

933,386.

Patented Sept. 7, 1909.

2 SHEETS—SHEET 1.

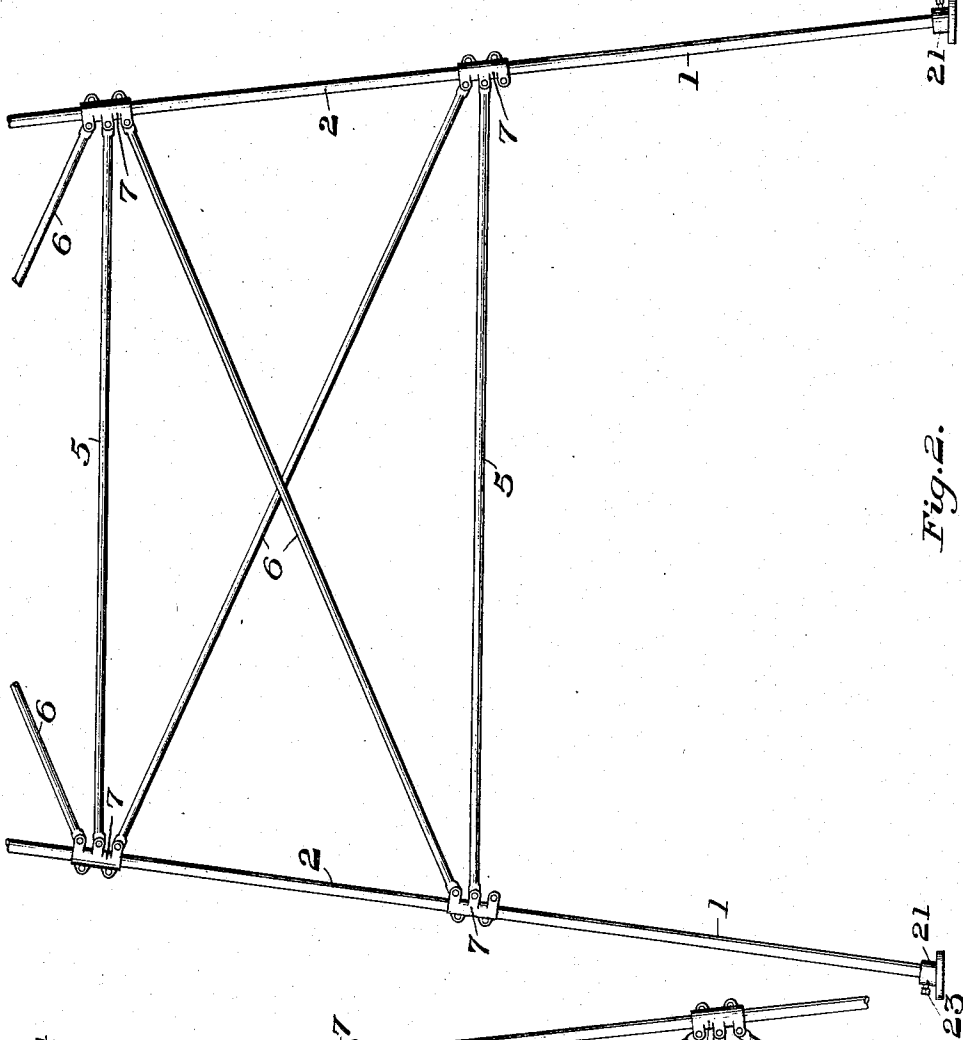


Fig. 2.

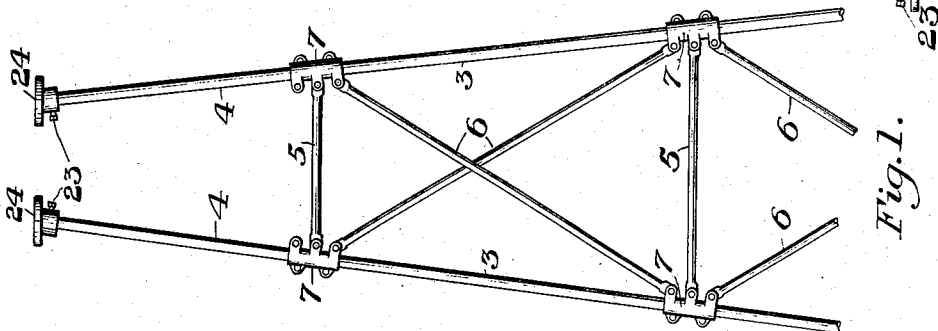


Fig. 1.

