

Aug. 10, 1926.

1,595,652

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PORTABLE SUSPENDING DEVICE FOR SUCKER RODS

Filed July 7, 1924

3 Sheets-Sheet 1

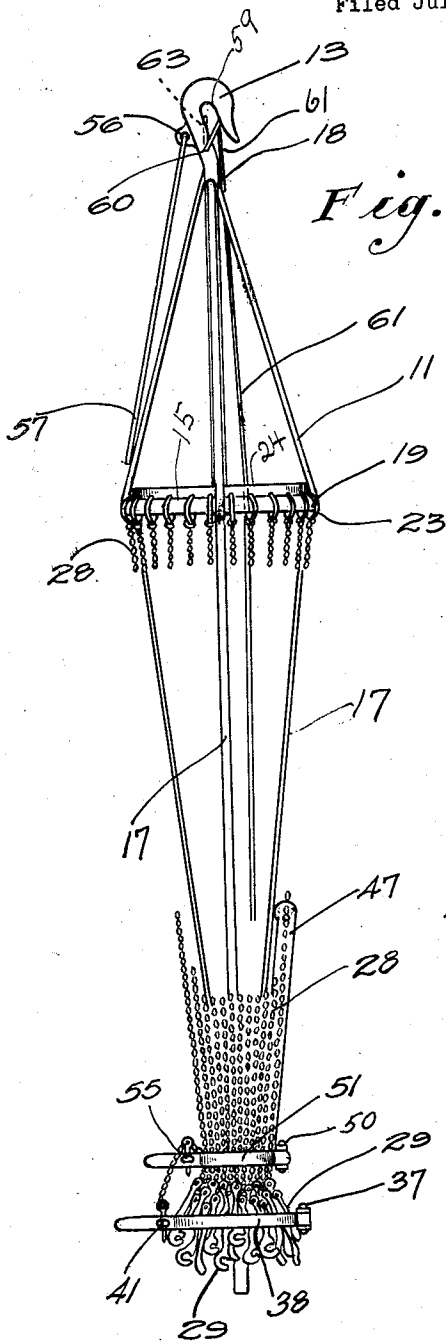


Fig. 1.

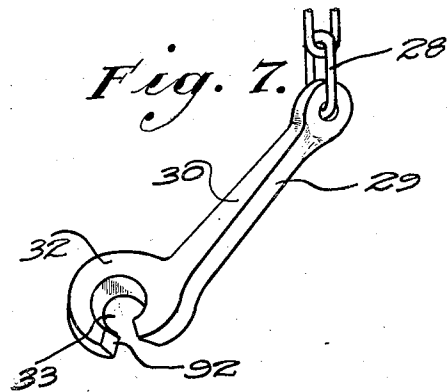


Fig. 7.

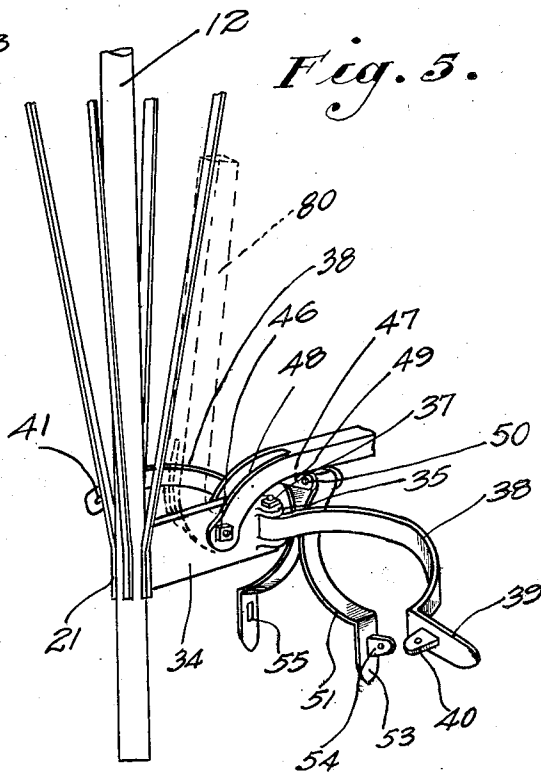


Fig. 5.

