FRAME ASSEMBLY

Part No.	Part Name
1-A	-UPRIGHT-R.H.
1-B	-BED
1-C	-CROWN
1-D	-UPRIGHT-L.H.
23	-SLIDE-(OR PLUNGER)
199	-MAIN TIE ROD
200	-MAIN TIE ROD NUT
354	-SIDE SHEAR
1001	-MAIN MOTOR PLATE

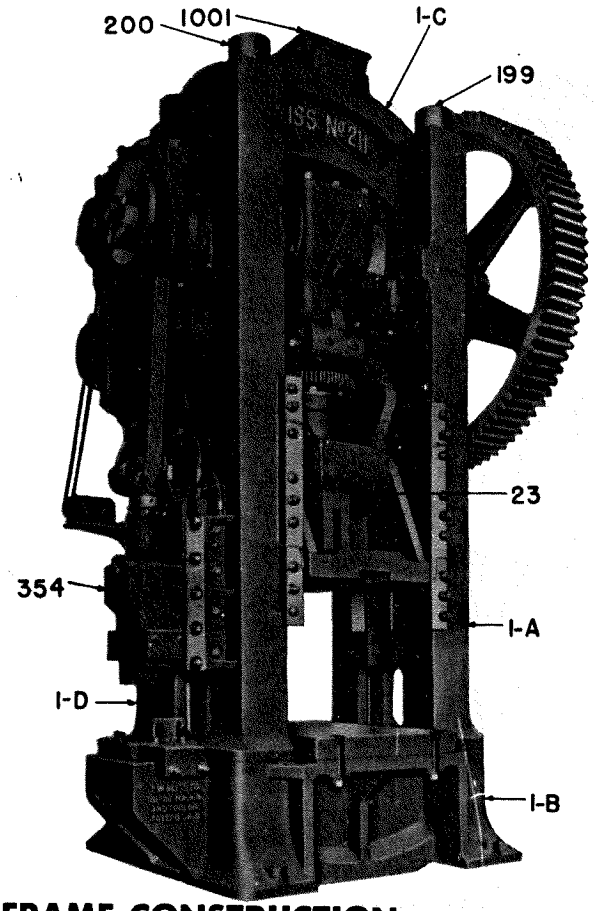


FIG. 1.

SHIPPING

Your Bliss Straight Side press is shipped as completely assembled as practical by either of two methods.

(a) Press completely assembled except for gears, gear guards, flywheel and motor.

(b) The larger sizes will have the frame disassembled or "knocked down" with individual parts skidded to facilitate handling under normal shipping regulations.

In either method all machined surfaces are coated with an anti-rust slushing compound which must be removed before the press is put in operation. Kerosene or any suitable solvent may be used for cleaning. Oilite bearings used on presses with rolling key clutches are covered with waterproof paper for shipment and are not coated with anti-rust slushing compound. *Do not use Kerosene on the interior of these bearings.*

FRAME CONSTRUCTION

Bliss Straight Side presses are of four piece frame construction which consists of a bed, two uprights and a crown held together by four steel tie rods which are shrunk in at assembly to take the load of the press.

The extra heavy uprights are keyed to the bed and crown to withstand any lateral loads which may occur when an eccentric load is produced on the slide. The uprights also provide a mounting surface for the wear strips and adjustable gibs which in turn guide the slide in its vertical motion.

FRAME ERECTION

Erecting the frame is only necessary when the press is shipped to you "knocked down." This erection may be done by either of two methods, depending on the amount of head room available.

Vertical Method: This is the preferred method but it requires more head room than the horizontal method.

1—Place the bed in position on the foundation. The bed should be set level front to back and right to left with provision for about 1" of grouting.

