United States Patent

[11] **3,604,241**

[72] Inventor **Weltzin B. Blix, Jr.**
South Milwaukee, Wis.

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[73] Assignee **Nordberg Manufacturing Company**
Milwaukee, Wis.

[54] **RAILROAD SPIKE STRAIGHTENER**
2 Claims, 4 Drawing Figs.

[52] **U.S. Cl.** **72/416,** 72/445, 104/17
[51] **Int. Cl.** **B21d 37/10,** B21j 7/28
[50] **Field of Search** 100/53; 72/40, 416, 445; 104/17; 10/56

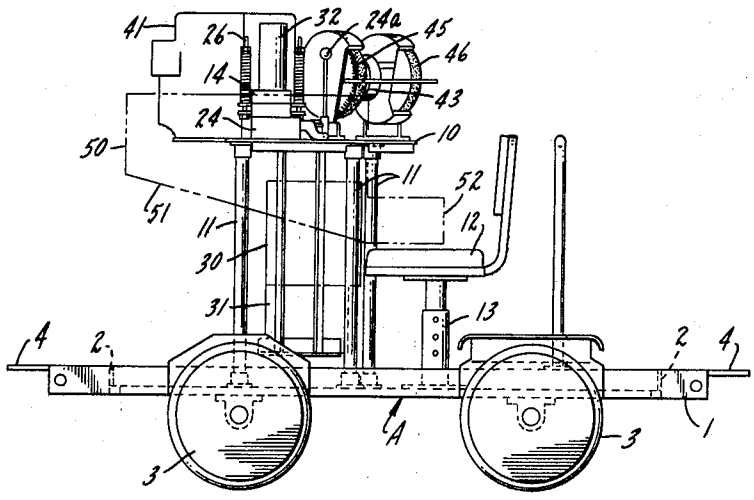
[56] **References Cited**

UNITED STATES PATENTS

3,125,020	3/1964	Surina	100/53 X
2,946,277	7/1900	Archer	100/53
556,657	3/1896	Baird	72/416
676,292	6/1901	Wigtel	72/416
429,701	6/1890	Parmelee	72/416
3,450,037	6/1969	Licklitter	72/445
1,384,348	7/1921	Riedy	100/53
3,405,649	10/1968	Foxx	104/17

Primary Examiner—Charles W. Lanham
Assistant Examiner—E. M. Combs
Attorney—Parker, Carter & Markey

ABSTRACT: A spike straightener for straightening spikes used along railroad tracks. On any suitable carrier, for example, a railroad car, a spike-straightening unit is provided which is power driven but is controlled by the operator who has to use at least two handles to actuate it, thereby preventing unintended actuation against a hand of the operator. One power unit is effective to operate a cleaning device and another the straightening device.



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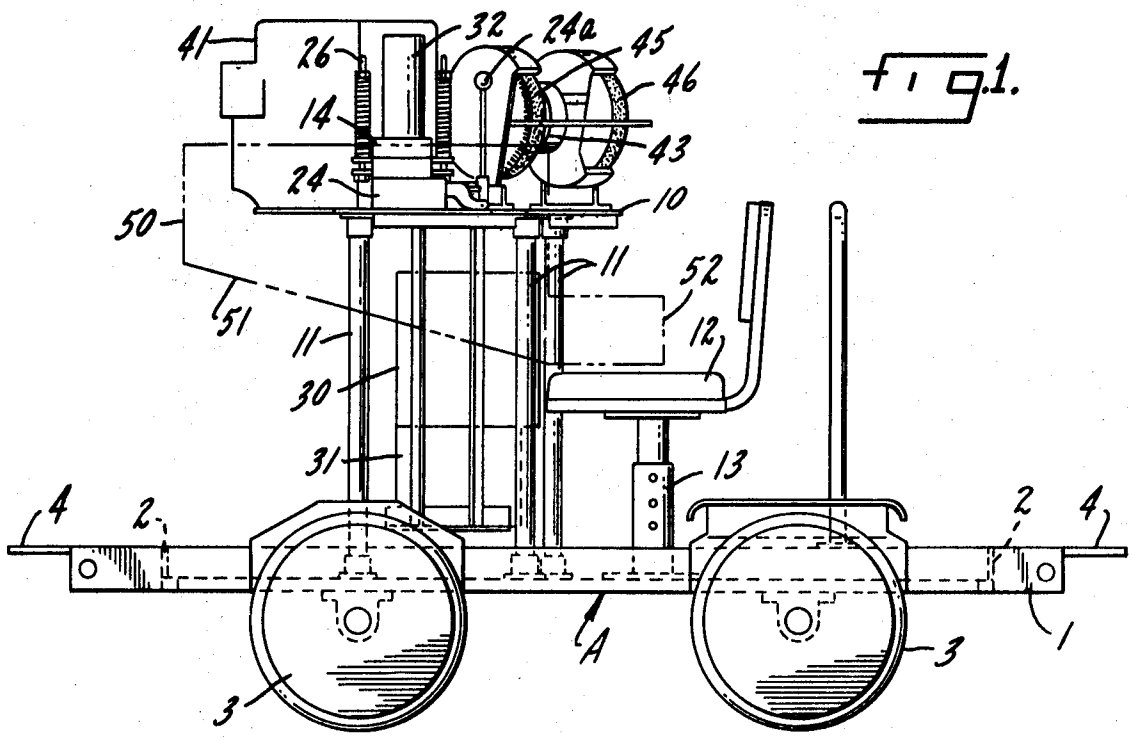


