July 17, 1962 R. J. STEELE 3,044,757

CUTTING MEANS FOR TUBULAR MATERIAL

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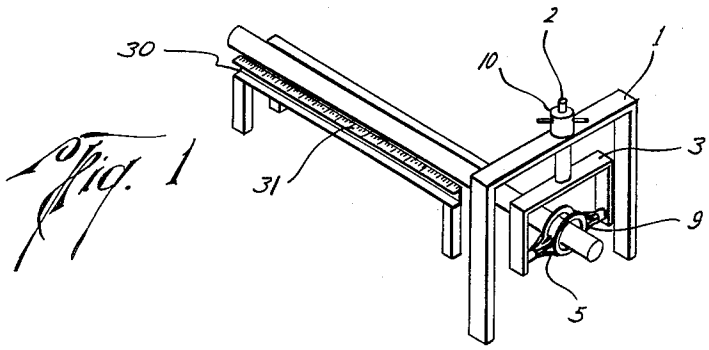


Fig. 1

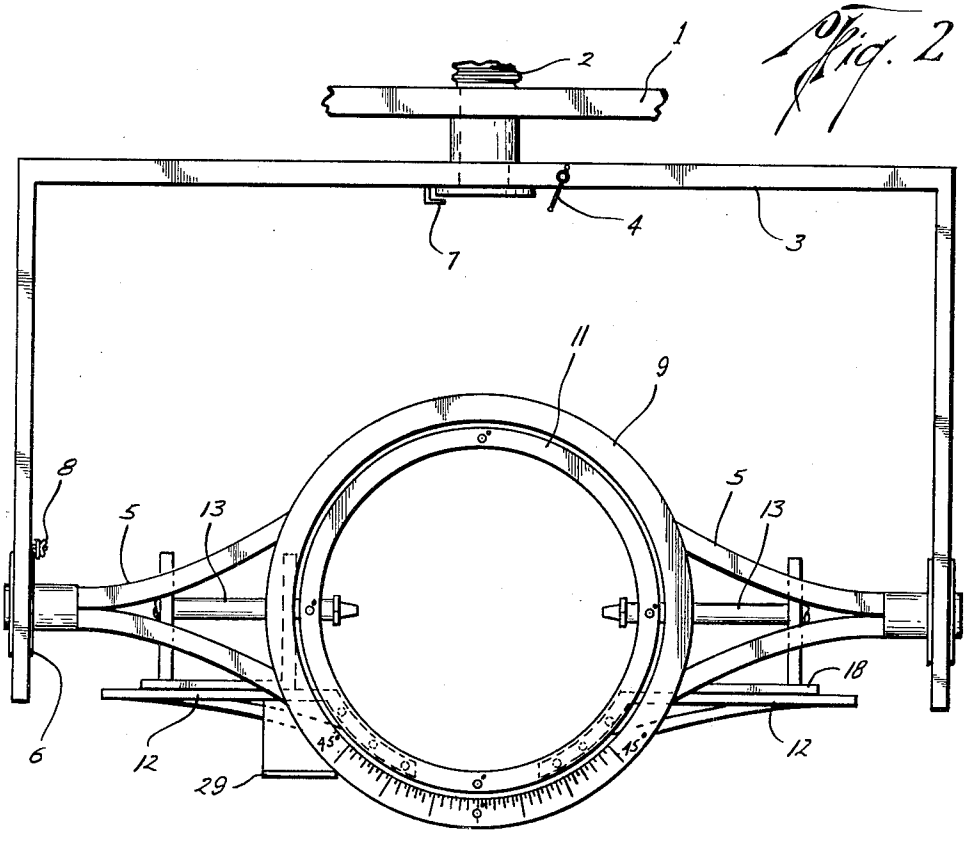


Fig. 2

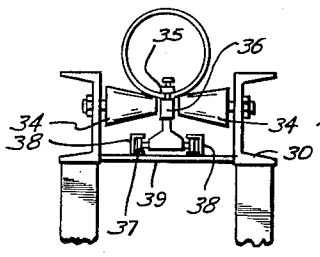


Fig. 6

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Fig. 3

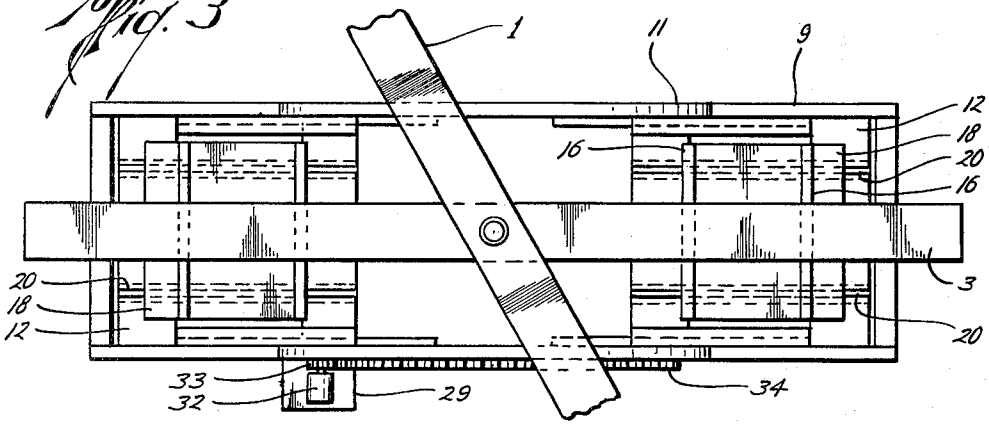


Fig. 4

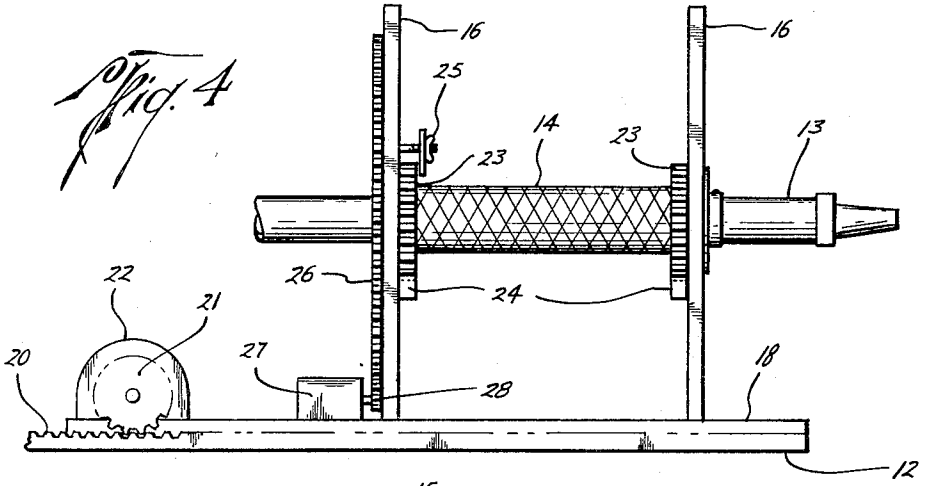
