Aug. 28, 1928. 1,682,149

W. E. ROBERTSON

PIPE BENDING MACHINE

Filed July 24, 1926

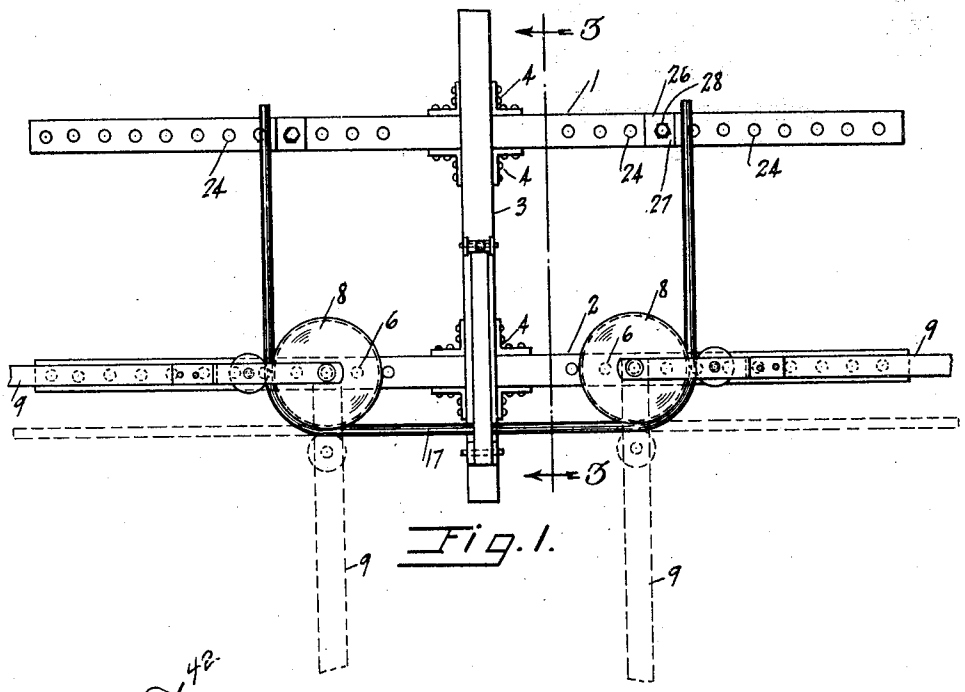


Fig. 1.

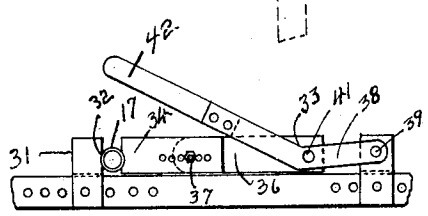


Fig. 4.

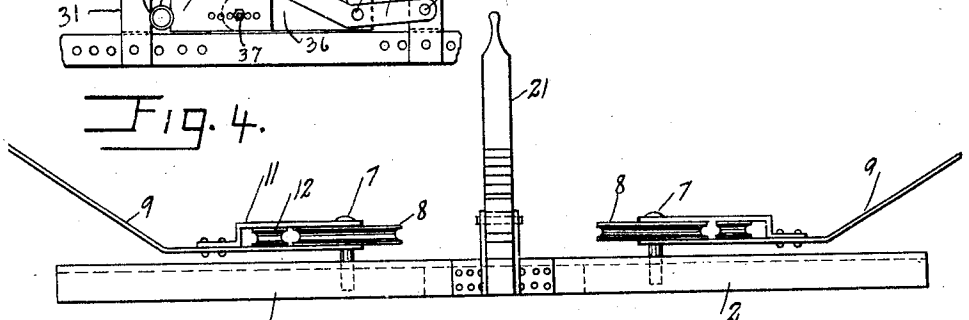


Fig. 2.

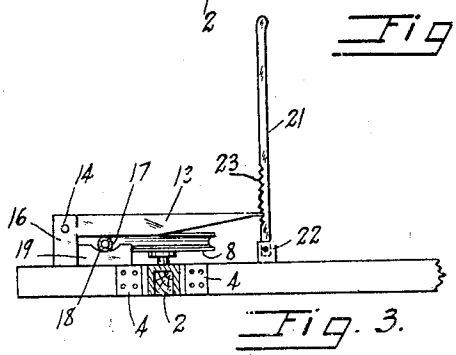


Fig. 3.

INVENTOR.
W. E. ROBERTSON.
BY Harry D. Schroeder
ATTORNEYS.

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UNITED STATES PATENT OFFICE.

WILLIAM E. ROBERTSON, OF BERKELEY, CALIFORNIA.

PIPE-BENDING MACHINE.

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The present invention relates to improvements in pipe bending devices, and its particular object is to provide a means by which a pipe may be bent without producing any kinks, and without any great effort. It is also intended to provide a means allowing a pipe to be bent in two different places at the same time, or at least without changing the arrangement so that any desired U shape of pipe may be produced.

Further objects and advantages of my invention will appear as the specification proceeds.

The preferred form of my invention is illustrated in the accompanying drawing, in which:

Figure 1 shows a top plan view of the same,

Figure 2 a front view, and

Figure 3 a sectional view taken along line 3—3 of Figure 1.

Figure 4 a sectional view illustrating a modified form of pipe holding means.

