

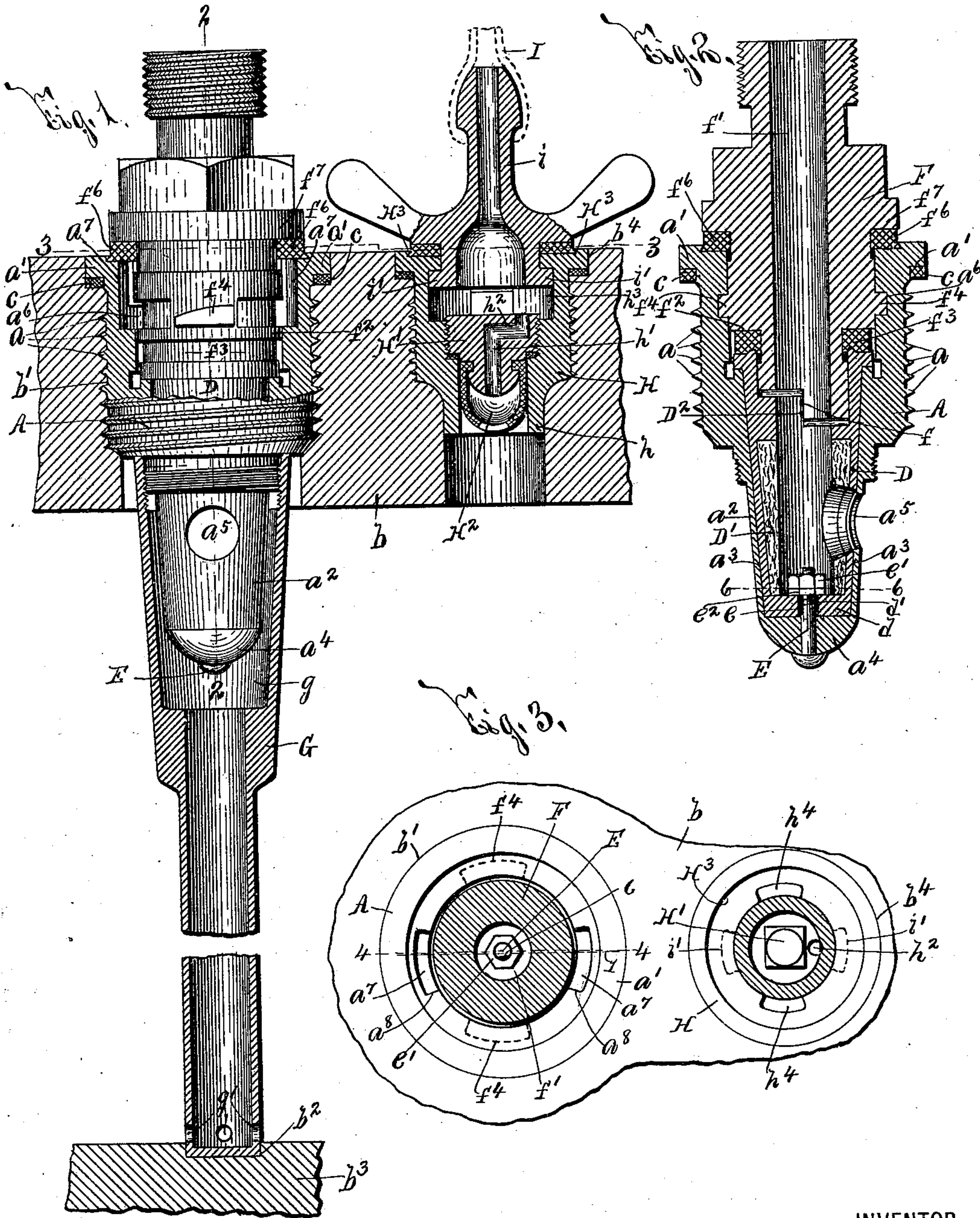
(No Model.)

2 Sheets—Sheet 1.

J. N. KNAPP.  
TAPPING APPARATUS.

No. 543,024.

Patented July 23, 1895.



WITNESSES:

*H. C. Chase*  
*S. A. Theobald*

INVENTOR

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BY

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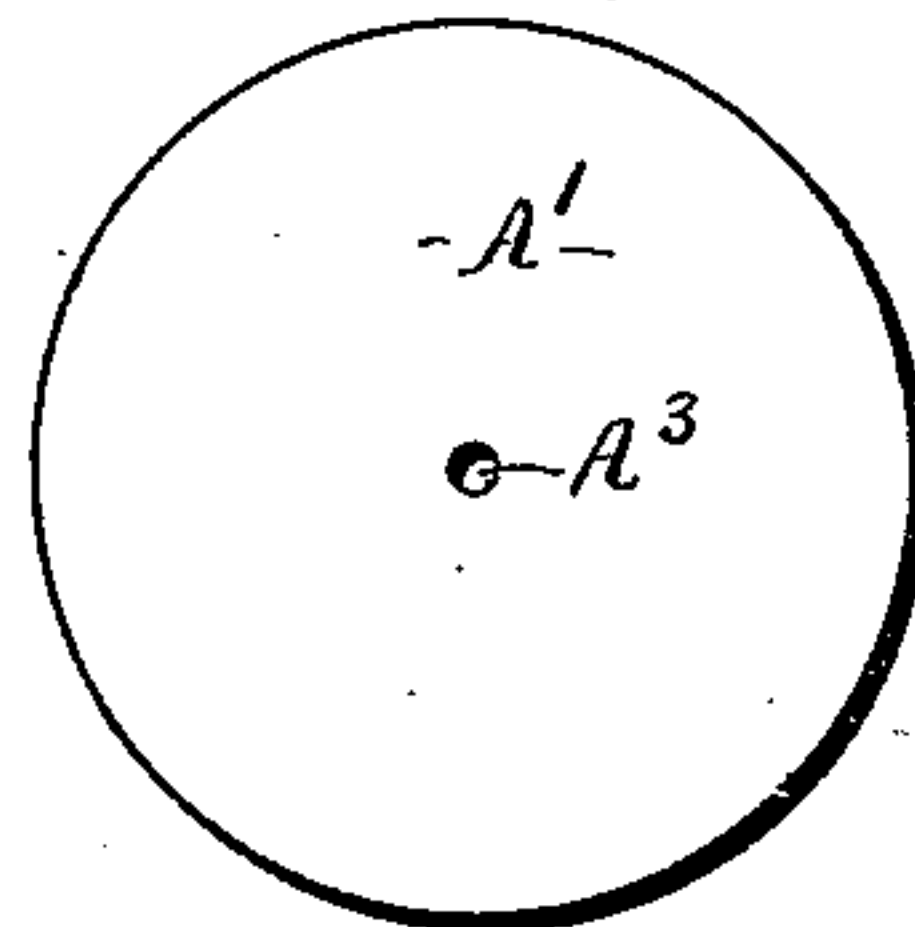
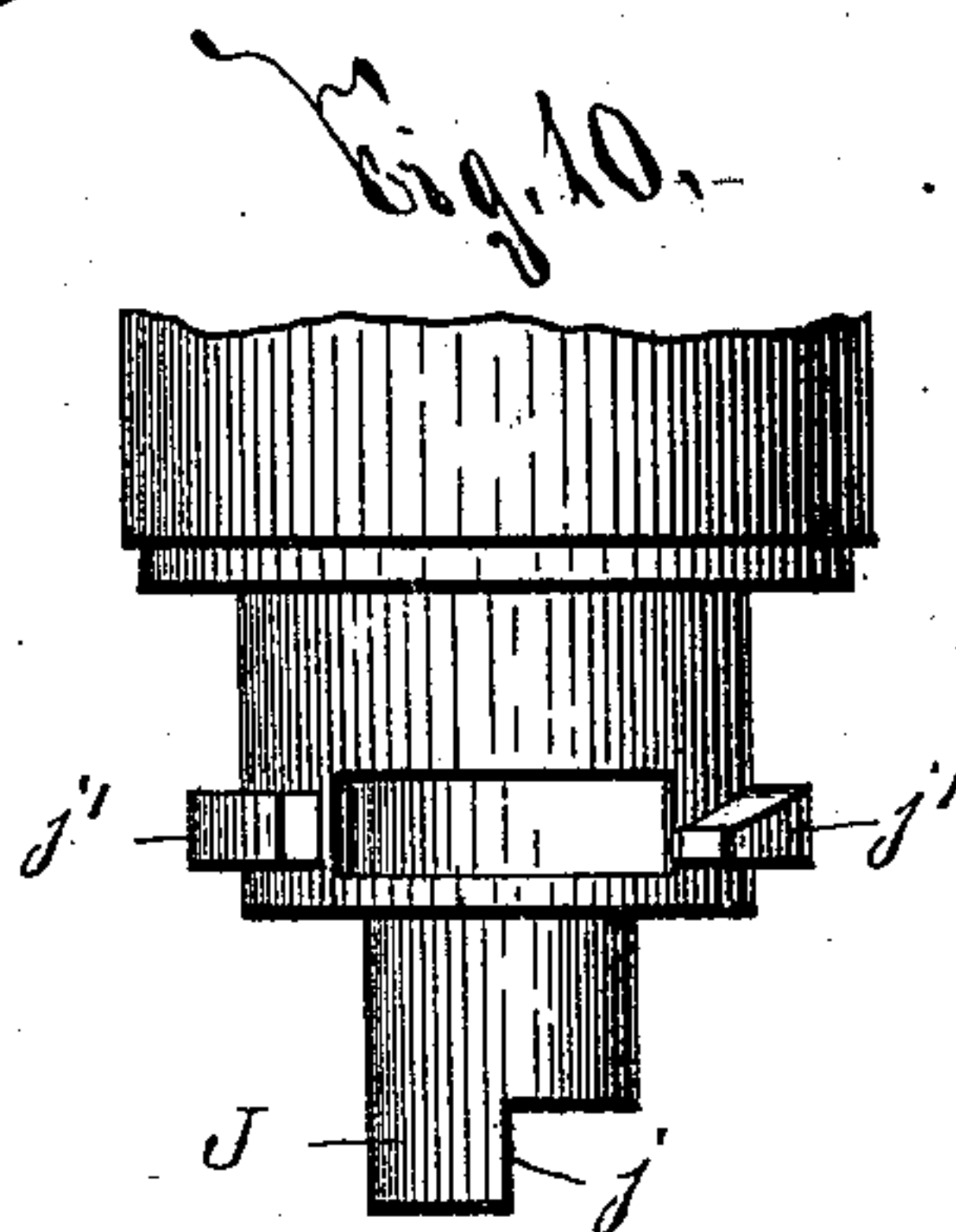
