Dec. 15, 1959 L. C. PONTING 2,917,314

CHUCK JAW ADJUSTING MEANS

Filed Nov. 6, 1958

FIG. 1

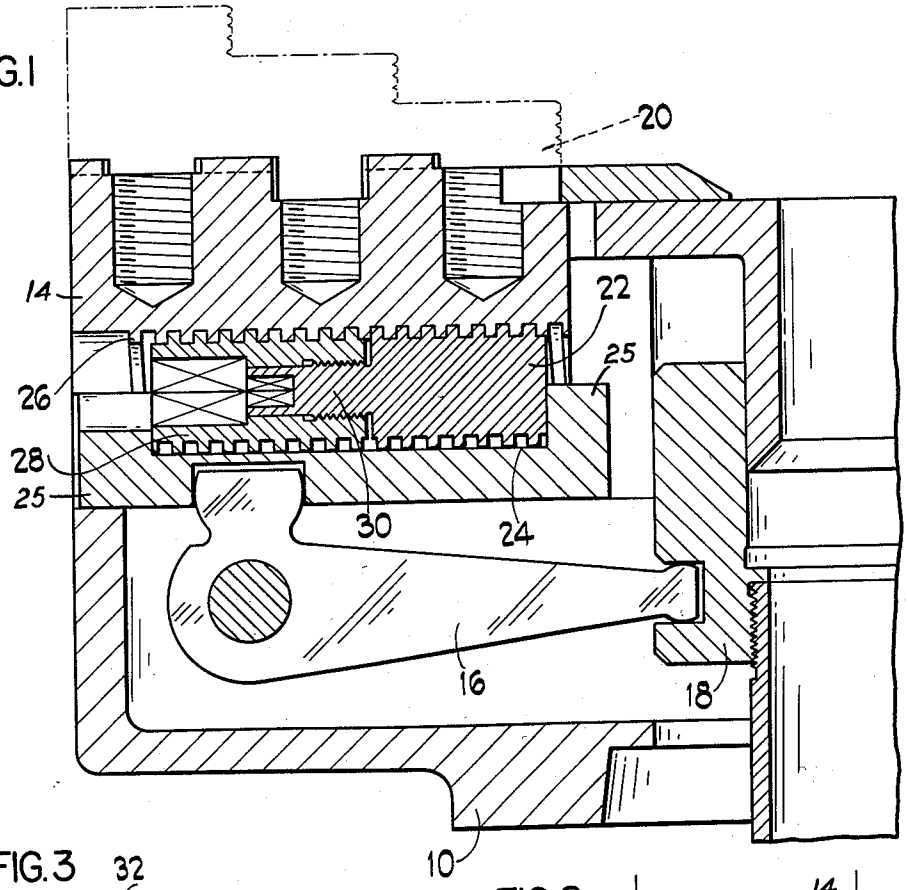


FIG. 3

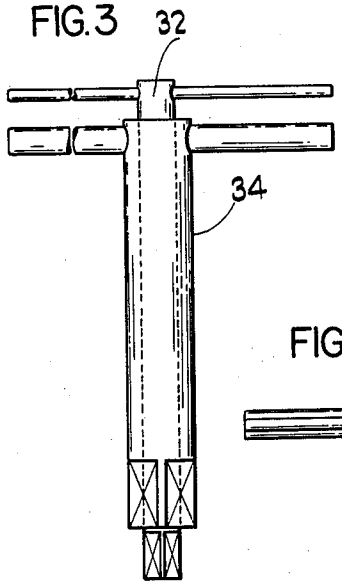


FIG. 4

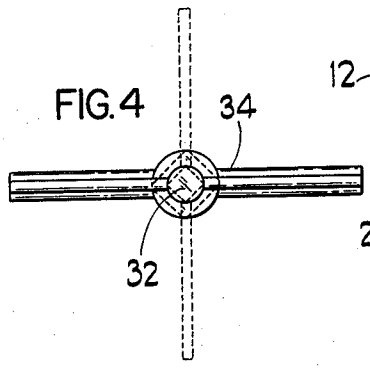
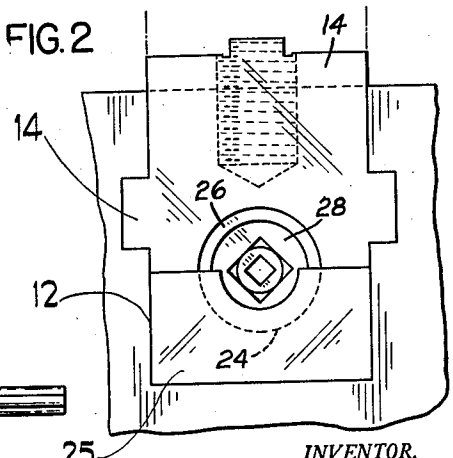


