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L. E. WHITON

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JAW FOR LATHE CHUCKS, ETC

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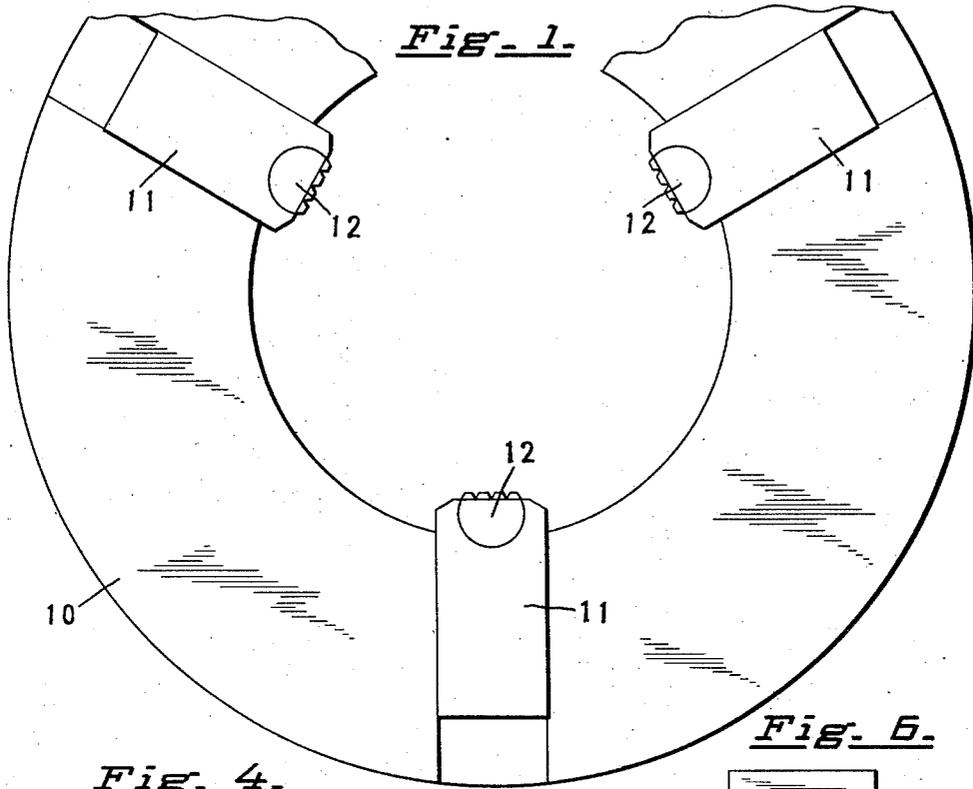


Fig. 1.

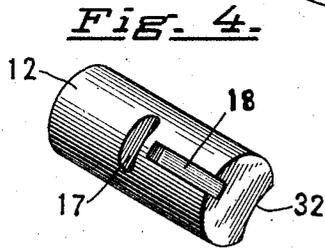


Fig. 4.

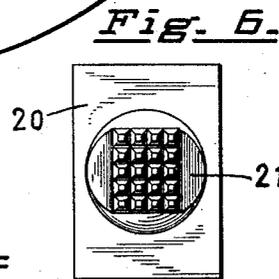


Fig. 6.

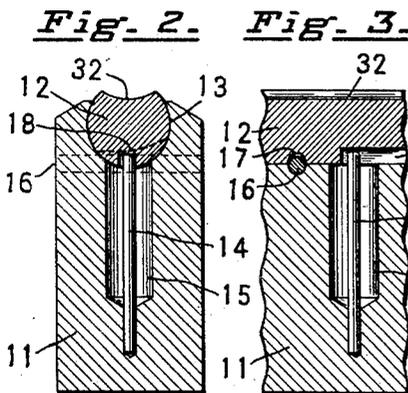


Fig. 2.

Fig. 3.

Fig. 7.

