RE. 25010

Feb. 11, 1958 H. R. POETKER 2,822,895

COLLAPSIBLE DERRICKS

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Fig. 1

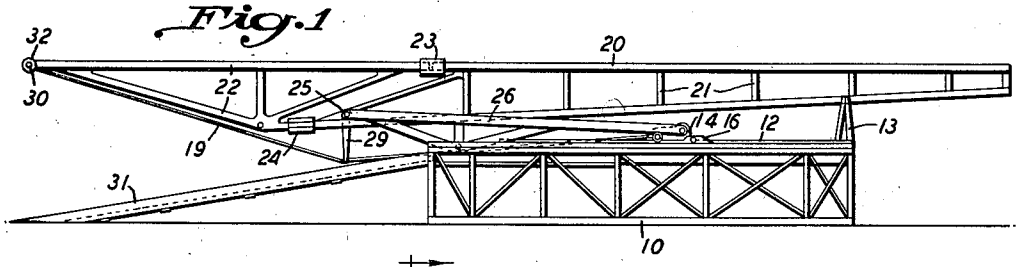
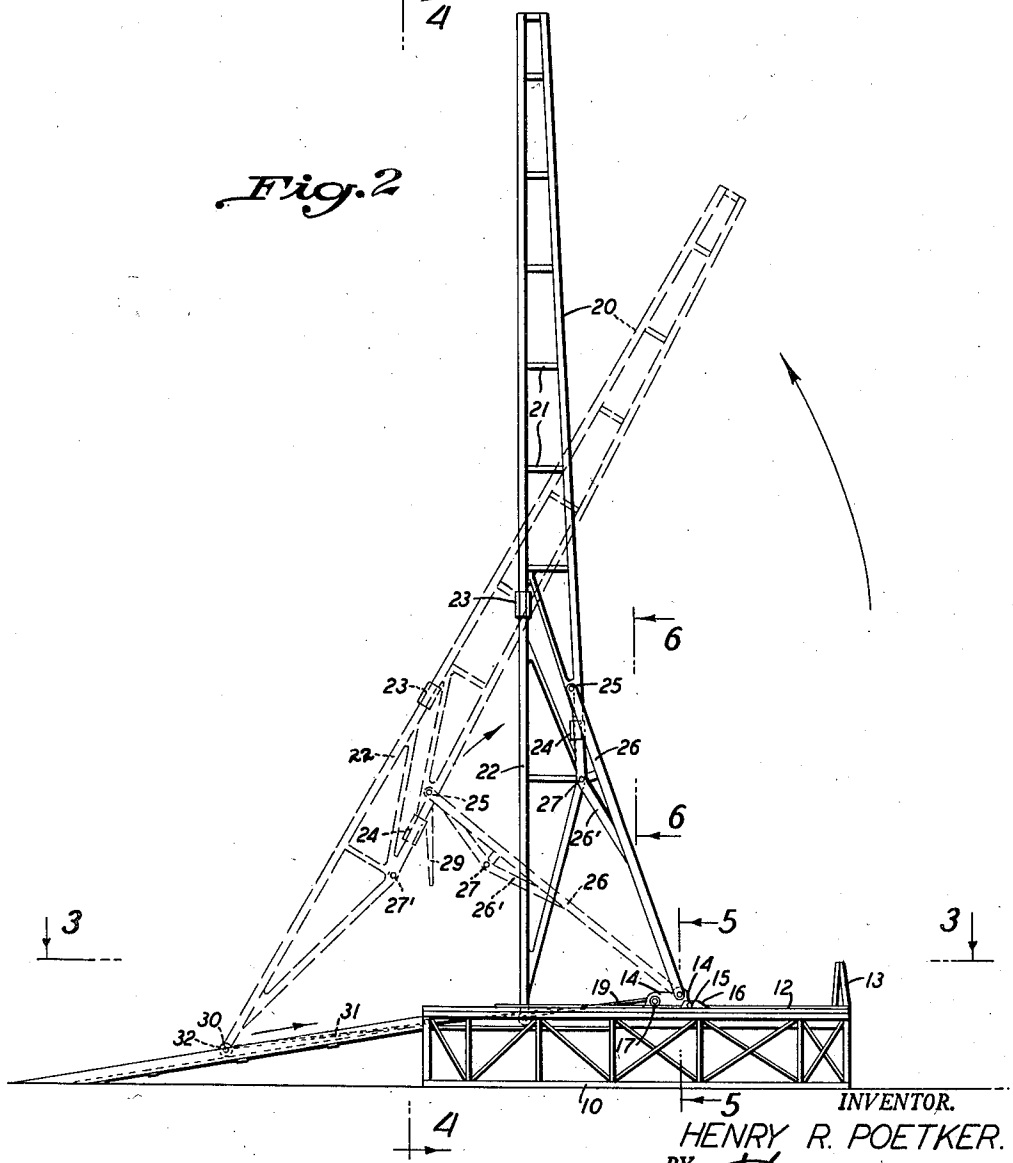


