

No. 636,161.

Patented Oct. 31, 1899.

E. MORRISON.

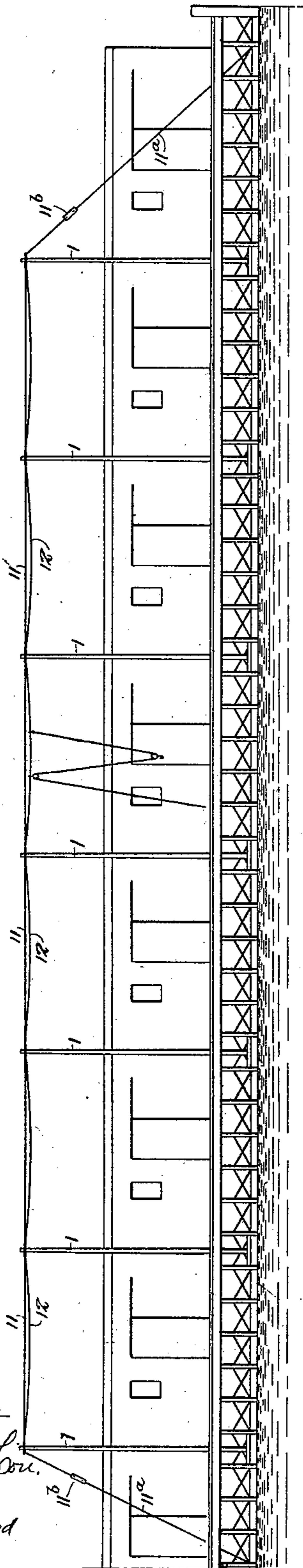
HOISTING APPARATUS FOR PIERS.

(Application filed May 1, 1899.)

(No Model.)

3 Sheets—Sheet 1.

Fig. 1.



Witnesses:-

Charles D. Cox.
Louis H. Whithead.

Fig. 2.

