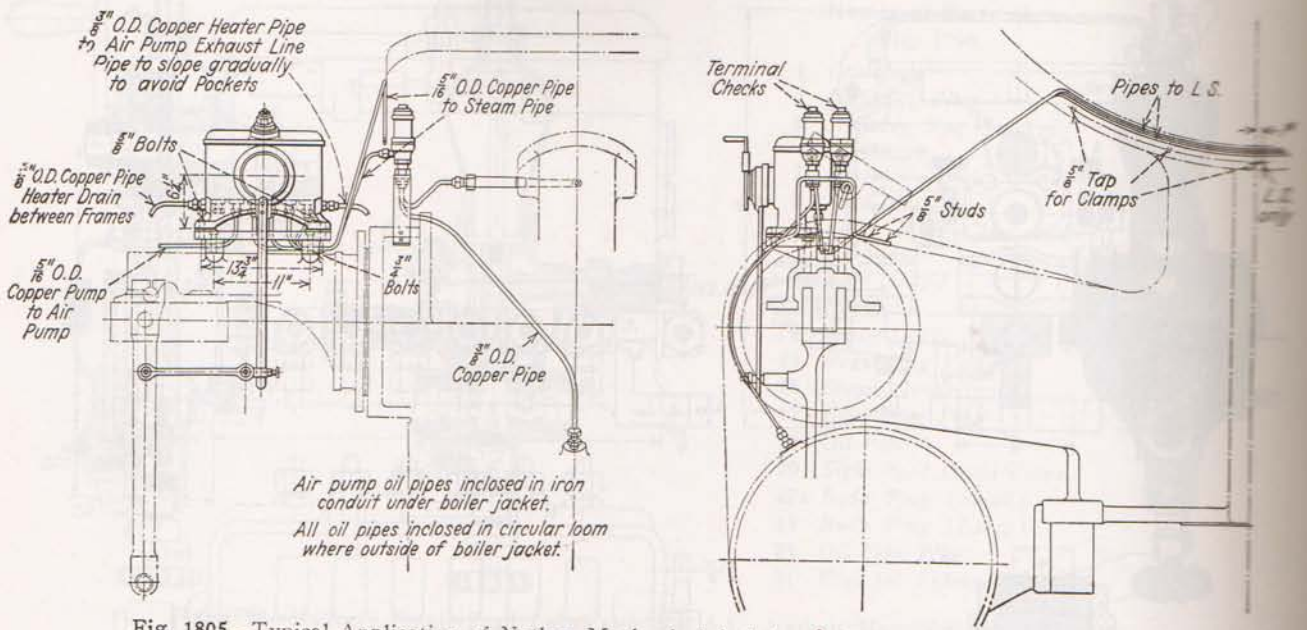

Fig. 1805—Typical Application of Nathan Mechanical Lubricator, Type D. V., to a Locomotive.

