Dec. 15, 1925. 1,566,006

B. F. HINIKER

PIPE SPIDER

Filed Aug. 25. 1923

Fig. 1

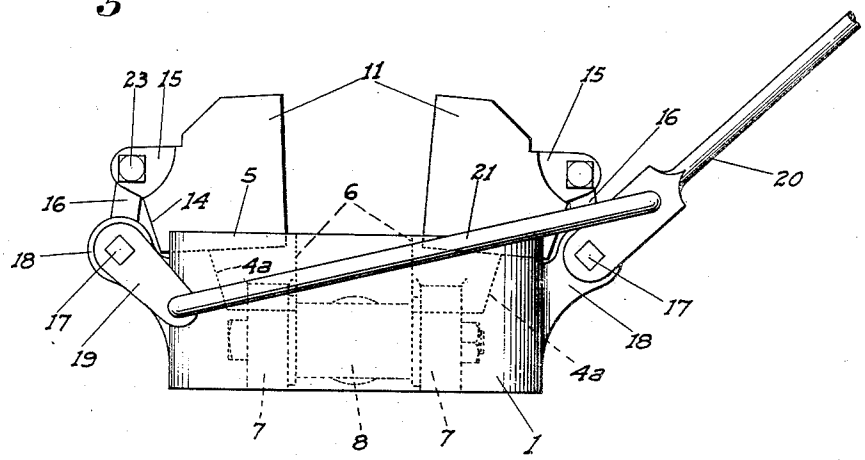


Fig. 2

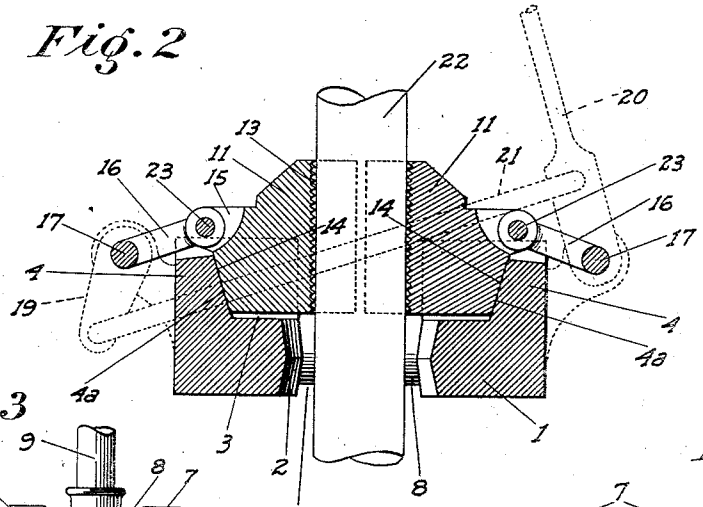


Fig. 3

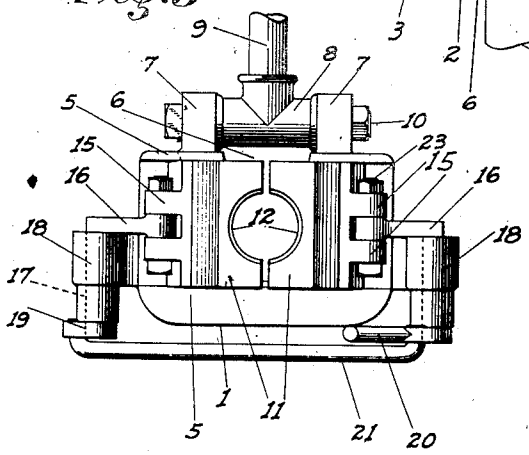
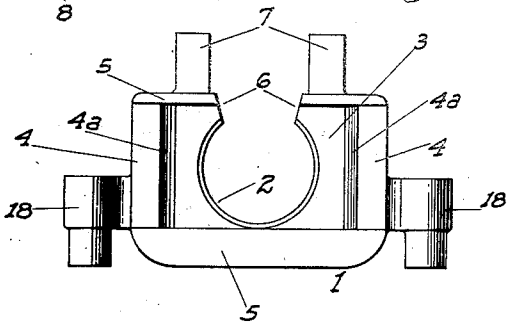


Fig. 4



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UNITED STATES PATENT OFFICE.

