J. C. KAVENEY.

TURNING DEVICE FOR BOILER SHELLS AND THE LIKE.

APPLICATION FILED JULY 6, 1915.

1,204,451.

Patented Nov. 14, 1916.

2 SHEETS—SHEET 1.

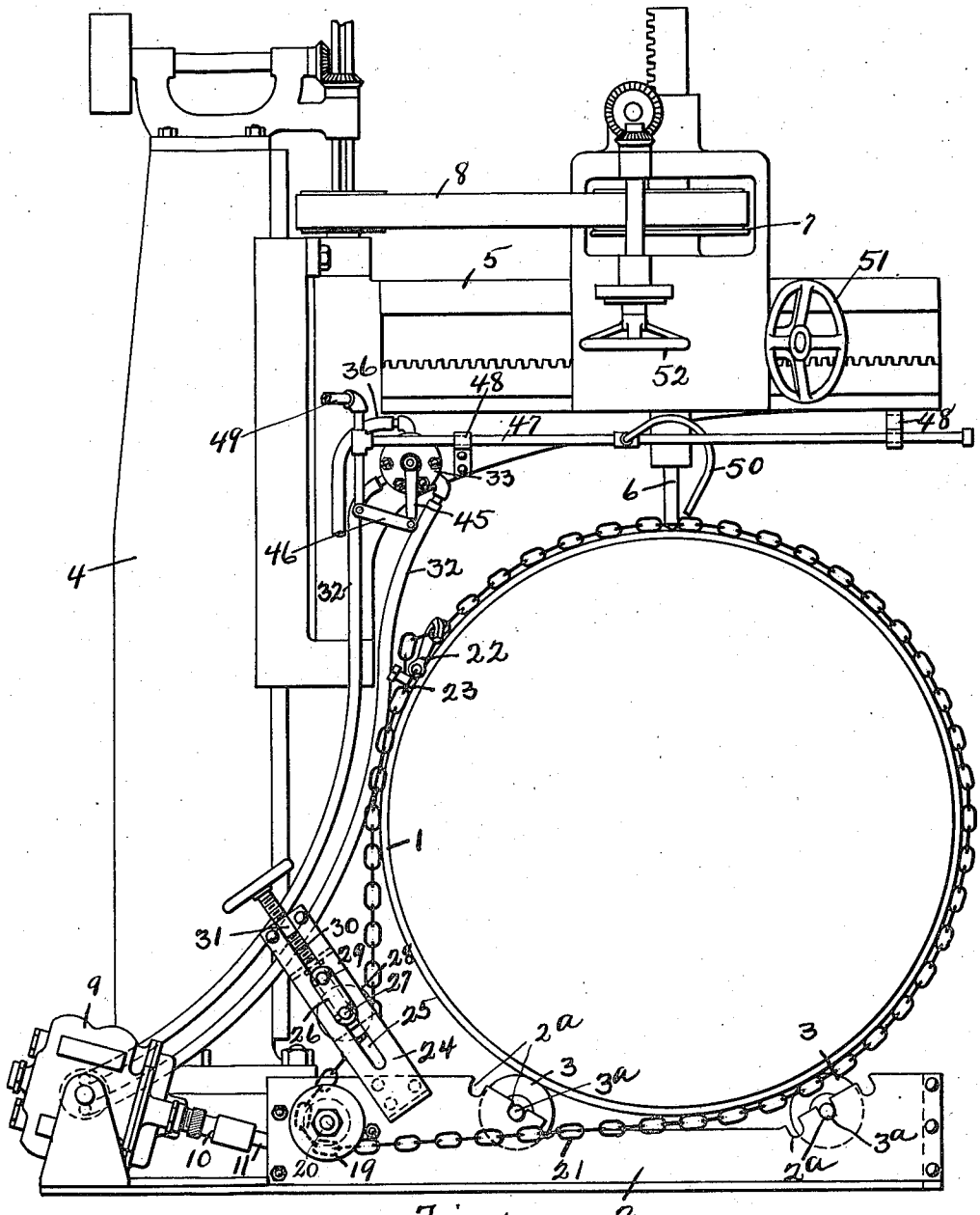


Fig. 1.