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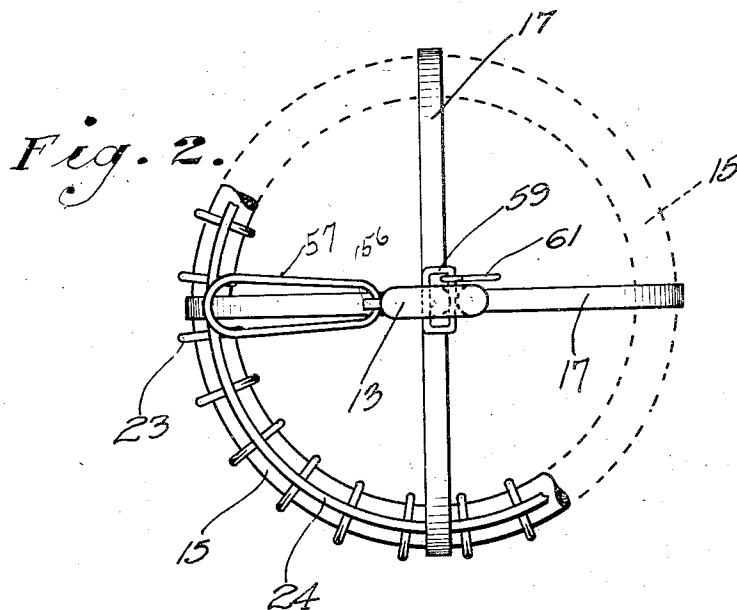
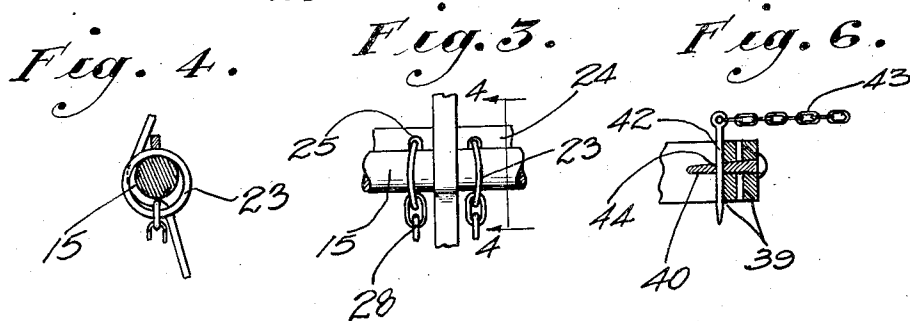
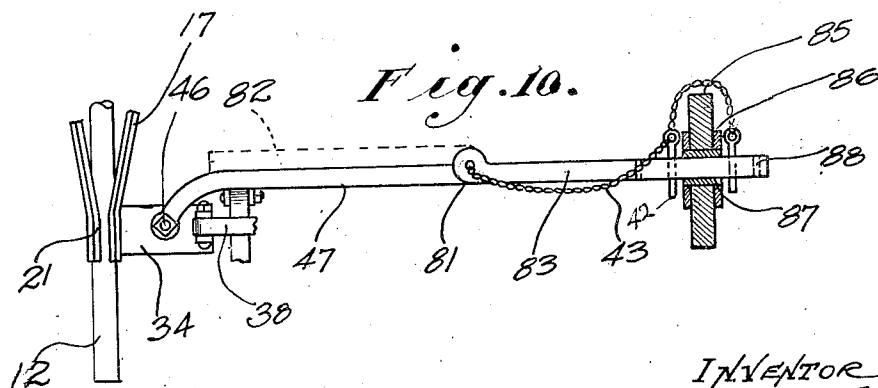
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PORTABLE SUSPENDING DEVICE FOR SUCKER RODS

