

No. 731,784.

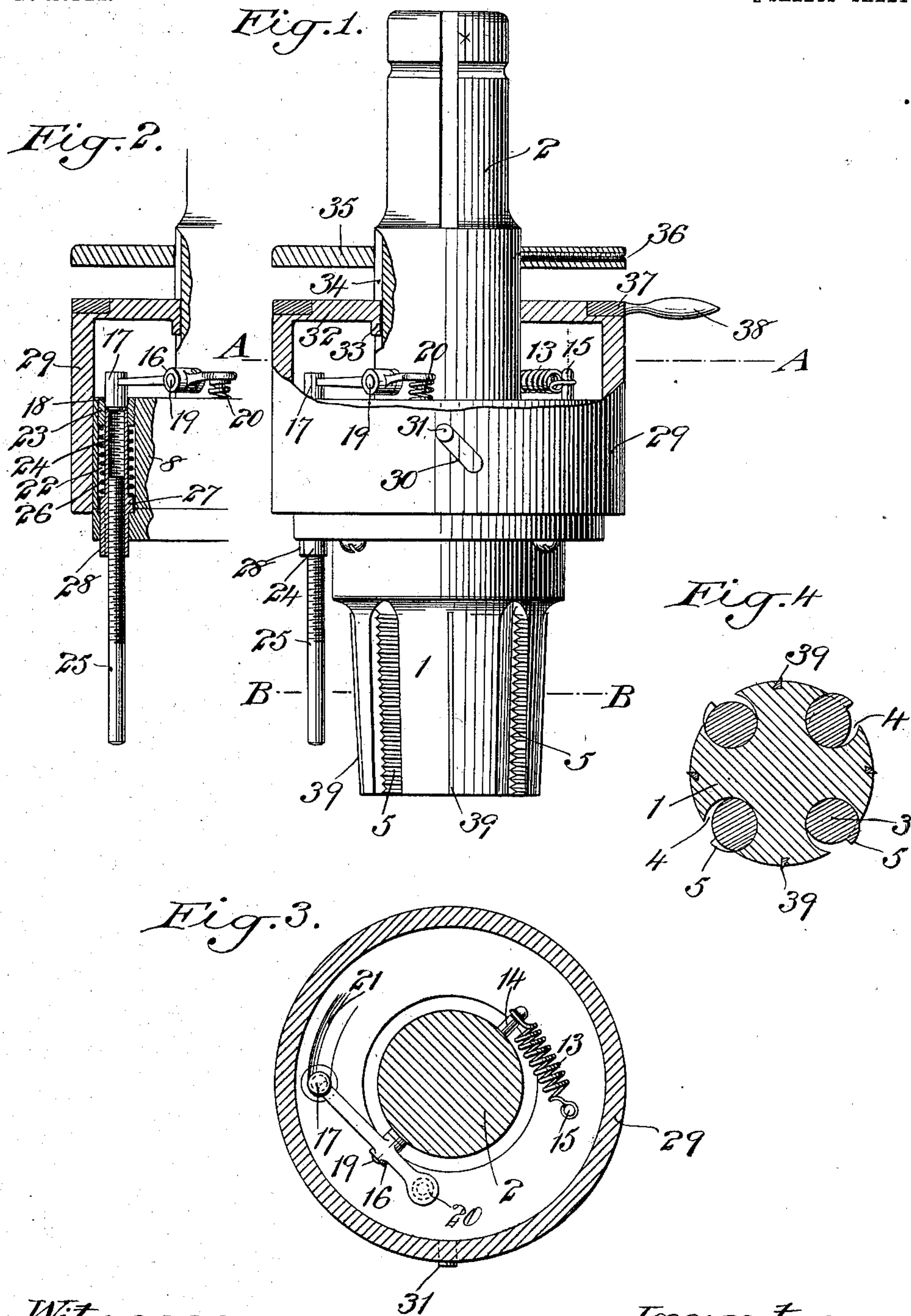
PATENTED JUNE 23, 1903.