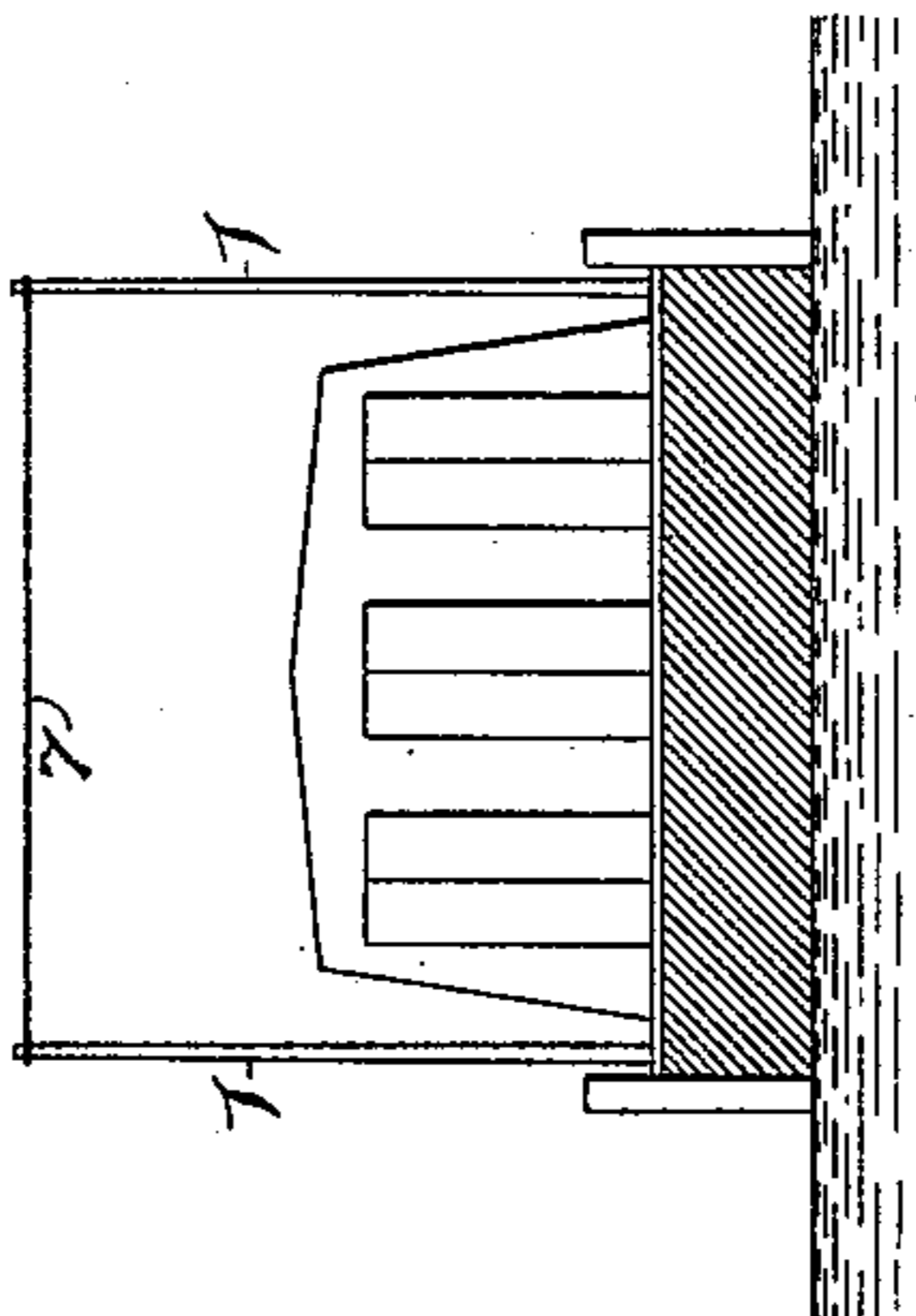
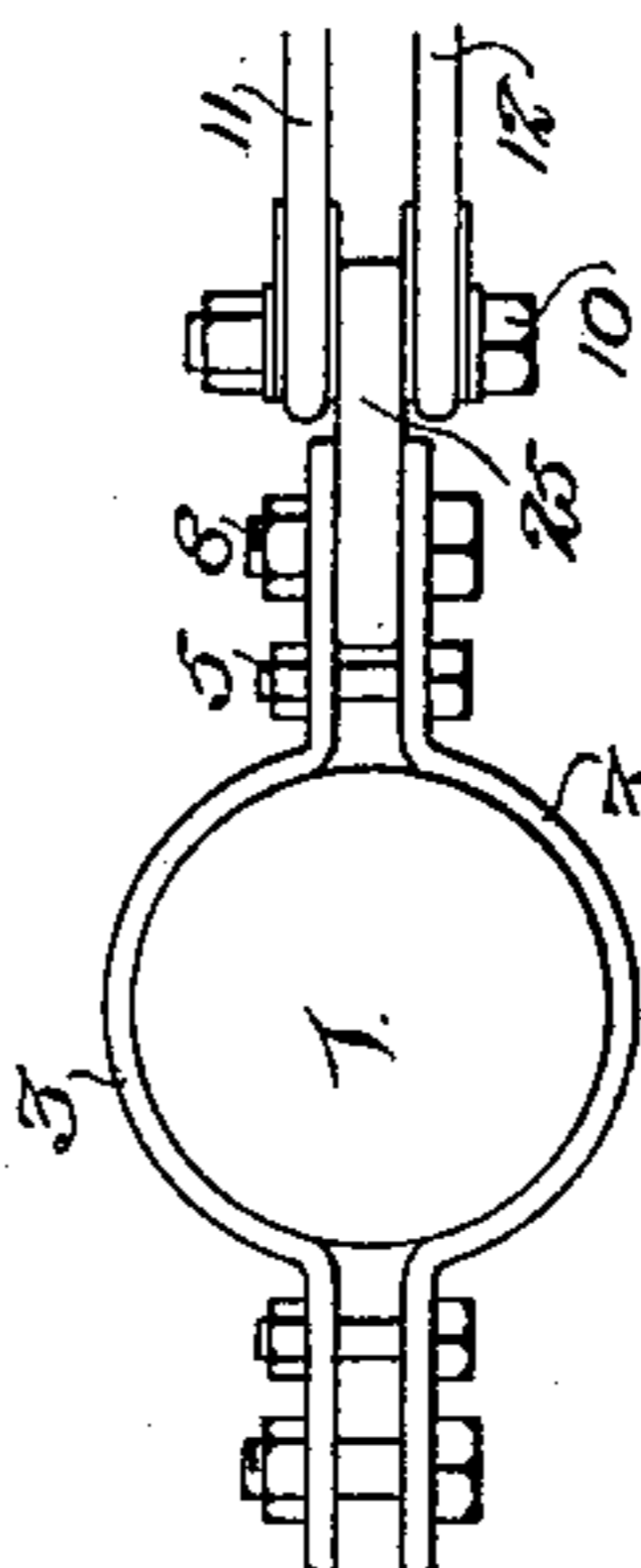


Fig. 3.



Inventor:

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by His Attorneys:

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Fig. 6.