fig. 1.

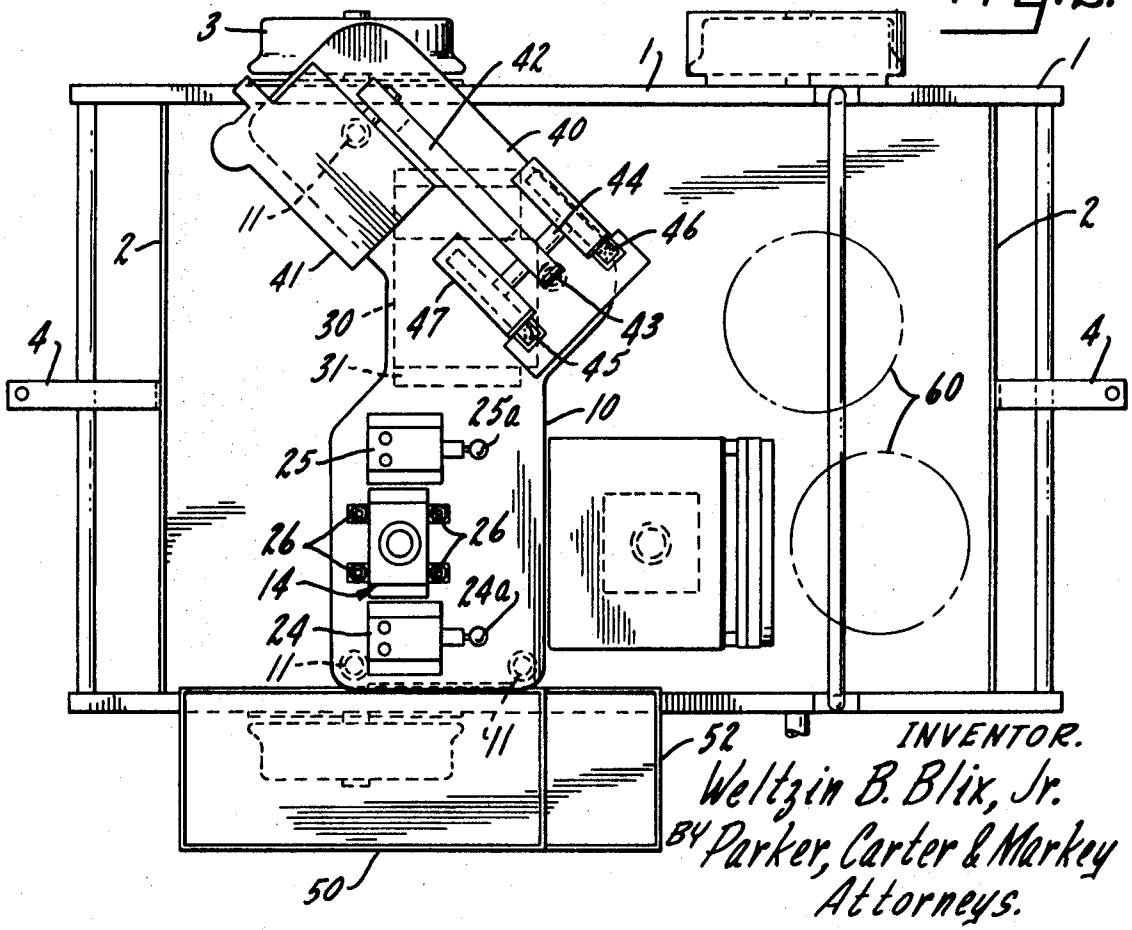


fig. 2.

