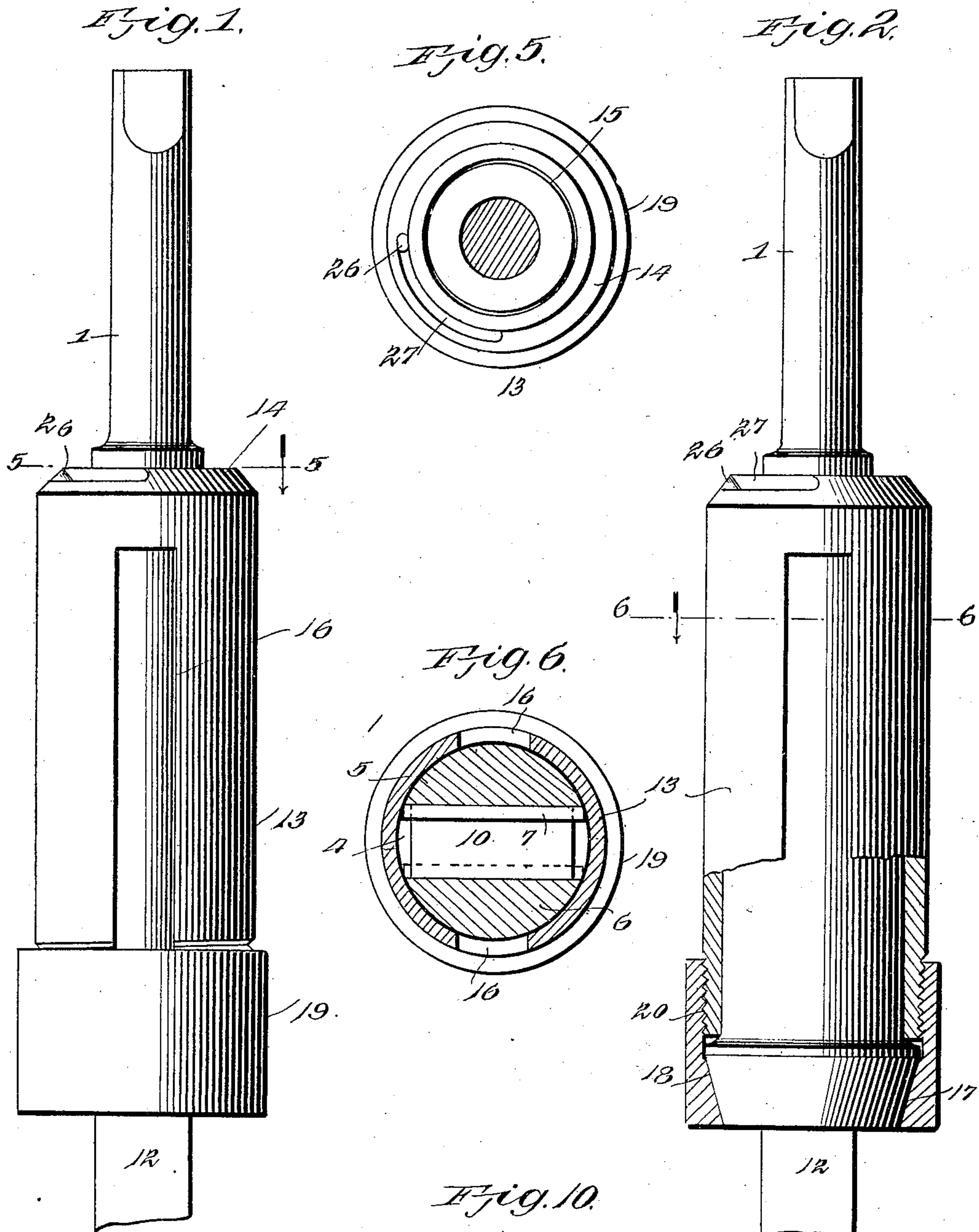


No. 860,980.

PATENTED JULY 23, 1907.

F. E. KLING.  
DRILL CHUCK.  
APPLICATION FILED DEC. 5, 1905.

2 SHEETS—SHEET 1.



Witnesses  
Frank Hough  
D. W. Gould.

