March 25, 1924.

1,488,040

B. GALLAND

RAPID TIE CHANGER

Filed April 30, 1923

2 Sheets-Sheet 1

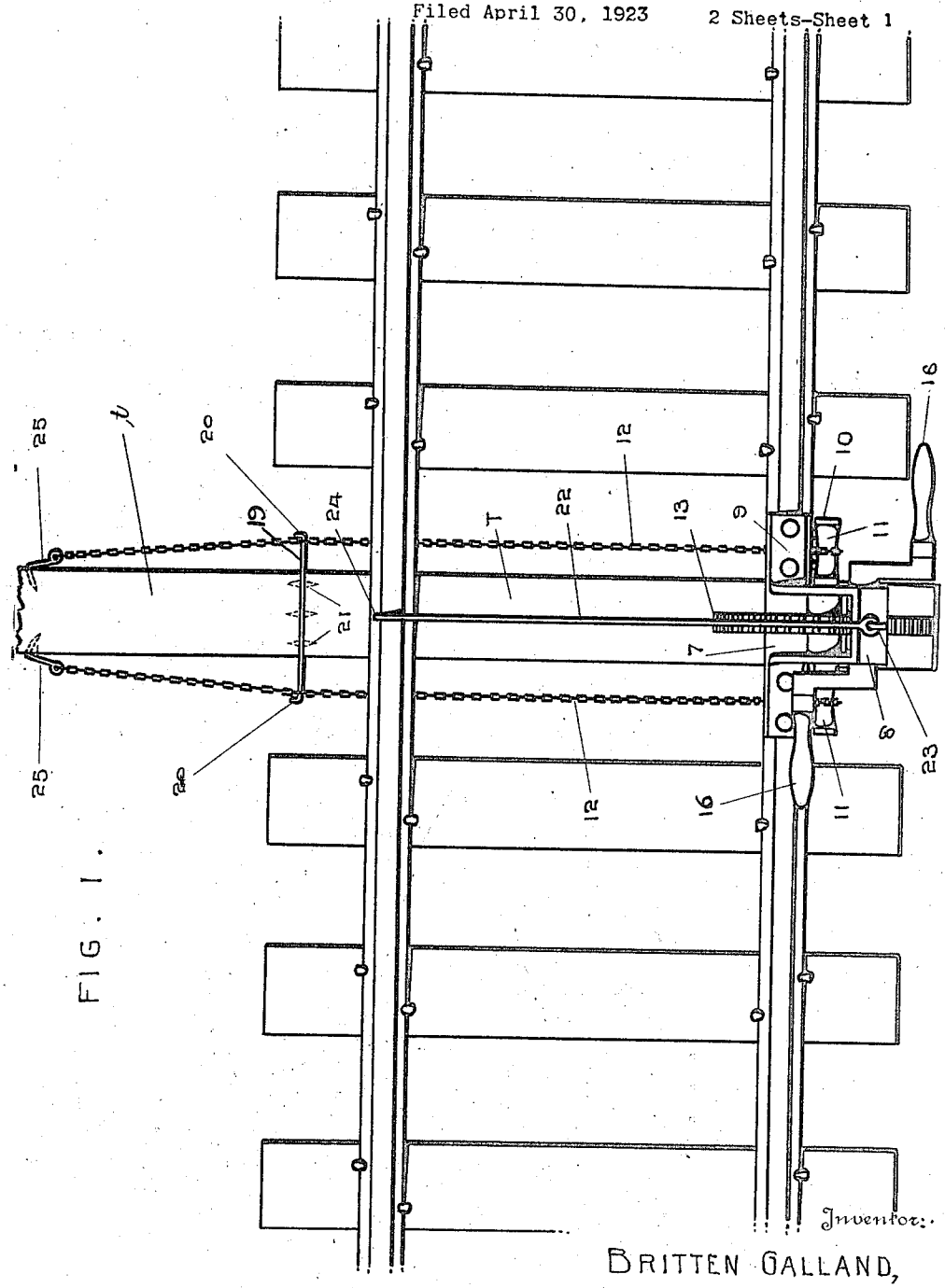


FIG. 1.