INVENTOR.
Weltzin B. Blix, Jr.
BY Parker, Carter & Markey
Attorneys.

FIG. 4.

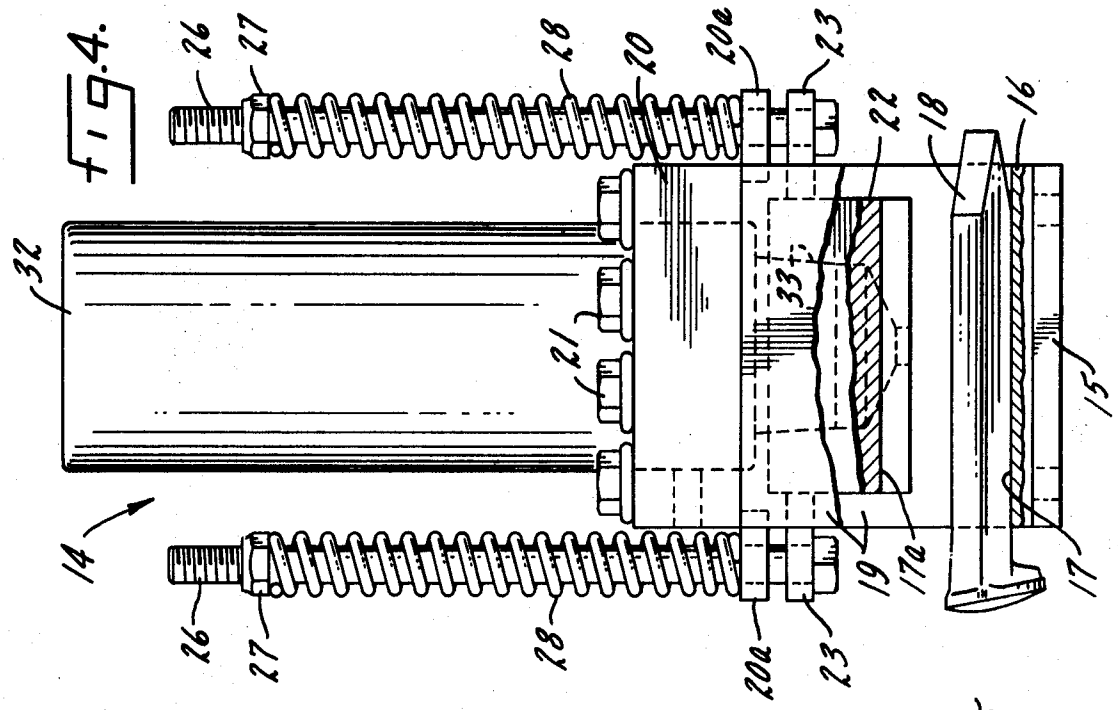
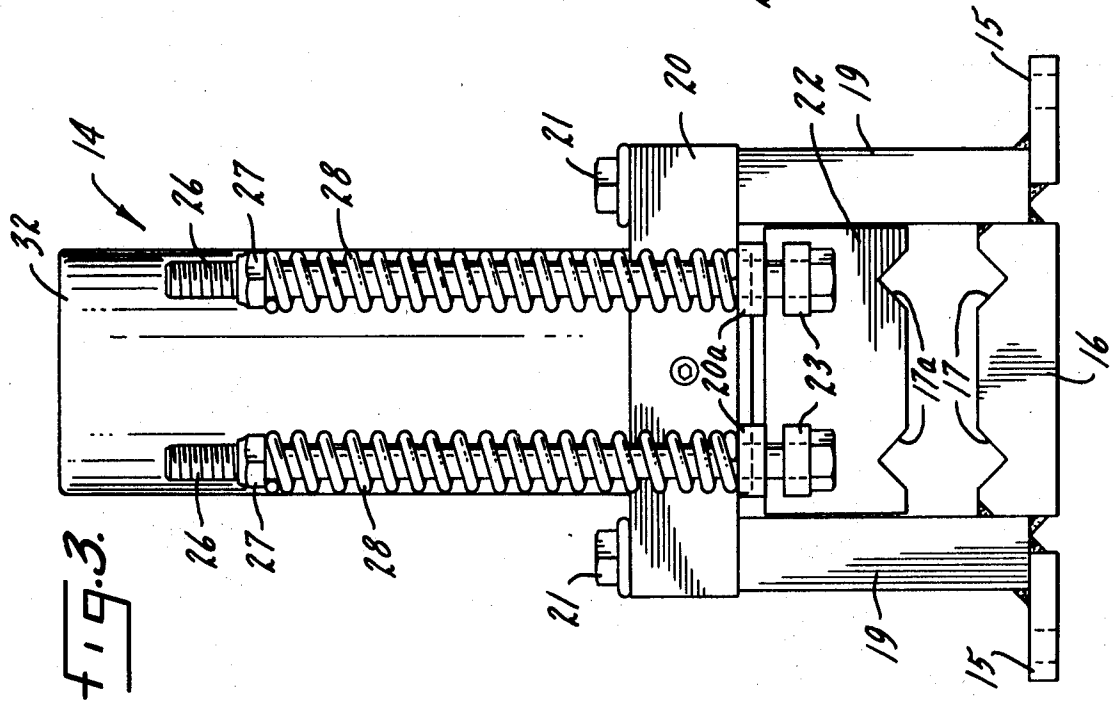


