Dec. 10, 1929. W. B. MARTIN 1,739,248

METHOD OF RECLAIMING RAILWAY CAR AXLES

Filed Sept. 14, 1928

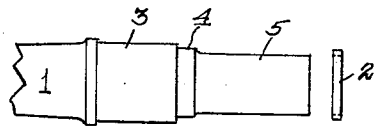


Fig. 1

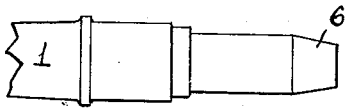


Fig. 2

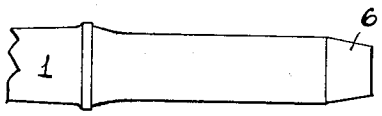


Fig. 3

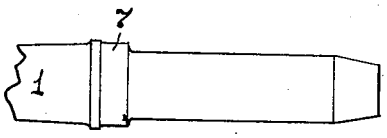


Fig. 4

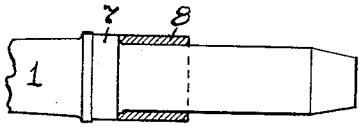


Fig. 5

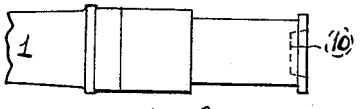


Fig. 6

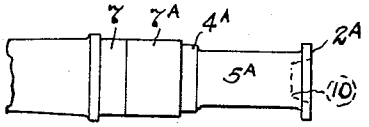


Fig. 7

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UNITED STATES PATENT OFFICE

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METHOD OF RECLAIMING RAILWAY-CAR AXLES

Application filed September 14, 1928. Serial No. 305,943.

The subject of the present invention is the method of reclaiming worn axles for railway cars, and more particularly the steps in such a method of providing replacement metal for the worn journal or bearing portion of the axle from the original wheel seat and dust guard seat portion, but so accomplishing this object as to obtain a portion of the wheel seat of full original diameter out of the original metal and then adding metal to the axle to form the rest of the wheel seat with the joint between the old and new metal formed between the ends of the wheel seat. By the present method, it is possible to take a badly worn axle and remake this axle to its original full size, and to maintain substantially full strength. To the accomplishment of the foregoing and related ends, said invention, then, consists of the means hereinafter fully described and particularly pointed out in the claims.

The annexed drawing and the following description set forth in detail one approved method of carrying out the invention, such disclosed mode, however, constituting but one of the various ways in which the principle of the invention may be used.

Fig. 1 is a diagrammatic view of a wheel end of a railway car axle showing the first step in reclaiming the same; Fig. 2 is a similar view showing the axle after the first reducing operation; Fig. 3 is a similar view showing the axle after the final reducing operation; Fig. 4 is a similar view showing the first reforming operation; Fig. 5 is a similar view showing the axle when the new metal has been added; Fig. 6 is a similar view showing the reformed axle; and Fig. 7 is a view showing the axle in its final form.

In reclaiming axles, it must be understood that both the journal portion of the axle and the wheel seat portion of the axle have been subjected to wear and that it is necessary to build up both such parts to original size. In accomplishing this result, the worn axle, as shown in Fig. 1, is placed in an upsetting machine and the collar 2 at the end of the axle 1 is removed. This is accomplished in any usual way such as by providing dies which have an impression the size of the journal, and by so placing the axle in the dies, that when the heading tool comes forward it punches the axle and shears the collar, which, of course, cannot pass through the impression in the dies.

After the collar is removed, the next operations are to reduce the diameter of the wheel seat 3 and dust guard seat 4 of the axle and this is done to swedging the metal down, the preferable method being shown in Figs. 2 and 3, the first step being to swedge a portion of the journal 5 down and make an extending conical shaped end 6, and then by further swedging a portion of the wheel seat and dust guard seat down to build up the journal portion of the axle as is indicated in Fig. 3.

