(No Model.)

P. J. KELLY & J. GROVES.

TRIP TAP.

No. 358,980. Patented Mar. 8, 1887.

Fig. 1.

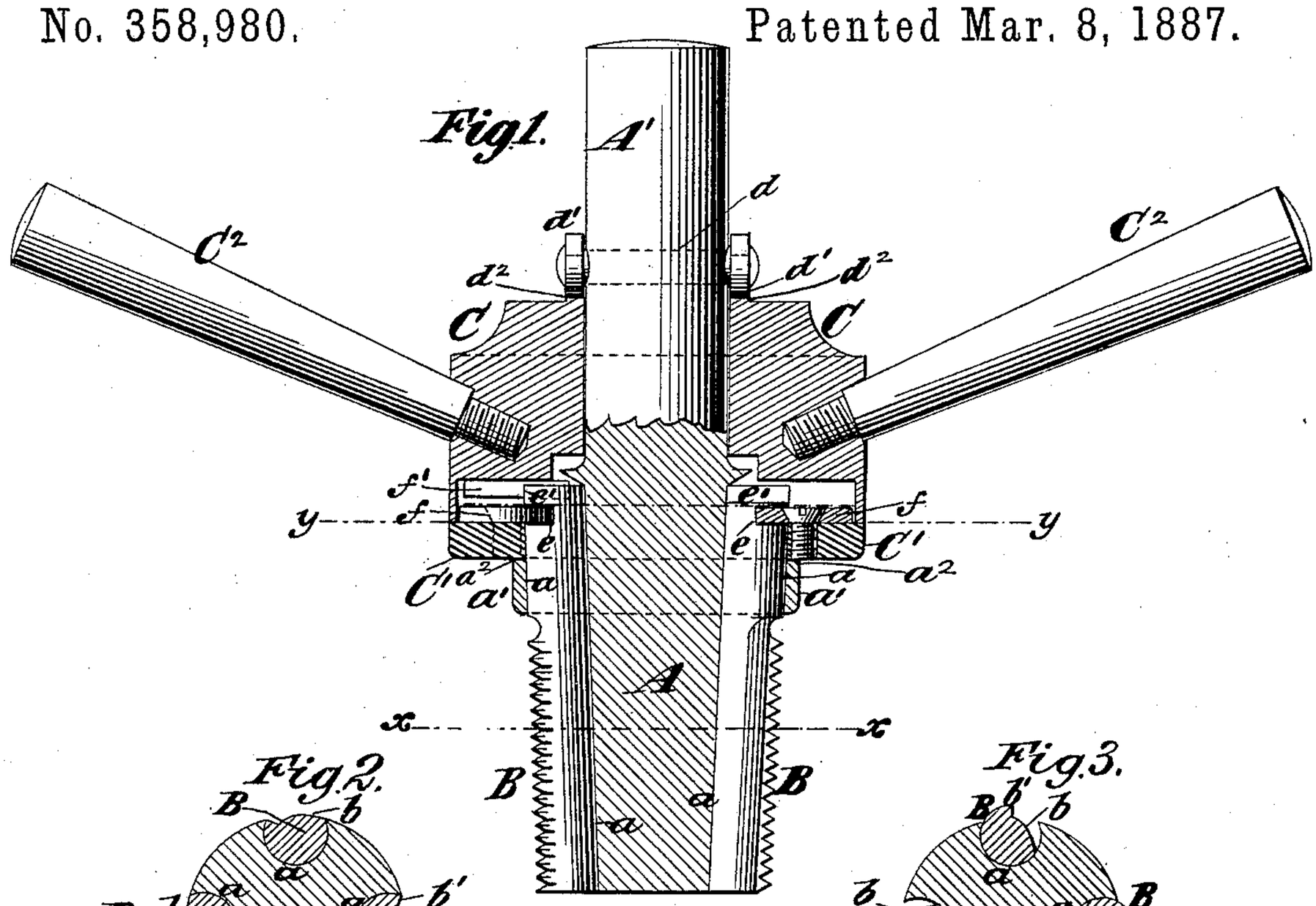


Fig. 2.

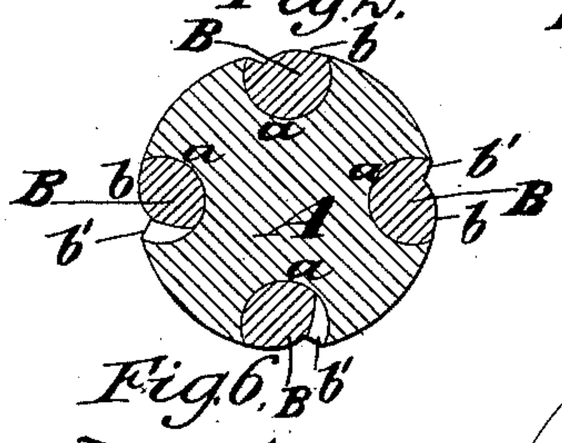


Fig. 3.