FIG. 3.



INVENTOR.
Weltzin B. Blix, Jr.
BY Parker, Carter & Markey
Attorneys.

RAILROAD SPIKE STRAIGHTENER

SUMMARY OF THE INVENTION

This invention is concerned with providing ready means, usable, for example, with a train of trackworking equipment, to provide for the cleaning and straightening of railroad spikes, for reuse. These spikes are normally driven through the apertures of any suitable tie plates, the spikes penetrating the tie and having a head portion overlying the base or bottom flange of a railroad rail. In shifting rails, or in laying rails, or in varying rail levels for various reasons, used spikes, or spikes freshly withdrawn from the rails, may be employed. If such used spikes are employed they may initially be both dirty and encrusted with foreign matter, and, what is more critical, may be somewhat bent. Spikes may become bent in initial insertion. Even more frequently, they are somewhat bent when withdrawn by manual or machine means. Since these spikes are used in large numbers, and are an item of substantial cost, it has been found to be profitable to reuse spikes. However, spikes cannot advantageously be reused unless they are substantially straight.

One object of the present invention is to provide ready means for the power straightening of railroad spikes.

Another object is to provide ready means for cleaning the spikes or spike heads, when necessary, to remove encrustation, dirt, and the like.

Another object is to provide a unitary assembly for straightening spikes and cleaning them.

Another object is to provide such an assembly in which, although power operated, it is impossible for an operator in normal circumstances to get his hand positioned where it might be damaged by the actuation of the spike straightening means.

Another object is to provide actuating means for straightening spikes, which call for the simultaneous use of both hands of the operator, whereby to prevent injury to the operator's hands during the actuation of the straightening means.

Another object is the provision of a straightening and cleaning unit, which may be moved along the rails in unison with or in proper relation to trackworking equipment, such unit including spike-receiving means, spike-straightening means, spike-cleaning means, and spike-storing means, for convenient reuse.

Other objects will appear from time to time in the course of the specification and claims.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention is illustrated more or less diagrammatically in the accompanying drawings, wherein:

FIG. 1 is a side elevation;

FIG. 2 is a plan view;

FIG. 3 is an end elevation, on an enlarged scale, of one form of spike-straightening means; and

FIG. 4 is a side elevation, with parts broken away and parts in section, of the structure shown in FIG. 3.