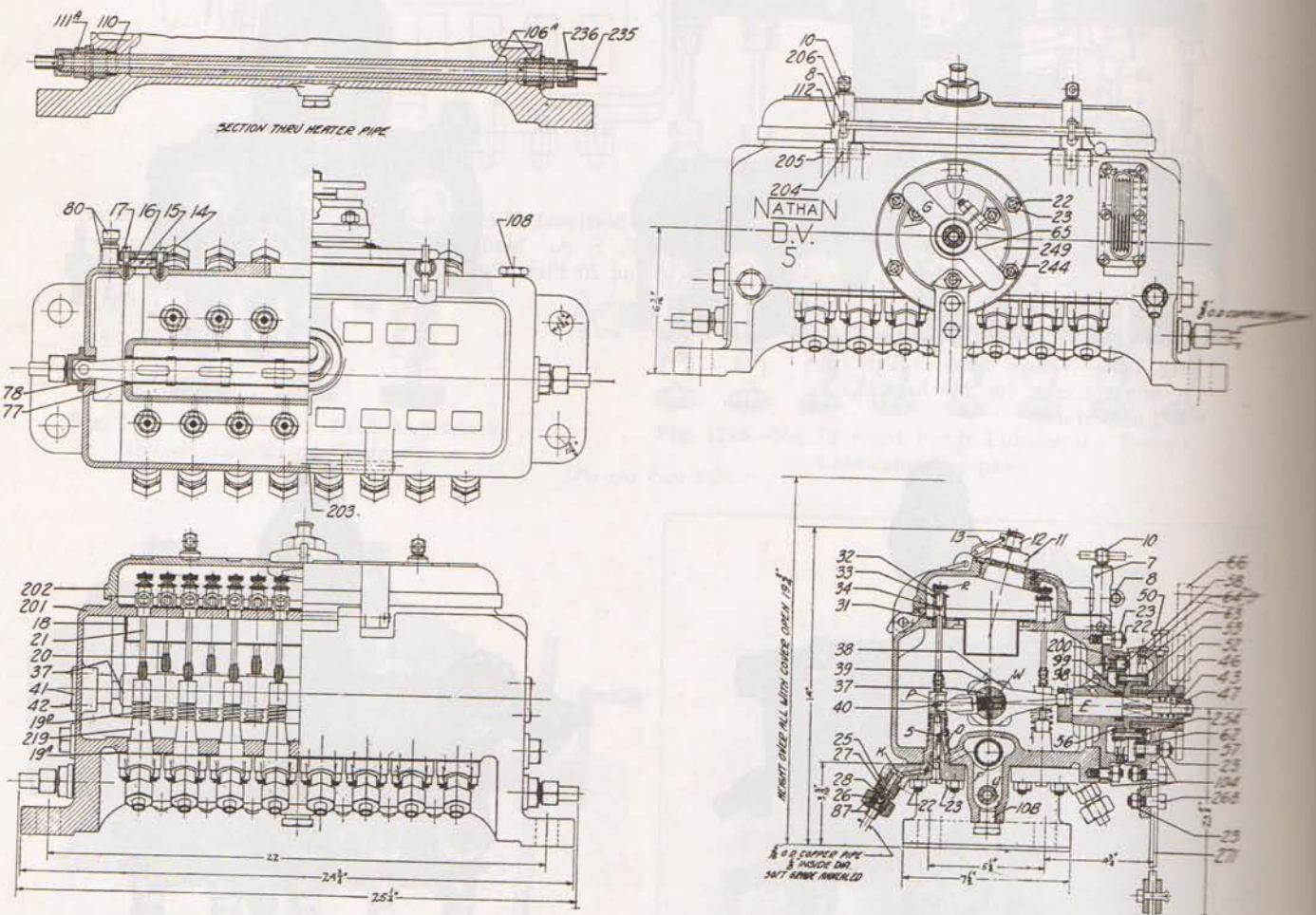

Fig. 1806—Sectional Views of Nathan Mechanical Lubricator, Type D. V. 5. Number of Feeds, 14; Capacity, 24 Pints.

Nathan Manufacturing Company.

(*See also Page* 753)

Nathan Locomotive Lubricators

The Nathan Type D. V. Valveless Mechanical Lubricator used principally for oiling parts under pressure, is the result of many years experimentation, development, and service tests. It is made in any number of feeds desired up to 14 and from 8 pints to 24 pints reservoir capacity. In road service it is reducing oil consumption on freight power 50 per cent and on passenger power 25 per cent and at the same time is doubling piston packing mileage.

This lubricator consists of an oil reservoir containing valveless plunger type pumps, one for each

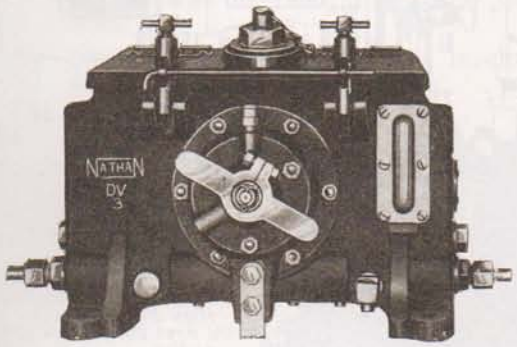

Fig. 1807—Nathan Type D. V. Mechanical Lubricator

feed. These pumps are actuated by the engine motion work through a ratchet lever.