Fig. 10.  
23 25 27 28

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2 SHEETS—SHEET 2.

Fig. 3.

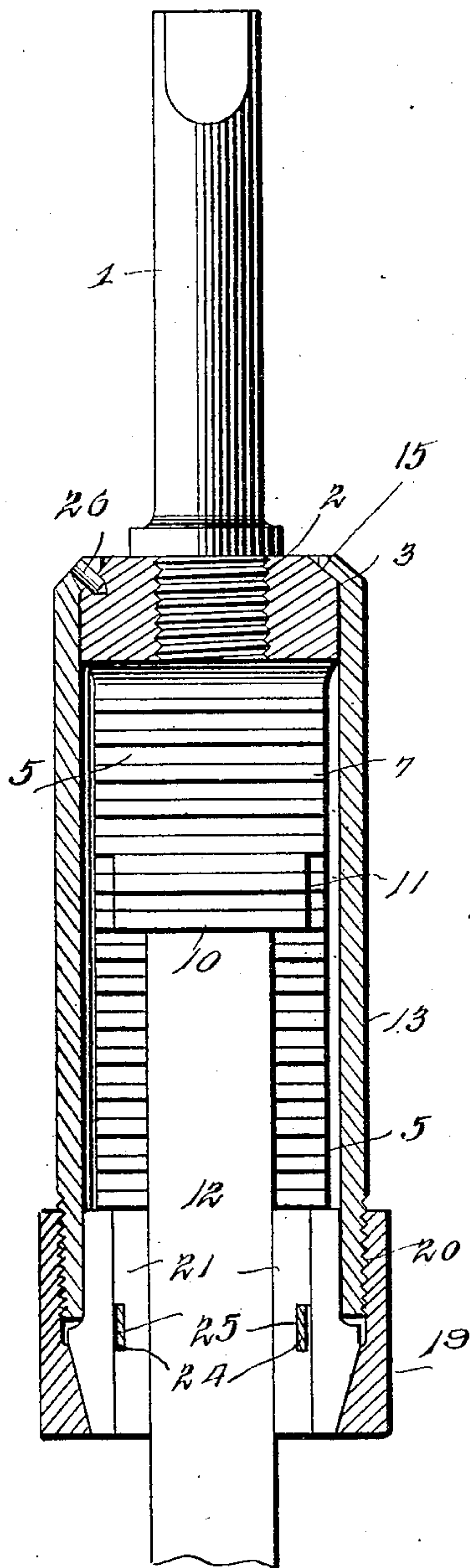


Fig. 7.