FIG. 2



INVENTOR.
LEONARD C. PONTING
BY Joseph J. Schofield
ATTORNEY

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CHUCK JAW ADJUSTING MEANS

Leonard C. Ponting, Pawtucket, R.I., assignor to Pratt & Whitney Company, Incorporated, West Hartford, Conn,. a corporation of Delaware

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3 Claims. (Cl. 279—123)

This invention relates to work holding chucks and particularly to an individual jaw adjustment therefor enabling extremely fine adjustments of a work engaging jaw to be made relative to its master or operating jaw.

An object of primary importance of the invention is to provide a radial adjusting means for a work engaging jaw relative to its master or operating jaw in which all lost motion or back lash between the parts of the adjusting means will be eliminated.

A feature of the invention that enables the above object to be accomplished is that a two-part threaded member is set into a recess in one of the members of the jaw and engages partial screw threads in the other member of said jaw, the two aligned parts of the threaded member being adjustably connected together so that by simultaneously rotating both parts of the threaded member the radial position of the work engaging jaw relative to its master jaw may be adjusted; and, by relatively rotating the two aligned threaded members the total or overall length of the threaded member may be increased.

Another object of the invention is to provide operating and relative adjusting means for the components of the threaded member enabling the two components to be simultaneously rotated for adjustment purposes of the work engaging jaw and also for relatively rotating one of the components relative to the other by means of which the overall length of the two part-member may be increased to eliminate all lost motion between the threaded components and the jaw members.

And finally it is an object of the invention to provide conventional operating wrench means enabling the two components of the threaded member to be simultaneously rotated or for one of the components to be rotated relative to the other from the outer periphery of the chuck.

With the above and other objects in view the invention may include the features of construction and operation set forth in the following specification and illustrated in the accompanying drawing.

In the accompanying drawing annexed hereto and forming a part of this specification I have shown the invention embodied in a conventional lever operated chuck, but it will be understood that the invention can be otherwise embodied and that the drawing is not to be construed as defining or limiting the scope of the invention, the claims appended to this specification being relied upon for that purpose.

In the drawing:

Figure 1 is a sectional view taken through a master jaw of a chuck showing the positioning and locking members therefor;

Fig. 2 is an outer end view of the parts shown in Fig. 1 taken from the left hand side of Fig. 1;

Fig. 3 is a side elevation of the two-part wrench adapted to adjust the connecting means or for positioning them to eliminate back lash; and

Fig. 4 is an end view of the wrenches shown in Fig. 3.

In the above-mentioned drawing there has been shown but one embodiment of the invention which is now

deemed preferable but it is to be understood that changes and modifications may be made within the scope of the appended claims without departing from the spirit of the invention.

The present invention represents an improvement upon the form of jaw adjusting means shown and described in the patent to Singer 346,133 granted July 27, 1886.

Referring more in detail to the figures of the drawing, there is shown in Fig. 1 a portion of a conventional pneumatically operated chuck for the rotatable spindle of a machine tool having a body member **10** provided with suitable radial slots **12** within which the master jaws **14** of the chuck are radially movable. But one of these jaws **14** is shown. It will be understood, however, that several of the jaws are provided movable within radiating slots of the body member **10**. To effect radial movement of the master jaw **14** a bell-crank lever **16** is provided pivotally mounted within the body member **10** and having its shorter end engaging a transverse slot in the lower member **25** of the master jaw and its longer end engaging a peripheral groove in an axially movable member **18** which may be operated by any means forming no part of the present invention.

