May 9, 1933. W. V. OSBORNE 1,908,175

SPIKE PULLING DEVICE

Filed May 30, 1930 2 Sheets-Sheet 1

Fig. 1.

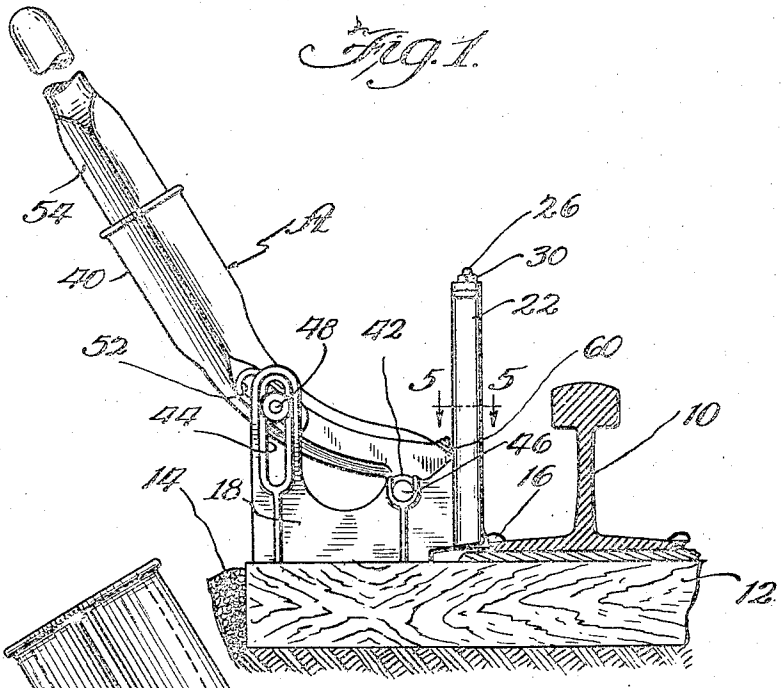

Fig. 2.

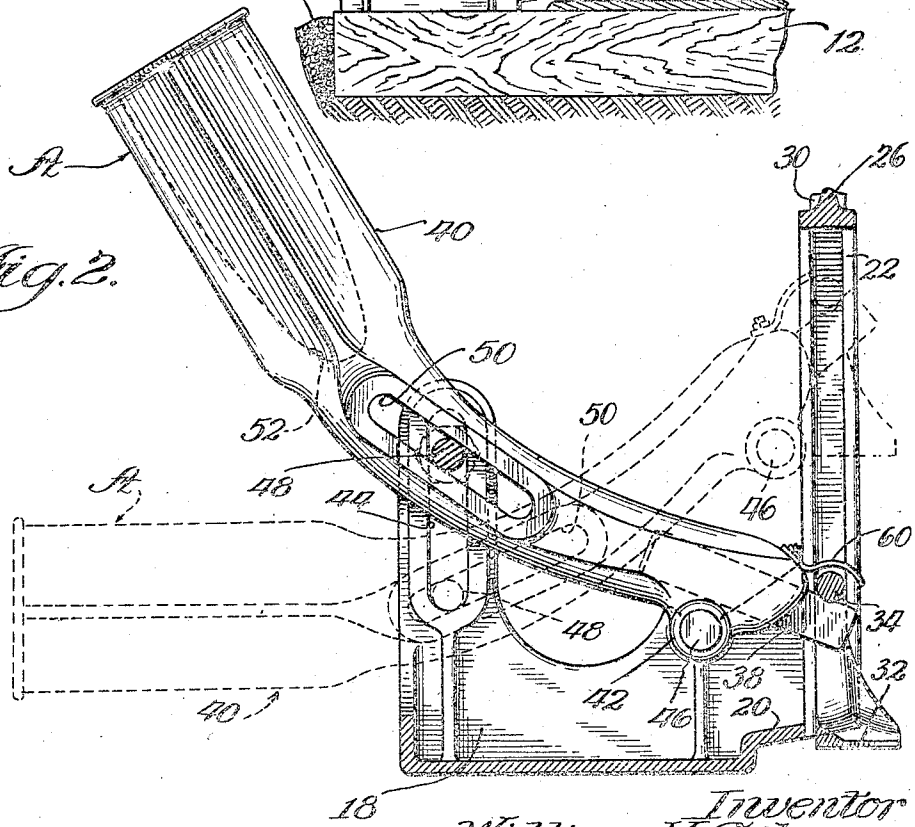

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Fig. 3.

