



INSTALLATION • ADJUSTMENTS • MAINTENANCE

INSTRUCTIONS

OIL CIRCUIT BREAKER

Types F-11 and F-22

WESTINGHOUSE ELECTRIC CORPORATION

SWITCHGEAR DIVISION

EAST PITTSBURGH PLANT
SUPERSEDES I.B. 5229-L

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SHIPPING

The types F-11 and F-22 oil circuit breakers are built on the unit basis, i.e., the breaker unit, the coverplate and the accessories are unit assemblies, packaged and shipped as separate units. Each assembly is inspected, operated and tested before packing to be sure it is correct. Check each package, when opened, against the shipping papers to see that the contents are as listed. Keep the papers

at least until installation is complete. Correspondence will be expedited if the Westinghouse order number, the style number, or other identification marked, on the part or assembly under question and a description are included in the first letter. If possible refer to the part or parts by the names given in this book together with the figure number where it appears.

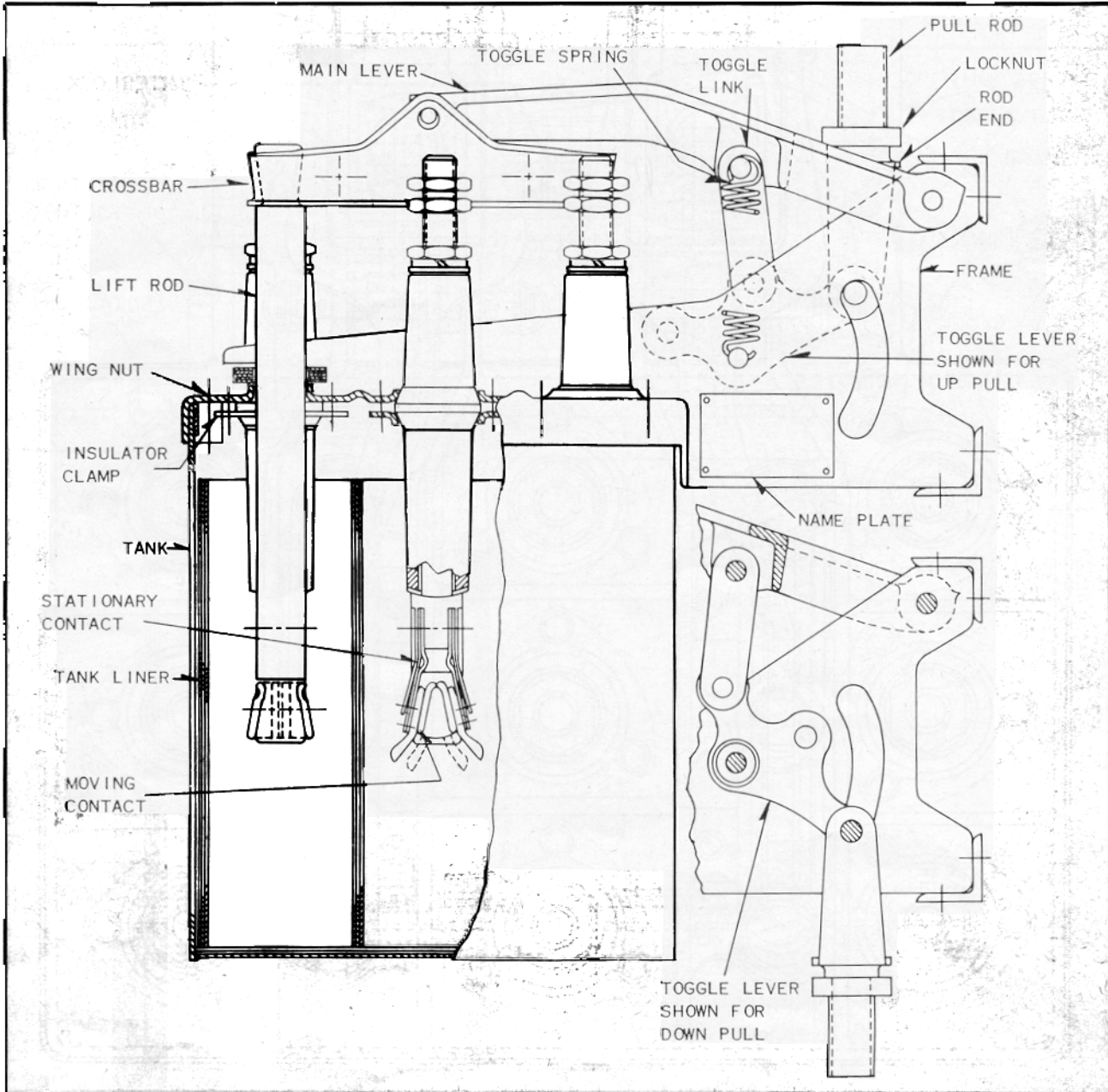


FIG. 1. F-11 Single Throw Breaker Unit

INSTALLATION

Lay out all the assemblies and parts on the floor or on a bench in approximate position for assembly. Check to see that all required parts are at hand then proceed in approximately the following sequence.

1. Place the bell alarm (Fig. 19) or auxiliary switch (Fig. 18), if they are supplied, in the slot in the coverplate.
2. Place trip coils in coverplate and assemble trip attachments by inserting in holes in bottom of

