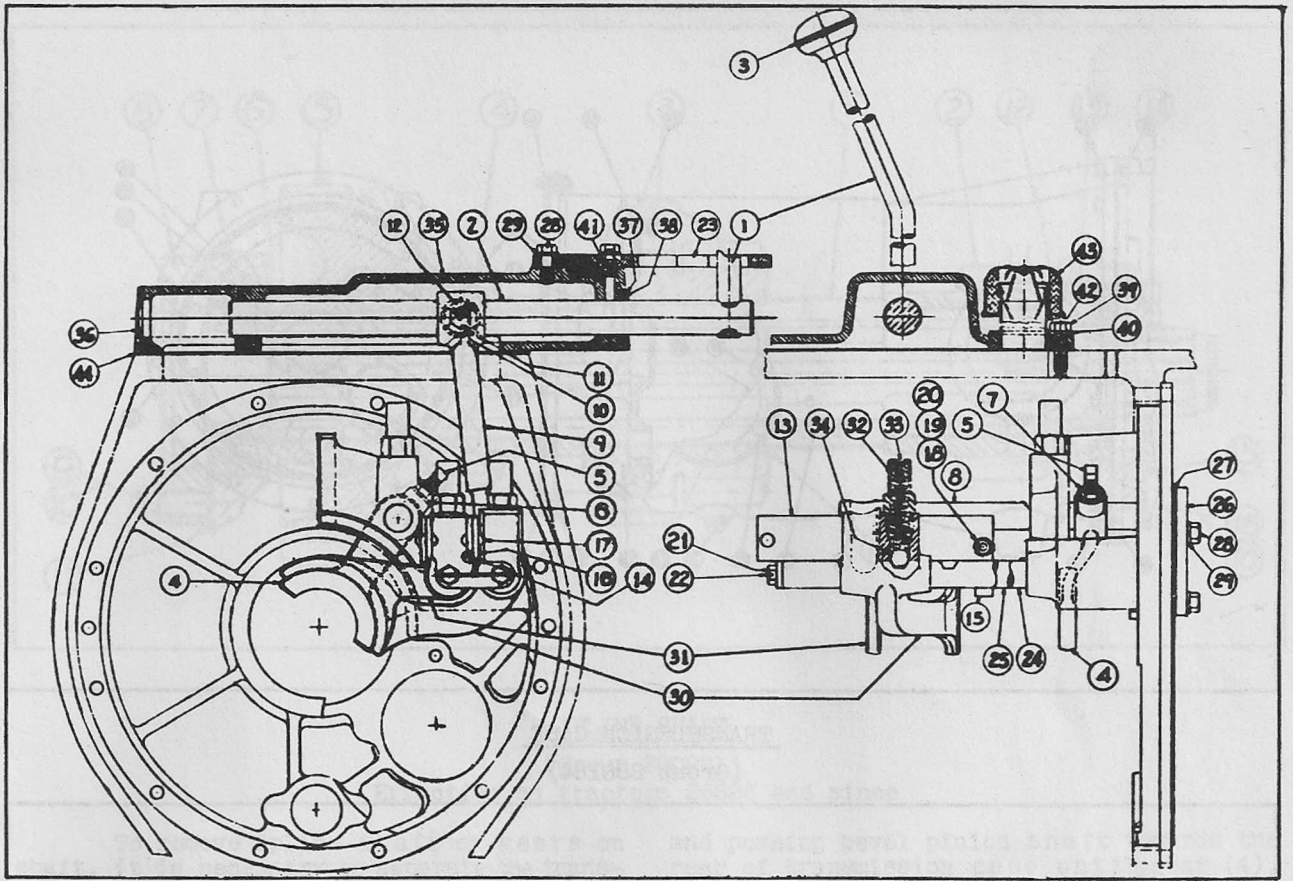
To reassemble, reverse above operation.

When attaching clutch assembly to flywheel, line splined hub of clutch plate (56) with center of pilot bearing (19) to aid in entering clutch shaft. When entering clutch shaft into clutch plate, crank motor slowly to line up the splines. Be sure that oil deflector (61) is towards the flywheel.

