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Canada Steamship Lines, Ltd., Montreal, born at Hamilton, Ont., June 29, 1883. V. G. R. Vickers, Manager, Foreign De-v. G. R. Vickers, Manager, Foreign De-

Walter White, Trainmaster, G.T.R., Palmerston, Ont., born at Toronto, June

The Use of Rubber Goods in Railway Service.

By J. M. S. Carroll, Manager, Quebec Division, Canadian Consolidated Rubber Co., Ltd.

Railways are amongst the largest users of rubber goods of various kinds, and a general summary of some of the most Important lines regularly purchased may be of interest:

Air brake and air signal hose, made to standard M.C.B. specifications. All railways have in recent years improved the general treatment accorded train hose, and complaints on bad quality are now practically unheard of. A large proportion of train hose formerly was destroyed careless treatment in service, but Watchfulness and care on part of railway officials have effected a wonderful improvement in this connection. Brakemen would occasionally give the locomotive man a signal to go ahead, after cutting off certain cars, and omit to disconnect couplings of hose, resulting in undue strain on end of hose; and often a fractured end.

Normal air pressure in 1% in. train hose is 90 lbs. Wear in Canadian service is not due so much to working pressure

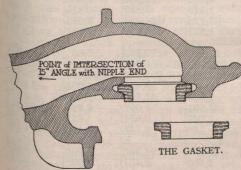


Fig. 1. M.C.B. Standard Air Brake Hose Gasket.

as to climatic extremes met with. Zero Weather is troublesome and excessive cold sometimes tends to put the air hose temporarily out of service. Cases have been known on Canadian roads where the hose, excessively cold weather, became so stiff as to uncouple the ends and thus destroy the brake connection with engine.

Train air signal hose connects between cars the standard signal equipment from the locomotive engineer's cab to end of train. In emergency cases conductor can signal locomotive man or vice versa.

Air brake gaskets play an important they in brake operation. Though small, they are perhaps the most important detail in the air brake hose connection. Experience has demonstrated that gaskets, to be fully effective, must be a specially close fit when seated in position and stock The tween seated in position that the rest be of a tough, resilient character. The standard M.C.B. gasket is shaped as shown in Fig. 1, which also shows detail

of hose coupling where gasket is seated. For some years past, the C.P.R. has used air brake gaskets conforming to general measurements of M.C.B. standand, but made with an extra flange, as shown in Fig. 2. This particular shape gasket is standard with the Westing-use Co. The Grand Trunk, Grand Trunk Pacific and Canadian Northern are also using the Westinghouse type of air brake gasket. Steam heater hose used on Canadian roads is not of uniform inside diameter. side diameter, or length. Some of the measurements are as follows:

Length.
Canadian Pacific. 25 in.
Grand Trunk.... 24 in.
Intercolonial ... 24 in.
Michigan Central. 24 in.
IIn to the I.D. Enlarged ends 1½ in. 1 3-4 in. 1 ½ in. 1 13-16 in. 1½ in. 1 5-8 in. 1½ in. 1 11-16 in.

Up to the present, various roads appear to lack cohesion in seeking to establish standard length and other measurements, applying to steam heater hose. nipple equipment varies, and each road no doubt has a disinclination to change its practice and adopt the other's standard. This variation in railway shop practice creates difficulty for the rubber manufacturers, by compelling use of differently equipped mandrils for each railway's requirements.

Steam pressure carried in car heating line varies somewhat, but will average around 60 lbs. Next to the locomotive pressure often reaches 90 lbs. service this line has to undergo makes it important to use only best quality materials and workmanship. An accident to a steam heat line will very quickly be followed by a cold car in zero weather. Gaskets used in steam heater hose are made from a special compound to resist continuous action of steam.

Corrugated steam tender hose is connected from locomotive to tender. line regularly in use by C.P.R. is 54 x 2¾ ins. x 5 ply. Hose acts as a conductor of water from reserve supply in tender to locomotive boiler. Surplus steam is sometimes forced through hose to the tender to superheat the water, thereby saving proportion of cost normally re-quired to heat cold water. This hose in service retains a curved shape.

