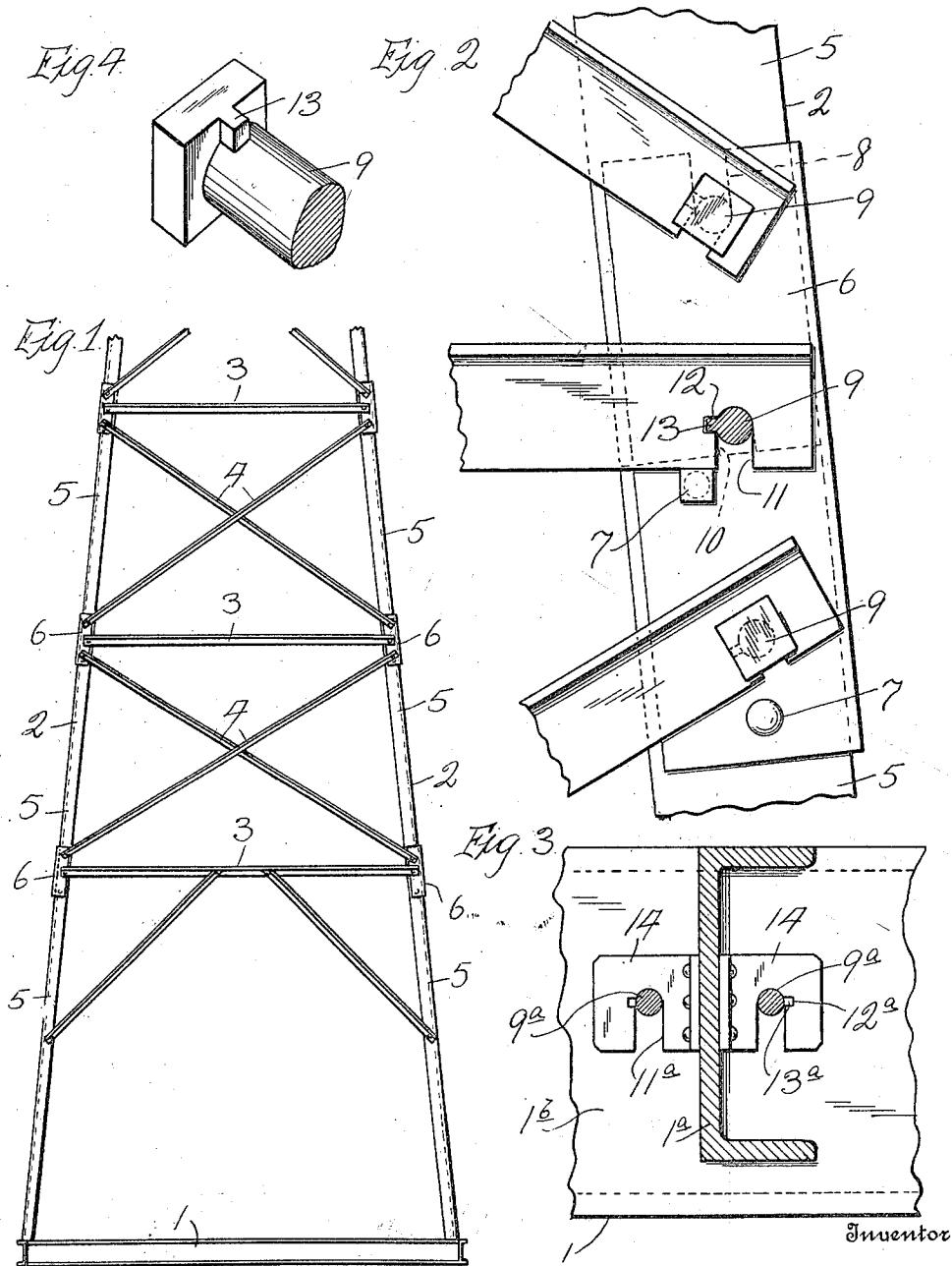


P. YORKE.
METALLIC DERRICK.
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1,090,955.

Patented Mar. 24, 1914



Witnesses

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METALLIC DERRICK.

1,090,955.

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To all whom it may concern:

Be it known that I, PATRICK YORKE, a citizen of the United States, residing at Washington, in the county of Washington and State of Pennsylvania, have invented certain new and useful Improvements in Metallic Derricks, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to improvements in metallic derricks for use in drilling oil, gas, salt and Artesian wells although equally applicable for mining shafts, hoists and other towers generally, and it has for its primary object an apparatus or structure of this character, the parts of which are so constructed and arranged that they may be quickly assembled and disassembled without putting in or taking out a single bolt.