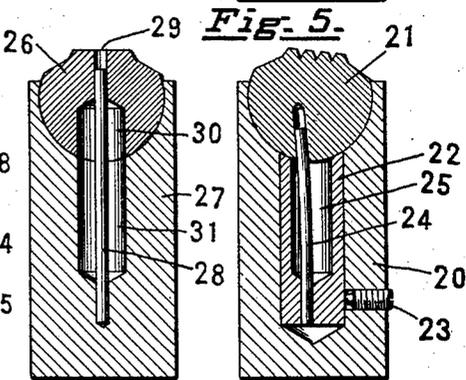


Fig. 5.

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JAW FOR LATHE CHUCKS, ETC.

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The main object of the present invention is the provision of self tightening gripping members especially adapted to power chucks.

Another object is to provide a jaw member which will adjust itself to tapered work.

In the drawings I have illustrated two forms of grippers but it should be understood that the invention is not limited to the forms shown.

Fig. 1 is a face view of a chuck with jaws embodying one form of my invention, parts being broken away.

Fig. 2 is a transverse sectional view of a jaw embodying one form of my invention.

Fig. 3 is a longitudinal sectional view of the same construction.

Fig. 4 is a perspective view of the rear of one of the gripping members.

Fig. 5 is a transverse sectional view of another form of jaw and gripper.

Fig. 6 is an end view of the same.

Fig. 7 is a transverse sectional view of another form.

As the invention relates primarily to the jaw construction, I have illustrated a conventional chuck body 10 with jaws 11—11. These jaws may be adjusted in any suitable manner as for instance by hand or automatically.

Each jaw has a member 12 constituting the gripping means.

In the form shown in Figs. 2, 3 and 4 the gripping member is cylindrical in form and mounted in a groove 13 so that it may rock in the groove. This gripping member is secured in place so that it is normally under the tension of a spring rod 14, one end of which is mounted in the jaw member 11 and the other end of which projects into the gripping member 12. The jaw member may have a recess 15 to allow for the oscillation of the spring rod 14. The gripping member may be held from longitudinal movement by means of a pin or key 16. The gripping member has a segmental groove 17 sufficiently long to permit the gripping member to oscillate through a limited angle, the pin 16 serving as a stop. For purpose of assembly the gripping member 11 is provided with a longitudinal groove 18 adapted to receive the

outer end of the spring pin 14. The spring 14 tends to rotate the member 12 anti-clockwise as viewed in Fig. 2.

When the pin 16 is withdrawn from the jaw 11 the gripper 12 may be removed by end-wise movement.

In the form shown in Figs. 5 and 6 the jaw 20 is provided with a spherical seat for the ball shaped head 21 which serves as the gripping member. The sleeve 22 is detachably mounted in the jaw 20 being held in place by a set screw 23. The spring pin 24 is secured in the bottom of the sleeve 22 and extends into the ball shaped gripping head 21. The sleeve has a recess 25 to permit the upper end of the spring pin 24 to flex.

In the form shown in Fig. 7 the ball head 26 is mounted in the outer end of the jaw 27. The spring pin 28 has one end held in the jaw member 27 and the other end in a hole 29 in the ball member. The ball member and the jaw member may be recessed as at 30 and 31 respectively to facilitate the flexure of the spring pin 28.

The bearing or gripping face of each gripper may be shaped according to the work to be performed. In the form shown in Figs. 2, 3 and 4 the gripper is provided with a shallow groove so that in end view it is crescent shaped. In the form shown in Figs. 5 and 6 the gripping face is roughened or checkered. The particular form of gripping face, however, is unimportant to my invention.

In the cylindrical as well as in the spherical forms the gripper has a tendency to roll slightly and thereby self-tighten on to the work with the increasing resistance of the cutting tools. The form shown in Figs. 5 and 6 which can roll universally is particularly adapted to adjust itself to the holding of tapered pieces.

When the jaws are in use the gripping members roll slightly so as to conform automatically as nearly as possible with the shape of the piece being held.

