March 19, 1957 E. F. GREGORY 2,785,477

CONDUIT BENDING GUIDE

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Fig. 1

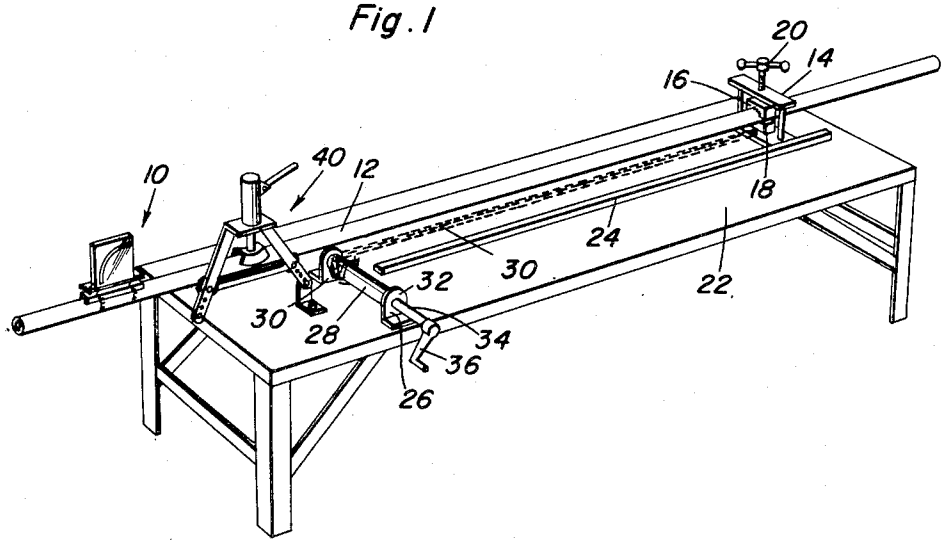
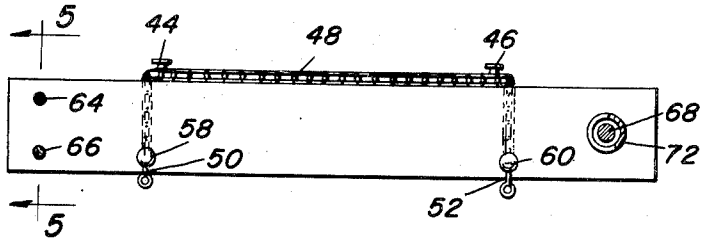