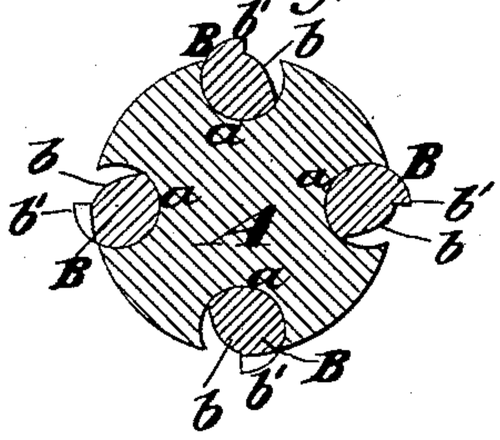


Fig. 4.

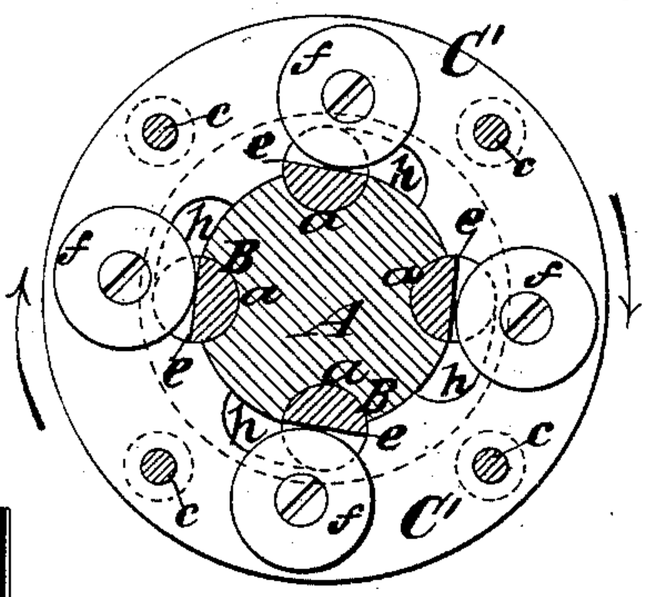


Fig. 5.

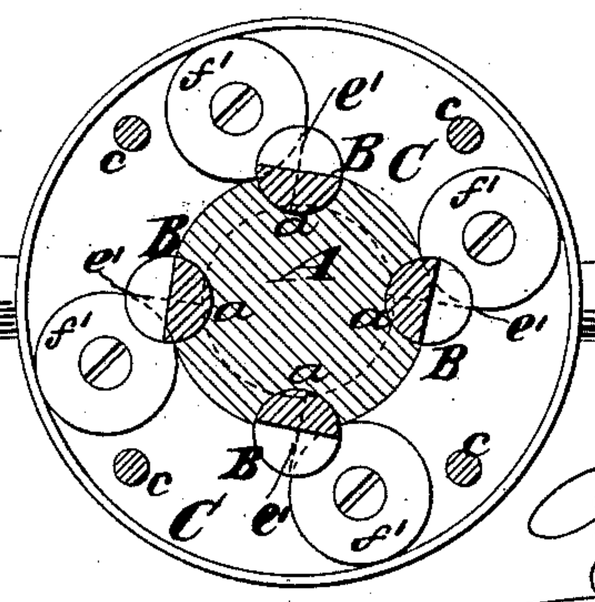
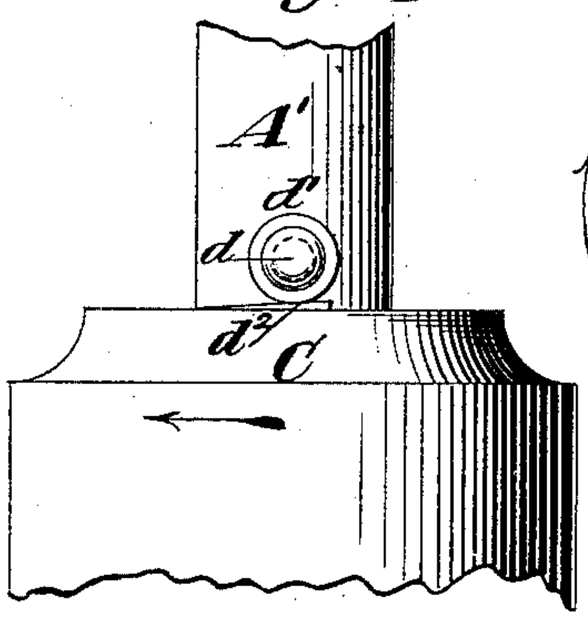


Fig. 6.



