

No. 747,423.

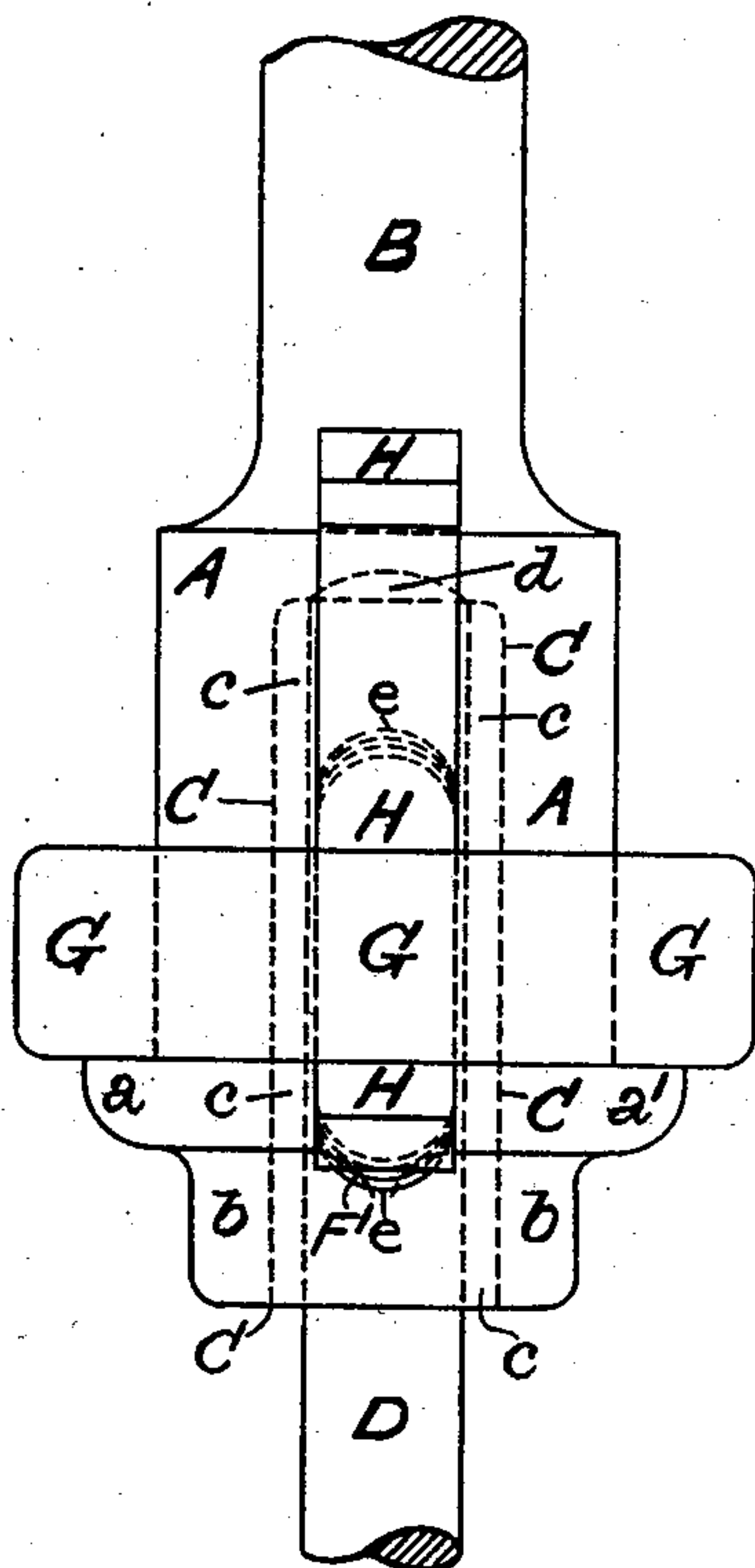
PATENTED DEC. 22, 1903.

