

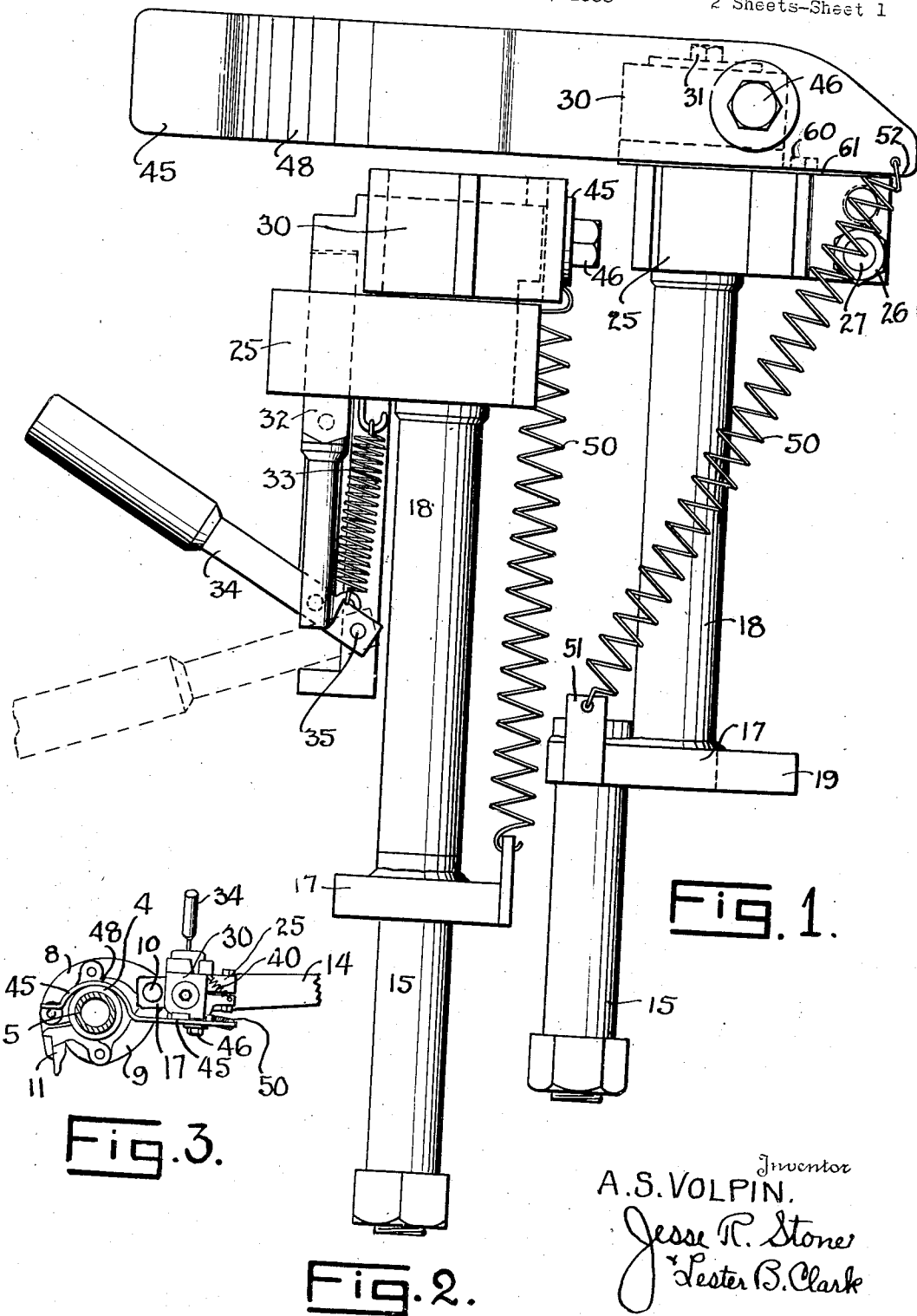
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PIPE STABBING GUIDE

