Dec. 7, 1937. A. S. MULLER 2,101,624

CUTTING JIG

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Fig. 1.

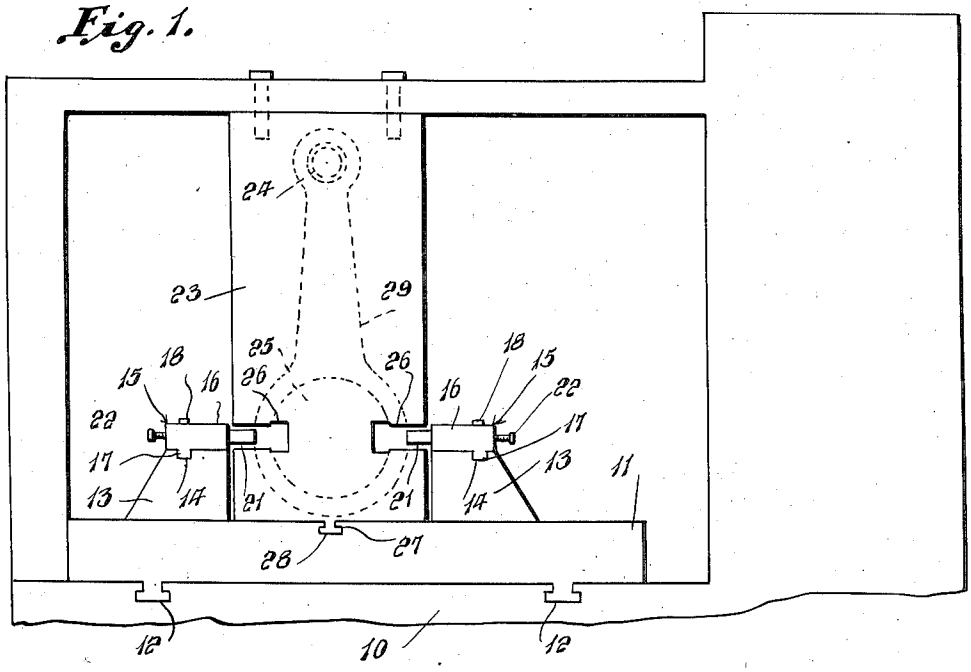


Fig. 2.

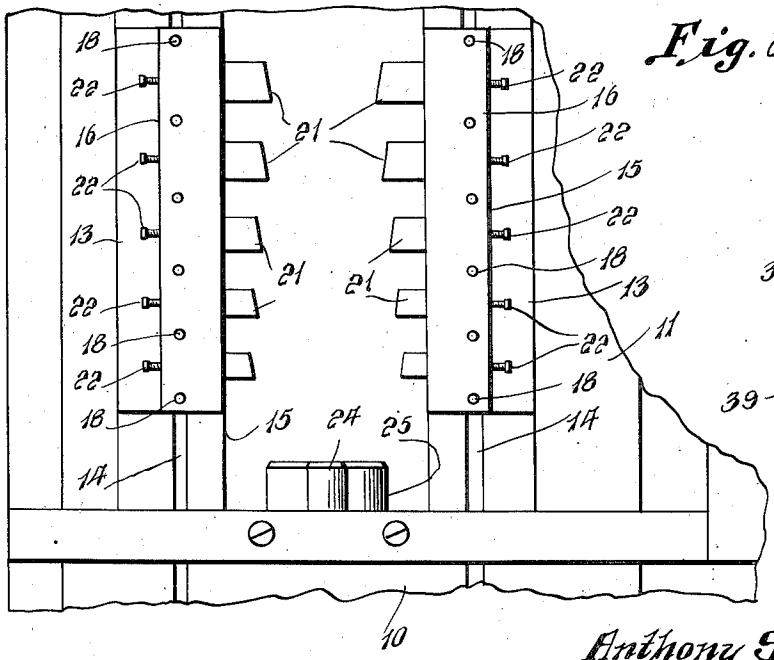
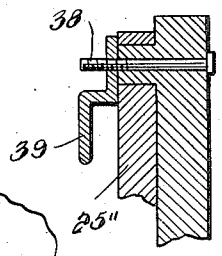


Fig. 11.



