

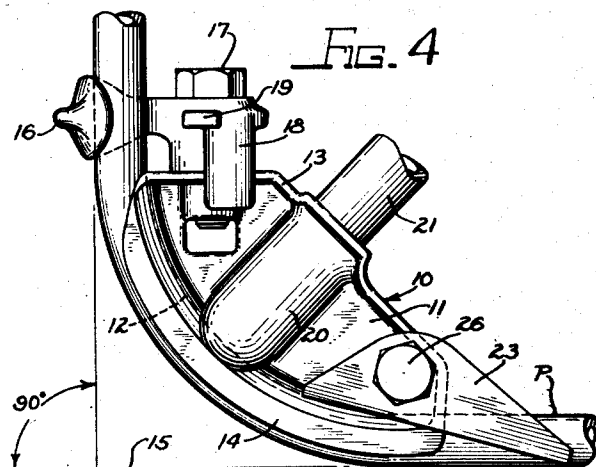
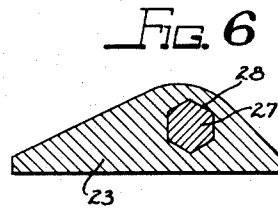
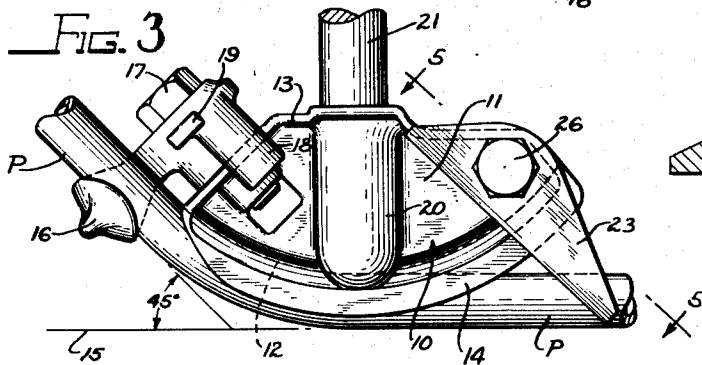
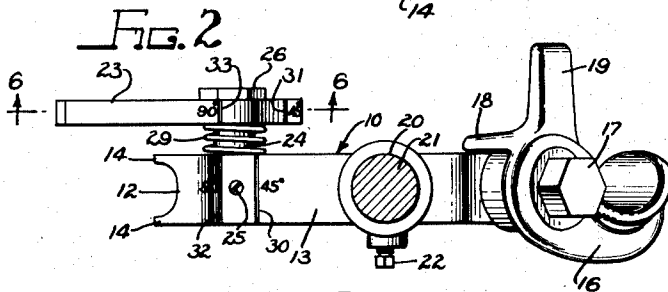
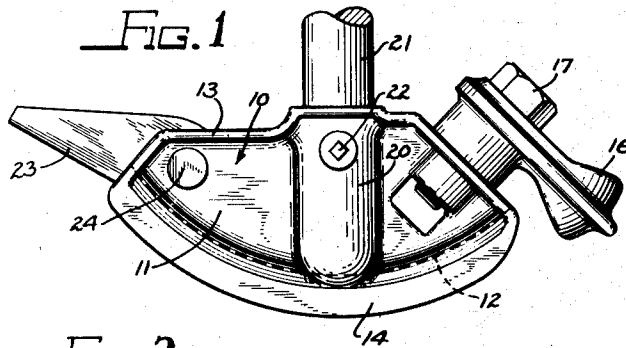
Oct. 27, 1953

J. W. LEWIN

2,656,747

ROCKING TYPE PIPE BENDER WITH ADJUSTABLE GAUGE MEANS

Filed Feb. 4, 1950



Inventor
Jacob W. Lewin

by:
Carbone, Rifkin, Haddad & Wolfe
Attys

UNITED STATES PATENT OFFICE

2,656,747

ROCKING TYPE PIPE BENDER WITH
ADJUSTABLE GAUGE MEANSJacob W. Lewin, Oak Park, Ill.; Lillie E. Lewin,
administratrix of said Jacob W. Lewin, de-
ceased

Application February 4, 1950, Serial No. 142,397

2 Claims. (Cl. 81-15)

1

The present invention relates generally to hand operable devices for bending pipes, conduits, rods and the like.

One of the objects of the present invention is to provide a hand operable pipe bender of the type in which a head has an arcuate groove to receive the pipe and is rocked to bend the pipe according to the curvature of the groove, and which is provided with gage stop means for positively limiting the extent of rocking movement so as to predetermine the degree of bend.

Another object is to provide a pipe bender of the foregoing character in which the stop means is selectively adjustable to adapt the bender for making bends of different degrees.

A further object is to provide a pipe bender which is simple and inexpensive in construction, and which is efficient and reliable in operation.

Other objects and advantages will become apparent as the description proceeds.

In the accompanying drawings,

Fig. 1 is a side elevational view of a pipe bender embodying the features of the present invention.

