Dec. 17, 1963 R. L. FOX 3,114,534

BRIDGE RAISING YOKE ASSEMBLY

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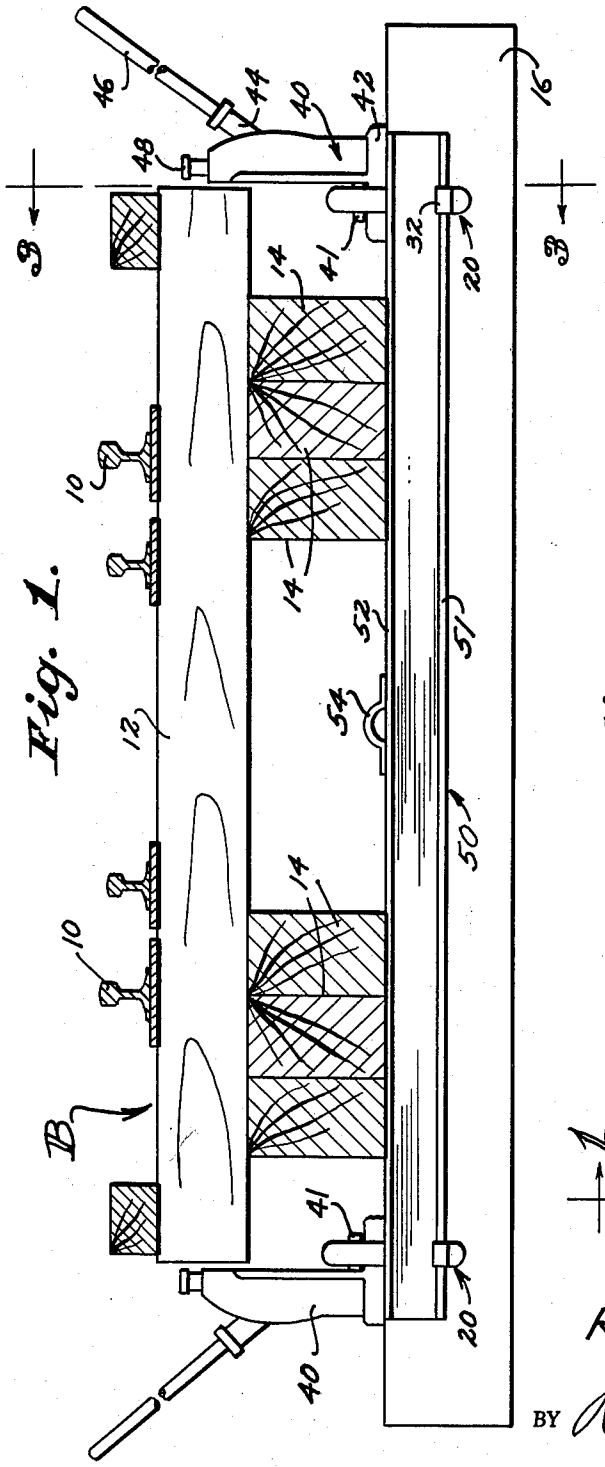

Fig. 1.

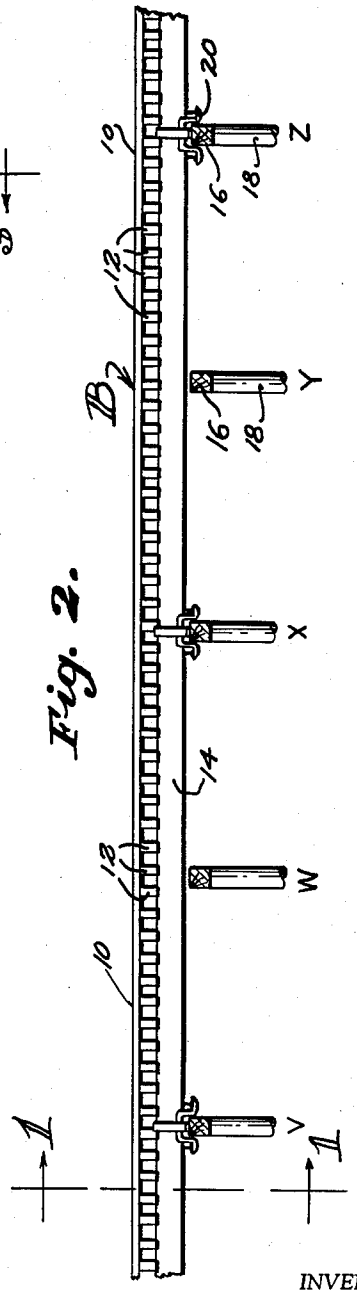

Fig. 2.