CRANKSHAFT CROWN AND CAP ASSEMBLY

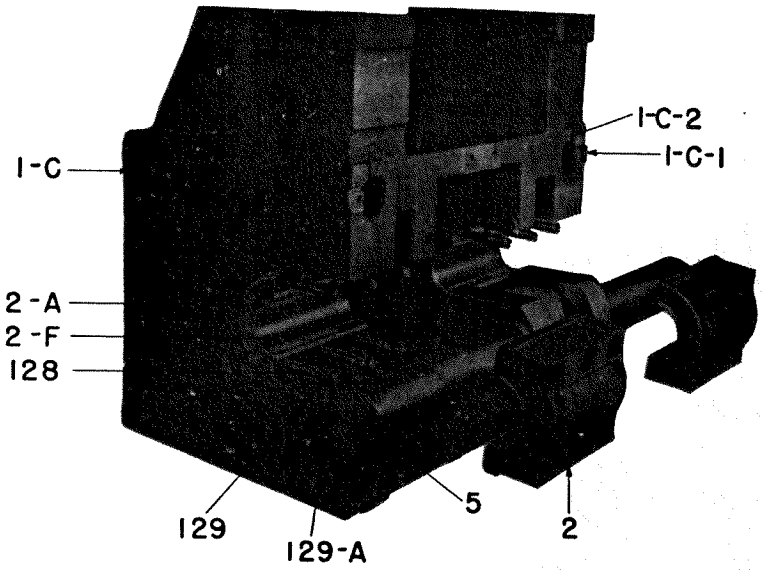


Fig. 2.

Part No.	Part Name
1-C	—CROWN
1-C-1	—CROWN AND UPRIGHT KEY
1-C-2	—CROWN AND UPRIGHT KEY SCREW
2	—CRANKSHAFT MAIN BEARING CAP
2-A	—CRANKSHAFT MAIN BEARING CAP BUSHING
2-F	—CRANKSHAFT MAIN BEARING CAP BUSHING DOWEL
5	—CRANKSHAFT
128	—CRANKSHAFT END BEARING STUD
129	—CRANKSHAFT END BEARING STUD NUT
129-A	—CRANKSHAFT END BEARING STUD LOCK NUT

NOTE — When no pit is used the bed should be first placed on blocks with sufficient clearance for the tie rod nuts to slide underneath.

2—Place the tie rod nuts in position under the bed.

3—Put the tie rods inside of the upright.

4—Place the uprights and tie rods in position on the bed, lowering the tie rods on the nuts.

5—Put the lower nuts on the tie rods.

6—Place the crown in position.

7—Raise the tie rods and put on the top nuts and screw tight taking up all slack.

Horizontal Position: When head room is limited.

1—Lay the bed on its back and level up.

2—Place the uprights in position.

3—Place the crown in position.

4—Put the nuts on the bottom of tie rods.

5—Insert the tie rods in the frame.

6—Put on top nuts and screw tight, taking up all slack.

7—Raise press and mount on foundation leveling front to back and right to left leaving space for about 1" of grouting.

SHRINKING OR PRELOADING THE TIE RODS

The tie rods should be heated until they have expanded sufficiently to be able to take up the tie rod nuts an additional amount equal to .0083 inch per foot of tie rod length, measured between the nuts.

Method of Heating Tie Rods: Near the bottom of each upright there is an opening for heating the tie rods. Protect the uprights with asbestos ¼" thick, then apply heat to the tie rods by an acetylene torch, or other means, capable of spreading a generous and equal flame around the full circumference, using an up and down movement to prevent burning the tie rod.

NOTE—Care should be exercised in not giving the rods too much shrink, as this would unduly strain the frame.

If it becomes necessary to dismantle a press of Bliss four-piece tie rod construction, it is advisable to preheat all tie rods and allow an interval of fifteen (15) minutes before applying second heat to remove the nuts.

SLIDE ADJUSTMENT LIMIT SWITCHES

Presses arranged with power elevating attachments are provided with two slide adjustment overtravel limit switches that are wired through their normally closed contacts, between the adjusting motor starter and its "RAISE" or ("UP") and "LOWER" or ("DOWN") buttons. It is important that these limit switches be properly set to eliminate jamming of the connecting screw and the connection at the up position of the adjustment and to prevent the screw from coming out of the connection at the down position.

The limit switches and their actuating arms are properly set before shipment but either or both may become damaged or misaligned in shipment. Before starting the slide adjusting motor the following checkups should be made.

1. **Make sure that both limit switch arms are securely fastened to the limit switch shafts.**
2. **Check to see that limit switch rollers can be actuated by the limit switch trip bracket.**
3. Loosen the locking screw (18-C) three or four revolutions to spread the clamping plugs (18-A) and (18-B). Do not loosen the anchor screws (19-A). BE SURE THAT THE CLAMPING PLUGS ARE RE-TIGHTENED BEFORE STARTING THE PRESS.

4. Set selector switch to "Slide Adjusting" position. Start the slide adjusting motor by pressing either the "RAISE" or "LOWER" button (dependent on the position of the slide) and then actuate the proper limit switch arm by hand to see that it actually interrupts the circuit to the starter.

The following procedure should be used to set the limit switches. The limit switches require a travel of 10 degrees, or approximately 1/4" (measured at the center of the roller) before the switch breaks the circuit after the dog has contacted the roller. This must be allowed for, in setting the switches.

