UNITED STATES PATENT OFFICE

2,638,948
INTERNAL REVERSE TAPER EXPANDING BIT REAMER

George Lee White, San Pablo, Calif.
Application December 23, 1949, Serial No. 134,376

1 Claim. (Cl. 145—114)

This invention relates to improvements in devices for reaming out the bottom portion or two-thirds of a hole that is preformed by a straight bit in a wooden railroad tie, and has particular reference to a bit that will function to ream out the hole to provide a gradual taper with the largest diameter of the hole at its bottom. The principal object of the invention is to provide a portable tool adapted for use on railroad ties for drilling holes therein and to provide in the expansion tool lateral cutting surfaces that will effectively ream the side walls of the preformed hole to the desired degree of taper, and to associate with the bit various sizes of lugs that will become imbedded in the bottom of the hole to thus retain the lugs stationary while the bit is turned relative to the lug or lugs.

An additional object of the invention is the provision of an internally threaded sleeve that is adapted to fit over and threadedly engage the upper portion of the bit to reinforce the structure of the same and to prevent the divided sections of the lower portion of the bit from further splitting and from being twisted out of alignment.

A further object of the invention is the provision of a device of the character described that consists of comparatively few parts that can be easily and quickly assembled, and a device that is economical to manufacture, strong, durable, and highly efficient and serviceable in use.

Other objects and advantages will be apparent during the course of the following description.

In the accompanying drawings forming a part of this specification and in which like numerals are employed to designate like parts throughout the same,

Fig. 1 is a front elevational view of the bit or reamer constructed in accordance with my invention,

Fig. 2 is a front elevational view disclosing the sleeve of the invention positioned on the shank of the body of the bit,

Fig. 3 is a perspective view of a lug which is associated with the bit,

Fig. 4 is a perspective view of the sleeve, and

Fig. 5 is a fragmentary section of a wooden railroad tie showing the lug of the invention resting in a hole in the tie.

I have recently devised a fastening device that serves to secure rails to railroad ties, which device is intended to replace the conventional spikes used as the securing means for said purpose. In the utilization of my improved fastening device, holes are pre-formed in the tie to accommodate the said fastening element. Accordingly, the present invention functions to form or ream the holes in the tie, which holes receive therein the said rail fastening device.

In the accompanying drawings, wherein for the purpose of illustration is shown the preferred embodiment of my invention, the numeral 6 designates, as a whole, the shank of the reamer or bit. The said shank embodies in its construction a solid upper end 7 equipped with a hexagonal head 8 that provides a connection or coupling with a power bit or like medium for rotating the portable bit when it is positioned in a hole 9 of a railroad tie 10 for the purpose of forming therein a hole of gradual taper.

The lower portion of the shank is tubular or of a hollow configuration throughout its length and is slit as at 11 to furnish the desired degree of flexibility. External threads 12 are provided on a portion of the solid end 7 and on a section of the tubular lower portion. The slit 11 serves to divide the tubular portion into two sections 13 and 14 of similar configuration, that have provided on their outer peripheries external teeth or cutting surfaces 15.

It will be noted that the threads 12 extend downwardly from a point on the upper solid portion of the shank and terminate at the location where the cutting area begins in the tubular portion of the shank.

As disclosed to advantage in Fig. 4, the numeral 16 indicates a thin metallic sleeve that is equipped with internal thread 17. This sleeve in practice is placed over the upper end of the bit and is moved downwardly to thus threadedly engage the external threads 11. The said sleeves serve to give added strength to the bit structure and function to prevent the sections 13 and 14 from splitting or being twisted out of alignment. Furthermore, by the manual manipulation of the sleeve, that is by turning it upwardly a few revolutions while the bit is in use, and by turning it downwardly when the work with the bit has been finished, I prevent a springing of the divided sections or a slight bending of the same that might occur from continued use. In other words, the divided sections may have a tendency to remain slightly expanded after usage. In the employment of this particular threaded sleeve this tendency of expansion will be overcome and the divided sections can be drawn tightly together in order that the bit may be easily inserted into the top and tapered portion of the hole that is to be reamed at its bottom.

In Fig. 3 I have illustrated an inverted con-
shaped lug 18 that is equipped at its apex with an eye 19, and which is provided with spaced bottom sharpened projections 20. The apex of the cone is snugly receivable in the tubular portion of the bit 6.

It will be obvious that as the bit is turned and is simultaneously being pushed downwardly in the hole 10 of the tie, the desired expansion of the sections 13 and 14 will be realized. Sets of two or more sizes of lugs are utilized in the reaming operation. The smaller sizes are first used and are then replaced by next larger sizes. By this practice the expansion of sections 13 and 14 will be effected. Accordingly, the bit will never be required to cut more than a very thin degree of shaving from the walls of the hole at one operation. Nor will the bit be subjected to heavy strain or will it be likely to stick in the walls of the hole and become twisted, broken, or sprung. The sharp projections 20 of the lug are adapted to stick into the wood of the tie 10 at the bottom of the hole. This action of the projections prevents the lug from becoming firmly wedged into the tubular end of the bit and thus turning with the bit. The said lug will always be held stationary while the bit revolves around the lug.

The eye 19 in the apex of the cone-shaped lug serves as a means for receiving a bent wire therein, which wire serves as a means to raise a lug from the hole when it is desired to replace the lug by one of smaller or larger dimensions.

Any type of spring may be inserted at the top end of the slot 11 to dislodge the lug from the confines of the tubular portion of the bit.

It is to be understood that the form of my invention herewith shown and described is to be taken as a preferred example of the same and that various changes relative to the shape, size, material and arrangement of parts may be resorted to without departing from the spirit of the invention or the scope of the sub-jointed claim.

Having thus described my invention, I claim:

A device of the character described comprising a shank equipped with a solid upper end portion and a slotted lower end portion, said shank being threaded at the juncture of said portions with the threads extending over a part of each of said portions; the slot in the lower end defining a pair of sections which are provided with a series of external circumferentially spaced vertically extending rows of teeth capable of reaming out, upon a rotation of said device, a hole in a wooden tie to form a tapered hole, and an internally threaded sleeve threadedly engaging the external threads to prevent a distortion of the sections of said slotted lower end, and a cone shaped bit detachably mounted in said lower end and having a plurality of bottom teeth for engaging the tie.

GEORGE LEE WHITE.

References Cited in the file of this patent

<table>
<thead>
<tr>
<th>UNITED STATES PATENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
</tr>
<tr>
<td>200,991</td>
</tr>
<tr>
<td>915,184</td>
</tr>
<tr>
<td>1,690,018</td>
</tr>
<tr>
<td>2,074,605</td>
</tr>
</tbody>
</table>