Inventor
Anthony S. Muller

By A. F. Kaudewitz Jr.

Attorney

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Fig. 3.

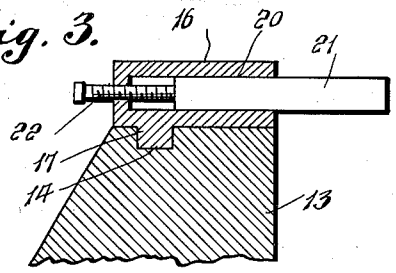


Fig. 4.

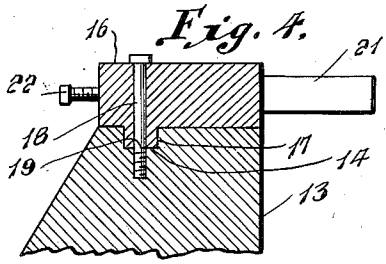


Fig. 5.

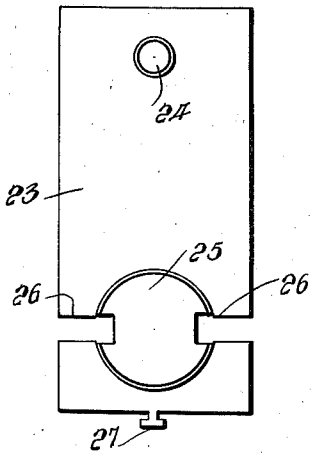


Fig. 6.

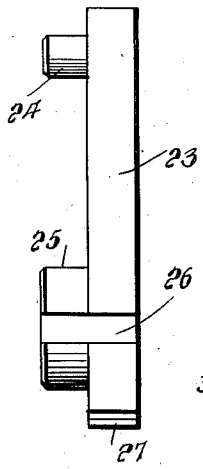


Fig. 7.

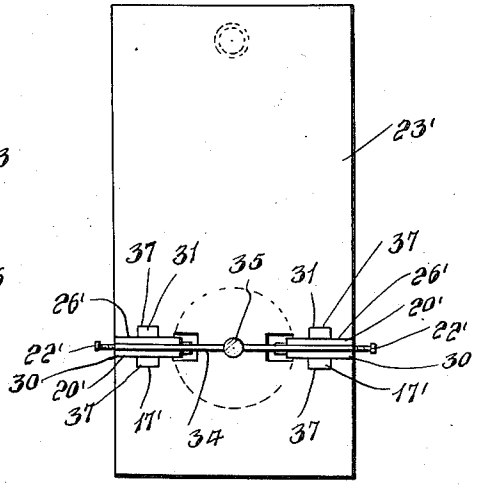


Fig. 8.

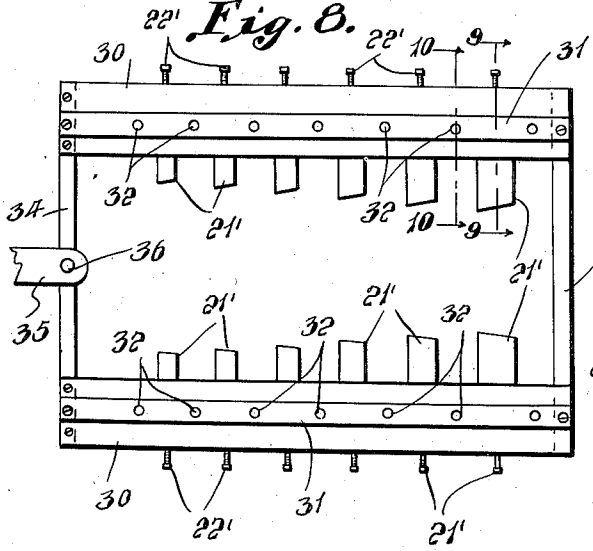


Fig. 9.