A. Set selector switch to "Press Operating" position.

B. Use "Inch" button to run slide to its bottom stroke position (crank pin down).

C. Set selector switch to "Slide Adjusting" position.

D. Adjust the slide to the minimum die height by carefully inching the slide down by pressing the "LOWER" or (DOWN") button. Set arm of limit switch to break at this point, allowing for 10 degrees travel as described above.

E. After the low position limit switch has been set, then the slide should be carefully inched upward by use of the "RAISE" or "UP" button. When the maximum die height is reached then the limit switch arm should be set accordingly, allowing for the 10 degrees travel as described above.

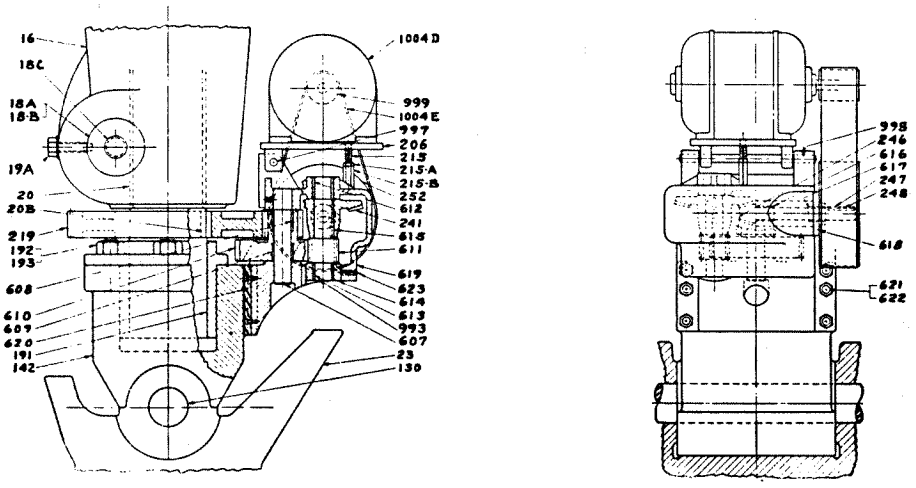
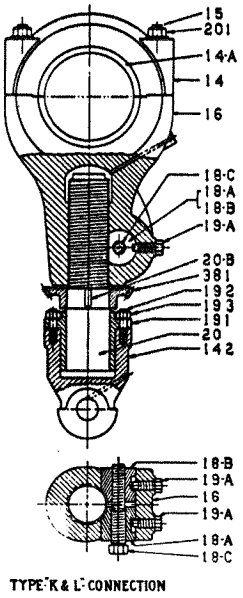


FIG. 3.

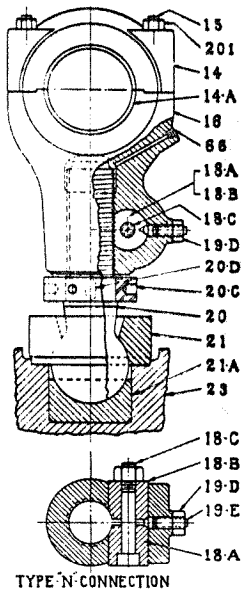
See Page 9 for Parts Identification

PRESS CONNECTIONS AND ADJUSTMENT ASSEMBLIES



TYPE K & L CONNECTION

FIG. 4.



TYPE N CONNECTION

FIG. 5.