Witnesses.
Emil Herter
C. L. Sundgren

Inventors.
Patrick J. Kelly
James Groves
by his Atty
Brown & Hall

UNITED STATES PATENT OFFICE.

PATRICK J. KELLY AND JAMES GROVES, OF BROOKLYN, NEW YORK.

TRIP-TAP.

SPECIFICATION forming part of Letters Patent No. 358,980, dated March 8, 1887.

Application filed September 9, 1886. Serial No. 213,074. (No model.)

To all whom it may concern:

Be it known that we, PATRICK J. KELLY and JAMES GROVES, both of Brooklyn, in the county of Kings and State of New York, have invented a new and useful Improvement in Trip-Taps, of which the following is a specification.

Our invention relates to taps such as are employed for tapping pipe-fittings and for other purposes, and 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 and to contract the diameter of the tap measured at extremity of the thread. The tap may then be withdrawn directly from the hole without the necessity of backing it out.

In the trip-taps heretofore made the chasers have usually been arranged to slide lengthwise of the body in order to withdraw them from the work or project them for use, and have been fitted to dovetailed grooves or seats in the body.

The object of our invention is to provide a trip-tap in which the chasers may be withdrawn or projected each by a rotary motion on its own axis and in a horizontal plane transverse to the length of the body without any sliding movement lengthwise of the body, and to thereby provide a trip-tap which may be made at less cost than those used heretofore.

According to our invention we make the chasers of substantially circular form, flattened slightly on one side, and we fit them within seats or grooves which are segmental or circular in a plane transverse to the body, and which constitute more than one-half a circle, so as to readily retain the chasers. Upon the body is fitted a collar or head, which is provided with cams engaging the chasers, and through which the chasers are turned on their own axes in one or other direction by a slight turning of the said collar or head in one or other direction on the body.

The invention consists in the novel combinations of parts hereinafter described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is an axial section of a trip-tap embodying our invention. Figs. 2 and 3 are transverse sections on the plane indicated by the dotted line *x x*, Fig. 1, Fig. 2 representing the chasers as turned to withdraw their threaded portions within the body and Fig. 3 representing said chasers as turned to project their threaded portions into operative position beyond the body; and Figs. 4 and 5 are transverse sections on the plane indicated by the dotted line *y y*, Fig. 1, and looking, respectively, downward and upward from said line; and Fig. 6 is a side view of the shank portion of the body and a head or collar turnable thereon.

Similar letters of reference designate corresponding parts in all the figures.

A designates the body of the tap, which is tapered in its lower portion and has a shank portion, A′, for entering the socket in an upright or horizontal spindle, whereby the tap is operated.

B designates the chasers, which are here represented as four in number, although any other suitable number may be employed.

C designates a head or collar, which is adapted to turn slightly on the body A to trip the chasers B preparatory to withdrawing the tap or to adjust the chasers in a reverse direction to project them into operative position beyond the body A.

In the periphery of the body A, and lengthwise thereof, are formed grooves *a*, which form seats for the chasers B and in which the chasers may be turned, each on its axis. The seats *a* are of substantially circular form, each constituting more than a half-circle, and the chasers B are substantially cylindric, save that they are cut away on one side, as shown at *b*.

Above the tapered portion of the body A is an enlarged cylindric portion, *a′*, in which the chaser-seats *a* are continued as cylindric bores.

The body A and the chasers B may be very conveniently made by taking a piece or bar of steel large enough to form the enlarged portion *a′* and then drilling holes at a slight angle and lengthwise thereof to form the chaser-seats *a*, and, after round pieces of steel of a size to form the chasers B are slipped into

said holes, the body may be turned down to the taper form shown below the enlarged portion *a'*, and the chasers B will at the same time be cut away to form the flattened sides or surfaces *b* thereon. The chasers B may be then turned slightly in their seats *a* and held in fixed position and against turning on their own axes, and the teeth or cutting projections *b'* may then be cut in the edge portion of the flat side *b*, which projects beyond the periphery of the body A.