P. J. KELLY.  
TAP.

APPLICATION FILED JULY 9, 1902.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses:  
George Barry Jr.  
Henry Thorne

Inventor:  
Patrick J. Kelly  
By attorney  
Merritt L. Leland



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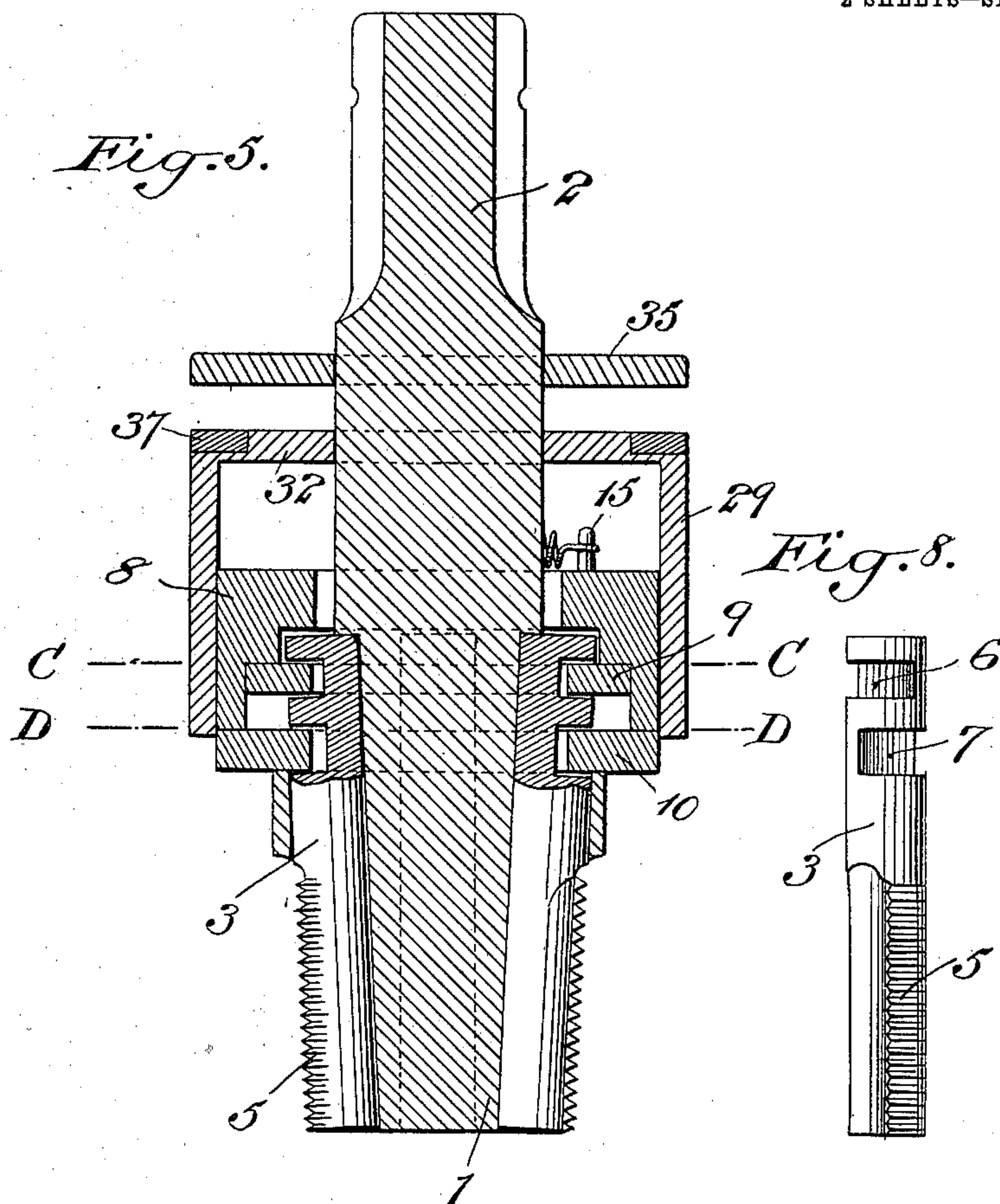
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