United States Patent

Blatt

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[54] DUAL GRIP AUTOMATION JAW SWIVEL ASSEMBLY

[72] Inventor: **Leland F. Blatt,** 790 Shoreham Road, Grosse Pointe, Mich. 48236

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[52] **U.S. Cl.** **294/106,** 285/412

[51] **Int. Cl.** **B25b**

[58] **Field of Search** 294/88, 106, 113, 115; 285/405, 412, 413

[56] **References Cited**

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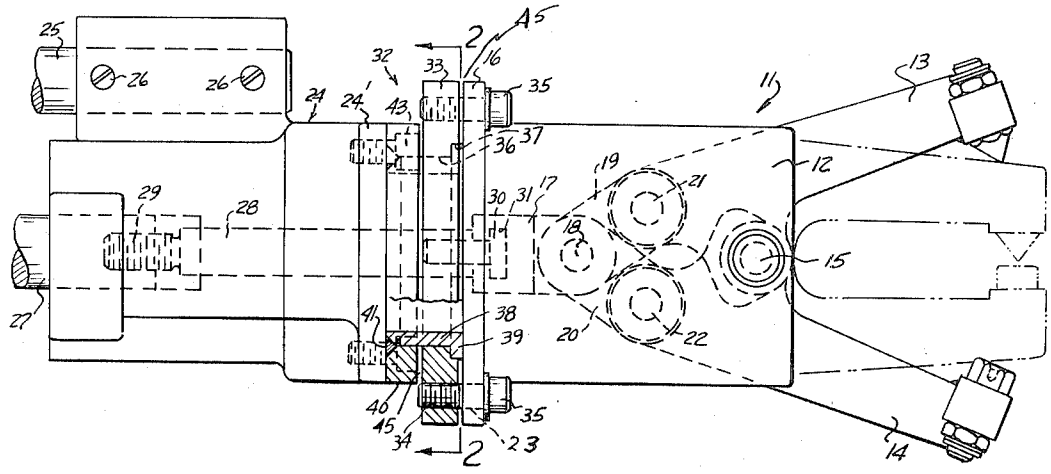
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Primary Examiner—Edward A. Sroka
Assistant Examiner—Douglas D. Watts
Attorney—Cullen, Sloman & Cantor

[57] **ABSTRACT**

In combination with an automation duel grip jaw assembly having an apertured mounting flange, and a power operated actuating unit for said jaw assembly with an apertured jaw-mounting flange, a jaw swivel assembly including an apertured swivel plate secured to said jaw assembly mounting flange and a swivel body loosely mounted through and retainingly engaging one side of said swivel plate and including a collar adjacent the other side of said swivel plate, said collar being secured to said actuating unit jaw-mounting flange whereby on loosening of the fasteners between said jaw assembly and said swivel plate, the jaw assembly and said swivel plate may be rotatively adjusted.

