April 28, 1931. H. J. BYERS 1,802,373

ADJUSTABLE BRACE

Filed Dec. 17, 1926

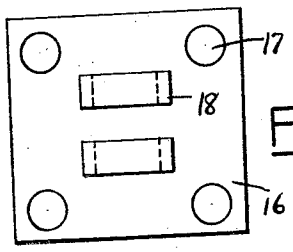


Fig 1

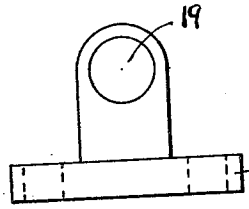


Fig 2

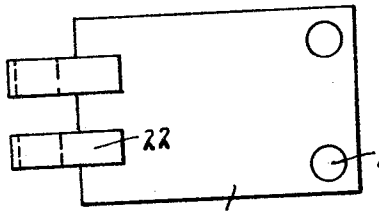


Fig 3

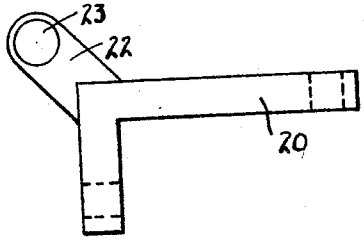


Fig 4

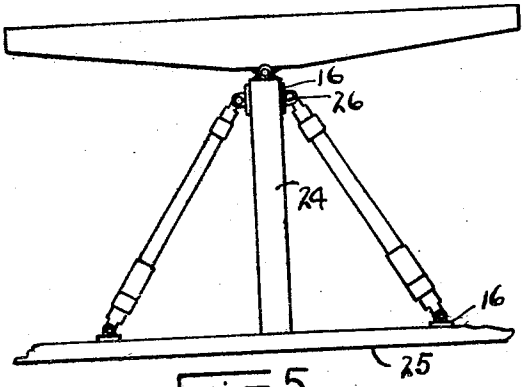


Fig 5

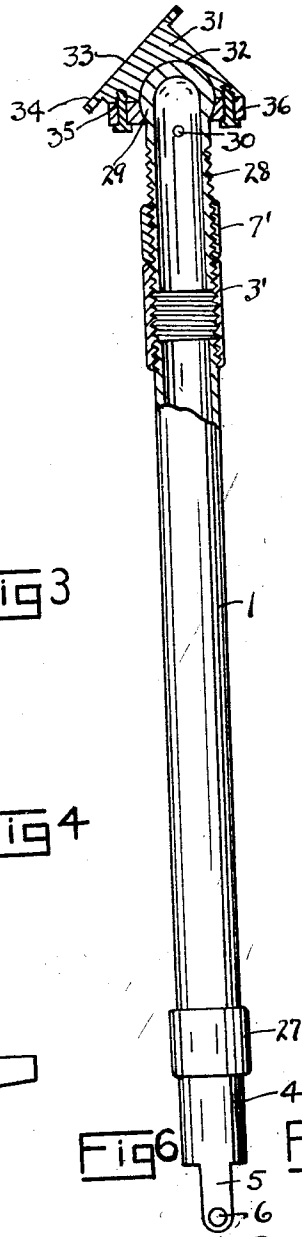


Fig 6

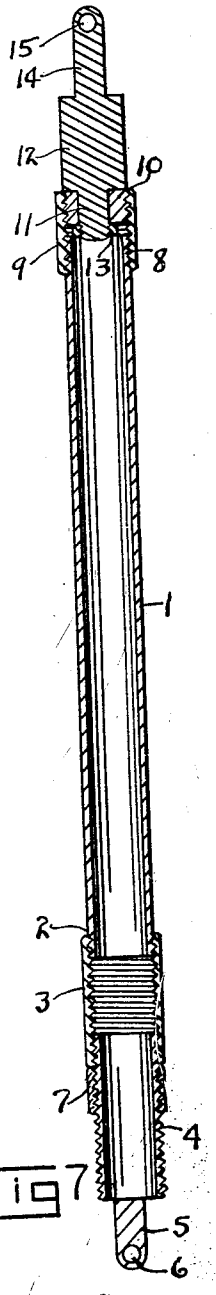


Fig 7

Harry J. Byers Inventor

By Jesse R. Stone

Attorney

Patented Apr. 28, 1931

1,802,373

UNITED STATES PATENT OFFICE

HARRY JEROME BYERS, OF BEAUMONT, TEXAS

ADJUSTABLE BRACE

Application filed December 17, 1926. Serial No. 155,469.

My invention relates to braces adapted particularly for use on constructions of temporary, or portable, nature such as are found in oil well drilling installations.

In such structures the drilling rig or pumping rig must be installed upon a derrick platform and anchored and braced in such manner as to withstand particularly heavy service. Such rigs may have to be moved from one well to another and adjustability and ease of handling are particularly desirable.

It is an object of the invention to provide a brace which may be employed to firmly support parts of a structure or apparatus and adapted to be adjusted to fit the same for a variety of situations.

It is also desired that the brace be made largely of material which can be easily and cheaply obtained about a drilling or pumping rig.

Referring to the drawing herewith, Fig. 1 is a top plan view of an attaching bracket employed with the invention. Fig. 2 is a side elevation thereof. Figs. 3 and 4 are top plan and side elevations respectively of a second form of attaching bracket. Fig. 5 is a side elevation of a Samson post with braces embodying my invention employed thereon. Fig. 6 is a side view, partly in central vertical section, illustrating one form of my brace; and Fig. 7 is a central longitudinal section through a slightly different embodiment of the invention. Like numerals of reference are employed to designate like parts in all the views.