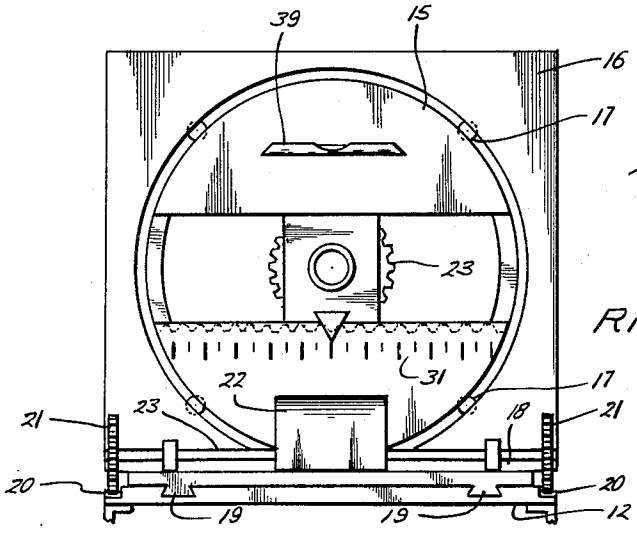


Fig. 5



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United States Patent Office 3,044,757 Patented July 17, 1962

3,044,757

CUTTING MEANS FOR TUBULAR MATERIAL

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Filed Aug. 18, 1958, Ser. No. 755,735
1 Claim. (Cl. 266—23)

This invention relates to new and useful improvements in a cutting device for tubular material.