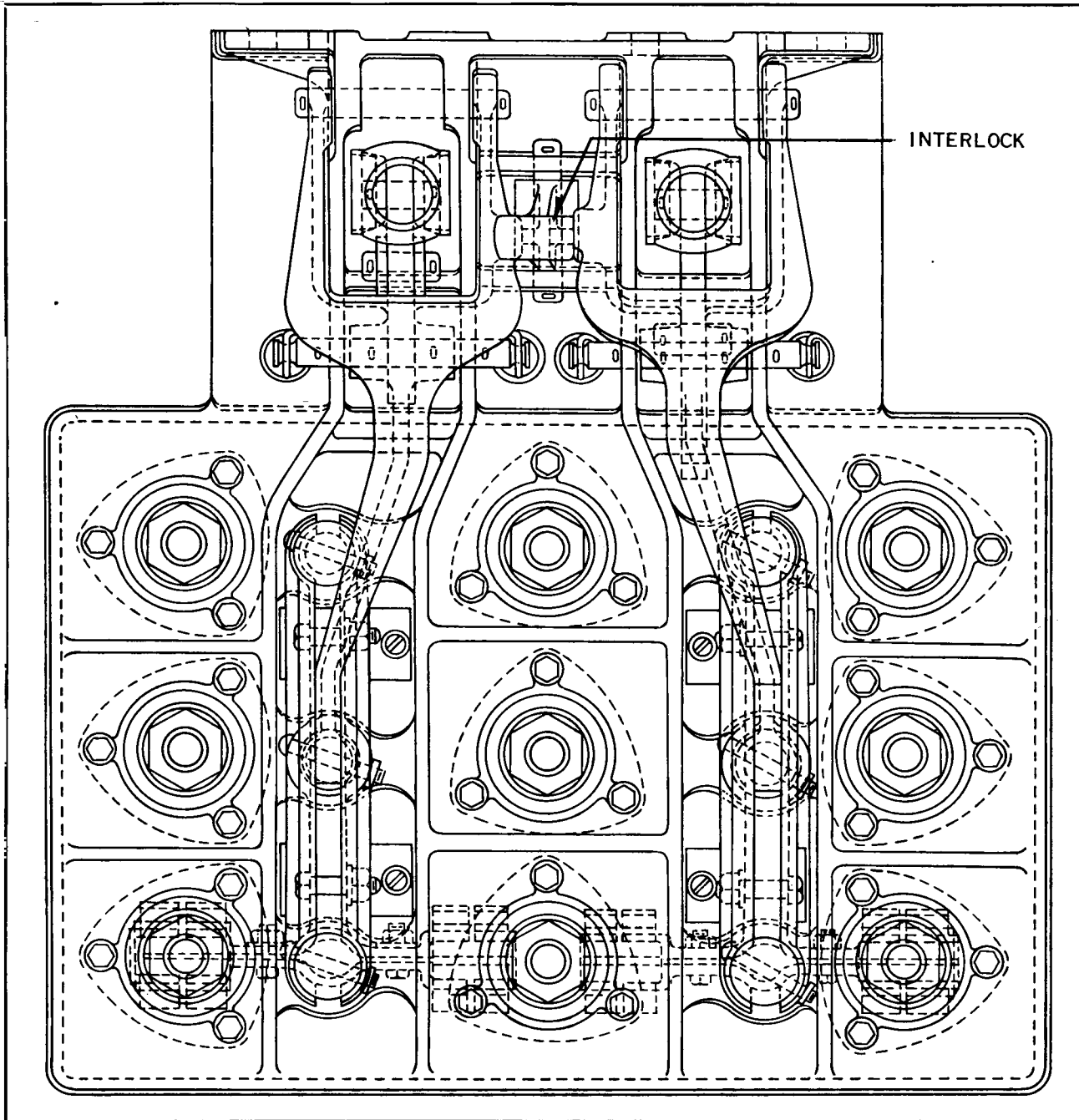


FIG. 2. F-11 Double Throw Breaker Unit

coil box pushing up through coil and top of coil box. Turn calibration scales so they face the front. Fasten in place with nut and lock washer on top of coil box. Wedge coil by driving wedges *below* coil. Wedges should be coated with shellac before driving in to insure they will not come out.

3. Place coverplate on switchboard. Make sure handle travels vertically.

4. If manual retrieve undervoltage (Fig. 17) is furnished, mount it on left hand coverplate bolt. The automatic retrieve undervoltage (Fig. 17A) is mounted on right hand coverplate bolt.

5. If breaker unit is to be mounted in back of switchboard assemble with coverplate. (See Fig. 6)

Note several of the bolts fasten both assemblies. Make sure breaker unit is level with studs vertical.

6. If breaker unit and coverplate are to be mounted on a pipe mounting bracket as in Fig. 9 proceed as per 3-4-5 above, the pipe bracket is just a cast iron switchboard to be supported on pipes.

7. If breaker unit is to be carried on panel mounting brackets back of and off of switchboard, the assembly will be as in Fig. 7.

8. If breaker unit is to be carried on a wall or pipe frame, assembly will be according to Fig. 8. The bell cranks are supplied for mounting on the floor with the accelerating device carrying the spring next to the breaker unit. If bell cranks are to