After engine is connected to the transmission, adjust clutch. Clutch pilot bearing (19) is lubricated by means of a wick in crankshaft and needs no other lubrication.

For ordinary use, lubricate throwout bearing with two or three strokes of grease gun for each 30 hours of operation. If clutch is used excessively, or if tractor is used on belt work and clutch is frequently locked in disengaged position with motor running, it should be lubricated each day.

If clutch slips or becomes sluggish in action because of grease on clutch facings remove inspection cover (14) and give facings a bath of gasoline. (An oil can, may be used for injecting the gasoline). Do this with motor running and engage and disengage clutch several times while applying gasoline. This will have a scrubbing effect on facings and remove the grease. Lock clutch in disengaged position for a few hours after the washing operation so it can thoroughly dry out.



GEAR SHIFT

(Group 280955)

Effective on Tractors 26526 and Since

The gear shift hand lever shaft (1) is installed in the transmission case cover (35). Felt ring (38), held in position by retainer (37), prevents grease leakage around shaft (2).

Gear shift lever (9) is attached to shaft (2) by set screw (10).

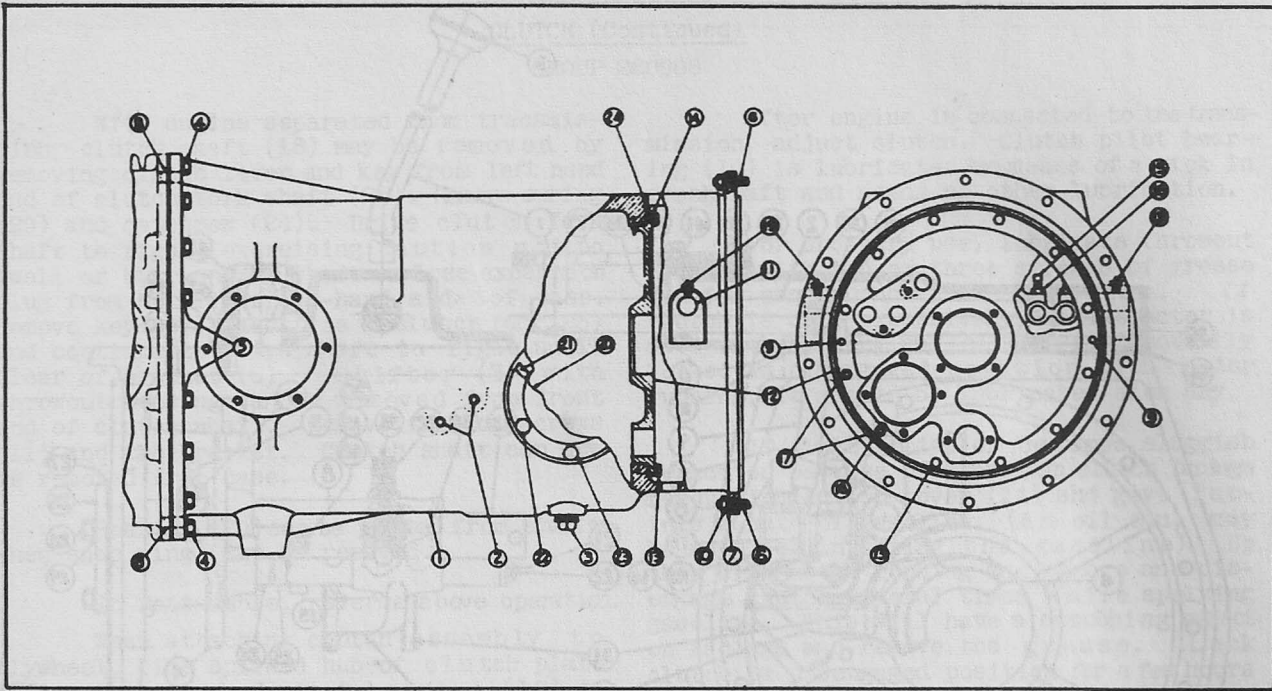
Gear shifter fork shafts (24) and (25) are held stationary in transmission case by set screws (28) located in the front transmission head. Gear shifter forks (30 and 31) work on shifter shaft and are held in posi-

tion by retainer (33), spring (32), and ball (34) which engages in notches in shifter shafts.

