April 28, 1953 J. H. MORRIS 2,636,273

PIPE SIGHTING DEVICE AND CONTOUR MARKER

Filed April 12, 1951 2 SHEETS—SHEET 1

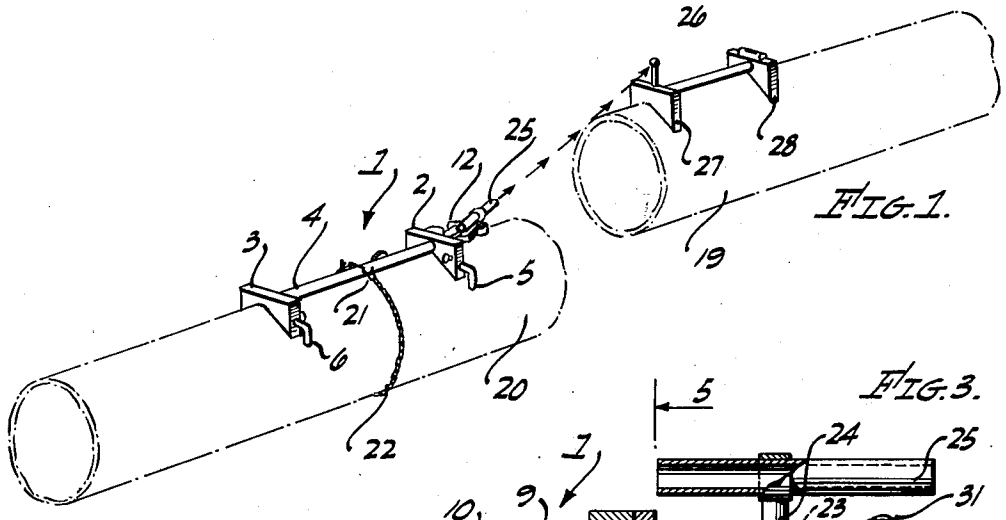


FIG. 1.

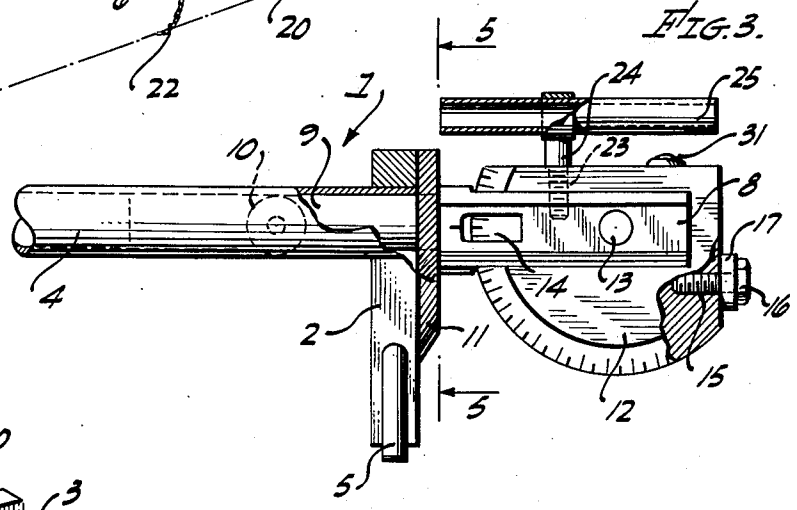


FIG. 3.