In the operation of work holding chucks it is frequently desirable to slightly adjust a work engaging jaw **20** relative to its operating or master jaw member **25** to provide means to concentrically mount a work piece being operated on with the axis of rotation of the chuck. For this purpose it has been standard practice to house a threaded member **22** within a recess **24** formed between the two parts **14** and **25** of the master jaw. Partial screw threads **26** are formed in the upper member **14** of the operating jaw to which is clamped the work engaging jaw **20**. By rotation of the threaded member therefore the work engaging jaw **20** with the upper member **14** of the operating jaw will be adjusted slightly radially relative to its lower member **25** housed within the recess **12**. In such constructions, however, some back lash or lost motion is required to enable the threaded member **22** to be rotated within its recess **24**. Also there will be a slight amount of lost motion or back lash between the threaded portions of the jaw member and the flanks of the threads on the threaded member **22**.

In order to eliminate this lost motion between the cooperating parts of this adjusting mechanism the threaded member **22** is made in two longitudinal sections. These members **22** and **28** as shown, are housed within the recess **24** in the lower member operating jaw **25** with the end faces of the aligned members **22** and **28** bearing against the opposite end faces of the recess **24**. The two members **22** and **28** are adjustingly connected together at their adjacent ends so that by rotation of one of the threaded members relative to the other the overall length of the two threaded members will be increased or decreased.

The adjustable connection between members **22** and **28** may be made by interengaging threads, external threads being formed on an extension **30** formed on the member **22** entering an internally threaded recess formed within the member **28**. In the increased length of these members **22** and **28** they will abut firmly against the end walls of the recess and the flanks of the screw threads on the portions of the threaded members **22** and **28** will similarly be spread apart to bear firmly against opposite portions of the threads formed on the upper member of the operating jaw **14**.

In order to actuate this adjusting means a special form of wrench is provided having concentric sleeves **32** and **34**. At one end of each sleeve is a non-circular wrench portion. The outer wrench **34** has its square or non-cir-

cular end adapted to fit within a non-circular recess formed in the outer end of threaded member **28**. The inner of the two wrenches **32** has its non-circular end extending beyond the end of the outer wrench **34** as shown. This end is adapted to enter a non-circular recess within the threaded projection **30** on the outer end of the threaded members **22**.

It will be seen from the above description that by simultaneously rotating the two wrenches **32** and **34** the two threaded members **22** and **28** will be simultaneously rotated and there will be no increase or decrease in the overall length of these two members. The chuck jaw, however, will be radially adjusted toward or from the axis of rotation of the chuck depending upon the direction of rotation of the members **22** and **28**. However, if one of the wrenches is held stationary and the other rotated, one of the threaded members **22** or **28** will be rotated upon its axis and by means of the threaded connection between the two threaded members the overall length of the two members will be increased or decreased.

After an adjustment of the jaw has been made to the desired position of the jaw by simultaneous rotation of the two aligned threaded members **22** and **28**, the two threaded members may be relatively rotated to increase the overall length of the aligned members. This relative rotation by movement of one wrench relative to the other will lock the threaded members **22** and **28** in the recess provided therefor and also will cause the flanks of the threads on the aligned members to tightly engage the opposite sides of the thread flanks of the fragmentary internal screw threads in the work engaged jaws. In this position all lost motion or back lash is eliminated and the jaw member **14** is securely locked in position.

I claim:

1. In a chuck, the combination of a two-member master jaw radially adjustable in said chuck, the mating surface of one of said jaw members having a recess formed therein, partial screw threads formed in the mating surface of the other of said jaw members, a two-part threaded member fitting within said recess and engaging said screw threads to adjust the position of one of said members of said master jaw relative to its other member, and an adjustable connection between the parts of said threaded member, whereby the overall length of said member may be increased to lock said threaded member within its recess.

2. In a chuck, the combination of a two-member master jaw radially adjustable in said chuck, the mating surface of one of said jaw members having a recess formed therein, partial screw threads formed in the mating surface of the other of said jaw members, a two-part threaded member fitting within said recess and engaging said screw threads to adjust the longitudinal position of one of said members of said master jaw relative to its other member, and a threaded connection between the parts of said threaded member, whereby by relative rotation of one of said threaded members relative to the other the overall length of said member may be increased to lock said threaded member within said recess.

3. In a chuck, the combination of a two-part master jaw radially adjustable in said chuck, the mating surface of one of said jaw members having a recess formed therein, partial screw threads formed in the mating surface of the other of said jaw members, a two-part threaded member fitting within said recess and engaging said screw threads to adjust the position of one of said members of said master jaw relative to its other member, a threaded connection between the parts of said threaded member, and wrench means to simultaneously rotate said threaded members and to relatively rotate one of the parts thereof relative to the other.

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