Fourth speed shifter fork (4) is held to fourth speed shifter shaft (8) by set screw (5). Shifter shaft and fork are held in desired position by retainer (33), spring (32) and ball (34) located in transmission case head.

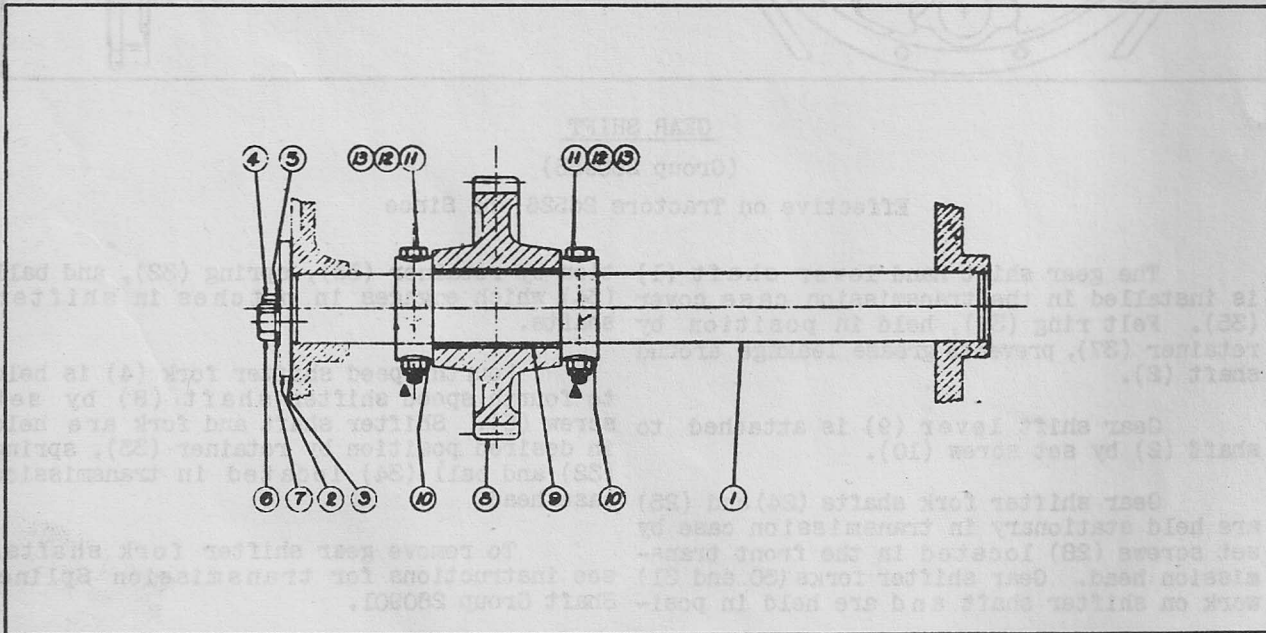
To remove gear shifter fork shafts, see instructions for transmission Spline Shaft Group 280901.





TRANSMISSION CASE

(Group 280184)