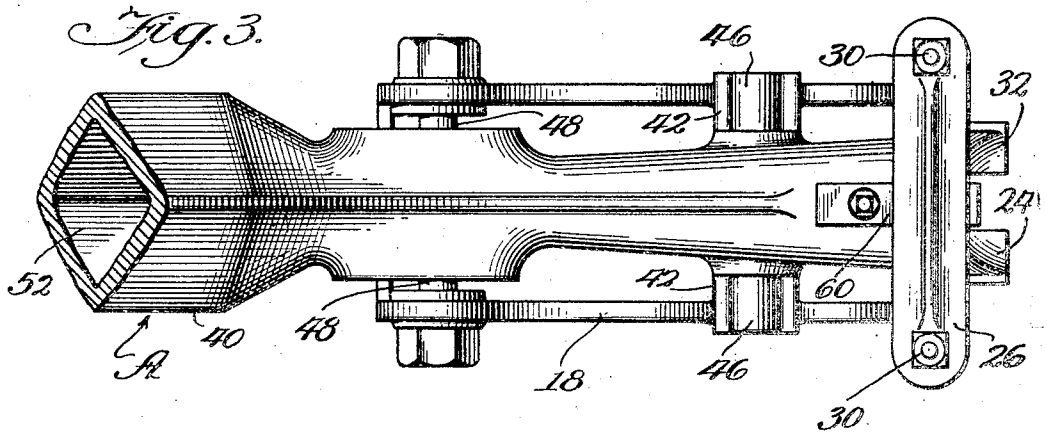


Fig. 4.

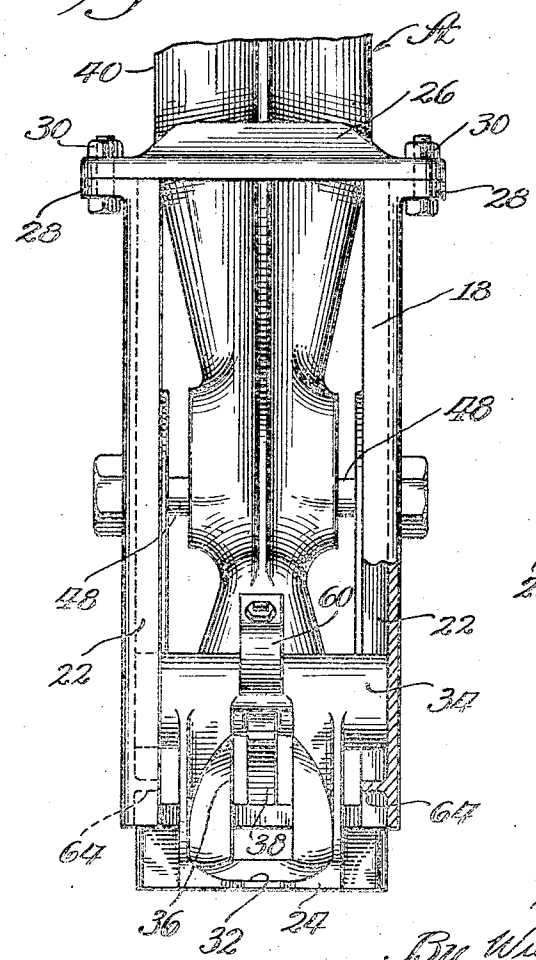
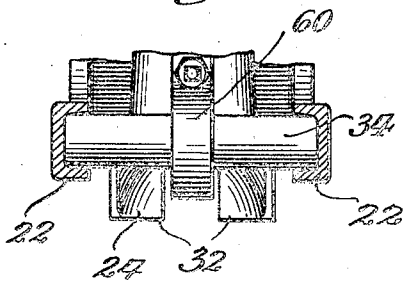


Fig. 5.



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Patented May 9, 1933

1,908,175

UNITED STATES PATENT OFFICE

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SPIKE PULLING DEVICE

Application filed May 30, 1930. Serial No. 457,607.

My invention relates to spike pulling devices and has for its object the provision of means whereby spikes may be withdrawn from railway ties without bending them.

The spike pullers of the prior art have all been more or less unsatisfactory, because the devices which are capable of pulling a spike without bending the spike require great effort to operate them, ordinarily requiring two or three men to pull a spike, thus greatly increasing the labor cost of railway maintenance work and materially diminishing the likelihood of using devices capable of withdrawing spikes without mutilating or bending them.

It is an object of my invention to provide an improved portable spike pulling device having a lever arrangement whereby the fulcrum of the lever at the start of the operation is adjacent the spike, thus giving a greatly increased leverage to the initial pressure exerted and whereby the fulcrum will be changed after a predetermined initial movement to a point removed from the spike to allow a full lever stroke of an ordinary length.

Another object of my invention is to provide an improved spike pulling device having removable wearing parts which may easily be replaced in case they are broken or worn out.

A further object of the invention is the provision of an improved portable spike pulling device which may easily be handled by one man.

Another object of the present invention is to provide a portable spike puller that is easily and cheaply manufactured, yet durable and capable of long and steady use.

