Oct. 20, 1959 J. HENDRICKS ET AL 2,909,011

PIPE BEVELERS

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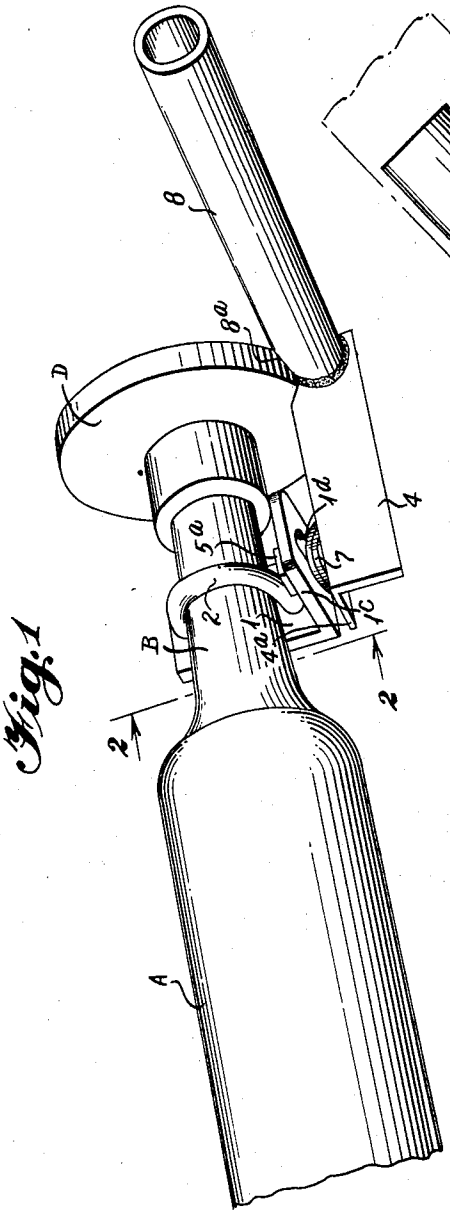