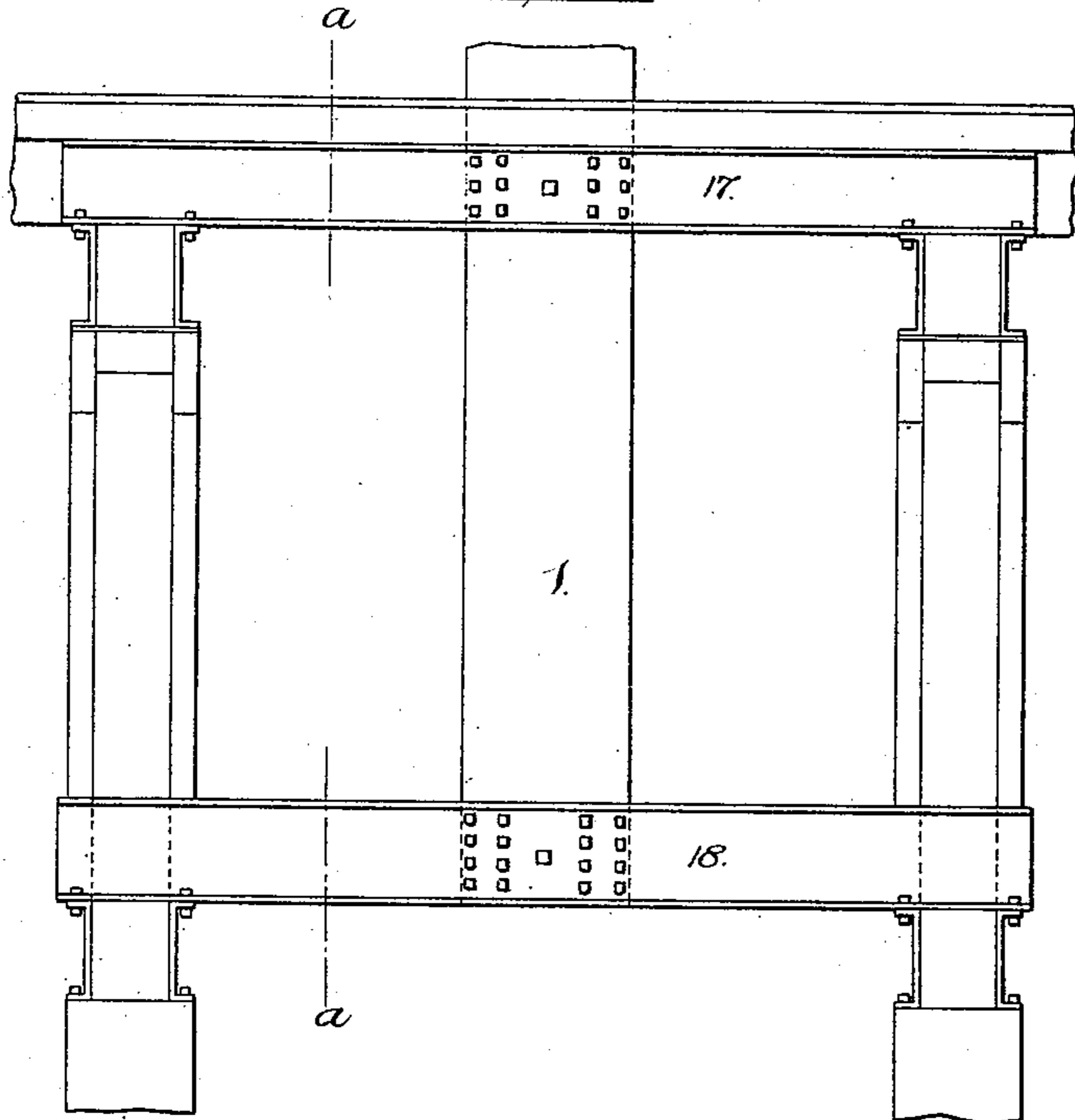


Fig. 7.