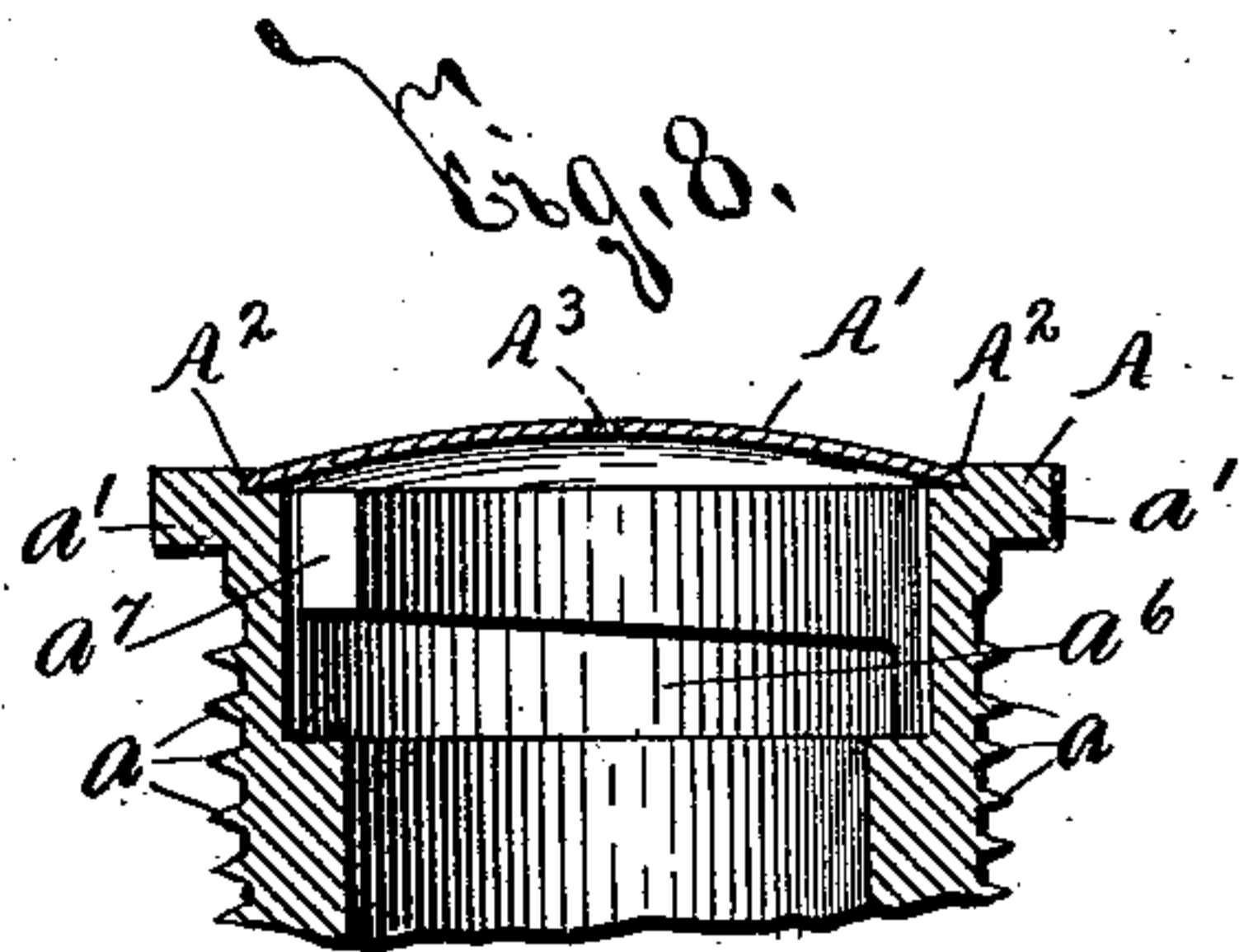
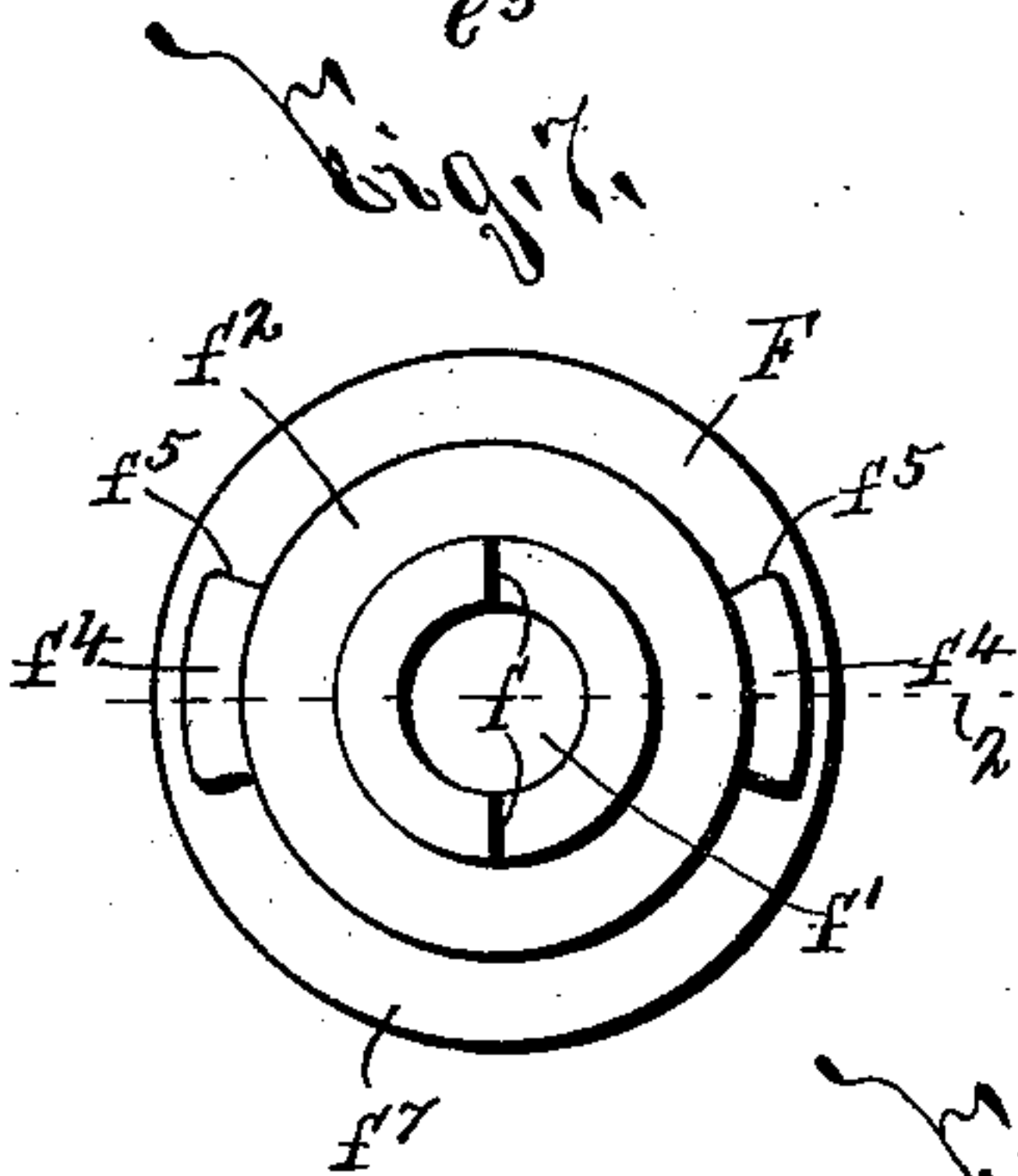
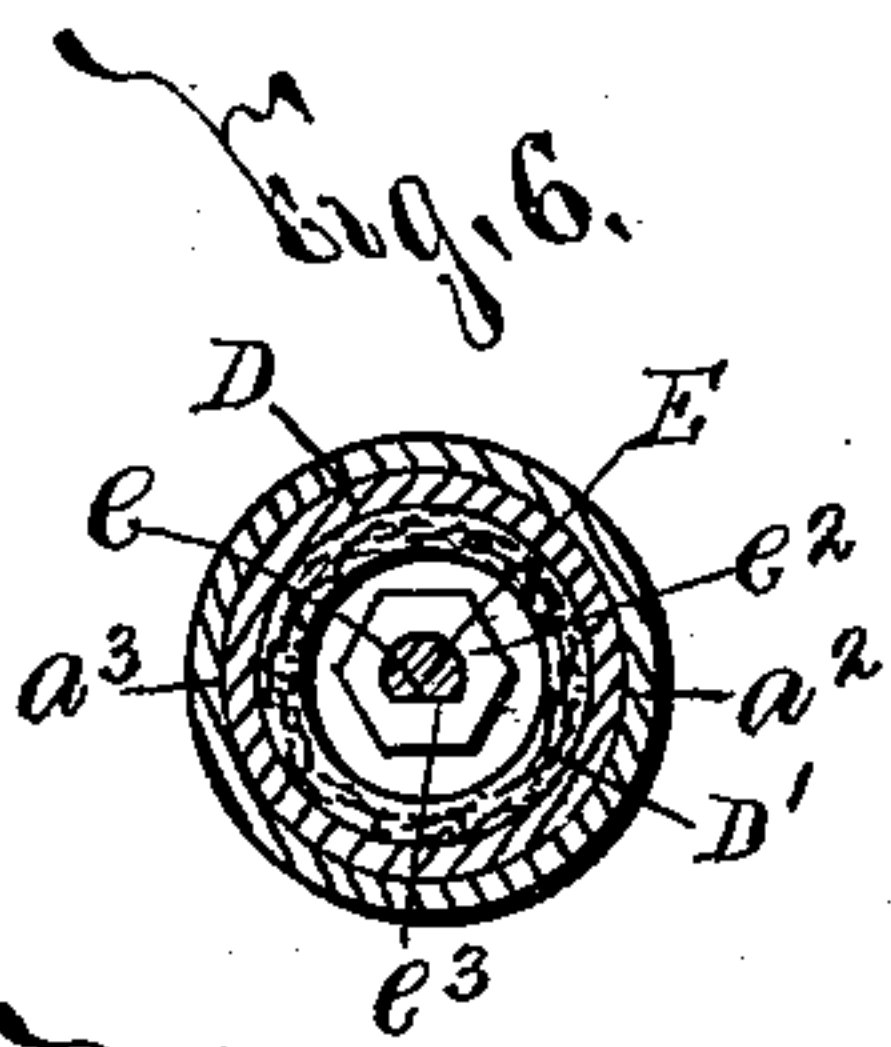
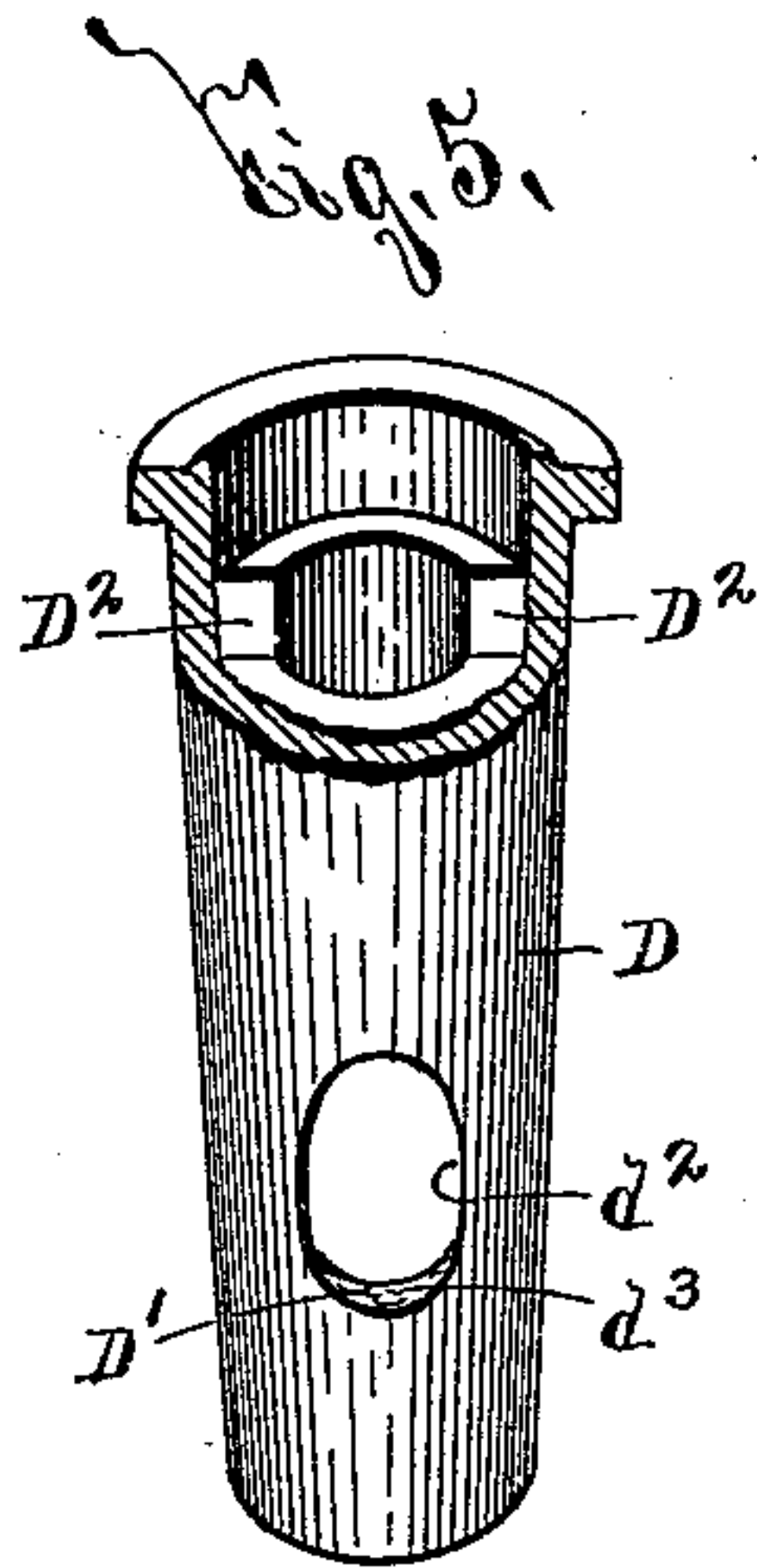