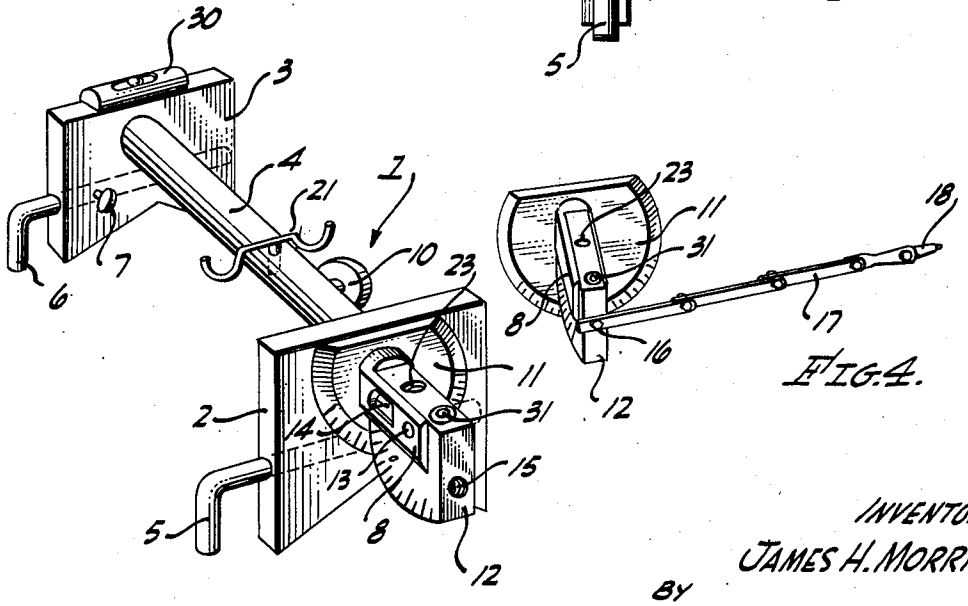


FIG. 2.

FIG. 4.

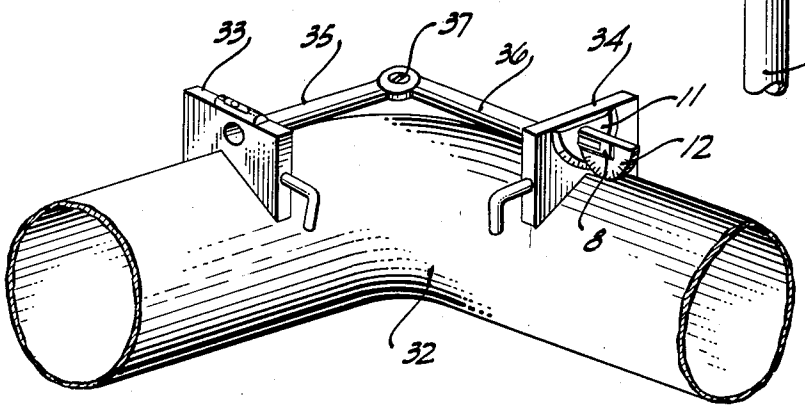
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PIPE SIGHTING DEVICE AND CONTOUR MARKER

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FIG. 7.



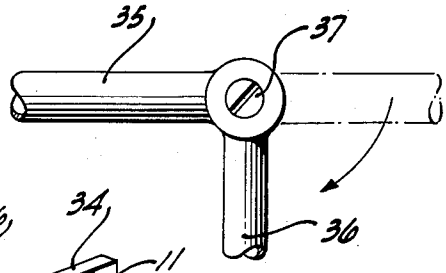


FIG. 8.

FIG. 9.

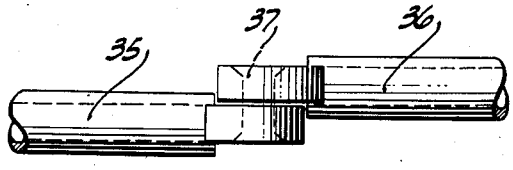


FIG. 5.

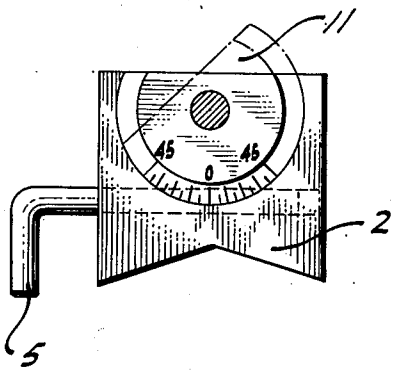
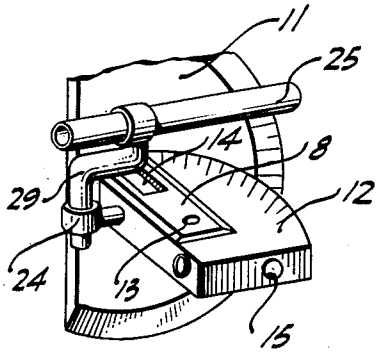


FIG. 6.



