July 24, 1923. 1,462,746

C. J. GOUGLER

REENFORCING STRUCTURE FOR DERRICKS

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Fig. 1.

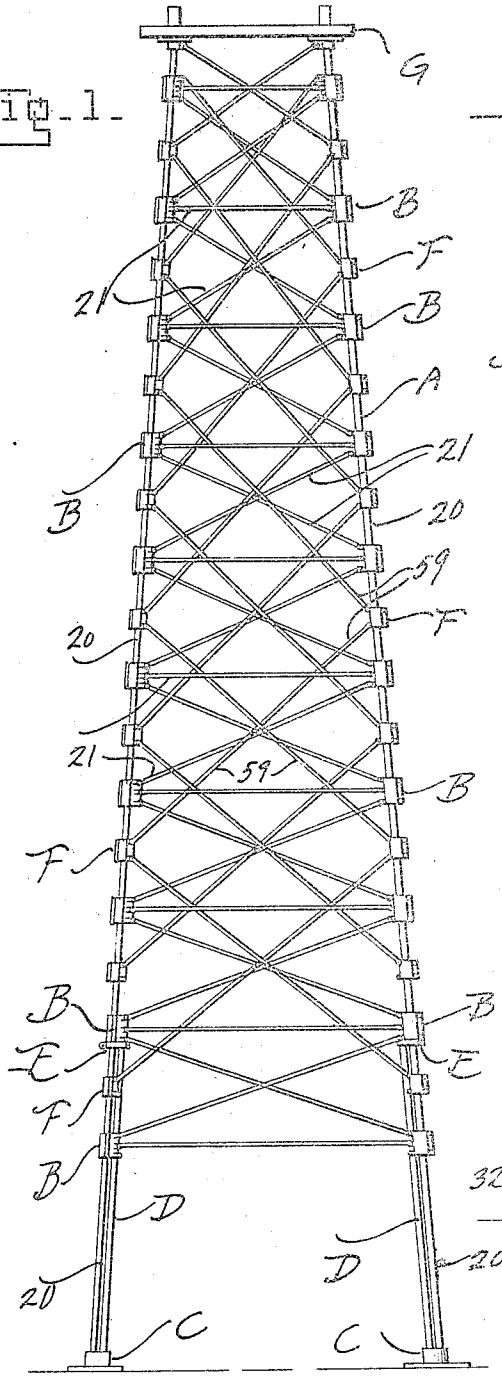
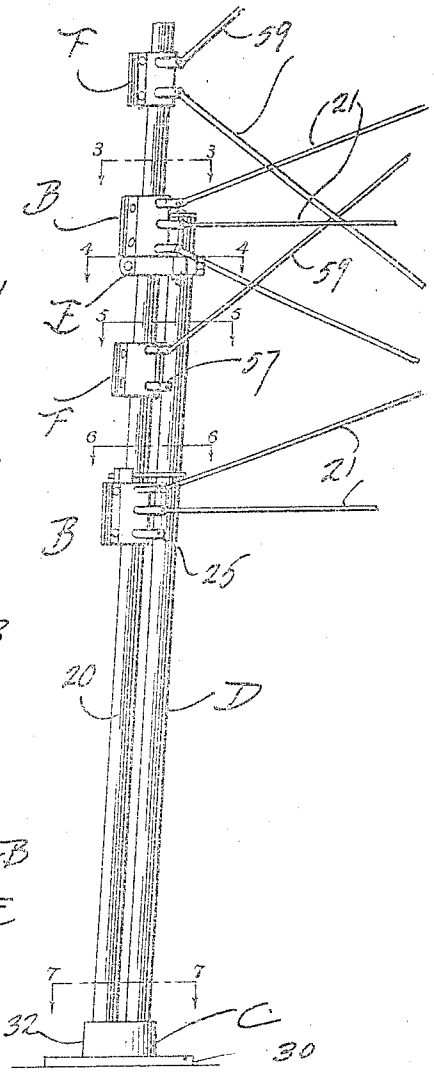


Fig. 2.



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Fig. 3.

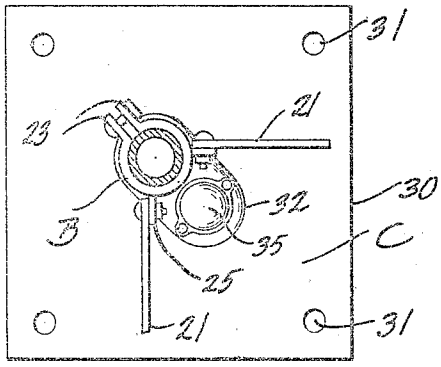


Fig. 4.