Witnesses

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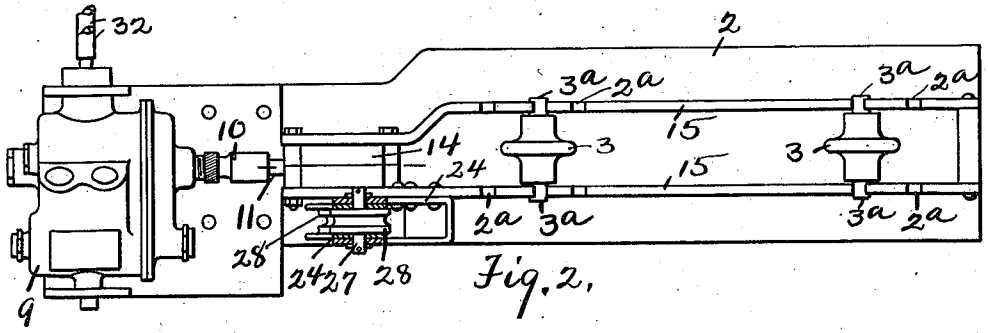


Fig. 2.

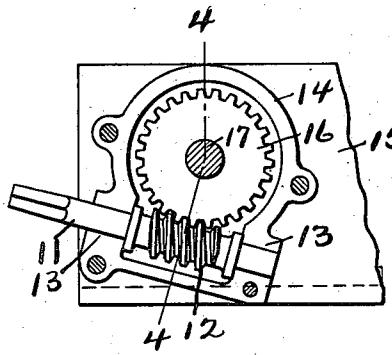


Fig. 3.

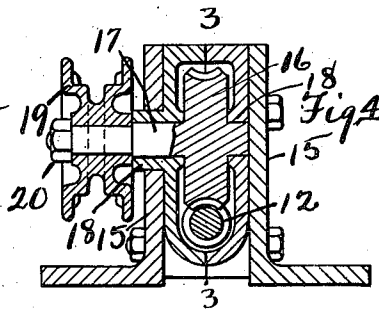


Fig. 4.

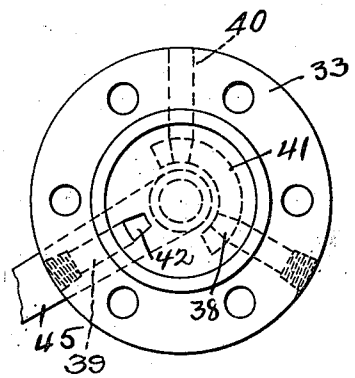


Fig. 5.

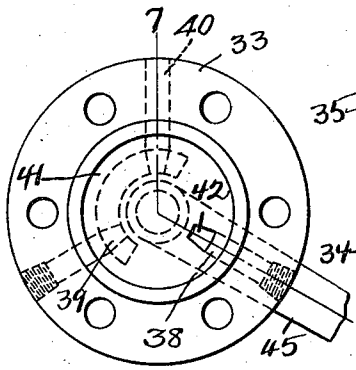


Fig. 6.

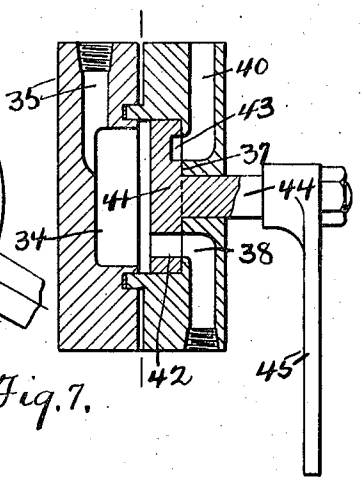


Fig. 7.

Witnesses

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UNITED STATES PATENT OFFICE.

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TURNING DEVICE FOR BOILER-SHELLS AND THE LIKE.

1,204,451. Specification of Letters Patent. Patented Nov. 14, 1916.

Application filed July 6, 1915. Serial No. 38,374.

To all whom it may concern:

Be it known that I, JAMES C. KAVENEY, a citizen of the United States, residing at Erie, in the county of Erie and State of Pennsylvania, have invented new and useful Improvements in Turning Devices for Boiler-Shells and the like, of which the following is a specification.

This invention relates to turning devices for boiler shells and the like and consists in certain improvements in the construction thereof as will be hereinafter fully described and pointed out in the claims.

The object of the invention is to handle boiler shells and similar articles so as to position the surface of such shell so as to make it convenient to be operated upon. Heretofore it has been common practice to support such shells under a tool such as a drilling tool and to turn them by means of bars or other devices so as to present different surfaces of the shell to the drill. In the present invention this shifting of the shell is accomplished by means of power and can be readily accomplished with accuracy by the operator handling the drill.

