Aug. 13, 1968 W. W. ROSEBERRY 3,396,671

ADJUSTABLE TAMPER BLADE ASSEMBLY

Filed Feb. 21, 1966

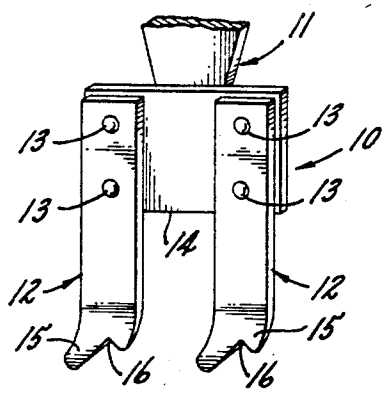


Fig. 1.
(PRIOR ART)

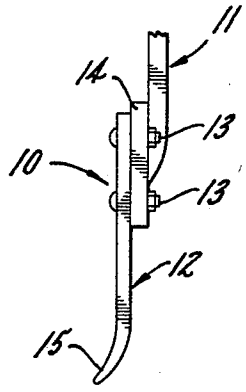


Fig. 2.
(PRIOR ART)

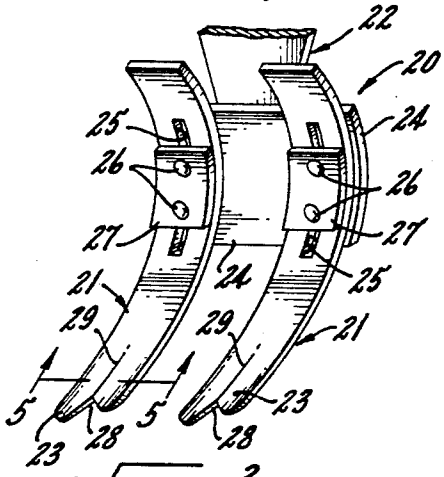


Fig. 3.

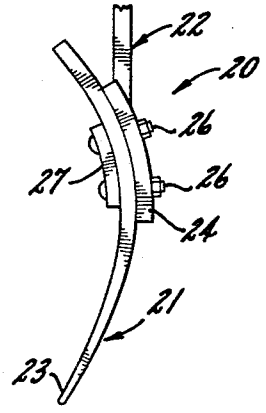


Fig. 4.



Fig. 5.

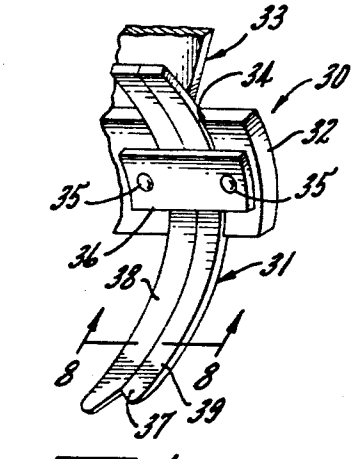


Fig. 6.

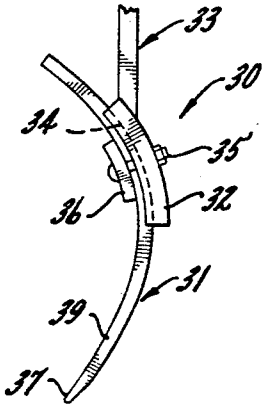


Fig. 7.



Fig. 8.

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ADJUSTABLE TAMPER BLADE ASSEMBLY

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ABSTRACT OF THE DISCLOSURE

A railroad ballast tamping blade assembly in which the work is done by adjustably mounted blades that can be shifted to compensate for wear erosion without varying the required tip angles. The blades are formed so that the step configuration of the blades is maintained through the full range of adjustment.

This invention relates generally to railroad track ballast tamping machines and more particularly concerns tamping blades for such machines.

Vibratory ballast tamping involves vibrating a blade at high speed and under considerable force, lowering the vibrating blade into the ballast, and guiding the blade so that the ballast material supporting and holding the track ties is "tamped," i.e., the particulate matter making up the ballast is positioned and tightly interfitted to provide a solid base for each tie. It is readily apparent that under such operating conditions tamping blades quickly wear. Indeed, the types of blades with which the invention is primarily concerned erode sufficiently after three to five days' use to become inefficient and virtually inoperable.

