Dec. 25, 1934. A. M. STONE 1,985,586

DRILL CHUCK

Filed May 31, 1933

Fig. 2.

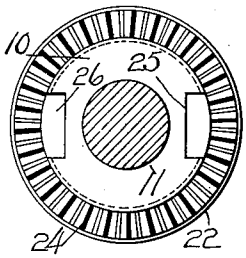


Fig. 1.

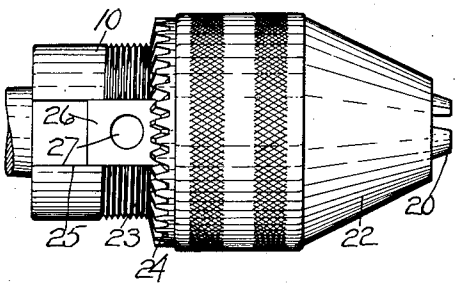


Fig. 3.

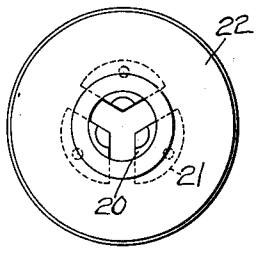


Fig. 10.

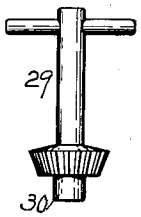


Fig. 4.

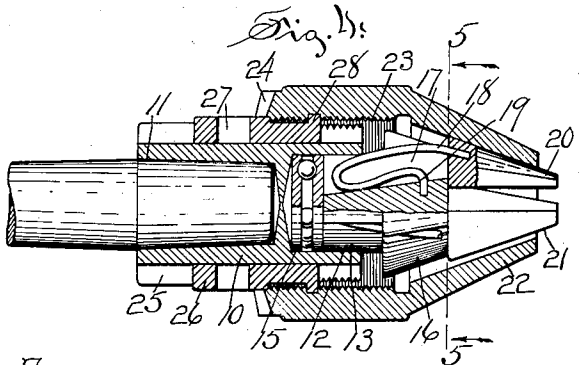


Fig. 5.

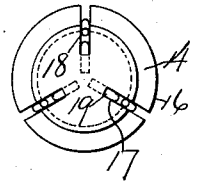


Fig. 7.

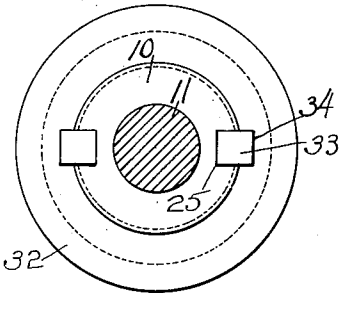


Fig. 6.

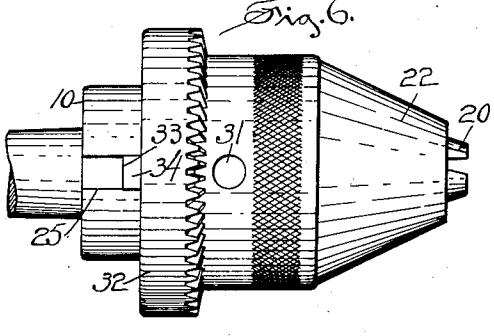


Fig. 9.

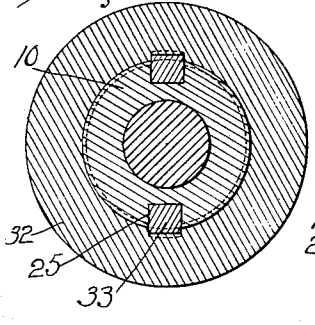
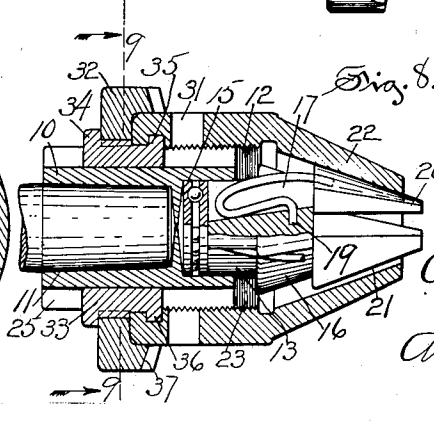


Fig. 8.



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UNITED STATES PATENT OFFICE

1,985,586

DRILL CHUCK

Arthur M. Stoner, West Hartford, Conn., assignor to The Jacobs Manufacturing Company, Hartford, Conn., a corporation of Connecticut

Application May 31, 1933, Serial No. 673,615

3 Claims. (Cl. 279—60)

My invention relates to the class of devices which are employed for holding drills, reamers and similar tools for boring, tapping, and analogous operations and an object of my invention, among others, is the production of a device of this type which shall be simple in construction and particularly efficient in operation.

One form of a chuck embodying my invention and in the construction and use of which the objects herein set out, as well as others, may be attained, is illustrated in the accompanying drawing in which—

Figure 1 is a side view of my improved chuck.

Figure 2 is a view looking at one end of the chuck.

Figure 3 is a view looking at the opposite end of the chuck.

Figure 4 is a view in central longitudinal section with parts broken away to show construction.

Figure 5 is an end view of the carrier with the jaw springs therein, and on a plane denoted by the dotted line 5—5 of Figure 4.

Figure 6 is a side view of my improved chuck showing a little different form of construction.