F. HENDERSON.

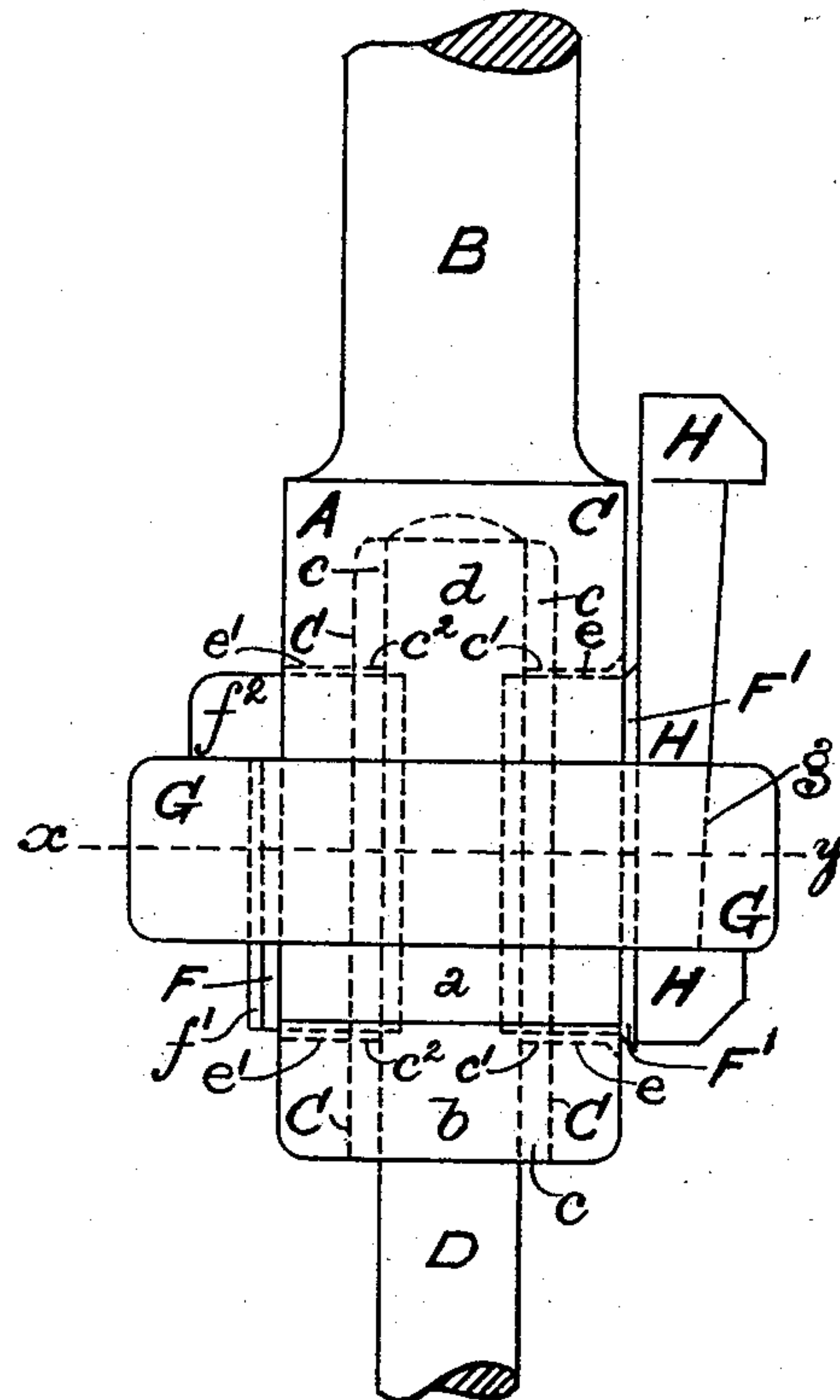
CHUCK FOR ROCK DRILLING MACHINES.

APPLICATION FILED JULY 1, 1903.

NO MODEL.



