Nov. 24, 1953 J. F. VAN GUNDY 2,659,975

PIPE TOOL

Filed May 28, 1951 2 Sheets-Sheet 1

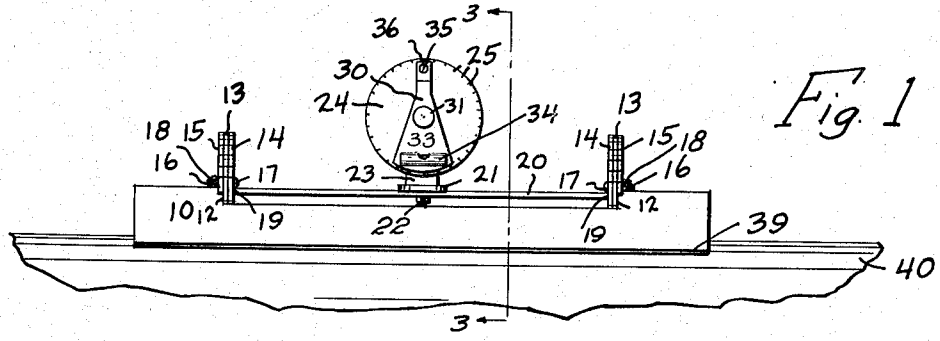


Fig. 1

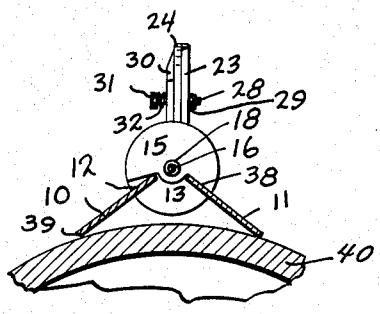


Fig. 2

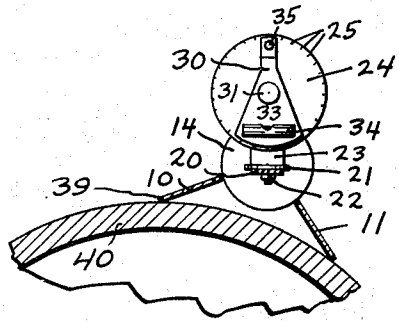


Fig. 3

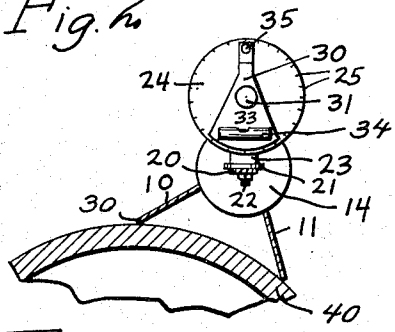


Fig. 4

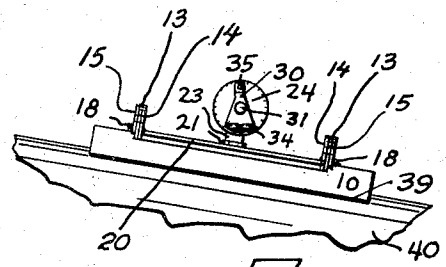


Fig. 5

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Filed May 28, 1951 2 Sheets-Sheet 2

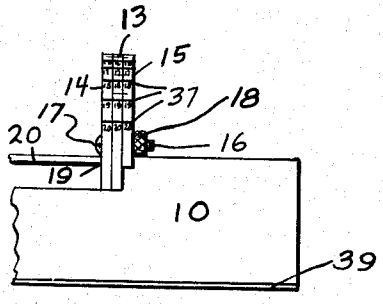


Fig. 6

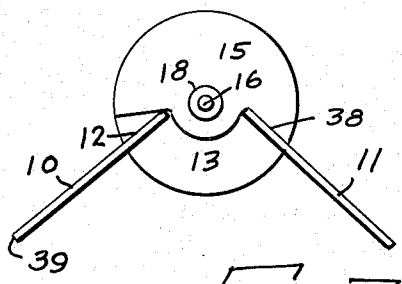


Fig. 7

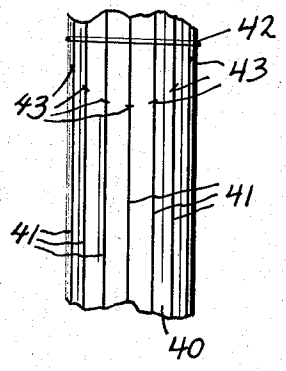


Fig. 10

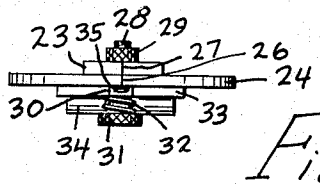


Fig. 8

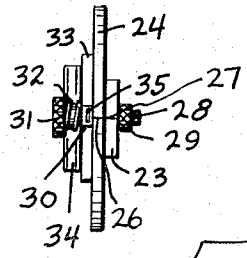


Fig. 9

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PIPE TOOL

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Application May 28, 1951, Serial No. 228,670

8 Claims. (Cl. 33—88)

1

My invention relates to a pipe tool.