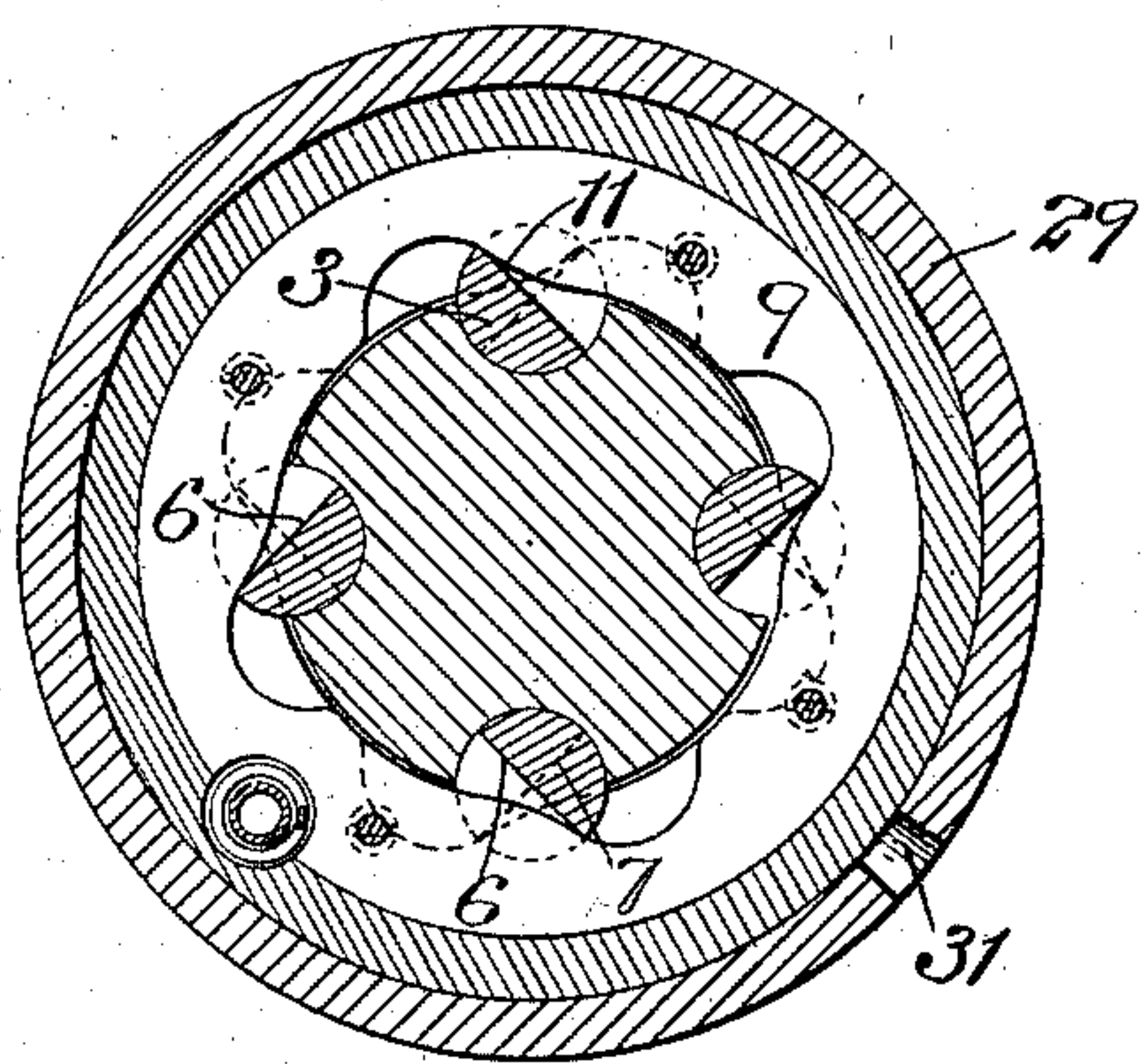
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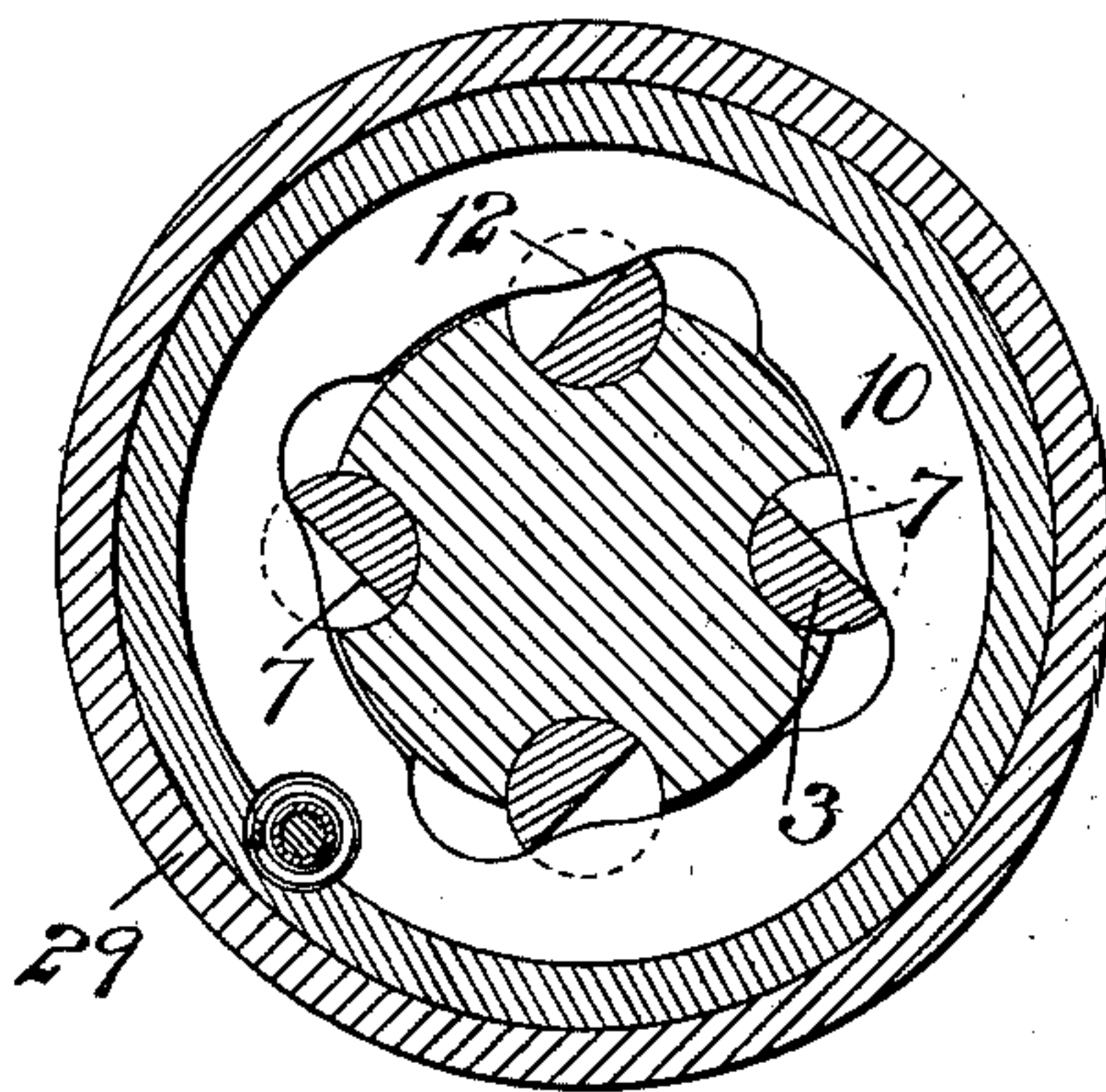
2 SHEETS—SHEET 2.