Each pump consists of a plunger P—see Fig. 1806—which, in its highest and lowest positions, automatically opens and closes the oil inlet opening and oil outlet opening through a turning movement of the plunger. The plunger thus replaces the suction and discharge valves.

The crank disc on the end of the ratchet shaft *E* contains a circular hole which receives the ball end of the rocker arm attached to the shaft *W*. The center of the circular hole is eccentric to the center of the ratchet shaft *E* so that as the ratchet shaft rotates the vertical throw of the eccentric causes the shaft *W* to oscillate while the horizontal throw of the eccentric causes the shaft to slide back and forth. These oscillating and reciprocating motions are definite since the arm is rigidly attached to shaft *W*. These two motions are utilized to operate the plungers for pumping and for the control of admission and discharge of oil.

Each plunger is operated by a small arm rigidly attached to the shaft *W*, the ball end of the arm moving in an elongated slot of the enlarged top of the plunger, to be termed the crosshead. The slot in the crosshead is long enough so that on the upward or suction stroke of the plunger the oscillating motion of the small arm will leave the plunger free to be pushed upward by the spring below the crosshead. On the downward or pressure stroke the ball end of the small arm contacts with the bottom of the slot pressing the plunger down. As the elongated slot is situated on the periphery of the crosshead, the reciprocating motion of the shaft *W* causes the plunger to oscillate and the turning motion thus produced causes a groove in the plunger to make connection to the suction chamber *O* on the up-stroke and with the discharge chamber *K* on the down-stroke.

The amount of upward motion of the plunger is limited by the contact of the adjusting screw *R* and the extension rod of the plunger, the action of which can be visually inspected. The amount of motion may be varied from full stroke to zero by the position of adjusting screw *R*.

The shaft *E* is rotated by a ratchet arranged with three pawls and the ratchet is prevented from a return by a second ratchet also arranged with three pawls. The driving ratchet is moved by the arms attached to some point of the valve gear. The handle *G* permits operating the pump by hand for priming or inspection.

The lubricator is provided with suitable strainers and heating arrangement.

The Nathan Type F. S. A. Mechanical Lubricator, Figs. 1802 and 1808, is used principally for lubricating parts not under pressure. Each cylinder unit has a pressure piston, 34, and a distributing piston, 35. The oil enters the distributing piston at the opening *O*, and according to the position of the distributing piston is pumped by the pressure piston on one stroke to the horizontal outlet and on the other stroke to the vertical outlet. In this way from each pumping unit, two oil lines are supplied and lead to parts to be lubricated, making it possible to incorporate a large number of outlets in a very compact and comparatively small reservoir.

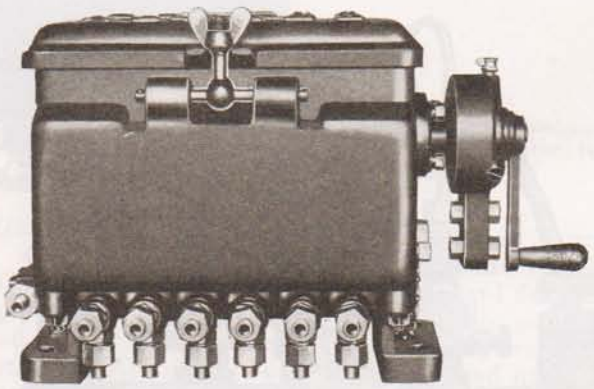

Fig. 1808—Nathan Type F.S.A. Mechanical Lubricator

In operating as above, the pressure piston has to make two strokes for each one made by the distributing piston. This is effected by actuating the former by a double cam, *m*, and the latter by an eccentric, *e*.

The oil adjustment is effected by means of the regulating screw 30, which, when turned to the right increases the feed and when turned to the left, decreases the feed.

The lubricator is provided with suitable strainers and heating arrangement.

For other products and branch offices, see classified and alphabetical indexes.

NATHAN MANUFACTURING COMPANY, NEW YORK, N. Y.