*Fig. 1.*



*Fig. 2.*

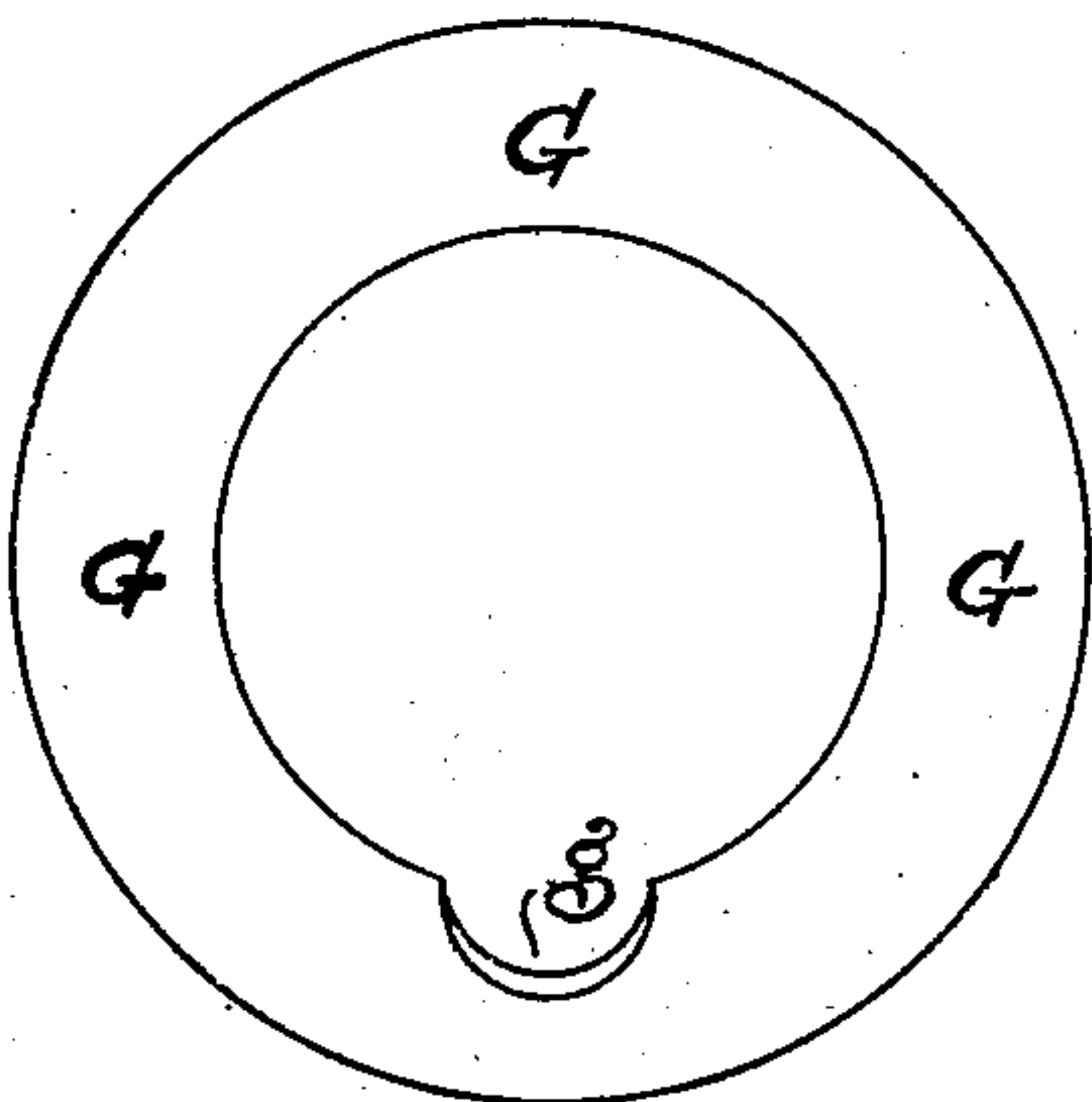
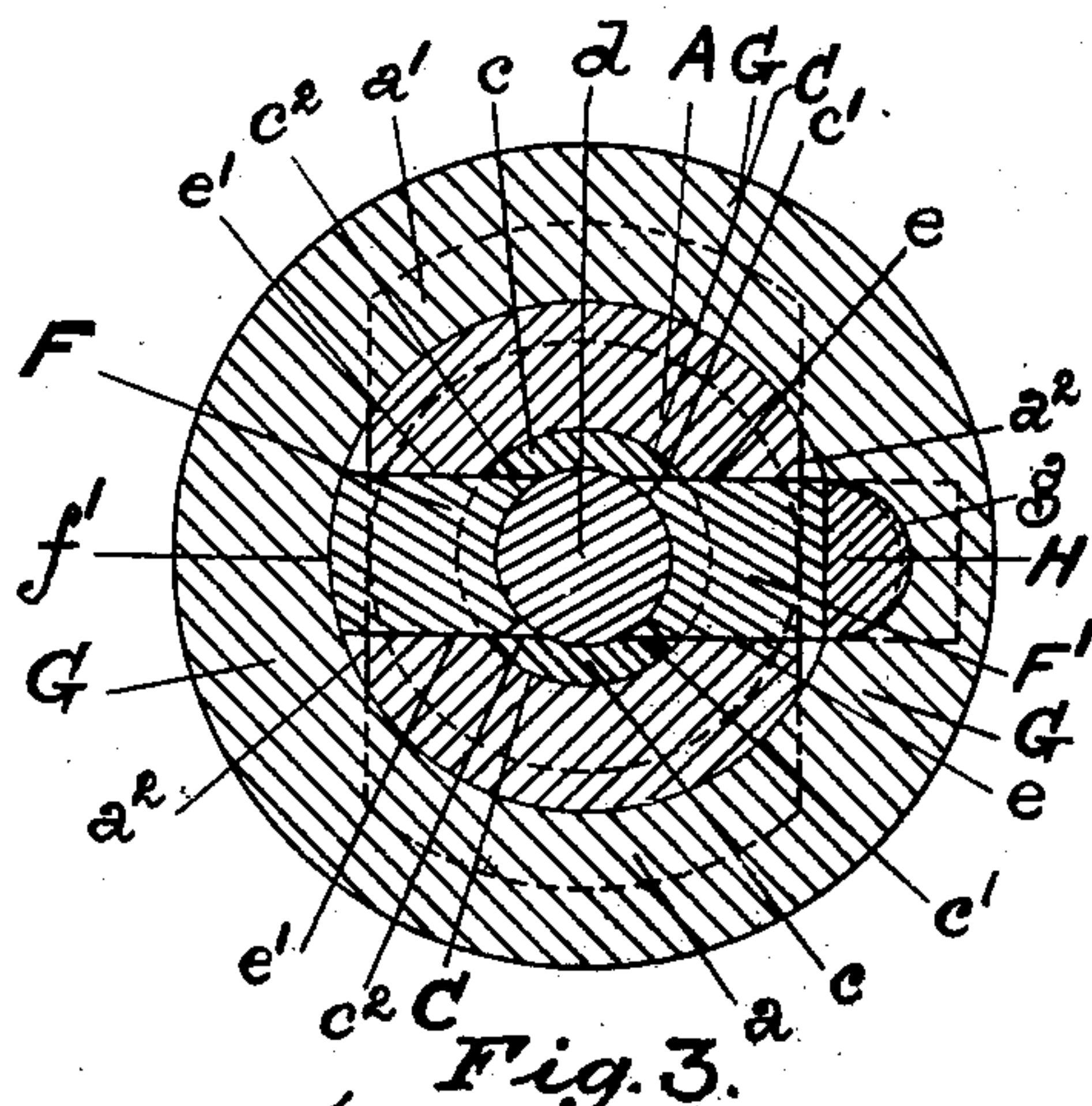