To those familiar with the art to which this invention appertains, it is well known that in drilling gas wells, for example, it is unnecessary to leave the derrick permanently erected over the well after it has once been drilled and, consequently, it is a desideratum to provide a structure which can be erected and dismantled at a minimum of cost and quickly and with comparatively little labor and hence my invention aims, in one of its aspects to attain this result and to provide a derrick or similar structure which will possess to a marked degree the susceptibility of being erected and dismantled expeditiously and without the use of special tools and with a minimum of labor.

To accomplish this result, my invention consists in a structure of this character in which the parts may be quickly connected together by the use of bolts fitting in slots or recesses in the edges of the parts, in contradistinction to holes, whereby it is only necessary in dismantling the derrick or tower, to slightly loosen the nuts on the bolts without entirely removing the latter, whereupon the leg sections, braces and girts may be detached, leaving the bolts in the parts which carry them, so that they will always be at hand when desired again for a subsequent assembling of the parts, none of them being lost but being immediately at hand, while at the same time as is evident, it will only be necessary for the rigger to be equipped with a hand wrench or simi-

lar small tool to tighten up the nuts again on the bolts when the parts are assembled.

It will at once be apparent that holes or openings lying entirely within the margins of the parts for receiving the bolts possess advantages over an ordinary slot or recess formation, owing to the fact that with the ordinary slot or recess formation, for example, some of the tackle used in hoisting the parts might catch in parts already assembled but not securely so, due to some failure on the part of the rigger to tighten up the nut securely, and in such event, the parts thus caught or entangled might become entirely detached and fall or otherwise cause damage to the structure and accident to the workmen or others.

With a knowledge of these conditions, it is a further object of my invention to provide very simple means whereby the bolts may be received in openings which will possess not only the advantages of the notch or recess formation but the advantages of the hole formation also, and to this end my invention further consists in bolt receiving openings which open out into the edges of the parts in which they are formed, but at the same time are formed in one or both of their side walls with laterally extending recesses designed to engage and coact with lugs that are formed on the shanks of the bolts whereby, even though the nuts may be slightly loose, no detachment of the parts is possible until there is a movement of the bolt in a direction longitudinally thereof sufficient to remove the lugs from the recesses which are designed to receive them; and this movement must of necessity be sufficient to preclude any accidental displacement of the bolt owing to a slight and unintentional loose condition of the nut.

With these and other objects in view as will more fully appear as the description proceeds, the invention also consists in certain constructions, arrangements and combinations of the parts that I shall hereinafter fully describe and claim.

For a full understanding of the invention reference is to be had to the following description and accompanying drawing, in which—

Figure 1 is a side elevation of a portion of a derrick embodying the improvements of my invention; Fig. 2 is an enlarged fra-

mentary view thereof; Fig. 3 is a detail sectional view hereinafter specifically referred to; and Fig. 4 is a fragmentary perspective view of one of the bolts.

Corresponding and like parts are referred to in the following description and designated in all of the views of the accompanying drawing by like reference characters.

In describing the invention in detail, it is to be borne in mind that the embodiment of the invention illustrated in the accompanying drawing is for the purpose of illustration only and that hence only the vertically disposed or extending portion of a well-drilling derrick is shown, the drilling rigs being purposely omitted as unnecessary to a full understanding of the principles and improvements of the inventive idea.

In the drawing, the numeral 1 designates the base of the derrick, 2 the upwardly converging legs as a whole, 3 the girts which extend horizontally from one leg to another and 4 the leg braces. Preferably the side and cross sills of the bars are of channel formation while the legs, girts and braces are of angle material.

The legs 2 are built up or formed in sections each of which is designated 5. The sections are disposed in longitudinal alignment with each other with their ends abutting and at the joints of the sections splice bars 6 are disposed in overlapping relation to the adjoining section, as clearly illustrated in the drawing. These splice bars are riveted, as at 7, to the subjacent sections and are formed at their upper edges with upwardly opening and vertically disposed recesses 8 into which are designed to fit the bolts 9 that are carried by the superjacent and abutting leg sections in an evident manner. Said last named leg sections are formed in their lower edges with vertically disposed and downwardly opening recesses 10 for accommodating the bolts 9 immediately contiguous to the joints.