It is an object of this invention to provide a cutting device for making openings and cuts in pipe or other tubular material, where it is intended to make a connection, such as with another tubular member, or a post.

In construction work involving tubular material where it is necessary to join tubular members at various angles, the present method is to employ templates for the purpose of making the cut, which templates are tedious to make and are time consuming to use and which are often inaccurate. It is an object of this invention to provide a mechanism for quick and accurate setting of the device and cutting of the tubular material.

It is another object of the invention to provide a cutting mechanism having novel means for adjusting cutting torches to direct a cutting flame towards each other to control the flame and limit its action to the area of the tubular material being cut.

It is still another object of the invention to provide a cutting device for tubular goods having a novel means for adjusting the position of the cutting torches relative to the material being cut.

It is still a further object of the invention to provide a cutting device for tubular goods having novel means for adjusting the rotation of the cutting torches.

With the above and other objects in view, the invention has relation to certain novel features of construction, operation and arrangement of parts more particularly defined in the following specifications and illustrated in the accompanying drawings, wherein:

FIGURE 1 is a perspective view of the complete device, showing a pipe in position to be cut.

FIGURE 2 is an enlarged end view of the device.

FIGURE 3 is a top plane view of the device.

FIGURE 4 is a side elevational view of the cutting torch employed, and

FIGURE 5 is an end elevational view of the cutting means.

Referring now more particularly to the drawings, the numeral 1 designates a framework which may be constructed of any suitable rigid material and which may be suitably anchored such as by setting the depending legs thereof in concrete or the like. The framework 1 has a threaded shaft 2 mounted therein and on the lower end of which is suspended the yoke 3. The yoke 3 is loosely mounted on the shaft 2, as by means of a bushing, and is provided with a locking means 4 to lock the yoke 3 against rotation on the shaft 2 when the device is in cutting position. If desired, a protractor as 7 may be mounted on the shaft 2 below the yoke 3 to aid in determining the setting of the yoke 3 with relation to the shaft 2. An internally threaded cap 10 is provided through which the shaft 2 is moved vertically, the shaft 2 being keyed to the frame 1 to prevent rotation of the frame.

Mounted on the lower ends of the depending legs of the yoke 3 are the guide supports 5, 5. Suitable bearings are mounted in the yoke 3 in which the ends of the guides 5, 5 rest to facilitate rotation. Protractors, as 6, 6 aid in setting the position of the guide supports 5, 5 and a lock 8 anchors the guide supports in the desired position. Guide rings 9, 9 are mounted on the extended ends of the guide supports 5, 5.

An inner ring assembly 11 is rotatably mounted in the

guide ring 9 and suitable bearings (not shown) may be provided to facilitate rotation of this inner ring assembly. Anchored to the inner ring 11 are the cutting torch tables 12, 12 on which the cutting torches 13, 13 are reciprocably mounted. The torches 13, 13 are supported by the adjustable axle 14 which extends through the discs 15, 15 and the discs 15, 15 are rotatably mounted in the supports 16, 16 by suitable bearings 17, 17. The supports 16, 16 are secured to the reciprocable platforms 18, 18 which are anchored to the tables 12, 12 by means of the dovetail joints 19, 19. Tracks 20, 20 are formed in the outer margins of the table 12 and gears 21, 21 which are rotated by the motor 22 and shaft 23, engage the tracks 20, 20 to reciprocate the platforms 18, 18 on the tables 12, 12. The discs 15, 15 reciprocate horizontally in the supports 16, 16, and are adjusted by means of the axle 14 on each end of which is mounted a gear 23, 23. Beneath the gears 23, 23 is a horizontal track 24 which engages the gears 23, 23. A suitable lock 25 is provided to anchor the cutting torches 13 in place in the supports 16, 16.

Mounted on the outer disc 15 of each cutting torch assembly is a gear 26. A suitable electric motor 27, having a drive shaft and gear 28 engages the gear 26 and rotates same.