Fig. 4.

Fig. 4  
Witnesses:  
R. Orndale.  
Springover



*Fig. 3.*

Inventor:  
Frederick Henderson  
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Attorney



# UNITED STATES PATENT OFFICE.

FREDERICK HENDERSON, OF JOHANNESBURG, TRANSVAAL.

## CHUCK FOR ROCK-DRILLING MACHINES.

SPECIFICATION forming part of Letters Patent No. 747,423, dated December 22, 1903.

Application filed July 1, 1903. Serial No. 163,885. (No model.)

*To all whom it may concern:*

Be it known that I, FREDERICK HENDERSON, a subject of the King of England, residing at Johannesburg, Transvaal, have invented certain new and useful Improvements in the Chucks of Rock-Drilling Machines, (for which I have made application for patent in the Transvaal, No. 538, bearing date September 26, 1902,) of which the following is a specification.

This invention relates to the chucks of rock-drilling machines, and is designed to provide an efficient chuck of simple construction in which the defects of the existing devices will be eliminated.

In a chuck constructed in accordance with my invention I dispense with the ordinary U chuck-bolts, the breakage of which is of frequent occurrence, and consequently I avoid the expense of having to repeatedly replace the same. As compared with the existing chuck-bolts, the employment of my invention will effect a large reduction in the initial cost of manufacture as well as in maintenance, and a considerable saving of time will be effected in the operation of changing or renewing the drills or drilling-bits. I further provide means whereby the tightening of the drill or drilling-bit can be effected either top or bottom, and so permit of the wear being distributed at the top or bottom of the chuck-bush.

The invention will be fully described by aid of the accompanying drawings, in which—

Figure 1 is a front view of the chuck. Fig. 2 is a side elevation of the same. Fig. 3 is a transverse section of Fig. 2 on the line  $xy$ , and Fig. 4 is a plan of the ring or hoop for retaining the parts in position.

