H. A. BOWERS.

DERRICK.

APPLICATION FILED APR. 15, 1912.

1,030,640. Patented June 25, 1912.

Fig. 1.

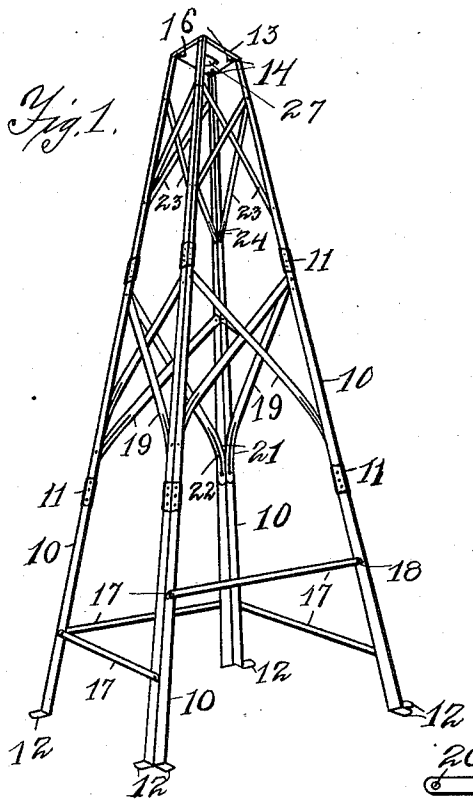


Fig. 2.

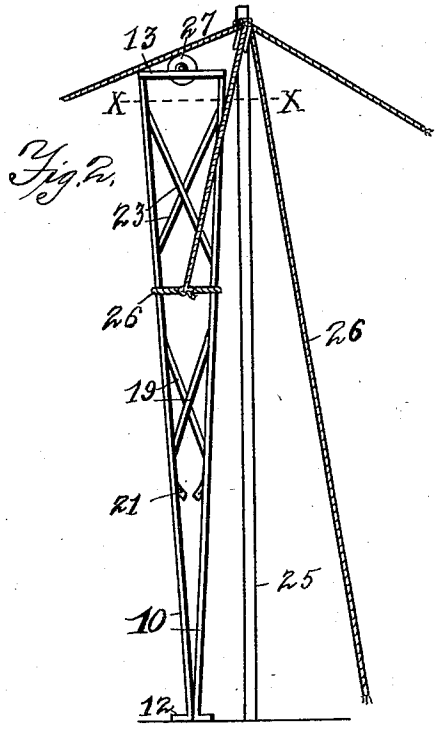


Fig. 3.

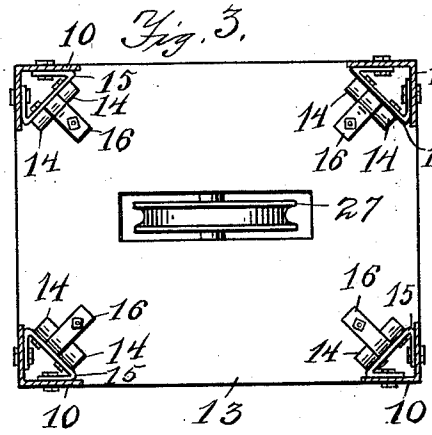


Fig. 4.

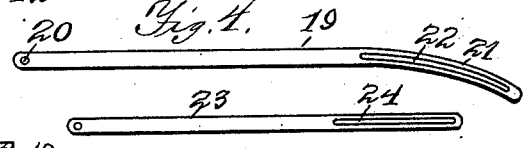
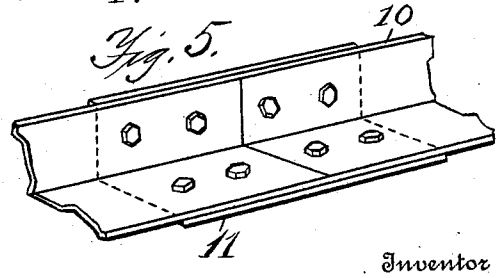


Fig. 5.



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DERRICK.

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To all whom it may concern:

Be it known that I, HENRY A. BOWERS, a citizen of the United States, residing at Jamestown, in the county of Chautauqua and State of New York, have invented certain new and useful Improvements in Derricks, of which the following, taken in connection with the accompanying drawings, is a specification.

The invention relates to derricks for oil wells and similar uses and the object of my improvement is to provide a simple and convenient collapsible derrick which may be easily set up or taken down by means of a gin pole and suitable blocks and cables, and when set up makes a rigid support for the drilling tools; and the invention consists in the combination and arrangement of the parts as shown in this specification and the accompanying drawings and pointed out in the claims.

In the drawings, Figure 1 is a perspective view of the derrick in a set up position. Fig. 2 is an elevation of the derrick collapsed and supported by a gin pole for either spreading the frame as in setting up or for lowering the same in order to move to another position. Fig. 3 is a sectional view of the derrick at line X X in Fig. 2 showing the hinged attachment of the supporting columns to the crown plate of the derrick. Fig. 4 shows elevations of one of each of the different braces used in the construction of the derrick. Fig. 5 is a perspective view of one of the joints of the supporting columns.

