May 24, 1949. W. S. HENDRICKS 2,470,983

SUPPORT AND GUIDE FOR DRILL STEMS

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Fig. 1.

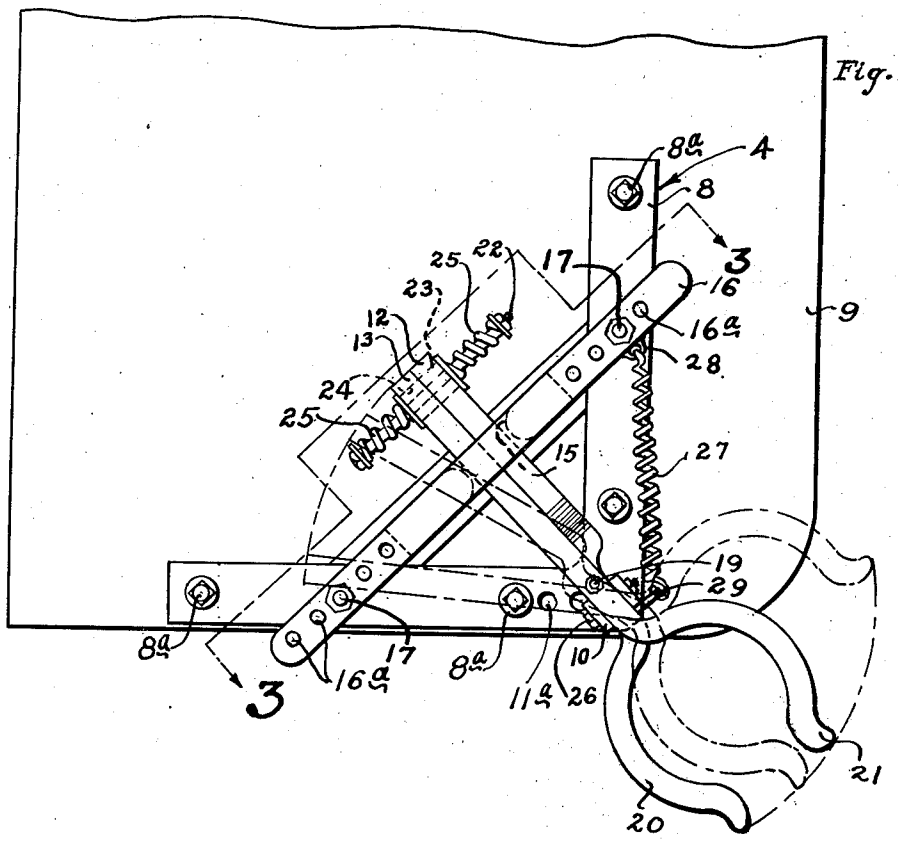


Fig. 2.

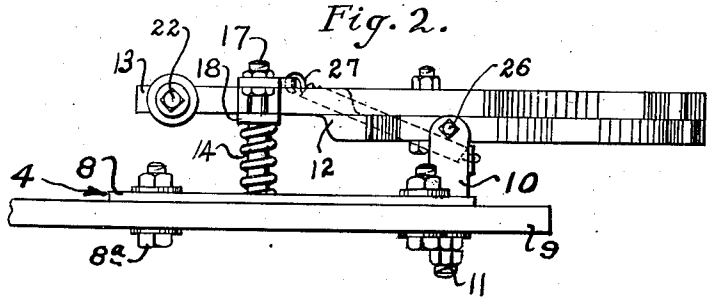
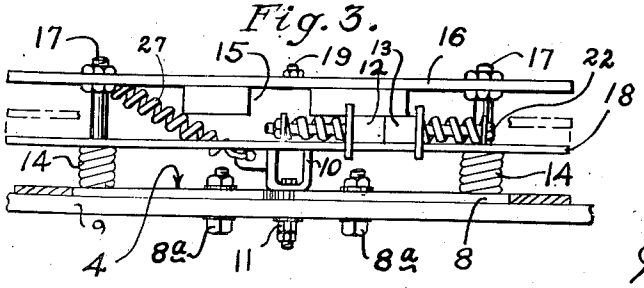


Fig. 3.