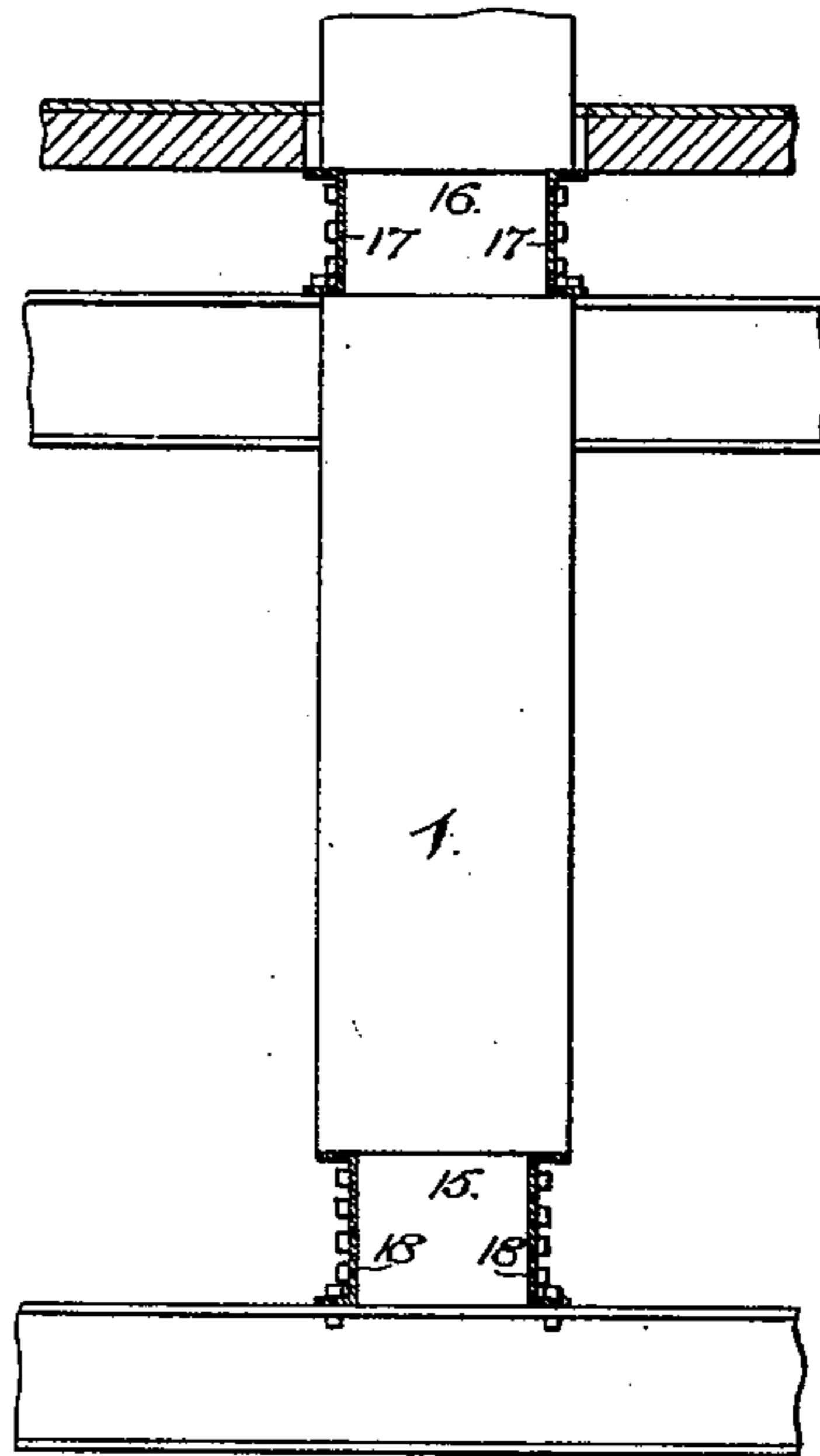


Fig. 8.



Fig. 11.

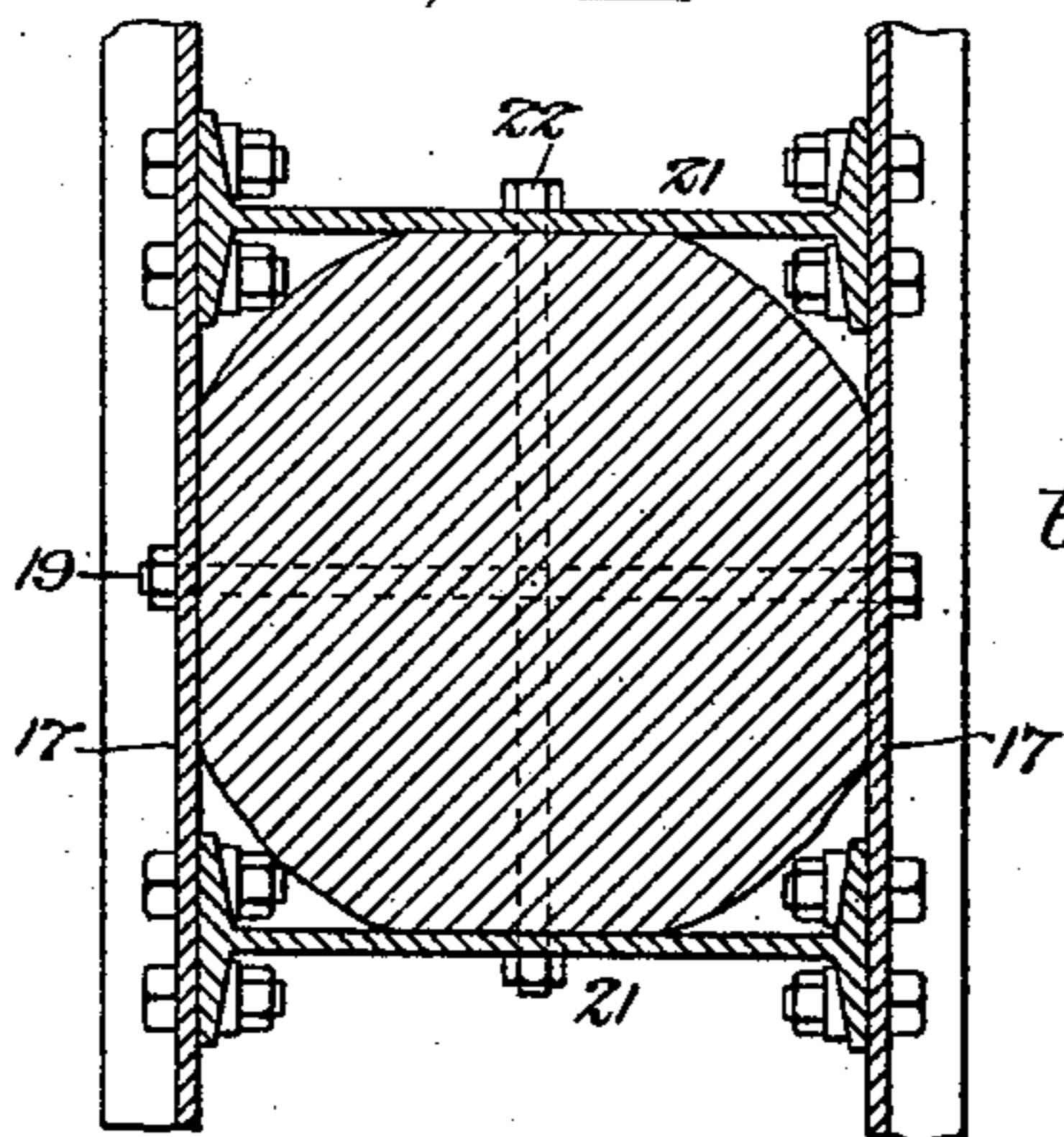


Fig. 9.