An object of my invention is to provide a pipe tool which will include a combination of various features rendering the tool useful for the purpose of indicating the correct angle in which the pipe lays, which tool also includes other features wherein by a simple operation the tool can be adjusted and used for marking guide or station lines on the pipe when it is desired to provide patterns for intersecting pipes.

A further object of my invention is to provide means wherein the pattern can be developed for any pipe size by the use of as many peripheral spacings as desired, and to also provide means wherein the centrally positioned and uppermost longitudinal line can be accurately determined, whereupon the tool can then be used to accurately space the station lines for the above mentioned purposes.

A further object of my invention is to provide means whereby the tool can be used in an offset manner for starting the station lines at a point off from the center of the pipe and whereby the tool can also be adjusted to provide complementary angles when providing a bend in the pipe to the desired angle.

With these and other objects in view, my invention consists in the construction, arrangement, and combination of the various parts of my device, whereby the objects contemplated are attained, as hereinafter more fully set forth, pointed out in my claims, and illustrated in the accompanying drawings, in which:

Figure 1 is a side elevation of the tool showing the same resting upon a pipe in horizontal position,

Figure 2 is an end view of the tool,

Figure 3 is a sectional view taken along the lines 3—3 of Figure 1 with the gauge portions of the tool however being rotated 90 degrees,

Figure 4 is a further sectional view similar to Figure 3 showing the use of the tool on a smaller diameter pipe,

Figure 5 is a side elevation of the tool as being used to indicate the correct angle of a pipe inclined at such angle,

Figure 6 is a detail,

Figure 7 is an end view of Figure 6,

Figure 8 is a further detail,

Figure 9 is a similar detail to that of Figure 8 showing the gauge positioned at 90 degrees therefrom, and

Figure 10 is a plan view of a pipe showing the longitudinal station lines provided by the use of the tool.

2

My invention contemplates the provision of an all purpose tool usable for measuring purposes in a variety of conditions encountered for pipe work for piping natural gas, etc.

I have used the character 10 to designate an angularly inclined plate providing one side of the tool, the character 11 indicating a further plate inclined at the same angle. Plate 10 is securely welded at 12 to the disks 13 which disks are positioned intermediately of the inner disks 14 and the substantially semi or half disks 15. Passing through the disks are the studs 16 rigidly secured at 17 and threadably engaging these studs are the knurled nuts 18 which are provided to securely lock the disks against rotation as will be explained later.

Welded at 19 to the inner disks 14 is a longitudinal strap member 20, upon which rests a platform 21 to which platform is attached the stud and nut arrangement 22 which is freely mounted so that the platform 21 can rotate and extended upwardly from the platform 21 is the post member 23. Positioned against the post member 23 is the disk 24 upon which are marked the degree markings 25 and the zero marking 26 (see Figures 8 and 9) normally adapted to register with the center marking 27 at the top of the post 23.

The stud 28 is secured to the disk 24 and passes through the post 23 where it engages a tightening knurled nut 29, the stud also freely passing through the indicator member 30, and terminating in the head 31, the compression spring 32 being interposed between the head 31 and the member 30 to provide tension against the member 30. Attached at the lower end 33 of the member 30 is a leveling member 34 having the usual indicating bubble therein.

The indicating member 30 includes an opening at 35 whereby the degrees 25 can be read and further includes the mark at 36.

Marked along the edges of the various disks 13, 14, and 15 are the various markings 37 indicating pipe diameters.

The plate 11 is welded at 38 to the outermost semi-disks 15. The innermost disks 14 are freely rotatable with respect to the other disks except when the assembled disks are securely clamped by means of the nuts 18.

The tool is used in the following manner. For measuring the angle in which a pipe lays, the tool is used as shown in Figure 5, the post 23 being solidly bolted to the disk 24 and with the markings 26 and 27 being in line. The angle of the pipe is then readily measured by moving the

indicator 30 until the bubble in the leveling member 34 is centered, thereby indicating the angle. In this manner the angle of the pipe is determined whether in already fixed position or whether it is desired to bend the pipe to the proper angle, the plates 10 and 11 of course being placed in such angle so that their lower edges will engage the pipe and so that the disks 13 and 14 will not contact the pipe.

