Dec. 23, 1958 S. J. PAULEY 2,865,625

PIPE BEVELLING DEVICE

Filed July 3, 1957

FIG. 1.

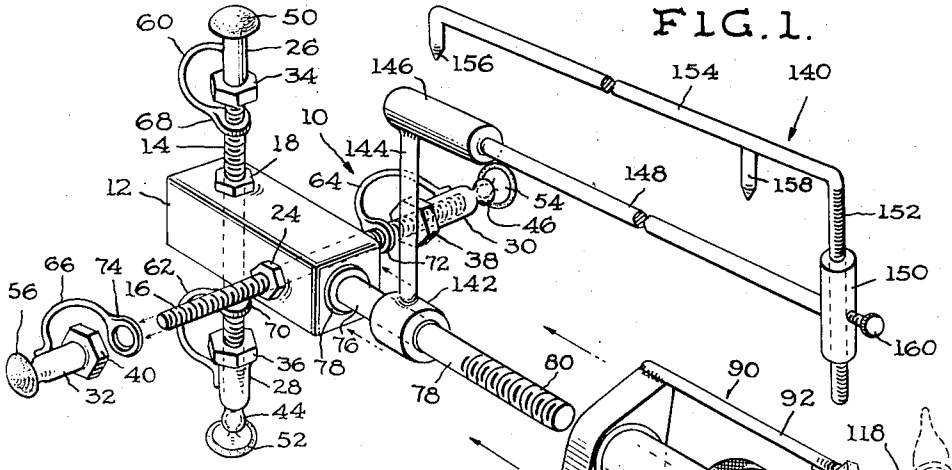


FIG. 4.

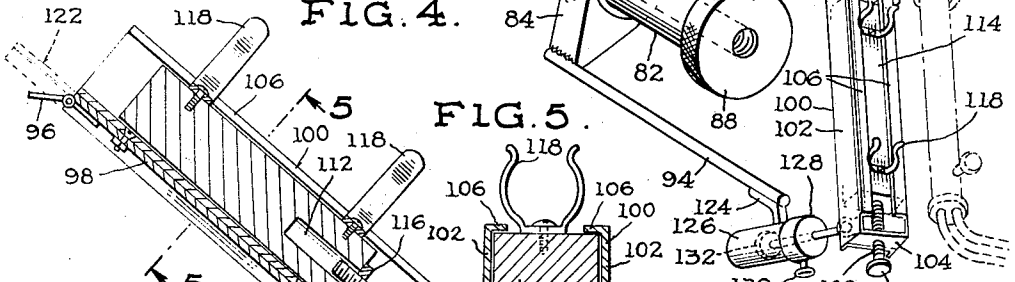


FIG. 5.

FIG. 3.

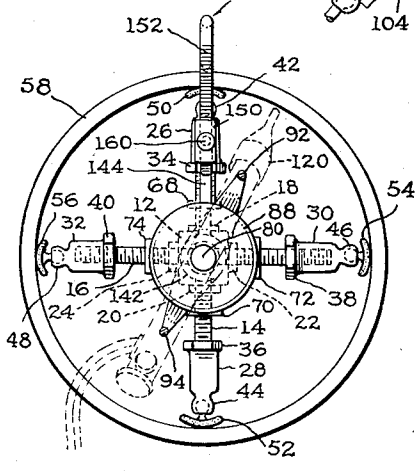
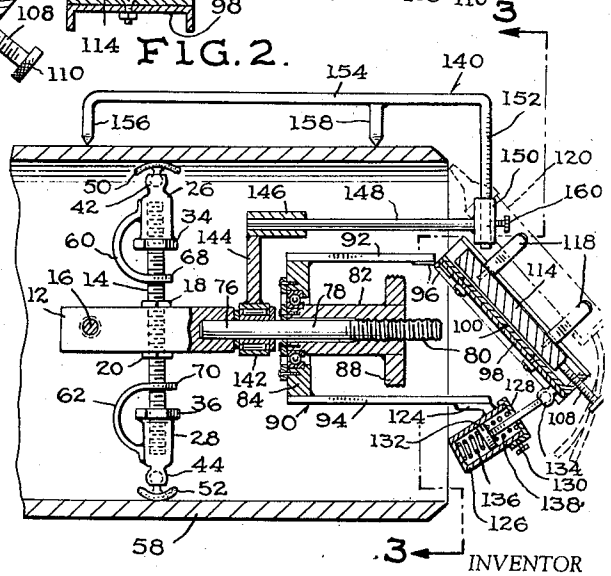


FIG. 2.



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PIPE BEVELLING DEVICE

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1 Claim. (Cl. 266—23)

This invention relates to a bevelling device for pipes, and it particularly relates to a device for applying a cutting torch to the end of pipe lengths at predetermined angles.