REVERSE SHAFT

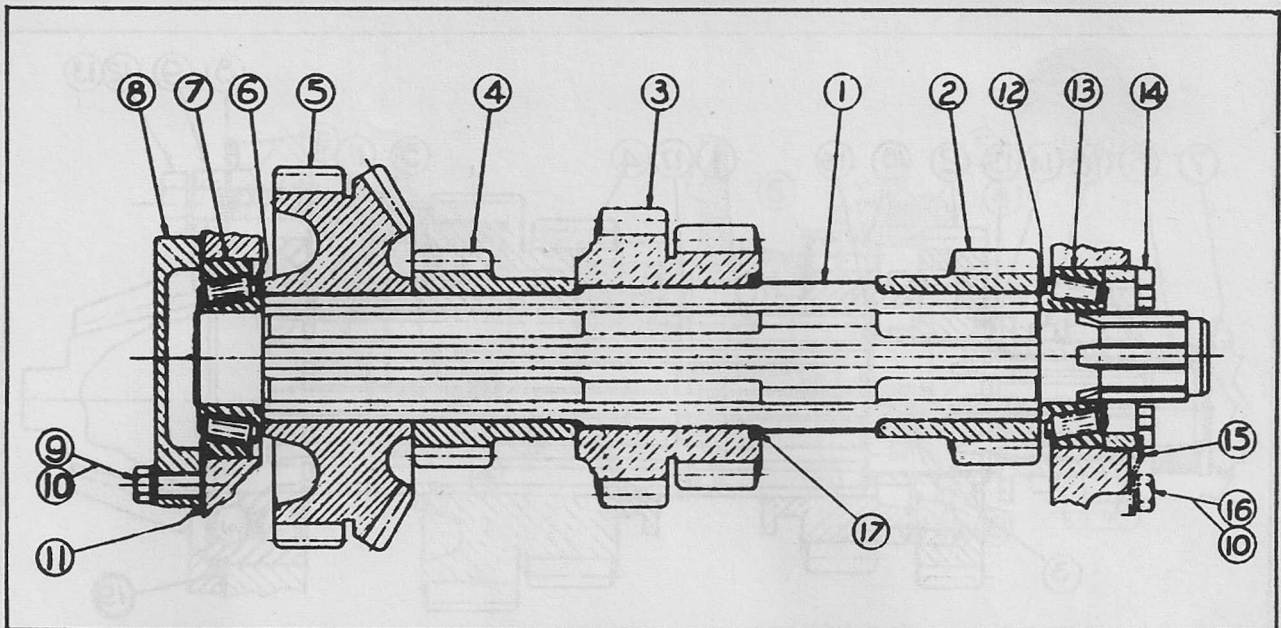
(Group 280799)

Effective on tractors 26526 and Since

To remove reverse shaft (1) or gear (8), it is necessary to separate motor from transmission. Remove transmission case head (9) (Group 280907) explained under spline shaft (Group 280901). Remove bolt (11) and collar (10). Slide shaft (1) back until gear (8) can be removed from front end of shaft. Shaft (1) can then be removed by pulling towards the front.

Bushing (9) is a press fit in gear (8) and when replaced must be reamed to fit shaft with a clearance from .001" to .002".

When reinstalling reverse above operation and be sure gasket (3) is in good condition.



### SPLINE SHAFT

(Group 280901)

Effective on tractors 26526 and since

To remove spline shaft or gears on shaft, it is necessary to separate the transmission case from both the engine and rear axle housing and remove front transmission case head (9) (Group 280907).

To remove transmission case head, (the following items are listed in group 280955), remove transmission case cover (35), set screw (5), holding fourth speed shifting fork (4) to shifter shaft (8), gear shift spring retainers (33), springs (32), balls (34), shaft cover (26), shifter shafts (24 and 25), guide assembly and all capscrews holding case head to transmission. Next remove cross shaft and bearings — refer to (Group 280992).