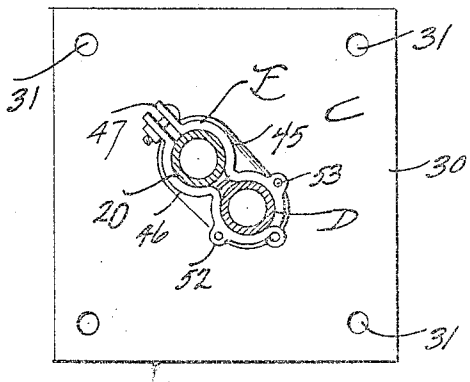


Fig. 5.

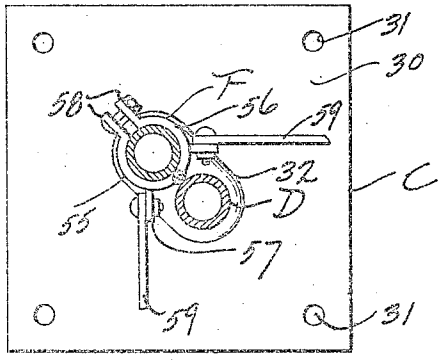


Fig. 6.

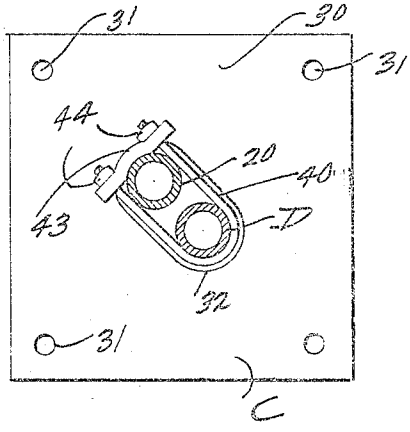
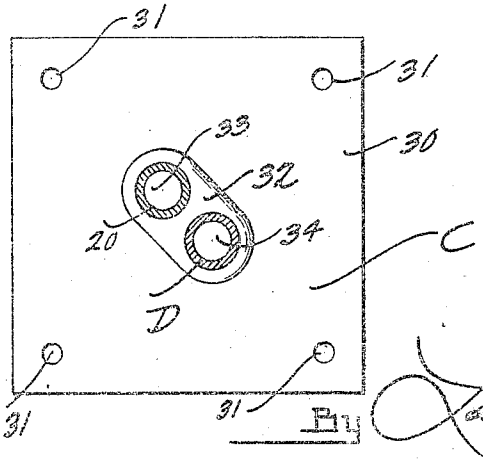


Fig. 7.



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Fig. 8.

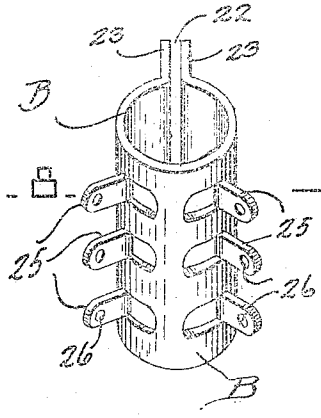


Fig. 10.

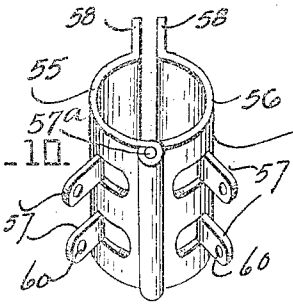


Fig. 11.

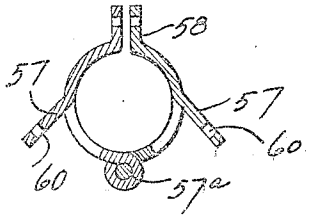


Fig. 9.

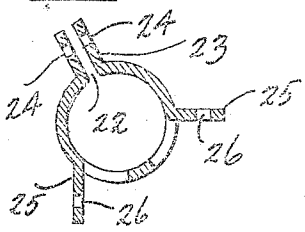


Fig. 14

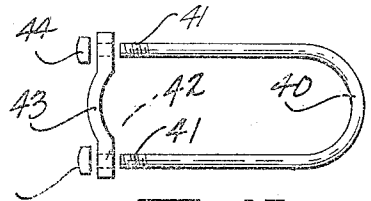


Fig. 12.