There have been various types of pipe bevelling devices used heretofore. However, all these prior types have generally been extremely complex in structure and subject to easy breakage. They were, because of their complex structure, unduly expensive to manufacture and to maintain in repair, and difficult to handle. In those few instances, on the other hand, where the devices were more simple in construction, they were too weak to stand up under heavy usage and were also not capable of providing an accurate cut.

It is one object of the present invention to overcome the above and other disadvantages by providing a bevelling device which is simple in construction, easy to handle and accurate in cut.

Another object of the present invention is to provide a bevelling device which is easily and accurately adjustable to accommodate pipes of various dimensions.

Other objects of the present invention are to provide an improved bevelling device, of the character described, that is easily and economically produced, which is sturdy in construction, and which is highly efficient in operation.

With the above and related objects in view, this invention consists in the details of construction and combination of parts, as will be more fully understood from the following description, when read in conjunction with the accompanying drawing in which:

Fig. 1 is an exploded, perspective view of a device embodying the present invention.

Fig. 2 is a side view, partly in section and partly in elevation, of the device of Fig. 1, the device being shown in operative position within the bore of a pipe.

Fig. 3 is a sectional view taken on line 3—3 of Fig. 2.

Fig. 4 is an enlarged, detailed side view, partly in elevation and partly in section, of the longitudinally adjustable mounting for supporting the torch.

Fig. 5 is a cross-sectional view taken on line 5—5 of Fig. 4.

Referring now in greater detail to the drawing wherein similar reference characters refer to similar parts, there is shown a bevelling device, generally designated **10**, which comprises a block **12** having a threaded rod **14** extending through a threaded bore adjacent the free end of the block and a second threaded rod **16** extending through a threaded bore in the block which is perpendicular to the first bore and closer to the opposite end of the block. Each rod **14** and **16** is held in position relative to the block by means of lock nuts, such as shown at **18** and **20** for rod **14** and **22** and **24** for rod **16**. At each end of the two rods **14** and **16** is provided a hollow head having an internally threaded bore to receive the corresponding threaded ends of the corresponding rod; these heads being designated as **26, 28, 30** and **32** respectively. Each head is provided at one end with a polygonal nut portion, as at **34, 36, 38** and **40** respectively, and with a spherical socket,

as at **42, 44, 46** and **48** respectively, on the other end. Connected to each of these sockets as by a ball joint is a concave shoe designated respectively **50, 52, 54,** and **56.** These shoes may preferably be constructed of steel or the like and may be covered with rubber. On the other hand, if desired, the entire shoe may be made of rubber or the like. The rubber, in either case serves to frictionally engage with the interior of a tube or pipe such as indicated at **58**, the end of which is to be bevelled. Each head **26—32** is provided with a bridge member, as at **60, 62, 64** and **66** respectively, each bridge member having a ring portion, as at **68, 70, 72** and **74** respectively, which is adapted to encircle the corresponding threaded rod to act as a guide for the adjustable head to which it is attached.

The block **12** is provided at one end with a socket to receive in rigid engagement therewith one end of a shaft **76**; a collar **78** holding the shaft in the socket. The shaft is unthreaded for the major portion of its length but, at that portion opposite to its connection with the block, the shaft is threaded, as at **80**. This shaft **78** extends into and through a sleeve **82** which is internally threaded to engage with the threads **80** on the shaft. This sleeve **82** is mounted, at one end, in a centrally apertured plate **84,** wherein a ball bearing assembly **86** surrounds the sleeve to permit free rotation of the sleeve in the plate. The opposite end of the sleeve **82** is provided with a knurled disc **88** by means of which the sleeve may be manually rotated on the shaft.

The plate **84** forms the front end of a mounting bracket **90** for the torch, the remainder of the bracket consisting of a pair of rods **92** and **94** connected, by welding or other suitable means, to the plate **84** at their front ends, and extending rearwardly parallel with the sleeve **82.** The rod **92** is somewhat shorter than the rod **94** and is provided, at its free end, with a hinge plate **96** consisting of two plate-sections connected by a hinge connection. One of the plate sections is attached to the rod **94** and the other is attached to the underside of a base plate **98.** The base plate **98** supports a housing **100.** The housing is provided with side walls **102** and a front wall **104.** The side walls **102** are provided with laterally-inwardly-extending flanges **106** at their upper edges; these flanges defining an open top. The front wall **104** is centrally apertured to provide a threaded opening through which threadedly extends a threaded rod **108** having a manually-actuatable knob **110** on its end. The opposite end of the threaded rod is positioned in a socket **112** at one end of a slidable block **114** and is retained therein by a collar **116.** On the upper surface of the block **114** are provided a pair of clamps **118** spaced from each other longitudinally of the block. The clamps project out from the open top of the housing **100** in a position to releasably clamp a torch **120.** It should be noted that the hinge plate **96** may be removed and a larger hinge plate, such as indicated at **122,** may be substituted to accommodate larger pipes. By the same arrangement, smaller hinge plates may be substituted to accommodate smaller pipes.