Filed Oct. 25, 1938

2,147,002

2 Sheets-Sheet 1



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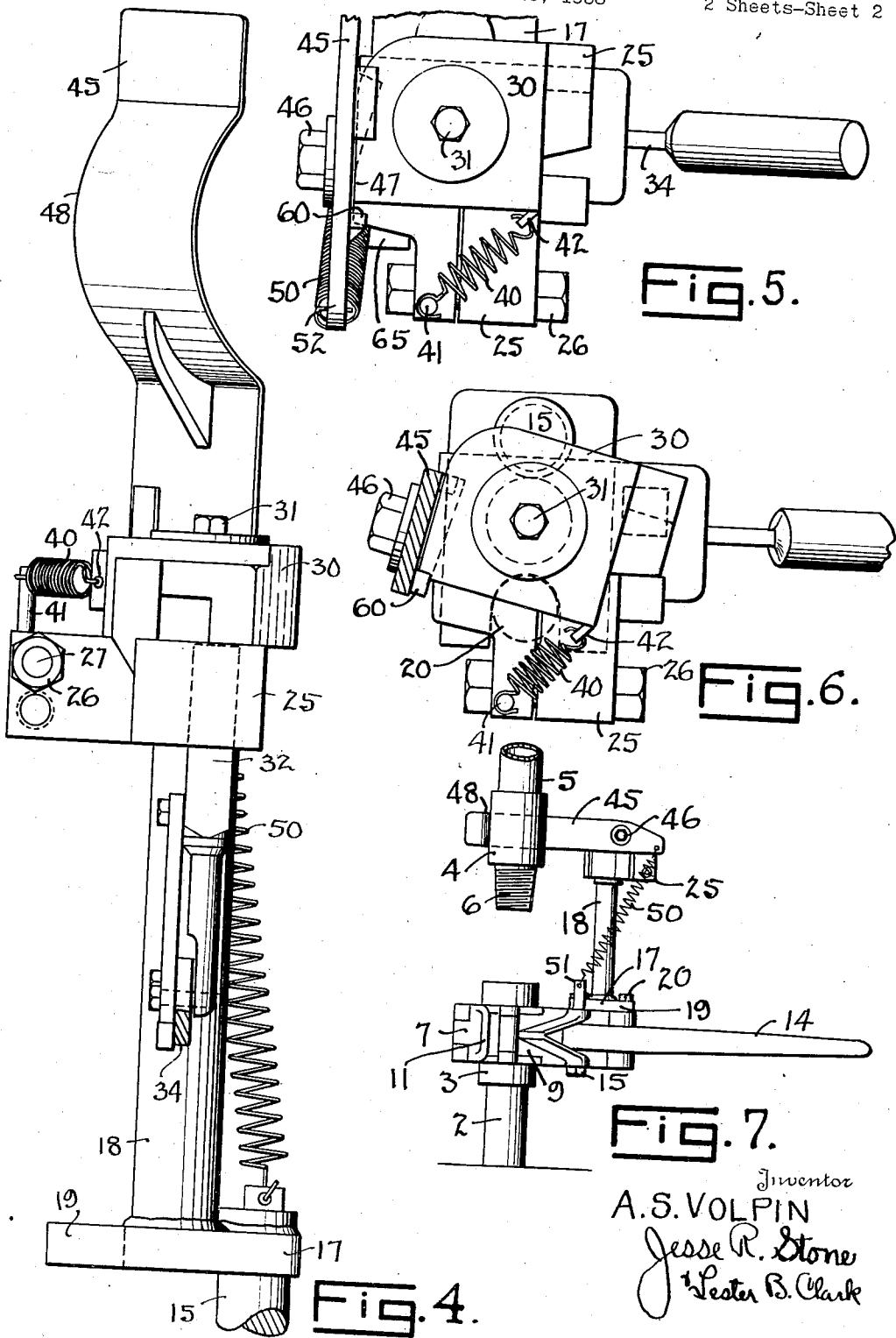


Fig. 7.
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UNITED STATES PATENT OFFICE

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PIPE STABBING GUIDE

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9 Claims. (Cl. 255—35)

The invention relates to a pipe stabbing guide which may be used in combination with a pipe tong for use in making up tool joints or pipe connections where the two pipe sections are to be threaded or connected together while disposed in a vertical position.

