

The United States of America



The Commissioner of Patents and Trademarks

Has received an application for a patent for a new and useful invention. The title and description of the invention are enclosed. The requirements of law have been complied with, and it has been determined that a patent on the invention shall be granted under the law.

Therefore, this

United States Patent

Grants to the person(s) having title to this patent the right to exclude others from making, using, offering for sale, or selling the invention throughout the United States of America or importing the invention into the United States of America for the term set forth below, subject to the payment of maintenance fees as provided by law.

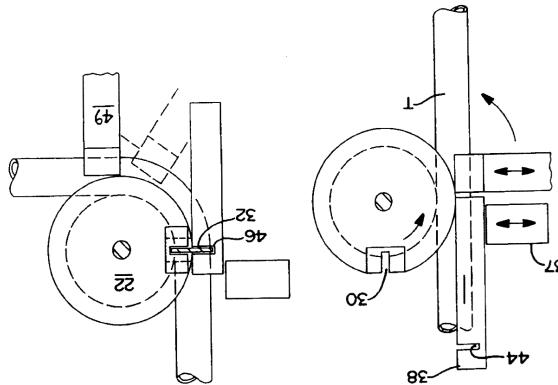
If this application was filed prior to June 8, 1995, the term of this patent is the longer of seventeen years from the date of grant of this patent or twenty years from the earliest effective U.S. filing date of the application, subject to any statutory extension.

If this application was filed on or after June 8, 1995, the term of this patent is twenty years from the U.S. filing date, subject to any statutory extension. If the application contains a specific reference to an earlier filed application or applications under 35 U.S.C. 120, 121 or 365(c), the term of the patent is twenty years from the date on which the earliest application was filed, subject to any statutory extension.

A handwritten signature in black ink, appearing to read "Todd Pichini".

Acting Commissioner of Patents and Trademarks

Attest
A handwritten signature in black ink, appearing to read "Marjorie V. Turner".



Claims, 5 Drawing Sheets

inertial motion through a blade guide path, and the blade may be moved to define a blade guide slot of the end of the blade into the tube.

the blade has been bent into a preselected orientation.

blade lines up with the first blade guide slot of the follower station thereof, the second blade guide slot of the follower blade being positioned to receive a section of the blade.

blade assembly has been bent into a preselected orientation.

blade holder between extended and retracted positions thereof in operation, after a section of the blade has been bent into a preselected orientation.

callably moving the blade holder between extended and callably movable blade holder is also provided for reciprocating assembly the band die. A blade holder is attached to the piece assembly for holding and supporting a blade.

piece assembly the band die. A blade holder includes a movable band arm assembly for connecting and bending a bending workpiece of the blade.

The apparatus further includes a movable band blade guide slot formed therein to receive a second portion of the blade.

The follower slide also has a second opposite the blade end die. The follower slide also has a second lower slide clamps a pressure applicator, and a follower slide which is able first pressure base, and a follower slide which is attached to the support base. The follower slide applies pressure to the upper slide to the support base.

The apparatus also includes a pressure die which is movable relative to the upper slide and a pressure die which is movable relative to the lower slide.

The apparatus is formed therefrom to receive a first portion of a blade thereon.

form the blade into a first portion of a blade thereon.

blade-securing portion of the upper slide.

A band die is rotatably attached to the support base, and is attached to the upper slide and a number of components attached thereto.

An apparatus for bending and cutting metal tubing includes

10-432, 5-40 to 5-41, 7-84 to 7-85, 10-128 1010-135.
Rev. 6-95, pp. 1-1 to 1-4, 2-6 to 2-8, 3-24 to 3-25, 4-31.

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[57]	Field of Search
[58]	U.S. Cl. 72/149, 155, 157, 158, 159, 241, 369
[59]	Int'l Cl. 72/131; 72/129, 131, 132
[60]	Int'l Cl. B21F 11/00; B21D 7/04
[61]	Continuation-in-part of application No. 08/611,396, Mar. 5, 1996, part No. 5,862,697.
[62]	U.S. Cl. 72/149
[63]	Related U.S. Application Data
[22]	Filed: Aug. 31, 1998
[21]	Appl. No. 09/143,598

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[74]	APPARATUS FOR BENDING AND CUTTING TUBING, AND METHOD OF USING SAME
[75]	Inventor: M. Craig Webster, Novi, Mich.
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[77]	UNICASER Parallel In-Line Helical Gearmotors & Speed Reducers
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[81]	UNICASER Helical Gearmotors & Speed Reducers Information sheet, © 1990 Nord Gear Corporation.
[82]	U.S. Cl. 72/131; 72/129, 131, 132
[83]	Int'l Cl. 72/149
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