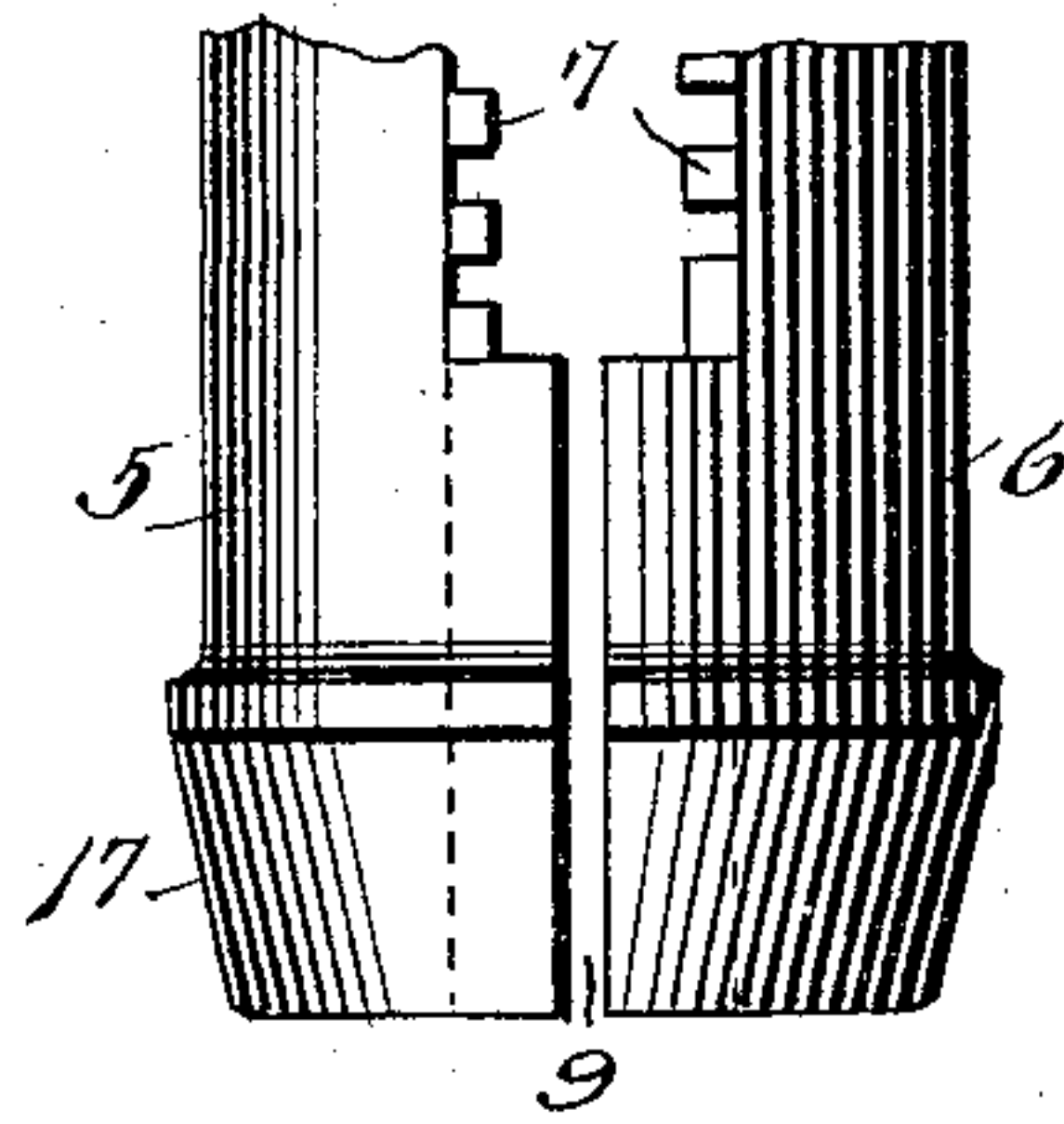


Fig. 8.