WITNESSES

Walter Samaniss
Marie Draper.

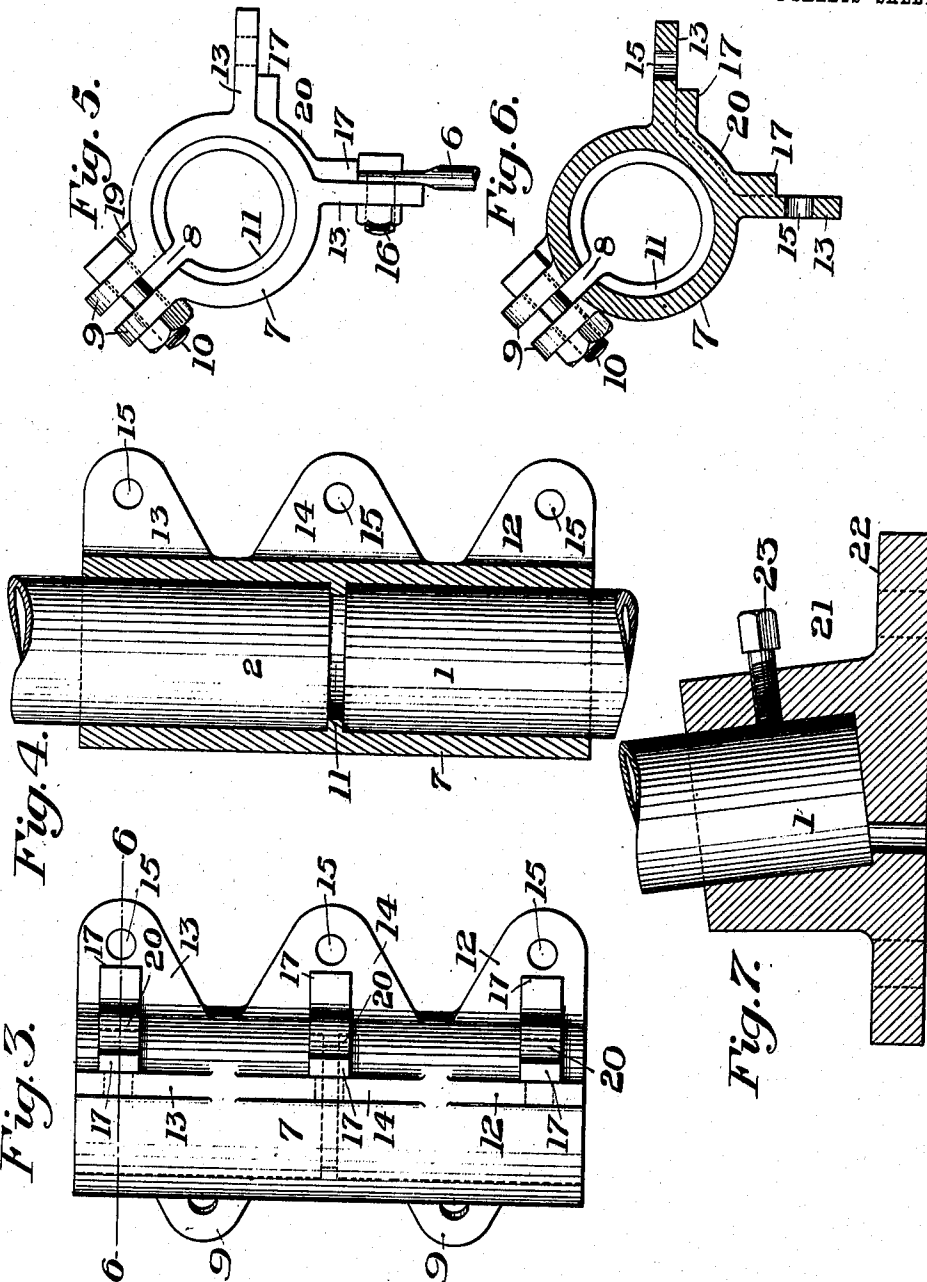
INVENTOR

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3 SHEETS—SHEET 2.