In operation the jaws will be adjusted to grip the work. When power is applied the gripping members roll under the strain so as to bite into the work. When the chuck is re-

leased the spring pins return their gripping members to their normal positions of rest.

I claim:—

- 5 1. A chuck jaw body having a gripping member, a part of which is of circular cross section and mounted to rock in the jaw body and a spring rod having one end secured in said body and the other end secured to the gripping member and means for limiting the swinging movement of said spring rod. 70
- 10 2. A chuck jaw body, a gripper mounted to oscillate a limited amount within a curved seat in the body and a spring rod connecting the body and the gripper and holding the gripper normally in a position intermediate the limits of its oscillation, said rod being arranged to bend as a cantilever. 80
- 15 3. A chuck jaw body, a gripper mounted to oscillate within a curved seat in the body, and a spring rod having one end in the gripper and the other end in said body, one end of the rod being free for flexure substantially as a cantilever. 85
- 20 4. A chuck jaw having a recess with a bearing in its outer end, a rolling gripper in said bearing, a spring pin having one end secured in the jaw in said recess and the other secured to the gripper for returning it to normal position when the jaw is released and a removable stop for said gripper. 90
- 25 5. Chuck jaw body and gripper socketed in said body to limit oscillation with respect to the body, a flexible rod having one end anchored in said body and its other end portion within said gripper and arranged to flex as a cantilever with yieldable movement of said gripper. 95
- 30 6. A chuck jaw body having a cylindrical gripper received within a cylindrical socket in the jaw body, said gripper and socket extending throughout substantially the length of the jaw body axially of the work, and a spring rod to resiliently retain said gripper in normal position intermediate the limits of its oscillation. 100
- 35 7. A chuck jaw body, a gripper mounted to oscillate within a curved seat in the body, and a spring rod having one end in the gripper and the other end in said body, one end of the rod being free for flexure substantially as a cantilever, said jaw body being recessed around said rod between the anchorage of said spring rod and the opposite end portion of the rod. 105
- 40 8. A chuck jaw body having a cylindrical gripper received within a cylindrical socket in the jaw body, said gripper and socket extending throughout substantially the length of the jaw body axially of the work, a spring rod to resiliently retain said gripper in normal position intermediate the limits of its oscillation, and means for substantially preventing longitudinal movement of said gripper in its cylindrical seat. 110
- 45 9. A chuck jaw body having a cylindrical gripper received within a cylindrical socket in the jaw body, said gripper and socket extending throughout substantially the length of the jaw body axially of the work, a spring rod to resiliently retain said gripper in normal position intermediate the limits of its oscillation, and means for substantially preventing longitudinal movement of said gripper in its cylindrical seat. 115
- 50 9. A chuck jaw body having a cylindrical gripper received within a cylindrical socket in the jaw body, said gripper and socket extending throughout substantially the length of the jaw body axially of the work, a spring rod to resiliently retain said gripper in normal position intermediate the limits of its oscillation, and means for substantially preventing longitudinal movement of said gripper in its cylindrical seat. 120
- 55 9. A chuck jaw body having a cylindrical gripper received within a cylindrical socket in the jaw body, said gripper and socket extending throughout substantially the length of the jaw body axially of the work, a spring rod to resiliently retain said gripper in normal position intermediate the limits of its oscillation, and means for substantially preventing longitudinal movement of said gripper in its cylindrical seat. 125
- 60 9. A chuck jaw body having a cylindrical gripper received within a cylindrical socket in the jaw body, said gripper and socket extending throughout substantially the length of the jaw body axially of the work, a spring rod to resiliently retain said gripper in normal position intermediate the limits of its oscillation, and means for substantially preventing longitudinal movement of said gripper in its cylindrical seat. 130
- 65 9. A chuck jaw body having a cylindrical gripper received within a cylindrical socket in the jaw body, said gripper and socket extending throughout substantially the length of the jaw body axially of the work, a spring rod to resiliently retain said gripper in normal position intermediate the limits of its oscillation, and means for substantially preventing longitudinal movement of said gripper in its cylindrical seat. 130

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