No. 677,198. Patented June 25, 1901.

H. FUCHS.

BIT STOCK.

(Application filed Jan. 8, 1901.)

(No Model.)

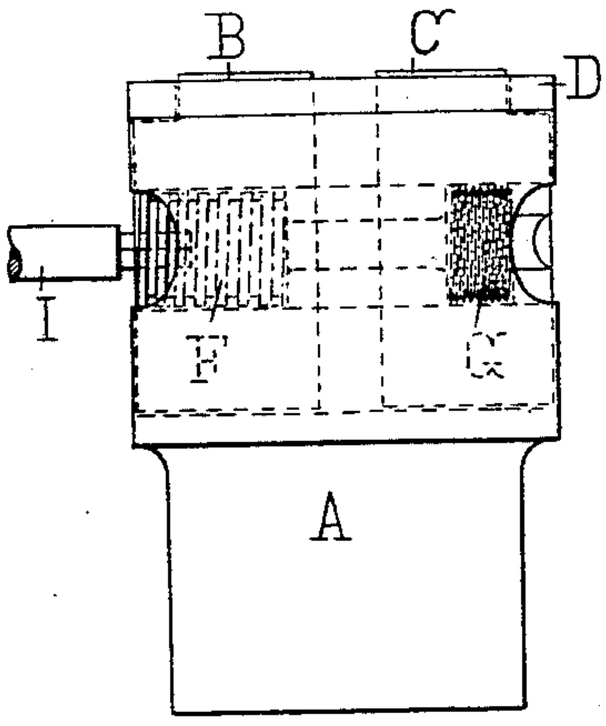

Fig. 1.

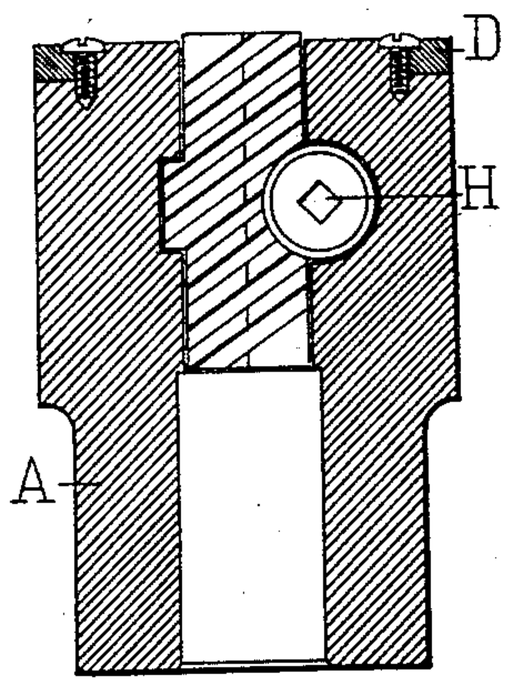

Fig. 3.

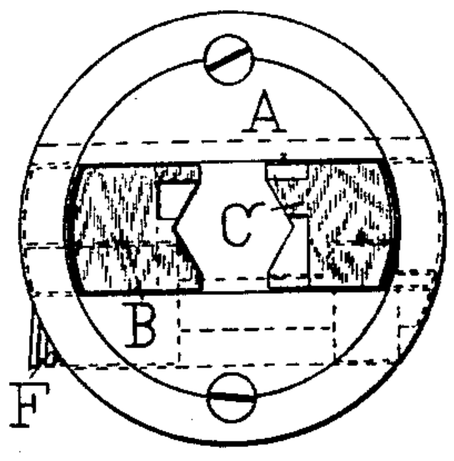

Fig. 2.

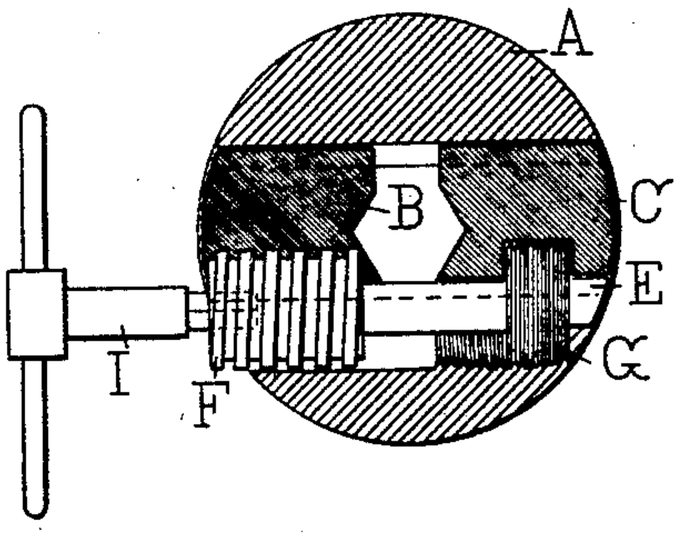

Fig. 4.