In many cases if an angle bend has already been made and it is desired to obtain the correct similar angle at the other side of the bend, the nut 29 can be loosened after the device has been placed on the first angle, the disk 24 and indicator 30 being moved simultaneously until the bubble is centered, and then the tool is placed on the other side of the bend regardless of what this original angle is, and then by clamping the disk 24 and post 23 together again, the angle at the other side of the pipe can be bent or set, by the indicator 30 and bubble, thereby establishing the required angle without the necessity of the operator's adding or subtracting such angles.

A further and important use of the tool described, is that of establishing station lines and points when cutting intersecting pipes so that they fit snugly on the intersecting points. The usual method of such pipe work is to establish a pattern on paper corresponding to the various diameters of the various pipe and to further establish longitudinal station lines on both sections of pipe whereby the intersecting points are established from a base line, which points can then be readily transferred by measuring to the point. In order to accomplish this result however it is necessary to draw the same spaced longitudinal lines on the pipe itself, this being accomplished in the following manner. In viewing Figure 3 and assuming that the device is being used on a 20'' diameter pipe, all of the markings "20" will be in the position as shown in Figure 6, these markings pertaining to the markings on the disks 13, 14, and 15.

The post 23 is then swung around on the pivot 22 and then appears as viewed in Figure 3, with the post 23 and disk 24 being locked together with marks 26 and 27 in alignment, and with the indicator 30 being on the zero point. At this point the left-hand edge 39 of the member 10 will be exactly on the highest central point of the pipe 40, or directly in a vertical line above the true longitudinal center of the pipe. In other words the markings on the device are pre-established consistent with this feature, so that when the bubble indicates level, this line will be in the position as stated, whereupon the line is drawn by chalk or any other medium, such line or lines being indicated by the character 41 in Figure 10. In order to draw the next succeeding line at the spacing required, it may be assumed for instance that 24 of such lines will be drawn about the pipe, or that each line will be at a distance of 15 degrees from the preceding lines with respect to the pipe axis whereupon the indicator 30 is swung to the 15 degree mark and the tool is moved to the right about the pipe periphery until the bubble is level again, whereupon the next succeeding line 41 is marked and next the indicator is moved another 15 degrees etc. until the entire periphery of the pipe is marked with these lines substantially as shown in Figure 10. A strap or other member 42 can then be placed around the pipe which will indicate the base line, the points of intersection 43 being marked on the lines 41

which points are taken from the plotted chart, thereby providing the true points of intersection. In many cases the charts are not being required since tables can be set up for the intersection of various pipe sizes, these tables setting forth the distances from the base lines as standards.

For using the device in the same manner except for a smaller diameter pipe, the markings 26 and 27 are brought into alignment with the zero point on the indicator 30 being brought into alignment therewith, the members 10 and 11 are pivoted towards each other until the markings as for instance "18," which indicates an 18'' diameter pipe, are brought together in alignment, the nuts 18 being loosened, and next the entire locked assembly of the strap 20, disk 24, members 30 and 23 are rotated until the markings "18" on the inner disks 14 register with the other markings "18," the entire assembly then being locked by means of the nuts 18. The device is then moved along the pipe upper portion until the bubble indicates level whereupon the edge 39 will then again be on the centrally positioned upper point of the smaller pipe, as shown in Figure 4, it being noted that this will be natural due to the fact that when the plates 10 and 11 are brought together the compensation provided by rotation of the plates 14 will insure that this point can be in one position only. The same operation is then proceeded with in marking the lines 41 by shifting the indicator 30 in the same manner to the next degree marking each time. In the above described manner it will be noted that a variety of pipe sizes can be marked for the purposes intended.

In case it is desired to start the first station line at a different point than the center point, a similar operation can be proceeded with to establish the first offset line to the right of the vertical line, whereupon the disk 24 can then be moved so that the markings 26 and 27 will be offset from each other and the indicator registering level, the disk 24 and post 23 then being clamped, whereupon the markings can proceed as before.

It will now be noted that my type of pipe tool provides a great many advantages specifically as mentioned in the objects of my invention and includes other advantages readily apparent.

Some changes may be made in the construction and arrangement of the parts of my invention without departing from the real spirit and purpose of my invention, and it is my intention to cover by my claims any modified forms of structure or use of mechanical equivalents which may be reasonably included within their scope.

I claim as my invention:

1. A pipe tool comprising a pair of angularly inclined plates including mutually pivoted extending portions whereby said plates are pivoted in relation to each other, a gauging device attached between said plates including a pivotal indicator member including a bubble level attached thereto, indicating means marked on said extending portions for indicating the topmost longitudinal center line along said pipe incidental upon registration of all of said indicating marks and level indicating of said bubble level.