WITNESSES

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UNITED STATES PATENT OFFICE.

THOMAS A. NEILL, OF MANNINGTON, WEST VIRGINIA.

OIL-WELL DERRICK.

933,386.

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Application filed August 13, 1908. Serial No. 448,279.

To all whom it may concern:

Be it known that I, THOMAS A. NEILL, a resident of Mannington, in the county of Marion and State of West Virginia, have invented a new and useful Improvement in Oil-Well Derricks, of which the following is a specification.

This invention relates to towers and more especially to oil well derricks.

The object is to provide an all-metal tower or derrick which is composed of a few simple parts, which is of comparatively light weight so as to reduce the cost of transporting to the wells, and which can be easily and rapidly erected by unskilled labor with the use of only a few common tools.

The invention comprises the construction and arrangement of parts hereinafter described and claimed.

In the accompanying drawings, Figure 1 is an elevation of the top portion of an oil well derrick constructed according to my invention; Fig. 2 is a similar view of the lower portion of the same; Fig. 3 is a side view on an enlarged scale showing one of the clamp sockets; Fig. 4 is a vertical section of the same showing portions of the legs; Fig. 5 is a plan view of the same; Fig. 6 is a horizontal section on the line 6-6, Fig. 3; and Fig. 7 is a vertical section through one of the feet.

The derrick or other tower is intended to be constructed entirely of metal tubes, with the necessary connecting parts, in order to get maximum strength with minimum weight. The derrick is provided with four legs as is usual, placed on an incline so that the derrick tapers toward the top as is usual. These legs are composed of a series of sections of tubes, the bottom ones indicated at 1, intermediate ones at 2 and 3, and the top sections at 4. The legs are connected by the horizontal members or girts 5, and diagonal braces 6, thus giving a built up tower or derrick of the usual type. The leg sections are joined by suitable clamp sockets 7, which are so constructed as to also have the girts and diagonal braces connected thereto. Each clamp socket is practically a tubular sleeve slit or open at one side, as at 8, from top to bottom and provided at the opening with radial flanges or ears 9 which are perforated for receiving compression bolts 10, by means of which the flanges or ears can be drawn together and the socket clamped onto the leg sections. Internally the sleeve is provided

about midway of its length with the rib or ledge 11, which lies between the ends of adjacent leg sections, resting upon the lower leg section so as to prevent the sleeve from slipping down over the same, while the upper leg section rests on top of said ledge or rib. The ledge or rib is substantially midway between the ends of the sleeve so as to give a deep seating for the leg sections for a given length of sleeve.

Each sleeve is provided with flanges or ears projecting substantially radially and located substantially 90 degrees apart and serving as connecting means for the girts and braces. As shown, each sleeve is provided with a pair of such ears 12 near its lower end for the attachment of the lower braces 6 and with a similar pair of ears 13 for the attachment of the upper braces 6 and with a pair of intermediate ears 14 for the attachment of the girts. The ears 12, 13 and 14 might of course be one continuous flange, but for the sake of lightness a part of the metal is omitted, thus forming ears instead of continuous flanges. Each ear is perforated as at 15 for receiving a bolt 16 or the like by means of which a brace or girt is connected to the sleeve. Each ear or flange is provided adjacent to the bolt hole 15 with a boss 17 against which the head of the bolt contacts so as to prevent the latter from turning when the nut is being screwed on or off. These bosses also serve as abutments for the ends of the girts or braces, as indicated in Fig. 5, so as to somewhat relieve the bolts from shearing stresses. Similar bosses 19 are provided on the radial ears or flanges 9 and serve to prevent rotation of the compression bolts 10.