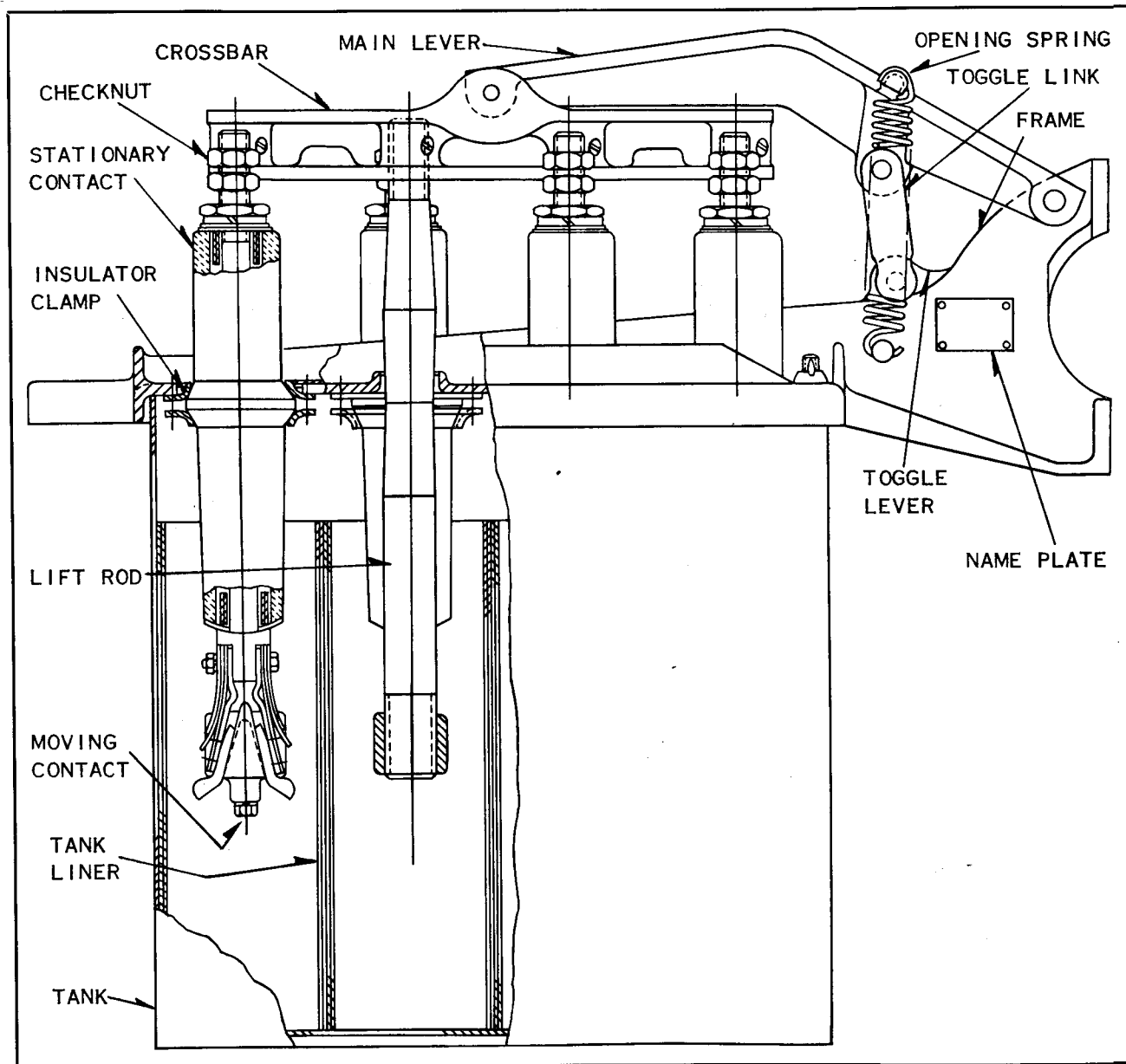


FIG. 3. F-22 Single Throw Breaker Unit

INSTALLATION

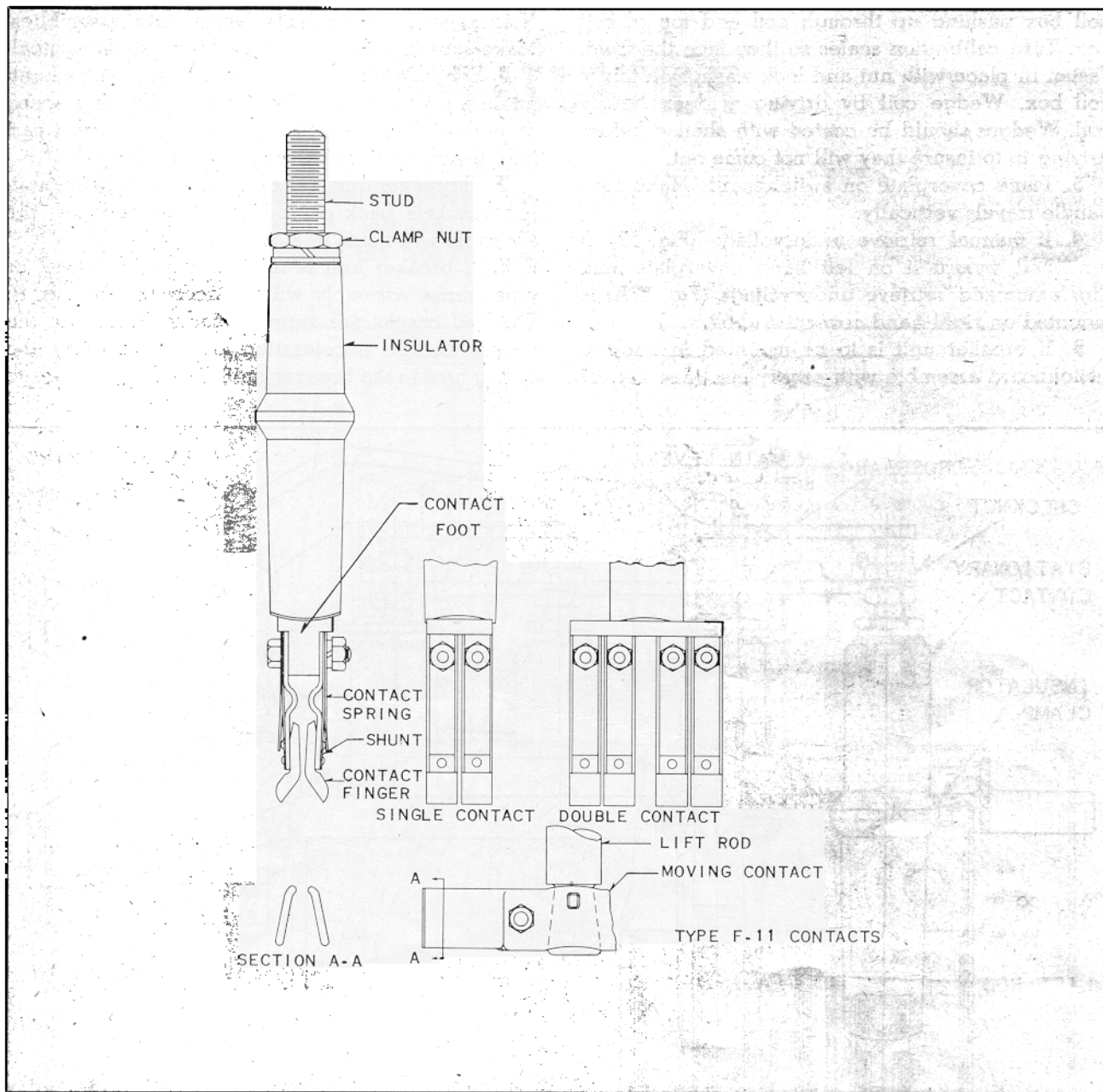


FIG. 4. Contacts F-11

be placed on the ceiling of the floor below they should be reassembled as shown in Fig. 10. The operating rods are $\frac{3}{4}$ pipe with a taper thread on one end and a straight thread on the end used for adjusting. Be sure and assemble pipe nut on this end to lock adjustment when complete.

9. Connect power circuit. Be sure conductors of adequate cross section are used to carry the

expected load in the circuit without overheating. Be sure all surfaces are clean before bolting together. A light coat of linseed oil, particularly on threaded studs, will help make up a tight, low resistance joint and will make breaking the joint easier. Be careful when bolting on circuit copper that alignment of contacts is not disturbed.

10. Connect up accessories and attachments according to detail diagrams.

ADJUSTMENT

Connect the coverplate to the breaker units. Adjust the length of the rod so that with the coverplate in the latched position the toggle on the breaker unit is within approximately $\frac{1}{8}$ inch of its stop. On remote control breakers the length of rods should be adjusted so each bell crank travels an equal distance each side of centerline, i.e., with coverplate and breaker unit in mid position each bell crank should be approximately right angles to pipe. Be sure to lock adjustments with pipe nuts when adjustments are completed.

Check to see that, with handle in open position there is some clearance left between trip lever and top of slot in the coverplate and that the breaker unit linkage is resting on the open position stop.

