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FOOT CASTING FOR DERRICKS AND METHOD OF USING THE SAME

Filed June 2, 1928

FIG-1

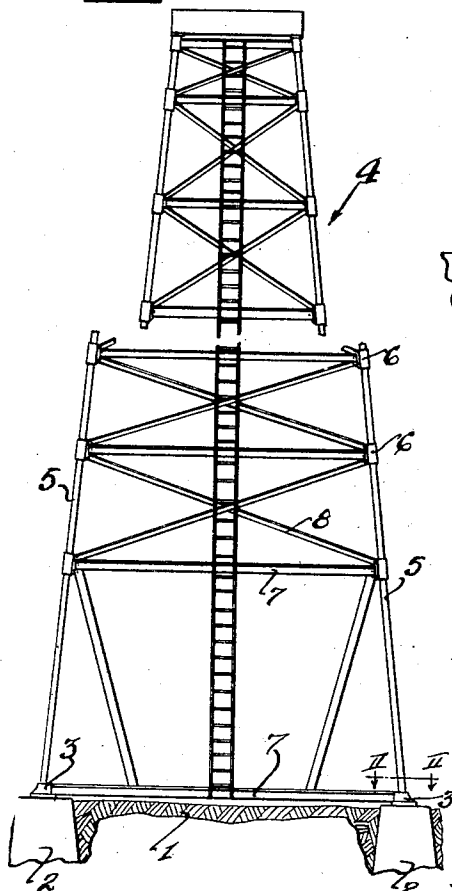


FIG-2

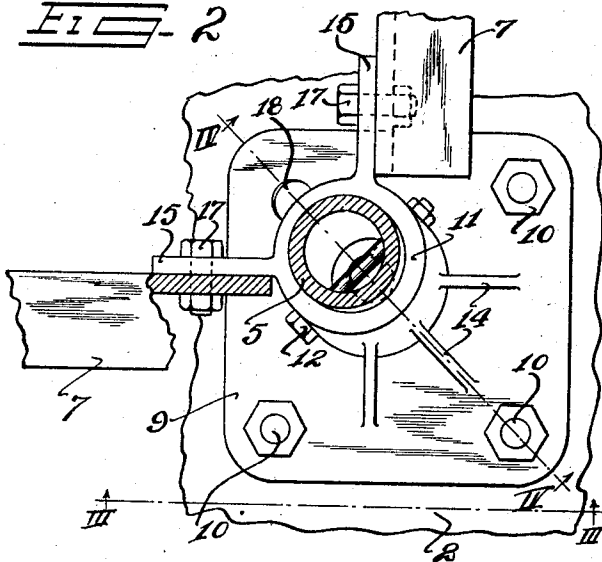


FIG-3

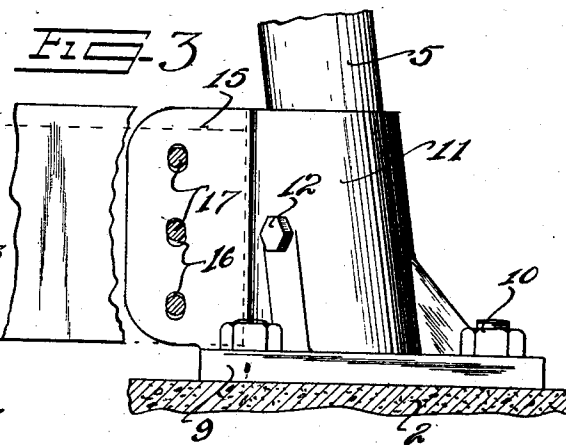
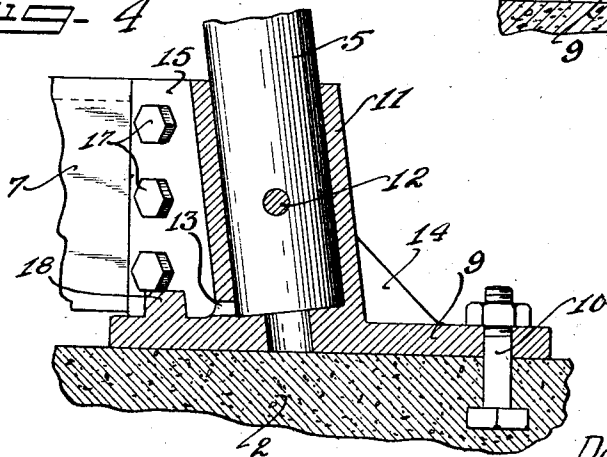


FIG-4



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FOOT CASTING FOR DERRICKS AND METHOD OF USING THE SAME

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This invention relates to improvements in foot casting for derricks and to an improved method for using the same, and more particularly to foot castings which are highly desirable for the proper mounting of legs of metallic oil well derricks, although the same may be used in various locations and manners in many and varied types of fabricated structures, as will be apparent to one skilled in the art.