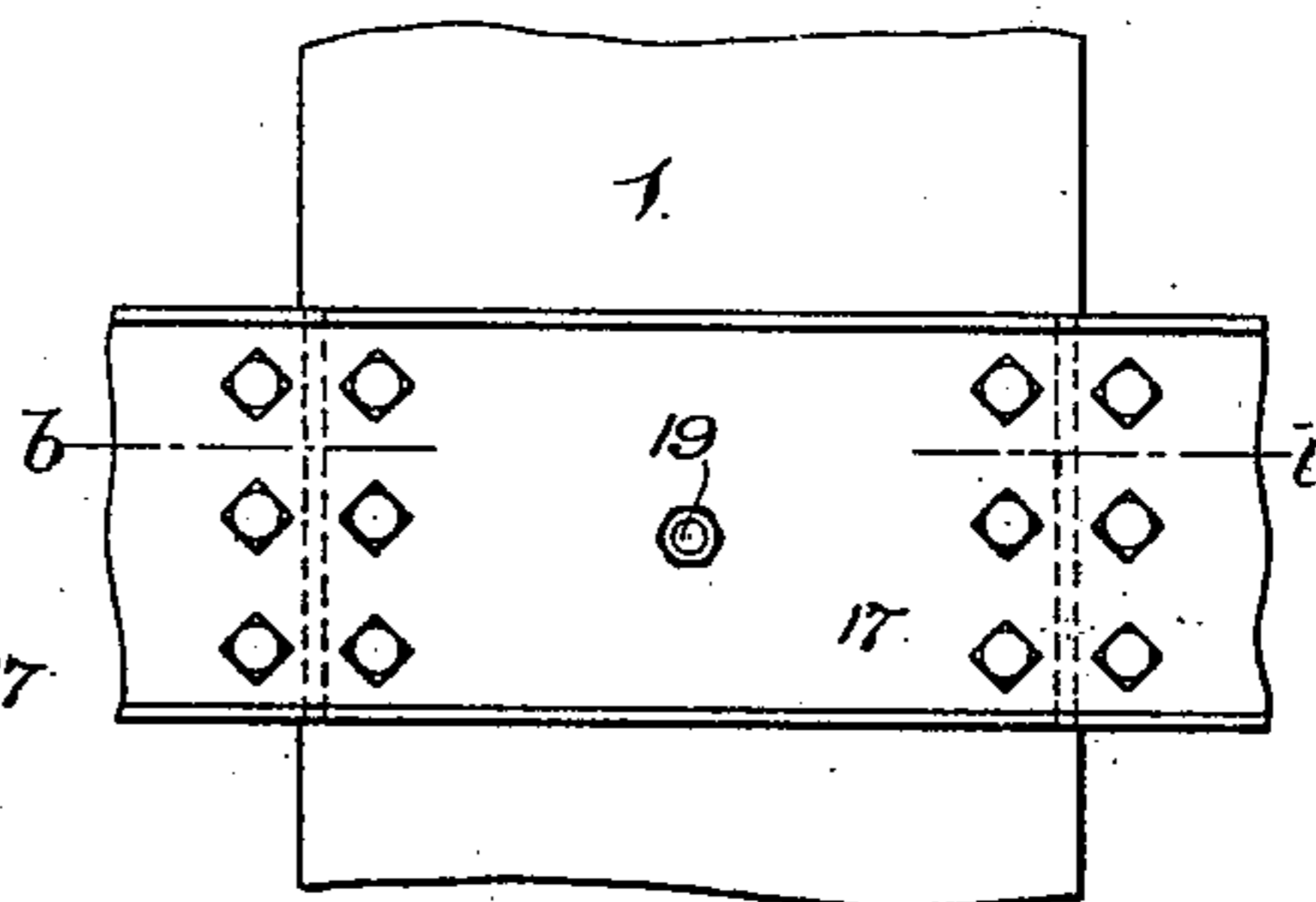


Fig. 12.