While I have shown only the preferred form of the invention, I wish to have it understood that various changes or modifications may be made within the scope of the claims hereto attached without departing from the spirit of the invention.

My device comprises in its general features two parallel bars 1 and 2 and a transverse bar 3 secured relative thereto by means of angle clips 4, or any other suitable manner so that the parallel bars project from the transverse bar in opposite directions by about the same length. The bar 2 is provided with a plurality of perforations 6 on opposite sides of the transverse bar, each perforation being adapted to receive a pin 7 on which a grooved pulley 8 is pivoted. Each pin has also pivoted thereto a lever 9 forked as shown at 11, and supporting between the prongs of the fork, a second pulley 12 which is also grooved and disposed in such a manner as to co-act with the first pulley and to grip a pipe disposed between the same.

To use the pulleys the pipe is inserted endwise between the two sets of pulleys while the two levers are in the parallel position indicated in dotted lines in Figure 1 whereupon the two levers may be turned into the full line position which bends the pipe in the manner shown in the drawing.

It is desirable that an intermediate portion of the pipe be held in a fixed position during this operation and for this purpose I provide the lever 13 pivoted as shown at 14 in two spaced clips 16 and adapted to bear down on an intermediate section of the pipe 17 which latter is partly accommodated in a groove 18 of a block 19. To hold the lever 13 in clamping position, a second lever 21 is pivoted as shown at 22 so as to allow the free end of the lever 13 to ride downwardly on the inner face of the lever 21 and to be locked in any desired position by means of a series of teeth 23 on the lever 21.

The second one of the parallel bars is also provided with a plurality of perforations 24 on opposite sides of the cross bar and any one of these perforations is adapted to receive a stop 26 which may be made of any suitable form, and which in its preferred form comprises an angular clip 27 fitting a pin 28 extending downwardly therefrom adapted to be received in one of the perforations.

The manner of using my device will be readily understood from the foregoing description. If it is desired to bend a pipe into U shape the two pulleys 8 are first spaced by means of the various perforations in the bar 2, so that their distance corresponds to the length of the base desired. The two levers 9 are swung into parallel position as indicated in dotted lines in Figure 1 and the straight pipe is placed between the two sets of rollers endwise until the desired position is obtained whereupon an intermediate portion of the pipe is clamped upon the transverse bar by means of the two coacting levers 13 and 21. The two levers 9 are now successively or simultaneously turned on their pivots into the full line position shown in Figure 1, which operation gradually bends the pipe until the ends of the latter engage with the stop 26. The latter may be positioned in such a manner as to allow the pipe to go somewhat beyond the angle desired because the pipe, due to its inherent elasticity, will spring back slightly from its farthest position. Experience will show the best position to be selected for the stops for pipe of different sizes and diameters.

In Figure 4 is shown a modified form of pipe holding means including a stationary abutment 31 recessed as shown at 32 to engage the pipe 17 from the outside and a toggle joint 33 for forcing a second abutment 34 against the pipe from the other side.

The toggle joint includes a link 36 adjustably fastened to the abutment 34 by means of a bolt 37 and a second link 38 pivoted to a stationary support as shown at 39 and to the link 36 as shown at 41, while a handle 42 extends over the latter pivot for operating the toggle joint.

This manner of holding the pipe 17 engages the latter more directly against the pulley and is in some respects superior to that shown in Figure 3.

I claim:

1. In a pipe bending device of the character described, two parallel bars, a cross-bar, means for clamping a pipe to the cross-bar so as to run parallel to the other bars, two pulleys adjustably pivoted on one of the parallel bars on opposite sides of the cross-bar so as to accommodate the pipe in grooves thereof, means for bending the pipe around the pulleys and stops adjustable in the second parallel bar for limiting the turning motion of the pipe.

2. A device as defined in claim 1 in which the bending means comprise levers pivoted coaxially with the pulleys and pulleys mounted on the same adapted to coact with the first pulleys in bending the pipe.

3. A pipe bending machine comprising two parallel bars, a cross bar, means on said cross bar for clamping a pipe thereto so as to lie parallel to the parallel bars, a pair of pulleys adjustably pivoted on one of said parallel bars, said pulleys bearing against said pipe, means for bending said pipe around said pulleys and stops adjustable in one of said parallel bars for limiting the turning movement of the pipe.

4. A pipe bending device comprising a pair of parallel bars, a cross bar, means for clamping a pipe to the cross bar so as to lie parallel to the other bars, a pair of pulleys one of which is adjustably mounted on one of the parallel bars, said pulleys bearing against said pipe, means for bending the pipe around the pulleys, and stops adjustable in one of said parallel bars for limiting the turning movement of the pipe.

5. A pipe bending machine comprising a pair of parallel bars, a cross bar, means for clamping the pipe to the cross bar so as to run parallel to the other bars, a pair of pulleys adjustably pivoted on one of the parallel bars on opposite sides of the cross bar, there being grooves in said pulleys to accommodate said pipe, a pair of handles attached to said pulleys, said handles comprising means for bending the pipe around the pulleys, as and for the purpose specified.

6. A device as claimed in claim 5 and, in addition, stops adjustable in one of said parallel bars for limiting the turning movement of the pipe.

In testimony whereof I affix my signature.

WILLIAM E. ROBERTSON.