BENJAMIN F. HINIKER, OF TAFT, CALIFORNIA.

PIPE SPIDER.

Application filed August 25, 1923. Serial No. 659,293.

To all whom it may concern:

Be it known that I, BENJAMIN F. HINIKER, a citizen of the United States, residing at Taft, county of Kern, State of California, have invented certain new and useful Improvements in Pipe Spiders; and I do declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, and to the characters of reference marked thereon which form a part of this application.

This invention relates to improvements in well drilling machinery and equipment, and particularly to a spider for holding pipe and the like, the present device being an improvement over that shown in my United States Patents, No. 1,273,858, dated July 30th, 1918, and No. 1,375,964, dated April 26th, 1921.

The principal object is to provide a structure of the character shown in the above mentioned patents in which the construction is greatly simplified thereover, all springs, dovetailing and other complex features being eliminated, while the gripping action of the jaws is much simpler and yet fully as effective as in the previous forms.

I have also greatly simplified the placing and removing of the spider about a pipe.

The above and other objects I accomplish by means of such structure and relative arrangement of parts as will fully appear by a perusal of the following specification and claims.

In the drawings similar characters of reference indicate corresponding parts in the several views:

Fig. 1 is a side elevation of the spider, with the jaws in their spread or open position.

Fig. 2 is a sectional elevation, showing the jaws clamped about a pipe.

Fig. 3 is a top plan view of the complete spider, with the jaws in closed position.

Fig. 4 is a similar view of the base member alone.

Referring now more particularly to the characters of reference on the drawings, the numeral 1 denotes a base member, substantially rectangular in general form. This base is provided with a centrally and vertically disposed orifice 2, which extends from the bottom upwardly to a distance about half the height of the base, the latter from said plane to its upper end being formed with a cavity 3, substantially of rectangular form, the inner faces of the end walls 4 of said cavity having an outward slope upwardly, as shown at 4^a, while the side walls 5 are straight and parallel to each other and projected above the end walls 4 to a certain extent.

On one side of the base is a vertical opening 6 extending from top to bottom and thus of course communicating both with the orifice 2 and the cavity 3.

Lugs 7 formed on the base project outward therefrom at the sides of the opening 6 to receive therebetween a T member 8 from which projects a horizontal pipe or bar 9, adapted to be abutted against a fixed post or other member of a well derrick or frame so as to enable the spider to be easily held against rotation when desired.

The T member when in position between the lugs of course closes the opening 6 to a certain extent, and is therefore removably mounted between said lugs by a bolt 10 passing through the latter and removable at will.

Supported by the base and adapted to partially project into the cavity 3 are opposed jaw blocks 11 having on their adjacent ends opposed and cooperating jaw orifices 12, each preferably semicircular in outline and threaded as at 13 to provide a positive grip on a pipe.

The lower portions of the opposite ends of the jaws are tapered as at 14 corresponding to the end-wall tapers 4^a, against which the tapered jaw-ends bear when the jaws are moving to their closing position, the side walls 5 forming side guides for the jaws at all times.

Above the tapered portions of said jaws the latter have horizontal lugs or ears 15 projecting over the walls 4, to provide pivotal supports for the inner ends of links 16, the outer ends of which carry stems 17 turnably mounted in bosses 18 formed on the base at the oposite ends thereof.

Said stems project beyond the bosses from the faces thereof opposite to the lugs 7. On the projecting end of one stem is fixed an arm 19 and on the other an operating lever 20, a connecting rod 21 extending therebetween, the arm and lever, and said rod, being so disposed relative to each other simultaneously and an equal amount, and when said lever is moved in the opposite direction,

the jaws will similarly move away from each other.

The various parts of the device are so proportioned and disposed relative to each other that when the jaws are being released from their clamping position about a pipe 22 as shown in Fig. 2, the initial upward rotation of the links 16 causes the sloping jaw-ends 14 to substantially follow the slope of the base-walls 4ª, so that the jaws move evenly both upwardly and away from the pipe.

As soon as the lower edges of the ends of the jaws reach the top of the walls 4, the rotation of the links causes the jaws to move directly apart while resting on top of said walls, until their adjacent ends are spaced apart a distance somewhat greater than the width of the base side-opening 6, when they will lie in a somewhat tilted position as shown in Fig. 1. The side walls 5 prevent turning or lateral movement of the jaws at all times.