Check to see that with coverplate in the closed position contacts are properly engaged.

The length of the lift rods in the Type F-11 breaker is fixed. The cross bar clamps to the upper end, the moving contacts clamp to the lower end. An indent in each end presses into the wood and prevents rotation. In replacing rods squeeze the indent into the wood by clamping in a vise or with a "C" clamp. Tightening the bolts alone does not provide the necessary pressure.

The lift rods in the Type F-22 breakers are threaded on both ends. The proper adjustment is secured when the contacts are at the proper closed position with the toggle stop in the linkage in contact. A wood screw prevents rotation. In replacing rods be sure there are no burrs in the threaded holes and drill a hole in the wood rod to start the locking screw.

Check operation when the breaker is closed suddenly and when trigger is released with breaker in the closed position. Check to see that moving contacts enter approximately centrally between the fingers when closing and that the arcing contacts engage first and break last.

Check to see that trigger releases trip lever if it is raised slowly to full travel. Use only graphite type lubricant such as used for locks or guns on the trigger roller.

Raise trip core of each trip device and check to see that trigger is released with approximately $\frac{1}{8}$ inch of travel left. Check to see that with trip rod in contact with trigger applying minimum rated cur-

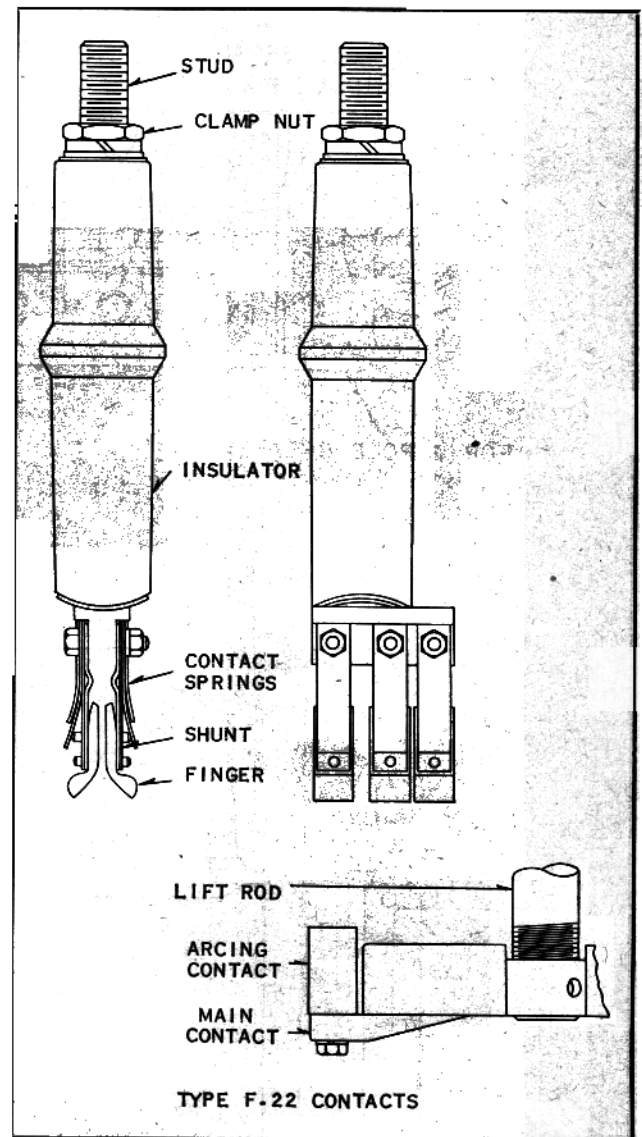


FIG. 5. Contacts F-22

rent to the trip coil or 80% of normal voltage to a shunt trip coil will release trigger.

Check undervoltage to see that applying 80% of normal voltage picks up the armature from the retrieved position. Check to see that armature will drop from closed position when voltage falls to about 50% of normal, check to see that releasing the armature slowly by hand still releases trigger without stalling.

Light out each contact of auxiliary switch in bell alarm.