1 Claims, 2 Drawing Figures



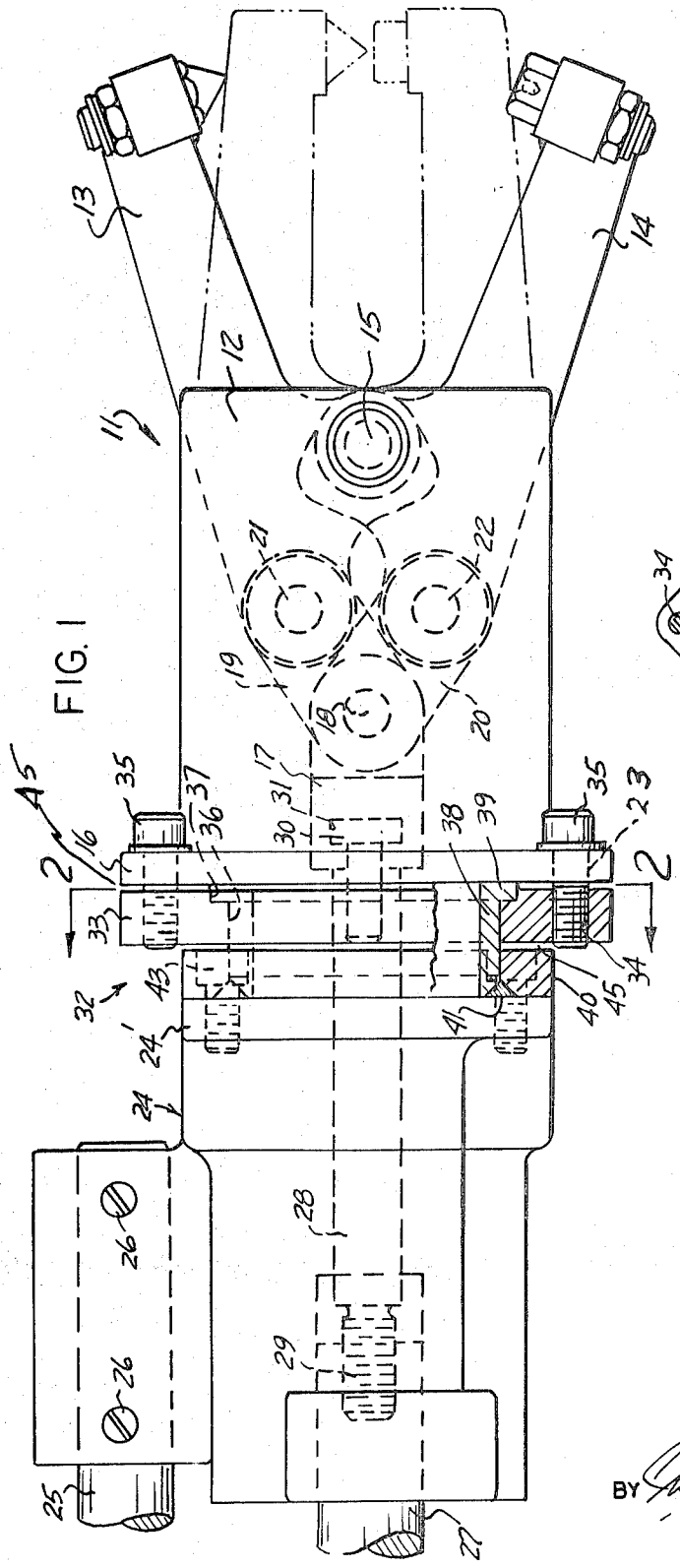


FIG. 1

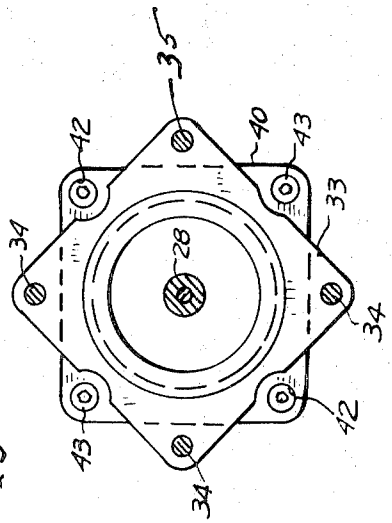


FIG. 2

INVENTOR
LELAND F. BLATT
BY Cullen, Sloman, & Cantor
ATTORNEYS

DUAL GRIP AUTOMATION JAW SWIVEL ASSEMBLY

BACKGROUND OF THE INVENTION

Heretofore, in the use of dual-gripping automation jaws and related gripping devices for workpieces, there is normally associated therewith actuating unit for transmitting reciprocal power to the clevis of the automation jaw for effecting opening and closing movements of the jaws. Under some conditions wherein the actuating unit is so supported as to movably position the jaw with respect to a workpiece to be applied to a machine tool or removed therefrom, it becomes necessary to rotate the jaw assembly with respect to the actuating unit for registry with a predetermined gripping plane for a particular job. In the past, it has been possible to provide in the actuating unit and the jaw assembly cooperating apertured mounting flanges and wherein, upon loosening of the respective bolts and disconnecting the flanges, a relative rotation can be achieved between the two parts after which the two flanges must be reconnected and the bolts assembled.

BRIEF DESCRIPTION OF THE INVENTION

It is an object of the present invention to overcome the time-consuming task of adjustment of the respective parts and to provide interconnected between the actuating unit and the jaw assembly, a jaw swivel unit by which in a simple and expeditious fashion, the jaw assembly may be angularly positioned and secured with respect to the actuating unit.

It is another object to provide between the actuating unit and the jaw assembly, the jaw swivel assembly which includes the rotative swivel plate initially secured to the jaw assembly mounting flange and to provide a swivel body which projects through and retainingly engages a swivel plate on one side and includes an apertured collar secured thereon adapted to retainingly engage the opposite side of the swivel plate and also, adapted for securing to the actuating unit-mounting flange.

It is a further object to provide a jaw swivel unit wherein angular adjustment may be achieved between the jaw body and the actuating unit merely by loosening the securing bolts which join the swivel plate to the jaw body.

These and other objects will be seen from the following specification and claims in conjunction with the appended drawing in which:

FIG. 1 is a fragmentary side elevational view of the jaw body, actuating unit and interposed swivel assembly.

FIG. 2 is a section taken in the direction of arrows 2—2 of FIG. 1.

DETAILED DESCRIPTION

Referring to the drawing, the present dual grip automation jaw assembly generally indicated at **11** and includes jaw body **12**, upper and lower jaws **13** and **14** pivoted upon said body at **15**.

The jaw body includes at one end mounting flange **16** apertured adjacent its periphery at **23**, FIG. **1**.

The jaw assembly also includes a power reciprocated clevis **17** pivoted at **18** to the control links **19** and **20**.