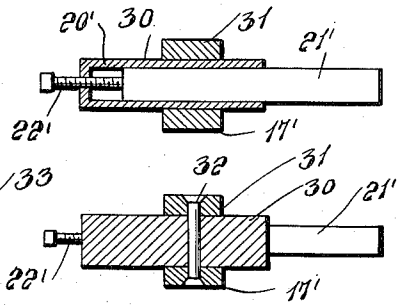


Fig. 10.

Inventor

Anthony S. Muller

By L. F. Randolph Jr.

Attorney

Patented Dec. 7, 1937 2,101,624

UNITED STATES PATENT OFFICE

2,101,624

CUTTING JIG

Anthony S. Muller, Pontiac, Mich.

Application June 25, 1936, Serial No. 87,277

3 Claims. (Cl. 90—33)

This invention relates to a jig for cutting metal, and it aims to provide a means and apparatus which is more expeditious and less expensive than broaching or sawing.

It is further aimed to provide, in furtherance of the aforesaid objects, a jig wherein cutters are employed capable of independent sharpening, removal and replacement and which are adapted to successively cut shavings or slices with the same movement of the jig in one direction, in order to perform the cutting operation by a single movement in one direction.

The more specific objects and advantages will become apparent from a consideration of the description following taken in connection with accompanying drawings illustrating an operative embodiment.

In said drawings:—

Figure 1 is a view showing the use of the invention in connection with a metal working machine, the latter being shown fragmentarily;

Figure 2 is a plan view showing the jig in place in such metal working machine;

Figures 3 and 4 are cross sectional views taken across one of the stocks at different locations;

Figure 5 is a front elevation of the work-supporting plate;

Figure 6 is a side elevation of said work-supporting plate;

Figure 7 is a front elevation of a modified form of work-supporting plate in connection with the jig;

Figure 8 is a plan view of a modified form of the jig;

Figure 9 is a cross sectional view taken on the line 9—9 of Figure 8;

Figure 10 is a cross sectional view taken on the line 10—10 of Figure 8; and

Figure 11 is a detail section of a modified form of work clamp.

Referring specifically to the drawings, 10 fragmentarily suggests a metal working machine or the equivalent, and for instance a shaper, a miller or an oil gear. Such machine has a movable bed at 11 slidably connected and guided on the machine proper by ribs and ways at 12, such bed being movable in either direction by gearing and operating power of the machine (not shown) as constituting no part of my invention.

A pair of longitudinally disposed mounts 13 are rigidly secured to the top of the bed 11, in parallelism and each having a longitudinally extending groove 14 in the upper surface thereof.

Said mounts 13 removably support jigs generally designated 15 having stocks or bodies 16, which may be made in a single piece or composite as preferred. Such jigs have a longitudinally extending guide rib 17 depending from their lower faces and disposed in the grooves 14. Screws 18 are loosely passed through the stocks 16, including the ribs 17, and have screw threaded engagement below the same at 19, in openings of the mounts, whereby the stocks are rigidly secured in place.

Said stocks have equidistantly spaced sockets 20 open at the inner faces of the stocks and closed at the outer faces thereof. Metal cutters 21 are disposed removably in said sockets 20 and adjusted and maintained in adjusted position, by means of screws 22, threaded in the stocks and abutting the outer ends of the cutters.

A work-holding plate is employed at 23, being rigidly and removably mounted or supported on the machine end in any desired manner. This plate, of course, is fixed relatively to the bed 11 and may be provided with upper and lower work-supporting pins 24 and 25, the latter usually being considerably larger than the former. The pin 25 and the plate at diametrically opposite points in a horizontal plane have clearance grooves or slots 26 provided therein. Said plate 23 may also have a depending key or rib 27 arranged to slide in a groove or slot 28 in the top of the bed 11.