14 Connection Cap
14-A Connection Cap Bushing
15 Connection Cap Stud
16 Connection
18-A Connection Screw Clamping Plug (head end)
18-B Connection Screw Clamping Plug (nut end)
18-C Connection Screw Clamping Plug Screw
19-A Connection Screw Clamping Plug Anchor Screw
19-D Connection Screw Clamping Plug Dummy Screw
19-E Connection Screw Clamping Plug Spreader
20 Connection Screw
20-B Connection Screw Gear Key
20-C Connection Screw Adjusting Collar
20-D Connection Screw Adjusting Collar Key
21 Connection Screw Ball Box Cap
21-A Connection Screw Ball Box
23 Slide
66 Oil Cup
130 Connection Wrist Pin
142 Connection Wrist
191 Connection Screw and Wrist Retaining Bushing
192 Connection Screw and Wrist Retaining Bushing Stud
193 Connection Screw and Wrist Retaining Bushing Stud Nut
201 Connection Cap Stud Nut
206 Elevating Motor Plate
215 Elevating Motor Plate Adjusting Screw
215-A Elevating Motor Plate Adjusting Screw Nut
215-B Elevating Motor Plate Adjusting Screw End
219 Connection Screw Gear, Spur
241 Adjusting 1st Driven Gear
246 Adjusting 1st Drive Pinion
247 Adjusting 1st Drive Pinion Key
248 Adjusting Main Driveshaft
252 Adjusting Motor Driven Pulley
381 Connection Screw Gear, Bevel
382 Connection Screw Gear Pinion, Bevel
607 Adjusting 3rd Shaft
608 Adjusting 4th Gear Bushing, Pinion End
609 Adjusting 4th Gear Bushing, Gear End
610 Adjusting 4th Gear
611 Adjusting 3rd Gear
612 Adjusting Gear Case Bushing, 1st Driven Gear Shaft
613 Adjusting Gear Case Bushing, 1st Driven Gear Shaft
614 Adjusting Gear Case Sleeve, 1st Driven Gear Shaft
615 Adjusting 1st Driven Gear Key
616 Adjusting Gear Case Bushing, Main Driveshaft, Pinion End
617 Adjusting Gear Case Bushing, Main Driveshaft, Pulley End
618 Adjusting Gear Case Sleeve, Main Driveshaft
619 Adjusting Gear Case
620 Adjusting Gear Case Anchor Key
621 Adjusting Gear Case Stud
622 Adjusting Gear Case Stud Nut
623 Adjusting Gear Case Sleeve Set Screw
993 Adjusting 1st Driven Shaft
997 Adjusting Motor Plate Pivot Shaft
998 Adjusting Motor Plate Lug
999 Adjusting Motor Sheave
1004-D Adjusting Motor
1004-E Adjusting Motor Belt

SIDE SHEAR ASSEMBLY

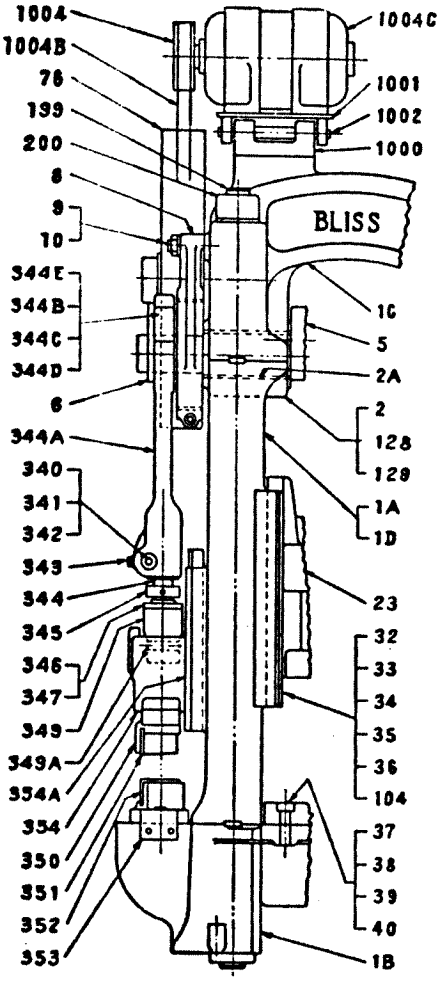


FIG. 6.

1-A. Upright, R. H.
1-B. Bed
1-C. Crown
1-D. Upright, L. H.
2. Crankshaft bearing cup
2-A. Crankshaft bearing cup bushing
5. Crankshaft
6. Crankshaft brake collar
7. Crankshaft brake collar key
8. Crankshaft brake band complete with lining
9. Crankshaft brake band attaching stud
10. Crankshaft brake band attaching stud nut
23. Slide (or plunger)
32. Gib, front, L. H.
33. Gib, front, R. H.
34. Gib screw (or stud)
35. Gib adjusting set screw
36. Gib adjusting set screw nut
37. Bolster plate
38. Bolster plate bolt
39. Bolster plate bolt washer
40. Bolster plate bolt nut
76. Balance wheel (or flywheel)
104. Gib stud nut
128. Crankshaft end bearing stud
129. Crankshaft end bearing stud nut
199. Tierod
200. Tierod nut
340. Connection screw clamping plug, R. H.
341. Connection screw clamping plug, L. H.
342. Connection screw clamping plug screw
343. Connection screw clamping plug anchor screw
344. Connection screw
344-A. Connection
344-B. Connection cap
344-C. Connection cap stud
344-D. Connection cap stud nut
344-E. Connection main bushing
345. Connection screw adjusting nut
346. Connection screw and wrist retaining bushing
347. Connection screw and wrist retaining bushing stud
349. Connection wrist
349-A. Connection wrist pin
350. Cutter holder, upper
351. Cutter, upper
352. Cutter, lower
353. Cutter holder, lower
354. Trimming slide
354-A. Main gib, outer
1000. Motor plate lug
1001. Motor plate
1002. Motor plate pivot shaft
1003. Motor plate pivot shaft cotter
1004. Motor sheave
1004-B. Belt, main
1004-C. Motor, main

