O. G. DESCH.

TIE HANDLING DEVICE.

APPLICATION FILED MAY 25, 1917.

1,291,437. Patented Jan. 14, 1919.

Fig. 1

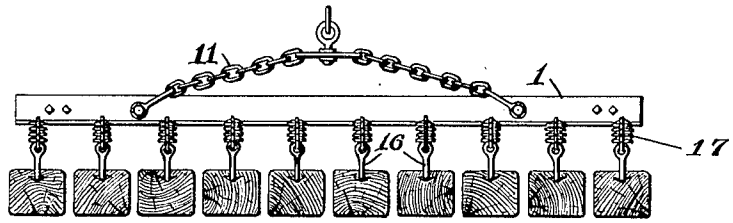


Fig. 2

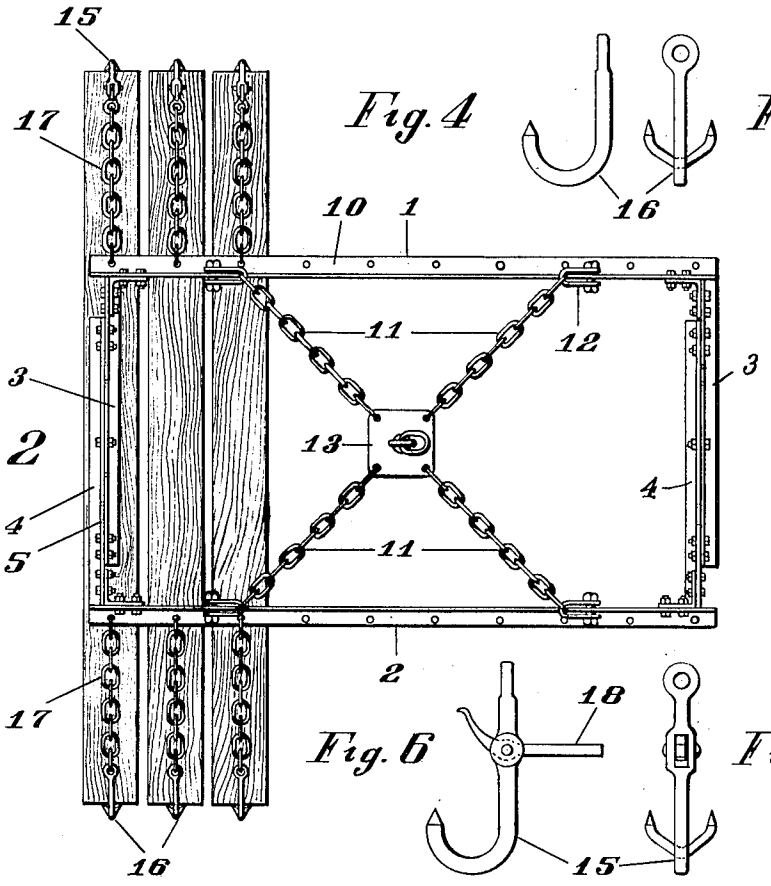


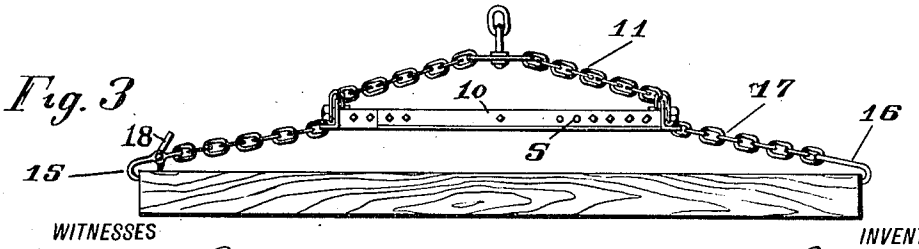
Fig. 4

Fig. 5

Fig. 6

Fig. 7

Fig. 3



WITNESSES

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TIE-HANDLING DEVICE.

1,291,437. Specification of Letters Patent. Patented Jan. 14, 1919.

Application filed May 25, 1917. Serial No. 170,816.

To all whom it may concern:

Be it known that I, OTTO G. DESCH, a citizen of the United States, residing at New York city, in the county of Kings and State of New York, have invented certain new and useful Improvements in Tie-Handling Devices, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

This invention relates to an improved lifting device for handling railroad ties and other logs, beams, posts and the like. The invention has been made more particularly with the idea of providing a device for the rapid and convenient loading and unloading or other moving about of railroad ties, although, obviously, the invention is not limited to such use.