While the machine may be used to cut work of any desired shape or character, a connecting rod is shown in dotted line in Figure 1 at 29 merely by way of example. Such connecting rod at the two openings thereof engages the pins 24 and 25 so as to be carried thereby, such connecting rod being clamped to the plate or otherwise additionally secured thereto if desired.

It will be realized that the cutters of each jig have their inner or cutting edges progressively increasing nearer the longitudinal center of movement of the bed in the direction of cutting, so that the cutters are arranged to successively engage and shave the metal of the connecting rod in line with the slots 26, to completely cut or sever the connecting rod through a single movement of the cutters in one direction.

It is clear that the cutters are capable of independent removal for sharpening or replacement and are independently adjustable.

It will also be understood that the cutting operation may be effected by either a pushing of the movable bed 11 or by a pulling thereof.

The interengagement of the ribs 17 and grooves 14 aids in preventing side sway or springing of the stock and cutters away from the plate 23 and

work, and that if desired, the work and plate **23** may be braced at the sides thereof in addition.

A modified form of work-supporting plate and jig is shown in Figures 7 to 10.

The jig, in this case, has a body **30** provided with sockets **20'** in which cutters **21'** are removably and adjustably disposed in connection with screws **22'**, such parts **20'**, **21'** and **22'** functioning like those at **20**, **21**, and **22**, respectively, of the previous form. The body **30** has a longitudinally extending depending rib at **17'**, and another rib at **31** rising from the upper surface thereof in line therewith. Such ribs **17'** and **31** may be formed integrally with the body **30** or made separate therefrom as desired, in the latter instance, being preferably secured thereto by means of rivets as at **32**.

The two jigs of this form of the invention are connected together in parallelism by front and rear cross bars **33** and **34**, thus forming a rectangular frame, to which a tongue **35** is fastened as at **36**. The tongue **35** is adapted to be connected to a slidable part, which either pushes or pulls, in order to draw the cutters through the work and accomplish the same end as in the first form of the invention, the frame completely surrounding a portion of the work as will be understood.

The work-supporting plate **23'** for the most part is identical with that disclosed at **23**. The difference resides in enlarging the slots **26'** which are the equivalent of the slots **26**, as at **37**, to fit and accommodate the passage of the ribs **17'** and **31** therethrough.

In some cases, ordinary large bearings may be supported on the larger pin **25** in which event, as shown in Figure 11, the pin which is designated **25''** has one or more bolts **38** passing through the same and the plate and having work-engaging clamp **39** screw threaded thereto as shown.

Various changes may be resorted to provided they fall within the spirit and scope of the invention.

I claim as my invention:—

1. A device of the class described comprising a machine body, a bed movable on said body, a work holding plate suspended on said body and beneath which the bed moves, said plates resting on and being supported by the bed, and jig means on said bed on opposite sides of the plate to co-act with work supported by the plate.

2. A device of the class described comprising a machine body, a bed movable on said body, a work holding plate suspended on said body and beneath which the bed moves, said plate having slots in opposite sides thereof, jig means on said bed on opposite sides of the plate to co-act with work supported by the plate, cutters on said jig means movable through said slots, and interfitting means between the bed and body and between the lower end of the plate and the bed.

3. A device of the class described comprising a machine body, a bed movable on said body, a work holding plate suspended on said body and beneath which the bed moves, jig means on said bed on opposite sides of the plate to co-act with work supported by the plate, interengaging means between the bed and plate, said jig means comprising jig members, mounts on the bed on opposite sides of said plate, interfitting connections between the jig members and mounts permitting slidable adjustment of the jig members, cutters projecting beyond one side of each jig, the cutting ends of said cutters progressively increasing in the extent of projection from one face of the jig in a rearward direction, and said plate having slots in opposite sides thereof through which the cutters move.

ANTHONY S. MULLER.