TYPE "K" CLUTCH SHAFT ASSEMBLY

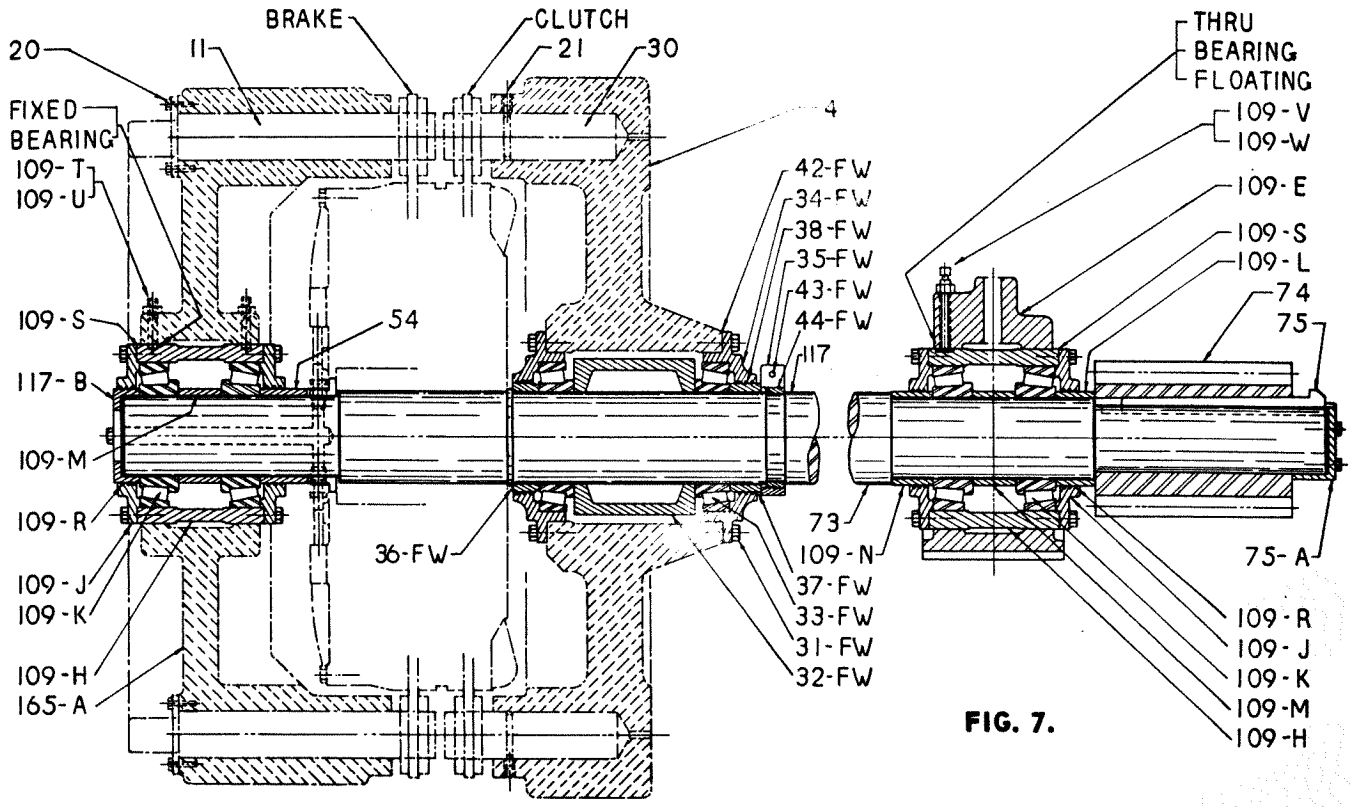


FIG. 7.