In railway shops, a large quantity of ½ and ¾ in. air hose is used on rivetters, chippers, etc. Service conditions are hard and this hose is subjected to lots of unusually severe treatment. The cover is often cut by contact with sharp metal ends and corners, and as hose undergoes expansion under air pressure, a sharp substance will often puncture it, causing air leak and subsequent destruction. Pressure in this class of hose runs from 75 to 100 lbs., with an average of about 90 lbs. The best hose is none too good for air tool service.

Suction hose, as used by Canadian railways, is usually of roughbore type, 3 ins. i.d. On steam shovel work this class of hose is largely used for replenishing water in boiler. Hose is thrown around a good deal and cheap quality should never be sold. Construction work is often being carried on in remote places. Cheap hose will quickly disintegrate and the cost of delivering inferior hose to site of work is just as great as charges on A-1 material that can be depended upon to deliver lengthy service.

Vacuum hose is used at terminals to clean passenger cars and should be of special quality, the writer has known cases where vacuum cleaners have been put out of business by pieces of inferior tube blocking the parts. Badly cleaned cars bring a strong reprimand from the superintendent, and a general soreness develops against use of cheap hose. Vacuum hose, when in use, is dragged through windows and ends of car, and must be well cushioned by good rubber stock, in order to allow needed resiliency to twist around seats, etc.

Fire hose, both linen and cotton rubber lined is extensively used. Linen hose is also found to be an economical agent to use for wetting down coal piles.

Steam and water hose.—Large quanti-

ties of various sizes and plies, in 50 ft. lengths, are regularly used by all railways. This material is usually supplied without couplings.

Hydraulic hose must be of strong construction and preferably protected on cover by wire or heavy duck. This line is used by machine shops in connection with hammers and rams and must with-

stand considerable pressure.

White corrugated tubing 3-32 in. i.d. x 1-16 in. wall is extensively used in car shops to make deck sashes weatherproof.

Red rubber tubing is used as outside covering on wire berth cables in sleeper and tourist cars. The rubber cover prevents the wire from scratching varnish of

Rubber boots with leather soles, are largely used by mechanical departments of railways. In the operation of washing out locomotive or stationary boilers, this

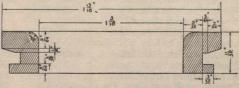


Fig. 2. C.P.R. Standard Air Brake Hose Gasket.

class of boot is especially serviceable. C.B.S. packing 1-32 in. is used as a protective covering on diaphragms between coaches, to prevent cotton material in diaphragms rotting from continuous exposure to the weather.

C.I. packing 1-16, 1-8 and 1-4 in. is purchased in large quantities throughout the year. This class of packing is used for a variety of purposes, principally however for making gaskets of varying sizes, for both water and steam (low pressure) pipe joints, etc. Red sheet packing is used on high pressure steam lines, being cut into washers and all sizes of gaskets

Truck tires are used on platform baggage trucks. As cement floors have almost entirely displaced wood the use of rubber tires ensures practically noiseless operation of small trucks, etc.

Pebbled (or dot) rubber is used on steps and platforms of tourist and second class passenger cars.

Inlaid rubber tiling is largely used. The Canadian Pacific, Canadian Northern, Grand Trunk, Grand Trunk Pacific and Intercolonial have hundreds of sleeping, dining and observation cars equipped with it. The rubber floor is noiseless, with it. The rubber floor is noiseless, attractive in appearance, very enduring, and easy to clean.

Head light gaskets are used on large

locomotive head lights to prevent undue vibration. Rubber stock used in this line is tough and has lots of resiliency.

The foregoing comprise the leading lines of rubber goods used in the opera-tion of railways on this continent. A multitude of moulded rubber articles are also used in shop practice. Without rubber, railways would have great difficulty in operating.