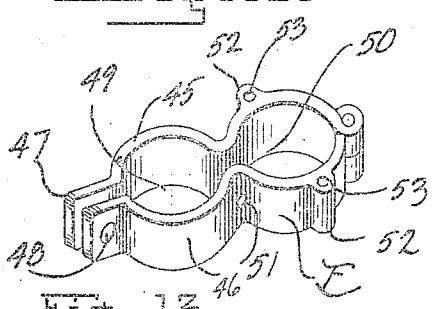


Fig. 15.

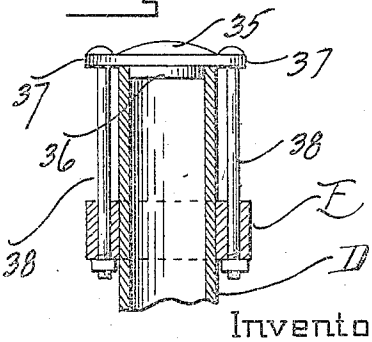
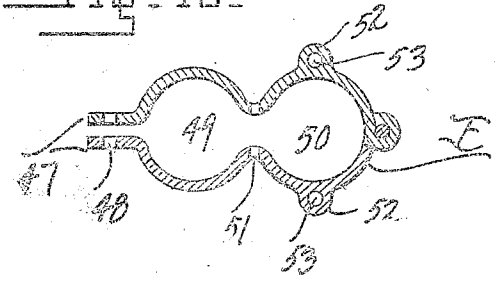


Fig. 13.



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UNITED STATES PATENT OFFICE.

CLYDE J. GOUGLER, OF TULSA, OKLAHOMA.

REENFORCING STRUCTURE FOR DERRICKS.

Application filed November 11, 1920. Serial No. 423,390.

To all whom it may concern:

Be it known that I, CLYDE J. GOUGLER, a citizen of the United States, residing at Tulsa, in the county of Tulsa and State of Oklahoma, have invented certain new and useful Improvements in Reenforcing Structures for Derricks, of which the following is a specification.

This invention relates to improvements in derrick structures.

An important object of the invention is the provision of a reinforced derrick structure, which can be easily assembled and quickly disassembled, without the destruction of any of its parts.

A further object of the invention is the provision of a reinforcement for derricks of tubular formation, which can be attached to a derrick structure, without the provision of any special parts or the taking down of any part of the derrick structure.

A further object of the invention is the provision of clamp members which can be attached to a derrick structure for the purpose of additionally reenforcing the derrick structure.

A further object of the invention is the provision of a derrick reenforcing structure, which can be universally applied to derricks of tubular construction.

Other objects and advantages will be apparent during the course of the following detail description.

In the accompanying drawings, forming a part of this specification, and in which like reference characters designate like parts throughout the same:

Figure 1 is a side elevation of a derrick structure having the improved reenforcing means attached thereto.

Figure 2 is a fragmentary view showing the foundation section of the reenforcing means.

Figure 3 is a sectional view taken on the line 3—3 of Figure 2.

Figure 4 is a cross sectional view taken on the line 4—4 of Figure 2.

Figure 5 is a cross sectional view taken on the line 5—5 of Figure 2.

Figure 6 is a cross sectional view taken on the line 6—6 of Figure 2.

Figure 7 is a cross sectional view taken on the line 7—7 of Figure 2.

Figure 8 is a perspective view showing a sleeve clamping element which is used upon the derrick structure.

Figure 9 is a cross sectional view taken through the clamp shown in Figure 8 and showing the construction thereof.

Figure 10 is a fragmentary view showing a hingedly connected clamping member which is used in connection with the derrick reenforcing means.

Figure 11 is a cross sectional view taken through the clamping member shown in Figure 10.

Figure 12 is a perspective view showing a second type of hingedly connected clamping member.

Figure 13 is a cross section taken through the clamping member shown in Figure 12.

Figure 14 is a plan view of a U-bolt clamp used in the derrick construction.

Figure 15 is a fragmentary cross sectional view showing a detail of construction of the reenforcing structure.

In the drawings, wherein for the purpose of illustration is shown a preferred embodiment of my invention, the letter A designates a derrick structure, preferably of tubular construction, and on which the clamping sleeves B are mounted. The derrick reenforcing means comprises the foundation plate C which supports the reenforcing legs D, which reenforcing legs are connected to the bearing structure by hingedly connected clamping members E. Detachable clamping members F are provided, for mounting upon the derrick structure to aid in the bracing thereof.