Type "K" Clutch Shaft Assembly (Single Geared)

Part No.	Part Name
4	—CLUTCH WHEEL—OR FLYWHEEL
11	—BRAKE FRICTION DISC PIN
20	—BRAKE FRICTION DISC PIN SCREW
21	—CLUTCH FRICTION DISC PIN SCREW
30	—CLUTCH FRICTION DISC PIN
31-FW	—FLYWHEEL BEARING RETAINER SCREWS
32-FW	—FLYWHEEL BEARING SPACER—CENTER
33-FW	—FLYWHEEL BEARING
34-FW	—FLYWHEEL BEARING RETAINER
35-FW	—FLYWHEEL OUTER CLAMP RING
36-FW	—FLYWHEEL BEARING SPACER—INNER
37-FW	—FLYWHEEL BEARING SPACER—OUTER
38-FW	—FLYWHEEL BEARING RETAINER PACKING
42-FW	—FLYWHEEL BEARING ADJUSTING SHIMS
43-FW	—FLYWHEEL OUTER CLAMP RING SCREW
44-FW	—FLYWHEEL INNER CLAMP RING
54	—SHAFT SPACER (To Clutch)
73	—MAIN OR IST INTER. SHAFT
74	—MAIN OR IST INTER. PINION
75	—MAIN OR IST INTER. PINION KEY
75-A	—MAIN OR IST INTER. SHAFT END COLLAR
109-E	—DRIVE SHAFT BRACKET (Floating)
109-H	—DRIVE SHAFT BEARING SLEEVE (Fixed)
109-H	—DRIVE SHAFT BEARING SLEEVE (Floating)
109-J	—DRIVE SHAFT BEARING COLLAR (Fixed)
109-J	—DRIVE SHAFT BEARING COLLAR (Floating)
109-K	—DRIVE SHAFT BEARING (Fixed)
109-K	—DRIVE SHAFT BEARING (Floating)
109-L	—DRIVE SHAFT BEARING SPACER (Outer) (Floating)
109-M	—DRIVE SHAFT BEARING SPACER (Middle) (Fixed)
109-M	—DRIVE SHAFT BEARING SPACER (Middle) (Floating)
109-N	—DRIVE SHAFT BEARING SPACER (Inner) (Floating)
109-R	—DRIVE SHAFT BEARING COLLAR PACKING (Fixed)
109-R	—DRIVE SHAFT BEARING COLLAR PACKING (Floating)
109-S	—DRIVE SHAFT BEARING COLLAR SHIM (Fixed)
109-S	—DRIVE SHAFT BEARING COLLAR SHIM (Floating)
109-T	—DRIVE SHAFT BEARING SLEEVE DOWEL
109-U	—DRIVE SHAFT BEARING SLEEVE DOWEL NUT
109-V	—DRIVE SHAFT BEARING SLEEVE SCREW
109-W	—DRIVE SHAFT BEARING SLEEVE SCREW NUT
117	—MAIN DRIVE SHAFT
117-B	—MAIN DRIVE SHAFT END BEARING SPACER
165-A	—BRAKE BRACKET