Fig. 1

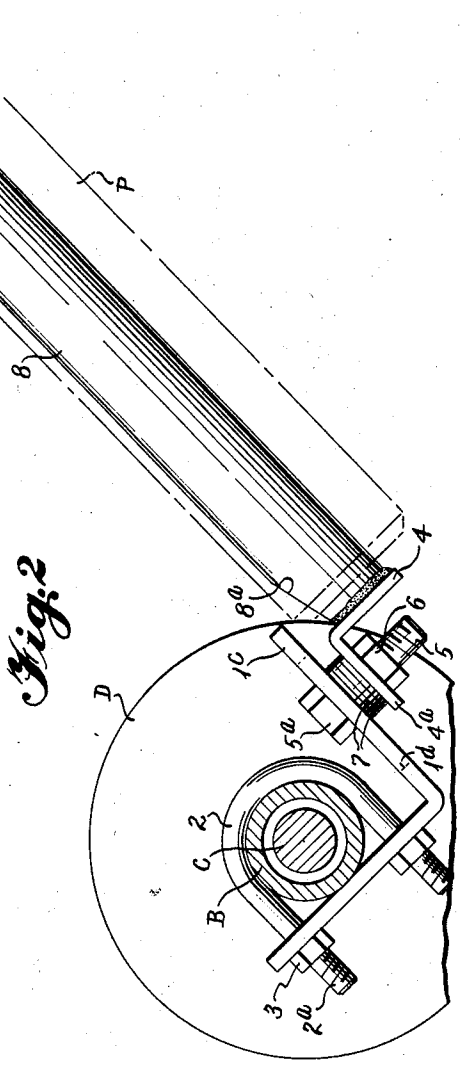


Fig. 2

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Fig. 3

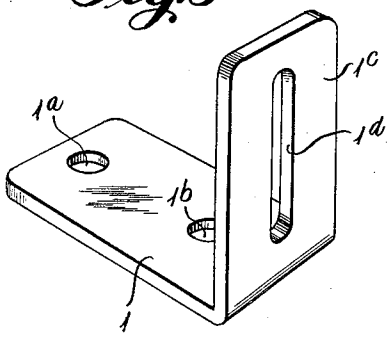
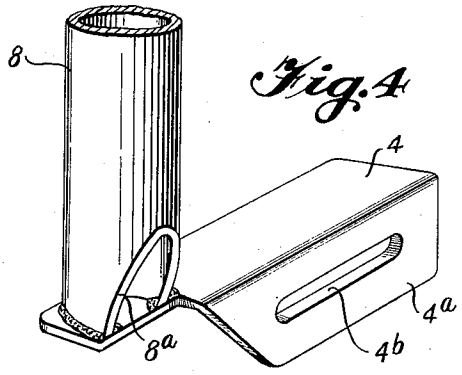


Fig. 4



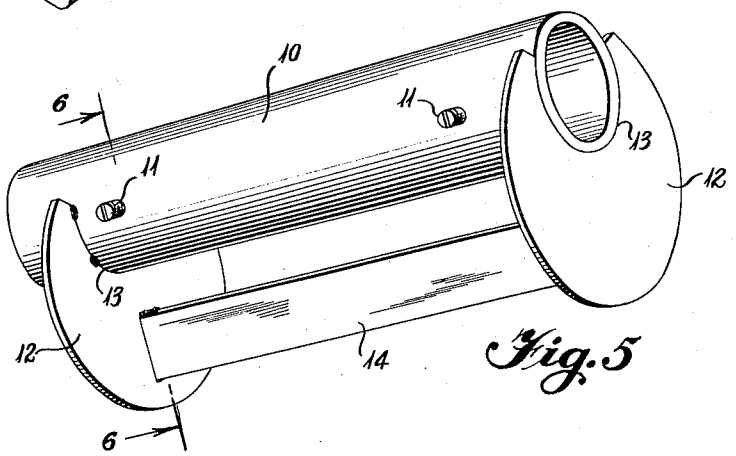


Fig. 5

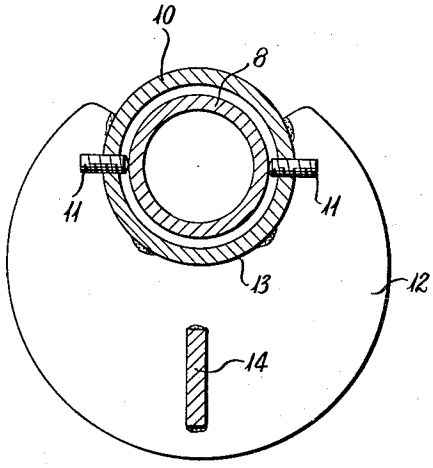


Fig. 6

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United States Patent Office 2,909,011 Patented Oct. 20, 1959

2,909,011

PIPE BEVELERS

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Application January 9, 1959, Serial No. 785,946

12 Claims. (Cl. 51—102)

Our invention is a novel pipe beveler adapted to be attached to any portable grinder, either air or electric, the beveler being adapted to bevel pipes of various sizes prior to welding operations, and our invention being particularly valuable for beveling stainless steel pipes since the use of our beveler eliminates any necessity for filing the bevel of the pipe, as the Atomic Energy Commission prefers to avoid filing of the beveled pipes for the reason that the carbon present has a tendency to defect the welds.

A principal object of our invention is to provide a beveler unit which may be fastened to the shaft of a straight pattern grinder, either air or electrically driven, in such a manner that the unit may be used on pipes which may be rotated or which are secured in fixed position.

A further object of our invention is to provide a pipe beveler of the above type which will speed-up the beveling process at least 75% and which will produce a factory bevel which cannot be obtained by the use of the conventional portable grinders; also to provide a pipe beveler in which the bevels may be obtained ranging from 20° to 60° by means of simple adjustments.

We will explain the invention with reference to the accompanying drawings which illustrate several practical embodiments thereof, to enable others familiar with the art to adopt and use the same; and will summarize in the claims, the novel features of construction, and novel combinations of parts, for which protection is desired.

In said drawings:

Fig. 1 is a perspective view of our novel pipe beveler showing same attached to the shaft of a grinding wheel, and showing the mandrel of the unit upon which the pipe to be beveled may be placed for proper presentation to the grinding wheel.