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2 Sheets-Sheet 2

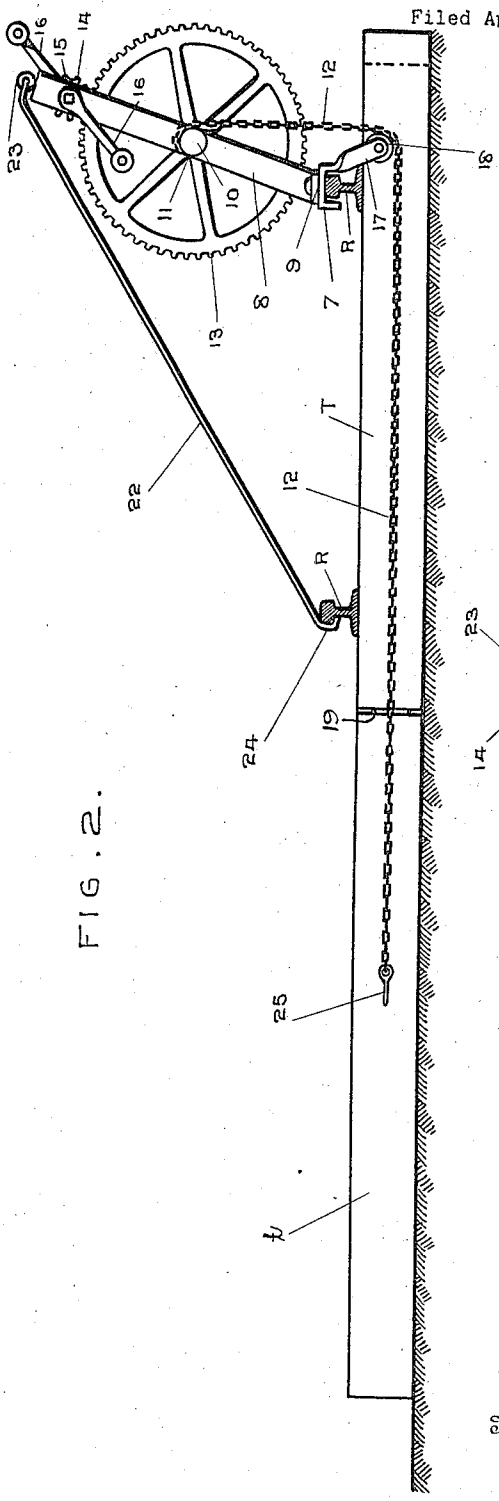


FIG. 2.

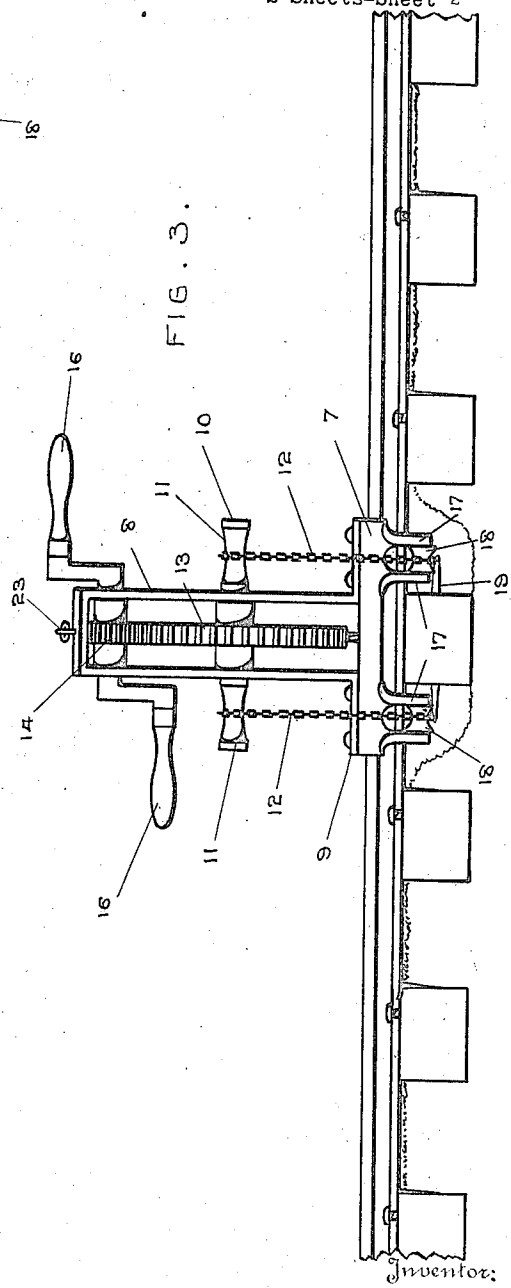


FIG. 3.