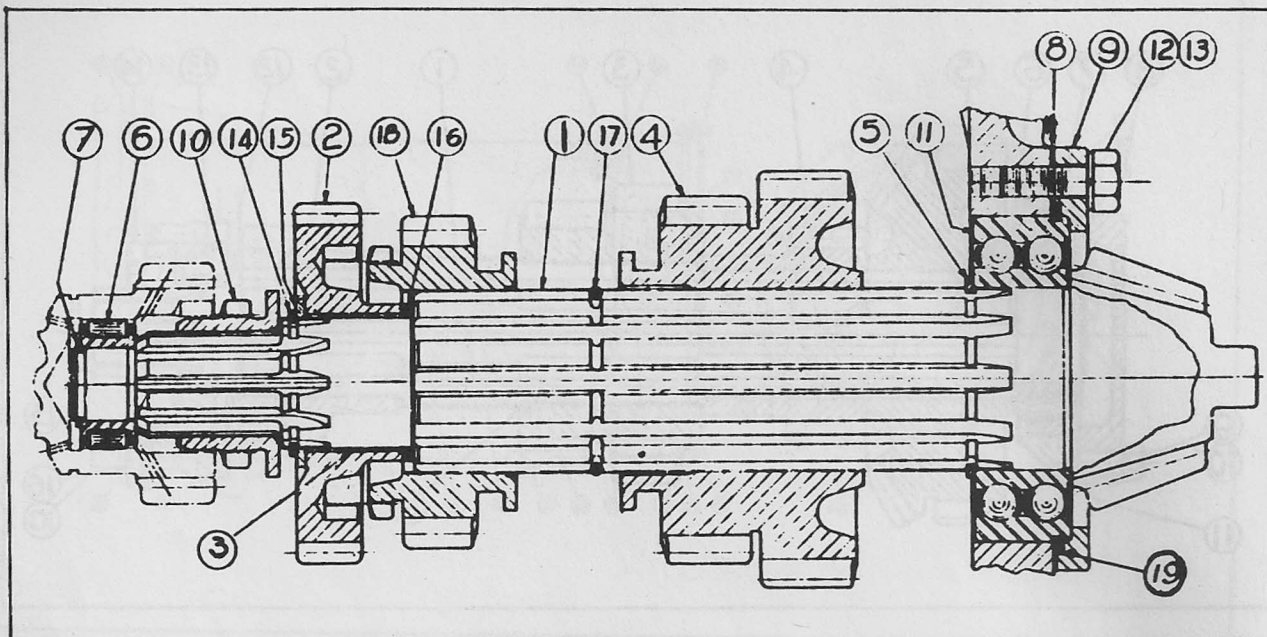
In removing spline shaft, it will also be necessary to change the position of the bevel pinion shaft. This can be done by removing bearings cover (9) (Group 280902)

and pushing bevel pinion shaft towards the rear of transmission case until gear (4), (Group 280902) strikes the case end; next remove capscrew (16), nut lock (15) and bearing adjusting nut (14) on spline shaft group. Then drive against front of spline shaft and drive bearing cup (13) towards the rear until gear (2) strikes case end. Spline shaft can then be removed from the front. Bevel pinion shaft can be removed at this time if repairs are to be made. (Refer to Group 280902).

To assemble, reverse above operation. After shafts are replaced, it will be necessary to adjust spline shaft bearings. First inspect gasket (11) on front bearing cover and see that it is in good condition; next adjust bearing on rear end of shaft by locating bearing adjusting ring (14), providing a free rolling fit on bearings; then replace capscrews (16) and nut lock (15).