The derrick A is preferably of ordinary construction, such as is principally used in oil or gas well drilling, and may be of the tubular type, employing the main supporting legs 20 which converge toward the top of the derrick to provide a pyramidal shaped derrick. The clamping sleeves B are provided for mounting upon the supporting legs 20 for the purpose of detachably connecting lateral bracing members 21 to the various supporting legs 20 to provide a derrick construction.

The sleeve clamp B is preferably circular in formation for the purpose of attachment about a supporting leg 20, and is split as at 22 and provided with flanges 23 projecting laterally from the sleeve structure B and having apertures 24 therein for the reception of a bolt or the like to rigidly clamp the section B to a supporting leg. The lateral ears 25 are struck from the body of the clamping member B and are preferably bent

outwardly therefrom and toward the split portion 22 of the sleeve, and each provided with an aperture 26 for the insertion of a bolt or the like to clamp the bracing rods 21 to the supporting legs 20.

A foundation plate C is provided for each of the supporting legs 20 and comprises the resting plate 30 having apertures 31 therein for suitable spikes or the like for securing the same to the ground. An upwardly projecting body 32 is provided upon the foundation plate C, and having a socket 33 therein for the reception of a supporting leg 20 and a companion socket 34 for the reception of the reenforcing leg D.

The reenforcing legs D are preferably similar in construction to the supporting legs 20 and rest in the socket 34 of the foundation plates C extending upwardly and parallel to the supporting legs 20, however terminating short of the opposite end of the supporting legs. Each of the supporting legs D are provided with a cap 35 which is provided with a depending projection 36, adapted to be inserted within the tubular sleeve D for the purpose of mounting the same securely upon the top thereof. The laterally extending flange 37 is provided adjacent the depending portion 36 and has apertures therein for the free reception of bolts 38, which are provided to detachably support the clamping member E. A U-bolt 40 is provided upon each of the legs 20 for the purpose of securely clamping the supporting leg 20 and the reenforcing leg C together. It is provided with the threaded ends 41 which are adapted to be inserted through the apertures 42 of a member 43, which member is adapted to be moved to tightly connect the supporting leg 20 and the reenforcing leg 6, upon adjustment of the nut 44 upon the screw threaded portion 41 of the U-bolt 40.

The hinge clamping member E is of simple construction and comprises the hingedly connected and substantially W-shaped sections 45 and 46. Each of the sections 45 and 46 are provided upon their free ends with the laterally extending flanges 47 having the apertures 48 therein for the reception of a bolt or the like for the purpose of detachably connecting said clamping sections together. When clamped together, the sections form two substantially circular openings 49 and 50, adapted to receive a supporting leg 20 and a reenforcing leg D, as is clearly shown in Figure 4 of the drawings. Apertures 51 are provided intermediate the ends of the clamping sections 45 and 46 for the purpose of receiving a rivet or bolt to rigidly attach the same to the reenforcing structure. The lateral extensions 52 are provided upon each of the clamping sections 45 and 46 and diametrically opposite each other, the same having apertures 53 extending therethrough for the purpose of receiving the bolts 38 of the cap 35 to support the clamping members in a predetermined position.

The hingedly connected clamping members F are similar in construction to the members B, with the exception that they comprise sections 55 and 56, hingedly connected by a pin 57ª. Laterally extending ears 57 are provided upon each of the sections and point outwardly from the body portion of said sections and are bent toward the flanged end 58 for detachably connecting the reenforcing rods 59 through the apertures 60 therein in order that a detachable but yet rigid structure is formed.

A derrick reenforcing structure has thus been provided, which is detachable, in that the reenforcing legs D can be quickly and conveniently assembled within the foundation plate C and attached to the supporting legs 20 by the clamping members E and the U-bolts 40. The reenforcing rods 59 are, of course, provided for additionally bracing the structure, in addition to the bracing means already provided by the bracing members 21; which reenforcing rods are diagonally attached to the members F which are mounted upon one supporting leg 20 extending to those members F which are mounted upon another supporting leg 20. It is thus seen that a superstructure could easily be mounted upon the reinforced derrick and the platform G elevated to a suitable extent to take care of any need which might exist for the elevating of the platform G.

It is to be understood that the form of my invention herewith shown and described is to be taken as a preferred example of the same. Various arrangements of the clamping members and bracing members could of course be made, it being the primary function of the invention to provide a reenforcing means for a derrick which would be applicable to tubular derricks as now constructed.

Various changes in the size and arrangement of parts may be resorted to without departing from the spirit of the invention or scope of the subjoined claims.

