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TOWER

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Fig. 4.

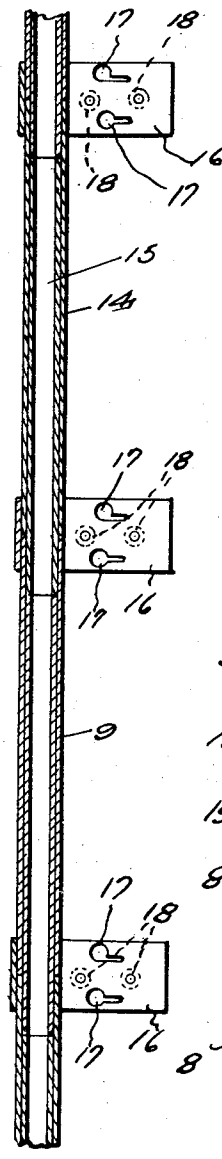


Fig. 1.

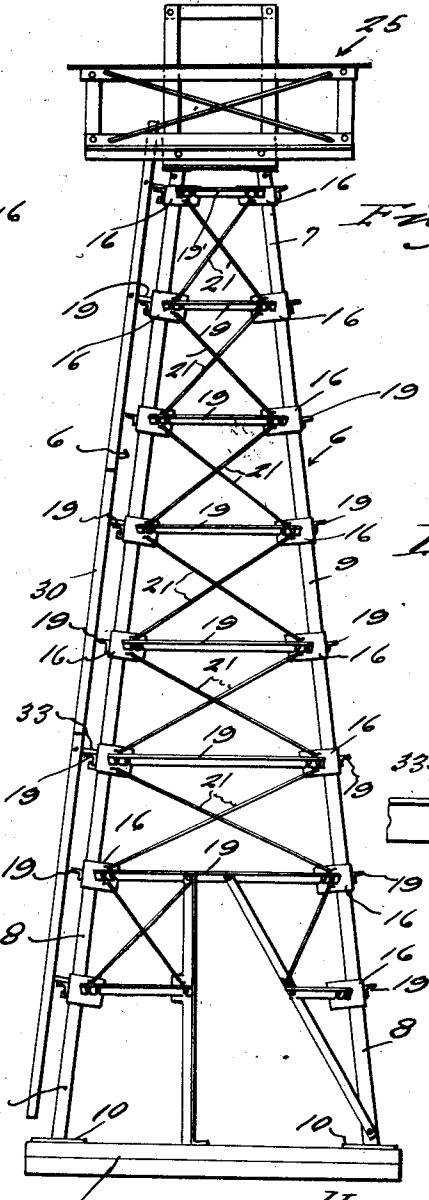


Fig. 5.

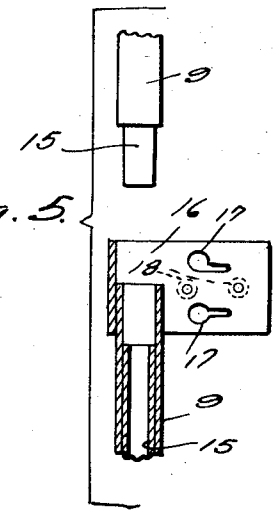
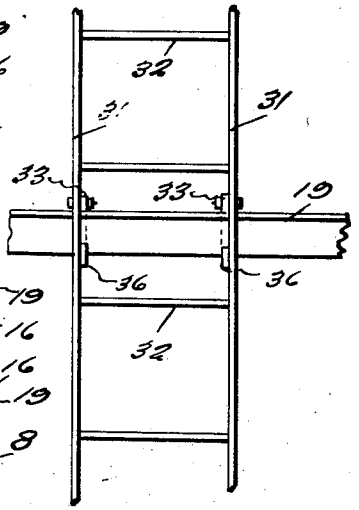


Fig. 11.



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Fig. 2.