Filed July 7, 1924

3 Sheets-Sheet 2



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PORTABLE SUSPENDING DEVICE FOR SUCKER RODS

Filed July 7, 1924

3 Sheets-Sheet 3

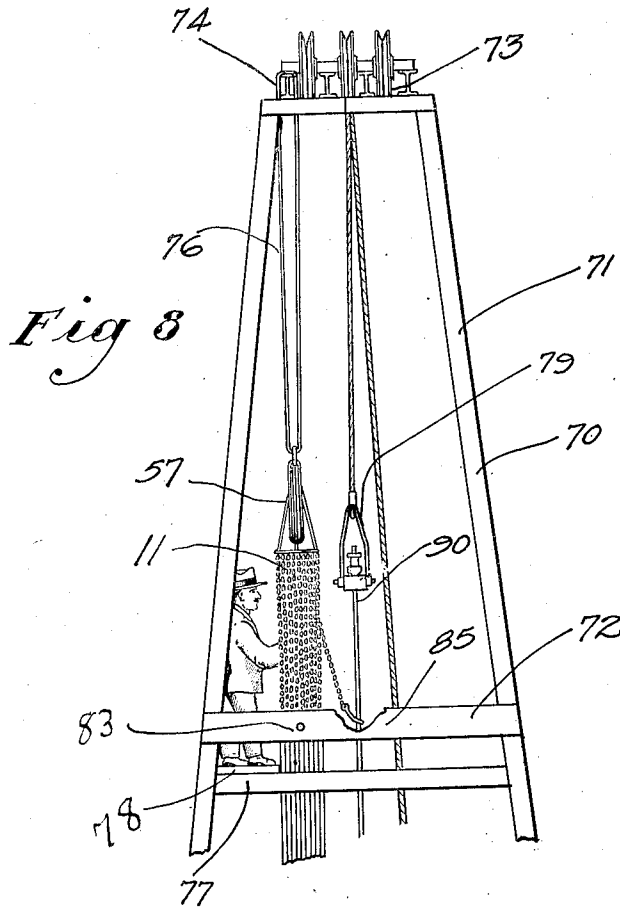
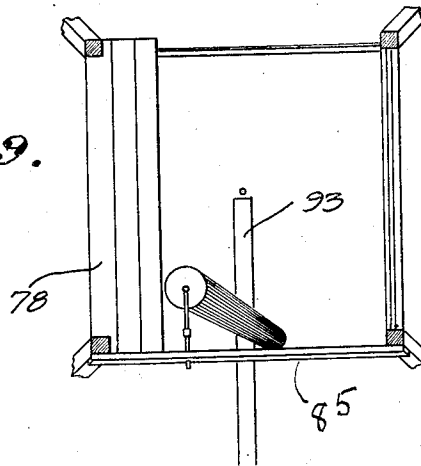


*Fig. 9.*



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## UNITED STATES PATENT OFFICE.

GEORGE E. FRITTS, OF TAFT, CALIFORNIA, ASSIGNOR, BY MESNE ASSIGNMENTS, TO  
F. A. KEEFOVER AND DAISY KEEFOVER.

## PORTABLE SUSPENDING DEVICE FOR SUCKER RODS.

Application filed July 7, 1924. Serial No. 724,700.

This invention relates to oil well equipment and relates particularly to a portable suspending device for sucker rods. The device presented in this application is similar to the arrangement presented in my pending application entitled Sucker rod hanger, filed May 2, 1923, Serial No. 636,107.

In the oil well industry, oil is pumped from the well by means of a pump plunger, which reciprocates in a pump barrel, the plunger and barrel being situated at the lower end of the well. Mechanism for reciprocating the plunger in the barrel is located at the surface of the ground and motion from the mechanism is transferred to the pump plunger through a string of sucker rods. When it is necessary to replace or repair the plunger or barrel, the sucker rods must be pulled from the well. The sucker rods are very flexible and therefore hard to handle. Previous to my invention supra, it was necessary to uncouple the sucker rods in "stands" of several joints and lay them outside the derrick generally to one side of the engine house. It will readily be seen that this was quite a task, because of the nature of the rods which had to be carried through the side of the derrick between the girts and diagonal members thereof. By using my previous invention it was possible to uncouple the sucker rods in quite long lengths and to hang them in one corner of the derrick, thus making it very convenient and very quick to remove and install in the well.

As the sucker rod hangers are used only when it is necessary to pull the sucker rods, it will be seen that the hangers are unused most of the time. Equipping each well with sucker rod hangers therefore incurs considerable capital in respect to the amount of use to which the hangers are put.

It is an object of this invention to provide a portable suspending device for sucker rods, this device being of such construction that it may be transported from one well to another when it is desired, or necessary to pull the sucker rods of that specific well.

It is a further object of the invention to provide in a device of this character a means for holding the flexible members and hanger members compactly against the body structure of the device during the shipping thereof.

It is also an object of the invention to provide in a device of this character a means for preventing a lateral movement in the device when it is installed in the derrick.

It is a further object of the invention to provide certain features of construction which will render the using of the device with safety, these features being elucidated hereinafter.