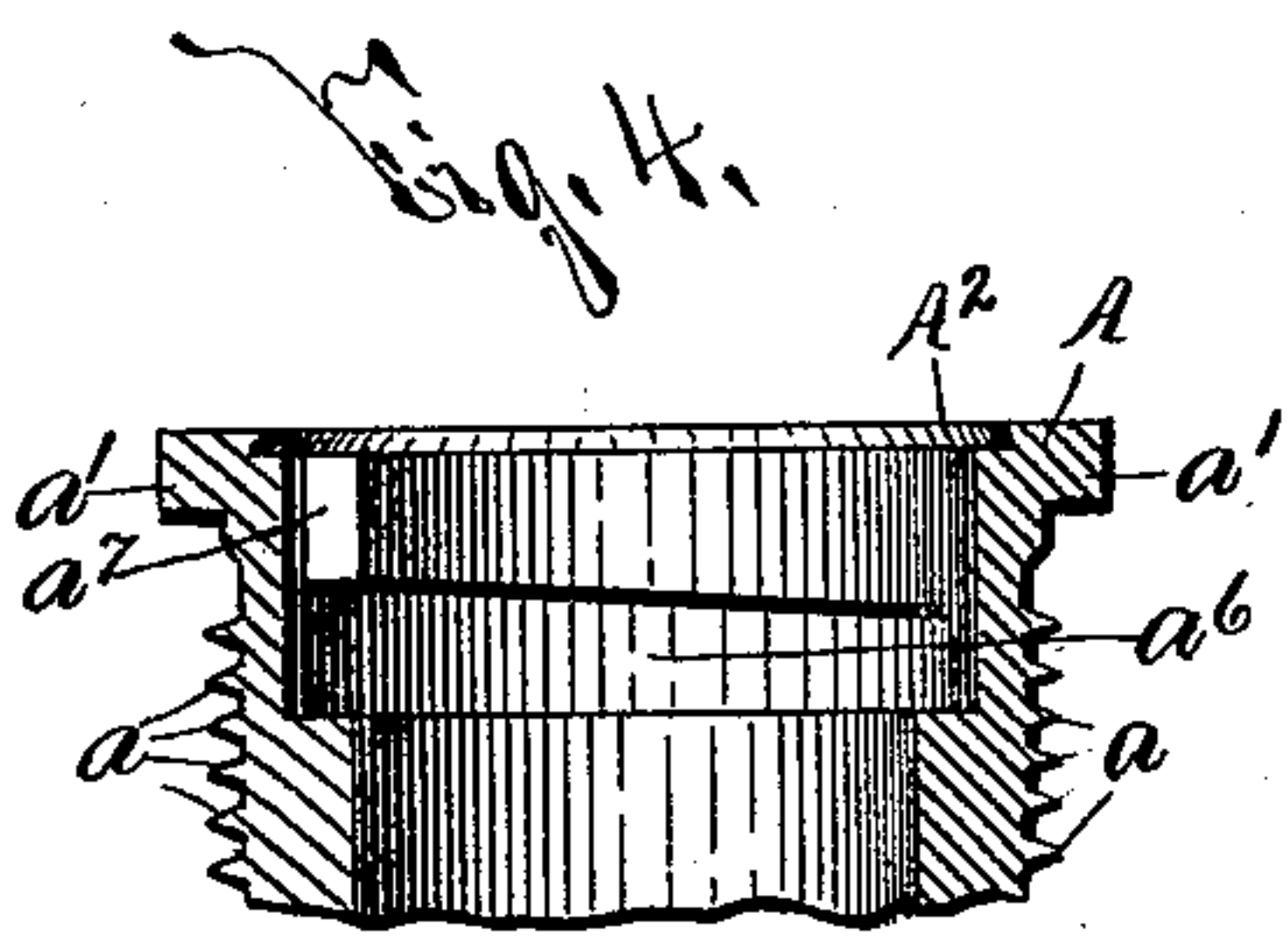
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2 Sheets—Sheet 2.