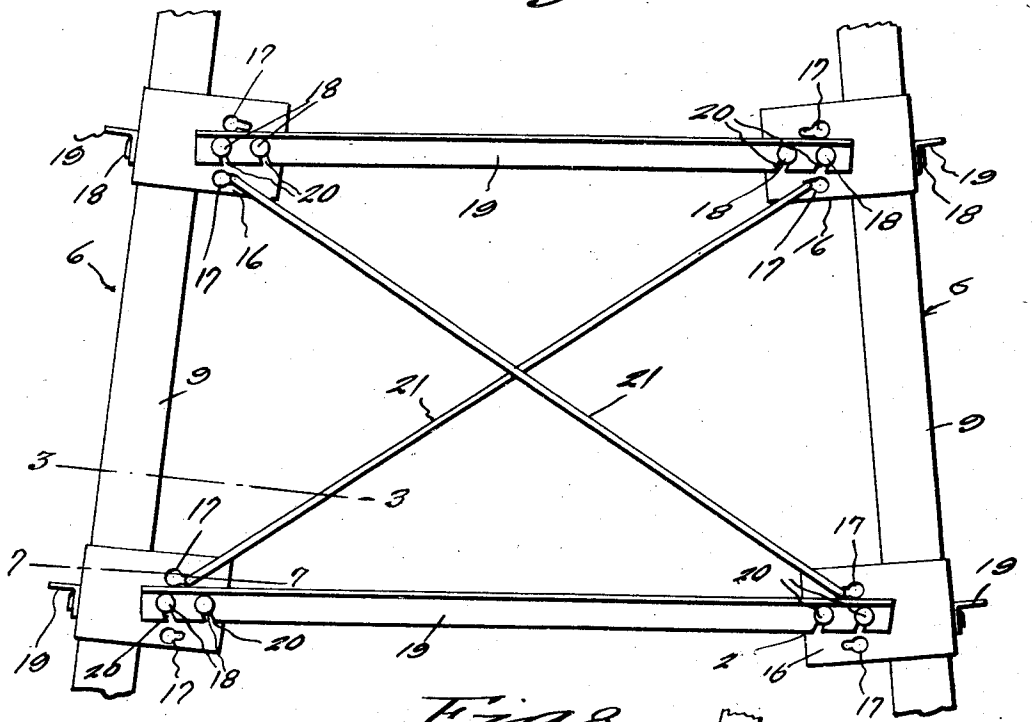


Fig. 8.

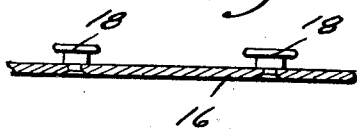


Fig. 3.

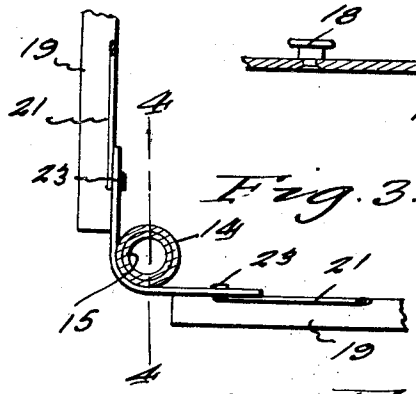


Fig. 12.

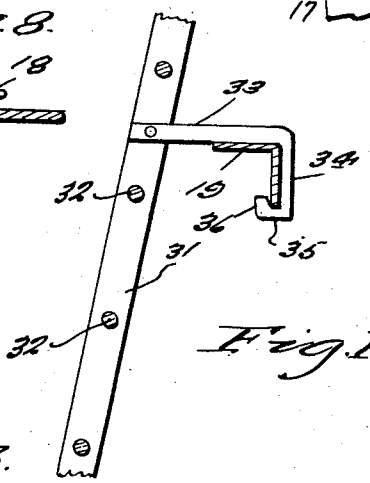
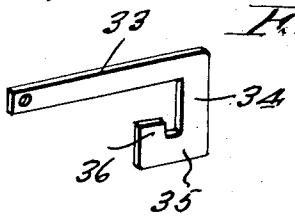


Fig. 13.



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Fig. 9.