It will be seen that the girts 3 and the braces 4 are formed near their ends and in their lower edges with downwardly opening and vertically disposed recesses 11 which are formed in their side walls with laterally extending recesses or notches 12 designed to receive lugs 13 formed on the shanks or heads of the bolts immediately next to the inner faces of the latter.

From as much of the specification as has preceded in connection with the correlated views of the accompanying drawing, it will be manifest that the parts may be very readily assembled and the derrick structure erected, owing to the bolt receiving slots of the splice bars 6, leg sections and girts and braces; and it is to be particularly noted that in the assembling of the parts, when the nuts are tightened up on the threaded ends of the bolts, the lugs 13 being received in

the notches 12 will securely prevent any of the parts from being displaced by any upward pull, even though the nuts have not been tightened sufficiently by the riggers to prevent such separation were it not for this lug and notch connection which renders it impossible for the girt, for example, to be displaced by any upward movement, until the nuts have been loosened sufficiently to permit of a longitudinal or axial movement of the bolt a distance sufficient to remove the lug entirely from the notch. And even though the nuts might be accidentally left loose enough for this axial movement of the bolts, yet, as the bolts in the present instance are shown in horizontal position, it is at once apparent that the lug and notch arrangement of itself will tend to preclude the liability of accidental displacement.

It is to be understood that the invention is not limited to any particular construction or arrangement of the parts, except as defined by the appended claims, and that various changes may be made in construction, arrangement and proportions, without departing from the scope of the invention such as the claims define. For example, I have shown for the purpose of illustration a connection between one of the cross sills 1^a of the base 1 and one of side sills 1^b thereof. It will be seen that angular brackets 14 are riveted to the opposite sides of the cross sill 1^a at the ends thereof, the outstanding members of the brackets being adapted to abut against the inner faces of the side sills 1^b and being formed with downwardly opening bolt receiving recesses 11^a for the bolts 9^a, these recesses 11^a being formed in their side walls with laterally extending notches 12^a for the lugs 13^a of the bolts.

Various other applications of the inventive idea might be illustrated and described, but it is believed that the foregoing, in connection with the accompanying drawing is sufficient to enable those skilled in this art to practice the invention and to thoroughly understand the principles and improvements thereof.

It will be seen that by the use of the construction and arrangement of the parts described and illustrated, the structure embodying these improvements may be quickly erected and dismantled without the use of special tools and in a simple and expeditious manner without putting in or taking out a single bolt, the bolts being left in the parts which are designed to carry them whereby they will always be at hand and not be liable to become lost, while at the same time the provision of the lugs and notches in which they are intended to be received, will prevent all accidental displacement by any upward pull or strain, thereby clearly precluding all liability to danger and accident as set forth at the outset of the specification.

What I claim is:—

1. In a structure of the character described, legs constructed in sections designed for longitudinal alinement with each other with their ends in abutting relation, splice bars connected to the upper end of one section and overlapping the lower end of a superjacent section, said last named section being formed in its lower edge with a downwardly opening recess, the splice bar being formed in its upper edge with an upwardly opening recess, said recesses being designed to accommodate bolts, a girt formed in its lower edge with a downwardly opening recess by which it is adapted to slip over a bolt received in the leg recess, and a brace formed in its lower edge with a downwardly opening recess by which it is adapted to be slipped over a bolt in the splice bar recess, bolts in said recesses, the recesses in the girt and brace being formed in the walls with laterally extending notches and the bolts being formed with lugs receivable in said notches.
2. In a structure of the character described, legs formed in sections designed to be placed in abutting relation with each other, splice bars rigidly connected to the upper ends of a section and adapted to extend above a superjacent section, bolts carried by the splice bars one above the other

and the upper one being located above the upper edge of said superjacent section, another bolt carried by said superjacent section above said last named bolt, there being an upper and a lower and an intermediate bolt, said superjacent section being formed in its lower edge with a downwardly opening recess whereby it is adapted to be slipped down into the upper end of the splice bar over the intermediate bolt, the splice bar being formed in its upper edge with an upwardly opening recess adapted to receive the upper bolt, and braces and an intermediate girt, the braces being formed with downwardly opening recesses by which they are adapted to be slipped down over the upper and lower bolts and the girt being formed with a downwardly opening recess by which it is adapted to be slipped over the intermediate bolt, the recesses of the braces and girt being formed in their walls with laterally extending notches and the bolts being formed with lugs receivable in said notches for the purpose specified.

In testimony whereof I hereunto affix my signature in the presence of two witnesses.

PATRICK YORKE.

Witnesses:

D. W. GALL,
FREDERICK S. STITT.