The other rod **94** is provided, at its free end, with a bracket **124** upon which is mounted a tubular spring housing **126** having an open top coverable by a cover lid **128.** The cover lid **128** is releasably locked in place by a set screw **130.** Within the housing **126** is provided a plunger **132** having a stem extending through a central opening in the cover **128.** The other end of the stem is provided with a ball fitting within a socket depending from base plate **98** to form a ball joint **134.** Within the housing **126,** a spring **136** is positioned on one side of the plunger head and a second spring **138** is positioned on the other side of the plunger head. The difference in tension between these two springs is so maintained that the plunger biases

the housing **100**, and therefore, the torch **120**, into a predetermined angle of bevel relative to the end of the pipe **58**. When the angle is desired to be changed, the cover **128** is removed and a different set of springs is inserted to vary the differential pressure therebetween.

A gage device generally designated **140**, to indicate the positioning of the device relative to the outside of the pipe, is connected to the device by a ring bearing **142** which surrounds the shaft **76** to permit relative movement therebetween. Extending upward from the ring bearing is a rod **144** having a socket **146** at its free end and perpendicular thereto. Positioned in this socket is one end of a rod **148**; this rod **148** having a perpendicularly extending sleeve **150** at its other end. Slidable within this sleeve **150** is a rod portion **152** integral at its upper end with a perpendicular rod portion **154** which extends back in the direction of rod **148**. The rod portion **154** is provided with a pair of indicating points **156** and **158** to provide for center alignment. The rod portion **152** is calibrated, preferably in 1/16 inch calibrations, to indicate its adjustment relative to the sleeve **150**. A setscrew **160** is provided in the sleeve **150** to hold the rod portion **152** in releasably adjusted position. The gage **140** is rotatable relative to the bevelling device by means of the ring bearing **142** to indicate the radius of the pipe; this radius being indicated by the calibrations on rod portion **152**.

As is apparent from the above description, in the operation of the device, the shaft **76** and its associated parts are inserted into the mouth of the pipe and the heads **26—32** are adjusted so that their respective foot members **50—56** bear against the internal wall of the pipe with sufficient play provided by their ball joints during and after the adjustment. The knob **88** is then manipulated to bring the sleeve **82** and its associated parts into the proper position. A fine adjustment is made by means of threaded rod **108** to bring the torch into proper position and the springs in the housing **126** are positioned to provide the proper angular bias of the torch. The gage member is then set to indicate the radius of the pipe. The device is then ready to operate and the cutting action takes place by rotating the torch-holding assembly around the mouth of the pipe.

Although this invention has been described in considerable detail, such description is intended as being illustrative rather than limiting, since the invention may be variously embodied, and the scope of the invention is to be determined as claimed.

Having thus set forth and disclosed the nature of this invention, what is claimed is:

In a device of the character described, in combination

an elongated block, a threaded rod extending through said block in a direction transverse to the longitudinal arcs thereof, a second threaded rod extending transversely through said block at right angles to said first mentioned rod, a threaded cap for each end of each rod, an outwardly concaved shoe swivelly mounted on the end of each cap, lock nuts on each rod on each side of said block permitting longitudinal adjustment of said rods and hence of said shoes, a third rod having smooth portion and a threaded end extending longitudinally from an end of said block, an internally threaded sleeve on the threaded end of said third rod, an elongated plate secured to said sleeve and rotatable on the smooth portion of said rod, a pair of rods, one secured at one end to each end of said plate extending parallel to said third rod and beyond said sleeve, a housing hingedly secured to the end of one of said rods, a tubular spring housing secured to the end of the other of said rods inclined toward the other end of said first mentioned housing, a piston in said spring housing, a piston rod secured to said piston and abutting said other end of said first mentioned housing, replaceable spring means in said spring housing biasing said piston towards said other end of said first mentioned housing and cutting torch supporting means carried by said first mentioned housing, the smooth portion of said third rod carrying a ring bearing, a rod extending from said ring bearing perpendicular to said third rod, an additional rod secured to the end of said rod extending from said ring bearing, and parallel to said third rod, a collar carried by the end of said additional rod and perpendicular thereto, an L-shaped rod having one leg adjustably secured in said collar, the other leg of said L-shaped rod extending rearwardly parallel to said additional rod and adapted to extend over the outside of a pipe to be bevelled and indicating points carried by said other leg of said L-shaped rod.

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