35





BEVEL PINION AND SHAFT

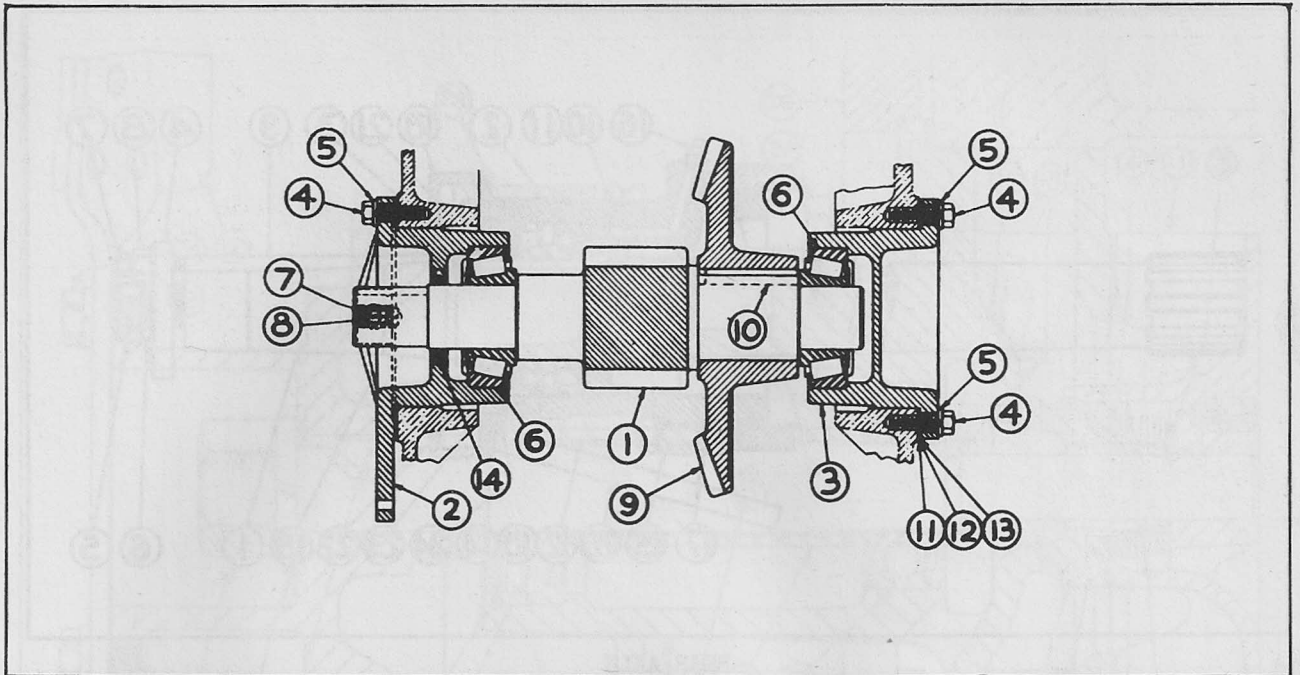
(Group 280902)

Effective on tractors 26526 and since

To remove bevel pinion and shaft, it is necessary to remove the spline shaft as explained in (Group 280901). Pinion shaft can be pulled out towards the front after removing snap ring (19). To remove gears and bearings from shaft, start at the front, remove snap ring (7), bearing (6) and fourth speed coupling (10), snap ring (14), thrust washer (15), gear (2), collar (16), gear (18),

snap ring (17), gear (4), and snap ring (5). Bearing (11) must be pressed from shaft.

When reassembling, be sure to install shims (8), and of sufficient quantity to obtain the proper adjustment between pinion (1) and bevel gear (9) (Group 280992). For correct adjustment, see cross shaft instructions.



### CROSS SHAFT

(Group 280992)

Effective on tractors 26526 and since

The drive pinion (1) is a part of the cross shaft. Bevel gear (9) is keyed to cross shaft (1) by key (10). Bearings (6) are located in bearing cases (2) and (3) which are held to transmission case by cap screws (4). Shims (11), (12) and (13) between bearing case and transmission case allow for adjustment.

Shaft (1) extends through bearing case (2) allowing installation of brake pulley. Oil seal (14) placed in bearing case (2) prevents oil leakage.

To remove cross shaft, it is necessary to separate transmission case from rear axle housing. Remove brake band assembly and brake pulley. The pulley can be removed by taking out cap screw and using a gear puller. File off any burrs or rough spots on end of shaft to prevent damage to oil seal. Remove both bearing cases and shims. Drive pinion and cross shaft can now be removed from rear of transmission case.

If installing new bevel gear (9) be very careful to prevent any dirt or small particles of metal from gathering between hub of gear and the shoulder on shaft (1), as this would throw gear off center and make it impossible to get proper adjustment between gear and bevel pinion.

When reinstalling cross shaft, reverse above operation using just enough shims so shaft will roll free with no binding or end play.

The correct amount of shims (8) (Group 280902) should be in place to bring the ends of teeth on bevel pinion even with those of the bevel gear. (Approx. six shims are used) Allow .006" back lash between gears, by removing shims from the cross shaft bearing case ends. Cross shaft bearings (6) must have free rolling fit.