Like parts are indicated by like symbols throughout the specification and drawings.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring initially to FIGS. 1 and 2, the invention may be used with any suitable carrier or support, including, but not limited to, a car or car frame movable along the rails of a track. In FIGS. 1 and 2, for example, there is illustrated a carriage, generally indicated as A, having side frame members 1 and transverse members such as the end members 2. Any suitable frame or body may be mounted upon or associated with the side and end members, and will not herein be shown in detail. However, it may be advantageous to employ flanged wheels 3 for engaging track rails and to provide drawbars 4 whereby the carriage A may be moved along the rails of a track, or, if desired, may be connected in a train of trackworking equipment of various types.

Referring, again, to FIGS. 1 and 2, 10 generally indicates a transverse support or table which may be supported, for example, upon vertical members 11 extending upwardly from the frame or carriage A. Likewise, any suitable seat or chair 12 may be mounted, in vertically adjustable relation, in a socket 13 on the car A.

Shown in plan view in FIG. 2 is a spike-straightening unit generally indicated at 14. These are illustrated in greater detail in FIGS. 3 and 4. The straightening unit is shown as suitably secured to the table 10, for example, by flanges 15 through which any suitable securing bolts or other means may pass. Associated therewith is a bottom block or anvil 16 which may be provided with one or more notches 17 which are upwardly open to receive the shanks of rail spikes such as are shown at 18 in FIG. 4. These spikes are generally rectangular in cross section, and, therefore, fit readily into the notches 17, each spike being, for example, positioned as shown in FIG. 4. Extending upwardly from the flanges 15 and the bottom block 16 are side guide members or supports 19, the upper ends of which are connected by any suitable transverse bridge 20.

The parts may be secured together by any suitable bolts, the heads of which are indicated as at 21. Slidable within and between the side members or guides 19 is an upper block or die 22 having notches 17*a* and outwardly extending ears or flanges 23. Corresponding flanges or ears 20*a* 20*a* extend outwardly from the bridge 20. The flanges 23 and 20*a*are apertured in line and through these apertures pass guiding pins or bolts 26 having top abutments, or heads, or nuts 27. Compressed between each nut 27 on the upper face of each flange or ear 20*a* is illustrated a coil spring 28. It will be clear that when these springs are permitted to expand they will withdraw the upper block or die 22 to the upper position in which it is shown in FIGS. 3 and 4 against any suitable abutment on or associated with the bridges 20. It will be clear from FIG. 3 that the lower notches 17 will each receive a spike shank, and that the upper notches 17*a* when thrust down against the spike shanks, are effective to straighten them, regardless of the direction of the bend or crookedness of the spike shanks.

Referring again to FIG. 1, two power plants are illustrated, but not in detail, one to actuate the below-described cleaning device and the other to provide pressure for the below described hydraulic system for the spike-straightening unit. The latter power source is illustrated diagrammatically at 30 in FIGS. 1 and 2, and may be associated with or positioned upon any suitable liquid tank 31 for the hydraulic liquid to be used. 32, in FIGS. 3 and 4, indicates more or less diagrammatically any suitable hydraulic cylinder within which any suitable piston, not herein shown in detail, is provided. The piston may be secured to or include a portion 33 which extends down into, and is secured to, and adapted to actuate, the upper block or die 22. Without going into hydraulic details, 24 indicates one valve assembly and 25 another, each provided with a separate manually operable handle 24*a* and 25*a* . It will be understood that it is only when both handles 24*a* and 25*a* are actuated that the upper block or die 22 is subjected to the pressure within the hydraulic cylinder 32. In other words, the operator, seated on the chair 12, must simultaneously grasp both handles, thus using both hands, before he can overcome the upward thrust of the springs 28 about the guide rods or pins 26. This operation will be described later in somewhat more detail.

As will be clear from FIG. 2, the table 10 is extended as at 40 to receive a suitable cleaning element, the details of which do not of themselves form part of the present invention. 41 diagrammatically illustrates any suitable motor means, which may be a gasoline motor for driving a belt or chain 42. The belt in turn passes about any suitable sheave 43 on the driven shaft 44. At each end of the shaft are cleaning elements 45 and 46. Either or both may be wire brushes or buffing members, or any suitable means which, when put in engagement with the spike, will be effective to clean it. 47 are any suitable protecting hoods about the members 45 and 46.