The invention is illustrated in the accompanying drawings as follows:—

Figure 1 shows an end elevation of the boiler in position under a drill with the turning device in position to operate thereon. Fig. 2 shows a plan view of the turning device, partly in section. Fig. 3 a section on the line 3—3 in Fig. 4. Fig. 4 a section on the line 4—4 in Fig. 3. Fig. 5 a view of the motor controlling valve with the body portion of the valve removed. Fig. 6 a similar view with the valve shifted to vary the direction of the motor. Fig. 7 a section on the line 7—7 in Fig. 6.

1 marks the boiler and 2 the base block. Rollers 3 are mounted on the base block, the rollers having pins 3^a which are journaled in the pockets 2^a in the side frames of the block 2. Several of the pockets 2^a are provided so as to take care of different diameters of boilers. The block 2 is ordinarily one that can be moved and rests on the shop floor so that the boiler may be readily rolled into position on it.

A drill press is carried by a standard 4. It has a swinging arm 5, a drill 6, a driving pulley 7 for driving the drill and a belt 8 driving the pulley 7, the pulley 7 and the belt being driven from the center of the pivot of the arm 5. These parts of the drill are of ordinary construction. A motor 9, as shown an air motor, is mounted on the end of the block 2. The motor drives a spindle 10. The spindle 10 is locked by means of a squared end with a worm shaft 11. A worm 12 is arranged on the worm shaft and the worm shaft is journaled in bearings 13. The bearings 13 are carried by a case 14, preferably made in halves, and clamped between the sides 15 of the block 2. The worm 12 meshes a worm gear 16. The worm gear 16 is carried by a shaft 17. The shaft 17 is mounted in the bearings 18 formed in the case 14. A sprocket 19 is fixed on the shaft 18 being clamped in position thereon by a nut 20. The motor is of the reversing type. It will be readily seen that as the motor spindle is driven in one direction or the other, the sprocket 19 is rotated through the action of the worm and gear.

A chain 21 forms a flexible driver for turning the boiler. It is preferably wrapped around the boiler and is in mesh with the sprocket 19. A hook 22 on the end of the chain 21 is hooked on a link which will bring the chain nearly taut and the chain is ordinarily locked against slipping on the boiler by any means such as a drift pin 23. The chain passes between the plates 24 forming sides of the frame of a tightening device. The sides have the slots 25 along which the links 26 slide. Pins 27 extend at one side of the frame to the other and the idler pulley 28 is carried by the pin 27. A pin 29 extends through the frame and the upper end of the link 26 and an adjusting screw 30 operates on a block shown in dotted lines above the pin 29. The screw operates in a nut 31 in the upper end of tightener frame. It will be readily seen by the operation of the screw 30 the pulley 28 may be raised or lowered thus tightening the chain as desired. This is desirable in that if there is any slack and it is necessary to shift the boiler back and forth this slack must be taken up in each instance.

Air pipes 32 lead to the motor, one of these pipes carrying the motive fluid and the other exhausting. By reversing these the motor is reversed in the common manner. A controlling valve 33 controls the motive fluid leading to the pipes 32. It has

the air chamber 34 to which air is supplied through a passage 35 from a pipe 36. The pipe 36 leads to any convenient source of supply. The valve is provided with a valve face 37 from which the ports 38 and 39 connected with the pipes 32 lead. An exhaust port 40 also leads from this valve surface. The valve disk 41 operates on the surface. It has a way 42 extending through it and adapted to be brought over either the port 38 or the port 39 so as to connect one or the other of these ports with the air chamber. It also has a way 43 which is of sufficient length to connect one of the ports 38 or 39 with the exhaust port, the circumferential extent of this way being shown in dotted lines in Figs. 5 and 6. This way does not extend through the valve disk and, therefore, is not at any time connected with the valve chamber 34. In Fig. 6 the air is shown as connected with the port 38, the way 42 being in register therewith. The exhaust way 43 connects the port 39 with the exhaust port 40. In Fig. 5 the way 42 is in connection with the port 39 and the way 43 connects the port 38 with the exhaust port. Thus by rotating the valve disk, the air may be reversed on the motor and the direction of the motor reversed so as to reverse the direction in which the boiler may be turned.