At the outset, it should be clearly understood that although the present invention is highly desirable for use with combination pipe and steel derricks, by slight changes in the construction, the invention is as readily applicable to all-pipe or all-steel derricks.

The modern tendency, especially with regard to oil well derricks, is to eliminate the objectionable and enormous expense incorporated in the cumbersome and laborious timber construction, including the mortising and tying of legs and mud sills necessitated in the erection of a wooden derrick, by the utilization of all-metal derricks which are more economical after repeated use due to the rapidity and ease with which they may be assembled and dismantled, and due to the fact that they may be transferred from one foundation to another without the necessity of rebuilding the foundations. In the oil fields it frequently happens, that certain flowing wells must be pulled rather often and so their respective derricks must be left standing over them. On the other hand, certain wells may cause little or no trouble after they once become flowing wells, and obviously it is highly desirable to remove the derrick and remount it in a different location.

In the past various types of foundations and leg supports have been developed, but have proven objectionable in most instances in that they were not sufficiently simple in construction but necessitated the use of mud sills and other parts which, when viewed in the light of the present invention, are superfluous. Moreover, these formerly known mounting means when incorporated with a foundation, projected an objectionable distance above the ground. Further, they were not sufficiently permanent and rigid, but after a derrick was

once set up, alignment operations, in nearly all cases, were necessary to properly center the derrick over the drill hole.

The present invention has been designed to overcome the above noted defects and objections in the provision of a foot casting adapted for ready and easy mounting on a firm foundation and to support a derrick leg in conjunction with similar castings in such a manner that little or no aligning of the derrick is necessary.

The invention also seeks to provide foot supports which are removable or permanent as desired and which require very little attention.

A further object of the present invention is to provide a foot support directly engageable with girts as well as with the derrick leg, whereby cumbersome mud sills may be dispensed with.

A still further object of the present invention is to provide a foot support mountable on a foundation in a predetermined and fixed position so that when a derrick is mounted on a set of such supports, the derrick will be rigid and firm and ready for use with little or no adjustments.

A still further object of the present invention is to provide a new method of utilizing foot supports.

While some of the more salient features, characteristics, and advantages, of a device embodying the present invention have been above pointed out, others will become apparent from the following disclosures.

The present invention includes these and other features of construction and combinations of parts hereinafter described, and shown in a preferred form in the drawings, as more particularly indicated by the claim.

On the drawings:

Figure 1 is a fragmentary elevational view of a derrick in which are incorporated devices embodying principles of the present invention.

Figure 2 is an enlarged plan sectional view taken along line II—II of Figure 1, of a portion of the structure and one of the devices shown in Figure 1.

Figure 3 is an enlarged view in elevation, with parts broken away and parts in section,

taken substantially as indicated by line III—III of Figure 2.

Figure 4 is a vertical sectional view taken substantially along line IV—IV of Figure 2.

As shown in the drawings:

In Figure 1 there is shown imbedded in the ground 1, a plurality (four being customary) of foundation members 2, preferably formed from plastic material such as concrete or the like. In the illustrated embodiment of the present invention there is shown a leg support, generally indicated as 3, mounted upon each of the foundation members 2. Supported by the supports 3, is a superstructure of a derrick 4 which includes sectional legs 5 connected by coupling members 6 to lateral girts 7 and diagonal braces 8. With the present invention mud sills are unnecessary, a lower set of the girts 7 being connected to the leg supports 3 in lieu thereof.

