L. C. MOORE.

COUPLING FOR STEEL TOWERS OR DERRICKS.

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1,082,207.

Patented Dec. 23, 1913.

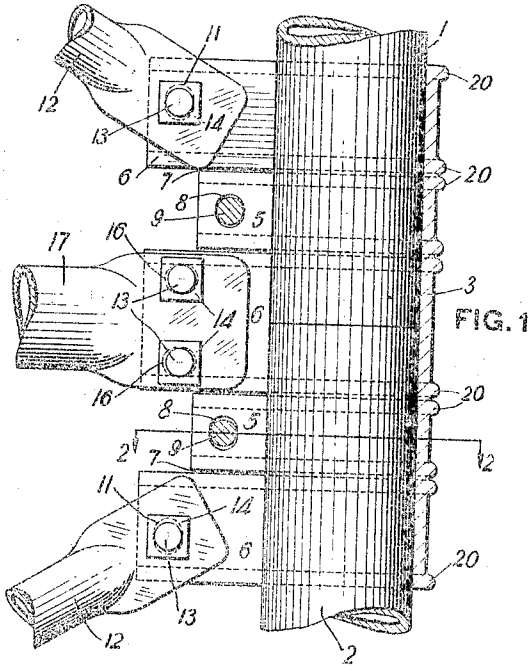


FIG. 1

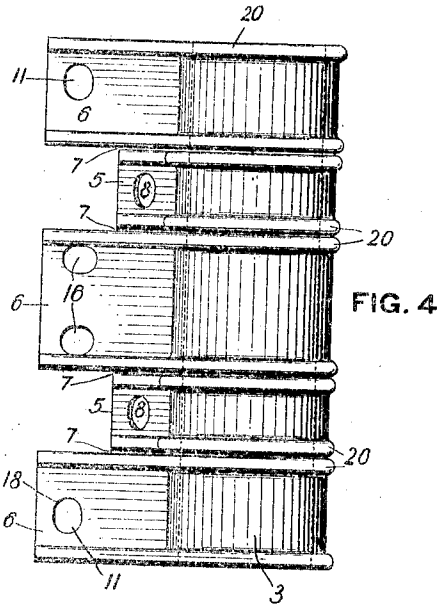


FIG. 4

FIG. 2

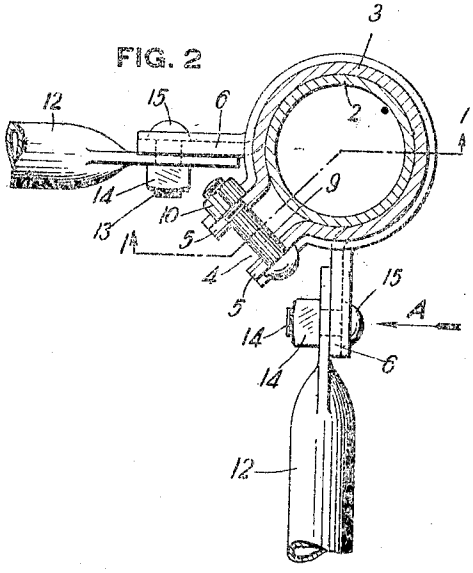
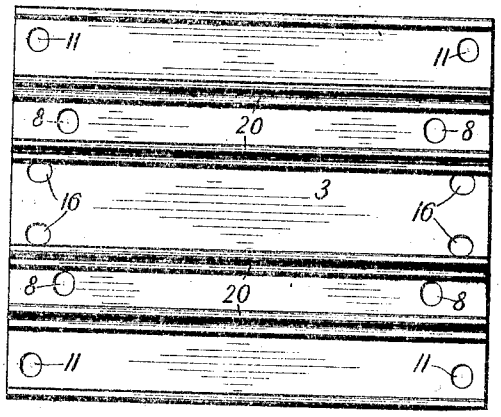


FIG. 3



WITNESSES

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COUPLING FOR STEEL TOWERS OR DERRICKS.

1,082,207. Specification of Letters Patent. Patented Dec. 23, 1913.

Application filed September 17, 1912. Serial No. 720,882.

To all whom it may concern:

Be it known that I, LEE C. MOORE, a resident of Pittsburgh, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Couplings for Steel Towers or Derricks, of which the following is a specification.

This invention relates to a coupling or clamp for metal towers or derricks, and particularly such as are used for oil wells.

The object of the invention is to provide an improved clamp for uniting the ends of the leg sections, and fasten girts and braces thereto, which clamp is of simple construction, can be cheaply manufactured and which, when secured to the tower or derrick, leaves no exposed projections on the outside thereof.