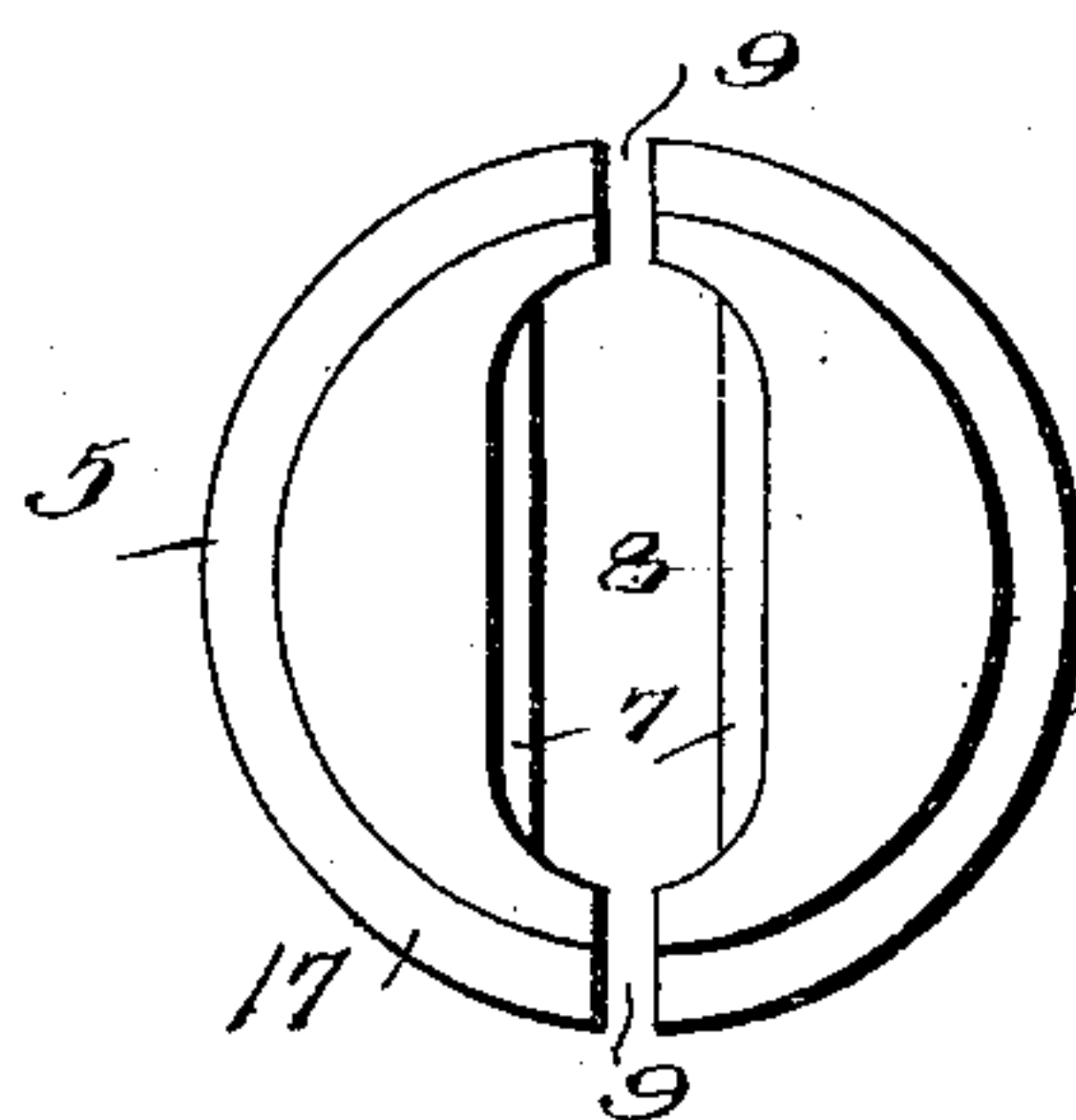


Fig. 9.

