

POWER ENGINEERS' NOTEBOOK

PLANT-TESTED IDEAS TO SOLVE PROBLEMS OF DESIGN, OPERATION AND MAINTENANCE



SLIP JOINTS PREVENT EXPANSION TROUBLES

HEAT EXCHANGERS must be mounted flexibly so expansion of the unit will not cramp or distort connections and fittings for either circuit passing through the shell. On the crude-oil pipeline, right, the flow of oil through the line cools the engine jacket-cooling water. Here the heat exchanger shells are mounted with slip joints on the downstream end.

Three sets of restraining links set across the slip joint take any end thrust that develops and prevents the line pressure from forcing the unit apart. The links are set up when the unit is cold, thus allowing for expansion above that point without binding.

The lines carrying the cooling water to the coils within the exchanger are set

some four feet from the shell and enter by way of a reverse-U swing so torque in the horizontal pipe can absorb dimensional changes in exchanger shell length.

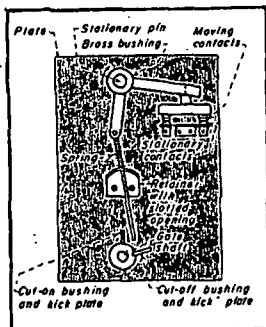
Use of flange joints on the water circuit and slip joints on the oil side permits a shell to be withdrawn from service in a minimum of time by loosening only a few bolts. This work does not disturb the main control valves and the second section of the heat exchanger installation, permitting operation to continue during maintenance work.

ELTON STERNETT Houston, Texas

The Editors Invite Contributions

Here's your chance to cash in on one of those professional tricks you have used in your plant. Power pays \$20 for each item published here on problems in design, operation and maintenance. Your contribution need be in rough form only—just set down all facts with sketches in pencil. We will do any editing that is needed.

AUTOMATIC SWITCH CONTROLS ALARM CIRCUIT



A PLANT burning hogged fuel moved its wood from the storage vault by a belt conveyor. Frequently the wood would arch over at the vault discharge leaving the conveyor empty. Since this fuel fed three boilers it was important that the fireman know about the stoppage as soon as it occurred. The author developed the mechanical switch, at left, to operate a bell alarm.

A swinging gate in the conveyor trough operates this switch. With a clean belt the gate hangs vertically, but when loaded with fuel the belt pushes the gate to a horizontal position. The gate shaft extends through the switch-mounting plate. Two brass bushings mounted on the end of the shaft are locked in position with setscrews. Each

bushing carries a kick plate and can be readily positioned in respect to the gate and the gate, and adjust the alarm on and cut-off points.

The spring gives the switch action and locks it in position. The gate can swing to and fro a certain amount before causing an operation in either direction. The spring-operated construction of the moving contacts assures a good contact when the switch closes. The angular arrangement causes a wiping action that cleans the points. The switch may be used either a circuit-opening or circuit-closing setup, depending on the setting of the alarm circuit selected.

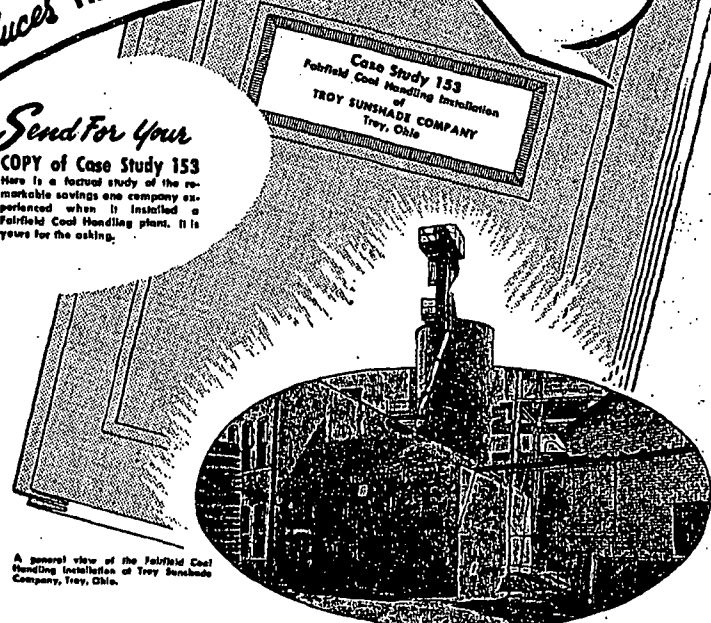
DENARD L. GUSLER Bassett, Va.

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