Will S. Hendricks
INVENTOR.

BY Wayland D Keith
HIS AGENT.

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Fig. 5.

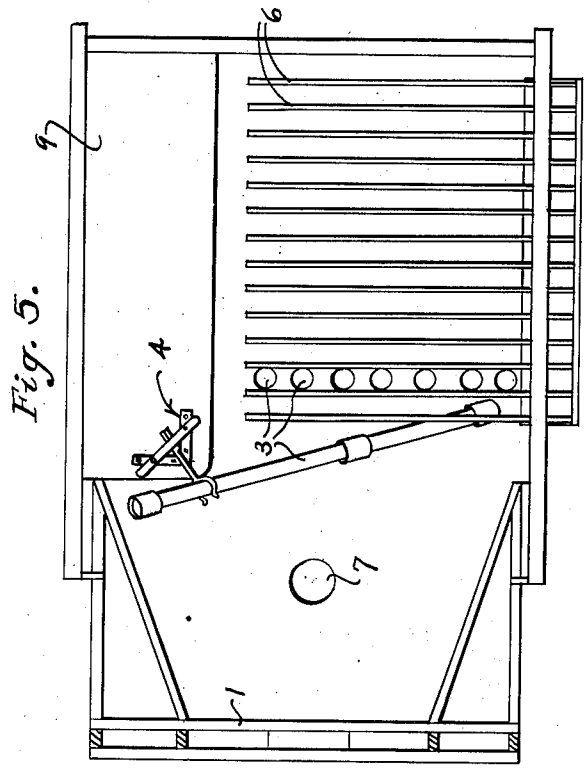
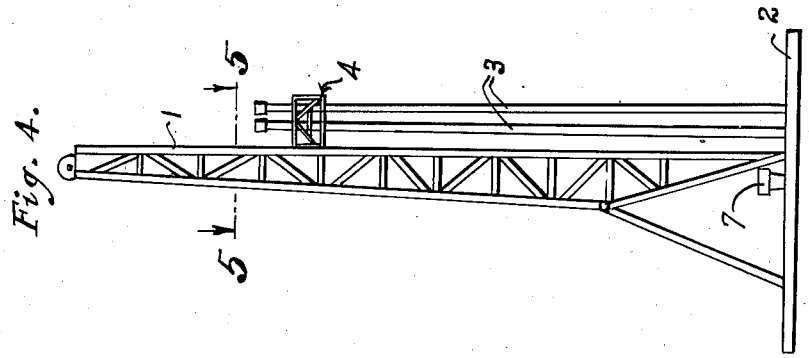


Fig. 4.



Will S. Hendricks
INVENTOR.

BY Wayland J. D. Keith
HIS AGENT.

Patented May 24, 1949 2,470,983

UNITED STATES PATENT OFFICE

2,470,983

SUPPORT AND GUIDE FOR DRILL STEMS

Will S. Hendricks, Wichita Falls, Tex., assignor of one-half to Peyton Castillow, Wichita Falls, Tex.

Application December 12, 1945, Serial No. 634,591

6 Claims. (Cl. 214—1)

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This invention relates to improvements in a support and guide for drill stem and the like to be used in derricks after the drill stem or pipe is racked in the derrick but before the elevators are attached thereto.

Elevators are well known devices that are used to raise and align the lengths of pipe or drill stem over the bore hole of a well. Heretofore, after the drill stem or pipe has been racked in the derrick each length, as it was to be used, was propped and balanced out from the rack by means of a notched board to put it into position for the elevator to be attached. This practice not only required a great deal of manual effort, which was time consuming, but was very dangerous, because, if a heavy length of pipe slipped workmen were likely to be injured or valuable equipment damaged or both.

The primary object of this present invention is to provide a support and guide for drill stem and the like that will securely hold the lengths of drill stem in an upright position in the derrick until the elevator is locked in place and the grip of which will automatically release when the drill stem is raised upward by the elevator.