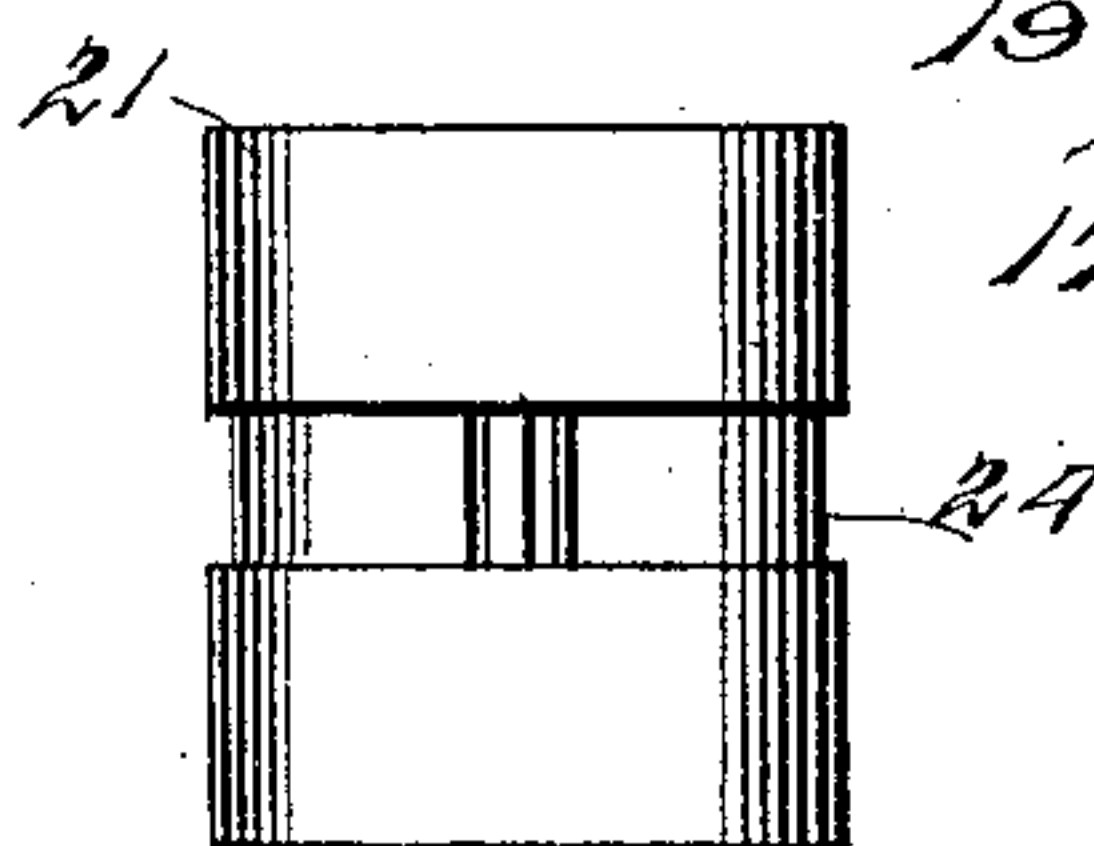
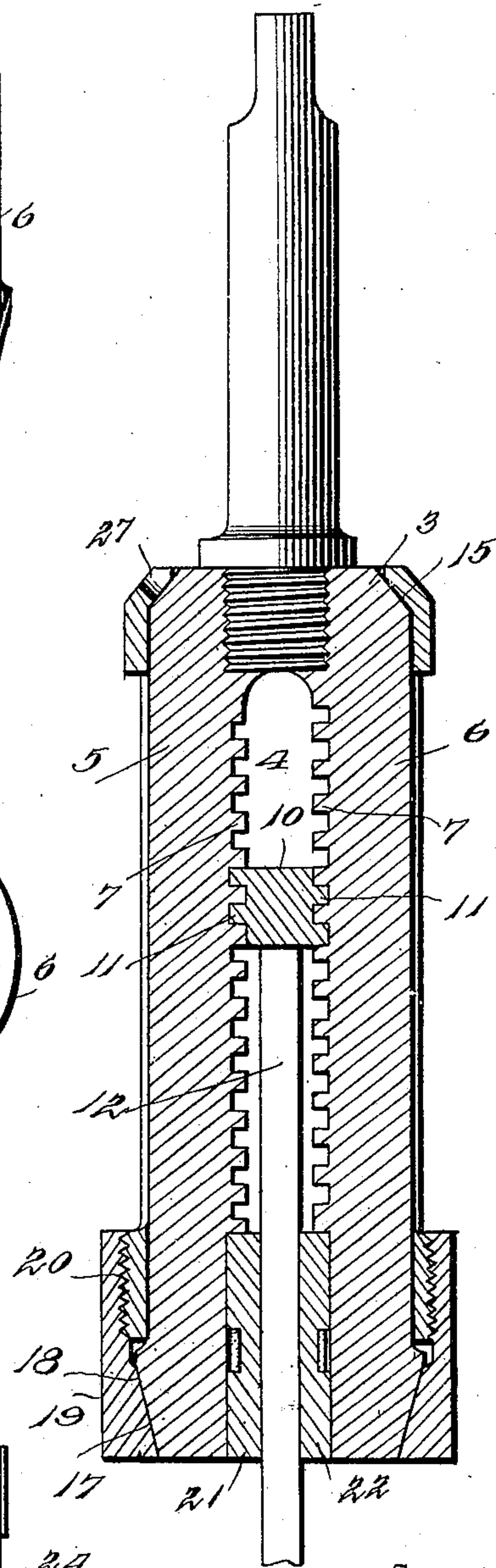


Fig. 4.



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# UNITED STATES PATENT OFFICE.

FRED E. KLING, OF YOUNGSTOWN, OHIO.

## DRILL-CHUCK.

No. 860,980.

Specification of Letters Patent.

Patented July 23, 1907.

Application filed December 5, 1905. Serial No. 290,478.

*To all whom it may concern:*

Be it known that I, FRED E. KLING, a subject of the Emperor of Germany, residing at Youngstown, in the county of Mahoning and State of Ohio, have invented  
5 new and useful Improvements in Drill-Chucks, of which the following is a specification.