With the reverse movement of the lever, the above described movement of the jaws takes place in the reverse order, and when the jaws are in their clamping positions the axial lines of the arm 19 and lever 20 preferably converge upwardly toward each other.

The pipe cannot then rotate in the jaws, and the jaws cannot turn in the base, owing to its rectangular construction.

Neither can the spider as a whole rotate if the pipe 9 is abutted against a fixed object, as hereinbefore described.

To place the device about a pipe, it is only necessary to remove the pipe and T member 8 as a unit by taking out the bolt 10, and raising the jaws so that they clear the side opening 6. The spider may then be placed about the pipe by a horizontal movement, the pipe passing through the opening 6.

The jaws may then be lowered to clamp the pipe, and it will be noted that when in said clamped position the bottoms of the jaws are clear of the bottom of the cavity 3, and their adjacent ends are spaced apart as well, so that nothing interferes with a positive gripping of the pipe.

This gripping of the pipe is materially aided by the sloping faces of the jaws and end walls, which, with the weight of the clamped pipe, causes a constantly exerted and inward wedging action of the jaws to take place.

The orifice 2 is provided with a reverse bevel, as shown in Fig. 2, so as to prevent the pipe from hanging up at any time.

The device may be used to hold sucker-rods, cable, and in fact any round pieces, if suitable sized jaws are provided.

Jaws having different sized openings but the same external size may be provided and substituted for each other at any time, by merely removing the link bolts 23 which connect the links to the jaw-lugs.

From the foregoing description it will be readily seen that I have produced such a device as substantially fulfills the objects of the invention as set forth herein.

While this specification sets forth in detail the present and preferred construction of the device, still in practice such deviations from such detail may be resorted to as do not form a departure from the spirit of the inventon, as defined by the appended claims.

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

1. A pipe-holding spider comprising a base member provided with a downwardly extending cavity open to the bottom, jaw-blocks having cooperating pipe-engaging surfaces on their adjacent faces mounted in the cavity, the base being provided with a side opening leading to said cavity and extending from top to bottom of the base, and a member removably mounted across said side opening and having a lateral extension adapted for engagement with a fixed object, whereby to prevent rotation of the base.

2. A pipe-holding spider comprising a base member provided with a downwardly extending cavity open to the bottom, jaw-blocks having cooperating pipe-engaging surfaces on their adjacent faces mounted in the cavity, means for moving said jaws to and away from each other, and a rigid removable member projecting horizontally from one side of the base and adapted to abut against a fixed object to prevent rotation of the base.

3. A pipe holding spider comprising a base having a vertical cavity therethrough, opposed pipe engaging jaw blocks mounted in the cavity, a single lever for moving the blocks, connecting means between said lever and the blocks to cause both blocks to move together with a movement of the lever, and means included with said connecting means whereby with such lever movement the blocks will be moved from their pipe engaging position both horizontally and vertically for a certain distance and then horizontally only.

4. A pipe holding spider comprising a base having a vertical cavity therethrough, the opposed walls of said cavity having a converging slope from the top down, opposed jaw blocks normally mounted in the cavity, movable means connecting the blocks onto the base in a manner to enable the blocks to move up said sloping walls and then along the top of the base, and means applied to said connecting means for operating the same to thus cause the blocks to move.

5. A pipe spider comprising a base hav-

ing a vertical cavity whose opposed walls have a diverging upward slope, pipe engaging blocks mounted in the cavity and normally engaging the sloping walls, links pivoted on the blocks at the opposed ends thereof and on the base adjacent thereto, means connected to the links for rotating them upwardly about their base pivots, and means whereby when the blocks have been moved to the top of the sloping walls by the rotation of the links further rotation of the latter will cause the blocks to be drawn horizontally from each other.

6. A pipe holding spider comprising a base having a vertical cavity therethrough, the opposed walls of said cavity having a converging slope from the top down, opposed jaw blocks normally mounted in the cavity, movable means connecting the blocks onto the base in a manner to enable the blocks to move up said sloping walls, and to then rest on the surface of the base beyond the bore thereof, and hand actuated means applied to said connecting means for enabling the same to be operated simultaneously for thus moving the blocks.

In testimony whereof I affix my signature.

BENJAMIN F. HINIKER.