The valve disk has a stem 44 on which is fixed a lever 45. A link 46 connects the lever 45 with a hollow rod 47. The hollow rod 47 is carried by brackets 48 on the arm 5. The hollow rod 47 is connected through a pipe 49 with a liquid supply which supply is delivered by way of a pipe 50 to the surface being drilled. The rod 47 thus forms a convenient means for supplying the liquid and for actuating the controlling valve.

The operator handling the drill is ordinarily adjacent to the drill itself and the operating wheels 51 and 52 are provided for this purpose. The rod 47 is also within reach of the operator in this position so that the operator can swing the boiler in one direction or the other so as to bring the different surfaces into position to be drilled. The chain being taut the worm gear locks the boiler in any position to which it may be adjusted.

What I claim as new is:—

1. In a turning device for boiler shells and the like, the combination of a base having points adapted to contact the periphery of a shell at each side of the axis thereof; a flexible driver adapted to be secured to the shell; and a motor for actuating the driver.

2. In a turning device for boiler shells and the like, the combination of a base having rollers adapted to contact the periphery of a shell at each side of the axis thereof; a flexible driver adapted to be secured to the shell; and a motor for actuating the driver.

3. In a turning device for boiler shells and the like, the combination of a base having points adapted to contact the periphery of a shell at each side of the axis thereof; a flexible driver adapted to be wrapped around the shell; and a motor for actuating the driver.

4. In a turning device for boiler shells and the like, the combination of a base having points adapted to contact the periphery of a shell at each side of the axis thereof; a chain adapted to be wrapped around the shell, said chain having means for varying the length thereof; a sprocket over which the chain runs; and a motor for actuating the sprocket.

5. In a turning device for boiler shells and the like, the combination of a base having points adapted to contact the periphery of a shell at each side of the axis thereof; a chain adapted to be wrapped around the shell, said chain having means for varying the length thereof; a sprocket over which the chain runs; a motor for actuating the sprocket; and a worm and gear between the sprocket and motor adapted to communicate the movement of the motor to the sprocket and to lock the sprocket in adjusted position.

6. In a turning device for boiler shells and the like, the combination of a base having points adapted to contact the periphery of a shell at each side of the axis thereof; a flexible driver adapted to be secured to the shell; a pulley actuating the driver; a worm and gear driving the pulley; and a motor driving the worm.

7. In a turning device for boiler shells and the like, the combination of a base having points adapted to contact the periphery of a shell at each side of the axis thereof; a flexible driver adapted to be secured to the shell; and a reversing motor for actuating the driver.

8. In a turning device for boiler shells and the like, the combination of a base having points adapted to contact the periphery of a shell at each side of the axis thereof; a flexible driver adapted to be wrapped around the shell; and a reversing motor for actuating the driver.

9. In a turning device for boiler shells and the like, the combination of a base having points adapted to contact the periphery of a shell at each side of the axis thereof; a flexible driver adapted to be wrapped around the shell; a motor for actuating the driver; and a tightener for the driver.

10. In a turning device for boiler shells and the like, the combination of a base having points adapted to contact the periphery of a shell at each side of the axis thereof;

a chain adapted to be wrapped around the shell, said chain having means for varying the length thereof; a sprocket over which the chain runs; a motor for actuating the sprocket; and a tightener for the chain.

11. In a turning device for boiler shells and the like, the combination of a base having points adapted to contact the periphery of a shell at each side of the axis thereof; a flexible driver adapted to be secured to the shell; an air motor for actuating the driver; a valve controlling the air motor; a hollow rod controlling the valve; and means for supplying fluid through the rod to the work on a shell controlled by the turning device.

12. In a turning device for boiler shells and the like, the combination of a base comprising side rails; rollers arranged on said rails; a motor carried by said base; a pulley mounted on said base; a connection between the motor and pulley; and a driver driven by the pulley and adapted to be wrapped on a shell carried by said rollers.

13. In a turning device for boiler shells and the like, the combination of a base having side rails with a series of pockets therein; rollers journaled in said pockets and adapted to be dropped into different pockets to adapt the base to different diameters of shells; means carried by the base adapted to turn a shell carried by said rollers, said means comprising a motor; and a driver adapted to convey the movement of the motor to a shell carried by the rollers.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

JAMES C. KAVENEY.

Witnesses:
B. M. HARTMAN,
THOMAS C. MILLER.