I claim:

1. In a reenforcing structure for derricks, the combination with a derrick structure, of auxiliary reenforcing legs, base plates for supporting said derrick structure and auxiliary reenforcing legs, and means detachably connecting said auxiliary reenforcing legs to the derrick structure.

2. In a reenforcing structure for derricks, the combination with a tubular derrick structure having tubular supporting legs, of auxiliary reenforcing legs of tubular formation, base plates having sockets therein for the reception of said derrick and reenforcing legs, and hingedly connected clamping mem-

bers for detachably connecting said derrick legs and reenforcing legs to brace the derrick structure.

3. In a reenforcing structure for derricks, the combination with a derrick structure, of auxiliary reenforcing legs of tubular formation, said legs terminating short of the top of said derrick structure, caps disposed upon the top of said reenforcing legs, clamp members or clamping said reenforcing legs to the derrick structure, and bolts detachably connecting said caps with said clamp members.

4. As an article of manufacture, a clamp comprising a pair of hingedly connected sections, each of said sections of substantially W-formation and when clamped together forming a pair of circular openings, lateral extensions diametrically opposite each other formed on the sides of said clamp, at one of the circular openings, said extensions each having an aperture therein.

5. In a device of the class described, the combination with a derrick structure including supporting legs, of auxiliary reenforcing legs, shorter than said derrick supporting legs, and means connecting said auxiliary and derrick supporting legs to support said derrick upon a foundation.

6. In a derrick reenforcing structure, the combination, with a tubular derrick comprising supporting legs and lateral bracing rods connecting said supporting legs, of auxiliary reenforcing legs, tubular in construction and disposed parallel with said supporting legs, foundation plates having recesses therein for the reception of said supporting and reenforcing legs, caps for the top of said reenforcing legs, and hingedly connected clamping members of substantially W-shaped formation and connecting said supporting legs and reenforcing legs, having ears struck laterally therefrom, and reenforcing rods connecting the ears of the clamping members upon one supporting rod to the ears of other clamping members arranged upon another supporting rod.

7. In a device of the class described, the combination with a derrick structure including supporting legs, of an auxiliary reenforcing leg for each derrick supporting leg, a foundation plate for each derrick supporting leg and its adjacent auxiliary leg to support them in fixed relation, and means connecting each supporting leg upwardly of its foundation plate to an auxiliary leg for reenforcing purposes.

8. In a device of the class described, the combination with a derrick structure including tubular supporting legs arranged in upwardly converging relation, an auxiliary supporting leg of tubular formation for each derrick supporting leg, a foundation plate for each derrick supporting leg and its adjacently positioned auxiliary leg, said foundation plates each having a pair of sockets therein nor receiving a derrick leg and an auxiliary leg, and means connecting each auxiliary leg to its adjacent derrick leg upwardly of the foundation plates upon which they are positioned.

9. In a device of the class described, the combination of a derrick structure including supporting legs, an auxiliary supporting leg for each derrick leg, a cap for positioning upon the top of each auxiliary leg, clamp members for mounting said auxiliary legs to their adjacently positioned bearing legs for reenforcing the latter, and detachable bolt means for supporting said clamps from said caps.

10. In a device of the class described, the combination with a derrick structure including supporting legs, of relatively short auxiliary reenforcing legs, a reenforcing leg being positioned adjacent each of said derrick legs, a cap mounted upon the top of each of said auxiliary reenforcing legs, clamp members each having a pair of openings therein for receiving a derrick leg and a reenforcing leg, and bolts supported from said caps for engagement with said clamps whereby the clamps may be properly positioned longitudinally of the derrick and auxiliary legs for relative connection of the same for reenforcing purposes.

11. In a device of the class described, the combination with a derrick structure including supporting legs arranged in upwardly converging relation, a base plate for each of said derrick supporting legs having a pair of sockets therein, said legs resting in one of the sockets of its base plate, a relatively short tubular auxiliary leg for each of said derrick legs adapted for mounting in the other socket of the derrick leg base plate, so that each of said derrick legs are provided with an adjacently positioned auxiliary leg in parallel relation thereto, caps mounted upon the upper ends of said auxiliary legs to normally close the openings in said legs, said caps having lateral apertured flanges thereon, clamping members adapted for transverse attachment to each supporting leg for clamping the same to its adjacent auxiliary leg, said clamps having apertures therein for alignment with the apertures of a cap, and detachable bolts for support from each cap for extension through the apertures of said cap and a clamp whereby the upper ends of said auxiliary legs may be clamped in secure manner to their adjacent derrick legs for reenforcing purposes.

CLYDE J. GOUGLER.