Mounted on the guide 9 is a suitable motor support 29; any suitable means for rotation of the inner ring 11 such as the motor 32 having a driving gear 33 in engagement with the gear 34 on the ring 11 may be employed. It is contemplated that this rotation will be limited to an arc of one hundred eighty degrees which will be all that is necessary to effect an end cut, each torch 13 cutting half of the circumference of the tubular material being cut.

The tubular material to be cut rests on the rollers 34, 34 for easy longitudinal movement. A graduated scale is preferably mounted on the upper bar of the support 30 to aid in determining points of cut. Suitable means are provided to hold the tubular material from rotating on the supports 34, 34, such as the vertically adjustable pipe clamp 35, which may consist of suitable gripping jaws mounted on the telescoping stem 36 and a roller 37 which is fitted in the channel formed by the channel bars 38, 38. The channel bars 38, 38 are supported by suitable cross members 39 between the supports 30, 30.

To effect an end cut, the tubular material may be mounted in suitable supports, such as 30, 30 and the tubular material, such as 31, moves into the guide 9 and inner ring 11. The shaft 2 is rotated to move the guide 9 vertically to position the torches 13, 13 as desired. The guide supports 5, 5 are rotated in the yoke 3 to the desired position for the cut and locked in place by means of the lock 8. The motor 22 is actuated to move the torches 13 horizontally into the desired position for the cut. If an end cut straight across the tubular material is to be made, the torches 13, 13 are positioned in the discs 15, 15 at the desired location and locked in position by means of the lock 25, and the means on the mount 29 will be activated to effect rotation of the inner ring 11, moving the torches 13, 13 at the desired speed in an arc of one hundred eighty degrees, and effecting the cut. If it is desired to make a saddle cut, or other than a straight cut, the axle 14 is manually rotated, moving the torches 13, 13 horizontally in the discs 15, 15 and for the purpose of aiding in determining the degree of horizontal movement, a gauge as 31 may be provided. The lock 25 is utilized to secure the torches 13, 13 in the desired horizontal adjustment and the motor 27 activated to rotate the discs 15, 15 and effect the desired saddle cut. It is contemplated that the torches 13, 13 will be operated as a single unit, however, if desired,

the controls for the operation of these torches may be separated and the torches independently operated.

As may be seen from the foregoing, the many different angles of cuts made possible by the arrangement of the device makes it possible to quickly and easily adjust the machine for any type of cut desired without the necessity of preparing templates in advance. The pipe being clamped against rotation assures a constant center, so that by moving the yoke vertically through the shaft **2**, the vertical position may be obtained, and a scale may be mounted on the shaft **2** to aid in arriving at the proper setting, if desired. The angle of the cut is then determined by the adjustment of the yoke through rotation, the protractor **7** aiding in arriving at the desired angle. The type of cut is then effected by adjustment of the cutting torches for their rotation through rotation of the discs **15, 15** or rotation of the inner ring **11**. Graduations are marked on one of the outer guide rings **9** and on the inner ring **11** so that accurate settings may be effected. A level as **39** may be provided on the discs **15, 15**, if desired.

While the foregoing is considered a preferred form of the invention, it is by way of illustration only the broad principle of the invention being shown by the appended claim.

What I claim is:

In a cutting means for tubular material for selectively forming cuts of various patterns in the material being cut, a framework, a vertically and horizontally adjustable yoke on said framework, the free ends of said yoke depending from said framework, guide ring supports extending laterally and inwardly from the free ends of said yoke and being rotatably adjustable with relation to said yoke, an annular guide mounted on said supports and through which the material to be cut extends, an adjustable inner guide ring mounted in said annular guide, calibrated indicia on said inner ring and said annular guide for selective adjustment of said inner ring with relation to said annular guide, longitudinally adjustable tables mounted on said inner ring, a pair of upstanding plates on each of said tables; a laterally adjustable cutting torch mounted in each of said pairs of plates, a manually rotatable sleeve on each of said torches between said plates, gears on each end of said sleeves, rotatable discs in each of said plates in which said torches are axially mounted, horizontal racks in each of said discs in mesh with the gears on said sleeves for lateral adjustment of the torches with relation to the discs and means for the rotation of said inner rings.

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