J. N. KNAPP.  
TAPPING APPARATUS.

No. 543,024.

Patented July 23, 1895.



WITNESSES:  
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# UNITED STATES PATENT OFFICE.

JUDSON N. KNAPP, OF ONONDAGA, NEW YORK.

## TAPPING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 543,024, dated July 23, 1895.

Application filed January 26, 1895. Serial No. 536,315. (No model.)

*To all whom it may concern:*

Be it known that I, JUDSON N. KNAPP, of Onondaga, in the county of Onondaga, in the State of New York, have invented new and  
5 useful Improvements in Tapping Apparatus, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

My invention relates to improvements in  
10 tapping apparatus, and has for its object the production of a device for withdrawing liquor from a barrel or other receptacle which is readily secured in position, is not liable to become deranged or injured, obviates undue  
15 loss or escape of the liquor, prevents the barrel or other receptacle from becoming sour or musty, and is particularly practical and effective in operation; and it consists in the arrangement and construction of its parts, as  
20 will be hereinafter fully set forth in the specification and pointed out in the claims.

In describing this invention reference is had to the accompanying drawings, forming a part of this specification, in which like letters indicate corresponding parts in all the  
25 views.

Figure 1 is an elevation, partly in section, of my improved tapping apparatus, parts of opposite walls of a barrel or other receptacle  
30 being shown in section. Figs. 2 and 3 are vertical and horizontal sectional views taken, respectively, on lines 2 2 and 3 3, Fig. 1. Fig. 4 is a vertical sectional view of the detached upper end of the tap or bushing, taken on  
35 line 4 4, Fig. 3. Fig. 5 is a perspective, partly in section, of the detached key or valve-piece. Fig. 6 is a horizontal sectional view taken on line 6 6, Fig. 2. Fig. 7 is an end view of the detached plug for the tap or bushing. Fig. 8  
40 is a vertical sectional view similar to Fig. 4, the cap for preventing entrance of foreign articles within the tap or bushing being shown in operative position. Fig. 9 is a face view of the detached cap illustrated at Fig. 8; and  
45 Fig. 10 is an elevation of one end of a faucet-coupling designed to co-operate with the tap or bushing of my invention.

A represents the tap or bushing, which is preferably secured to one of the heads  $b$  of a  
50 barrel or other liquor-containing receptacle, and may obviously be secured to any desired portion of its wall. The outer peripheral

face of one extremity of the tap or bushing A is preferably provided with screw-threads  $a$  for engaging a threaded aperture  $b'$  in the  
55 wall  $b$ , and the outer end of said extremity is formed with an annular shoulder  $a'$  bearing against a washer  $c$  imposed upon the outer face of the wall  $b$ . The opposite or inner end  $a^2$  of the tap or bushing is contracted  
60 and gradually decreases or tapers in diameter, and the portion of the internal chamber of the tap or bushing within its contracted tapering end is formed with a tapering wall  $a^3$ , which forms a bearing-face or valve-seat.  
65

A key or valve-piece D, which gradually tapers in diameter, is arranged within the tap or bushing and closely fits the correspondingly-formed portion thereof. A pivotal pin E for the key or valve-piece D is  
70 rigidly secured to the end wall  $a^4$  of the tap or bushing and projects upwardly beyond the inner face of said wall, and is provided with a screw-threaded end formed with a longitudinal engaging-shoulder  $e$ . The key or  
75 valve-piece D is formed hollow, and its inner wall  $d$  is of less thickness than the length of the pivotal pin E, and is formed with an aperture  $d'$ , of slightly-greater diameter than  
80 said pin, for permitting easy revoluble movement of the key or valve-piece D upon the pin E. A nut  $e'$  is mounted upon the screw-threaded end of the pin E, and interposed between said nut and the adjacent face of the end wall of the key or valve-piece D is a  
85 washer  $e^2$ , formed with a shoulder  $e^3$ , which engages the shoulder  $e$  of the pin E and prevents revoluble movement of said washer and nut, and the consequent liability of undue detachment of the key or valve-piece.  
90

The entrance of liquor within the key or valve-piece is permitted by an aperture  $a^5$  in its side wall, and said key or valve-piece is provided with a suitable non-corrosive lining  
95  $D'$ , formed of wood or similar material. The side walls of the key or valve-piece D and the lining  $D'$  are formed with apertures  $d^2$   $d^3$ , aligned with the aperture  $a^5$  for conducting the liquor therefrom. When the apertures  
100  $a^5$   $d^2$   $d^3$  are in alignment, as illustrated at Fig. 2, the liquor is free to pass from the barrel or other receptacle provided with my invention, and when the key is partially revolved, so that said apertures are out of



alignment, the flow of the liquor is entirely prevented.

