Diaphragm Between the Cab and Tender on C. P. R. Passenger Locomotives.

Although the discomforts experienced by the engineer and fireman in severe by the engineer and fireman in severe weather have long been recognized by different railways, up till recently no definite steps have been taken to improve their conditions of operation by protecting them in some measure from the inclemencies of the weather, and the extreme cold found in certain localities during the winter.

The Canadian Pacific Ry. has solved this problem in a large measure in the

during the winter.

The Canadian Pacific Ry. has solved this problem in a large measure in the manner indicated in the accompanying illustrations, figs. 1 to 3. The rear end of the cab, instead of being left open and unprotected except for the canvas drop in general use, is completely closed in by the arrangement shown, the rear end only having an opening in the centre, in line with the coal door opening of the tender. Around the contour of this opening there is a diaphragm ring similar to that found on the end of vestible coaches, only not as deep. This ring may be seen to the best advantage in fig. 3, where it will be noticed that it is rivetted to the rear wall of the cab to form an integral part thereof.

A corresponding diaphragm ring slightly smaller is held in close contact with this cab ring by four plungers carried in the front wall of the tender, and which project back into the coal space, as may be seen to the left in fig. 3. The construction of this plunger may be seen in fig. 1 of the diaphragm mechanism. The plunger, guided in a bushing in the tender wall, bears against a coiled spring in a pipe barrel, being thereby kept at all times in its forward position, holding the two diaphragm rings in close contact.

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Provision for taking up the angular Provision for taking up the angular movement between locomotive and tender when taking a curve or when swaying on rough track, is provided for in a simple manner, as may be seen from fig. 1 in the section of the diaphragm mechanism. In the first place, the connection between plunger and tender diaphragm ring is made with a ball and socket joint which allows the necessary angular movement at that point. Attached to this tender diaphragm ring there is a plate cut out to the contour there is a plate cut out to the contour

the walls of the entrance into the coal spaces by means of springs at each of the hinges, so that the locomotive on rounding a curve compresses the springs

parts is supported from the plungers, which have a fixed position outside of their sliding movement. From the ball and socket joint on the outer end, align-ment of the tender diaphragm ring is maintained; while the side flaps for keeping a tight connection along the sides of the passage into the tender, are

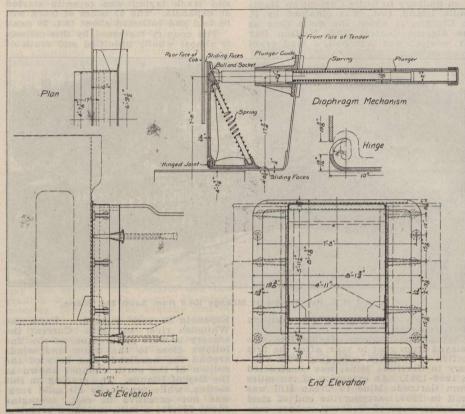


Fig. 1-C.P.R. Diaphragm Connection between Engine and Tender.

on one side and releases them on the other, maintaining a tight connection between the cab and the entrance into the coal space. At the hinged joint, the hole in the flap part of the hinge is elongated to allow for relative side movement when rounding a curve. A loose

held in contact by the angular coiled springs bearing on the ball and socket joint of the plunger. The connection between engine and tender is by this means kept quite tight. The only open-ing to the rear is the shovel opening at the lower edge of the coal doors, the



Fig. 2—Entrance and Steps of Diaphragm Cab.
of the opening into the tender coal space. The vertical faces of this plate carry eight hinges—four on each side—attached to which are two vertical plates at right angles, bearing against

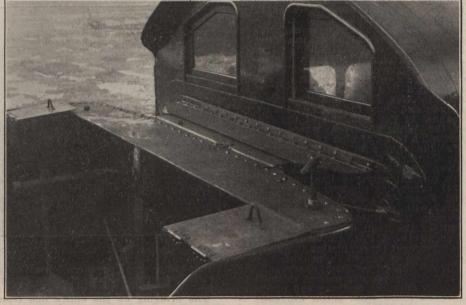


Fig. 3-Top and Rear View of Diaphragm Connection.

unhinged joint is left along the top edge of the opening, as there is but little relative movement between the two.

It will thus be seen that the whole

weight of the tender diaphragm ring and

latter only requiring to be opened when it becomes necessary to pull down coal from the top of the pile. Even that operation is made unnecessary except when the coal shifter with which all