Aug. 10, 1937. H. B. JONES 2,089,800

PIPE ROTATING DEVICE

Filed Aug. 7, 1934

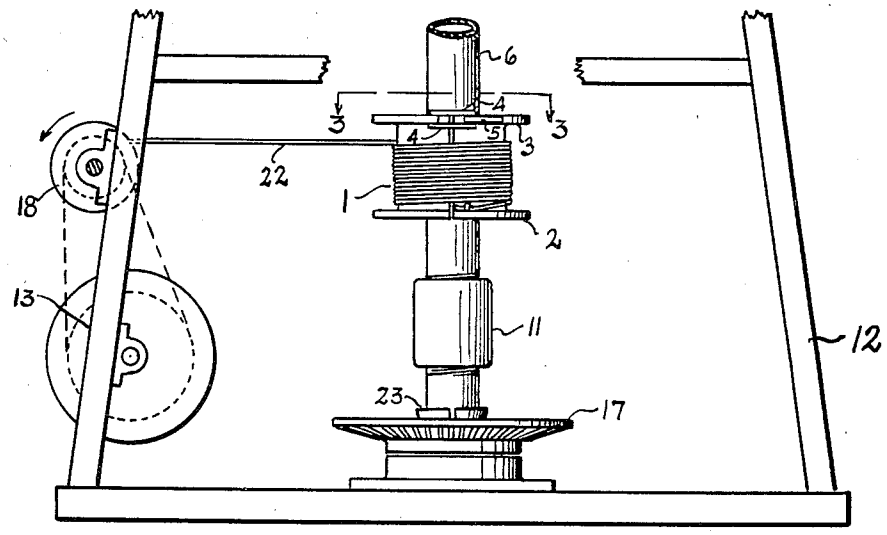


Fig. 1.

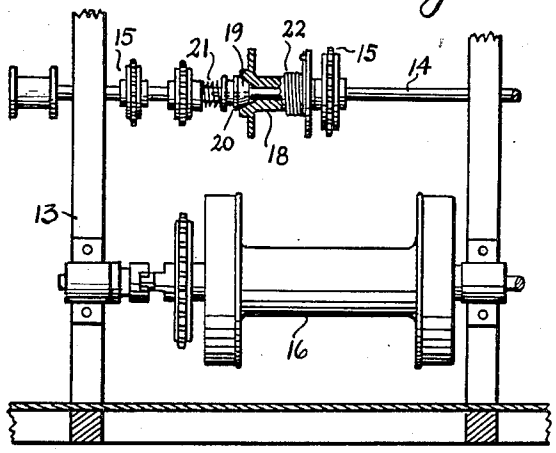


Fig. 2.

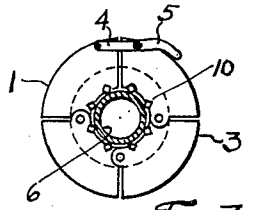


Fig. 3.

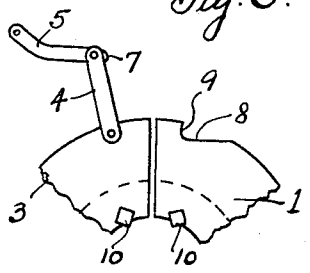


Fig. 4.

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PIPE ROTATING DEVICE

Hulon B. Jones, Humble, Tex.

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2 Claims. (Cl. 255—35)

This invention relates to a pipe rotating device.

The apparatus has been specially designed for rotating pipe, rods and the like to make the same up into a string or to break the same out. It is specially applicable to pipe which is to be made up into a string as the same is let down into a well bore or to be broken up as the same is being withdrawn from a well bore.

Another object of the invention is to provide a device of the character described that may be readily applied to a section of the pipe to be made up or broken up and includes also means for applying power to accomplish the operation.

Another object of the invention is to provide a device of the character described that may be easily handled, readily applied to or removed from the pipe and which may be readily adapted for either screwing sections of pipe together or for unscrewing them.

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 side elevation of the device as applied to a pipe in a well bore.

Figure 2 shows an elevational view partly in section of the power applying means.

Figure 3 shows a cross sectional view taken on the line 3—3 of Figure 1, and

Figure 4 shows a fragmentary plan view.

In the drawing the numeral 1 designates a sectional drum to be applied to the pipe. As shown this drum is composed of arcuate sections hinged together and open at one side. The drum has the end flanges 2, 3, said drum being spool like in form. Releasable latch means is provided at the open side of the drum, said latch means comprising the spaced links 4, 4 which are pivoted at one end to opposite sides of the flange 3 at the upper end of the drum. A hand lever 5 is pivoted between the other ends of said links.