In the drilling of wells by the rotary method the drill bit is lowered into the well bore and rotated by means of a drill stem which is made up of pipe sections connected together in a vertical position and lowered into the well bore. It seems obvious, therefore that it is necessary to make these threaded connections by bringing the piece of pipe which is to be added to the drill stem into alignment with the pipe which is projecting from the top of the well bore.

With present day drilling operations extending to enormous depths and heavy drill pipe having weights ranging up to thirty pounds per foot, it is often difficult for the drilling crew to quickly and accurately swing the new section of pipe which is to be added to the drill stem into the proper position without a great deal of difficulty. This is true particularly where the drill stem is made up in thribles or fourbles which are stacked in the corner of the derrick and are raised by a hoisting apparatus or draw-works when an elevator is connected to the upper end thereof. As the elevator is substantially at the center of the derrick when the weight of the pipe sections to be added is lifted from the derrick floor these sections will swing across the derrick. In some instances it takes two or more of the crew to handle this heavy string of pipe and to eventually move it into proper position so that the threaded pin member on the lower end thereof may be stabbed into the threaded box member which is projecting upwardly on the string of pipe which is affixed or suspended in the well bore.

It is essential that the making up of the tool joint connections be carried on with the utmost speed because of the fact that the well bore is usually filled with heavy drilling mud which may settle in the well bore or become coagulated and stick the drill pipe which is in the well bore.

In order to facilitate the operation of the making up of these tool joint connections the present invention has been devised in the form of a stop member which is properly positioned over the fixed pipe end projecting from the well bore so that the new section of pipe or drill stem which is being added may swing casually across the derrick floor and will strike this stop member and be held in aligned position with the box mem-

ber on the fixed pipe. In this manner by a single movement the new section of pipe is swung into alinement and stopped in proper position to be guided or stabbed into the fixed pipe.

It is one of the objects of the invention to provide a combination tong and stabbing guide.

It is another object of the invention to provide a stop arm to receive the new section of pipe as it swings across the derrick floor and to guide it into the drill pipe in the well bore.

Another object of the invention is to provide a stabbing guide which will normally be held in position to aline the new piece of pipe and which may be automatically removed to an inoperative position.

Still another object of the invention is to provide a stabbing guide which may be positioned to receive and guide the drill pipe or which will be moved laterally and vertically to an inoperative position so that the tong by which it is carried may be employed in the usual manner.

Other and further objects of the invention will be readily apparent when the following description is considered in connection with the accompanying drawings, wherein:

Fig. 1 is a side elevation of the stop member as it will be added to the tong or support.

Fig. 2 is an end elevation taken at right angles of the view of Fig. 1.

Fig. 3 is a diagrammatic plan view looking down on the stabbing guide as it is assembled on a pipe tong.

Fig. 4 is an edge elevation looking at the right side of the device of Fig. 2 with the stop arm in elevated or inoperative position.

Fig. 5 is a broken detailed view looking down on the head of the stabbing device with the arm in stopped position.

Fig. 6 is a view similar to Fig. 5 but with the head turned slightly to release the arm so that it will move automatically to inoperative position.

Fig. 7 is a diagrammatic view showing the new piece of pipe as having been stopped by the arm and in position to be guided thereby.

In Fig. 7 the upper end of a string of pipe is indicated at 2 and this will preferably be a section of pipe which carries the lower part 3 of a tool joint. The part 3 is the box member of the tool joint whereas the pin member 4 of the tool joint is carried by the pipe section 5 which is to be added to the string of pipe 2. The threads 6 on the pin member are to be engaged with similar threads in the box member 3. The pipe section 2 is held in rigid position in the rotary table or upon a suitable support in the

derrick floor and a pipe tong 7 is connected therewith. This tong as seen in Fig 3 includes the jaw members 8 and 9 which are pivoted on a pin 10. A latch 11 clamps the jaws securely

about the box member 3.
The handle 14 of the tong is so pivoted that movement thereof will cause the jaws 8 and 9 to either grab or release the pipe. Tongs of this sort are old and well known. The usual practice in making up pipe is to attach the tong 7 of the pipe section 2 and hold it securely in position. The new pipe section 5 is then swung over the box member 3, lowered into position and the pipe 5 is then rotated either by a spinning tong or by attaching another tong thereto which is manually turned by the drilling crew.