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PIPE SIGHTING DEVICE AND CONTOUR MARKER

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2 Claims. (Cl. 33—69)

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This invention relates to a pipe sighting device and contour marker for the purpose of determining the misalignment of pipe, and particularly to determine the shape and contour of the cut to be made on the pipe so that a connecting section of pipe will properly fit and can be appropriately welded or otherwise fastened in place.

An object of my invention is to provide a pipe sighting device which can be easily and quickly mounted on a section of pipe and which carries a sighting tube so mounted that the appropriate horizontal and vertical angles of misalignment can be quickly and easily determined.

Another object of my invention is to provide a novel pipe sighting device of the character stated, in which rotatable protractors are so mounted that both the horizontal and vertical angles, or either of them, can be determined.

A feature of my invention is to provide a pipe sighting device of the character stated, in which the amount and direction of misalignment of two pipes can be accurately determined, and also the shape of the cut on these pipes can be accurately and quickly determined by the operator of the device.

Another feature of my invention is to provide a device of the character stated, which is simple in construction and which can be easily operated by the user.

Other objects, advantages and features of invention may appear from the accompanying drawing, the subjoined detailed description and the appended claims.

In the drawing:

Figure 1 is a perspective view of my pipe sighting device in position on misaligned pipe.

Figure 2 is a perspective view of the tool with the sighting tube removed.

Figure 3 is an enlarged framentary side elevation of my pipe sighting device with parts broken away to show interior construction.

Figure 4 is a perspective view of the pipe sighting device showing the marker in position.

Figure 5 is a sectional view taken on line 5—5 of Figure 3.

Figure 6 is a perspective view of the protractor showing the sighting tube arranged to determine the horizontal angle.

Figure 7 is a perspective view of a modified form of pipe sighting device.

Figure 8 is a fragmentary plan view of the hinged connecting tube of the pipe sighting device.

Figure 9 is a fragmentary side elevation of the same.

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Referring more particularly to the drawing, the numeral 1 indicates my sighting device, which consists of a pair of spaced V-blocks 2 and 3, which are connected by a tube 4, which is fixedly attached to both V-blocks. The V-blocks are so constructed that they will fit on to the top of the pipe to be worked upon, substantially as shown in Figure 1, and will center themselves on the pipe due to the shape of the block.

In certain instances, it may be desirable to attach the sighting device to a structural shape, and for that purpose I provide a hook 5 in the block 2, and a hook 6 in the block 3. These hooks are slidably mounted in the V-blocks and are held in adjusted position relative to the blocks by a set screw 7.

The sighting construction consists of a bifurcated head 8, from which a trunnion 9 extends. This trunnion is fixedly secured to the head 8 and fits closely within the tube 4. A set screw 10 is threaded into the tube 4 and bears against the trunnion 9, thus holding the trunnion and the head 8 against movement when the set screw 10 bears against this trunnion.

A protractor 11 is fixedly attached to the head 8 and this protractor bears against the outer face of the V-block 2. The purpose of this protractor will be further described.

A second protractor 12 is pivotally mounted in the head 8 on the pin 13. This pin is removable so that the protractor 12 can be removed, as will be further described. The calibrations on the protractor 12 are read through a window 14 in the head 8. It will be evident that the head 8 can be rotated in the tube 4 so that the protractor 12 may be either in a horizontal or a vertical position. This will be subsequently described in the operation of the device.

In the outer face of the protractor 12, I provide a threaded hole 15 which receives a bolt 16 to hold the marking arm 17. This marking arm carries a chalk 18 at its outer end for the purpose of marking the pipe 19 or 20 when the contour marker is in position.

To hold the sighting device 1 in position on the pipe, I provide a pair of hooks 21, which project outwardly from the tube 4, and a chain 22 (which may also include a spring section) encircles the pipe and is hooked into the hooks 21, thus holding the sighting assembly 1 in position, as shown in Figure 1.