2. A pipe tool comprising a pair of angularly inclined plates including mutually pivoted extending portions whereby said plates are pivoted in relation to each other, a gauging device attached between said plates including a pivotal indicator member including a bubble level attached thereto, indicating means marked on said

extending portions for indicating the topmost longitudinal center line along said pipe incidental upon registration of all of said indicating marks and level indicating of said bubble level, said extending portions including a plurality of substantially circular disks secured at each end of said tool, a pair of said circular disks being attached to one of said plates, a further pair of said circular disks being attached to the other of said plates, a further pair of circular disks being attached to said gauge member.

3. A pipe tool comprising a pair of angularly inclined plates including mutually pivoted extending portions whereby said plates are pivoted in relation to each other, a gauging device attached between said plates including a pivotal indicator member including a bubble level attached thereto, indicating means marked on said extending portions for indicating the topmost longitudinal center line along said pipe incidental upon registration of all of said indicating marks and level indicating of said bubble level, said extending portions including a plurality of substantially circular disks secured at each end of said tool, a pair of said circular disks being attached to one of said plates, a further pair of said circular disks being attached to the other of said plates, a further pair of circular disks being attached to said gauge member, said gauge member being mounted between said circular disks whereby it can be rotated 90 degrees as required.

4. A pipe tool comprising a pair of spaced angularly pitched plates, the lower edges of which are adapted to engage a pipe surface, substantially circular disks attached to said plates, a pair of inner circular plates pivotally secured to said disks, a bar attached between said inner plates including a post pivotally secured thereto for positioning said post longitudinally of or transversely to said angularly pitched plates, a levelling member attached to said post.

5. A pipe tool comprising a pair of spaced angularly pitched plates, the lower edges of which are adapted to engage a pipe surface, substantially circular disks attached to said plates, a pair of inner circular plates pivotally secured to said disks, a bar attached between said inner plates including a post pivotally secured thereto for positioning said post longitudinally of or transversely to said angularly pitched plates, a levelling member attached to said post, said levelling member further including an angle indicating disk having degree marks thereon adjustably attached to said post, an indicator member pivoted to said angle indicating disk, said indicating member including a bubble level at the lower end thereof.

6. A pipe tool comprising a pair of spaced angularly pitched plates, the lower edges of which are adapted to engage a pipe surface, substantially circular disks attached to said plates, a pair of inner circular plates pivotally secured to said disks, a bar attached between said inner plates including a post pivotally secured thereto for positioning said post longitudinally of or transversely to said angularly pitched plates, a levelling member attached to said post, said levelling member further including an angle indicating disk having degree marks thereon adjustably attached to said post, an indicator member pivoted to said angle indicating disk, said indicating member including a bubble level at the lower end thereof, all of said disks lying in a plane perpendicular to said plates, means for releasing said disks for rotatable movement thereof.

7. A pipe tool comprising a pair of spaced angularly pitched plates, the lower edges of which are adapted to engage a pipe surface, substantially circular disks attached to said plates, a pair of inner circular plates pivotally secured to said disks, a bar attached between said inner plates including a post pivotally secured thereto for positioning said post longitudinally of or transversely to said angularly pitched plates, a levelling member attached to said post, said levelling member further including an angle indicating disk having degree marks thereon adjustably attached to said post, an indicator member pivoted to said angle indicating disk, said indicating member including a bubble level at the lower end thereof, all of said disks lying in a plane perpendicular to said plates, means for releasing said disks for rotatable movement thereof, said disks having inch indicating markings thereon whereby registration of all of said inch indicating markings in aligned position will provide means for indicating the topmost center line of a pipe according to the diameter indicated by said markings, and when said angle indicating disk is positioned at right angles to said plates and when the zero marking of said indicating member registers with the zero markings of said indicator disk and said post.

8. A pipe tool comprising a pair of spaced angularly pitched plates, the lower edges of which are adapted to engage a pipe surface, substantially circular disks attached to said plates, a pair of inner circular plates pivotally secured to said disks, a bar attached between said inner plates including a post pivotally secured thereto for positioning said post longitudinally of or transversely to said angularly pitched plates, a levelling member attached to said post, said levelling member further including an angle indicating disk having degree marks thereon adjustably attached to said post, an indicator member pivoted to said angle indicating disk, said indicating member including a bubble level at the lower end thereof, all of said disks lying in a plane perpendicular to said plates, means for releasing said disks for rotatable movement thereof, said disks having inch indicating markings thereon whereby registration of all of said inch indicating markings in aligned position will provide means for indicating the topmost center line of a pipe according to the diameter indicated by said markings, and when said angle indicating disk is positioned at right angles to said plates and when the zero marking of said indicating member registers with the zero markings of said indicator disk and said post, positioning of said post and indicator disk parallel to said angularly pitched plates providing means for determining the angle of inclination of a pipe engaged by said plates by the degree marking of said indicator member with respect to said angle indicating disk when said level bubble is centered.

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