Figure 7 is an end view of the same.

Figure 8 is a view in central longitudinal section through this latter form of the chuck.

Figure 9 is a view in section on a plane denoted by the dotted line 9—9 of Fig. 8.

Fig. 10 is a side view of the key for operating the chuck.

In the accompanying drawing the numeral 10 denotes the body of my improved chuck provided with any suitable means for attachment to a spindle or other driving member, a tapered hole 11 being shown herein for such purpose. A recess 12 extends inwardly from the inner end of the chuck body and the hub 13 of a carrier extends into said recess, a ball bearing 15 or other suitable anti-friction member being located in the recess between its bottom and the end of the hub. A head 16 of the carrier has slots 17 within which jaw actuating springs 18 are located, there being one of these springs appurtenant to each jaw. The springs are preferably of U-shape each having one outturned end 19 extending into a hole in the bottom of a slot 17 and the opposite end projecting into the end of one of the jaws 20, as clearly shown in Fig. 4 of the drawing.

These jaws are of old and well-known construction in chucks of this type, being of somewhat triangular shape as shown in full and dotted lines in Fig. 3, the back surfaces of the jaws being rounded as at 21 for a bearing against the tapered wall of a clamping sleeve 22 which is screw threaded at its larger end to fit the screw threaded end 23 of the body 10.

The sleeve 22 has gear teeth 24 formed on its larger end extending around the periphery thereof, these teeth being formed to receive the teeth of a so-called key which is in the form of a small beveled pinion the teeth of which mesh with the teeth 24 and a stud on the end of the key fitting a hole within which the key is turned. Such a key is shown in Fig. 10 of the drawing.

In many types of chucks now in common use the hole for the reception of the key has been formed in the chuck body and the clamping sleeve has been rotatable upon the body but not movable lengthwise thereof, the inner surface of the sleeve being threaded to engage threaded surfaces of the chuck jaws to move them in and out in a manner that will be readily understood by those skilled in the art.

In my improved chuck I have employed an old form of chuck jaws 20 which, to be operated, require a longitudinal movement of the clamping sleeve 22 on the chuck body, and it is therefore necessary to provide means for keeping the teeth of the key sufficiently engaged with the teeth 24 on the clamping sleeve to operate said sleeve.

To effect such purpose I form grooves 25 preferably on opposite sides of the body 10 and extending lengthwise thereof, and in such grooves I place key supporting slides 26 having holes 27 to receive the stud on the end of the key. A lip 28 is formed on the inner end of each slide which lip is engaged with an annular groove on the inner surface of the sleeve 22, and as shown in Fig. 4 of the drawing.

It will now be seen that as the sleeve 22 is rotated by means of the key 29, the stud 30 thereon being located in the hole 27 and the slide being moved by engagement of the lip 28 with the groove in the sleeve, the teeth of the key will be held fully engaged with the teeth 24 on the sleeve.

By the use of my improved springs each spring acts independently upon its jaw and there is no interdependence of the springs one upon another as in prior devices in which this type of jaw is used; also the improved springs position and maintain the jaws equal distances apart, the springs being held by the grooves in the carrier equally spaced to effect this result, the action of the springs being in a radial direction only. Consequently the jaws are always maintained with their binding edges at the axial center of the

chuck with a result that the drill or reamer or other tool is always properly centered.

In that form of my improved chuck shown in Figs. 6 to 9 a hole 31 to receive the stud of the key is formed in the sleeve 22 and a toothed clamping ring 32 encircles the body 10 but is held from rotation by keys 33 slidably mounted in the grooves 25. There are preferably two of these keys and each has a lip 34 engaging the outer surface of the ring 32 and an inner lip 35 engaging within an annular groove 36 on the inner surface of the recess in the clamping sleeve 22, and as shown in Fig. 8 of the drawing.

In this form of the device the stud 30 of the key is inserted in the hole 31 and the teeth of the key are engaged with the teeth 37 on the under side of the ring 32, and as the sleeve moves along the body the engagement of the lips 34 and 35 with the sleeve and the ring holds said members against separating movement with a result that the teeth of the key are maintained in full engagement with the teeth 37 on the ring.

I claim:

1. A chuck including a body, a clamping sleeve threadedly engaged with said body and rotatable thereon, clamping jaws supported by the body and operatively engaged by said sleeve, a toothed ring encircling said body adjacent the end of said sleeve and having its teeth positioned for engagement by the teeth of a key rotatably engaged with said clamping sleeve, and means for attachment of the ring to the sleeve for relative rotation of said sleeve and ring.

2. A chuck including a body, a clamping sleeve threadedly engaged with said body and rotatable thereon, clamping jaws supported by the body and operatively engaged by said sleeve, a slide located in a groove in said body and maintained in engagement with said sleeve, and a toothed ring encircling said sleeve and engaged with said slide and having its teeth positioned for engagement by the teeth of a key rotatably attachable to said clamping sleeve.

3. A chuck including a body, a sleeve threadedly engaged with said body and rotatably mounted thereon, said sleeve having means for attachment of a key thereto, chuck jaws supported by said body and operatively engaged with said sleeve, a slide mounted on the body and having a notch engaged by a lip from said clamping sleeve, a clamping ring engaged in said notch and held against rotation on said body, and teeth on said ring engageable by the teeth of a key attached to said sleeve.

ARTHUR M. STONER.