The invention relates to an improvement in drill chucks particularly adapted for operatively supporting flat drills of various sizes.

10 The main object of the present invention is the production of a chuck constructed and arranged to receive and hold flat drills, means being provided whereby the chuck may be readily and conveniently adjusted for coöperation with drills of varying lengths.

15 A further object of the invention is the production of a clamp designed for coöperation with a chuck by which the drill is securely held and centered within the chuck.

20 The preferred details of construction will be described in the following specification, reference being had particularly to the accompanying drawings, in which:—

Figure 1 is a view in elevation of my improved chuck, Fig. 2 is a similar view, the locking nut and  
25 a portion of the sleeve being shown in section, Fig. 3 is a longitudinal central section through the chuck, the tool being shown in elevation, Fig. 4 is a similar view taken at right angles to Fig. 3, Fig. 5 is a section on line 5—5 of Fig. 1, Fig. 6 is a section on line 6—6 of  
30 Fig. 2, Fig. 7 is a broken elevation showing the lower end of the stock, Fig. 8 is a bottom plan of the stock, Fig. 9 is an elevation of the clamp, and Fig. 10 a horizontal section of the same.

Referring to the drawings my improved chuck comprises a shank 1 adapted for coöperation with any  
35 suitable type of drill press, one end of which is provided with a threaded nipple 2 for coöperation with a threaded opening in the head of the stock 3. It is obvious, however, that the shank 1 and stock 3 may if preferred  
40 be made in a single piece as the independent construction just described is not a material part of the invention. The stock is formed for the greater portion of its length with a longitudinal slot 4, dividing the stock  
45 into members 5 and 6, said slot extending entirely through the stock transverse its length to provide the members 5 and 6 in spaced parallel relation, as clearly shown in Fig. 4. The opposing side walls of the slot are formed with spaced parallel projections or teeth 7, extending transverse the length of said walls with the  
50 teeth of one wall relatively out of alinement with the approximate teeth of the other wall. The lower end of the stock is formed with an approximately oval shaped opening, 8, equal in greatest width to that of the slot 4, but formed wholly within the body of the  
55 stock. The wall of the stock adjacent the respective ends of the opening is slitted at 9 to provide for inde-

pendent relative movement of the respective members 5 and 6, as hereinafter described. It is to be understood that the walls of the opening 8 are plain throughout their length to provide for the ready insertion and  
60 removal of the tool clamp, to be later described.

A stop block 10 is arranged to fit within the slot 4 in the stock, being preferably somewhat less in length than the width of the slot and having its opposing edges formed with teeth 11 to interlock with the teeth 7 of the  
65 walls of the slot at any desired point, whereby said block is maintained transverse the stock to provide an abutment for the inner end of the tool 12. As the slot 4 extends wholly through the body of the stock the block 10 may be readily inserted into said slot and  
70 into engagement with the teeth therein at any desired point longitudinally of the stock, whereby the block may be readily and conveniently arranged in any desired relation lengthwise of the stock.

A sleeve 13 is designed for coöperation with the stock, 75 being of a size to encircle the same and being revolubly supported by an intumed flange 14 at the upper end resting upon an inclined shoulder 15 formed on the head of the stock. The sleeve is formed with diametrically opposed longitudinally arranged openings 16, coextensive in width with the slot 4 and designed to aline  
80 therewith when it is desired to insert the stop block 10, it being obvious that a movement of the sleeve to cause the opening 16 to register with the slot 4 will provide an open way wholly through the chuck for the insertion of  
85 the stop block, after which the sleeves may be turned a quarter revolution to present a solid portion of its surface in alinement with the slot 4, whereby accidental displacement of the stop block is prevented.

Immediately adjacent the lower end the stock is 90 formed with an upwardly inclined surface 17, designed to be engaged by a reversely inclined surface 18 formed interiorly of a lock nut 19, the upper portion of which nut is arranged for threaded engagement at 20 with the threaded lower end of the sleeve 13, all as clearly  
95 shown in Fig. 4.