Reinforcements 20 are provided on the sleeve between the pairs of flanges or ears to which the braces and girts are connected, such reinforcements being in the form of ribs running into the bolt head bosses 17. These reinforcements take care of the stresses due to the braces and girts on the two adjacent sides of the derrick or tower. These reinforcements do not extend around the main portion of the body of the sleeve, but the latter is left without special reinforcement and of substantially uniform thickness so that it can yield quite readily and be very tightly clamped on the leg sections.

The legs at their lower ends are set into sockets 21 provided with plates 22 forming the feet for the legs and arranged to be

bolted to a suitable foundation. Binding screws 23 extend through the walls of the sockets 22 and against the lower ends of the legs. At the tops exactly similar members 5 are used except that they are reversed, so forming the caps 24 with horizontal flat upper faces upon which may be placed the beams or other members for supporting the oil well rig.

10 The leg sections are formed of metal tubes and the braces and girts likewise are of smaller sized tubes, thus giving maximum strength for minimum weight. The ends of the girts and brace tubes are preferably 15 flattened as shown, so as to permit a more convenient attachment to the clamps or sleeves. The feet and caps can be of castings, such as cast iron, but the clamp sockets or sleeves are preferably of cast steel, so as 20 to give greater strength and enable the same to be used as a clamp in the true sense of the term and also to make them practically indestructible.

The entire derrick is very light, even compared with wooden derricks, thus facilitating transportation, which is of importance 25 as the wells are frequently located in mountainous and other locations difficult to reach. The tubes can all be cut before shipment and only a few simple parts are necessary. 30 These can be readily erected by unskilled labor. In erection, the lower sections of the legs are first erected and clamped in the feet, sleeve sockets are then slipped over the upper 35 ends of the same until the rib or ledge 11 rests on top of the leg sections, when the first set of girts can be connected thereto. The next leg sections are then set into the sleeves or sockets and the compression bolts 40 tightened up to clamp the adjacent ends of the leg sections. Other sleeves or sockets are then placed on the upper ends of these second leg sections, after which another set of girts and a set of diagonal braces are applied; this 45 is continued until the derrick or tower is completely erected. In this work no tool is necessary other than an ordinary wrench of sufficient size. The consequence is that the derrick or other tower can be erected at a 50 minimum labor cost.

While the invention is particularly adapted for oil well derricks, it will be understood that it is also adapted for a tower for any purpose.

55 What I claim is:

1. A metal oil well derrick or tower comprising tubular leg sections, clamping sockets

uniting the ends of adjacent leg sections and provided with two sets of perforated ears or flanges located substantially 90 degrees apart 60 and each set providing three perforations arranged in vertical relation to each other, and tubular girts and braces provided with flattened perforated ends, a girt being bolted to the intermediate perforation in each set of 65 ears or flanges and a brace bolted to the upper and lower perforations of each set of ears or flanges.

2. A metal oil well derrick or tower comprising tubular leg sections, sockets receiving the ends of adjacent leg sections and 70 each comprising a sleeve slit on one side and provided at the slit with radial flanges or ears for receiving compression bolts, and provided with two sets of perforated ears or 75 flanges each providing three perforations arranged in vertical relation to each other, said socket having braces extending between said ears to flanges substantially in line with the perforations, but having the remainder of its 80 body of substantially uniform thickness, and braces and girts having their ends bolted to said ears or flanges.

3. A clamp or socket for oil well derricks and towers comprising a sleeve slit on one 85 side and provided at said slit with radial flanges or ears for receiving compression bolts, and provided opposite said slit with two sets of perforated radial ears or flanges for the connection of braces and girts, and 90 being provided with braces or reinforcements between said ears or flanges substantially in line with the perforations therein, said sleeve between said perforated ears or flanges and the slit being of substantially uniform thickness. 95

4. A clamp or socket for oil well derricks or towers comprising a sleeve open on one side and provided at said opening with radial 100 flanges or ears for receiving compression bolts, and being provided opposite said opening with perforated radial ears or flanges for the connection of braces and girts, and being provided with braces or reinforcements between said last named flanges 105 or ears, said braces or reinforcements extending onto the flanges or ears into proximity to the perforations therein.

In testimony whereof, I have hereunto set my hand.

THOMAS A. NEILL.

Witnesses:

D. J. ONEIL,

J. M. CARRAHAN.