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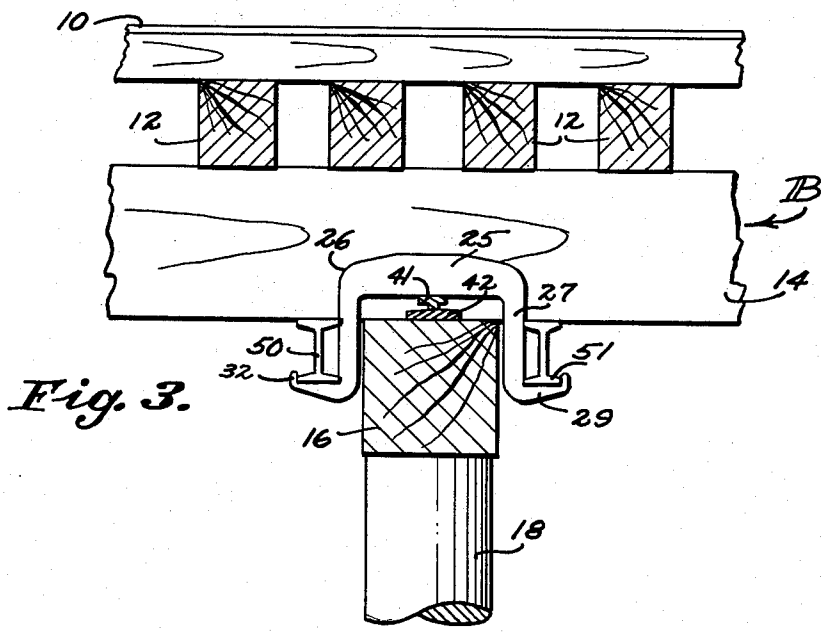


Fig. 3.

Fig. 4.

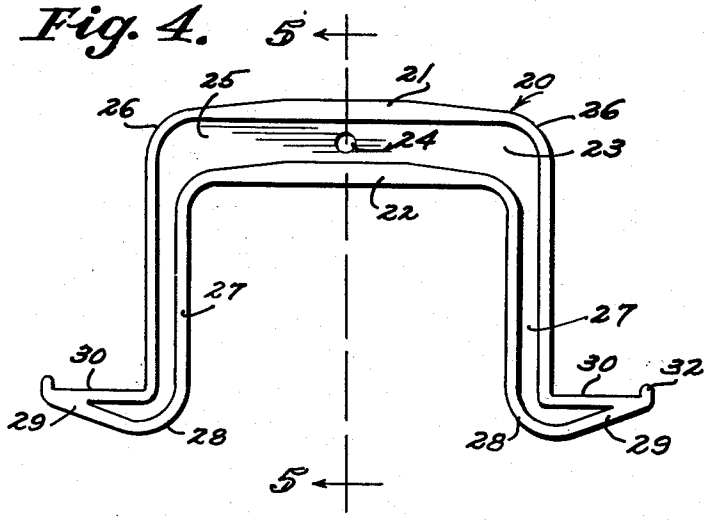


Fig. 5.

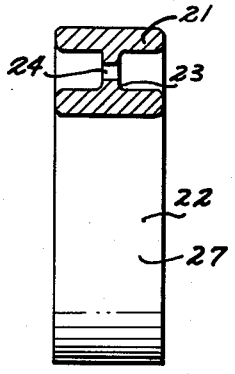
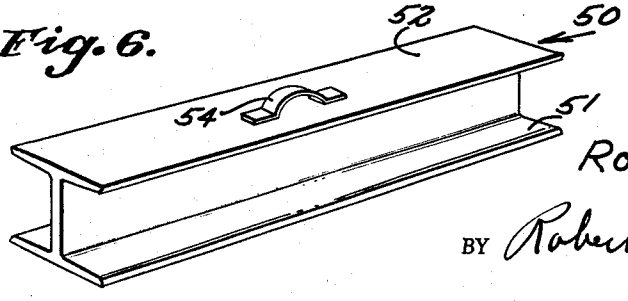


Fig. 6.



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United States Patent Office 3,114,534 Patented Dec. 17, 1963

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BRIDGE RAISING YOKE ASSEMBLY

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Filed Oct. 21, 1960, Ser. No. 64,102
4 Claims. (Cl. 254—89)

This invention relates to railway maintenance and railway equipment and more particularly to a device for replacing various supporting members used in the construction of railway trestles and bridges.