It is a still further object of the invention to provide a device which is very compact in size, which is very sturdy in construction and which is very economical to produce.

Further objects and advantages of the invention will be made evident hereinafter.

Referring to the drawings which are for illustrative purposes only,

Fig. 1 is an elevational view of a device presenting the features of my invention.

Fig. 2 is a plan view of Fig. 1 on a slightly enlarged scale.

Fig. 3 is an enlarged fragmentary view showing the manner in which the attachment rings are spaced on the suspension member by the spacing member.

Fig. 4 is a section taken as indicated by the line 4-4 of Fig. 3.

Fig. 5 is an enlarged fragmentary perspective view showing very clearly the binding member employed in the device.

Fig. 6 is an enlarged fragmentary view showing the manner in which the binding members are secured around the flexible members and hangers.

Fig. 7 is a large perspective view showing a form of sucker rod hanger, which I may employ in the device.

Figs. 8 and 9 are essentially diagrammatic views showing the device installed in the well in the manner in which it is utilized.

Fig. 10 is a fragmentary view showing the manner in which the device is rendered non-movable in a lateral direction.

In the drawings certain parts in the different views are broken away or left out purposely to efficaciously present the various features of this invention. As shown in Figs. 1, 2 and 5, the body structure comprises a central supporting member in the form of a vertically extending rod, which has a hook or attaching member situated at the top end thereof as clearly

shown in Fig. 1. A suspension member in the form of a solid ring 15 is secured to the member 12 by means of supporting struts 17, these supporting struts being preferably secured to the central member 12 at the upper end thereof at 18 as by welding. The struts 17 extend outwardly and downwardly around the ring 15 and are welded thereto at 19 as shown. The lower ends of the struts 17 converge and are welded to the lower end of the central member 12 as indicated at 21. Attachment rings 23 as shown clearly in Figs. 3 and 4, are arranged on the suspension member 15. A spacing member 24 is provided for spacing the rings 23 in a definite location, this member 24 having semi-circular slots 25 which, when the member is installed in place, fit over the upper portions of the rings 23, thereby holding them in place as shown. Secured to each ring 23 is a flexible member in the form of a chain 28. These flexible members hang downwardly and have a sucker rod hanger 29 secured at the lower end thereof. As shown in Fig. 7, a form of sucker rod hanger which I may employ comprises an arm portion 30, to which the chain 28 may be attached. Opposite from the attaching end of the arm is formed a head portion 32, which head portion 32 has a slot 33 formed therein. The use of the sucker rod hanger will be described hereinafter. The invention employs a binding means which is arranged to bind the lower ends of the flexible members and the sucker rod hangers compactly against the body during the shipping of the device. As shown clearly in Fig. 5, a supporting member 34 extends from the central rod 12, preferably being welded thereto. At the outer end of the member 34, lugs 35 are provided through which the bolts 37 extend, there being a pair of lugs formed on each side of the member 34. Lower binding members 38 are pivoted on each of the pins or bolts 37, these members being semi-circular in shape as clearly shown in Fig. 5. Extending substantially radial from the free end of the members 38 are ears 39, one having a wedge 40 and the other ear 39 having an opening 41 through which the wedge 40 is arranged to extend. As clearly shown in Fig. 6, when the binding members 38 are in binding position, the wedge 40 extends through the opening 41 and a pin 42 arranged on a chain 43 may extend through a hole 44 in the wedge 40 in a manner to secure the binding members around the suspension members. It will be seen that the members 38 are forced together in such a manner that there will always be a pressure against the pin 42 so as to retain the pin frictionally in place. Pivoted at 46 to the supporting member 34 is an arm 47, this arm 47 being bifurcated as shown so that a leg 48 extends to either side of the member 34.

Secured to the arm 47 are lugs 49 having pins 50 extending therethrough. Upper binding members 51 are pivoted between each pair of lugs 49, these pairs being situated to each side of the arm 47, similar to the binding members 38. The binding members 51 have ears 53, one ear being provided with a wedge 54, whereas the other ear is provided with a slot 55. As shown in Fig. 1, when the device is arranged for shipping, the arm 47 is arranged to extend in substantially vertical position and the binding members are secured around the device in such a manner that the upper binding members 51 compact the flexible members against the body and the lower binding members compact the sucker rod hangers against the body.

