C. H. CLARE.

CHUCK FOR HOLDING TOOLS AND BARS.

APPLICATION FILED NOV. 13, 1919.

1,372,482. **Patented Mar. 22, 1921.**

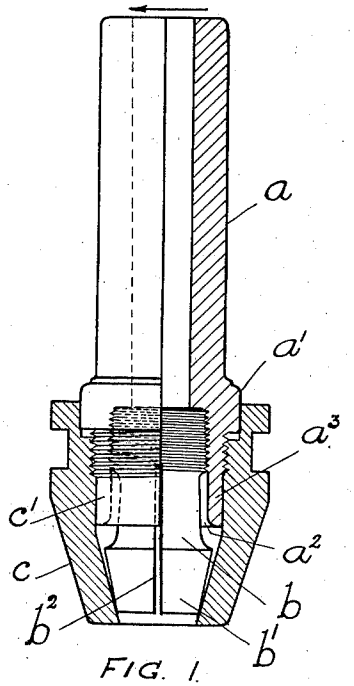


FIG. 1.

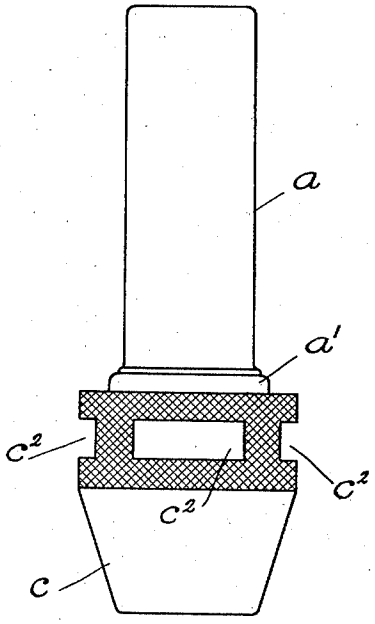


FIG. 2.

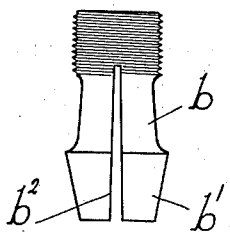


FIG. 3.

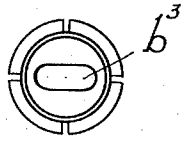


FIG. 4.

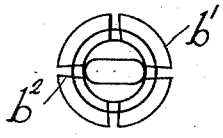


FIG. 5.

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CHUCK FOR HOLDING TOOLS AND BARS.

1,372,482. Specification of Letters Patent. Patented Mar. 22, 1921.

Application filed November 13, 1919. Serial No. 337,675.

To all whom it may concern:

Be it known that I, CHARLES HENRY CLARE, a subject of the King of Great Britain and Ireland, residing at 20 Kent street, Lower Broughton, Salford, England, have invented new and useful Improvements in Chucks for Holding Tools and Bars, of which the following is a specification.

This invention relates to chucks for holding tools, bars, or similar articles, and consists in an improved construction in which a left hand threaded split sleeve cooperating with a conical nose is automatically tightened on to the article being held as the chuck commences to rotate, and the greater the resistance to turning offered by the article so held, the more intense is the grip of the chuck.

My invention will be better understood on reference to the accompanying sheet of drawings, in which:—

Figure 1 is a part sectional elevation of a chuck made according to my invention.

Fig. 2 is an outside elevation of same.

Fig. 3 is an elevation of a split sleeve which fits inside the chuck.

Fig. 4 is a plan view, and

Fig. 5 an underside plan view of same.

The same letters refer to similar parts throughout the several views.

As the principle of construction involved in my improved chuck will be the same whatever type of article is being held, for the convenience in this description I shall refer to such article as a drill.

According to my invention the shank a of the chuck has a surrounding flange a^1, an internal recess a^2 tapped with a left hand screw thread, and a portion a^3 below the flange screwed externally with a right hand thread. Adapted to be screwed into the recess a^2 is a split sleeve b with a tapered end b^1 and having saw cuts b^2 extending for a portion of the length. The upper end of the sleeve b is screwed with a left hand thread to engage with the tapped portion of the recess a^2. The sleeve b may have a taper or parallel bore, and if desired, the upper end may be closed in except for a flat-sided slot b^3 to engage with the flats formed on the end of a drill shank. It should be mentioned that the sleeve is in some cases fully open at both ends so that bars or similar articles may be passed as far through as may be desired.

A nose c with an internal conical or tapering chamber c^1 is threaded at its upper end to engage with the threads on the portion a^3 of the shank a. The outer face of the nose may be suitably knurled or may be formed with a series of flats c^2 to admit of being engaged by a spanner or wrench.

The manner of operating my improved chuck is as follows:

Assuming the shank of a drill to have been inserted within the mouth of the nose c and passed up through the sleeve b until the flats on the end engage with the flat sided slot b^3; on the drill being pressed against the work it has to operate on and the shank a rotated, in the direction indicated by the arrow on Fig. 1, the statical friction between the drill and the work is sufficient to keep the former stationary together with the split sleeve b; this being so, there is a relative movement between the thread on the sleeve and the internal threads of the shank, with the result, that the tapered end b^1 of the sleeve b is brought into close contact with the inclined walls of the nose c. This causes the sleeve to contract, by reason of the provision of the slits b^2 and tightly grip the drill shank, which is then carried around with the chuck. The greater the resistance offered by the work to the tool in cutting or boring, the more intense will be the grip which the chuck has on the tool, and as the gripping area is relatively large, there is less likelihood of the tool breaking under the strain put upon it.

The release of the drill from the chuck can be readily and quickly effected by the rotation of the nose c. I have found by experiment that it is not essential to have a flat sided slot in the top end of the sleeve, as the grip of the sleeve on the drill is quite sufficient to hold it. By reason of this a parallel shank drill may be held so as to project any desired distance from the mouth of the chuck.

It will be understood that my improved chuck can be used either as an independent device, or form part of the spindle of a machine, and in this connection it is very suitable for turret lathes.

My improved chuck, by reason of its large gripping power can hold parallel shank drills as effectively as (or more so than) morse taper chucks engaging morse taper shank drills and since parallel shank drills are much less expensive than morse taper shank drills, the use of my improved

chuck results in an economy in the cost of the drills used.

It should, however, be explained that where a threaded nose is employed the turning movement of the shank a (during the period when the statical friction of the drill is being overcome, and the tapered end b' of the sleeve b bears upon the internal conical face c' of the nose) causes the nose to rise upon the right hand screw threads on the portion a^3 of the shank and so augment the rapid and efficient grip of the chuck upon the tool being held.

Having now described my invention what I claim as new and desire to secure by Letters Patent, is:—

A tool holding chuck, comprising a tubular shank provided interiorly and exteriorly thereof with oppositely directed threaded portions, a sleeve having a threaded portion for engaging the interior thread of the shank, and a nose engaging the exterior thread and encircling said sleeve and adapted to engage the same upon rotation of the sleeve relatively to the shank.

In testimony whereof I have signed my name to this specification.

CHARLES HENRY CLARE.