*Fig. 6.*



*Fig. 7.*



Witnesses:-

George Barry Jr.  
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Inventor:-

Patrick J. Kelly  
by attorneys  
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## UNITED STATES PATENT OFFICE.

PATRICK J. KELLY, OF ELIZABETH, NEW JERSEY.

## TAP.

SPECIFICATION forming part of Letters Patent No. 731,784, dated June 23, 1903.

Application filed July 9, 1902. Serial No. 114,858. (No model.)

*To all whom it may concern:*

Be it known that I, PATRICK J. KELLY, a citizen of the United States, and a resident of Elizabeth, in the county of Union and State of New Jersey, have invented a new and useful Improvement in Taps, of which the following is a specification.

My invention relates to an improvement in taps such as are employed for tapping pipe-fittings, &c., in which the chasers or threaded cutters are so combined with the body that they may be moved relatively to the body or tripped after the tap has been advanced the required distance in order to release them from the work for permitting the tap to be withdrawn directly from the hole without the necessity of backing it out.

My invention has for its object to provide certain improvements in the means for operating the chasers whereby the chasers may be moved positively and accurately into and out of operative position.

A further object is to provide a tap of the above character in which reamers are employed for insuring a smooth edge to the threads formed by the chasers.

A still further object is to provide means for automatically tripping the tap for withdrawing the chasers when the hole has been threaded to a predetermined depth.

A practical embodiment of my invention is represented in the accompanying drawings, in which—

Figure 1 represents the tap in side elevation, a portion of the casing being broken away to more clearly show the parts within the same. Fig. 2 is a partial detailed section showing the means for tripping the tap when the hole is threaded to a predetermined depth. Fig. 3 is a transverse section in the plane of the line A A of Fig. 1. Fig. 4 is a transverse section taken in the plane of the line B B of Fig. 1. Fig. 5 is a vertical central section through the tap. Fig. 6 is a transverse section taken in the plane of the line C C of Fig. 5. Fig. 7 is a transverse section taken in the plane of the line D D of Fig. 5, and Fig. 8 is a detail view of one of the chasers.

The body of the tap is denoted by 1, and it is provided with a shank 2 for the attachment

of the means for operating the tap. The lower portion of the body of the tap may be made cylindrical or tapered to suit different requirements, the tap shown in the accompanying drawings having its lower portion tapered. A series of chasers 3 are mounted along the tapered portion 1 of the body in sockets 4, with their cutting-teeth 5 arranged to be brought beyond the periphery of the body when the chasers are partially rotated in one direction and to be brought within the periphery of the body when the chasers are partially rotated in the opposite direction. The upper end of each of the chasers 3 is provided with two transverse notches 6 and 7, arranged at different angles to each other, the bottom walls of the said notches being fitted to be engaged by cams, as will be hereinafter set forth.

The head of the tap is denoted by 8, which head is provided with two cam-rings 9 and 10, permanently secured thereto, the cam-ring 9 having cam-surfaces 11 fitted to engage the bottoms of the notches 6 in the chasers 3 and the cam-ring 10 having cam-surfaces 12 fitted to engage the bottoms of the notches 7 in the said chasers. These cam-surfaces 11 and 12 of the cam-rings 9 and 10 are so arranged with respect to each other that when the head 8 is turned in one direction around the body 1 of the tap the chasers will be partially rotated out into their cutting position and when the head is partially rotated in the reverse direction the chasers will be partially rotated into their inoperative position. A spring 13 has one end engaged with a pin 14, carried by the shank 2 of the body, and its other end engaged with a pin 15, carried by the head 8, the tension of the spring being exerted in a direction tending to rotate the head partially around the body for causing the cams 11 on the cam-ring 9 to rotate the chasers 3 out of their operative position.

The head and body of the tap are removably locked together when the head and body are in such a relation that the cams have rotated the chasers into their operative position by the following device: A rocking-lever 16 is provided with a locking-dog 17, fitted to enter a socket 18 in the head, which lever 16 is hinged on a pintle 19, carried by the body 1. A spring



20 exerts its tension in a direction tending to hold the locking-dog 17 within its socket 18. A shallow groove 21, concentric with the body 1, leads from the socket 18 along the face of the head, within which groove the dog 17 is fitted to travel when released from the socket.

The device which I have shown for automatically releasing the dog 17 to cause the chasers to be rotated out of their operative position when a hole of the predetermined depth has been threaded is constructed and arranged as follows: A hole 22 is bored longitudinally through the head 8 and the socket 18 is formed through a plug 23, which closes the upper end of the said hole.