The brace constituting the invention is adapted for use upon drilling rigs particularly, although it is capable of wider application. It may be employed in connection with the Samson post or the jack post or it may be employed to brace the headboard of the derrick by which the draw works are supported.

In the drawing, Fig. 7 illustrates one form of the invention in which there is a central reach nipple 1, constituting the body of the brace. It is preferably made of pipe for lightness and strength and is threaded at 2 at one end for attachment to an adjusting collar 3. Said adjusting collar is an elongated coupling, threaded on its interior and adapted to engage with a threaded brace head 4. Said brace head may be of pipe, one end of which has been deformed in any desired manner so that it preferably forms a solid projecting arm 5 having an opening 6 therein to receive a connecting pin. The body of the brace head is threaded throughout its length so that the collar 3 may be adjustable longitudinally thereon with a right-hand threaded connection. I employ a jam collar 7 on the brace head adjacent to the adjusting collar to act to lock the collar and head in adjusted position when desired.

The upper end of the reach nipple is also threaded at 8 for connection with a collar 9, the opposite end of which is connected to a swivel nut 10.

The swivel collar 10 is adapted to fit the lower neck 11 of a head 12, the said nut 10 being rotatable on the neck 11 and held in place thereon by a nut 13 screwed upon the forward end of the neck 11 and adjusted to hold the nut 10 rotatably in position. The upper end of the head 12 is formed with an arm 14 having an opening 15 therein to receive a pin by which it is connected with an attaching bracket.

If this device is employed with a Samson post or other similar device, a bracket such as is shown in Figs. 1 and 2 will be employed. The bracket comprises a plate 16 having openings 17 therein to receive screws or bolts by which it may be attached in position. It has two spaced lugs 18 thereon with aligned openings 19 to receive the pivot pin by which it is connected to one of the arms 14 or 5, as may be the case.

If the brace is to be secured to a beam or headboard on the derrick, a bracket such as is shown in Figs. 3 and 4 may be employed. Said bracket is an angular plate 20 adapted to fit on the top and side of a beam or headboard and to be secured thereto by screws through openings 21 in the plate. Spaced arms 22 projecting from the angle of said plate have openings 23 therein to receive the

pin by means of which the connection is made with the brace.

In using this brace in the manner shown in Fig. 5 for supporting an upright post 24, the bracket 16 may be secured to the post 24 adjacent the upper end thereof and a similar bracket 16 secured in the proper spaced relation from the post upon the platform 25. The brace will then be secured to the brackets, a pin, shown at 26, extending through the lugs 18 of the bracket, and the opening in the arms 14 of the brace and a tight connection thus made at this point. The lower end of the brace will be secured to the bracket 16 upon the platform in a similar manner. In making this connection of the brace with the post and the platform, the brace will be of normal length but capable of adjustment as to length through means of the collar 3 and the brace head 4. If, therefore, the brace is to be lengthened slightly to exert a thrust upon the post, this may be done by rotating the collar 3 upon the brace head 4, screwing the collar on the head so as to unscrew the connection between them, thus lengthening the pipe. In this unscrewing action, the nipple 1 will be rotatable and this rotation will be accommodated by means of the swivel connection between the nipple and the upper swivel head 12 in an obvious manner.

In Fig. 6 I have shown a reach nipple 1, similar to that shown in Fig. 7. The connection between the nipple 1 and the lower head 4′ is by means of an ordinary coupling 27. At the upper end of the nipple 1, the said nipple is connected to a swivel head 28 in an adjustable manner by means of a collar 3′.

The head 28 is preferably tubular for the purpose of lightness. It is threaded on its outer surface to connect with the collar 3′ and a lock or jam collar 7′ is threaded thereon for the purpose of locking the parts in adjusted position. The upper end of the head 28 is closed and formed with a spherical shaped head 29 thereon, forming the ball of a ball and socket joint. An opening 30 transversely through this head allows the insertion of a rod or wrench, so that said head may be rotated when desired.

A special bracket 31 is provided with a hemispherical socket 32 therein to receive the head 29 of the brace. Said bracket is a casting having an inclined face 33 to fit against a supporting member, such as the Samson post or similar structure, and openings 34 in a marginal flange along said face are provided to receive attaching bolts or screws. The bracket is approximately triangular in cross section and the side having the socket 32 therein is provided with threaded openings to receive cap screws 35 by means of which a retaining ring 36 may be secured thereon. Said retaining ring has a central opening therein to fit about the outer side of the head 29, as shown in the drawing. Said ring, when secured in place, will prevent the withdrawal of the ball member of the joint.

In use this brace will function in practically the same manner as the embodiment shown in Fig. 7. The adjustment longitudinally is obtained by rotating the head 28, so as to screw it in or out of the collar 3′, and when properly adjusted the jam collar 7′ may be set to hold it in that position. The rotation of the head 28 will cause the rotation of the ball member in the bracket in an obvious manner, but will not bind in any way so as to interfere with the free rotation of the adjusting means.

While I have shown this device as employed to brace an upright post, it is to be understood that it may be used in other situations where a brace of this kind is desirable and where it is employed to brace a beam or headboard. The brackets shown in Figs. 3 and 4 may be used to make the connection between the brace and the beam. It will be noted that this brace is particularly strong and adapted to withstand heavy strains but is simple in construction and easy to adjust.

Having thus described my invention, what I claim as new and desire to protect by Letters Patent is:

A brace of the character described comprising a tubular reach nipple, a swivel head, a swivel nut rotatable on said head, a collar connecting said nut and said nipple, a bracket, means to secure said nipple to said bracket, a threaded attaching head, and an adjusting collar secured to said nipple and said attaching head.

In testimony whereof I hereunto affix my signature this 13 day of December, A. D. 1926.

HARRY JEROME BYERS.