Fig. 4



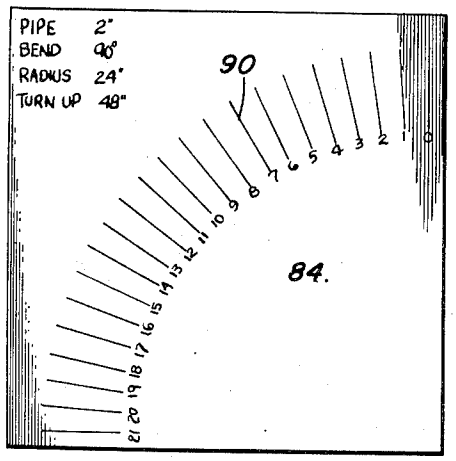


Fig. 5

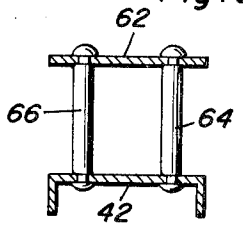


Fig. 6

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Fig. 2

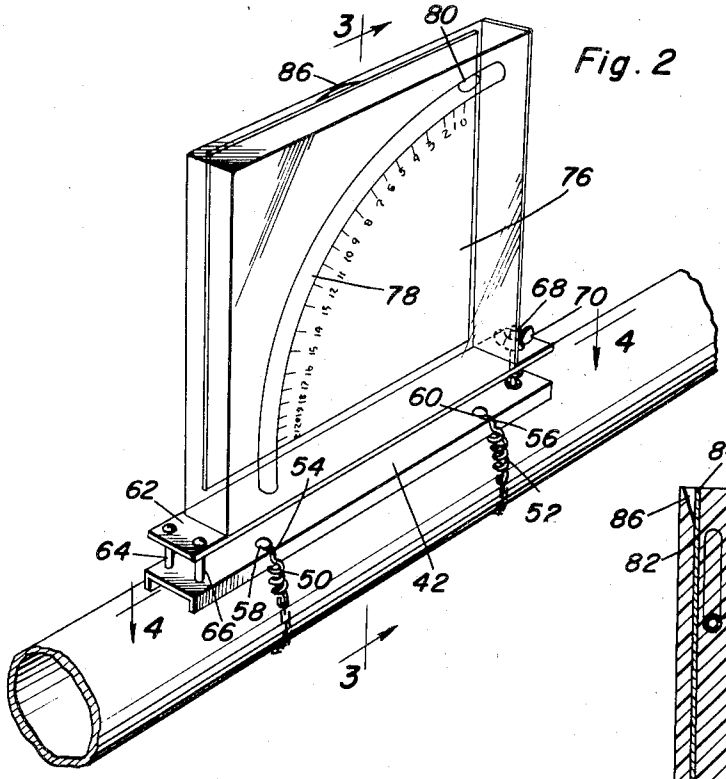


Fig. 3

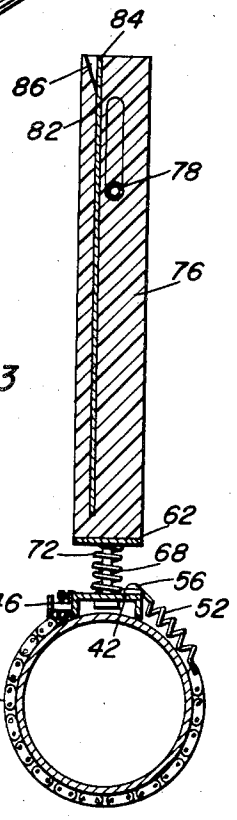
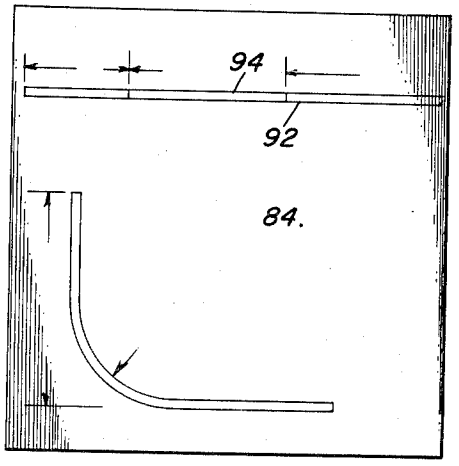


Fig. 7



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CONDUIT BENDING GUIDE

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Application September 16, 1955, Serial No. 534,652

3 Claims. (Cl. 33—207)

This invention relates to a device especially adapted to be utilized in conjunction with bending pipes and other similar conduits, and has for its primary object the provision of means for providing a guide adapted to enable true radius bends to be made in a pipe in a convenient manner.

The construction of this invention features a transparent block having a tube with an air bubble therein, with the tube arranged in a suitable arc. The transparent block has a slot therein for the reception of cards which have indicia thereon cooperating with the bubble in the tube to provide an indication to the user of the number of bends or presses which must be made in a pipe at given points to arrive at the desired bend of the radius desired.

A further object of the invention resides in the provision of a conduit bending guide which employs novel means for adjustment so as to assure that it can be secured on the pipe to be bent in a selected and initial position and which employs means for allowing different cards having varying indicia thereon to be readily substituted for one another so as to enable the device to be utilized in forming bends of varying curvatures.

Still further objects and features of this invention reside in the provision of a conduit bending guide that is simple in construction, highly efficient in operation, relatively inexpensive to manufacture, and efficient in use.

These, together with the various ancillary objects and features of the invention which will become apparent as the following description proceeds, are attained by this conduit bending guide, a preferred embodiment of which has been illustrated in the accompanying drawings, by way of example only, wherein:

Figure 1 is a perspective view illustrating the conduit bending guide as associated with a length of pipe and operatively installed on a work table for use in bending the pipe to the desired radius;

Figure 2 is an enlarged perspective view of the conduit bending guide;

Figure 3 is an enlarged vertical sectional view as taken along the plane of line 3—3 in Figure 2 illustrating the relative position of the slot and the arcuate tube;

Figure 4 is an enlarged horizontal sectional detail view as taken along the plane of line 4—4 in Figure 2 illustrating in particular the means utilized for positioning the conduit bending guide on a pipe or like member;

Figure 5 is an enlarged sectional detail view as taken along the plane of line 5—5 in Figure 4;

Figure 6 is an elevational view of one of the cards utilized in conjunction with the present invention; and

Figure 7 is a rear elevational view of the card shown in Figure 6.

With continuing reference to the accompanying drawings wherein like reference numerals designate similar parts throughout the various views, reference numeral **10** generally designates the conduit bending guide which is adapted to be utilized to enable a section of pipe, as at **12**, to be bent to the desired radius of curvature. In

use, the conduit bending guide is suitably mounted on the section of pipe **12** which is secured in a vise **14**. The vise **14** has an upper clamping member **16** as well as a lower clamping member **18** and is adjusted by a threaded member **20** in the conventional manner of a clamp press. The vise **14** is slidably mounted on a table **22** of suitable length which has a guide bar **24** mounted thereon in any convenient manner. The vise **14** is adapted to engage the guide bar **24** to assure its travel in the desired direction.

Mounted on the table **22** is a winch **26** having a drum **28** about which a chain or a cable **30** has an end secured.

The drum **28** is mounted for rotation on suitable bearing mounts **30** and **32** through which the shaft **24** on which the drum **28** is secured extends. A handle **36** is provided for rotating the shaft **34** and hence the drum **28**. The other end of the chain or cable **30** is secured to the vise **14** and upon rotation of the shaft **34** and hence the drum **28**, the vise **14** will be moved toward the winch suitably guided by the guide bar **24**.

