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METHOD OF MAKING BRAKE-SHOES.

SPECIFICATION forming part of Letters Patent No. 787,092, dated April 11, 1905.

To all whom it may concern:

Be it known that I, Joseph Douglas Gallagher, a citizen of the United States of America, residing at Glenridge, in the county of Essex and State of New Jersey, have invented a certain new and Improved Method of Making Brake-Shoes, of which the following is a specification.

My invention relates to the art of making brake-shoes; and it has for its principal object, to render available for use, and to save the unworn portion or back part of a discarded brake shoe, by certain provisions for fixing upon this discarded part a new wearing sole.

A further object of the invention is to provide means for attachment of a separately cast sole of such form that the natural wear of the shoe shall expose the retaining devices of the sole, so that the fragments may be removed, and a new sole may be cast on, as hereinafter set forth.

These objects, as well as other advantages which may hereinafter appear, I attain by the preferred mode of operation illustrated in the accompanying drawings, wherein:

Figure 1 is a longitudinal section of a complete shoe along the line $y$ $y$ of Fig. 3.

Figure 2 is a cross section on line $x$ $x$ of Fig. 1.

Figure 3 is a plan view.

Figure 4 is a longitudinal central section, on line $x$ $x$ in Figure 5 of a modified form of the shoe, wherein is used a different kind of retaining device for the wearing sole.

Figure 5 is a plan view of the same.

Figure 6 is a perspective view and section showing another form of retaining device for the sole.

Figure 7 illustrates still another mode of attaching the sole of the shoe to the back of the body, the view being a section.

As is clear from the nature of their use, brake shoes very rapidly wear out, and when worn down to a certain thickness, differing in different styles of shoes, the remaining unworn portion is usually thrown into the scrap heap and sold by the railroads as old iron at a price much lower than the price per pound paid for new shoes. This loss amounts to very large sums in the course of a year; and it is much greater where the improved steel backed shoes are used, as the backs are the most expensive parts and there has heretofore been no means of using them over again.

It has been the constant endeavor of the manufacturers and railroads to avoid or minimize this loss of scrap shoes, and various plans for overcoming the difficulty have been devised, with little success. Thus, inserts of harder metal have been put in gray iron shoes, and shoes have been chilled in sections of their faces, for the purpose of retarding the wear. Also, by providing reinforced shoe bodies with steel backs the shoe could be allowed to wear down to a thinner section, reducing the weight of the waste scrap about one half. Again, attempts have been made to place partly worn shoes on the face of the new shoes for the purpose of entirely wearing down the old one. All these methods have failed to fully meet the trouble and save the unworn portions.

My object is to fully overcome the difficulty, and this I do by providing for wearing only the sole of the shoe and thereupon supplying the shoe with a new wearing sole. I may proceed in several ways—either by taking a worn shoe and boring holes in it and then placing in a mold and casting a new face on it, the metal flowing through the holes; or by casting on the smooth face of the old shoe, by providing a run-out in the mold by which the metal flows over the surface until it is melted so that the new metal welds with the old; or I may cut dove-tailed grooves in the face of the old shoe and cast a new sole thereon, when it is held in place by the metal running into the grooves.

But for economic reasons I generally prefer to so form the body of the shoe originally as to allow of readily resoling. Thus, the body of the brake shoe, marked 8 in the drawings, may be first made separately and provided with retaining devices, such as the recessed lugs 9 in Figures 1 and 2 or the perforations 4 in Figures 4 and 5 or the recessed body 19 in Figure 6. The body 8 is then placed in a mold and the metal to form the sole 13 is cast thereon, when it is held firmly.
in place by the aforesaid retaining devices. The shoe being now allowed to wear on the wheel till it is ground to the line of retaining devices, they become free and allow of easily removing the end fragments 18 and the fragments between the lugs. For the purpose of rendering it easy to knock out the parts, the sides of the lugs (see Figure 1) are preferably made divergent from each other. The body is then placed in a mold and a new face or sole 19 is cast thereon, as originally. Thus the same body may be used over and over indefinitely with continuously renewed wearing soles.

15 The modified form shown in Figures 4 and 5 is more especially adapted to utilize the unused and discarded portions of the ordinary shoe already in use at the present time. The perforations 14 being provided, the procedure is as above set forth, the metal of the cast face entering the perforations 14 and the spaces 15 in the steel back, forming heads therein with retaining shanks 14" as shown.

In the design shown in Figures 1 and 3 the metal of the sole is introduced into a notch 16 at the ends of the body, and the lugs 9 extend entirely across the face of the shoe. This is in order to prevent sidewise displacement of the sole 13 and yet make easy the removal of the fragments when the retaining lugs become exposed. But any other means of attaching the separately cast sole may be used, as long as said means are caused by the natural wear to become ready for casting on a new sole.

In the form of Figure 6 the face of the body portion has one large recessed lug 19 and when it is exposed by wear the fragmentary rim portion may be easily broken off; while Figure 7 shows a sole 13" welded to the body 8.

The specific means of attaching the separate sole of the shoe may be varied as circumstances require, the essential thing in my process being the provision of a shoe in two parts of which the sole part only is to be worn and the body part thereto is provided with a new wearing sole and this may be done either by welding on the sole or by casting it on a retaining form. The articles herein shown and described I do not claim herein, but the same form the subject matter of my co-pending application No. 144,743, (Patent No. 747,919) filed of even date herewith, for brake shoes.

It will be understood that my invention is as well adapted to re-using the discarded portions of the brake shoes at present in use as to the original making of the shoes with retaining devices,—the invention covering broadly the re-soiling of brake shoes after the manner set forth.

Having thus described my invention and several preferred modes of carrying it into practice, what I claim, and desire to secure by Letters Patent, is the following:

1. The method of making brake shoes consisting in preparing a body portion and casting thereon a separate wearing sole, substantially as described.

2. The method of making brake shoes consisting in providing a body portion with retaining devices and casting thereon a separate wearing sole.

3. The method of making brake shoes which consists in providing a body portion consisting of a brake shoe partly worn in service, with retaining devices, and casting thereon a separate wearing sole.

4. The method of making brake shoes with renewable soles which consists in providing a rear body portion thereof with retaining devices designed to be exposed by wear of the sole, placing said body portion in a mold and separately casting a wearing sole thereon.

5. The method of refacing worn brake shoes which consists in providing the rear portion of the shoe with retaining devices, exposed by the wearing off of the sole, placing said body portion in a mold and casting thereon a new wearing sole.

6. The method of refacing worn shoes which consists in forming the body portion of the shoe with recessed lugs, allowing them to be exposed by wear of the sole, placing said body portion in a mold and casting thereon a new wearing sole which is held in place by said lugs, substantially as described.

In testimony whereof I have hereunto signed my name in the presence of two subscribed witnesses.

JOSEPH DOUGLAS GALLAGHER.

Witnesses:

WARREN L. JACOBUS,

A. E. CUMMING.