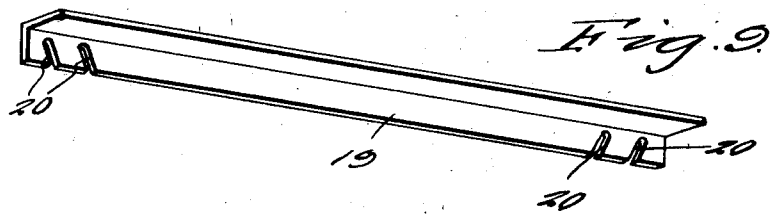


Fig. 10.

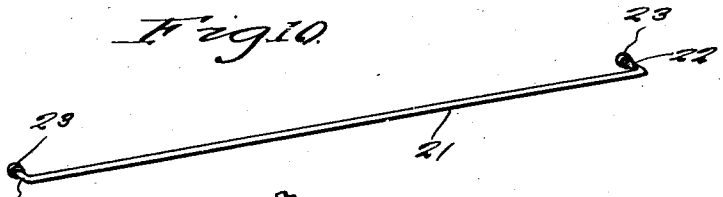


Fig. 6.

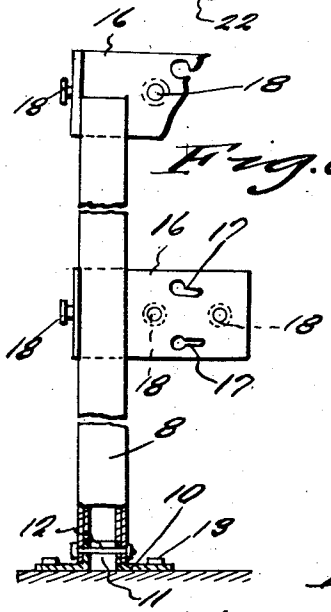


Fig. 14.

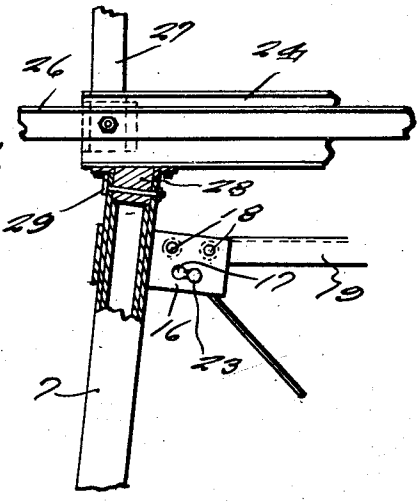


Fig. 15.

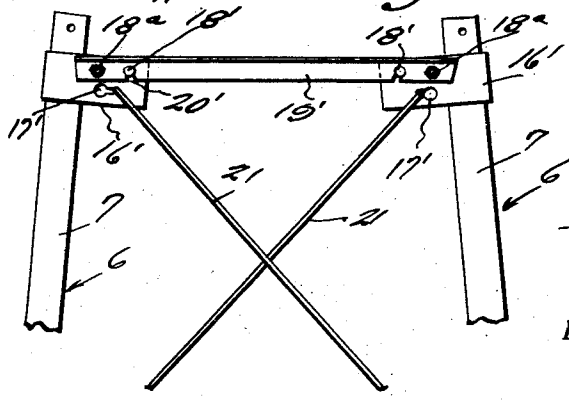
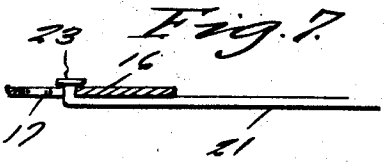


Fig. 7.



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Patented July 28, 1931

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UNITED STATES PATENT OFFICE

HENRY T. BARNHART, OF HOLLIDAYS COVE, WEST VIRGINIA, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO COVE TOWER COMPANY, OF HOLLIDAYS COVE, WEST VIRGINIA, A CORPORATION

TOWER

Application filed December 26, 1929. Serial No. 416,653.

This invention appertains to new and useful improvements in metallic building construction, and more particularly to a novel tower construction which may be used in well drilling, for carrying transmission lines, and for radio towers, etc.