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Patented Mar. 25, 1924. 1,488,040

UNITED STATES PATENT OFFICE.

BRITTEN GALLAND, OF SALIX, IOWA.

RAPID TIE CHANGER.

Application filed April 30, 1923. Serial No. 635,799.

To all whom it may concern:

Be it known that I, BRITTEN GALLAND, a citizen of the United States, residing at Salix, in the county of Woodbury and State of Iowa, have invented certain new and useful Improvements in Rapid Tie Changers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The present invention relates to a machine for changing railroad ties, and aims to provide a novel and improved machine of that kind for quickly, conveniently and efficiently removing a cross tie of a railroad track and replacing same with a new tie.

Another object is to provide such a machine having means whereby the new tie can be moved into place when the old tie is being removed, so that the tie replacement can be done with one operation in a rapid and practical manner.

A further object is the provision of such a machine embodying an upstanding frame to seat on the track and carrying the actuating means for conveniently operating the machine.

It is also an object of the invention to provide such a machine which is simple and economical in construction, and which is practical and efficient in use.

With the foregoing and other objects in view, which will be apparent as the construction proceeds, the invention resides in the construction and arrangement of parts, as hereinafter described and claimed, it being understood that changes can be made within the scope of what is claimed, without departing from the spirit of the invention.

The invention is illustrated in the accompanying drawings, wherein—

Figure 1 is a plan view of the machine as in use.

Fig. 2 is a side elevation thereof, showing the rails in cross-section.

Fig. 3 is a side elevation taken at right angles to the line of view in Fig. 2.

The frame of the machine comprises a base or saddle 7 of channel shape to fit over the tread of one rail R of the track, and an upwardly extending arch or standard 8 having the feet or outturned terminals 9 secured on the base or saddle 7 by rivets or other securing elements.

The actuating means includes a horizontal shaft 10 journaled for rotation through the arched standard 8 between the upper and lower ends thereof, and having the drums 11 near its ends at opposite sides of the standard. A gear wheel 13 is secured on said shaft within the standard, and chains or other flexible elements 12 are secured to the drums 11 to be wound thereon. A pinion 14 within the upper portion of the standard 8 meshes with the gear wheel 13 and is secured on an operating shaft 15 journaled within the standard, and hand cranks 16 are engaged on the ends of the shaft 15 for rotating said shaft manually, and each crank can be operated by one or more men. The cranks are carried by the upper portion of the frame so as to be at a convenient height to be readily operated without inconvenience, and the gear wheel 13 is of sufficient diameter so that the gear ratio will enable the chains 12 to be wound on the drums with considerable force.

The chains 12 extend downwardly from the drums 10 to the opposite sides of the tie T which is to be removed, the saddle 7 being seated on the corresponding rail above such tie, and the chains extend vertically across said rail at the outer side thereof. The outer side or flange of the saddle 7 has the downwardly extending pairs of brackets 17 between which are mounted for rotation the guide rollers 18, whereby said rollers are disposed at opposite sides of the tie T below the drums 10 and below the base flange of the corresponding rail at the outer side thereof. Thus, the chains 12 extend downwardly to and partly around the guide rollers 18 so as to extend along the opposite sides of the tie T to and beyond the opposite end of said tie under the rails.

In order to move the tie T with the chains 12, when said chains are wound on the drums 11, a cross bar or follower plate 19 is provided, to extend transversely across the end of the tie opposite to the actuating device, and said bar or plate 19 has the hooks or opposite terminals 20 to engage through the corresponding links of the chains, for

anchoring said bar to the chains to move therewith, so that the bar pushes the tie ahead with it.

The frame of the machine is steadied by a tie rod or brace 22 having a flexible joint or connection 23 with the upper end of the standard 8, and the opposite or free end of the rod has a hook 24 to engage the rail opposite to the rail on which the frame is seated, whereby to prevent the frame from tilting outwardly and downwardly under the tension of the chains 12 when they are wound on the drums.