As is well known to railroad maintenance men familiar with the problem of replacing various supporting members on open deck railway trestles and bridges, it is oftentimes necessary to employ a large crew of men and large machines to raise the bridge deck system in order to replace vertical or horizontal members supporting the bridge deck.

In my invention and new method of replacing open deck bridge supporting members, it is possible to replace such members with the use of much smaller crews and inexpensive equipment.

My invention has been made with the foregoing consideration in mind and have many important objectives in its creation and method of use.

An important object of my invention is the provision of a simple and easily performed method of replacing open deck bridge supporting members without the use of a large crew or expensive equipment.

Another important object of my invention is the provision of an economical device for use in railway maintenance in order to cut costs of operation.

Another important object of my invention is the provision of a yoke set arrangement which with lifting jacks presently used by railway crews, is adapted for use in bridge deck raising operation.

Another and further important feature of my invention is the provision of a device which will permit repairs to be made to open deck bridges or trestles without interfering with the normal flow of traffic and use of such bridge or trestle.

Another and further important object of my invention is the use of a low cost device in maintenance of railway bridges which will obviate the necessity of large and cumbersome machinery.

Another and further important object of my invention is the provision of a new method of maintaining railway bridges and trestles speedily and without the necessity of waiting for the arrival of the heavy equipment presently used in such a maintenance today.

Other features and advantages not specifically enumerated hereinbefore will become apparent after a consideration of the following descriptions and the appended claims:

FIGURE 1 is a cross sectional view of an open deck railway bridge taken on the line 1—1 of FIGURE 2 showing the application of my invention;

FIGURE 2 is a side view of an open deck railway bridge showing the device of my invention on alternate bents;

FIGURE 3 is an enlarged side view, taken on line 3—3 of FIGURE 1, showing a section of the railway bridge with the yoke of my invention in place;

FIGURE 4 is a front elevational view of the yoke of my invention;

FIGURE 5 is a cross-sectional side view of the yoke shown in FIGURE 4, taken on the line 5—5 of FIGURE 4;

FIGURE 6 is a perspective view of the preferred beam used with the yoke of my invention.

Bridge System

Reference is again made to FIGURES 1 and 2 in which is shown a cross section of the deck B of an open deck railway bridge. Extending vertically upward from a base (not shown) are vertical supporting legs 18. Pairs of supporting legs 18 are provided in spaced longitudinal arrangement throughout the length of the bridge in order to properly support the bridge deck B. Each pair of supporting legs is braced to each other and to adjacent pairs of supporting legs, not shown, to provide a unitary and rigid structure for supporting the bridge deck and the load that passes thereover as each train crosses the bridge.

Mounted on the upper extremities of each pair of supporting legs 18 are beams 16 which are arranged transversely with respect to the track rails 10. Beams or bents 16 carry the longitudinally arranged bridge stringers 14. The stringers 14 span the bents 16 and provide a deck for the railway ties 12 which are transversely spaced thereon and which carry the railway track 10 as is clearly shown in FIGURES 1 and 2.

Yoke Assembly

Yoke 20 is formed of a member generally I-beam in cross section. Yoke 20 is provided with a top flange 21 and a bottom flange 22 connected by a centrally spaced web portion 23.

As seen in FIGURE 3, the yoke 20 is fashioned with a top portion 25 turned downwardly at 26 at its opposite ends to form the side members 27, 27. Side members 27, 27 are bent outwardly at 28 to provide legs 29, 29. The legs 29, 29 are formed with a horizontal flat shelf portion 30 for receiving the lower flange 51 of an I-beam 50. The outer extremity of the legs 29 are turned upwardly to provide a holding lip 32. Centrally drilled in the web of the top portion 25 of the yoke is an opening 24, as is clearly shown in FIGURE 4.

The I-beam 50 is provided with an upper flange 52. Connected to the upper flange 52 in any suitable manner such as by welding, at the central portion of the I-beam 50, as shown in FIGURE 6, is a lifting strap 54.

The vertically movable toe 41 of a lifting jack 40 extends upwardly from the base member 42 of the jack. The toe 41 is raised in conventional manner through manipulation of the lever 44 by means of the bar 46. Lever 44, thus raising the vertical ratchet 48, on the bottom of which the toe 41 is carried.

In the assembled portion, shown in FIGURE 3, a yoke 20 is mounted on a beam 16 with a flange of an I-beam 50 received on each flat shelf 30 of the yoke. The base member 42 and the toe 41 of the jack is mounted between the yoke 20 and the bent 16, with the base member 42 of the jack 40 being flatly mounted on the bent.