Another object of this invention is to provide a support and guide for drill stem and the like which is easily guided, which will hold the drill stem securely in the desired position until the elevator is placed thereon but which will automatically release the drill stem when it is raised by the elevator.

A still further object of this invention is to provide a drill stem guide and support that is simple in construction, easy to install, and effective in operation.

This invention is used in a derrick to support the drill stem or pipe against lateral movement and to guide it in to proper position for the elevator to be locked thereon. The invention is so arranged that the drill stem is readily received by outwardly extending hooks on pivoted arms, when the slight pressure of resting the drill stem against the hooks is exerted. When the drill stem has been received by the hooks they lock thereabout and hold it securely until the stem is raised upward by the elevator, at which time the guide support automatically releases the pipe or drill stem.

A practical embodiment of this invention is illustrated in the accompanying drawings in which:

Fig. 1 is a fragmentary plan view of a portion of a platform positioned in the upper portion of a conventional well derrick and adapted to receive the pipe supporting and guiding device thereon;

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Fig. 2 is a side elevational view thereof;

Fig. 3 is a sectional view taken on the line 3—3 of Fig. 1;

Fig. 4 is a side elevational view of a portable derrick showing the drill stem racked therein; and

Fig. 5 is an enlarged sectional view taken on the line 5—5 of Fig. 4.

It is to be understood that while, for purposes of illustration, the invention has been shown as attached to a platform positioned in the upper portion of the derrick, that more than one platform or other suitable securing device may be used. The platform is practical, however, inasmuch as it provides space on which men may work, and it may be positioned in the derrick to meet the needs and conditions of the particular job.

With more detailed reference to the drawing the numeral 1 designates a conventional well derrick having a base 2, and having drill stems 3 racked therein, in the conventional manner as shown in Fig. 4.

Fig. 5 shows the lengths of drill stem 3 positioned within the pipe supporting and guiding device generally designated as 4, preparatory to engaging an elevator for said pipe or drill stem. The conventional racking fingers or dividing strips 6 hold the drill stem in racked position. The numeral 7 designates the well.

The drill stem supporting and guiding device generally designated as 4 has an angular bar or plate 8 which serves as a base by which it is secured to the platform 9 by bolts 8a or other suitable means. A bifurcated member 10 is pivotally mounted on bolt 11 to permit the swinging of arms 12 and 13 about the axis formed by the bolt 11. With the springs 14 in depressed position, as shown in Fig. 3, the arms 12 and 13 may be swung out of locking notch 15, which notch is formed in a bar 16 stationarily mounted on bolts 17 secured to base plate 8. The spring 14 surrounds the bolt 17 and is depressed by arms 12 and 13 moving downward on top of bar 18. The arms 12 and 13 are pivoted together by a bolt 19 so that one may be moved with respect to the other to open hook portions 20 and 21, as indicated in dot-dash outlines in Fig. 1.

A bolt 22 passes through holes 23—24 formed in the ends of the arms 12 and 13, respectively. Springs 25 are positioned around bolt 22 so as to normally urge arms 12 and 13 together, as indicated in Fig. 1. With the arms 12 and 13 positioned together they can readily drop into lock

notch and hold the pipe or drill stem in position until it is ready for the elevator to be coupled thereto. While one form of the device secured to the platform has been illustrated, it is to be understood that the device may have various positions on the platform 9 or may be positioned on other platforms in the upper portions of the derrick as indicated by the requirements of the individual job.

For operation, the drill stem support and guide is secured to the platform 9 by bolts that pass through plate 8 and platform 9. Then with the arms 12 and 13 positioned out of lock notch 15, as shown in Fig. 3, the pipe or drill stem 3 may be forced into hooks 20—21, as indicated in dot-dash outline, against tension of springs 25, and when the pipe passes within the embrace of the hooks 20—21, the springs 25 will urge the arms 12—13 together at which time the arms and hooks are manually swung about pivot bolt 11 until the arms 12—13 drop into lock notch 15 to hold the pipe in an outwardly extending position so that the elevator may be readily coupled thereto and at the same time the pipe is securely held against any lateral movement. Upon connecting the elevator to the length of drill stem the friction of the pipe on hooks 20—21 will cause hooks 20—21 to move upward and the arms 12—13 to move downward about pivot bolt 26 until the arms are out of lock notch 15. The arms are then free to open and permit the pipe to swing outward. The arms 12—13 may be depressed downward against tension of springs 14 and the spring 27 will move hooks 20—21 to one side so as to receive another length of pipe within the hooks 20—21 and the operation is repeated.