Fig. 2



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Fig. 3

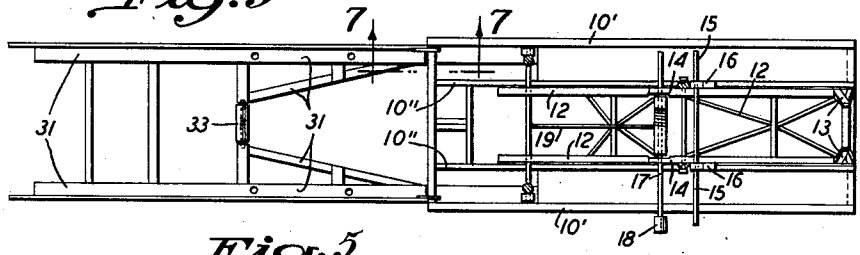


Fig. 5

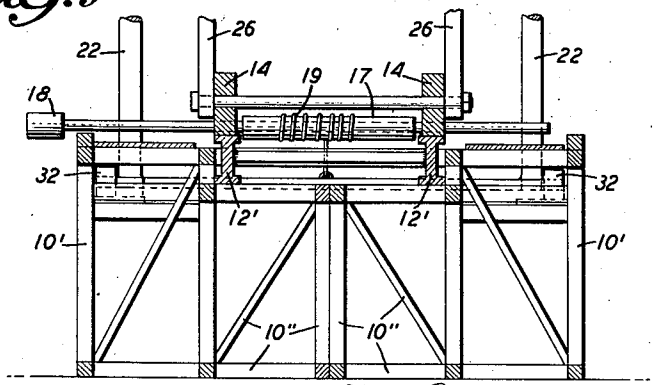


Fig. 4

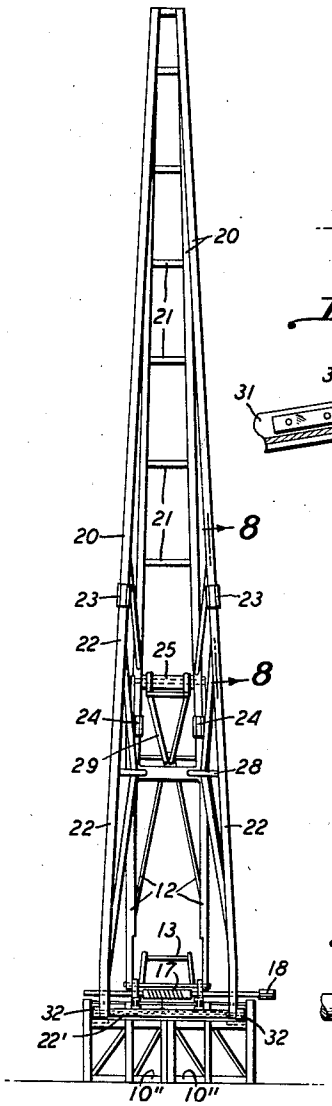
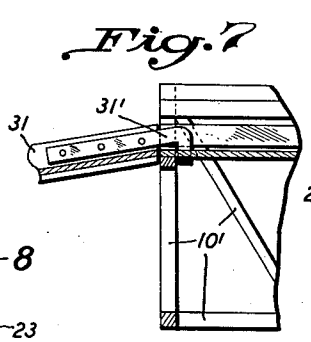


Fig. 6

Fig. 7



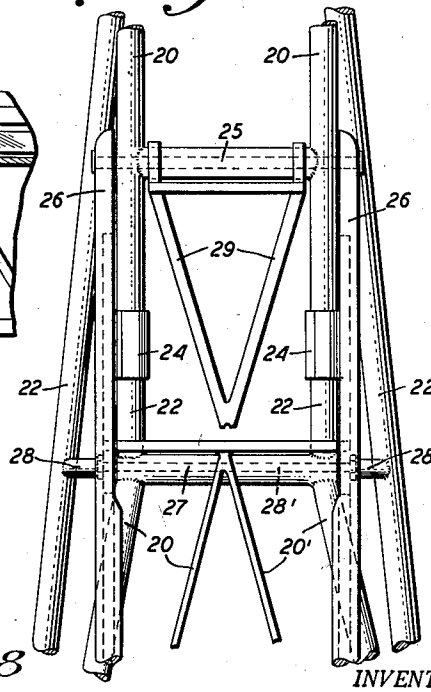
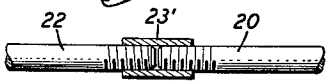


Fig. 8



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COLLAPSIBLE DERRICKS

Henry R. Poetker, Kerman, Calif.