Pivoted on the lug 56, which is provided at the upper end of the rod 12, is an elevating link 57, as shown in Figs. 1 and 2. This link is for the purpose of attaching the device to the elevator when it is desired to raise or lower it in the derrick. To prevent the body member from being inadvertently detached from its supporting member, a safety arrangement as shown in Figs. 1 and 2 is provided. This arrangement comprises a gate member 59, which pivots at 60 to the hook 13. Secured to the gate 59 is a rod 61 which extends downwardly therefrom, as shown clearly in Fig. 1. It will be seen from Fig. 1 that it will be impossible for a supporting member to egress from the hook without first swinging the gate 59 into the dotted position as shown at 63 in Fig. 1, the swinging thereof being accomplished through the rod 61.

As shown in Figs. 8 and 9, is a derrick in which my device is arranged to operate. The derrick comprises the corner members 71 which have suitable girts 72 and diagonal members which are left off for the sake of clearness. At the upper end of the corner members 71 is placed the crown block 73, which includes I-beams 74. One of the I-beams 74, as shown, supports a hanger member which may be in the form of a looped cable 76. On the girt 77 is provided a platform 78 on which a workman handling the sucker rods may stand. The sucker rod hanger suspension device of my invention may be installed in a derrick in the following manner.

Considering that the device has been delivered to the derrick floor, the elevator, shown at 79 in Fig. 8, is lowered and secured to the elevating member 57 in a suitable manner. The elevator is then moved upwardly and the device hoisted to the top of the derrick. The device is then adjusted to a position suitable to permit the entrance of the hanger member 76 into the hook 13. The weight is then transferred from the elevator 79 to the hanger member 76, after

which the elevator is detached from the elevating link 57. The pins 42 are then removed from the holes in their respective wedges 40 and 54, which allow the upper and lower binding means 51 and 38 to be swung outwardly on their pivots 49 and 37 respectively, the flexible members 28 and the hangers 29 being allowed to hang substantially as shown in Fig. 8. The arm 47 is then swung into the position shown in the full lines in Fig. 5 or full lines in Fig. 10. Pivoted to the outer end of the arm 47 at 81 is a secondary arm 82, which arm 82 when the arm 47 is in the position indicated by the dotted lines 80 in Fig. 5 is folded as shown. However, after the arm has been swung, as indicated in Fig. 10, the arm 82 is then swung into the position shown by the full lines 83 of Fig. 10. The girt 85 as clearly shown in Fig. 10 is provided with a member 86 which provides an orifice 87. The end of the arm 82 is extended through the orifice 87 as shown. The arm 82 has numerous openings 88 provided therein, and after the arm has been extended through the orifice 87, the pins 42 which are arranged on the chain 43 are extended through the opening 88 as shown, these pins preventing a lateral movement in the arm 47.

It will be readily seen that in this manner a lateral motion in the body of the device is prevented, and that a vertical motion will not occur because of the fact that the device is hanging from the upper end thereof. After the device has been swung in this manner as shown in Fig. 8, the sucker rods may be pulled. The sucker rod is secured to the elevator 79 and lifted into the position as shown at 90, Fig. 8. The workman standing on the platform 78 then hooks one of the hangers 29 around the rod 90 so that the rod extends into the slot 33, after which the elevator is lowered, and the weight of the sucker rod is transferred from the elevator to the sucker rod hanger 29.

It will be seen that when the weight is transferred to the hanger 29, the lower edge 92 of the slot 33 grips the rod 90 in a manner to frictionally support it. The workman then swings the lower end of the sucker rod 90 back to one side of the walking beam 93, as shown in Fig. 9, thus keeping it to one side of the well and out of the way. The other sucker rod stands are removed and suspended in a similar manner.

From the foregoing description it will readily be seen that by the use of my present invention, the expense of supplying each well with sucker rod hanging equipment is avoided. It will also be seen that considerable time and labor is prevented by the use of this device.

I claim as my invention:—

1. In a portable sucker rod hanger device, the combination of: a body structure;

sucker rod hangers suspended from said body; and binding members secured to said body structure for binding said hangers against said body structure.

2. In a portable sucker rod hanger device, the combination of: a body structure; sucker rod hangers suspended from said body structure; a supporting member extending from said body structure; and binding members secured to said supporting member for binding said sucker rod hangers against said body structure.