A series of holes 16*a* are disposed within bar 16 so as to permit longitudinal movement of bar 16 which will adjust the position of hooks 20—21. Holes 11*a* are provided for adjustment of pivot bolt 11 so as to properly position the hooks 20—21 in correct alignment with notch 15 when bar 16 has been adjusted.

This invention provides a secure support for the drill stem while it is being held outward for the elevator to be locked thereon. There is no danger of the pipe slipping or being accidentally knocked from its support, thereby injuring workmen and damaging equipment. It is held in the proper position as long as necessary and automatically released when the elevator is locked thereon and swung back into position to receive another length of drill stem.

Having thus described the invention, what is claimed is:

1. In a pipe holding device to be mounted in a derrick, a base, a pair of arms pivotally mounted on said base and having inturned hooks at the outer ends thereof for receiving a pipe therebetween, the arms extending inwardly in parallel relation and being normally urged together by resilient means, a bar positioned above said arms and having a notch formed therein adapted to receive the arms therebetween, a resiliently mounted bar positioned below said arms and adapted to move downward upon depressing said arms so as to permit the arms to be spread apart for the release of said pipe from between said hooks.

2. In a pipe holding device to be mounted in a derrick, a base, a pair of arms pivotally mounted on said base and having inturned hooks at the outer ends thereof for receiving a pipe therebetween, the arms extending inwardly in parallel relation and being normally urged together by resilient means, a bar positioned above said arms and having a notch formed therein adapted to receive the arms therebetween, means for adjusting said lock notch with respect to said base, a resiliently mounted bar positioned below said arms and adapted to move downward upon depressing said arms so as to permit the arms to be spread apart for release of said pipe from between said hooks.

3. In a pipe holding device for mounting within a derrick, a base, a pair of arms pivotally mounted on said base and adjustable with respect thereto, each of said arms having an inturned hook at the outer end thereof for receiving pipe therebetween, means for locking said hooks about said pipe, means for normally urging together the inwardly extending parallel arms, a bar positioned above said arms and having a notch formed therein adapted to receive the arms therebetween, a resiliently mounted bar positioned below said arms and adapted to move downward upon depressing said arms so as to permit the arms to be spread apart for release of said pipe from between said hooks when said pipe is raised upward.

4. In a pipe holding device for mounting within a derrick, a base, a pair of arms pivotally mounted on said base and movable with respect thereto, each of said arms having an inturned hook at the outer end thereof for receiving pipe therebetween, means for locking said hooks about said pipe, resilient means for normally urging together the inwardly extending arms, said hooks being releasable from said locking means upon upward movement of said hooks so as to permit the arms to be spread apart for release of said pipe from between said hooks when said pipe is moved upward.

5. In a pipe holding device for mounting within a derrick, a base, a pair of arms pivotally mounted on said base and movable with respect thereto, each of said arms having an inturned hook at the outer end thereof for receiving pipe therebetween, abutment means for locking said hooks about said pipe, resilient means for normally urging the inwardly extending arms together, said hooks being releasable from said abutment locking means upon upward movement of said hooks so as to permit the arms to be spread apart for release of said pipe from between said hooks when said pipe is moved upward.

6. In a pipe holding device for mounting within a derrick, a base, a pair of arms pivotally mounted on said base for upward and horizontal movement relative thereto, each of said arms having an inturned hook at the outer end thereof for receiving pipe therebetween, means for locking said hooks about said pipe, resilient means for normally urging together the inwardly extending arms, said hooks being releasable from said locking means upon upward movement of said hooks so as to permit the arms to be spread apart for release of said pipe from between said hooks when said pipe is moved upward.

WILL S. HENDRICKS.

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