The peculiar construction of the contracted end of the tap or bushing and the key or valve-piece permits the economical production of a particularly practical and effective joint for permitting and preventing the passage of the liquor without undue loss or waste thereof; and said construction also facilitates ready withdrawal of the key or valve-piece upon the removal of the nut  $e'$  and washer  $e^2$  for repair, cleansing, or oiling, although, as previously stated, undue removal of the key or valve-piece is absolutely prevented.

To facilitate turning of the key or valve-piece its outer face is formed with a shoulder  $D^2$  for engaging a corresponding shoulder  $f$  of a plug or other suitable device  $F$  for closing the tap or bushing and operating said key or valve-piece. This plug  $F$  is preferably formed with a lengthwise passage  $f'$ , communicating with the interior passage of the key or valve-piece  $D$ , and is secured to a suitable conduit or pipe (not illustrated) for conducting the liquor. The inner end of the plug  $F$  is formed with an annular shoulder or bearing-face  $f^2$ , and interposed between said shoulder and the adjacent face of the key or valve-piece  $D$  is a washer  $f^3$ , which prevents undue escape of the liquor to the exterior of the plug and the key or valve-piece.

The plug  $F$  is provided with opposite laterally-projecting lugs  $f^4$ , which enter opposite partially-circular grooves  $a^6$ , formed in the inner peripheral face of the tap or bushing in proximity to its outer end face. The entrance of the lugs  $f^4$  to the grooves  $a^6$  is permitted by opposite grooves  $a^7$  in the inner peripheral face of the tap or bushing, extending lengthwise from its outer end face to the former grooves  $a^6$ . As clearly seen at Figs. 3 and 7, the lugs  $f^4$  and the grooves  $a^7$  are so arranged that their corresponding ends  $f^5$   $a^8$  extend beyond their diametrically-opposite portions a greater distance than their opposite ends, and at Figs. 3 and 7 I have drawn lines 1 and 2 across the diametrically-opposite portions of said lugs and slots in order that their described construction may be more readily apparent.

The upper faces of the lugs  $f^4$  and the grooves  $a^6$  are preferably formed inclined in order that the plug  $F$  may be compelled to move endwise when being partially revolved for opening the key or valve-piece  $D$ , and consequently the washer  $f^3$  and a washer  $f^6$ , interposed between the end face of the tap or bushing and a shoulder  $f^7$  of the plug  $F$ , are compressed and obviate undue leakage of the liquor. It will now become obvious to one skilled in the art that the tap or bushing, the key or valve-piece, and the plug are so constructed and arranged that the key or valve-piece normally closes the aperture in the tap or bushing for the passage of the liquor, and can be operated only by the partial revolu-

tion of the plug, which enters the tap or bushing only when placed in its designed position and is prevented from withdrawal until partially revolved in a reverse direction. The key or valve-piece is thus operated to close said aperture and the barrel or other receptacle is prevented from becoming sour or musty.

My invention is generally used in connection with barrels or receptacles from which the liquor is forced by pressure, and in order that all of the liquor may be withdrawn the upper end of a suitable pipe or conduit  $G$  is connected to the tap or bushing and extends beyond the same the requisite distance to withdraw the designed amount of the liquor. The pipe or conduit  $G$  is of less diameter than the enlarged portion of the tap or bushing  $A$  and its upper end is provided with a chamber  $g$  of greater diameter than the contracted end  $a^2$  of the tap or bushing  $A$ , in order to facilitate ready passage of the liquor to the aperture  $a^5$ . The upper end of the pipe or conduit  $G$  may be permanently secured to the tap or bushing, but is preferably removably secured thereto by a screw-joint, and the opposite end of the pipe or conduit  $G$  is provided with inlet-openings  $g'$ , and may be supported by a socket  $b^2$  in a portion  $b^3$  of the barrel or receptacle directly opposite to the portion thereof provided with the tap or bushing.

When the liquor is forced from the barrel or receptacle by pressure I preferably use a vent, which is particularly applicable for use with my improved tapping apparatus. This vent comprises an inlet-bushing  $H$ , suitably secured in an aperture  $b^4$  in any desired portion of the wall of the barrel or other receptacle, a plug  $H'$ , and a valve  $H^2$ . The bushing  $H$  is formed with a contracted lower end  $h$ , and the plug  $H'$  is arranged within the inlet-bushing  $H$ , with its inner end above the corresponding end of said bushing. The plug  $H'$  is formed with a lengthwise inlet-passage  $h'$  and a lateral passage  $h^2$ , extending from the passage  $h'$  and provided with an upturned end opening from the outer face of said plug.

The valve  $H^2$  is suitably secured to the plug  $H'$  for automatically closing the lower end of the passage  $h'$  and preventing egress of the liquor, and the peculiar arrangement of the inlet-passage  $h^2$  prevents the entrance of sticks, wires, &c., which would injure the valve  $H^2$ . The air or other fluid for forcing the liquor from the barrel or other receptacle is conducted to my improved vent by a suitable pipe or conduit  $I$ , provided with a nipple  $i$ , which is detachably secured to the bushing  $H$  in any desired manner, being here illustrated as provided with lateral lugs  $i'$  for entering lengthwise and partially circular grooves  $h^3$   $h^4$ , formed in the inner peripheral wall of said bushing.