Other objects and advantages will be readily apparent from the following description, reference being had to the following drawings, in which

Figure 1 is a side elevational view of my improved spike pulling device in actual use;

Figure 2 is a vertical cross-sectional view of the device, with a changed position of the spike pulling lever and claws shown in dotted lines;

Figure 3 is a plan view;

Figure 4 is a front elevational view with a portion of the claw guide broken away; and

Figure 5 is a fragmentary horizontal sectional view taken on the line 5—5 of Figure 1, looking in the direction of the arrows.

In Figure 1 I have shown my device A in the position it is placed to start to pull a spike. A rail 10 is shown on a tie plate 13 resting on a tie 12 embedded in the ordinary road-bed 14. A spike 16 secures the rail 10 in place, this being the spike it is desired to withdraw.

The spike puller "A" comprises a base member 18 which is positioned on the railroad tie 12 with a portion 20 overlying the tie plate 13. Spikes driven through tie-plates are usually hardest to pull and for this reason the device is shown in connection with a tie plate but it will be apparent that where no tie plate is encountered the device is equally operable. At the front end of base member 18 a pair of vertical guides 22 are provided in which a claw member 24 is positioned. Guide members 22 are closed at their upper end by a cross member 26 fastened to lugs 28 on the guide members 22 by means of bolt and nut connections 30. Claw member 24 may be a forging having the separated fingers 32 connected by a cross-member 34, which cross-member also engages the guide 22. An opening 36 is provided in the claw member 24 through which a wear member 38 extending from lever 40 passes and connects to the claw member. Wear member 38 is preferably formed of tool steel or other equally hard substance and is loosely fitted into the end of lever 40 so that it may be readily replaced in the event that it is broken or worn out. Base member 18 is formed with a pivot socket at a point adjacent the front end and an elongated slot 44 which provides a similar pivot socket near the rear end of the member. A pair of studs 46 on the lever 40 are provided to cooperate with socket 42 and a bolt 48 extends through an elongated slot 50 in lever 40 and also through the elongated slot 44 of the base member 18. A socket 52 is provided in the upper end of lever 40 for an operating handle 54.

In the operation of my improved spike

puller, when it is desired to pull a spike, the device is placed in the position shown in Figure 1 with the fingers 32 of the claw member engaging below the flanged head on the spike 16. In this position the studs 46 will be engaged in the sockets 42 of base member 18 and it will readily be seen that by pulling downwardly on handle 54 a highly multiplied leverage will be provided to start the initial pulling of the spike. As the spike is extracted claw member 24 rises vertically in the guides 22 and further downward pressure on handle 54 will carry bolt 48 to the lower end of elongated slot 44, at which time socket 42 will cease to be the fulcrum for the lever, and the lower end of slot 44 will become the fulcrum point. Due to the fact that the spike has been loosened by being extracted a material distance, further extraction will be easily accomplished and for this reason a lesser leverage is sufficient. As the handle 54 is brought downward and claw member 24 is raised in the vertical slots 22, the lever 40 and associated parts will assume the position shown in dotted lines in Figure 2 with the bolt 48 moved to the left in slot 50. A small clip 60 is fastened to the top end of lever 40 overlying portion 34 of the claw member to prevent any accidental disarrangement of the parts and a ledge 64 is provided at the lower end of guides 22 to provide a limit stop at the lower end of the guides. When it is desired to replace claw member 24 it is only necesary to remove the bolts 30 and unfasten the clip 60 and remove clip member 24 and substitute another.

From the foregoing it is apparent that parts which may be worn and which do in effect take most of the wear and tear in the use of my improved device may be easily replaced or renewed without disassembling the device or causing any substantial loss of time or material.

It will also be apparent that due to the comparatively large ratio between the pivot, the handle and the load, great initial pressure can be produced to loosen the spike by any ordinary person, and it has been found in actual practice that spikes which require the strength of several men to extract, with any of the devices of the prior art, can easily be extracted by one person with my improved device.

While I have illustrated a preferred embodiment of my invention, many modifications may be made without departing from the spirit of the invention, and I do not wish to be limited to the precise details of construction set forth, but desire to avail myself of all changes within the scope of the appended claims.

I claim as my invention:

1. A spike pulling device comprising a base member, vertical guide means at one end thereof, spike pulling claws positioned in said guide means, a pair of fulcrum bearing means on said base member, and a lever having engagement with said claws and adapted to be fulcrumed first on one end and then the other of said bearings means.

2. A spike pulling device comprising a base member having a plurality of lever pivots, a lever having a plurality of pivot studs, spike engaging means at one end of said lever, said lever adapted upon engagement with a spike to be fulcrumed first on one and then the other of said pivots in said base.