Fig. 2 is a top edge view of the bender.

Fig. 3 is a side elevational view of the bender with the gage stop means adjusted to bend a pipe through an arc of 45°.

Fig. 4 is a view similar to Fig. 3, but with the gage stop means adjusted to bend a pipe through an arc of 90°.

Fig. 5 is a fragmentary sectional detail view taken along line 5-5 of Fig. 3, and illustrating the mounting for the gage stop means.

Fig. 6 is a sectional view taken along line 6-6 of Fig. 2.

Referring more particularly to the drawings, the pipe bender, constituting the exemplary embodiment of the invention, is of conventional form comprising a generally segment-shaped body or frame 10. Preferably, the body 10 has a central web portion 11 integral with a curved or arcuate groove or trough 12 extending along one marginal edge. The remaining marginal edge of the web portion 11 is bordered by a flange 13 transversely perpendicular thereto, and extending from one end of the groove 12 to the other. In effect, the groove 12 is defined by two transversely arcuate flanges 14 extending oppositely from opposite sides of the web portion 11. As a result, the groove 12 has a transversely rounded or substantially semi-circular root surface to receive and generally conform in transverse shape to a section of pipe or conduit P to be bent.

In normal or most common position of use, the groove 12 opens downwardly for engagement with

2

the pipe P as the latter rests against a suitable working surface, such as a floor 15, and hence may be conveniently designated as being located along the arcuate bottom edge of the body 10. The flange 13 follows the configuration of the remaining edge of the body 10, and hence may be conveniently designated as being located generally along the top edge. While this configuration may be varied as desired, the intermediate portion of the flange 13 extends in a chordal direction and the end portions are inclined thereto so as to extend substantially radially of the arcuate groove 12.

While the groove 12 may be of any suitable length, it extends preferably through an arc of approximately 90°.

Means of any suitable character may be provided for confining the pipe P in the groove 12 and imparting the bending force thereto as the body is rocked lengthwise of the pipe in the bending operation. In the present instance, this means comprises a pipe retaining hook 16 which is secured to the body 10 by means of a pivot pin 17, and which is located at one end of the groove 12 and arranged to rock transversely thereof on an axis substantially parallel to a tangent at the hook end of the groove.

In use, the hook 16 is swung out of the way so as to permit lengthwise insertion of the section of the pipe P to be bent into the contiguous end of the groove 12. With the pipe in position, the hook 16 is swung to engage about that portion of the pipe immediately projecting from the groove 12. A lug 18 extends from the hook 16 in spaced relation across one side edge of the flange 13, and is engageable with the latter to define the operative pipe engaging position of the hook. Thus, as the hook 16 is swung into the closed position shown in Fig. 3, one side edge portion of the lug 18 will be moved into abutting engagement with the flange 13. The lug 18 also serves to limit movement of the hook 16 in the other direction through engagement of the other side edge portion with the flange 13 when the hook has been swung out of the way sufficiently to permit insertion of the pipe. A short arm 19 projects from the hook 16 radially of its pivotal axis to facilitate actuation thereof.

Provision is also made for imparting the necessary force to turn or rock the body 10 through the desired angle of bend. To this end, the web portion 11 is formed with a tubular enlargement 20 defining a socket extending substantially radially of the arc of the groove 12. A handle 21

3

may be inserted in the socket, and positively secured therein by means of a set screw 22.

In practice, pipes for different applications may be required to be bent respectively through different degrees or arcs. Heretofore, effecting the required degree of bend by means of benders of the general type herein described has been left largely if not entirely, to the skill of the operator. This has necessitated the use of a cut-and-try technique, and attendant loss of time or inaccurate results. The present invention contemplates the provision of novel adjustable gage stop means for positively and selectively predetermining the degree of bend which will be effected in the operation of the pipe bender, thereby eliminating the human element in the physical actuation of the device, and resulting in greater accuracy and speed of operation.

It will be evident that, after engagement of the hook 16 about the pipe P to lock the latter snugly in the leading end of the groove 12, the remainder of the groove in a direction toward the trailing end will curve or recede away from the pipe. Bending is accomplished by rocking the body 10 relative to the normal axis of the straight pipe, and the degree of bend is dependent on the arcuate range of bending movement. According to the present invention the gage stop means predetermines the extent of this movement.

In the specific form disclosed, the gage stop means comprises an abutment finger 23 carried by the body 10 and adapted for engagement with the extraneous working surface 15 to limit the rocking movement. More particularly, the finger 23 is mounted on the body 10 adjacent the trailing end of the groove 12 in position to engage the surface 15 after the body has been rocked through a predetermined angle.

To provide for adjustment of the angle of bend, the finger 23 is mounted for selective adjustment on a pin 24 threaded transversely into the web 11. A set screw 25 threaded through the flange 13 serves to lock the pin 24 in fixed position. The pin 24 has a relatively large head 26 on the outer end, and a non-circular shank enlargement 27 immediately beneath the head. In the present instance, the enlargement 27 is hexagonal in shape. The finger 23 is formed with an opening 28 receiving the pin 24 and shaped to interfit with the enlargement 27. A coiled compression spring 29 encircles the pin 24, and seats at opposite ends respectively against the adjacent side of the web 11 and the inner side of the finger 23 to urge the latter yieldably outwardly for interfitting engagement with the enlargement and abutment against the inner face of the head 26.