The present invention is best seen in Figs. 1 and 2 and includes a bolt or pin 15 which is passed through the tong in lieu of the pivot pin 10 and is securely fastened thereto. Fixed to the pin 15 is a base 17 which has the stem 18 upstanding therefrom. The base 17 has a yoke 19 extending laterally from the stem 18 to be engaged about a second pin 20 carried by the handle 14 of the tong which is disposed beneath the attachment and seen in dotted lines in Fig. 6 and can also be seen as projecting above the base in Fig. 7. The pins 15 and 20 hold the base 17 against rotation so that it will move with the tong handle 14.

On the upper end of the stem 18 is a head 25 which is in the form of a split clamp which can be passed downwardly over the upper end of the stem 18 and secured by tightening the nut 26 on the bolt 27 so as to clamp the heads securely to the head 18. By releasing and setting the nut 26 the head can be adjusted in any desired angular or lateral position with respect to the stem 18.

The head 25 is made in the upper and lower parts, the upper part including a block 30 which is arranged to turn in a horizontal plane about the bolt 31 which extends through the upper part 30 and is anchored in the lower part 25.

The head 25 and block 30 are normally prevented from relative turning movement by a lock bolt 32 which is best seen in Fig. 2 as being slidably mounted in the head 25 and normally urged upwardly by a spring 33 which is connected to a handle 34 which is in turn pivoted at 35.

Fig. 2 shows that movement of the handle 34 from the full to the dotted line position will withdraw the bolt 32 into the head 25 and out of the block 30 so that the block will thus be released for relative turning movement.

Figs. 4, 5 and 6 show a spring 40 which is connected to the stud 41 on the head 25 and to an eye 42 on the corner of the block 30. In this manner when the bolt 32 is released the spring 40 will automatically turn the block in a clockwise direction as viewed in Fig. 6.

Fig. 1 shows the stop arm 45 as pivoted on the bolt 46 which projects laterally from the block 30. This arm as seen in Fig. 5 abuts against the face 47 on the side of the block 30 and in this manner is rigidly supported against lateral movement in a clockwise direction as viewed in Fig. 5. This arm is of an appropriate length as seen in Figs. 3 and 7 to extend over the jaws 8 and 9 and it has a curved portion 48 which is arranged to embrace the pipe 5 and particularly the pin member 4 of the tool joint. The nut 26 and bolt 27 will be so adjusted as to clamp the head 25 into

proper angular position so that when the handle 14 is holding the tong in grabbing position on the pipe 2 that the arm 45 will be in proper alignment to receive the pipe section 5 and stop it in an axial position so that it may be lowered or stabbed into the box member 3.

It seems obvious that when this arm is positioned as shown in Fig. 7 that when the pipe 5 swings over across the derrick that it will contact the arm and the pipe will thus be stopped in a proper and aligned position. A great saving of time is thus accomplished and the danger and injury to the workmen is avoided.

As soon as the pipe arrives in the position shown in Fig. 7 it can be quickly lowered by the drill so as to stab the threads 6 into the box member 3.

In some instances it may be desirable to use the tong 7 without resorting to the use of the stop arm 45 and in other instances it may be desirable to swing the pipe 5 in the same position across the top of the tong. Under such circumstances the arm 45 would not be used and provision is therefore made to move it to an inoperative position, such as seen in Fig. 4. The structure for releasing the block 30 so that it may swing laterally to move the arm 45 out to alignment with the pipe sections has already been described and this operation will occur automatically due to the provision of the spring 40. It is desirable also that the arm 45 be raised to a vertical position in substantial alignment with the stem 18 so that it will occupy a minimum of space and will not project laterally to interfere with other operations. To accomplish this vertical swinging movement a spring 50 has been connected to the bracket 51 on the base 17 and to the heel 52 of the arm 45 at a point beyond the pivot bolt 46 as seen in Fig. 1. This spring 50 normally urges the arm upwardly to the position shown in Fig. 4 but this vertical swinging movement is prevented by the provision of a lug 60 on the lower inside face of the arm 45 as best seen in Figs. 5 and 6. This lug as seen in Figs. 1 and 5 is normally positioned on the flat upper face of the head 25 as at 61 so that the lug cannot move downwardly as long as the block 30 is latched in position by the pin 32.

