20 pounds per square inch, above which, in practice, it has not been found advisable to work. A relief valve is, therefore, fitted at each pump with an adjustable spring which enables the pressure at which each pump shall

the car has been standing for a day or two, and so avoid starting away with dry axle boxes.

To prevent the oil from the running pump flowing into the other pump and

become saturated with oil and then slipping occurs. An occasional application of one of the various belting mixtures, however, greatly reduces this slipping. When equal relief valve springs were put in, it was noticed that

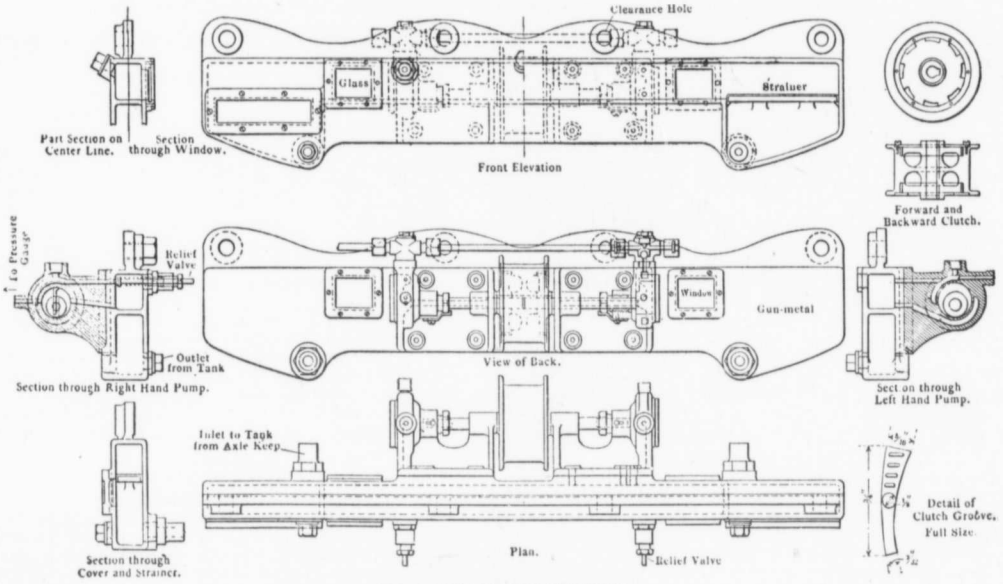

FIG. 2. THE OIL TANK AND PUMP

work to be regulated. The excess oil, when pumping, simply passes back into the tank again, through the relief valve against the pressure of the spring. A small pressure-gauge connected to each pump, and fixed in the driver's cab, shows the pressure of the oil pumped on both forward and backward running, while also acting as an indicator should failure of either pump occur at any time. Should this happen from any cause, the ordinary system of lubrication, by means of a lubricating box in the cab, is at hand. This lubricating box is also necessary to enable oil to be put into the axle boxes after

causing it to run backward, a small ball valve is placed in the three-way piece leading from each pump to the circuit. The movement of the axle boxes relatively to the tank and pumps was met in the first instance by trying different sorts flexible piping, but finally, ordinary coiled copper piping was adopted, both on account of its comparative durability and of its accessibility at any time.

The belt drive for the pumps at once gives a simple method of driving and one which allows for a small relative motion of the axle and pulley. It is apt, however, to soon

the pressure indicated for forward and backward running varied considerably, probably due to the difference in the slip of the belt in each case. The filters in the tank are removable, and are taken out and cleaned at the end of each day's work, the oil being first drawn off through the stop-plug, the thicker part of the oil, after straining, being then replaced by a small supply of fresh oil.

The foregoing description shows one method of dealing with an everyday problem in connection with the running of railway motor cars, or any rolling stock in which the pressure on the bearings, combined with the rubbing velocity, is excessive. The matter is one of importance to all concerned in the design and care of such stock.

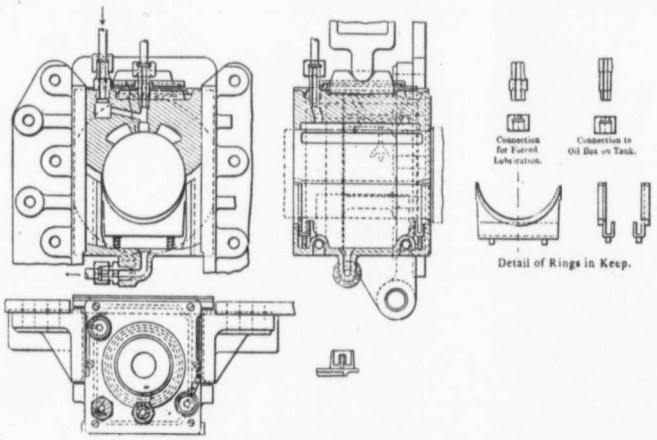

Fig. 3—Driving Axle Box and Keeps.

One Hundred Ton Electric Gantry Crane

The accompanying illustration will be of particular interest to railway men. It shows one of six 100-ton electric gantry cranes furnished the Great Northern Railway, St. Paul, Minn., by the Whiting Foundry Equipment Co., Harvey, Ill. The illustration shows the class of work for which the Great Northern Railway will use these cranes, namely for lifting and unwheeling locomotives; and they are specially adapted for this work. For the work which can be accomplished, this installation is quite inexpensive.

The dimensions and capacities of these cranes are as follows: capacity, 100 tons; one motor tvpe; hand and electric power; span, 14 feet 6 inches; clearance inside of legs, 13 feet; height from top of rail to