Similar numerals of reference refer to the corresponding parts in the several views.

The numeral 10 indicates one of the supporting columns which is preferably made of a plurality of lengths of angle iron joined together by means of angle iron plates 11 and bolts or rivets. The lower length has feet 12 turned therefrom for attachment to a suitable base or support. The upper ends of the angle iron columns 10 are hinged to the crown plate 13 preferably by means of lugs 14, on a plate 15 attached to the column 10. A bracket piece 16 is attached to the under side of the crown plate 13 and said bracket pieces 16 and lugs 14 are so placed upon the crown plate and upper ends of the angle iron columns that the inner sides of said columns face one another so that when collapsed or moved toward one another they will brace against each other and thereby strengthen the entire structure when in the collapsed position.

In order to support the columns 10 in a set up position a plurality of cross braces are provided which are pivotally attached to the wings on the angle iron columns 10 in the following manner: The lower cross braces 17 are preferably provided with notches 18 near each end for engaging suitable bolts on the angle iron columns 10, one of the braces being placed higher than the others to accommodate the walking beam of the drilling engine. Two sets of crossed braces extending around the derrick and braces 17 are usually sufficient to hold the columns 10 firmly in line. The lower set of crossed braces 19 are made with the hole 20 through the upper end and the lower end is curved as at 21 and has slot 22 lengthwise of the curved portion 21. The braces 19 are pivotally attached through holes 20 at their upper ends by means of bolts to the column 10 and by bolts through the slots 22 in the lower end. The curved ends 21 are required by the movement of the columns 10 from their set up or outspread position to a collapsed position or the reverse. The upper set of crossed braces 23 are the same as crossed braces 19 except that they are shorter and do not need to have curved ends in order to collapse the derrick. A lengthwise slot 24 is provided in their lower ends however. The braces 19 and 23 are attached to each side of the columns 10 and cross one another as shown and it is apparent that the sectional portions of the angle iron columns 10 may be taken to the place where it is desired to set up the derrick; that the said portions of the columns 10 then may be joined to one another by means of the bolts 11, said portions of the columns 10 would preferably be in twenty foot lengths for a derrick sixty feet in height, the common height for oil derricks; the columns 10 would then be attached to the crown plate 13 by means of the hinging lugs 14 and brackets 16; the braces 19 and 23 would then be attached to the four columns, the slotted ends of said braces being placed at the lower attachment so as to provide for the greater movement of the lower ends of the columns 10. It is apparent that the pivotal attachment of the upper ends and the pivotal sliding attachment of the lower ends of these braces permit free movement of the columns to and from one

another. A gin pole 25 is then set up at the position at which it is desired to place the derrick, being supported by suitable cables, and a rope and tackle are attached to the upper end of the pole 25. The rope 26 is attached around the collapsed derrick above its central portion and the derrick is raised to an upright position as shown in Fig. 2 by means of the rope and tackle. The columns 10 may then be spread to the positions desired, as shown in Fig. 1, after which the lower cross braces 17 are attached and the nuts of all the attaching bolts for each of the braces are then tightened, thereby rigidly holding the columns in the set up position, yet permitting the said nuts to be loosened and the entire derrick collapsed and removed for setting up at another oil well. The crown piece 13 is of course provided with the usual pulley 27 for the line supporting the drilling tools.

I claim as new—

1. A derrick comprising a crown plate, a plurality of columns hinged to said crown plate, a plurality of diagonally crossed braces to connect said columns, said braces pivotally attached to said columns at one end and the other ends having slots to engage the attaching bolts, and a series of removable horizontal cross braces around said columns near their lower ends to aid in holding said columns in the set-up position.

2. A derrick comprising a crown plate, an angle iron column hinged to each corner of said crown plate to move to and from one another, two series of diagonally crossed braces extending around said derrick to connect said columns, said series of crossed braces pivotally attached at their upper and lower ends to the wings of said angle iron columns, said lower ends of said crossed braces having lengthwise slots therein to receive the attaching bolts, curved lower ends on the lower series of said crossed braces to adapt said braces to the movement of said columns, and a series of removable horizontal braces connecting said columns near their lower ends.

3. A collapsible derrick comprising a crown plate, four angle iorn columns hinged diagonally across the corners of said crown plate to permit movement to and from one another, said columns formed in sections with bolts and angle iron connecting plates, an upper series of diagonally crossed braces having slotted lower ends bolted to the wings of said angle iron columns, a lower series of diagonally crossed braces bolted to the wings of said angle iron columns, curved lower ends on said lower diagonally crossed braces having curved slots lengthwise of the curved portion to receive the attaching bolts therethrough, horizontal cross bars having notches on their under sides to receive the attaching bolts therein and brace the lower ends of said columns, and feet on the lower ends of said columns, substantially as and for the purpose specified.

In testimony whereof I have affixed my signature in the presence of two witnesses.

HENRY A. BOWERS.

Witnesses:
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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."