The principal object of this invention, is to provide a metallic structure of the character described, which is built up of a multiplicity of interlockable parts, capable of being quickly assembled and disassembled.

Another important object of the invention is to provide a tower structure which when properly assembled will be stable and durable in use.

A further object of the invention is to provide a demountable power structure capable of being assembled and disassembled by unskilled workmen.

These and numerous other important objects and advantages of the invention will readily become apparent to the reader as this specification proceeds.

In the drawings:—

Figure 1 represents a side elevational view of a tower constructed in accordance with this invention, and especially devised for oil well drilling purposes.

Fig. 2 represents an enlarged fragmentary side elevational view of the derrick.

Fig. 3 is a fragmentary horizontal sectional view taken substantially on the line 3—3 of Fig. 2.

Fig. 4 represents a fragmentary vertical sectional view taken substantially on line 4—4 of Fig. 3.

Fig. 5 represents a fragmentary vertical sectional view through the upper portion of one of the post sections, and further showing in fragmentary side elevation, the lower portions of a connectable connection.

Fig. 6 is a fragmentary partial section and elevational view disclosing one of the lower sections of the posts.

Fig. 7 is a fragmentary sectional view taken substantially on the line 7—7 of Fig. 2.

Fig. 8 represents a fragmentary sectional view through one of the angle plates.

Fig. 9 represents a perspective view of one of the angle bars.

Fig. 10 is a perspective view of one of the brace rods.

Fig. 11 represents a fragmentary side elevational view disclosing the manner of mounting the ladder.

Fig. 12 represents a fragmentary vertical sectional view through the ladder and one of the angle bars supporting the same.

Fig. 13 is a perspective view of one of the brackets for connecting the ladder to the angle bars, (see Fig. 12).

Fig. 14 is a fragmentary detail sectional view disclosing the upper portion of the tower and the manner of securing the crow's nest structure thereto.

Fig. 15 is a fragmentary side elevational view disclosing a modification of the invention.

Referring to the drawings wherein like numerals designate like parts, it will be noted that the same includes a suitable base structure 5, upon which the demountable tower structure is built.

This tower structure embodies four vertically disposed sectional posts, each generally denoted by the numeral 6, and disposed in upwardly converging disposition with respect to each other, as in the manner substantially shown in Fig. 1.

The convergence of these posts, is determined by the length of the angle bars and races and certain other obvious factors.

It will be noted that the power structure embodies substantially upper and lower post sections 7 and 8 respectively. The common sections 9 are interposed between corresponding upper and lower sections 7 and 8 respectively, in each post construction.

In Fig. 6, it will be noted that each lower post section 8 is disposed upon the base plate 10 which has an upstanding sleeve 11 for disposition into the lower portion of the section 8. A bolt 12 passes through the lower portion of the section 8 and through the said sleeve 11 for securing the section 8 to the base plate 10, while the base plate 10 is secured by elements 13 to the aforementioned space 5.

At this point, it is manifested, that the sections 7, 8 and 9 are of double construction, the outer tubing being denoted by numeral 14, and the inner tubing by the numeral 15 (see Fig. 4). The inner tubing 15 terminates at its upper end inwardly of the upper end of the outer tubing 14, and at its lower end beyond the lower end of the outer tubing 14. Thus, slip-tight connections are effected between the various sections of the several posts.

To accommodate drilling rigs, etc., the lower sections 8 are substantially longer than the other sections, and to compensate for this elongation, one of the angle plates 16 is secured to the intermediate portion of each section 8. These angle plates 16 are spot welded or otherwise secured to the sections 8 as well as the section 9 and each is provided at its respective ends with a pair of key slots 17—17, and a pair of buttons 18—18.

At the upper end portion of each section 9, one of the angle plates 16 is secured substantially in the manner as shown in Fig. 5, so that a portion thereof will bear against the lower portion of the upper connecting section of the particular post.