In the handling of railroad ties it has been the custom heretofore to handle the ties individually or in bundles by means of a sling, thus necessitating individual handling in restacking or in placing in position for use. The present invention aims primarily to provide a device for handling a number of ties at a time and in such a way as to avoid entirely or largely individual rehandling. To this end I provide a device adapted to be swung from a crane or derrick and having a plurality of pairs of gripping hooks each connected to a supporting member by a chain or other suitable connecting means which permits the hook to swing in a vertical plane with a downward and inward movement. The hooks of each pair and their individual connecting means are arranged to extend outward from opposite sides of the common supporting member so that the series of pairs of hooks thus provided are adapted to grip the ends of a series of ties lying side by side and lift the series of ties when the supporting member is raised. As the hooks of each pair are connected to the supporting member so as not to be restrained in their downward and inward movement by the position of any other pair of hooks, ties varying somewhat in length may be lifted at the same time, shorter ties being carried, when the device is raised, at a slightly lower level than those which are longer. The invention includes various features of construction and arrangement of parts, all as hereinafter described and specifically pointed out in the claims.

The accompanying drawings show a lifting device designed especially for lifting railroad ties and which embodies the various features of the invention in the form which I now consider best. In said drawings:—

Figure 1 shows the device in side elevation as it appears when supporting a number of ties;

Fig. 2 is a plan view of the device in use, the view showing, however, only three of the ties and only the corresponding three pairs of gripping hooks and their connecting chains which appear in Fig. 1;

Fig. 3 is an end view of the device in use;

Figs. 4 and 5 are enlarged side and back views of one of the gripping hooks; and

Figs. 6 and 7 are, respectively, similar views of a gripping hook provided with an indicating finger or lever.

Referring to the drawings, the device shown comprises a supporting member which is most desirably, and as shown, a rectangular frame 10, conveniently formed of angle bars, and which is adapted to be suspended or carried in use by four chains 11 secured to the side bars 1 and 2 of the frame by means of shackles 12 and to a plate 13 which is provided with an eye-bolt and link to which may be connected the lifting tackle.

The frame carries a plurality of pairs of gripping hooks 15 and 16 which are connected to the frame by means of swinging connecting members 17, the connecting members being secured to the side bars 1 and 2 of the frame at, most desirably, uniform distances apart, and so that for each hook of the series 15 on one side of the frame there will be a hook 16 correspondingly connected to the other side of the frame. The connecting members 17 may be of any suitable form which will permit of the desired free downward and inward swinging of the hooks to grip and hold the ends of the ties, but connecting members formed, as shown, of short chain lengths have been found to be most generally satisfactory from standpoints of both manufacture and use of the device.

In the use of the lifting device, the supporting member 10 is placed over or on the layer or series of ties to be lifted and the gripping hooks are placed in position with

their prongs lying over the ends of the ties. Lifting the frame then tightens the chains 17, causing the hooks to be drawn inward and to grip the ends of the ties, each tie being lifted after the hooks placed over its ends have been pulled into gripping engagement therewith. Because of the independent action of each pair of gripping hooks, ties of somewhat different lengths may be thus gripped and lifted together. The exact time with relation to the lifting of the supporting frame at which the pair of hooks for any one of the ties grips and starts to lift that tie will depend upon the length of the tie, longer ties being gripped and lifted first by the upward movement of the frame, and the shorter ties being lifted and carried at a slightly lower level than the longer ones. When the frame has been lifted and is carrying a series or course of ties it may be shifted about to any desired position and then lowered, depositing the ties in the same relative positions as they were in before being lifted. After the ties come to rest, further downward movement of the frame serves to loosen the chain 17 so that the hooks may then be readily disengaged. Layers or courses of ties may thus be readily and quickly moved, as from storage stacks to cars, or vice versa, and relaid directly in courses; or a number of ties may thus be laid in position on the road bed, requiring only the usual spacing after being deposited.

While the gripping hooks may be of any suitable form, double pronged hooks such as shown are most desirably used, since, when placed in position over the ends of the ties, such hooks are more apt to remain in good gripping position, and will also grip even though tilted to a position in which a single pronged hook would pull free from the tie when the supporting frame was raised. The use of two-pronged hooks also has the further advantage that the ties when suspended in the air are held against turning movement on the hooks. It is sometimes desirable that the hooks on one or both sides of the supporting frame be provided with means such as the pivoted gripping finger or lever 18 shown on the hooks 15 and in detail in Figs. 6 and 7, which gripping finger or lever when thrown into operative position, as shown in Fig. 3, causes a slight gripping by the main prongs of the hook to insure its remaining in place before the supporting frame has been lifted. Such a gripping device is not ordinarily necessary, especially with the two-pronged hooks such as the drawings show, but it is sometimes convenient, as when the lifting device is being used short handed, to have the series of hooks on one side of the frame provided with such gripping fingers or levers as shown in Figs. 2 and 3.