The new tie *t* to replace the tie T is disposed in rear of the old tie T in alinement therewith and in abutment with the bar or plate 19, whereby the new tie will follow the old tie as the old tie is ejected. The bar or plate 19 has spurs or teeth 21 projecting from opposite sides to enter the adjacent ends of the old and new ties, whereby to keep said ends of the ties in registration or alinement, so that the new tie will follow the old tie without the liability of the new tie being obstructed by stones, pebbles and other particles of the roadbed or ballast. The free ends of the chains have hooks 25 with sharp prongs or spurs to be driven into the opposite sides of the new tie *t*, so as to anchor or secure the chains to the new tie for pulling the new tie behind the old one.

In operation, the saddle 7 is seated on one rail of the track over the tie T to be removed, and the rod 22 is engaged with the other rail to steady the frame. The chains 12 are then passed under the rollers 18 and extended along opposite sides of the tie. The bar or plate 19 is then placed against the opposite end of the tie T and its hooks 20 engaged with the links of the chain. The new tie *t* is then placed against the bar 19 with the ends of the ties in alinement, and the hooks 25 are then engaged with the new tie. Now, by rotating the cranks 16, the chains 12 are wound on the drums 11, thereby pulling the chains to the rollers 18 and upwardly from said rollers to the drums 11. The old tie T is therefore ejected from under the rails, and the new tie will follow the old tie to pass under the rails and to occupy the position on the roadbed previously occupied by the old tie that has been ejected. The replacement of an old tie by a new one is thus accomplished by a single operation, and the new tie in following the old tie into place, will be brought into place without interference, inasmuch as the two ties slide under the rails on the roadbed as practically a continuous object, and the forward end of the new tie will therefore not encounter obstructions because it is disposed immediately behind the rear end of the old tie, and the adjacent ends of the ties are kept in alinement by the spurs or teeth 21 on the bar or plate 19.

The device can be used for other purposes also for which it is suited or adaptable, it being noted that the base of the upwardly extending frame which carries the winch or windlass, has means for guiding the flexible means or chains to pass below the support for the frame, thereby enabling a horizontal pull to be made by the chains or means in an effective and desirable manner.

Having thus described the invention, what is claimed as new is:—

1. A tie changer comprising a bar to be disposed transversely between the adjacent ends of old and new ties and having means for holding said ends of the ties in registration, and actuating means connected to the ends of said bar and having portions for connection with the new tie to simultaneously move both ties.

2. A tie changer comprising a bar to be disposed transversely between the adjacent ends of old and new ties and having opposite teeth to enter said adjacent ends of the ties, and actuating means for connection with the ends of said bar and having portions to engage the new tie for simultaneously moving both ties.

3. A tie changer comprising flexible means to extend along an old tie, a member engageable with said means to extend transversely behind one end of said tie for moving the tie with said means, and said means having portions engageable with the new tie beyond said member to move the new tie in rear of the old tie simultaneously therewith.

4. A tie changer comprising flexible elements to extend along opposite sides of an old tie, a cross bar engageable at its ends with said elements to extend transversely across one end of said tie for moving said tie with said elements, and means carried by said elements beyond said bar for engaging a new tie to move the new tie with the old tie in rear thereof.

5. A tie changer comprising chains to extend along opposite sides of an old tie, a cross bar having terminal portions to engage the links of said chains, for positioning said bar transversely across one end of said tie, and hooks carried by said chains to engage a new tie beyond said bar for moving it with the old tie in rear thereof.

6. A tie changer comprising chains to extend along opposite sides of an old tie, means connected to said chains for engaging a new tie in rear of the old tie, and a cross bar having terminal portions to engage the links of the chains with said bar disposed transversely between the ends of said ties, said bar having teeth projecting in opposite direction to engage in the adjacent ends of said ties.

7. A tie changer comprising an upstanding frame having a base to seat on a rail

of a track, actuating means carried by said frame, flexible means operated by the actuating means to extend under the rails, means carried by the frame for guiding said flexible means under the rails, and a brace connected to the frame and engageable with the other rail.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

BRITTEN GALLAND.

Witnesses:

MAURICE D. GRANGER,

A. J. GRANGER.