TYPE "K" CLUTCH SHAFT ASSEMBLY

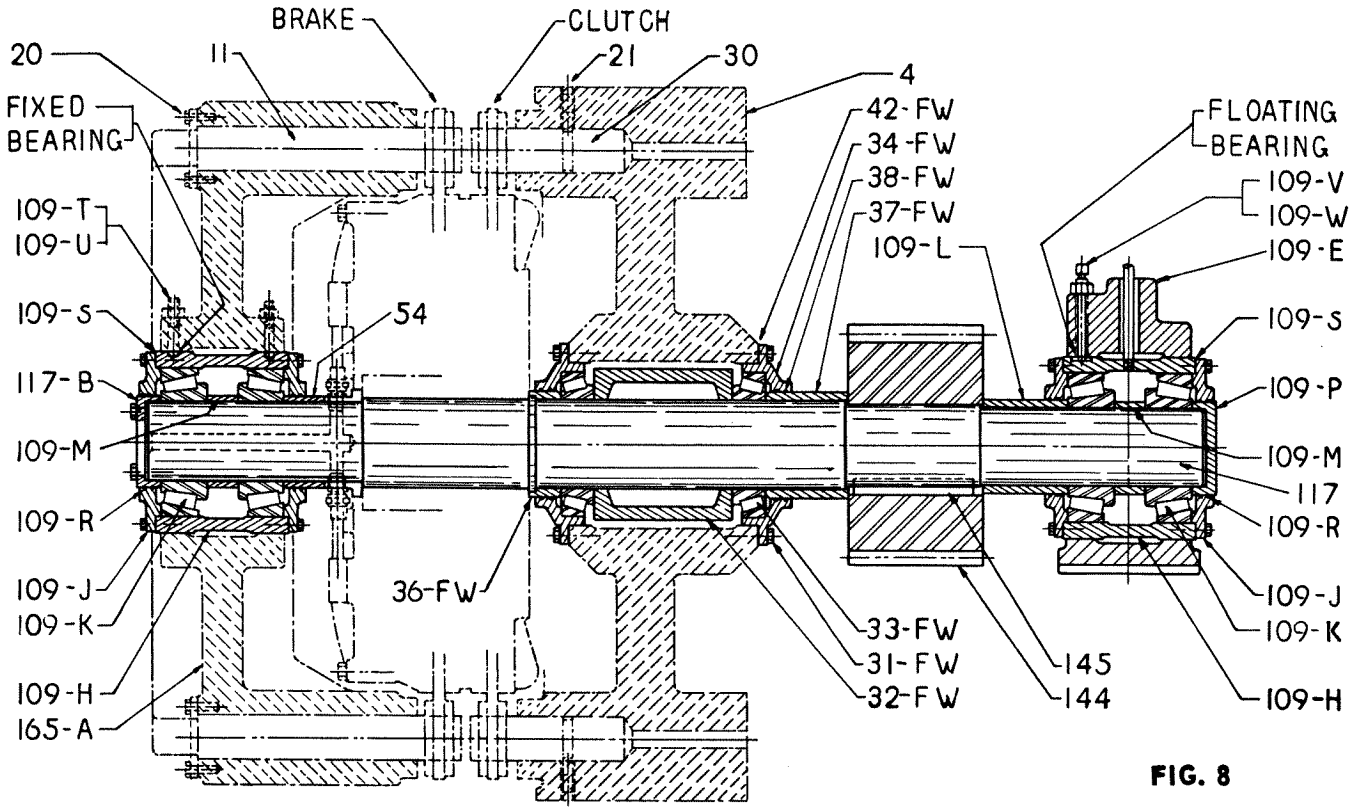


FIG. 8

Type "K" Clutch Shaft Assembly (Double Geared)

Part No.	Part Name
4	—CLUTCH WHEEL—OR FLYWHEEL
11	—BRAKE FRICTION DISC PIN
20	—BRAKE FRICTION DISC PIN SCREW
21	—CLUTCH FRICTION DISC PIN SCREW
30	—CLUTCH FRICTION DISC PIN
31-FW	—FLYWHEEL BEARING RETAINER SCREWS
32-FW	—FLYWHEEL BEARING SPACER—CENTER
33-FW	—FLYWHEEL BEARING
34-FW	—FLYWHEEL BEARING RETAINER
36-FW	—FLYWHEEL BEARING SPACER—INNER
37-FW	—FLYWHEEL BEARING SPACER—OUTER
38-FW	—FLYWHEEL BEARING RETAINER PACKING
42-FW	—FLYWHEEL BEARING ADJUSTING SHIMS
54	—SHAFT SPACER (To Clutch)
109-E	—DRIVE SHAFT BRACKET (Floating)
109-H	—DRIVE SHAFT BEARING SLEEVE (Fixed)
109-H	—DRIVE SHAFT BEARING SLEEVE (Floating)
109-J	—DRIVE SHAFT BEARING COLLAR (Fixed)
109-J	—DRIVE SHAFT BEARING COLLAR (Floating)
109-K	—DRIVE SHAFT BEARING (Fixed)
109-K	—DRIVE SHAFT BEARING (Floating)
109-L	—DRIVE SHAFT BEARING SPACER (Inner) (Floating)
109-M	—DRIVE SHAFT BEARING SPACER (Middle) (Fixed)
109-M	—DRIVE SHAFT BEARING SPACER (Middle) (Floating)
109-P	—DRIVE SHAFT BEARING END PLATE
109-R	—DRIVE SHAFT BEARING COLLAR PACKING (Fixed)
109-R	—DRIVE SHAFT BEARING COLLAR PACKING (Floating)
109-S	—DRIVE SHAFT BEARING COLLAR SHIM (Fixed)
109-S	—DRIVE SHAFT BEARING COLLAR SHIM (Floating)
109-T	—DRIVE SHAFT BEARING SLEEVE DOWEL
109-U	—DRIVE SHAFT BEARING SLEEVE DOWEL NUT
109-V	—DRIVE SHAFT BEARING SLEEVE SCREW
109-W	—DRIVE SHAFT BEARING SLEEVE SCREW NUT
117	—MAIN DRIVE SHAFT
117-B	—MAIN DRIVE SHAFT END BEARING SPACER
144	—MAIN DRIVE PINION
145	—MAIN DRIVE PINION KEY
165-A	—BRAKE BRACKET