Operation

In the operation of my invention, a maintenance crew is provided with 2 or more sets of my device. Each set consisting of 2 yokes, 2 I-beams and 2 jacks. As seen in FIGURE 2, when it is desired to replace a certain bent 16, such as the bent above the legs 18 of the supporting legs indicated by *w*, a yoke 20 is positioned on each end of the adjacent bents shown above *v* and *x*, of the trestle or bridge. The I-beams 50 are then mounted on the flat shelves 30 formed on the yokes positioned on the opposite ends of the bent in such manner that the I-beams extend below the stringers 14. The jack 40 is then mounted with its base 42 resting on the associated bent 16 and the toe 41 beneath the flange 22 of the top portion 25 of the yoke. Operating the jack levers 46 will then place the assembly in snug position with the I-beams 50 pressed upwardly against the stringers 14, and the toe 41 pressed upwardly against the flange 22 of the top portion 25 of the yoke. Further lifting with all the jacks on the bents at *v* and *x* will thus raise the deck B above the bent 16 at *w*.

Thus since the deck has been thus raised out of contact with the bent at *w* it is possible to replace that bent or to

replace its supporting legs or any other part of its structure.

After the repair work has been completed or whenever desired the jacks are operated to lower the bridge into its original position.

Obviously the use of another yoke set of any invention on the bent above z on FIGURE 2 will serve to permit replacement or repair of the bent or its supporting structure at y.

As is also obvious, it is thus possible by the use of my invention and method of operation to permit the track on the bridge to remain in normal use during its repair and thus eliminate delay in normal traffic and in the operation of trains or other rolling stock during such repair.

As is believed further obvious the yoke of my invention could be modified in size, shape or form. Numerous modifications and variations of the present invention will occur to those skilled in the art after a study of the invention which I have here disclosed both as to structure and to method of operation. For example it is believed obvious that a solid member or a box member could be utilized in place of the I-beam shown by way of example. Also, that any type jack could be utilized to raise the bridge deck whether it be by air, hydraulic, electric or manual operation. All such modifications and variations which come within the spirit and scope of the present invention are intended to be included herein as fully and completely as if they had been specifically illustrated, described and claimed herein.

The embodiment specifically described and claimed here is exemplary only and is not intended to limit the scope of this invention.

The exact construction and relative positioning of the various component parts of this invention is by way of example and may be modified substantially within the scope and spirit of my invention without departing therefrom.

Having thus described and disclosed my invention, what is claimed as new is:

1. A lifting yoke assembly for decks of railway trestles provided with spaced bents, comprising a pair of substantially U-shaped yoke members adapted to be mounted over a railway trestle bent on opposite sides of a railway trestle, outwardly extending legs connected to the bottom of said yokes and extending below the trestle bent, a beam member mounted on said legs and connecting said yoke members, and lifting jacks connected to said yoke members for raising the deck of a railway trestle.

2. A lifting yoke assembly for decks of railway trestles provided wtih spaced bents, comprising a pair of substantially U-shaped yoke members adapted to be mounted over a railway trestle bent on opposite sides of a railway trestle, outwardly extending legs connected to the bottom of said yokes and extending below a trestle bent, a flat shelf portion formed on the upper portion of each of said legs, a beam member mounted on the shelf portion of a leg on each yoke and connecting said yoke members, and lifting jacks connected to said yoke members for raising the deck of a railway trestle.

3. A lifting yoke assembly for decks of railway trestles provided with spaced bents, comprising a pair of substantially U-shaped yoke members adapted to be mounted over a railway trestle bent on opposite sides of a railway trestle, outwardly extending legs connected to the bottom of said yokes and extending below the trestle bent, a flat shelf portion formed on the upper portion of each of said legs, a beam mounted on the shelf portions of the yoke members on one side thereof and connecting said yoke members together, a second beam mounted on the shelf portions of the yoke members on the opposite sides thereof and connecting said yoke members together, and lifting jacks connected to the inner face of said yoke members for raising the deck of a railway trestle.

4. A lifting yoke assembly for decks of railway trestles provided with spaced bents, comprising a pair of substantially U-shaped yoke members adapted to be mounted over a railway trestle bent on opposite sides of a railway trestle, outwardly extending legs connected to the bottom of said yokes and extending below the trestle bent, a flat shelf portion formed on the upper portion of each of said legs, a beam mounted on the shelf portions of the yoke members on one side thereof and connecting said yoke members together, a second beam mounted on the shelf portions of the yoke members on the opposite sides thereof and connecting said yoke members together, and a lifting jack connected to the inner face of each said yoke members and operable to raise and lower said yoke members and the railway trestle carried thereby.

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