It will be observed in Fig. 2, that angle bars such as are also shown in Fig. 1, are employed and these angle bars are each denoted by the numeral 19. Each angle bar 19 has a pair of obliquely disposed slots 20—20 exposed divergently with respect to a similar pair of slots 20—20 at the opposite ends thereof. These slots receive the buttons 18—18 on corresponding angle plates 16, so as to retain the pair of the posts 6 in definite spaced relation. Obviously, by varying, that is gradually reducing the length of each successive angle bar 19, the proper convergent relation of the post 6 is determined.

As is clearly shown in Fig. 2, the pair of brace rods 21—21 are mounted between the pairs of angle bars 19. Each of these braces (see Fig. 10) is bent laterally at its ends as at 22, and each extremity of the brace is provided with a head 23, insertible through the large opening of any one of the key slots 17.

By disposing the space rods 21 in crossed relation, so that the upper ends of the brace rods have their ends 23 inserted through the lower key slots 17, of certain of the angle plates 16 and the lower ends of the brace rods 21 have their heads 23 inserted through the key slots of underlying angle plates 16, the lower ends of the brace rods will abut or limit the position of the underlying angle bar 19, so that it will be impossible for this angle bar to become displaced, prior to the displacement of the brace rods.

It can thus be seen, that the brace rods serve as securing members for the angle bars, designed also for bracing the posts. In Fig. 14, it can be seen that the uppermost angle plates 16 are preferably secured below the upper end of the corresponding upper section 7 so as to allow for the disposition of the I-beams 24, which form part of the crow's nest generally referred to by numeral 25 in Fig. 1.

Secured to these I-beams 24, are the floor supporting bars 26 and the risers 27, all clearly shown in Fig. 1. The I-beams 24 are provided with depending elements 28 and engage within the upper sections of the upper section 7, whereby the upper section may be connected to the I-beams 24 by a bolt 29.

Fig. 15 discloses an alternate form in which the angle plates 16′ are only provided with one key slot 17′ and one button 18′, the other button being displaced by an opening through the angle bar to receive a bolt 18*a*. This bolt extends through an opening in the corresponding end of the angle bar 19′ while inwardly from the opening in each end of the angle bar 19′ a slot 20′ is provided for receiving the corresponding button 18′.

In this manner, the angle bar 19′ may be employed for securing the upper end of the post 6 in definite spaced relation without probability of becoming displaced and without depending upon the brace members 21—21 to insure connection.

A ladder 30 of generally conventional construction, is adapted for vertical disposition at the side of the tower in substantially the manner shown in Fig. 1. This ladder is provided with the usual side rails 31 and rungs 32. A plurality of hooks 33 are provided and secured to the rails 31 of the ladder in pairs, for engaging over corresponding angle bars 19 in substantially the manner as shown in Fig. 12.

These hooks each comprise a substantially horizontal portion, a downwardly disposed portion 34, a portion 35 disposed backwardly in parallelism with respect to the horizontal portion, and an upwardly disposed portion 36 for engaging the outside of the depending section of the corresponding angle bar 19, as clearly shown in Fig. 12.

It will thus be seen, that a derrick involving the elements hereinbefore described, can be easily assembled or disassembled without likelihood of damaging any of the parts or without necessitating skilled workmen.

While the foregoing specification has set forth the invention in definite terms, it is to be understood that various changes in the shape, size, and materials may be resorted to without departing from the spirit and scope of the invention as claimed hereinafter.

Having thus described my invention, what I claim as new is:—

A tower sector comprising a pair of double legs, each member of each double leg comprising a number of sections, each section comprising inner and outer tubular members with the lower end of the inner member projecting beyond the lower end of the outer member, and the upper end of the outer member projecting beyond the upper end of the inner member, with a lower end of the inner member telescoping into the upper end of an outer member, of a lower section, angle brackets secured to the outer members and projecting beyond the upper ends thereof to engage the lower ends of the outer members of adjacent sections, to which said brackets are secured and cross bars having their ends connected with the brackets.

In testimony whereof I affix my signature.

HENRY T. BARNHART.