A second threaded hole 23 is provided in another face of the protractor 12, as shown, and this threaded hole receives a ring fitting 24 to hold the sighting tube 25, as shown in Figure 3.

The ring fitting 24 and the tube 25 are posi-

tioned, as shown in Figure 3, when it is desired to determine the vertical angle of misalignment between the pipes 19 and 20. In this position the protractor 12 is vertical and can be rotated around the pin 13 until the tube 25 bears on the target 26, which is mounted on the V-blocks 27—28, and positioned on the pipe section, which is spaced from the sighting assembly 1. If the pipes 19 and 20 are merely misaligned in a vertical direction, then the single sighting with the protractor 12 in the position shown in Figures 2 and 3 will be sufficient. If the pipes 19 and 20 are misaligned both vertically and horizontally then with the window 14 turned upwardly, as shown in Figure 6, the protractor 12 is then set in the head 8 so that the ring fitting 24 is projecting to the left, as shown in Figure 6. A riser 29 is now placed in the fitting 24, as shown in Figure 6, and the sighting tube 25 fits in this riser, the riser being off set so as to move the tube 25 substantially to the center line of the tube 4. By rotating the protractor 12 around its pivot 13 until the sighting tube 25 bears on the target 26, it is possible to read the horizontal angle of misalignment.

If desired, a bubble level 30 can be mounted on one of the V-blocks 2 or 3 for the purpose of levelling these blocks on the pipe and also a bubble 31 may be provided on the protractor 12 for the purpose of levelling this protractor.

In Figures 7, 8 and 9 I have shown a slightly modified form of V-block assembly so that the V-blocks can be arranged at an elbow 32 in the pipe. The V-blocks 33—34, which are identical to the blocks 2 and 3, are connected by hinged tubes 35—36, that is, these tubes are flat at their inner ends and are connected by a pin 37, thus hinging the two tubes so that the V-blocks 33 and 34 can be placed at an angle to each other.

In operation, the sighting assembly 1 is mounted on a pipe by means of the chain 22. The target 26 is placed on the adjacent misaligned pipe 19. First, the protractor 12 is turned to a vertical position, the ring fitting 24 is screwed into the protractor 12, and the sight tube 25 is placed in the ring 24. The set screw 10 can be set so that the protractor 12 can move only in a vertical plane. By moving the protractor 12 around its pivot 13, the sight tube 25 can be brought to bear on the target 26. If it is found that it is necessary to also rotate the trunnion 9, this can be done and the amount of rotation read on the protractor 11.

To determine a horizontal angle of misalignment, as well as the previously read vertical angle, the head 8 is turned so that the window 14 faces upwardly. The protractor 12 is removed from the head 8 and turned so that the ring fitting 24 projects to the left, as viewed in Figure 6. A second fitting 29 is now inserted in the ring 24 and the tube 25 is placed in this second fitting, as shown in Figure 6. The protractor 12 is now in horizontal position and can be rotated around the pin 13 until the sight 25 bears on the target 36, at which times the horizontal angle of misalignment is read.

The same procedure of determining misalignment of parts can also be done where these parts are structural shapes instead of pipe. For this purpose the hooks 5 and 6 are provided which fit over the edge of the structural shape.

Having described my invention, I claim:

1. A pipe sighting device comprising a pair of spaced V-blocks, a tube connecting the V-blocks and fixedly secured thereto, a head, a trunnion projecting from the head and extending through one of said V-blocks and into said tube, a protractor pivotally mounted on said head, a ring mounted in the edge of the protractor said protractor having a hole in the edge thereof to receive the ring, a sighting tube fitted in said ring whereby the sighting tube is mounted in spaced relation to the protractor.

2. A pipe sighting device comprising a pair of spaced V-blocks, a tube connecting the V-blocks and fixedly secured thereto, a head, a trunnion projecting from the head and extending through one of said V-blocks and into said tube, a protractor pivotally mounted on said head, a ring mounted in the edge of the protractor said protractor having a hole in the edge thereof to receive the ring, a sighting tube fitted in said ring whereby the sighting tube is mounted in spaced relation to the protractor, a second protractor fixedly mounted on said head and arranged at right angle to the first named protractor.

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