Application February 13, 1953, Serial No. 336,790

3 Claims. (Cl. 189—15)

This invention relates to collapsible derricks, of the type shown in my Letters Patent No. 2,551,286.

This invention solves certain problems developed in connection with the derrick of the patent, and makes it possible to have a taller derrick and to raise and lower it more easily. Among the salient objects of the present invention are:

To provide a collapsible derrick of the character referred to having a supporting sub-structure which can be easily loaded on to a truck for transportation, and which can be slid off of said truck at the place where it is to be used;

To provide such a sub-structure having a removable section which can be removed after the derrick is set up for use, and so as to give clearance for oil well pump jacks and the like;

To provide improvements in the lower end of the derrick and the brace frame or supporting lever frame pivotally connected therewith, and which makes it possible to raise a taller derrick structure from a horizontal position to a vertical or operating position by means of a cable and power means therefor;

To provide in connection with a derrick structure, a brace or lever frame structure having a portion, referred to as an elbow, which can be bolted or secured to the derrick proper when it is in its upright position;

To provide in a derrick structure of the character referred to, a lower section which is detachable fom the derrick proper for transportation purposes, together with an inclined slide-way or frame for said lower detachable section of the derrick, and which skid frame is also detachable whereby to shorten the overall structure for transportation purposes.

Other objects and improvements will be apparent from the following detailed description of one practical embodiment of the invention, taken with the accompanying two sheets of drawings, in which:

Figure 1 is a side elevation of my improved collapsible derrick in its collapsed condition, but before the lower section and the inclined slide-way have been detached;

Figure 2 is a side elevation of the derrick in its raised or operating position, with a partially raised position thereof indicated in light broken lines;

Figure 3 is a plan view looking down on the supporting structure from the position of line 3—3 on Fig. 2;

Figure 4 is a front elevation of the derrick in its raised position, as seen from the line 4—4 on Fig. 2;

Figure 5 is a fragmentary vertical sectional view taken on the line 5—5 on Fig. 2;

Figure 6 is a fragmentary view as seen from line 6—6, Fig. 2;

Figure 7 is a detailed view, at line 7—7 on Fig. 3, showing the upper end of the inclined slide-way detachably hooked to the supporting sub-structure; and

Figure 8 is a detail showing one method of connecting the members of the detachable lower end of the derrick.

Referring now more in detail to the drawings, a supporting sub-structure of rectangular form is shown in

Figs. 1 and 2, and also in end view in Fig. 5. This supporting sub-structure is designated as a whole **10**, and may be built of any suitable material, and in any desired size. In the present form, there are two long side box-like structures, as **10'**, **10'**, with two removable short end sections, as **10''**, **10''**, at the front end of said main structure, and which can be removed after the derrick is set up for use, in order to give clearance at the front end of the structure for well equipment.

Mounted on said supporting sub-structure **10** is a horizontal base or skid frame, designated **12**, having at one end an upstanding bracket **13**, to receive the upper end of the derrick when it is lowered into its horizontal position. Said skid frame **12** also has intermediate its ends two side bearing members, **14**, **14**, forming a pivot bearing for the brace lever frame, again referred to, and also for supporting a windlass for a cable, also again referred to. This horizontal base structure or skid frame **12** is anchored to the supporting sub-structure **10**, by means of a cross shaft **15**, resting in open recesses in the side bearing members **14**, **14**, and through two lug members, **16**, **16**, on the adjacent top sides of the skid frame **12**, as seen in Fig. 3. By removing this cross shaft or rod **15**, it is possible to slide the long skid frame **12** off of said supporting sub-structure **10**. The lower opposite side members of said skid frame **12** are shown in the form of I-beams **12'**, **12'**, in section in Fig. 5. The bearing brackets or members **14**, **14** are shown mounted on top of said I-beams. A cable windlass, as **17**, is shown as having its bearings in said brackets **14**, **14**, with one end extended and provided with a drive pulley, as **18**, or other means for applying power to said windlass for winding a cable **19** thereon, and again referred to.

The derrick frame proper is designated **20**, and is shown to be somewhat tapering to its smaller end, which, when down, rests on the upstanding bracket **13**. The brace members of the derrick, designated **21**, are short cross pieces, as seen in Figs. 2 and 4. The derrick tower is composed of round members, as here shown, but might be made of any general construction.

A lower end section of said tower or derrick is shown and is designated as a whole **22**, and its members are connected to the derrick proper at four places, as at **23**, **23**, and **24**, **24**, at longitudinally and vertically spaced positions, as seen in Figs. 1 and 2. These connections can be made of internally threaded sleeves, as **23'**, having right and left hand threads in their opposite ends so that the two ends will be connected and drawn together as said sleeve is put in place, as indicated in Fig. 8.