3. In a portable sucker rod hanger device, the combination of: a body structure; sucker rod hangers suspended from said body structure; and upper and lower binding members for binding said sucker rod hangers against said body structure.

4. In combination: a derrick; a hanging member secured in said derrick; and a sucker rod hanger device removably hung by said hanging member comprising a body structure which is hung on said hanging member, sucker rod hangers, and flexible means for securing said hangers to said body structure.

5. In combination: a derrick; a hanging member secured in said derrick; a sucker rod hanger device removably hung by said hanging member comprising a body structure which is hung on said hanging member, sucker rod hangers, and flexible means for securing said hangers to said body structure; and means connecting said body structure with said derrick for preventing a lateral movement in said body.

6. An arrangement as presented in claim 5 in which said means is in the form of an arm member permanently secured to said body structure and detachably secured to the derrick.

7. In a portable sucker rod hanger device, the combination of: a body structure; sucker rod hangers; and flexible means for suspending said hangers from said body.

8. In a portable sucker rod hanger device, the combination of: a body structure; sucker rod hangers suspended from said body structure; and flexible means whereby said device may be removably supported in a derrick.

9. In a portable sucker rod hanger device, the combination of: a body structure; sucker rod hangers suspended from said body structure; and means for binding said hangers to said body structure.

10. In a portable sucker rod hanger device, the combination of: a body structure having a means for removably supporting it in a derrick; sucker rod hangers; flexible members for suspending said hangers from said body structure; and binding means arranged to compact said hangers around said body structure.

11. In a portable sucker rod hanger de-

vice, the combination of: a body structure having a means for removably supporting it in a derrick; sucker rod hangers; flexible members for suspending said hangers from  
 5 said body structure; binding means arranged to compact said hangers around said body structure; and means for hoisting said device.

12. A device as defined in claim 10 in  
 10 which said binding means includes a pair of semi-circular members which are arranged to extend around said hangers and means for securing said members in place.

13. In a portable sucker rod hanger device, the combination of: a body structure;  
 15 sucker rod hangers suspended from said body structure; a supporting member extending from the lower end of said body structure; an arm pivotally secured to said  
 20 supporting member; lower binding members secured to said supporting member; and upper binding members secured to said arm, said upper and lower binding members being for the purpose of binding said sucker  
 25 rod hangers against said body structure.

14. In a portable sucker rod hanger device, the combination of: a central rod; an annular member secured to said central rod;  
 30 sucker rod hangers; and flexible members whereby said sucker rod hangers are suspended from said annular member.

15. In a portable sucker rod hanger device, the combination of: a central rod; an  
 35 annular member; struts whereby said annular member is secured to said central rod; sucker rod hangers; and flexible members whereby said sucker rod hangers are suspended from said annular member.

16. In a portable sucker rod hanger device, the combination of: a central rod; an  
 40 annular member secured to said central rod; rings carried by said annular member; sucker rod hangers; and flexible members

for securing one of said sucker rod hangers to each of said rings. 45

17. In a portable sucker rod hanger device, the combination of: a central rod; an annular member secured to said central rod; rings carried by said annular member; means for spacing said rings on said  
 50 annular member; sucker rod hangers; and flexible members for suspending one of said sucker rod hangers from each of said rings.

18. In a portable sucker rod hanger device, the combination of: a central rod;  
 55 an annular member secured to said central rod by suitable struts; sucker rod hangers suspended from said annular member; a hook formed at the upper end of said central rod whereby said device may be hung; and  
 60 a gate for closing the opening of said hook.

19. In a portable sucker rod hanger device, the combination of: a central rod; an annular member secured to said central rod by suitable struts; sucker rod hangers suspended from said annular member; a hook  
 65 formed at the upper end of said central rod whereby said device may be hung; a gate for closing the opening of said hook; and a rod for manually operating said gate. 70

20. In a portable sucker rod hanger device, the combination of: a central rod; an annular member secured to said central rod by suitable struts; sucker rod hangers suspended from said annular member; a hook  
 75 formed at the upper end of said central rod whereby said device may be hung; a gate for closing the opening of said hook; and an elevating link secured to the upper end of said central rod whereby said device may be  
 80 elevated.

In testimony whereof, I have hereunto set my hand at Los Angeles, California, this 5th day of June, 1924.

GEORGE E. FRITTS.