When the axle end has been reduced and lengthened to proper size, the first step of reforming is to upset the axle to form a portion 7 of the wheel seat next the shoulder of full original diameter and at the same time the remainder of the axle end and particularly the journal portion 7 thereof may be upset to substantially its full diameter, thus leaving an intermediate portion of the wheel seat and dust guard seat of a reduced diameter of approximately the same diameter as the journal portion. The necessary metal to replace that loss by wear and removal of the collar is next accomplished by placing a ring or sleeve 8 over the reduced portion of the axle and then by upsetting the axle into this ring to secure the same in place. This ring member is of sufficient length to form the rest of the wheel seat 7A and dust guard seat 4A of the axle between the wheel seat and the journal portion. When the axle is upset in the sleeve, the outer end of the axle is also upset to finally form the journal portion 5A to its full original size.

A collar 2A is formed on the end of the journal either by directly upsetting the end if there is sufficient metal or by forming an impression 10 in the end of the axle member if it lacks sufficient metal to form the collar with a full axle portion. The final step is the usual rough turning operation during which is formed the dust guard and in which

the wheel seat and journal are turned to rough dimensions.

If desired, the sleeve may be secured in place by shrinking on the axle and where this is done, the axle is turned down after step shown in Fig. 4 to provide a shrink fit and then the ring is shrunk into position in the usual manner. In the present method it will be seen that the wheel seat of the axle next to the inner shoulder is maintained from the original axle metal of full size so as to retain full strength at the line of the shoulder and the joint between this wheel seat portion of full size and the ring which forms the rest of the wheel seat is between the ends of the wheel seat and thus between the edges of the wheel when this is placed on the axle. The journal portion of the axle is built up to full size when new, out of the original metal of the axle and thus the axle when finished is of original new size with a journal portion which has no added metal thereon, but merely reformed from the original axle metal.

Other modes of applying the principle of my invention may be employed instead of the one explained, change being made as regards the method herein disclosed, provided the step or steps stated by any of the following claims or the equivalent of such stated step or steps be employed.

I therefore particularly point out and distinctly claim as my invention:

1. In a method of reclaiming worn axles, the steps of cutting off the collar, swedging down a part of the wheel seat and dust guard seat to normal size of the journal portion, upsetting the axle to form a part of the wheel seat to full original diameter, placing a ring over the swedged portion, upsetting the axle in said ring to form the rest of the wheel seat, and dust guard seat and to reform journal portion to original full size and then forming a collar on the axle end.

2. In a method of reclaiming worn axles, the steps of cutting off the collar, swedging down a part of the wheel seat and dust guard seat to provide replacement metal for the worn journal portion and a new collar, upsetting axle to form a portion of the wheel seat of full diameter, placing a ring over the swedged portion, upsetting the axle in said ring to form the rest of the wheel seat and dust guard seat and to reform journal portion to original full size and then forming a collar on the axle end.

3. In a method of reclaiming worn axles, the steps of cutting off the collar, swedging down a part of the wheel seat and dust guard seat to normal size of the journal portion, upsetting the axle to form a part of the wheel seat to full original diameter, placing a ring over the swedged portion, upsetting the axle in said ring to form the rest of the wheel seat and dust guard seat, upsetting the end of the axle to form journal of full size, and then forming a collar at the end of the journal.

4. The method of reclaiming worn axles consisting of swedging metal from the wheel seat to build up the worn journal portion, and replacing the wheel seat metal by securing a metal ring thereon.

5. The method of reclaiming worn axles consisting of swedging metal from the wheel seat and dust guard seat to build up the worn journal portion, and replacing the wheel seat and dust guard seat metal by securing a metal ring thereon.

6. The method of reclaiming worn axles consisting of swedging metal from the wheel seat and dust guard seat to build up the worn journal portion, reforming a portion of the wheel seat to full original diameter, and replacing the rest of the wheel seat and dust guard seat by securing a metal ring thereon.

7. The method of reclaiming worn axles consisting of swedging metal from the wheel seat and dust guard seat to build up the worn journal portion, replacing wheel seat and dust guard seat metal with a metal ring and forming the joint between the ring and full diameter portion of the wheel seat between the ends thereof.

Signed by me this 12th day of September, 1928.

WALLACE B. MARTIN.