Fifty indicates a suitable receptacle into which spikes to be treated may be dropped. It is shown as including a

downwardly and rearwardly sloped bottom **51** which terminates beneath an upwardly open withdrawal space **52**. The operator, seated on the seat **12**, may conveniently withdraw spikes at **52** and manually insert them in the position in which they are shown in FIG. **4**. When he has inserted a pair of such spikes he can straighten them, by a single blow of the upper block **22** against the anvil **16**. However, to cause this blow, in resistance to the expansion of the springs **28**, he must first grip, and manually actuate, both of the handles **24***a* and **25***a*. When he does so the upper block **22** is thrust downwardly against the spikes, with the effect that the spikes are straightened. When the operator releases the handles **24***a*, **25***a* the hydraulic pressure terminates and the springs **28** withdraw the die **22** to the upper position in which it is shown in FIGS. **3** and **4**. Thereafter, the operator may manually remove the straightened spikes and clean any part of them which calls for cleaning, by holding them manually against one or both of the cleaning members **45** and **46**. For example, one of them may be a brush, of wire or other material, and the other may be a buffing member, it being understood that there is room for substantial choice in such matters. Thereafter, the operator may drop the straightened and clean spikes into any suitable containers, diagrammatically shown at **60**. These may, for example, be cans or other containers removably seated on the carriage A, which may be removed for application at some other point, being then replaced by empty containers.

It will be realized that whereas a practical and operative device has been shown, nevertheless, many changes may be made in size, shape, number and disposition of parts without departing from the spirit of the invention. The description and drawings are therefore to be taken as in a broad sense illustrative or diagrammatic, rather than as limiting the invention to the specific structure shown. The details of the structure are for the purpose of general illustration, although a thoroughly practical and operative device is shown.

The use and operation of the invention are as follows:

A movable base is provided which may be associated in any desired way with a train of trackworking cars or equipment. Whereas the unit is not shown as self-propelled, and is merely provided with drawbars **4**, it will be within the scope of the invention to use it as a self-propelled unit. Likewise, it is within the scope of the invention to use the entire device on a fixed or semifixed base conveniently located to the work.

The spikes are straightened by being gripped in the notches **17** and **17***a*, which are effective to perform the straightening function regardless of the direction of the band of the spike shank.

The acts of the operator may be summarized as falling into four categories. First he picks up spikes from the area **52** of the container **50** for the unworked spikes. He then positions spikes manually in the notches **17** and actuates the control to urge the upper block or die notches **17***a* against the upper surfaces of the spike shanks. He then releases pressure to permit the springs **28** to withdraw the upper block **22** to its uppermost position. He then manually removes the spikes, and, when necessary, applies them for cleaning by the rotary members **45** and **46**. Thereafter, he drops the finished spikes into any suitable receiving container **60**, for removal and reuse. All of these acts are preformed from a single center, namely, the seat **12**, and involve a minimum effort on the part of the operator who is simultaneously conveniently located to perform all four of the above-mentioned acts or functions, without long reaching or reaching or strain, and with a minimum of movement. For ease of action the seat **12** may be made rotatable about a vertical axis.

I claim:

1. In a spike straightening device adapted for railroad use, a frame, rail engaging flanged wheels on the frame so that the device is movable along the rails of a railroad track, a support on the frame at a level commensurate with the operative level of a seated operator, a spike-straightening press mounted on said support and including a lower anvil and an upper die, the lower anvil being channeled to receive inserted spike shanks, the upper die being correspondingly channeled to engage the spike shanks, means for normally holding the die upwardly withdrawn from the anvil, whereby to permit manual insertion of the spike shanks in the anvil, hydraulic pressure means for forcing the die downwardly against the anvil, whereby to straighten the spikes, a valve system for actuating the hydraulic means, such valve system responding only to the simultaneous manual actuation of two control handles, whereby the hands of the operator are withdrawn from the downward path of the die when it is actuated, an operator's station on the frame for a seated operator facing and directly adjacent the press and control handles, and a receptacle on the frame at the general level of the support and contiguous to the operator's station for holding spikes to be straightened.

2. The structure of claim **1** characterized in that the lower anvil and upper die channels have walls diverging at an angle of the order of 45°, whereby the pressure of the upper die is effective to straighten the spikes, regardless of their direction of bend.