The upper derrick frame has a cross bearing sleeve or member, as **25**, between its side members, as seen in Figs. 4 and 6. To the outer ends of this bearing member **25** are connected the upper ends of a long brace lever structure, designated **26**, the other end of which is pivotally connected to the brackets **14**, **14**, on the opposite sides of the skid frame **12**. Said brace lever or member **26** has side portions, as elbows, designated **26'**, having bearing connections, as at **27**, with the opposite sides of the derrick proper, after the derrick has been raised to its upright or operating position. It will be seen that said elbow portions **26'** of the brace lever member structure, and its pivot **27**, come into register with another bearing **27'** on the derrick structure, indicated in the light broken line positions in Fig. 2, before they are moved together, as seen in full lines in said Fig. 2. These members **27** and **27'** are secured together by bolts, or a through rod, designated **28**, through a bearing sleeve **28'** between the sides of the lower section of the derrick, and which is detachable by the turning of the threaded sleeves **23**, **23** and **24**, **24**. It will be seen that when the elbow portions of the brace frame **26**, and the derrick extension portion or section **22**, are secured together at

27, that the lower end of the upright derrick is of A-form, as seen in full lines in Fig. 2, and that the brace frame lever is connected to the derrick proper at two places, namely 25 and 27. The connections at 25 are to the derrick proper, and the connections at 27 are to the middle opposite sides of the derrick extension. This is clear from Fig. 2.

Hanging from the pivot shaft at 25, of the derrick proper, and where the opposite ends of the brace frame 26 are connected, is a V-form member 29, under the lower end of which passes the cable 19, from the windlass 17, said cable being extended to and connected with the lower end of the extended derrick structure, as at 30, whereby when the cable is pulled by the windlass, the lower extension of the derrick moves upwardly on the inclined slideway 31, to the supporting sub-structure and on to the skid frame 12.

An inclined and detachable slide-way, designated 31, is provided to furnish a slide-way for the lower end of said derrick extension, which is provided with rollers, as 32, 32, to run on the trackways in said inclined slide-way, as seen in Figs. 1 and 2. A roller, as 33, may be provided in said slide-way 31, as seen in Fig. 3, for the cable 19 to run on when said derrick extension is being pulled to the upright position, as seen in Fig. 2. Said inclined structure 31 is provided at its upper ends, at opposite sides, with hooks 31', 31', to hook on to the upper portions of the two side box-like structures 10', 10', as clearly seen in Fig. 7. The lower ends of the derrick extension 22 are connected with a cross bar 22', Fig. 4, and to this the cable 19 is connected for pulling said derrick extension up the inclined way 31, and to the upright operating position, seen in full lines in Fig. 2, and where the long brace structure or A-frame 26 is shown in place, with its elbow or angle portion 26' secured to the tower, as at 27.

It is stated that the two long side box-like structures 10', 10' of the substructure 10 are separate and can be separately moved to the place of use, and assembled to receive the skid-frame 12 with the derrick tower thereon from the truck which transported it.

Thus I have provided an improved collapsible derrick with a detachable lower section and with a type of brace structure which makes it practical to have a taller derrick tower when set up for use, and which can be taken down conveniently for transportation from one place to another.

I am aware that changes in details of construction and arrangement can be made without departing from the spirit of the invention, and I do not, therefore, limit the invention to the details and the specific embodiment of the invention shown and described for explanatory purposes, except as I may be limited by the hereto appended claims.

I claim:

1. A collapsible derrick of the character shown and described including an elongate horizontally disposed supporting base structure having front and rear ends, an elongate horizontally disposed brace frame with one end pivotally mounted on the top of said base structure at a point intermediate its ends and projecting forwardly therefrom, said brace frame having a depending elbow portion formed on its under side at a point intermediate its ends and offset from the line of said brace frame, a derrick tower structure resting horizontally on said base structure to extend longitudinally thereof and pivotally connected with the forwardly projecting free end of said brace frame at a point intermediate its ends, the end portion of said tower structure projecting forwardly from the base tapering to its end and projecting beyond the supporting base structure, means connected with said tapered end of the tower structure for pulling said end rearwardly relative to the base and the pivotal axis of the brace frame and thereby shift the tower structure upwardly to a vertical operating position, the angle of said elbow portion on the brace frame and the end portion of said tower structure adjacent the beginning of the taper coming together when the tower structure is in a vertical position, and fastening means for connecting said elbow portion to said tower structure at a point below the pivotal connection therebetween.

2. A collapsible derrick as set forth in claim 1 in which the tapered end of said tower structure is detachable for reducing the length of said derrick tower structure for transportation, the elbow portion of said brace member being connected with said detachable portion of said tower structure for holding said tower structure in vertical operating position.

3. A collapsible derrick as set forth in claim 1 in which the supporting base structure has a removable section to give clearance space for well equipment after the base structure and said derrick have been set up for operation.

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