When in interfitting engagement with the enlargement 27, the finger 23 is keyed or locked against rotation about the pin, and projects beyond the groove 12 for abutment with the working surface 15 to limit the degree of rocking movement of the body 10. The finger 23 is angularly adjustable to vary the degree of bend. In the present instance, such adjustment is readily effected, because of the hexagonal shape of the enlargement 27, by moving the finger 23 against the force of the spring 29 out of engagement with the enlargement, as indicated in full outline in Fig. 5, and then revolving the finger freely through sixty degrees (60°) or some multiple thereof into a different angular position, and then reengaging the finger and enlargement as indicated in dotted outline in Fig. 5.

Within the broad concept of the invention,

4

any desired number of positions may be provided. In common practice, bends of 90° and 45° are most usually required, and hence indicia are utilized to indicate the two positions of adjustment to effect bends of these degrees. More particularly, two parallel transverse indicator lines 30 and 32 are formed on the flange 13 at opposite sides of the axis of the pin 24, and two corresponding indicator lines 31 and 33 are formed on the top edge of the finger 23. When the finger 23 is adjusted to locate the lines 30 and 31 in registration, the pipe bender will be conditioned for making bends of 45° as illustrated in Fig. 3. Likewise, when the finger 23 is adjusted to locate the lines 32 and 33 in registration, the pipe bender will be conditioned for making bends of 90° as illustrated in Fig. 4.

Assuming that the pipe section P is straight when gripped by the hook 16, the body 10 is rocked on the pipe, and the hook thereupon imparts a bending force to one end of the pipe, thereby causing the pipe to bend progressively in angular degree in accordance with the curvature of the groove 12. After a predetermined rocking movement, the depending end of the finger 23, acting as a gage stop, will contact the surface 15 to prevent further movement. The degree of permissible rocking movement depends upon the point at which the finger 23 will contact the surface 15. In Fig. 3, this is shown as occurring when the body 10 has been rocked just sufficiently to bend the pipe P through an angle of 45°. In Fig. 4, the finger 23 is positioned to contact the surface when the body 10 has been rocked just sufficiently to bend the pipe P through an angle of 90°.

In each position of adjustment, the finger 23 serves positively to predetermine the desired degree of bend. As a result, operation by cut-and-try depending on the skill and judgment of the operator is avoided, and accurate bends can be uniformly and quickly made.

I claim as my invention:

1. A pipe bender comprising, in combination, a body member having an open arcuate groove for receiving a section of pipe to be bent, and being adapted to be rocked lengthwise of said groove in relation to a working surface on which the pipe may rest during the bending operation, said groove extending through an arc of at least 90°, disengageable means at one end of said groove for retaining the contiguous end of the pipe therein, a pin rigidly fixed to said body member adjacent the other end of said groove and extending transversely thereof, an enlarged head on the outer end of said pin and having a hexagonal key member at the inner face, a finger having an opening receiving said pin and complementary in shape to said key member to interfit with said key member and movable axially of said pin into and out of interfitting engagement with said key member to effect relative adjustment selectively into different angular positions, and a coiled compression spring about said pin and interposed between said body member and finger to maintain said finger normally in interfitting engagement with said key member, said finger projecting from said body member for engagement with the working surface to limit the permissible degree of rocking movement of said body whereby to predetermine the degree of bend imparted to the pipe.

2. A pipe bender comprising, in combination, a body member having an open arcuate groove

5

for receiving a section of pipe to be bent, and being adapted to be rocked lengthwise of said groove in relation to a working surface on which the pipe may rest during the bending operation, disengageable means at one end of said groove for retaining the contiguous end of the pipe therein, a pin rigidly fixed to said body member adjacent the other end of said groove and extending transversely thereof, a key element on the outer end of said pin, an enlarged head on said pin outwardly of said key element, a finger having an opening receiving said pin and movable axially of said pin into and out of interlocking engagement with said key element to effect relative adjustment selectively into different angular positions, and spring means for normally maintaining said finger against said head and in engagement with said key element, said finger projecting from said body member for engagement

6

with the working surface to limit the permissible degree of rocking movement of said body whereby to predetermine the degree of bend imparted to the pipe.

JACOB W. LEWIN.

References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
759,823	Murch	May 10, 1904
1,835,264	Blythe	Dec. 8, 1931
1,878,754	Buchanan	Sept. 20, 1932
1,879,868	Breer	Sept. 27, 1932
2,349,525	St. Clair	May 23, 1944
2,381,064	Lewin	Aug. 7, 1945
2,464,002	Snyder	Mar. 8, 1949
2,464,800	Franck	Mar. 22, 1949