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The Railway and Marine World

October, 1911.

THE BULLDOZER IN THE CAR REPAIR SHOP.

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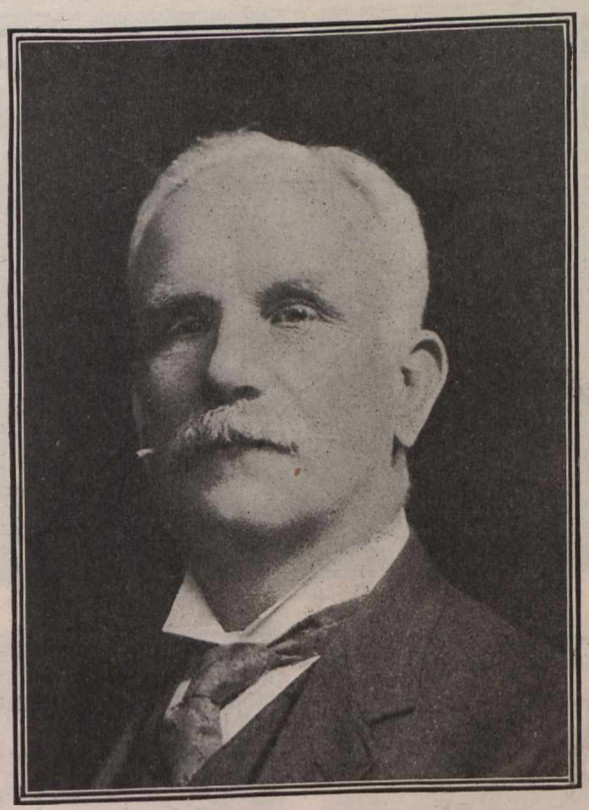
The bulldozer occupies a practically indispensable position in the railway shop, particularly in the car department, where so much bar stock must be bent into various shapes to form the car members. A few of these are the car coupler pockets, car step, brake stand, truck frame and many other parts that are of a uniform shape, or which on cars of similar types, are practically the same in size and shape. Were it not for the question of multiple production, and that all parts for the same purpose are alike, it would, of course, be more profitable to produce the shapes by the standard old-time methods on the hand forge, or possibly under the steam hammer. But where similar parts are to be produced in quantities, even though those quantities be comparatively small, it is more economical to make dies for the purpose.

Another factor must be considered in this matter; that is the matter of how many different kinds of parts are to be produced, for, if the number of different kinds were not sufficiently great, it would naturally be an unprofitable proposition to instal a bulldozer even though several entirely different pieces had to be produced in more or less large quantities. This is a question which local conditions alone can determine, and a comprehensive study of the situation must be made to decide if such an installation would be warranted.

In a repair shop, the chances of a bulldozer being used are much less than in the main construction works of a railway. In the larger repair centres, however, it has been found an economical proposition to make an installation. Such is the case with the Michigan Central Rd. in its St. Thomas shops. There all the repairs on the Canadian division of the line are handled. These shops, in charge of W. H. Flynn, Master Mechanic, are quite extensive and are equipped to handle all kinds of repairs to rolling stock. The Canada Southern division of the M.C.R. passes through a fairly productive territory, producing considerable freight and passenger traffic, but the major portion is through traffic, the through-freight from the western states to the main lines of the New York Central and Hudson River Rd. being particularly heavy. Added to this, there is a heavy through-passenger service between Chicago and New York. These heavy conditions have made necessary extensive and well-equipped shops to handle the repairs incidental to a great volume of traffic, especially as it is necessary for all the repairs of the Canadian division to be made in Canada. As a typical repair shop where good examples of work might be obtained, these shops were considered to be first class, so were selected for obtaining the necessary data on the use of a bulldozer in a general railway car repair shop.

The car shops at St. Thomas, under Neil Marple, General Foreman, are well equipped from a repair-shop standpoint, and many ingenious methods have been developed for producing work where standard equipment was lacking. Also, many devices for use with standard equipment have been produced. Prominent among these are the dies for use with the bulldozer in the blacksmith shop, of which Henry Batiste is foreman. The dies to be described in this articles are for the most part quite ingeniously designed, and, in common with most of the dies used, contain features quite different from those found in similar shops under like conditions.



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These features are for the most part, improvements on existing methods, and contain points which will undoubtedly appeal to the reader, especially if he is interested in car shop production.

Fig. 1. shows the bulldozer used in these shops. In this view, it is shown set up with the necessary dies for producing small car-coupler pockets. The female part is attached to the ram, the arms of the coupler pocket bar stock being bent around the male section which is stationarily attached to the platen of the machine. The action of the bulldozer being familiar to all, it is unnecessary to describe its operation.

Four good examples of bulldozer work are illustrated in fig. 2, and as they are all produced in an interesting manner, the dies and successive steps of production will be described in some detail. A is the standard size of rounded-end car-coupler pockets as made for freight car use; B, a freight brake-rod stand, the lower arms of which are bent at a right angle and attached under the end of the car, the brake rod fitting down into the hole shown in the rounded section; and C and D are freight car steps, the former being straight, while the latter is offset to accommodate the different types of construction followed by builders in standard freight cars.

The production of the part A of fig. 2, will be described first. This piece needs seven strokes of the machine, the bulldozer requiring two different settings for the purpose. These operations are: bending inward the two big ends of the bar stock; trimming these lugs to size; punching the two end bolt holes adjacent to the lugs; and finally bending to a U-shape. All operations but the last are performed in one setting, with a final setting for the U-bend.

The set of dies illustrated in figs. 3 and 4, are set up in one battery on the bulldozer. The first operation, which is performed on the two ends, is that of bending the lugs to form the inwardly projecting lugs E, fig.2. The bar stock of the required section, is cut off a little longer than the finished length of the coupler to allow for trimming in the second operation. The stock, with the end heated to a working heat, is secured in the clamp A, fig. 3; this clamp is bolted to the platen of the bulldozer. The vise feature of the clamp consists of concentric cam sleeve B, which, when the attached lever is depressed, mounts on the corresponding stationary projections, clamping the stock. The stock is allowed to project a distance slightly in excess of the lug depth beyond the face of the inserted piece C, around which the lug is bent. The part D, with the projecting lug E, is attached to the ram of the bulldozer. This part D is so arranged that the nearer face of the lug F, passes down alongside the inserted piece, C, leaving an intervening space equal to the thickness of the stock. This operation bends the lug, but leaves the projecting face rough requiring trimming.

As before mentioned, the dies in fig. 4, are attached alongside those in fig. 3, making a rapid sequence of operations possible, so that the three operations may be completed in one heat. The second one of the three, is the trimming of the inwardly projecting lug. The end, still hot, is placed on top of the stationary part A, as indicated, and the lug brought back against the inserted shear knife B. The moving part C with a corresponding inserted shear blade D, on moving forward in its stroke, trims the lug, the blade D being so placed as to just pass under the blade B. This