Fig. 2 is an enlarged section on the line 2—2, Fig. 1, showing in dot-and-dash lines a pipe mounted on the mandrel for proper presentation to the grinding wheel.

Fig. 3 is an enlarged perspective view of one of the angle clips of the unit.

Fig. 4 is a perspective view of another of the angle clips of the unit upon which the mandrel is mounted.

Fig. 5 is a perspective view showing one of the mandrel guides, detached, upon which larger sizes of pipe to be beveled may be mounted for proper presentation to the grinding wheel.

Fig. 6 is an enlarged transverse section on the line 6—6, Fig. 5.

As shown in Fig. 1, our beveling unit is adapted to be mounted upon the shaft extension of a portable straight pattern grinder having an air or electric motor housed in a casing A, which has a shaft extension B at one end through which the shaft C (Fig. 2) of the motor extends, said shaft C carrying on its outer end a grinding wheel D, the unit A—D being normally termed a straight pattern grinder. The grinding wheel D may be of Carborundum or emery or any other desired material, the straight pattern grinder A—D forming no part of our present invention.

As shown in Figs. 1 and 2, our novel unit consists of a member 1 in the form of an angle clip (Fig. 3) having one leg adapted to contact extension B of the straight pattern grinder, as shown in Figs. 1 and 2. A U-bolt 2 having a radius conforming with the exterior diameter of extension B, is fitted around extension B, and has its ends passing through perforations 1*a*—1*b*, respectively, Fig. 3, in member 1, the outer ends of the legs of U-bolt 2 being threaded, as at 2*a*, and carrying nuts 3, whereby member 1 may be tightly or loosely maintained in contact with shaft extension B of motor casing A.

The other leg 1*c* of member 1 (Figs. 1, 2 and 3) projects at substantially right angles to member 1 and is provided intermediate its sides with an elongated slot 1*d* disposed substantially transversely of the axis of extension B.

Adjustably mounted on flange 1*c* of member 1 is a second angle clip 4 (Fig. 4) having one leg 4*a* disposed substantially parallel with flange 1*c*, leg 4*a* having a second elongated slot 4*b* therein extending longitudinally thereof, substantially parallel with the axis of said extension; and a bolt 5 is passed through the registering slots 1*d*, 4*b*, said bolt 5 having a head 5*a* and at its opposite end a nut 6 (Fig. 2) whereby flange 4*a* may be drawn tightly toward flange 1*c*. If desired a series of washers 7 or the like may be disposed between flanges 1*c* and 4*a* to adjust the angle clip 4 toward or from flange 1*c* of clip 1 to suit different sizes or diameters of pipes P to be beveled.

Upon clip 4 is fixedly mounted a mandrel 8 by welding or otherwise, the mandrel being positioned adjacent grinding wheel D as shown in Fig. 1, and said mandrel preferably consisting of a tube of desired diameter having its inner end welded or otherwise fixedly secured upon angle clip 4, so that the axis of the mandrel 8 will substantially intersect the periphery of grinding wheel D somewhere along a radius of wheel D, the particular point of intersection being determined by the number or thickness of the washers 7 interposed between the flanges 1*c* and 4*a* of the members 1 and 4, as shown in Fig. 2.

By the above construction when it is desired to bevel the end of a pipe P shown in dot-and-dash lines in Fig. 2, the pipe P may be merely placed upon the mandrel 8, as shown in Fig. 2, mandrel 8 securely supporting pipe P in position to present the end thereof in proper beveling position with respect to grinding wheel D, the particular angularity of the bevel being controlled by the adjustment between the parts 1 and 4, and by the number or thickness of the washers 7, and also by the adjustment of the bolt 5 in the slots 1*d* and 4*b* of the members 1 and 4. As shown in Fig. 2, the mandrel 8 holds the top of pipe P in close contact with the periphery of grinding wheel D, it being noted that the upper portion of mandrel 8 adjacent grinding wheel D is beveled as at 8*a* so as to permit the end of pipe P to squarely and closely contact grinding wheel D.