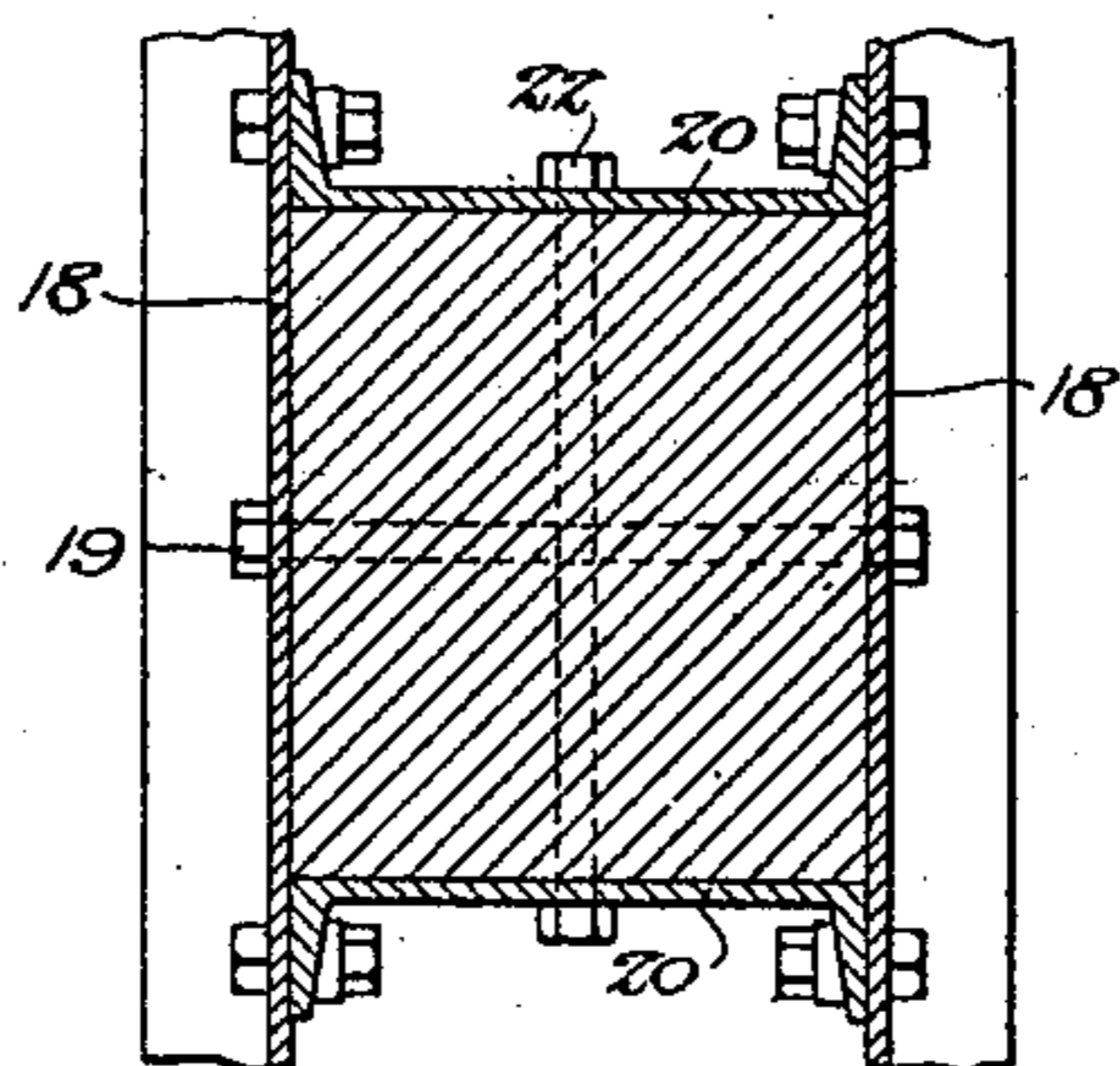
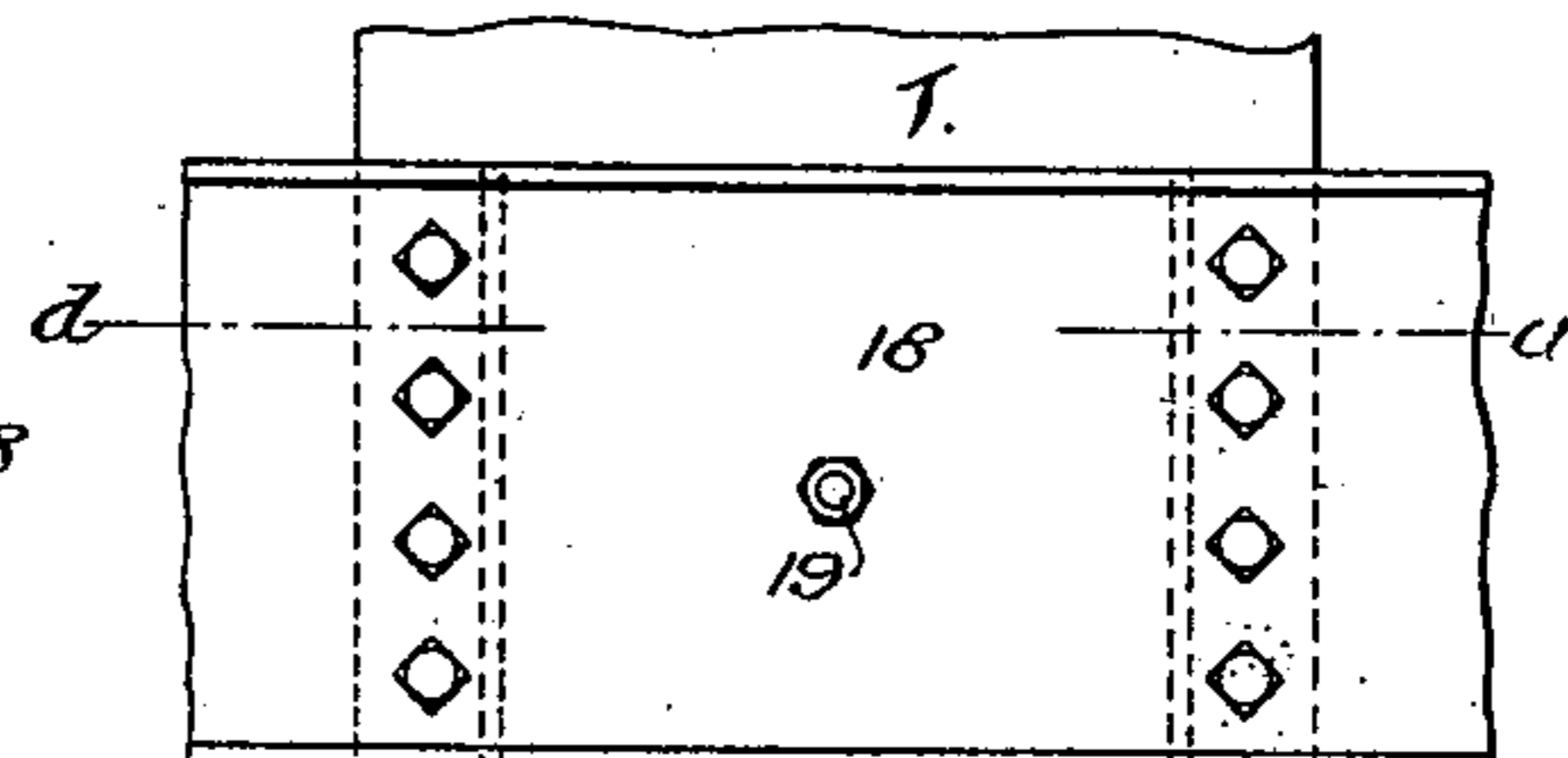