The supporting frame 10 is desirably made adjustable for varying its width for adapting the lifting device to longer or shorter ties without the necessity of changing the length of the chains 17. For this purpose, in the construction shown the end bars 3 and 4 of the frame are made each of two overlapping parts bolted together and provided with additional bolt holes as indicated at 5, so that the length of the end bars may be changed to vary the width of the frame.

What is claimed is:

1. A device for lifting a number of separate articles such as railroad ties comprising a supporting device having substantially parallel side members, connecting means extending from said side members, and gripping devices carried by the connecting means for separately gripping each of a series of ties, said gripping devices being formed to grip the ties under the strain of the connecting means when the supporting device is lifted, the gripping means for each tie being adjustable to the tie independently of the other gripping means.

2. A device for lifting a number of separate articles such as railroad ties, comprising a supporting device having spaced substantially parallel side members, two series of connecting members carried by the side members of the supporting device and adapted to extend outward therefrom and to swing vertically, and a gripping device carried by each connecting member and formed to grip under strain of its connecting member when the supporting device is lifted, the corresponding gripping devices on opposite sides of the supporting device forming a pair adapted to engage the ends of a tie, and the distance between said side members of the supporting device being less than the length of the ties, whereby when the supporting device is lifted the gripping devices of each pair will be drawn inward and caused to grip the ends of a tie to be lifted thereby.

3. A device for lifting a number of separate articles such as railroad ties, comprising a supporting member, two series of connecting members carried by the supporting member and adapted to extend outward from opposite sides thereof and to swing vertically, and a gripping hook carried by each connecting member, the supporting member being of a width less than the length of the ties and the corresponding hooks on opposite sides of the supporting member forming a pair adapted to engage the ends of a tie, whereby when the supporting member is lifted the hooks of each pair will be drawn inward against the ends of a tie to be lifted thereby and caused to grip the same and will adjust themselves to the tie independently of other pairs of hooks.

4. A lifting device for articles such as railroad ties, comprising a supporting frame having spaced side members, a plurality of pairs of gripping hooks, and a connecting member for each hook connected to a side member of the supporting frame to swing vertically, the width of the supporting frame being less than the length of the ties and the connecting members for the hooks of each pair being adapted to extend outward from the side members of the supporting frame with the hooks in position to engage the ends of a tie, whereby the hooks are drawn inward and caused to grip the ends of the ties when the supporting frame is lifted, and each pair of hooks and their connecting members being adjustable to a tie to be lifted thereby independently of other pairs of hooks and connecting members whereby the device is adapted to simultaneously lift a number of separate ties of different lengths.

5. A lifting device for articles such as railroad ties, comprising a supporting frame, two series of independently movable flexible connecting members secured to opposite sides of the supporting frame, and a gripping hook carried by each connecting member, the width of the supporting frame being less than the length of the ties and the corresponding hooks on opposite sides of the supporting frame forming a pair adapted, when their connecting members are extended outward from the frame, to engage the ends of a tie, whereby when the frame is lifted the hooks will be drawn inward and caused to grip the ends of the ties.

6. A lifting device for articles such as railroad ties, comprising a supporting frame, two series of independently movable flexible connecting members secured to opposite sides of the supporting frame, and a two-pronged gripping hook carried by each connecting member, the corresponding hooks on opposite sides of the supporting frame forming a pair adapted when their connecting members are extended outward to engage the ends of a tie.

7. A lifting device for articles such as railroad ties, comprising a supporting frame, two series of flexible connecting members secured to opposite sides of the supporting frame, and a gripping hook carried by each connecting member, the corresponding hooks on opposite sides of the supporting frame forming a pair adapted when their connecting members are extended outward to engage the ends of a tie, the gripping hooks on at least one side of the frame being provided with means for forcing and holding the prongs of the hooks in engagement with the ties.

8. A lifting device for articles such as railroad ties, comprising a supporting frame, two series of independently movable flexible connecting members secured to opposite sides of the supporting frame, and a gripping hook carried by each connecting member, corresponding hooks on opposite sides of the supporting frame forming a pair adapted when their connecting members are extended outward to engage the ends of a tie, the supporting frame being adjustable in width to adapt the lifting device to the length of the ties.

9. A lifting device for articles such as railroad ties, comprising a supporting frame, means for connecting said frame to a lifting tackle, a series of independently movable chains attached to each of two opposite sides of the frame, and a gripping hook carried by each of said chains, the distance between the sides of the frame to which the chains are attached being such that when the gripping hooks are in position to engage the articles to be lifted the chains will be extended outward, whereby when the frame is lifted the hooks will be drawn inward and caused to grip the articles.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

OTTO G. DESCH.

Witnesses:
ETHEL JOHNES,
A. L. KENT.