

for lower malleable iron closed door stop.

Dimension 2 ins., showing thickness of closed door stop, and dimension  $\frac{1}{4}$  in., showing the amount the floor projects beyond the sheathing, both changed to "to suit construction of door."

Note reading, "There must be not less than two bottom door-guide brackets supporting the door in any position, and not less than three bottom door guide brackets supporting the door in the closed position," removed.

Note reading, "When cars are provided with two belt rails, door stops are to be located at the rails," changed to read, "If two open door stops are used on cars provided with two belt rails, door stops are to be located at the rails."

Note reading, "If construction of door is such that the removal of this guide will permit the door to be sprung away from the car, some form of burglar proof guide should be applied at this point," added to the third bottom door guide from closed door stop.

Furring for door hasp staple fastener added.

Section C-D.—Dimension of  $\frac{1}{4}$  in., showing the amount the floor projects beyond the sheathing, changed to "To suit construction of door."

Length of bottom vertical flange of Z bar door stiffener changed from  $1\frac{1}{4}$  in. to 2 ins.

Dimension of 1 1-16 in., showing distance from face of car to lip of door guide, changed to "To suit construction of door."

Round holes in top flange of Z bar door stiffener changed to square.

Door Guide.—Height of lip changed from 1 in. to  $1\frac{3}{4}$  in.

Dimension of 1 1-16 in. from back of guide to inside of lip changed to "To suit construction of door."

Dowel omitted from door guide.

Design of lip changed from  $1\frac{3}{4}$  in. radius to square top with  $\frac{1}{4}$  in. radius at each corner.

Distance from centre of bolt hole to bottom of guide changed from 2 ins. to 3 ins.

Closed Door Stop.—Dimension of 2 ins. from back stop to lip changed to "To suit construction of door."

Open Door Stop.—Dimension of 2 ins. from back of stop to lip changed to "To suit construction of door."

Door Hasp Staple.—Design changed so that staple will fit over 3-16 by  $1\frac{1}{2}$  in. staple fastener. Number of bolts reduced from four to two, and staple extended.

PLACARD BOARDS FOR BOX CARS.—As many box cars recently built have steel ends, and some have complete steel sheathing, it becomes necessary to provide placard boards for the various kinds of cards used, including cards for explosive shipments. Your committee recommends that the space available for placards should be not less than 16 by 24 ins. on each end and each side of car. Box cars with sufficient space available on wood siding, or exposed lining, should have a rectangular space, painted black, on each side and each end. Other box cars should be provided with placard boards, made of soft wood, not less than 16 by 24 by 1 in., the vertical edge reinforced with metal protection, and the bolts fastening the boards to the car not less than six, passing through the metal reinforcing pieces, three through each. The boards may be made of more than one piece, and should then be tongued and grooved. The distance from the floor line of car to bottom of board should not be less than  $4\frac{1}{2}$  ft. Routing card boards, preferably the same size as the placard boards described, should be placed on the side of the car, as near as possible to the door seal.

DRAFT GEAR.—There are many failures due to weak draft gears, creating unneces-

sary delays, transfer of loads, excessive cost of repairs, accidents and wrecks. The situation in connection with wooden cars was described as serious. Your committee recommends that cars should not be accepted in interchange unless equipped with draft gears and attachments having strength or capacity equivalent to or greater than the following requirements:

The section area of draft timbers located underneath the centre sills must be not less than 32 sq. ins. Each draft timber must be not less than 4 ins. wide, nor less than 6 ins. deep, and must be held securely to the centre sills and end sills by not less than seven  $\frac{7}{8}$  in. bolts, or six 1 in. bolts. Draft timbers extending through or beyond the bolsters must be secured to the centre sills by two or more additional bolts. Draft gear yokes must be not less than 4 ins. by 1 in., made of wrought iron or steel, and attached to the coupler side with not less than two  $1\frac{1}{8}$  in. rivets. Draft springs must have a capacity of at least 19,000 lbs.