Therefore, it is the primary aim of the invention to provide tamping blades which can be adjusted to compensate for wear erosion. More specifically, it is an object of the invention to provide blades of the above kind which maintain the desired blade tip configuration through the full range of wear compensating adjustment.

It is also an object to provide blades as characterized above which are not only economical to manufacture but particularly economical to use since each blade has a useful life exceeding that of several successively used conventional blades.

Another object is to provide blades of the above type which can be easily adjusted in the field with simple tools. A related object is to provide blades of this character which can be maintained in the most efficient operating condition by making adjustments that preserve the original blade tip configuration.

Other objects and advantages of the invention will become apparent upon reading the following detailed description and upon reference to the drawings, in which:

FIGURE 1 is a fragmentary perspective showing a prior art blade assembly of the type with which the present invention is concerned;

FIG. 2 is a fragmentary side elevation of the assembly appearing in FIG. 1;

FIG. 3 is a fragmentary perspective of a blade assembly embodying the present invention;

FIG. 4 is a fragmentary side elevation of the assembly shown in FIG. 3;

FIG. 5 is a slightly enlarged section taken approximately along the line 5—5 in FIG. 3;

FIG. 6 is a fragmentary perspective of another embodiment of the invention;

FIG. 7 is a side elevation of the embodiment appearing in FIG. 6; and

FIG. 8 is a slightly enlarged section taken approximately along the line 8—8 in FIG. 6.

While the invention will be described in connection with certain preferred embodiments, it will be understood that I do not intend to limit the invention to those embodiments. On the contrary, I intend to cover all alternatives, modifications and equivalents as may be included within the spirit and scope of the invention as defined by the appended claims.

Turning first to FIGS. 1 and 2, there is shown a typical tamping blade assembly **10** of the type used with tamping machines as illustrated and described in U.S. Patent No. 3,119,346, issued Jan. 28, 1964. The assembly **10** includes a support bracket **11**, adapted to be rigidly secured to a vibration motor, and a pair of tamping blades **12**. The blades **12** are locked by bolts **13** to a mounting plate **14** forming part of the support bracket **11**.

To obtain proper blade movement into the ballast when tamping, the lower ends of the blades **12** are bent to define working tips **15** that are disposed at an angle with respect to the substantially vertical disposition of the support bracket **11** (see FIG. 2). As a result, when the vibrating blade assembly **10** is lowered into the ballast, the bent tips **15** tend to cam the blades **12** toward the left in FIG. 2 so that the blades work under the tie being tamped. Also, the working tips **15** of the blades **12** have a step configuration defined by a notch **16** in the end of each blade (see FIG. 1). As a result of this notched configuration, a camming force is developed as the vibrated blade assembly **10** is lowered into the ballast which tends to cause the blades **12** to work toward the left as seen in FIG. 1 so that the blades tilt toward and under the track rails.

Therefore, because of the bent blade tips **15** and their stepped configuration, the tamping blades tend to swing toward the rails and to move under the tie being tamped so as to insure good tamping action at the most critical location, that portion of the ballast beneath the intersection of the tie and the rail which it supports. As mentioned above, blades like the blades **12** wear away after only a few days' use. The greatest wear takes place, of course, at the working tips **15** and this wear erosion quickly destroys the step configuration shown in FIG. 1 and the tip angles shown in FIG. 2. This makes the blades unusable and, under prior practices, worn blades were either simply replaced or new tips welded on so as to obtain an additional period of blade use.

In accordance with the invention, a blade assembly **20** is provided in which elongated blades **21** can be adjusted to compensate for wear erosion while maintaining the desirable working tip angle and step configuration. The assembly **20** includes a support bracket **22** intended to hang in a generally vertical plane when secured in working relationship to a vibration motor. The blades **21** have an arcuate configuration so that the lower ends, which define working tips **23**, are disposed at the proper angle with respect to the generally vertical plane of the support bracket **22**. For adjustment, the blades **21** are releasably locked on the bracket **22** and are supported for movement, when unlocked, along the arcs defined by the blades.