Witnesses
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UNITED STATES PATENT OFFICE.

HERMANN FUCHS, OF GERA, GERMANY, ASSIGNOR TO WESSELMAN BOHRER COMPANY, OF GERA-ZWÖTZEN, GERMANY.

BIT-STOCK.

SPECIFICATION forming part of Letters Patent No. 677,198, dated June 25, 1901.

Application filed January 8, 1901. Serial No. 42,515. (No model.)

To all whom it may concern:

Be it known that I, HERMANN FUCHS, a subject of the Emperor of Germany, residing at Gera, Germany, have invented new and useful Improvements in Bit-Stocks, of which the following is a specification.

The jaws of chucks generally used for holding the boring-tool are simultaneously opened and closed, so that the chuck will serve for holding tools of different thickness in the direction of their length. For setting the jaws of the chuck a right and left hand screw-thread is employed, so that the rotation of the screw one way or the other secures the desired setting or movement of the jaws. Such an adjusting device has, however, a disadvantage in that the jaw-compressing power is comparatively small, and as a matter of fact it is difficult to secure firm hold for the tool in the chucks in use. This objection is to be removed by the present differential stock, in which a jaw-actuating screw-spindle is employed, which is provided with threads running in like direction, but which threads have varying pitch, one of the threads being in engagement with one of the jaws and the other with the stock.

This invention is set forth in the following specification and claim, and illustrated in the annexed drawings, in which—

Figure 1 is an elevation of the stock. Fig. 2 is a plan view of Fig. 1. Fig. 3 is a longitudinal section of Fig. 1. Fig. 4 is a transverse section of Fig. 1.

In the chuck A are inserted jaws B and C, as known, their movement being limited by the ring D. The screw-spindle E serves for moving the jaws with respect to one another. It is threaded at its forward part F and at its rear part G. A four-cornered or non-circular hole H allows the insertion of a key I. The thread of the screw-spindle E runs in the same direction; but the pitch of the thread end at F in the example shown is as large again as that of the thread end at G. The former is only in engagement with the jaw B, and at this part the chuck is not threaded, so that the screw-spindle is merely guided by the stock. The end G of the spindle, with lesser pitch on the other hand, is only in engagement with a thread cut in the stock, while it carries the jaw C along by extending thereinto.

If the screw-spindle is rotated once, then the jaw B would, if the spindle E were prevented from longitudinal movement, be moved in or out by the thread end F the extent of one pitch thereof; but as the screw-spindle E by threaded end G engages the chuck A the spindle at the same time by one rotation is displaced the extent of one pitch of the screw end G, carrying along the jaw C the same extent. The jaw B is thus displaced with respect to one jaw C the difference between the pitches of the two thread ends F and G. If the pitch of thread end G is one-half that of thread F, the jaw B is displaced a distance equal to one-half that of the pitch of thread F—that is, one pitch of thread G; but the jaw C is also displaced a like extent as it is carried along by thread end G.

By employing a screw-spindle of equal pitch and with right and left hand threads the tool, as a matter of fact, cannot thus far be clamped sufficiently tight. The same consequently slips somewhat in the chuck, with the result that the jaws wear, the slipping of the bit in the chuck becomes worse, and the wear of the stock-jaws more irregular, so that presently the bit no longer runs centrally, which defect is transferred in worse degree to the work.

In tightening the double-threaded screw-spindle the bending strain is also so great that there is risk of breakage. All these objections are obviated by the differential bit-chuck. The lateral pressure exerted by the jaws on the thread of the screw-spindle is considerably less, as here the thread end F engages the jaw B; but the other thread end G engages the chuck A. The strain on the screw-spindle E thus approaches or is nearly axial. At the same time as the power required for turning the screw-spindle is less the quadrangle B is spared and worn less than in the chucks thus far in use.

What I claim as new, and desire to secure by Letters Patent, is—

A chuck including a body having internal jaws slidable toward and from each other, each jaw having a side recess, one recess be-

ing threaded and the other plain, the chuck adjacent to the plain recess being threaded, a spindle projecting into said body having two threaded portions of different pitch, one threaded portion being set into the plain recess and engaging the threaded surface on the body and the other threaded portion being set into the threaded recess and engaging the threaded surface thereof, and detachable means on the body for limiting the movement of the jaws.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

HERMANN FUCHS.

Witnesses:
M. STENDINK,
A. BRÄUTIGAM.