The clamp forming a material part of the chuck comprises duplicate members 21 and 22 having together an exterior contour of a size and shape to fit within the opening 8 within the stock. The clamp members are  
100 of a length coextensive with the length of the opening 8 and are interiorly provided with squared longitudinally arranged recesses, forming when the parts are together a rectangular opening 23 extending longitudinally of the clamp for the reception of the body of the drill 12.  
105 To provide against accidental separation of the clamp members I provide each of said member with a transversely arranged groove 24, providing when the members are in coöperative relation an annular way centrally of the length of the clamp. U-shaped springs 25  
110 are arranged to secure the members of the clamp in co-operative relation, the arms of said springs embracing



both members, and resting upon opposite sides of each member, the central portion of the spring bridging the space normally between the members, as clearly shown in Fig. 10.

- 5 As the sleeve 13 is adapted for movement to aline its openings 16 with the slot 4, and as said sleeve is designed, as hereinafter stated, to form a fixed connection for the locking nut, it is obvious that means must be provided to prevent a complete revolution of the sleeve, 10 as otherwise it would be impracticable to seat the nut. This means is arranged by providing the inclined shoulder 15 of the stock with a pin 26, adapted to seat in a guide slot 27 formed in the adjacent portion of the sleeve, said slot being of a length to permit the necessary movement of the sleeve and serving when the pin 15 26 is in contact with the wall at one end of said slot to secure the stock and sleeve against further relative movement in that direction in order to permit the proper seating of the lock nut.
- 20 In use the tool is inserted within the bore 23 of the clamp, and said tool and clamp inserted within the longitudinal opening 8 in the stock. The sleeve 13 is turned to register its openings 16 with the slot 4 in the stock and the stop block 10 is inserted within said slot, 25 at the desired point longitudinally of the same, the teeth 11 registering with the teeth 7 of the slot. The sleeve 13 is then turned to move its openings 16 out of register with the slot 4 to prevent accidental disengagement of the stop block, the movement of the sleeve being continued until the pin 26 contacts with the end of the guide slot 27. The tool is then moved inward until its end abuts the stop block 10, after which the lock nut is screwed to its seat, the inclined surface 18 of said nut coöperating with the inclined surface 17 on the end 30 of the stock to force the lower ends of the stock members 5 and 6 into binding action with the clamp, thus securely holding the tool within the clamp against possibility of independent movement during operation.

- 40 In the event it is desired to alter the projecting length of the tool the lock nut 19 is unscrewed and the tool moved longitudinally to the extent desired, the sleeve 13 being moved to register its openings 16 with

the slot 4, after which the stop block may be moved bodily from the slot 4 and replaced in the desired position.

45

It is to be understood that the bore 23 of the clamp is designed to snugly fit the contour of the desired tool, and that a chuck such as described is arranged for co-operation with any number of clamps having a similar exterior contour but formed with varying bores to accommodate different tools.

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It is to be noted that the adjustment for the length of the tool is quickly and readily accomplished and without the necessity of the separation of parts incident to other drill chucks now in use, and that the offset relation of the teeth 7 of the respective walls of the slot provides for a comparatively minute adjustment of the stop block relative to the length of the stock.

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Having thus described the invention what is claimed as new, is:—

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1. A chuck comprising a stock formed with a longitudinally arranged slot for the reception of the tool, a stop block having adjustable connection with the walls of said slot, said block being movable transverse the stock for removal from or insertion within the slot, and a sleeve encircling the stock and formed with openings to register with the slot, said sleeve being movable to arrange the openings therein out of register with the slot, whereby to prevent the endwise movement of the block.

65

2. A chuck comprising a stock formed with a longitudinally arranged slot, the walls of said slot being formed with teeth, a stop block formed with teeth to engage the teeth of the slot walls and adapted for insertion between said walls transversely of the chuck, a sleeve having limited revolution around the stock, said sleeve being longitudinally slotted to aline with the slot in the stock and to permit the insertion of the stop block, the lower end of the sleeve being threaded, a clamp nut to engage the threaded end of the sleeve, the lower end of the stock being formed with cam surfaces to engage the cam surfaces of the nut, and a tool clamp adapted for insertion between the walls of the stock slot and held in position by the operation of the clamp nut.

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In testimony whereof, I affix my signature in presence of two witnesses.

FRED E. KLING.

Witnesses:

FRED OATLY,  
MAX RUESS.