Each of the supports 3, in the present instance, comprises an integral foot casting which embodies a substantially flat base 9 secured to one of the foundation members 2 preferably by bolts 10 imbedded in the foundation 2. Projecting upwardly from the base 9 is a tubular portion 11 which is preferably cored when the foot support 3 is cast so as to telescopically receive therein the lower end of a leg 5. It should be noted that the tubular portion 11 is inwardly inclined at a predetermined angle governed by the known slant of the legs 5 which, as is customary, converge toward the crown of the derrick. Both the leg 5 and the tubular portion 11 are transversely drilled to accommodate a through bolt 12 which effectively secures the leg in its socket. Adjacent the lower end thereof, the tubular portion 11 is provided with a radial bore 13 which acts as a drain port for the moisture seeping down between the leg and the socket. On the outer side of the portion 11, opposite the drain port 13, reinforcements 14 are provided to better enable the portion 11 to withstand the outward thrust of the leg 5.

Means are provided on the foot casting for engagement with the lowermost girt 7 to rigidify and strengthen the derrick superstructure as a whole. In this instance, these means embody a pair of wings 15 projecting outwardly from the inner part of the tubular portion 11 substantially normally thereto and substantially at right angles to each other. Each of these wings is provided with suitable apertures 16 therein to adjustably accommodate bolts 17 by which the ends of the girt 7 are secured to the wings.

It will be apparent from the structure hereinbefore recited that the base 9 of the foot casting is preferably positioned diagonally or, in other words, with one of the corners extending inwardly towards the center of the derrick. It will be equally apparent from the disclosures herein that a bolt 10 at the

inner corner of the base is totally unnecessary, and so this corner is provided with a releg pilot 18.

This releg pilot 18 is in effect merely an upwardly extending boss over which a temporary leg may be positioned so as to be effectively supported thereby. The weight of that side of the tower may then be carried by the temporary leg, thus leaving the main leg 5 free from strain for removal, replacement or other attention.

The novel method of using the present invention is simple and extremely economical. The foundation posts 2 are first provided after the location of the drill hole has been determined. While the concrete or other plastic material is still in a soft condition the bolts 10 are imbedded therein, so that when the concrete sets a firm foundation is provided with securing means attached thereto. These corner foundations are spaced equi-distant from the location of the drill hole with their tops preferably at ground level. In the setting of the foundation posts no consideration need be given to the placement of the apparatus, such as Samson post, walking beam, bull-wheel, etc.

After the foundation posts are provided the foot castings may be easily bolted thereon with the bolts 10 at the same time in which the superstructure of the derrick is to be erected or prior thereto, as is desirable. When it is desired to erect the derrick it is simply necessary to insert the legs 5 in the respective foot castings and secure the lowermost girts 7 to the respective wings 15. It will be apparent, therefore, that no alignment of the derrick is necessary, the foot castings determining its proper position.

If it is desired to transfer the superstructure it is merely necessary to remove the girt bolts 17 and the other bolt 12, leaving the castings mounted to the foundations if so desired. It is to be noted that the castings project only a slight distance above the ground occupying very little space, and leaving practically the entire surface for other use when the superstructure is removed. The derrick floor may be mounted on the lowermost girt 7, the derrick structure providing ample room for all necessary machinery.

With respect to the present invention it is to be clearly understood that while the terms girts and derrick, etc. are used herein and in the appended claim, it is obvious that the supports shown and described herein may be used with many and varied types of fabricated structures without departing from the scope of the invention.

From the foregoing it will be apparent that I have provided simple and efficient foot castings or leg supports for a fabricated structure, the leg supports being easily and readily secured to or removed from permanent foundations and permitting the mounting

thereon or removal therefrom of a derrick or similar structure.

Moreover, the leg castings determine the position of the structure thereby eliminating later alignment of the same, are readily installed and removed, are rigid and durable, and may be economically manufactured.

I am aware that many changes may be made and numerous details of construction may be varied through a wide range without departing from the principles of this invention, and I therefore do not purpose limiting the patent granted hereon otherwise than necessitated by the prior art.

I claim as my invention:

As an article of manufacture, a unitary support for a derrick leg adapted to be fastened to the top of the plastic foundation comprising a base formed to be secured to said foundation, a slanting tube integral with said base for receiving the lower end of a slanting derrick leg, lateral ears disposed at substantially a right angle to each other and formed integral with said tube for attachment to derrick girders and the like adapted to extend directly over the base of the derrick, and a releg boss integral with said base and disposed between said ears, said lateral ears being arranged so as to guide the releg in said boss.

In testimony whereof I have hereunto subscribed my name at Tulsa, Tulsa County, Oklahoma.

DALLAS D. WERTZBERGER.