The body or main part A of the chuck is formed on or fitted to the outer extremity B of the piston-rod or equivalent reciprocating member of the rock-drilling machine. The body A is formed of approximately cylindrical shape for the greater portion of its length and in proximity to the free end is constructed on two diametrically-opposed sides thereof with two projections  $a a'$ , which form two abutments or shoulders partially round the body and beyond the abutments with a neck or extension  $b$ . The body A is formed with a longitudinal parallel and cen-

tral hole C, in which is fitted an ordinary bush or liner  $c$ , adapted to receive the shank or extremity  $d$  of the drill or drilling-bit D, which is projected into it. The other two sides of the body A are made flat, as is indicated at  $a^2$  in Fig. 3. In the flat faces  $a^2$  holes  $e e'$  are formed communicating with the interior of the chuck-body A, and in the bush  $c$  holes  $c' c^2$  are formed which coincide with the holes  $e e'$ , formed in the body A. Thus when the bush  $c$  is in position a hole is formed transversely through the chuck intersecting the longitudinal parallel hole C.

In the holes  $e e'$ , formed in the body A and bush  $c$ , are arranged two keys  $F F'$ , which on the inside bear upon or engage the inner extremity or shank  $d$  of the drill or drilling-bit D. The drill-shank is thus engaged by the pads  $F F'$  both top and bottom or on two diametrically opposite sides. The bushing  $c$  and the keys  $F F'$  on the inside are, in the drawings shown, constructed to accommodate steel of circular section; but it will be obvious that they may be shaped to receive any section of drill-steel, and so avoid the necessity for the swaging or shaping of the shank  $d$  of the drilling-bit D to fit the chuck.

Around the chuck-body A and encircling the two keys  $F F'$  is a ring, hoop, or band G. (Shown in plan in Fig. 4.) As is indicated at  $f'$ , the exterior of the key  $F$  is curved to correspond to the inside of the ring G, which fits over or round it. The key  $F$  is also formed with an outward projection  $f^2$  at one end, against which the ring abuts, which projection, in conjunction with the projections  $a a'$  on the body A, operates to retain the ring G and key  $F'$  in position. The other key  $F'$  protrudes from the body A and has its exterior face formed flat. In the ring G, immediately opposite the key  $F'$ , is formed a semicircular or approximately semicircular recess  $g$ . In the recess  $g$  is arranged a taper key or cotter H. The cotter H is, as shown in Fig. 3, curved on the outside to fit the recess  $g$  and made flat on the inside to rest upon the outer face of the key  $F'$ .

The method of operating the device to fix or detach the drilling-bit D is obvious from the foregoing description. By forcing the cotter H longitudinally of the body A in one direction the keys  $F F'$  are forced inward to



grip the shank *d* of the drilling-bit D, and by moving the cotter H longitudinally of the body in the opposite direction the keys F F' are freed and release the shank *d* of the drilling-bit D, permitting the drilling-bit D to be readily withdrawn and renewed.

What I claim as my invention, and desire to protect by Letters Patent, is—

1. In a rock-drilling-machine chuck, the combination of a hollow body portion, the same having a hole formed therethrough, keys diametrically arranged in said hole and adapted to engage the shank of the drilling-bit, a ring surrounding said body portion and engageable with one of said keys, and a wedge-shaped cotter arranged between the other key and the ring, substantially as described.

2. In a rock-drilling-machine chuck, the combination of a hollow body portion, the same having a hole formed therethrough, keys diametrically arranged in said hole and adapted to engage the shank of the drilling-bit, a ring surrounding said body portion and engageable with one of said keys, an abutment on said body portion forming a stop for the ring against movement in one direction lon-

gitudinally of said body portion, a projection formed on one of said keys and acting as a stop for the ring against movement longitudinally of said body portion in the other direction, and a wedge-shaped cotter arranged between the other key and the ring, substantially as described.

3. In a rock-drilling-machine chuck, the combination of a hollow body portion, the same having a hole formed therethrough, a key arranged in said hole and adapted to engage the shank of the bit, a ring surrounding said body portion, said key being adapted to take against the ring when engaged with the bit, and a wedge-shaped cotter arranged between said body portion and the ring in substantially diametric opposition to the key, substantially as described.

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

FREDERICK HENDERSON.

Witnesses:

J. E. MELLOR,  
CHAS. OVENDALE.