The collar or head C has at the under side a cap or covering plate, C', which is secured thereto by screws *c*, and the collar or head may turn on the body A, and is held thereon between a shoulder, a^2, and rollers or projections on opposite sides of the shank A'. As here represented, a pin, *d*, is inserted transversely through the shank, and on opposite ends thereof are rollers *d'*, on which bear cam-projections d^2 on the collar or head C as the latter is turned. The action of the cams d^2, which are at diametrically-opposite points on the top of the head or collar C, is best shown in Fig. 6.

When the collar or head C is turned in the direction of the arrows shown in Figs. 4 and 6, the chasers B will be turned on their individual axes by means hereinafter described, so as to expose their threaded portions *b'* beyond the periphery of the body A, and as the collar or head C is so turned the cams d^2 bear upon the rollers *d'* and crowd the collar or head C down upon the shoulder a^2, thereby holding the collar or head against accidental turning and the chasers B against accidental shifting.

The collar or head C is connected with the several chasers by means which turn the chasers in one or other direction on their axes when the collar or head C is turned on the body. As here represented, the end portions of the chasers B, which enter the collar or head C, are cut away or notched through about half their transverse section, and engaging with the straight or nearly straight cam-surfaces *e e'* thus formed are cams *f f'*, which may consist of rollers secured, respectively, by screws or rivets to the collar or head C and cap-plate C', and fitting, respectively, the cam-surfaces *e e'* of the chasers.

When the collar or head C is turned in the direction of the arrows, Figs. 4 and 6, the cams *f* bear upon the surfaces *e* of the chasers B and turn the chasers so as to project the threads *b'* thereof beyond the body A. When the collar or head C is turned in the opposite direction, the cams *f'* bear upon the surfaces *e'* of the chasers B and turn said chasers so as to shield their teeth projections *b'* within the periphery of the body.

As here represented, the cap-plate C' has notches or elongated recesses *h*, which receive the chasers B, and which serve to limit the turning of the collar or head and the consequent rotation of the chasers on their axes by one or other end of said notches or recesses striking the chasers.

We have shown the collar or head C as provided with handles C^2, to which the hand may be applied for turning said collar or head. When the tap has been advanced the required distance into the work, a push upon either handle C^2 in one direction will turn the collar or head, and will also cause the chasers B to turn sufficiently to withdraw or shield their threaded portion *b'* within the periphery of the body A, and will permit the tap to be directly withdrawn from the work. When the collar or head C is turned in a reverse direction, the chasers will be turned on their individual axes to project their toothed portions *b'* beyond the periphery of the body.

By the term "cylindric," as applied to the chasers B, we do not mean that they are in the form of true cylinders, as they are cut off or have a portion of their circumference removed at one side, as indicated by the letter *b*. They are, however, of cylindric form, and in transverse section they are segments of a cylinder.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. The combination, with a tap-body having chaser-seats extending lengthwise thereof and segmental or arc-shaped in transverse section, of chasers which are substantially cylindric and which are capable of turning in said seats to present or retract their toothed portions, substantially as herein described.

2. The combination, with a tap-body having chaser-seats extending lengthwise thereof and segmental or arc-shaped in transverse section, of chasers which are substantially cylindric in transverse section fitting said seats, and a collar or head fitted to turn on the body and provided with cams or cam-like devices for acting to turn the chasers upon their axes, substantially as herein described.

3. The combination, with a tap-body having chaser-seats extending lengthwise thereof and segmental or arc-shaped in transverse section, of chasers which are substantially cylindric in transverse section fitting said seats and having their upper end portion notched, as at *e e'*, and a collar or head fitted to turn on the body and provided with two series of cams, as *f f'*, for engaging the notched end portions of the chasers, substantially as herein described.

4. The combination, with a tap-body having the segmental or arc-shaped chaser-seats *a* and the enlarged portion *a'*, in which said chaser-seats are continued as cylindric bores, of chasers substantially cylindric in their transverse section fitting the chaser-seats, and a collar or head fitted to turn on the body and having cams or cam-like devices for engaging the chasers to turn them on their axes when the collar or head is turned on the body, substantially as herein described.

5. The combination, with a tap-body having segmental or arc-shaped chaser-seats *a*, of

chasers substantially cylindric in transverse section fitting the seats, a collar or head turnable on the body and engaging the chasers to turn them on their axes, and a cam or cams whereby the collar or head is cramped when turned in a direction to project the threaded portions of the chasers, in order to prevent the accidental shifting of the collar or head and chasers, substantially as herein described.

PATRICK J. KELLY.
JAMES GROVES.

Witnesses:
FREDK. HAYNES,
EMIL HERTER.