Secured on the table **22** and adapted to clampingly engage the pipe or conduit **12** is a conventional pipe bender **40**. As the pipe **12** is moved by action of the winch **26**, the pipe bender **40** is adapted to make successive bends in the pipe.

In order to inform the user of the conduit bending guide **10** of the desired amount of movement for the pipe **14** and the desired amount of bend to be applied on the pipe, the guide **10** is secured about the pipe **12**. This conduit bending guide includes a lower mounting plate **42** having a pair of studs **44** and **46** extending outwardly from one end portion thereof. Positioned about this end portion are chains **48**, the ends of which have springs **50** and **52** secured thereto. The springs **50** and **52** have hook-like ends **54** and **56** engageable within apertures **58** and **60** in the lower mounting plate **42**. The lower mounting plate **42** is preferably of channel shape in construction to provide suitable engagement with the pipe **12** independent of the diameter of the pipe.

Secured to and spaced from the lower mounting plate **42** is an upper mounting plate **62**. Suitable spacer fasteners **64** and **66** hold one end of the upper mounting plate **62** in spaced relationship from the lower mounting plate **42**. However, a bolt **68** extends through suitable aligned apertures in the upper and lower mounting plates **62** and **42** respectively and a wing nut **70** is used for engagement about the threaded fastener or bolt **68**. Positioned about the bolt **68** and resiliently yieldingly engaging the upper surface of the lower mounting plate **42** and the lower surface of the upper mounting plate **62** is a spring **72**. Hence, by utilization of the nut **70**, the upper mounting plate **62** can be suitably angularly adjusted with respect to the lower mounting plate **42**, the fasteners **64** and **66** not being of such rigidity as to prevent this adjustment.

Bonded to the upper mounting plate **62** or otherwise secured thereto is a block **76** of any suitable transparent plastic material in which an arcuate tube **78** is embedded. The tube is filled with a suitable fluid, such as oil or the like, and an air bubble **80** is provided in the fluid. The tube **78** is shaped to conform to a portion of a circle of selected radius.

The transparent block **76** is provided with a substantially rectangular slot **82** therein of sufficient size so as to receive an indicator card **84** in the slot. The slot **82** is positioned to the rear of the arcuate tube **78** and is provided with an enlarged portion **86** for enabling the removal and replacement of the cards **84**.

Each of the cards **84** is provided with suitable indicia thereon. This indicia is in the form of radius marks

90 for indicating the angular relationship of the guide for each successive bend of the bending apparatus 40. On the obverse side of the card 84, there is shown other indicia 92 having suitable graduations 94 for indicating the distance that the pipe 12 should be moved for each successive bend of the bending apparatus 40 to form the bend desired.

In use, after the desired card 84 has been selected so as to obtain the bend desired, the guide is positioned on the pipe with the bubble 80 adjusted to zero. Then, a first press is made and the pipe is then moved in accordance with the indicia 94 the proper distance, at which time another press is made until the bubble centers on the radial indicia 90 indicated as the first line. Then, successive movements and successive presses are made until the conduit is formed in the shape desired.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly, all suitable modifications and equivalents may be resorted to, falling within the scope of the invention as claimed.

What is claimed as new is as follows:

1. A conduit bending guide comprising a lower mounting plate, means for securing said lower mounting plate on a conduit, an upper mounting plate carried by said lower mounting plate, a transparent block secured on said upper mounting plate, said block having a slot therein for receiving an indicator card, an arcuate tube embedded in said block, said tube being substantially filled with fluid to form an air bubble in said tube, and means for adjusting said upper mounting plate with respect to said lower mounting plate.

2. A conduit bending guide comprising a lower mounting plate, means for securing said lower mounting plate on a conduit, an upper mounting plate carried by said

lower mounting plate, a transparent block secured on said upper mounting plate, said block having a slot therein for receiving an indicator card, an arcuate tube embedded in said block, said tube being substantially filled with fluid to form an air bubble in said tube, an indicator card in said slot, said indicator card having indicia thereon, said indicia being arranged in alignment with said arcuate tube, and means for adjusting said upper mounting plate with respect to said lower mounting plate.

3. A conduit bending guide comprising a lower mounting plate, means for securing said lower mounting plate on a conduit, an upper mounting plate carried by said lower mounting plate, a transparent block secured on said upper mounting plate, said block having a slot therein for receiving an indicator card, an arcuate tube embedded in said block, said tube being substantially filled with fluid to form an air bubble in said tube, an indicator card in said slot, said indicator card having indicia thereon, said indicia being arranged in alignment with said arcuate tube, said means for securing said lower mounting plate on a conduit including chains secured to said lower mouting plate at one edge portion thereof, said lower mounting plate having apertures therein adjacent another edge portion thereof, and springs secured to said chains, said springs having hook ends engageable in said apertures, and means for adjusting said upper mounting plate with respect to said lower mounting plate.

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