When, however, the pin 32 is released and the block 30 rotates the lug 60 will move off of the top face 61 on the head 25 as seen in Fig. 6 so that the arm 45 is then free to tilt upwardly due to the tension in the spring 50.

In operation the tong will be assembled as seen in Figs. 3 and 7 with the arm 45 in horizontal or operative position and it will receive the pipe sections as they are swinging across the derrick to hold them in proper aligned position. When the arm is to be dispensed with handle 34 will be moved down to the dotted line position of Fig. 2 which will release the block 30 so that it will be turned by the spring 40. This turning movement releases the lug 60, moves the arm 45 out of alignment with the pipe and the spring 50 snaps the arm 45 to a vertical position. When the arm is to be again used it is only necessary to manually move the arm down to a horizontal position and rotate it in a counterclockwise direction, as viewed in Fig. 5 so as to move the lug 60 over the top face 61 of the head 25.

What is claimed is:

1. The combination of a pipe tong for making up pipe joints in a vertical position and a stop member for the pipe being added, and means to support said stop member in alignment with the

pipe and tong so that as the pipe being added swings over the tong it will be aligned ready to make up the joint by engaging said stop.

2. The combination of a pair of pipe sections 5 to be threaded together in a vertical position, a tong gripping the lower pipe section, a stop member carried by said tong and disposed thereabove in the path of the other pipe section so as to stop such other section in a position where it may 10 be moved axially and rotated to make up the threaded connection.

3. In combination with a pipe tong to make up tool joints on drill pipe, a stabbing guide, said 15 guide including an arm projecting over the lower part of the tool joint and adapted to receive, stop and thus align the upper part of the tool joint with the lower part.

4. A stabbing device for making up drill stem connections where one section of pipe is held 20 stationary in a vertical position and another section is to swing into alignment therewith and lowered and rotated to make the threaded connection, said device including a support fixed to the fixed section of pipe, an arm disposed in the 25 path of travel of the other pipe section as it swings, said arm being substantially rigid to stop said pipe and guide it into the fixed pipe section.

5. A pipe tong of the character described, including jaws to grip a pipe, a stem carried by 30 said tong and extending axially thereof in an offset position, a head on said stem, and a stop arm extending laterally from said head.

6. A pipe tong of the character described including jaws to grip a pipe, a stem carried by said 35 tong and extending axially thereof in an offset

position, a head on said stem, a stop arm extending laterally from said head, and means mounting said arm on said head to fix it in said lateral position.

7. A pipe tong of the character described including jaws to grip a pipe, a stem carried by said 5 tong and extending axially thereof in an offset position, a head on said stem, a stop arm extending laterally from said head, means mounting said arm on said head to fix it in said lateral position, 10 and additional means to release said first means so that said arm may move laterally out of alignment.

8. A pipe tong of the character described including jaws to grip a pipe, a stem carried by said 15 tong and extending axially thereof in an offset position, a head on said stem, a stop arm extending laterally from said head, means mounting said arm on said head to fix it in said lateral position, additional means to release said first means, and 20 springs to move said arm to an inoperative position.

9. A pipe tong of the character described including jaws to grip a pipe, a stem carried by said 25 tong and extending axially thereof in an offset position, a head on said stem, a stop arm extending laterally from said head, means mounting said arm on said head to fix it in said lateral position, additional means to release said first 30 means, and springs to move said arm to an inoperative position, said springs first swinging said arm laterally and then vertically to an upright position so the tong may be used independently of such arm.

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