The invention comprises the construction and arrangement of parts hereinafter described and claimed.

In the accompanying drawings Figure 1 is a longitudinal section taken on the line 1—1, Fig. 2, through one of the improved clamps, and showing the ends of the braces and girts secured thereto; Fig. 2 is a horizontal section on the line 2—2, Fig. 1; Fig. 3 is a plan view of the punched blank from which the clamp is formed; and Fig. 4 is an elevation of the clamp viewed in the direction of the arrow A, Fig. 2.

The tower or derrick may be of any of the usual constructions, but preferably of the form shown and described in the patent to Thomas A. Neill, No. 933,386, granted September 7, 1909, and which is constructed of metal tubes throughout. With the specific clamp illustrated, the derrick is intended to be provided with four legs inclined so that the derrick tapers from its top, the legs being composed of tubular sections, as stated.

In the drawings, one of the leg sections is indicated at 1 and the other leg section at 2. These are cut off exactly square so as to abut each other endwise around the entire circumference of the tubes. The clamp or socket is indicated at 3 and comprises a substantially tubular member or sleeve, slotted or open longitudinally along one side, as at 4, and having a smooth interior surface to embrace and fit the cylindrical surfaces of the ends of the meeting leg sections. The clamp may either be secured to the meeting ends of the adjacent end sections to secure the same together as illustrated in the drawings or may be slipped over a leg section and located intermediate the ends thereof to be used as an intermediate clamp for connecting girts and braces to a leg section intermediate its ends.

The clamp is provided along both edges of the opening 4 with two sets of oppositely disposed lugs or ears marked respectively 5 and 6, the clamp being slotted or cut transversely to its length, as at 7, to form the same. The opposite ears or lugs 5, of which, in the form shown, there are two along each edge of the opening 4, are bent into substantial parallelism with each other, and spaced a short distance apart, and are provided with apertures 8 for the reception of ordinary clamping bolts 9, threaded at their ends and provided with nuts 10 to enable the clamp to be drawn tightly around the leg sections to securely clamp the same thereto. By bending the lugs 5 into parallelism, a square and firm bearing of the bolt head and nut on the surfaces thereof is obtained and a strong clamping effect is assured. The lugs or ears 6 are bent outwardly from the wall of the sleeve on either side of the edges of the opening 4 and preferably a short distance circumferentially therefrom. In the form shown, these lugs or ears extend radially of the clamp and are substantially at an angle of 90° with respect to each other, thus adapting the clamp for use with a derrick having four legs. Obviously, however, the angular relation between the lugs or ears 6 may be varied in accordance with circumstances, and in the case of a derrick having three legs will be substantially 60°. In the form shown in the drawings three lugs or ears 6 are formed along each edge of the opening 4. The two end lugs or ears of each set are each provided with an aperture 11 to enable a diagonal brace 12 to be secured thereto by an ordinary clamping bolt 13, the nut 14 thereof being preferably placed on the inside of the clamp and the smooth, round head 15 thereof on the outside, thus decreasing the number of sharp projections on the outside of the clamp and lessening the liability of danger or injury to workmen climbing around the derrick, which might result from the clothing catching in such projections. The intermediate lug or ear 6 is provided with a pair of apertures 16 for the securement of a horizontal girt.

These apertures may be unsymmetrically located with reference to the axis of the clamp to enable the two companion apertures in the girt 17 to be located squarely opposite each other and thus simplify construction thereof. This, however, is not essential, since by making the apertures slightly larger than the diameter of the bolts they can be placed exactly in line with each other.

Preferably, the openings 11 and 16 are formed non-circular, as indicated at 18, and the shanks of the bolts passing therethrough are provided with non-circular portions to prevent the bolts from turning in the shanks, thereby permitting the nuts to be tightened up on the bolts by the use of a single wrench manipulated with one hand.

The clamp or socket described is preferably formed of plate metal, although it may be formed by forging or partly by rolling, and then pressing or bending. In the manufacture thereof, the metal is rolled or formed as a flat sheet and is cut into blanks of the shape illustrated in Fig. 3. If desired, it may be rolled of the cross section shown in Fig. 1 to provide a plurality of ribs 20, running transversely of the length of the finished socket and which stiffen and strengthen the same and enable it to be formed of lighter metal. Along its edges the cut blank is then slotted at 7 between the ribs 20 in the manner described to form the ears or lugs 5 and 6. Either before or after this slotting operation, or simultaneously therewith, the apertures 8, 11 and 16 may be punched in the blank for the securement of girts and braces thereto. After being slotted and punched, the blank is then bent into the form shown in Figs. 1 and 2, the body of the blank being formed substantially cylindrical to provide the sleeve, and the ears or lugs 5 and 6 being bent outwardly from the opening therein in the manner stated.