MAIN SHAFT ASSEMBLY

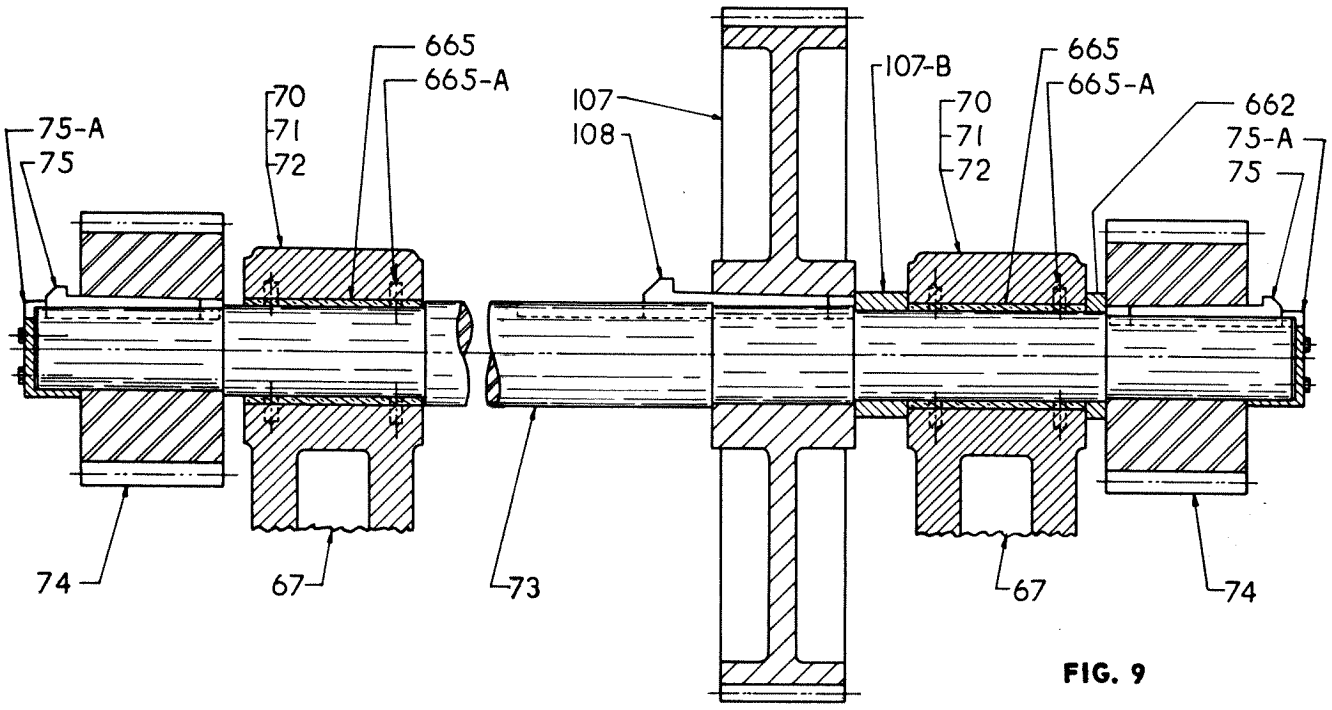


FIG. 9

Main or First Intermediate Shaft Assembly — Twin End Drive

Part No.	Part Name
67	—MAIN OR IST INTER. SHAFT BRACKET—L.H.
67	—MAIN OR IST INTER. SHAFT BRACKET—R.H.
70	—MAIN OR IST INTER. SHAFT BRACKET CAP—L.H.
70	—MAIN OR IST INTER. SHAFT BRACKET CAP—R.H.
71	—MAIN OR IST INTER. SHAFT BRACKET CAP STUD
72	—MAIN OR IST INTER. SHAFT BRACKET CAP STUD NUT
73	—MAIN OR IST INTER. SHAFT
74	—MAIN OR IST INTER. PINION—L.H.
74	—MAIN OR IST INTER. PINION—R.H.
75	—MAIN OR IST INTER. PINION KEY—L.H.
75	—MAIN OR IST INTER. PINION KEY—R.H.
75-A	—MAIN OR IST INTER. SHAFT END COLLAR—L.H.
75-A	—MAIN OR IST INTER. SHAFT END COLLAR—R.H.
107	—MAIN DRIVE IST INTER. GEAR
107-B	—MAIN DRIVE IST INTER. GEAR SPACER
108	—MAIN DRIVE IST INTER. GEAR KEY
662	—MAIN OR IST INTER. PINION SPACER
665	—MAIN OR IST INTER. SHAFT BUSHING—L.H.
665	—MAIN OR IST INTER. SHAFT BUSHING—R.H.
665-A	—MAIN OR IST INTER. SHAFT BUSHING DOWEL