Short lengths of pipe P may be beveled by placing the grinder A—D in a vise and rotating the pipe manually; while long lengths of pipe P can be beveled by fixedly securing the pipe P and rotating the grinder A—D throughout arcs. If desired, the mandrel 8 with its angle clip 4 may be interchangeable with others as to size, whereby factory precision bevels may be obtained.

As shown in Figs. 5 and 6, mandrel guides may be provided for beveling the ends of pipes ranging from 2 to 14 inches or larger in diameter. In this modification, the mandrel such as 8 would be used in the manner aforesaid, but over mandrel 8 a mandrel guide may be used, the same consisting of a tubular member 10 of

larger inside diameter than mandrel 8, the same having diametrically opposed set screws 11, which may be adjusted to contact the outer walls of mandrel 8, as clearly shown in Fig. 6.

Adjacent each end of tubular guide member 10 are parti-circular discs 12 having parti-circular slots 13 in their peripheries snugly receiving the outer walls of tubular member 10, said circular plates 12 being welded or otherwise fixedly secured to tubular member 10 adjacent each end thereof. The parti-circular plates 12 may be maintained in fixed spaced and parallel relation by means of a spacer bar 14 having its ends secured by welding or the like to the faces of plates 12 within the peripheries thereof.

When the mandrel guides 10—14 (Figs. 5 and 6) are thus positioned upon mandrel 8, larger size pipes P may be slipped over the mandrel guides 10—14 with their upper inner peripheries resting upon the top of tubular member 10 (Fig. 6) and thus brought into proper grinding relation with respect to grinding wheel D, the diameter of the parti-circular plates 12 conforming substantially with the internal diameters of the larger sized pipes P which are to be beveled. Obviously, the mandrel guides 10—14 may be varied in size to suit any size pipe P of relatively large size internal diameter.

By the above construction, the pipe P is to be beveled is inserted over mandrel 8, or over the mandrel guides 10—14, and the grinding wheel D rotated by either air or electric means. In order to bevel pipe P either said pipe may be rotated or the unit, whichever is more convenient for the operator, but if pipe P is rotated the grinder A—D must be fastened securely.

If desired, mandrel 8 may be secured to angle clip 4 by means of bolts or screws so that the mandrel 8 may be removable and replaceable with one of a larger or smaller size.

Instead of using the mandrel guides 10—14 shown in Figs. 5–6 for mounting larger size pipes P on the mandrel 8 for bringing same into proper grinding position, the mandrel guides 10—14 might be omitted where the pipe P to be beveled is of only slightly larger size than mandrel 8. In place of mandrel guides 10—14 a welding rod or the like might be wrapped around mandrel 8 so as to approximate the inside diameter of the pipe P to be beveled. However, it is preferable to use for large sized pipes P the mandrel guides 10—14 shown in Figs. 5 and 6.

This grinder, by using a small grinding disc, will give a U bevel on pipe, or hollow ground effect. Pipe T's and L's can also be finished with a factory bevel after being salvaged from used pipe.

We do not limit our invention to the exact forms shown in the drawings, for obviously changes may be made therein within the scope of the claims.

We claim:

1. In combination with a grinder having a prime-mover housed in a casing provided with an extension for the prime-mover shaft, said shaft carrying a grinding wheel; a pipe beveler comprising an angle clip having one leg secured to said extension, and having an elongated slot in its other leg; a second angle clip having one leg disposed substantially parallel with the other leg of the first angle clip and having a second elongated slot therein; a bolt transfixing said slots; spacing washers on said bolt interposed between the bolted legs of said clips; a mandrel fixedly secured to said second angle clip adjacent said grinding wheel and having its longitudinal axis substantially intersecting the periphery of said grinding wheel, said mandrel being adapted to fit within a pipe whose end is to be beveled and to support same in proper beveling position with respect to said grinding wheel, whereby relative rotation of the pipe and beveler will bevel the end of said pipe according to the adjustment of the angle clips of said beveler.

2. In a combination as set forth in claim 1, said mandrel being removably and replaceably mounted on said second angle clip.