Fig. 10.



Witnesses:-
Charles H. Cox
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Inventor:-
Edwin Morrison.
by his Attorneys:
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UNITED STATES PATENT OFFICE.

EDWIN MORRISON, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO THE
FRANKLIN SUGAR REFINING COMPANY, OF SAME PLACE.

HOISTING APPARATUS FOR PIERS.

SPECIFICATION forming part of Letters Patent No. 636,161, dated October 31, 1899.

Application filed May 1, 1899. Serial No. 715,206. (No model.).

To all whom it may concern:

Be it known that I, EDWIN MORRISON, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain Improvements in Hoisting Apparatus for Piers, &c., of which the following is a specification.

My invention consists of certain improvements in hoisting apparatus or derricks such as are employed in connection with wharves or piers, one object of my invention being to provide for the proper bracing of the upper ends of the spars or poles which are arranged in a row alongside the pier and another object being to firmly and rigidly secure the lower ends of said spars or poles to the pier structure. These objects I attain in the manner hereinafter set forth, reference being had to the accompanying drawings, in which—

Figure 1 is a side view of a pier having hoisting apparatus constructed in accordance with my invention. Fig. 2 is an end view of the pier. Fig. 3 is an enlarged side view representing the upper ends of two adjoining spars or poles, with connections, in accordance with my invention. Fig. 4 is a top or plan view of the parts shown in Fig. 3. Fig. 5 is a view of the upper end of one of the spars, with certain clamps carried thereby, the view being taken in a direction at right angles to that constituting Fig. 3. Fig. 6 is a side view of part of the pier structure, showing the method of securing the lower end of the hoisting spar or pole thereto. Fig. 7 is a transverse section on the line *a a*, Fig. 6. Fig. 8 is a view of the lower end of one of the hoisting spars or poles. Figs. 9 and 10 are views on a larger scale than Fig. 6 and showing, respectively, the upper and lower connections for the spar or pole. Fig. 11 is a sectional plan view on the line *b b*, Fig. 9. Fig. 12 is a sectional plan view on the line *d d*, Fig. 10; and Fig. 13 is a plan view illustrating a modification of part of my invention.

Referring in the first instance to Figs. 1 and 2 of the drawings, it will be noted that along each side of the pier extends a row of vertical spars 1, or, as they are sometimes technically termed, "stevedore-sticks," the spars of the row along one side of the pier being directly opposite the corresponding spars of the row at the opposite side of the pier. Each of the

spars has secured to it near the upper end a pair of clamps 2 and 3, each clamp consisting of a pair of segmental plates fitting snugly to the spar and having at opposite sides of the same projecting ears 4, which are drawn together by means of bolts 5, so as to confine each clamp firmly to the spar.

The ears 4 of the lower clamp 2 of each spar are on the inner side of the spar longer than the outer ears, so as to carry the bolt 6, to which is secured one end of a transverse stay or guy rope or cable 7, which is stretched between the clamp 2 of a spar at one side of the pier and the corresponding clamp of an opposite spar at the other side of the pier, whereby the spars of the opposite rows are properly braced in a lateral direction—that is to say, in a direction crosswise of the pier.

The ears 4 of the upper clamps 3 project beyond the bolts 5 on both the fore and aft sides of the spars and carry bolts 8, which serve as a means of connecting to the clamp opposite cheek-pieces 9, these cheek-pieces carrying another bolt 10, which is adapted for engagement with the looped ends of two ropes or cables 11 and 12, the loops being, by preference, provided with suitable shoes 13 and the folded back portions of the ropes being confined together by means of clamp-yokes 14, as shown in Figs. 3 and 4.