These links at their outer ends are pivotally connected respectively at **21** and **22** to the upper and lower jaws **13** and **14**.

The structure and function of the jaw assembly has been set out in my U.S. Pat. No. 3,371,953 issued Mar. 5, 1968, and a detail of the function and operation is omitted herein.

It is sufficient to state that the power operated clevis **17** through the linkage described, is adapted to pivotally actuate the respective jaws **13** and **14**; the said clevis being connected to a reciprocal power source hereafter described.

ACTUATING UNIT

The present actuating unit, FIG. **1**, has a body generally indicated at **24** and includes connected thereto the horizontally disposed support rod **25**, fragmentarily shown secured to the actuating unit by fasteners **26**.

Said actuating unit also has a bore adapted to receive a portion of the reciprocal piston rod **27**, fragmentarily shown which normally projects from a power cylinder and extends into the said actuating unit.

The detail of the present actuating unit as well as the power cylinder for same does not form a part of the present invention, except to the extent that the present actuating unit includes a body **24**, is adapted to receive the reciprocal piston rod **27** and includes jaw swivel unit mounting flange **24'**.

The structure of the present actuating unit and power cylinder assembly is shown in my copending U.S. Pat. application, Ser. No. 815,658 filed Apr. 14, 1969 and the detail thereof is not repeated herein.

Elongated piston rod end **28** extends through the bore of the actuating unit body **24** and is threadedly connected and otherwise secured to **29** within the axial bore in the end of the piston rod **27**, FIG. **1**.

The opposite end of the piston rod end projects from the actuating unit and includes an undercut head **30** which is adapted for the swivel mounting within the T-slot **31** formed within clevis **17**.

JAW SWIVEL ASSEMBLY

The present jaw swivel unit designated at **32** is adapted to be interposed between the jaw assembly and the actuating unit.

Said swivel unit includes swivel plate **33** which adjacent the four corners thereof at its periphery has a series of threaded apertures **34** adapted to receive the cap screws **35** or other fasteners which extend through corresponding apertures in the jaw assembly mounting flange **16**.

This construction provides a means of fixedly anchoring the jaw unit **11** to the swivel plate **33**.

Said swivel plate includes the central bore **36** terminating in a counterbore **37**.

Swivel body **38** loosely extends through the swivel plate **33** and includes an annular flange **39** which nests within said counter bore and projects axially outward a slight distance from the face of the swivel plate **33**, as best shown in FIG. **1**.

The other end of swivel body **38** extends into unit body mounting plate **40** and is fixedly secured thereto as by the weld **41**. Mounting plate **40** is spaced adjacent the opposite side of swivel plate **33** and includes adjacent its periphery the plurality of spaced apertures **42**.

Said apertures are similar to the threaded apertures in the swivel unit mounting flange **24'**, FIG. **1**.

Fasteners **43** in the nature of capscrews project through the plate apertures **42** and are threaded through the corresponding apertures in the said swivel unit mounting flange **24'**.

The forward side of the swivel body **38** projects axially of corresponding side of swivel plate **33** for engagement with jaw assembly mounting flange **16** to thus, define a limited annular space at **45** between flange **16** and swivel plate **33**.

OPERATION

With the fasteners **35** tightly drawn up and threaded into corresponding apertures **34** of said swivel plate, two functions are achieved:

1. the jaw body **12** is fixedly secured to swivel plate **33** for mounting the same thereon;

2. the swivel plate snugly and tightly engages the swivel body **38** so that swivel plate is secured against relative rotation with respect to said swivel body unless and until the fasteners **35** are loosened.

When it is desired to change the angle of the gripping plane of the jaws **13** and **14**, all that is necessary is to merely loosen partly the respective fasteners **35**. When this is done, then the jaw body assembly and the connected swivel plate **33** may be rotated to the desired angle after which the fasteners are again tightened.

Having described my invention, reference should now be had to the following claims.

1. In combination, a first hollow body and a second hollow body;

with each body having a peripheral flange provided with bolt holes and fastening bolts;

means for axially coupling said first body to said second body in a manner to enable the two bodies to be relatively rotated a slight distance axially;

said means comprising a first ring between the flanges and adjacent the first body flange and having bolt holes for receiving the bolts of the first body flange;

a second ring between the first ring and the second body flange and having bolt holes receiving the bolts of the second body flange;

the two rings having their central clear areas axially aligned;

a cylindrical collar inside the aligned clear areas of the two rings; with its rear edge welded at the rear to the second ring; and its forward edge outwardly flanged to seat in a counterbore of the front face of the first ring;

the weld and flange enabling the collar to interlock the two rings axially, while permitting the two rings and their peripheral body flanges bolt-fastened to the two rings to rotate slightly with respect to each other, when the bolts of the first ring and first body flange are released somewhat.

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