In the FIGS. 3–5 embodiment, the bracket **22** includes a mounting plate **24** shaped to conform with the blades **21**, and the blades have slots **25** that receive pairs of bolts **26** passing through holes in clamp blocks **27** and in the mounting plate **24**. By loosening the bolts **26**, the blades **21** are freed for movement through a range permitted by the slots **25**. In making wear erosion compensating adjustments, the blades **21** are adjusted downwardly along their own arcs and hence the angles of the blade tips **23** remain constant so long as the blades are moved downwardly in increments to compensate for the amount of blade material worn away.

The blades **21** also have notches **28** in their working tips **23** so as to define the desired step configuration. To main-

tain this configuration after wear erosion, the blades **21** have bands **29** of reduced cross section (see FIG. 5) extending longitudinally of the blades from the notches **28**. In operation, the thinner bands **29** tend to wear through more rapidly than the thicker edge portions of the blade tips. Thus, the bands **29** tend to wear at about the same rate as the projecting fingers on either side of the blade notches **28** which, because of their outthrust configuration, absorb most of the wearing action encountered by the blades **21**. As a result, the lower ends of the blades **21** wear upwardly in roughly the same stepped configuration in which they were originally formed.

In the blade assembly **30** embodiment shown in FIGS. 6–8, an arcuate blade **31** is releasably locked on a mounting plate **32** constituting part of a support bracket **33**. The blade **31** is fitted into a groove **34**, formed in the plate **32**, which guides the blade **31** for movement in its own arc, and locking is obtained by bolts **35** which draw a clamp block **36** against the blade. Longitudinal adjustment of the blade **31** compensates for wear and keeps the lower end of the blade, defining a blade working tip **37**, at the proper angle in the same manner as described above in connection with the FIGS. 3–5 embodiment.

To maintain the desired step configuration in the working tip **37** of the blade **31**, the blade **31** is formed of two adjacent members **38** and **39** with the members being relatively movable. Each of the members **38, 39** have rounded lower ends (see FIG. 8) defining the step configuration of the working tip **37**. This configuration is maintainable by selective relative adjustment of the members **38, 39** as the lower ends of these members are eroded.

It can be readily seen that the blade assemblies **20, 30** embodying the invention are well suited for economical large scale production. The assemblies are particularly economical to use since wear erosion can be compensated for, and each blade has a useful life exceeding that of several successively used conventional blades of the type shown in FIGS. 1 and 2. Since only conventional bolts are manipulated, blade adjustment can be accomplished in the field with readily available tools.

It will also be appreciated that the adjustable blades of the invention permit tamping efficiency to be maximized since frequent blade adjustments can keep the blade tips at the proper angle and in the proper relationship with their vibration motor to promote effective tamping.

I claim as my invention:

1. A tamper blade assembly for ballast tamping comprising, in combination, a blade support bracket, an elongated tamping blade releasably locked on said bracket, said blade having an arcuate configuration so that one end of the blade defines a working tip that is disposed at an angle with respect to said bracket, said blade being supported on said bracket for movement, when unlocked, along the arc defined by the blade so that wear erosion of said tip can be compensated for by unlocking, moving and again locking the blade, said working tip end of the blade having a step configuration defined by a notch in the end of the blade, and said blade having a band of reduced cross section extending longitudinally from said notch so that the step configuration is maintained after wear erosion by said band wearing away at about the same rate as the steps of the working tip.

2. A tamper blade assembly for ballast tamping comprising, in combination, a blade support bracket, an elongated tamping blade releasably locked on said bracket, said blade having an arcuate configuration so that one end of the blade defines a working tip that is disposed at an angle with respect to said bracket, said blade being supported on said bracket for movement, when unlocked, along the arc defined by the blade so that wear erosion of said tip can be compensated for by unlocking, moving and again locking the blade, said blade being formed of two adjacent and abutting members being relatively movable when the blade is unlocked, each of said members having rounded ends defining together a step configuration at said working tip, said step configuration being maintainable by selective adjustment of said members.

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