The upper ropes or cables 11 are stretched taut between adjoining spars, so as to serve as longitudinal guys or braces for the upper ends of said spars, thereby connecting the upper ends of the spars of the entire row in such manner that they afford each other mutual support, neither spar being capable of yielding independently of the other.

From the end spars of the row guy ropes or braces 11^a extend diagonally to anchorages, and these diagonal guy-ropes may be provided with turnbuckles 11^b or other suitable means for taking up slack. The ropes or cables 12, however, have considerable slack and hang loosely between the adjoining spars, and it is upon these loose ropes or cables that the hoisting pulleys or other hoisting devices are supported, one of such hoisting devices being shown in Fig. 1. This not only permits the pulley or other hoisting device to swing to and fro laterally, so as to better accommodate

itself to the direction of pull upon it, but it also enables the entire strength of the rope or cable 12 to be devoted to sustaining the load which is to be hoisted, whereas if the hoisting device was mounted upon a tightly-stretched guy or brace rope the additional strain upon the latter due to the hoisting would have a tendency to overstrain it and cause it to break. Hence the importance of employing one rope as a means of bracing the upper ends of the spars and an independent rope as a means of support for the hoisting mechanism.

The lower ends of the spars 1 are supported upon the pier structure in the manner best illustrated in Figs. 6 to 12. On reference to Fig. 8 it will be observed that the spar is mortised at the lower end, as shown at 15, and on reference to Figs. 1, 6, and 7 it will be seen that in the pier structure there are at those points where the spars 1 are located upper and lower pairs of longitudinal girders 17 and 18, the lower pair receiving between them the mortised lower end 15 of the spar and the upper pair receiving between them the spar at a point some distance above said mortised lower end, the spar being securely confined to the girders by means of transverse bolts 19. To the mortise 15 are also fitted transverse toe-plates 20, which connect the pair of girders 18, similar tie-plates 21 connecting the girders 17 and bearing upon the spar, and these tie-plates are connected by longitudinal bolts 22, passing through the spar, as will be understood on reference to Figs. 9 to 12. A firm and rigid support for and confinement of the lower ends of the spars 1 is thus provided, and this, in connection with the braces for the upper ends of said spars hereinbefore described, causes said spars to be held so rigidly in position that they provide at all times a proper support for the hoisting-tackle.

The looped ends of the wires or cables 11 and 12 or either of them may, if desired, be adapted to the bolts 8 instead of to the special bolts 10 carried by the projecting cheek-pieces; but such modified construction would necessitate the separation of the ears 4 of the clamps to a greater extent than is desirable. Hence the use of the cheek-pieces and special bolt is preferred. Instead of the pair of cheek-pieces, however, flanking the ears 4 of the clamp and confining between them the looped ends of the ropes or cables 11 and 12 I may, as shown in Fig. 13, use a single central bar 25, projecting from between the ears of the clamp-plates and flanked by loops of the cables 11 and 12, said loops being laterally confined by the head of the bolt 10 and by the nut applied to said bolt.

Having thus described my invention, I

claim and desire to secure by Letters Patent—

1. The combination of a series of spars constituting supports for hoisting mechanism, with taut guy ropes or braces connecting the upper portions of adjoining spars together and to suitable anchorages, and loose ropes extending from spar to spar and carrying the hoisting device, substantially as specified.

2. The combination of a double row of spars constituting supports for the hoisting mechanism, with taut guy ropes or braces extending from the upper portion of a spar of one row to the upper portion of a corresponding spar of the other row, taut guy ropes or braces connecting the upper portions of the spars of each row, and loose ropes extending from spar to spar of each row and carrying the hoisting devices, substantially as specified.

3. The combination of a spar constituting part of a hoisting device, a clamp secured to said spar and having projecting ears, a bolt carried by said ears, a structure mounted upon said bolt and carrying, beyond the ends of the ears, an independent bolt, and a guy-rope and a hoist-supporting rope having looped ends engaging said independent bolt, substantially as specified.

4. The combination of a spar constituting part of a hoisting apparatus, a clamp secured thereto and having projecting ears a bolt carried by said ears, cheek-pieces secured to said bolt and projecting beyond the ears, a bolt carried by said cheek-pieces, and a guy-rope and a hoist-supporting rope having looped ends confined between the cheek-pieces and engaging with the bolt carried thereby, substantially as specified.

5. The combination of a mortised spar or derrick-post, with a pier structure having upper and lower pairs of longitudinal girders confining vertically-separated portions of the spar, and transverse tie-plates connecting girders of each pair and likewise engaging the spar, substantially as specified.

6. The combination of a mortised spar or derrick-post, with a pier structure having upper and lower pairs of longitudinal girders confining vertically-separated portions of the spar, transverse tie-plates connecting the girders of each pair, and likewise engaging the spar, and bolts for securing the spar to said girders and tie-plates, substantially as specified.

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

EDWIN MORRISON.

Witnesses:

F. E. BECHTOLD,
JOS. H. KLEIN.