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PIPE ROTATING APPARATUS

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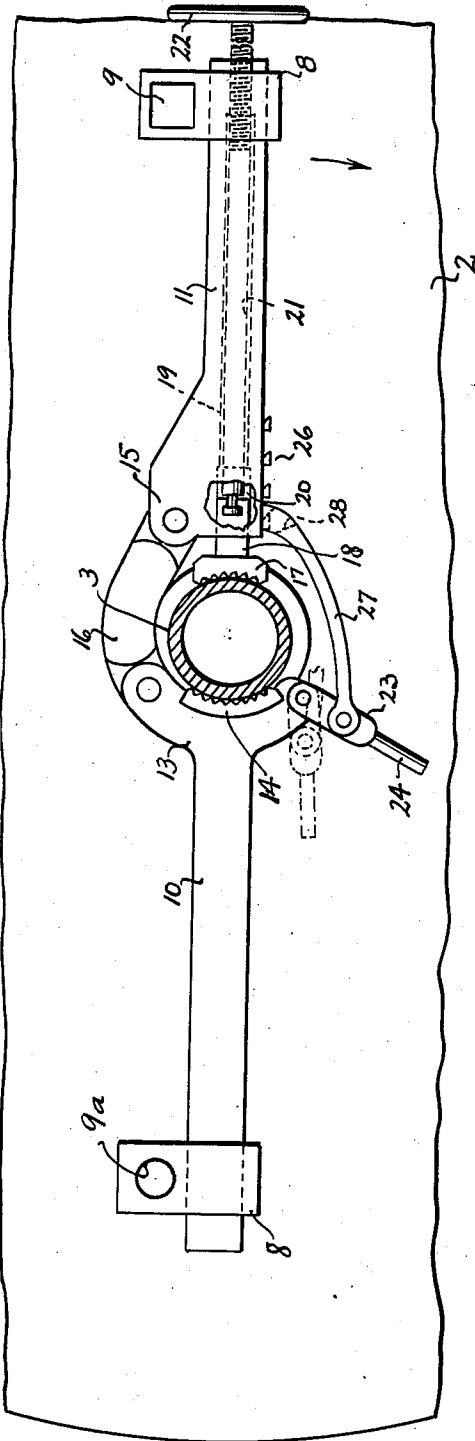


Fig. 1.

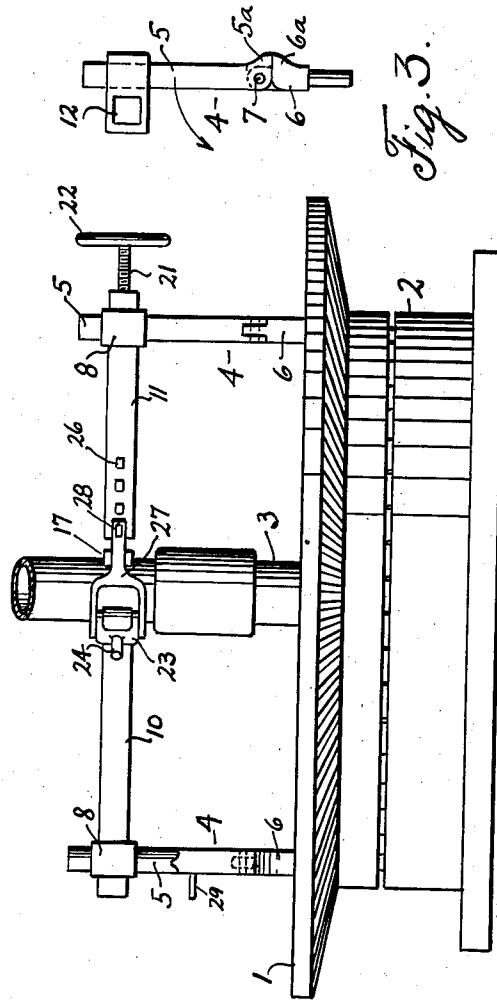


Fig. 3.

Fig. 2.

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PIPE ROTATING APPARATUS

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3 Claims. (Cl. 255—35)

This invention relates to a pipe-rotating apparatus and has particular relation to means arranged to be mounted on the table of a rotary drilling machine and engaged with a vertical pipe extending through the table for rotating said pipe from the table in the process of making up or breaking out a string of pipe.

An object of the invention is to provide a pair of posts upstanding from the table provided to support a tong in engagement with the pipe to be rotated, said posts being jointed whereby the tong may be laid down on the table when not in use without detaching the same from the posts.

It is another object of the invention to provide, in apparatus of the character described, a novel type of tong having oppositely arranged handles for engagement with the posts and flexibly connected by means of a link and being provided with jaws, one at least of which is adjustable to take pipes of different sizes, said tong having a novel type of latch whereby it may be securely engaged with the pipe to be turned.

With the above and other objects in view, the invention has particular relation to certain novel features of construction, operation, and arrangement of parts, an example of which is given in this specification and illustrated in the accompanying drawing wherein:

Figure 1 shows a plan view of the tong as supported by the posts on the rotary table.