It is sometimes desirable that my improved vent may operate by atmospheric pressure, and the only change requisite for rendering



the same capable of such operation is the substitution of a valve sufficiently thin or delicate to be operated by the atmospheric pressure as the liquor is withdrawn from the barrel or other receptacle.

In order to prevent the entrance of foreign articles within the tap or bushing during shipment of the barrel or other receptacle provided therewith, I suitably secure a cap A' to the outer end face of the tap or bushing. This cap is preferably formed concavo-convex in cross-section and of yielding material, and its peripheral edge is arranged in a groove A<sup>2</sup> in the outer end face of the tap or bushing, which gradually increases in diameter, as clearly seen at Fig. 8. After the cap is arranged in the groove A<sup>2</sup> it is forced inwardly a limited distance, and is then firmly secured to the tap or bushing and obviously prevents entrance of foreign articles. The cap may be readily removed by inserting a nail or other article in a small opening A<sup>3</sup> in its central portion, and may be provided with an engaging shoulder if the aperture A<sup>3</sup> is dispensed with. The vent-bushing H is also preferably provided with a groove H<sup>3</sup>, similar to the groove A<sup>2</sup> for receiving a cap. (Not illustrated.)

In cases when it is desirable to use my invention with a faucet the pipe or conduit G may be dispensed with and a faucet may be used having its end or coupling J provided with a shoulder j and lugs j', similar to the like parts f and f<sup>4</sup> of the plug F. The peculiar arrangement of the lugs j' will then compel the proper alignment of the faucet, so that when the key or valve-piece has been operated to open the valve the faucet is in proper position to effectively discharge the liquor.

In the operation of my invention the pressure inlet-pipe is connected to the vent, the plug through which the liquor is withdrawn is operatively arranged within the tap or bushing, and is then partially revolved for correspondingly moving the key or valve-piece and permitting the outlet passage of the liquor. After the passage of the desired amount of liquor the nipple i of the inlet-pipe is detached from the vent and the plug is partially revolved in a reverse direction and correspondingly moves the key or valve-piece for preventing the escape of the liquor or the entrance of air, whereupon the plug may be readily withdrawn. The parts are so constructed that when the plug is withdrawn the key or valve-piece is in its normal position for closing the barrel or other receptacle and undue leakage of the liquor is entirely prevented, either when the valve is in its normal position or the liquor is being withdrawn. The key or valve-piece is, however, readily withdrawn after the discharge of the liquor for permitting its repair, cleansing, or oiling, and the component parts of my improved tapping apparatus are economically manufactured and are practical and durable in use. It is evident, however, that the exact detail construc-

tion and arrangement of my invention may be somewhat varied, and hence I do not herein specifically limit myself to such exact detail construction and arrangement.

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

1. In a tapping apparatus, the combination of a supporting wall provided with an aperture, a tap or bushing having an enlarged cylindrical extremity secured within the aperture and formed with a bearing face surrounding the outer end of its inner chamber and a reduced tapering extremity projecting beyond the inner face of the supporting wall and provided with an aperture in its side wall and having its outer end closed and formed with a flat inner face, a pivotal pin projecting from said inner face, a hollow tapering key or valve piece within the tap or bushing having one end formed with an annular bearing face and its other end closed and provided with a perforation for receiving the pivotal pin, and a flat outer face engaged with said inner face, a nut arranged within the key or valve piece and removably engaged with said pivotal pin, a plug detachably engaged with the key or valve piece and formed with bearing faces adjacent to the former bearing faces, flexible washers interposed between said bearing faces, and cam faces on the tap or bushing and the plug for forcing the plug endwise and compressing the flexible washers, substantially as and for the purpose set forth.

2. In a tapping apparatus, the combination of a supporting wall provided with an aperture, a tap or bushing having an enlarged cylindrical extremity secured within the aperture and formed with a bearing face surrounding the outer end of its inner chamber and a reduced tapering extremity provided with an aperture in its side wall and having its outer end closed and formed with a flat inner face, said tap or bushing having opposite partially circular grooves in its inner face and lengthwise opposite grooves of substantially equal width extending from its outer end face to the former grooves, the lengthwise grooves having corresponding sides extending beyond their diametrically opposite portions a greater distance than their opposite sides, a pivotal pin projecting from the inner face of the closed outer end of the reduced extremity of said bushing, a hollow tapering key or valve piece within the tap or bushing having one end formed with an annular bearing face and its opposite end closed and provided with a perforation for receiving the pivotal pin, and a flat outer face engaged with said inner face, a nut arranged within the key or valve piece and removably engaged with said pivotal pin, a plug detachably engaged with the key or valve piece and formed with bearing faces adjacent to the former bearing, and opposite laterally projecting lugs, for entering said lengthwise grooves,



said lugs being formed of substantially equal width and having corresponding sides extended beyond their diametrically opposite portions a greater distance than their opposite sides, whereby the plug is moved lengthwise, and flexible washers interposed between said bearing faces, substantially as described.

3. In a tapping apparatus, the combination of a supporting wall provided with an aperture, a tap or bushing having an enlarged cylindrical extremity secured within the aperture, and a reduced extremity and provided with an aperture in its wall, a key or valve piece within the reduced extremity of the tap or bushing for closing the aperture, and a pipe having one end secured to one extremity

of the tap or bushing above the aperture therein and formed of less diameter than the aperture in the supporting wall, said extremity of the pipe being provided with a chamber of greater diameter than the reduced extremity of the tap or bushing, substantially as and for the purpose specified.

In testimony whereof I have hereunto signed my name, in the presence of two attesting witnesses, at Syracuse, in the county of Onondaga, in the State of New York, this 21st day of January, 1895.

JUDSON N. KNAPP.

Witnesses:

E. A. WEISBURG,  
K. H. THEOBALD.