3. In a combination as set forth in claim 1, a mandrel guide for a pipe of relatively large diameter, comprising a tubular member adapted to receive said mandrel; and parti-circular discs adjacent each end of said tubular member fixedly secured thereto, said discs each having parti-circular slots substantially tangent to the peripheries of the discs and snugly receiving the said tubular member, the said discs conforming substantially with the internal diameter of the relatively large pipe when the latter is positioned on the guide, with a portion of the pipe resting substantially upon a portion of the mandrel.

4. In a combination as set forth in claim 1, a coiled member around said mandrel substantially conforming with the inside diameter of a pipe to be beveled of somewhat larger size than said mandrel.

5. In combination with a grinder having a prime-mover housed in a casing provided with an extension at one end receiving the prime-mover shaft, and said shaft carrying a grinding wheel at its outer end; a pipe beveler comprising an angle clip having one leg clamped by a U-bolt to said extension, and having an elongated slot in its other leg; a second angle clip having one leg disposed substantially parallel with the other leg of the first angle clip and having a second elongated slot therein; a bolt transfixing said slots; spacing washers on said bolt interposed between said angle clips; a mandrel fixedly secured to said second angle clip adjacent said grinding wheel and having its longitudinal axis substantially intersecting the periphery of said grinding wheel, said mandrel being adapted to fit within a pipe whose end is to be beveled and to support same in proper beveling position with respect to said grinding wheel, whereby relative rotation of the pipe and beveler will bevel the end of said pipe according to the adjustment of the angle clips of said beveler.

6. In a combination as set forth in claim 5, said mandrel being removably and replaceably mounted on said second angle clip.

7. In a combination as set forth in claim 5, a mandrel guide for a pipe of relatively large diameter, comprising a tubular member adapted to receive said mandrel; set screws extending radially through said tubular member and adapted to engage said mandrel; and parti-circular discs adjacent each end of said tubular member fixedly secured thereto, said discs each having parti-circular slots substantially tangent to the peripheries of the discs and snugly receiving the said tubular member, the said discs conforming substantially with the internal diameter of the relatively large pipe when the latter is positioned on the guide, with a portion of the pipe resting substantially upon a portion of the mandrel.

8. In a combination as set forth in claim 5, a coiled member around said mandrel substantially conforming with the inside diameter of a pipe to be beveled of somewhat larger size than said mandrel.

9. In combination with a straight pattern grinder having a prime-mover housed in a casing provided with an extension at one end receiving the prime-mover shaft, and said shaft carrying a grinding wheel at its outer end; a pipe beveler comprising an angle clip having one leg clamped by a U-bolt to said extension, and having an elongated slot in its other leg disposed substantially transversely of the axis of said extension; a second angle clip having one leg disposed substantially parallel with the other leg of the first angle clip and having a second elongated slot therein extending substantially parallel with the axis of said extension; a bolt transfixing said slots; a series of washers on said bolt interposed between said bolts and angle clips; a mandrel fixedly secured to said second angle clip adjacent said grinding wheel and having its longitudinal axis substantially intersecting the periphery of said grinding wheel, said mandrel being adapted to fit within a pipe whose end is to be beveled and to support same in proper beveling position with respect

to said grinding wheel, whereby relative rotation of the pipe and beveler will bevel the end of said pipe according to the adjustment of the angle clips of said beveler.

10. In a combination as set forth in claim 9, said mandrel being removably and replaceably mounted on said second angle clip.

11. In a combination as set forth in claim 9, a mandrel guide for a pipe of relatively large diameter, comprising a tubular member adapted to receive said mandrel; set screws extending radially through said tubular member and adapted to engage said mandrel; parti-circular discs adjacent each end of said tubular member fixedly secured thereto, said discs each having parti-circular slots substantially tangent to the peripheries of the discs snugly receiving the said tubular member, the said discs conforming substantially with the internal diameter of the

relatively large pipe when the latter is positioned on the guide, with a portion of the pipe resting substantially upon a portion of the mandrel; and spacer means fixedly connecting said discs.

12. In a combination as set forth in claim 9, a coiled member around said mandrel substantially conforming with the inside diameter of a pipe to be beveled of somewhat larger size than said mandrel.

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