Should cars require repairs to bring them up to these minimum requirements, the following recommendations are offered:

Draft timbers should butt against the body bolsters and shoulder against the end sills, both of which in turn should be well secured against shifting from either pulling or buffing strains. Draft gear stops should, whenever possible, be gained into the draft timber or heeled on the end sills. Front and back draft gear stops may be made in one piece, or may be secured to a metal plate not less than 5-16 in. thick, or made separate. Each stop (counting two stops riveted to a 5-16 in. plate as one piece) must be se-

cured to the draft sill by not less than six  $\frac{3}{4}$  in. bolts or their equivalent. The centre sills should be strengthened by the use of a filling or packing piece secured between the same, butting against the end sill and extending beyond the body bolster toward the centre of the car, a distance at least as much as between the bolster and end sill. The present M. C. B. coupler side clearance of  $2\frac{1}{2}$  ins. should also be provided.

STOCK CAR DOORS.—It was suggested that a design of door be submitted for recommended practice as a guide for application of such doors. Your committee has agreed that at present it would not be policy to introduce such design as recommended practice, but are of the opinion that it might be well to formulate some rules governing stock car door construction. The subject, however, is of such a nature that more time than that available before the June convention must be taken in order to properly formulate such rules.

Note.—In connection with the discussions at the various meetings held by your committee, the suggestion was made that the committee develop a box car design, not necessarily as recommended practice, but primarily as a guide for box car construction, and as a basis for door and other designs, which then can be made complete in detail, showing actual application to a car design. It was further suggested that if such car design be made complete in detail, incorporating recommended practice, it would be used by some of the smaller roads who do not prefer to make designs of their own, thus tending toward a more uniform type of car for smaller roads.

## Report of Committee on Locomotive Stokers.

The American Master Mechanics' committee, A. Kearney, Assistant Superintendent of Motive Power, Norfolk and Western Rd., chairman, reported as follows:

The development of the locomotive stoker continues, though nothing notable has been observed during the past year. In your committee's last report allusion was made to the apparently accepted utility of the device, and its adaptability to locomotive service. References, it will be recalled, were also made to the higher average steam pressures maintained, and especially toward the latter part of a division run, simplicity of operation, work performed, etc., together with the admission that where comparisons as against hand firing had been made the stoker developed remarkable efficiency, consequently no attempt will be made to further elaborate upon such features. Suffice it to say, however, that your committee believes most of the statements appearing in their last report have been borne out in practice, according to such observations as the additional year has permitted. It is no doubt probable some erroneous conclusions have been drawn with reference to the capacity of the stoker, relative fuel consumption and economy, before fully weighing all operating conditions in train service. A truer value of the stoker and its range of usefulness and efficiency seems to be fully comprehended by those who have taken the time to make the necessary inquiries and investigation.

In your committee's last report an effort was made to give a comprehensive idea of the development of the locomotive stoker and the lines along which the inventors are apparently working. It was pointed out that the several types were in the main divided into two general classes, namely, the underfeed and the scatter or overfeed types. No attempt was made to venture an opinion as to which type was the better

(regarding both as having their strong points, which had not probably been fully developed), and even now your committee does not wish to advance an opinion as to which type will in the end prevail.

Where reference has been made to the use of run-of-mine coal in connection with the stoker, it should be understood that it generally means coal containing lumps not over 6 ins. in size, though, strictly speaking, it is coal as it comes from the mines. Anything larger than 6 ins. is apt to arch over the hopper, but this feature, it is claimed, can, and is, being improved.

Remarkable interest is being manifested in the development of locomotive stokers, and while many of those in service are actually doing their work, the subject is still in its infancy. Your committee wishes to again refer to the difficulties surrounding the designing of a machine to suit present locomotive construction; not so much on account of the work to be performed, but the absence of choice as to arrangement, the absolute limitations of space, and the conditions under which such a machine must operate. It is believed that as time goes on, greater latitude will be given the designers, and consequently more will be accomplished, where it is preconcided that the stoker is to be a part of the locomotive. This should allow consideration being given to the working parts of the stoker along with the locomotive as a whole, and it is not improbable that when the design for the stoker is given equal consideration the locomotive will be constructed in many of its details so as to better suit, or be better adapted to, a stoker than now obtains where it is necessary to construct the stoker to suit existing designs.

THE STREET STOKER, which is of the scatter type, and a type having the greatest number in service (totaling 418, with some 82 on order), as now designed, handles