A dog-tripping bar is provided which consists of an upper tubular member 24, engaging the dog, and a lower member 25, having a screw-threaded engagement with the upper member 24. This tripping-bar is normally held at the limit of its downward movement by means of a spring 26, interposed between the plug 23 and a shoulder 27 on the upper tubular member of the pin. The upper tubular member of the pin is provided with a feather-and-groove connection 28 with the lower cam-plate 10 of the head, so as to prevent the turning of the upper member in the head as the lower member 25 is turned to adjust the pin. When the hole has been threaded to a predetermined depth, the article within which the hole is being threaded will engage the lower member of the pin and raise it, thus causing its upper member 24 to raise the dog 17 of the lever 16 out of the socket 18. The spring will then swing the head in a direction to cause the cam-plate 9 to swing the chasers 3 out of their operative position. The tap may then be withdrawn directly from the hole without the necessity of backing it out.

The device which I have shown for resetting the tap comprises a hollow casing 29, telescoping upon the head 8. The wall of the casing 29 is provided with an elongated diagonal slot 30 therein, with which is engaged a pin 31, projecting from the periphery of the head 8. The top 32 of the casing has a feather-and-groove connection with the shank 2 of the body of the tap, the feather 33 in the present instance being shown as projecting from the top 32 of the casing and the groove 34 as being cut along the shank. This insures the positive rotation of the casing with respect to the body of the tap.

In the figures I have shown the casing in the position which it assumes when the head 8 is locked to the body of the tap, the pin 31 of the head in this position of the parts being located at the upper end of the diagonal slot 30 in the casing and the casing being at the limit of its downward movement.

When the dog 17 is released from the socket 18, the partial rotary movement of the head 8 with respect to the body 1 under the tension

of the spring 13 will force the casing 29 upwardly, because of the pin-and-slot connection between the head and the casing.

To take the strain off the pin 31, I may provide a disk 35, secured to the shank 2 of the body by a set-screw 36. A handle-ring 37, provided with a suitable operating-handle 38, is mounted on the casing 29.

When it is desired to reset the tap, the casing 29 is forced downwardly, and because of its feather-and-groove connection with the shank 2 of the body of the tap the head 8 will be partially rotated, thus causing the locking-dog 17 to travel along the concentric groove 21 until the dog engages the socket 18.

The body 1 of the tap is provided with reamers 39, intermediate the chasers 3, the cutting edges of which reamers project slightly beyond the inner edges of the cutting-teeth of the chasers, so that when the tap is operated the reamers remove all of the ragged edges of the threads being cut. This is a very important arrangement, for the reason that it obviates the necessity of accurately reaming the hole before the tap is used for cutting the screw-thread therein.

It is evident that various changes might be resorted to in the form, construction, and arrangement of the several parts without departing from the spirit and scope of my invention. Hence I do not wish to limit myself strictly to the structure herein set forth; but

What I claim is—

1. A tap comprising a body, chasers carried thereby, a head for rocking the chasers into and out of their operative positions, means tending to rotate the head with respect to the body, means for removably locking the head to the body comprising a rocking lever carried by the body, a socket in the head and a dog carried by the lever arranged to engage and disengage the socket and a dog-tripping bar for unlocking the head comprising an upper tubular member engaging the dog and a lower member having a screw-threaded engagement with the upper member and a spring for holding the tripping-bar at the limit of its outward movement.

2. A tap comprising a body, chasers carried thereby, a head for rocking the chasers into and out of their operative positions and means for removably locking the head to the body comprising a rocking lever carried by the body, a socket in the head and a dog carried by the lever arranged to engage and disengage the socket and means tending to rotate the head with respect to the body for rocking the chasers into their inoperative position when the head is released from the body.

3. A tap comprising a body, chasers carried thereby, a head for rocking the chasers into and out of their operative positions, means for removably locking the head to the body, means for partially rotating the head when



released from the body for rocking the chasers  
out of their operative position and means for  
resetting the tap comprising a casing having  
a feather-and-groove connection with the  
5 body and a slot-and-pin connection with the  
head.

In testimony that I claim the foregoing as

my invention I have signed my name, in pres-  
ence of two witnesses, this 8th day of July,  
1902.

PATRICK J. KELLY.

Witnesses:

FREDK. HAYNES,  
HENRY THIEME.