3. A spike removing device comprising a base member, a lever pivoted adjacent one end of said base member, a spike engaging means attached to said lever and adapted to be guided in a vertical plane by said base member, a second pivot on said lever adapted to be pivoted at a point removed from said first pivot at a subsequent stage in the pulling of the spike.

4. A spike extractor comprising a lever having a handle at one end, a removable wear member in the other end, a claw member carried by said wear member, a base member having a pair of sockets and said lever pivoted in said sockets and said lever having an elongated slot therein, a fulcrum member carried in said elongated slot and said lever arranged after predetermined initial movement to pivot on said last mentioned fulcrum member.

5. A spike removing device comprising a base member, a lever initially pivoted adjacent one end of said base member, a spike engaging means attached to said lever, means on said base member for guiding the spike engaging means in a vertical plane, and a second fulcrum member on said lever adapted to be pivoted at a point removed from said first pivot at a subsequent stage in the pulling of the spike.

6. A spike pulling device comprising a base member, vertical guide means at one end of said base member, spike pulling claws positioned in said guide means, pairs of fulcrum bearing means on said base member, one of said bearing means adjacent the vertical guide means, the other of said bearing means removed therefrom, and a lever operably connected to said claws and adapted to be fulcrumed first on one and then the other of said bearing means to raise a spike first at a greater leverage and then at a lesser.

7. A spike pulling device including a base member, said base member having vertical guide means at one end thereof, vertical side walls on two sides thereof, pairs of pivot sockets arranged in said side walls, one pair of said sockets adjacent the vertical guide means and the other pair adjacent the opposite end, spike engaging means positioned in said guide means and adapted to be raised and lowered, a lever having pairs of studs positioned thereon, one pair of said studs

adapted to engage said first named socket means and the other pair of said studs adapted to engage said second named socket means, and said lever operably connected to said spike engaging means.

8. A spike pulling device comprising a base member, vertical guide means at one end of said base member, a removable spike pulling claw positioned in said guide means, pairs of fulcrum bearing sockets on said base member, one pair of said bearing sockets adjacent the vertical guide means, the other of said bearing sockets spaced therefrom, and an operating lever connected to said claw means and adapted to be fulcrumed first on one and then the other of said bearing sockets to raise a spike vertically, first at a greater and then at a lesser leverage.

9. A spike extractor comprising a lever having a handle at one end, a removable wear member in the other end, a claw member carried by said wear member, a base member, a pair of vertical guide means in said member, said claw member positioned therein, said base member having pairs of sockets, said lever pivoted in one pair of said sockets and said lever having an elongated slot therein, a fulcrum member carried in said elongated slot and said lever arranged after an initial movement to pivot in the second pair of sockets on said last mentioned fulcrum member.

10. A spike pulling device including a base member, said base member having vertical guide means at one end thereof, and a removable cap thereon, vertical side walls on two sides of said base member, pairs of pivot sockets arranged in said side walls, one pair of said sockets adjacent the vertical guide means and the other pair adjacent the opposite end of said base member, spike engaging means positioned in said guide means and adapted to be raised and lowered, a lever, a removable wear member for actuating the spike engaging means, said lever having pairs of studs positioned thereon, one pair of said studs adapted to engage said first named socket means at the beginning of the operation and the other pair of said studs adapted to engage said second named socket means to complete the operation.

11. A device for pulling spikes without bending them, including a base member having a pair of vertical side walls, a front vertical guide means, a claw member reciprocably mounted in said guide means, a lever, a wear member in the end of said lever engaging said claw member, a pair of fulcrums on said lever engaging said base member progressively, the first adjacent the front end of the base member and the other near the rear end of the base member to provide lever arrangements of different ratios.

12. A spike puller comprising a base, a lever adapted to pivot thereon, spike engaging means adapted to be actuated by said lever, and means on said base for guiding said spike engaging means in a vertical direction.

13. A spike puller for withdrawing spikes without bending them comprising base means, a lever pivotally mounted thereon, spike engaging means mounted on the base means and adapted to be actuated by said lever, and guides restraining said spike engaging means in a substantially straight path.

14. A spike puller for withdrawing spikes without bending them comprising base means, spike engaging means mounted therein, means for guiding said spike engaging means in a substantially straight path whereby a spike is withdrawn without being bent, and a lever having a plurality of pivots upon said base means.

15. Means for extracting spikes without bending them comprising a base member, a long manually operable lever pivotally mounted thereon, spike engaging means thereon, and means for guiding said spike engaging means in a straight path in a spike extracting operation.

16. A spike removing device comprising a base member, a long manually operable lever pivotally mounted adjacent one end on said base member, and a spike engaging means engaged by said lever and adapted to be guided in a vertical plane by said base member.

In witness whereof, I hereunto subscribe my name this 28th day of May 1930.

WILLIAM V. OSBORNE.