It will be observed that since the slots 7 between the lugs or ears 5 and 6 fall between pairs of ribs 20, a pair of said ribs are, therefore, provided upon each of the lugs or ears and thereby strengthen the same along their edges for their full length.

The clamp or socket described may be used either to secure the abutting end sections of the leg sections together or may be placed intermediate the ends of a leg section. The clamp is preferably made of slightly resilient metal and of slightly larger internal diameter than the cross section of the leg section in order that it may be easily slipped thereon. After having been placed on the leg section, the clamping bolts 9 are passed through apertures 8 and the nuts 10 placed thereon and tightened to secure the clamp to the leg section. The girts and braces are then attached to the lugs or ears 6 in the manner described. During the process of erection it is only necessary to use a single wrench for securing the clamp to the derrick and the girts and braces thereto. This wrench can be manipulated with a single hand and thus leave the other hand available to protect the workman from falling. The outside of the clamp is free of rough or sharp projections which might catch the clothing of the workman climbing around the derrick in the erection of the same. It will also be observed that the lugs or ears 6 are formed of such size that no corners or portions of the flattened ends of the girts and braces 12 and 17 project beyond the same. This not only improves the appearance of the erected derrick but also lessens the liability of injury to workmen. The distance from center to center of the end lugs 6 is also increased beyond that in prior clamps and the entire derrick is thereby strengthened, but especially so at the joints thereof.

What I claim is:—

1. A clamp for towers, derricks and the like comprising a cylindrical sleeve open along one side and provided along the edges of said opening with two rows of lugs or ears extending outwardly from said sleeve and arranged for the attachment of girts and braces thereto, the lugs or ears of the two rows being at an angle to each other, and a second set of ears or lugs along the edges of said opening and lying between the ears or lugs of the first set and provided with apertures for the reception of clamping bolts.

2. A clamp for towers, derricks and the like comprising a cylindrical sleeve open along one side and provided along the edges of said opening with two sets each comprising a plurality of pairs of oppositely disposed ears or lugs, the ears or lugs of the two sets alternating longitudinally of the sleeve, one set having oppositely disposed apertures for the reception of clamping bolts, and the other set being arranged for the securement of girts and braces thereto.

3. A clamp for towers, derricks and the like comprising a cylindrical sleeve open along one side and provided along the edges of said opening with two sets of ears or lugs, one set comprising a plurality of pairs of oppositely disposed ears or lugs bent into substantial parallelism and provided with alined apertures for the reception of clamping bolts, and the other set comprising two rows of ears or lugs extending outwardly from said sleeve and arranged for the attachment of girts and braces thereto.

4. A clamp for towers, derricks and the like comprising a cylindrical sleeve open along one side and provided along the edges of said opening with two sets of oppositely disposed ears or lugs, one set being bent into substantial parallelism and spaced apart and

provided with apertures for the reception of clamping bolts and the other set extending radially to said sleeve, the opposite lugs or ears thereof being at an angle to each other and arranged for the attachment of girts and braces thereto.

5. A clamp for towers, derricks and the like comprising a cylindrical sleeve open along one side and slotted along the edges of said opening transversely to the length of said sleeve to provide two sets of ears or lugs, the oppositely disposed ears or lugs of one set being arranged to receive clamping bolts, and the other set of said ears or lugs being bent outwardly from said sleeve and spaced angularly therearound, and arranged for the attachment of girts and braces thereto.

6. A clamp for towers, derricks and the like, comprising a cylindrical sleeve open along one side and slotted along the edges of said opening transversely to the length of said sleeve to provide two sets of ears or lugs, the oppositely disposed ears or lugs of one set being provided with apertures to receive clamping bolts, and the other set of said ears or lugs being bent outwardly from said sleeve and spaced angularly therearound and arranged for the attachment of girts and braces thereto, said sleeve and said ears or lugs being provided with transverse reinforcing ribs extending continuously from edge to edge of the sleeve and thereby strengthening both the sleeve and lugs.

In testimony whereof, I have hereunto set my hand.

LEE C. MOORE.

Witnesses:

ELBERT L. HYDE,

WILLIAM B. WHARTON.