In order to secure the drum about the pipe 6 the drum may be opened and closed about said pipe and the links 4 then swung across the open side of the flange 3. The pivoted end of the handle 5 projects beyond the pivot forming a cam 7 which may be swung into the notch 8 of the flange 3 and the handle 5 then swung into the position shown in Figure 3 with the cam 7 bearing against the abrupt shoulder 9 of the notch 8 so as to draw the drum tightly about the pipe. The inner side of the drum has the pipe engaging teeth 10 to grip and hold the pipe 6. The pipe 6 is made up of sections connected by couplings as 11, or the conventional tool joints may be used to connect said sections.

Mounted at one side of the derrick 12 there is a conventional draw works as 13 which includes a transverse line shaft 14. This line shaft is driven by a suitable power through a sprocket chain which operates over the sprocket wheel 15 fixed on said shaft and from the line shaft the draw works drum 16 and the rotary drilling machine 17 are driven in the usual way. Loosely mounted on the line shaft there is a drum or spool 18, one end of which is formed with a cone clutch member 19. Splined on the shaft 14 there is a cone clutch 20 which is normally held in engagement with the cone clutch member 19 by the coil spring 21. This cone clutch may be released by any conventional type of release lever employed for the purpose. There is a cable 22 one end of which is secured to a flange of the drum 18 and whose other end is secured to a flange of the drum 1.

In use the drum 1 may be located on the rotary table of the drilling machine 17 with the latch released and said drum 1 in open position and the pipe 6 elevated by the usual means through said drum 1 until the section to be broken out is at the desired location and the drum 1 may then be manually rotated to wind the cable thereon and then latched securely about the pipe 6 to grip the same and the pipe may then be further elevated to carry the drum 1 up to the desired elevation as illustrated in Figure 1. The clutch 20 may then be engaged with the clutch member 19 of the drum 18 and said last mentioned drum will thereby be rotated to wind the cable 22 thereon and to unwind said cable from the drum 1 causing the latter to rotate to unscrew the section of the pipe to which it is engaged from the coupling 11 beneath. This coupling and the section of pipe beneath will be held stationary by the conventional slips 23 which are wedged in the rotary table around said section beneath. When the section to which the drum is applied has been unscrewed from the coupling beneath, the cable 22 will have been unwound from the drum 1 and said drum may then be unlatched and lowered onto the rotary table and the unscrewed section of pipe swung aside and the process may be repeated until the string has been broken up and withdrawn from the well.

The apparatus may be used as well for screwing up sections of the string of pipe as the same is lowered, into the well. In such case the made

up portion of the string will be suspended in the bore by the slips 23 and the unlatched drum 1 may be applied around the section to be added and turned to wind the cable thereon and then latched to the section to be added and said section may be swung into position on the coupling 11. When the section is to be screwed into the coupling 11 the cable, of course, is wound onto the drum 1 in a direction the opposite of that when the pipe section is to be unscrewed. The clutch 20 may then be engaged with the clutch member 19 to rotate the drum 18 whereupon the cable 22 will be wound on the drum 18 and unwound from the drum 1, causing said last mentioned drum and the section of pipe grasped thereby, to rotate until said last mentioned section is screwed into the coupling 11. When said section is fully screwed home the clutch 20 should be disengaged, but until disengaged said clutch will slip so as to prevent breakage of parts and for this reason a type of slip clutch has been provided to prevent a section from being screwed too tightly into the coupling 11 and to prevent breakage of parts. When a section has been added the string may be slightly elevated and the slips 23 removed and the string then lowered until the drum 1 rests on the rotary table and said drum may be released from the pipe and the string lowered until the coupling at the upper end of the added section is a short distance above the rotary table and the slips 23 may be then reinserted to hold the made up string suspended in the well. Another section may then be swung into position to be screwed into the coupling 11 and the drum 1 clamped to said last mentioned section as before, and the process repeated until the string is made up. Thereupon the drum 1 may be released from the string and laid aside until its use is again required.

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. In a pipe rotating device comprising a cable winding drum having arcuate hinged sections and being open at one side, said drum having pipe engaging teeth and being adapted to be clamped about a pipe, links on one flange of one section having a hand lever attached between the outer ends of said links, said lever projecting at its connecting end a sufficient length to form a cam, a notch in the corresponding flange of the opposing section to receive said cam.

2. In a pipe rotating device having a cable winding drum being open at one side and comprising a plurality of sections hinged together, links on a flange of one section having a hand lever attached between the outer ends of said links, said lever projecting at its connected end a sufficient length to form a cam, a notch in the corresponding flange of the opposing section to receive said cam.

HULON B. JONES.