Figure 2 shows a side elevation thereof, and

Figure 3 shows a side view of one of the posts.

Referring now more particularly to the drawing wherein like numerals of reference designate the same parts in each of the figures, the numeral 1 designates the rotary table which is mounted to rotate on the base 2 and which has the usual center opening for the passage of the vertical pipe 3 therethrough. The rotary table has the oppositely arranged upstanding backup posts 4, 4, each being composed of the upper and lower sections 5, 6, jointed together. The lower ends of the sections 6 are preferably cylindrical and are fitted into holes in the upper side of the table provided to receive them. The sections 5, 6, are jointed together by the pin 7. On each post there is a bracket 8 having the vertical openings 9, 9a, through which the posts extend.

There is a tong having the oppositely arranged handles 10, 11, the outer ends of said handles extending through horizontal openings, as 12, in the brackets 8. The inner end of the handle 10 is formed with an arcuate head 13 which is provided with an inside detachable pipe-engaging jaw 14. The inner end of the handle 11 is wid-

ened forming a lug 15 and a link 16 is pivotally connected to one end of the head 13 and to the lug 15. Opposite the jaw 14 there is an adjustable jaw 17 which is fixed on the inner end of the shank 18. The handle 11 has a longitudinal bore 19 therethrough from end to end and the inner end of this bore is enlarged forming a socket 20 polygonal in cross-section and into which the shank 18 is fitted. The outer end of the bore 19 is reduced and internally threaded and there is a shaft 21 through the bore 19 having a threaded connection with the outer end of the bore and a swivelling connection with the shank 18, and the outer end of this shaft has the handwheel 22 whereby the shaft may be turned. By turning the shaft 21, the jaw 17 may be adjusted outwardly, or inwardly, so as to adjust the tong to pipes of different sizes. Pivoted to the other end of the head 13 there is a hand lever 23 whose outer end has the grip 24. The corresponding side of the handle 11 has the lugs 26 spaced apart therealong. A link 27 has one end bifurcated to embrace the handle 23 to which said end of the link is pivoted. The opposite end of the link has the opening 28 to receive a lug 26. When the tong is applied to the pipe 3, the free end of the link 27 may be engaged with one of the lugs 26 and the handle 23 then swung around into position, as indicated by the dotted lines in Figure 1. When in this position, the pivoted end of the link 27 will have passed the center of the pivot connecting the handle 23 to the head 13 whereby the tong will remain in latched position in engagement with the pipe. When it is desired to release the tong, the handle 23 may be moved into the reverse position as shown in full lines in Figure 1, and the link may then be detached from the lug 26 with which it is engaged. When the tong is engaged with the pipe, the rotary may be turned in the direction indicated by the arrow in Figure 1 to turn the section of the pipe with which the tong is engaged to screw it into the coupling beneath. While the section engaged by the tong is being turned, the pipe beneath may be held against rotation by any suitable appliance provided for the purpose.

The abutting, or jointed ends of the sections 5, 6, have the abutting shoulders 5a, 6a at one side, as shown in Figure 3, whereby they will hinge in one direction only.

When the rotary table is being driven to the right, as indicated by the arrow in Figure 1, the post should be positioned so that the abutting shoulders 5a, 6a, will be on their rear side, with reference to the direction of rotation, so that

said posts will exert a driving influence on the tong. If the pipe is to be unscrewed, the position of the tong should be reversed and the posts 4 should be turned half the way around for the reasons above stated. When the pipe is completely made up, or broken up, one of the posts may then be turned half the way around so that the joints of the posts will break in the same direction and the upper sections 5 of the posts may then be laid down in the direction indicated by the arrow in Figure 3 so as to permit the tong to lie on the top of the rotary table out of the way until the tong is again needed.

For the purpose of permitting this turning movement of one of said posts, the hole 9a is shown to be round and the corresponding end of the post is also made round to fit through it. This post is provided with a lateral handle 29 whereby it may be rotated for the purpose stated.

The drawing and description disclose what is now considered to be a preferred form of the invention by way of illustration only while the broad principle of the invention will be defined by the appended claims.

What I claim is:

1. A tong comprising two oppositely disposed handles, jaws on the adjacent ends of the handles, a link connecting said ends on one side and a releasable latch means connecting said ends

on the other side, said latch means comprising a connecting member, a lever operable means on one handle connected to the connecting member and a series of lugs on the other handle adapted to receive the connecting member of said latch means.

2. A tong comprising two oppositely disposed handles, jaws on the adjacent ends of the handles, a link connecting said ends on one side and a releasable latch means connecting said ends on the other side, said latch means comprising a connecting member, a lever pivoted to one of said ends and to which one end of the connecting member is pivoted and interengaging means whereby the other end of the connecting member may be connected to the other of said handle ends.

3. Apparatus for rotating pipe comprising a tong having oppositely disposed handles, jaws on the adjacent ends of the handles, a link connecting said ends on one side and a releasable latch connecting said ends on the other side, said latch comprising a lever pivoted to one of said ends, a connecting member releasably connected to the other of said ends and pivotally connected to the lever, back up posts in driving relation with the respective handles, each post having a one way joint.

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