

(No Model.)

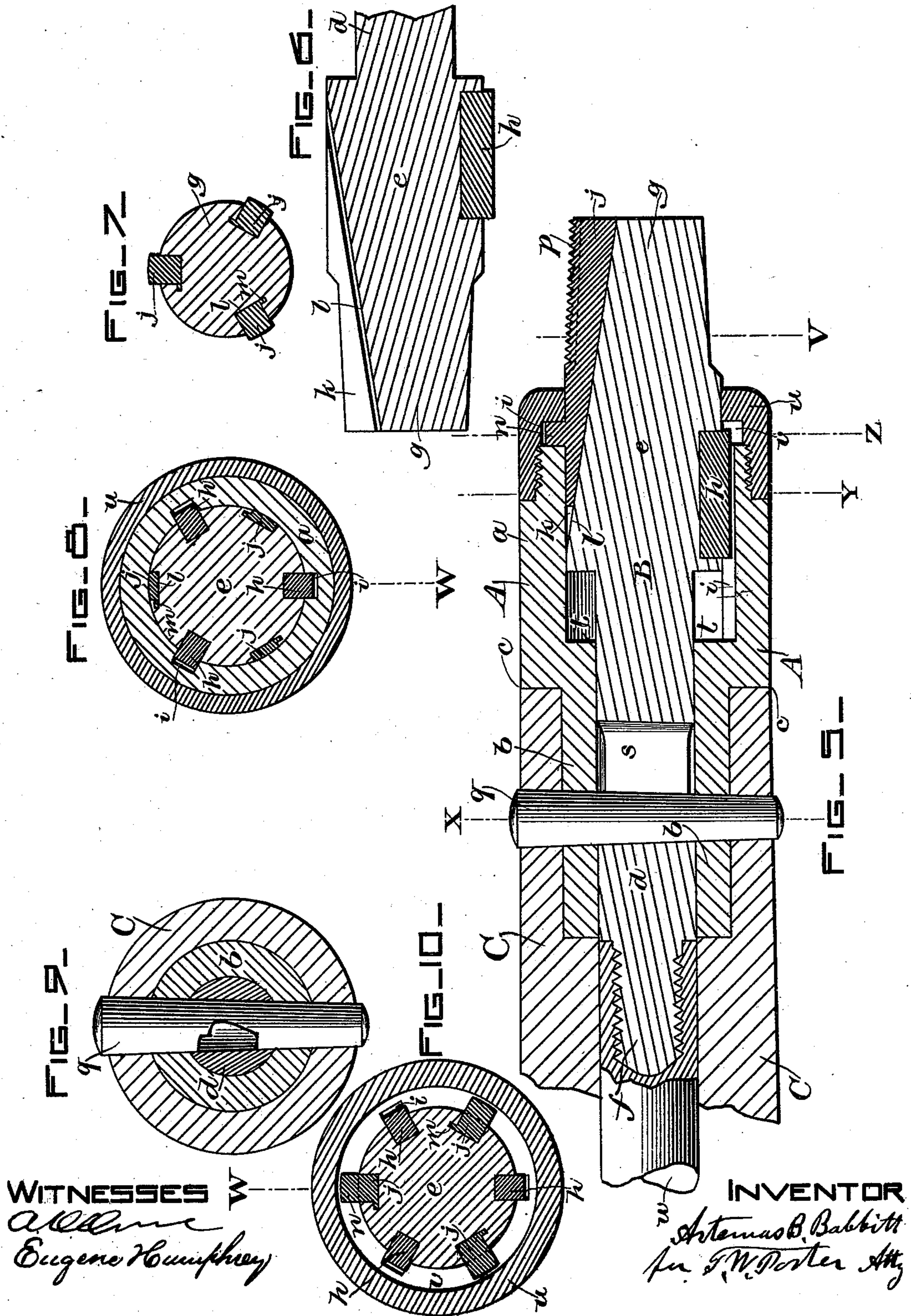
2 Sheets—Sheet 2.

A. B. BABBITT.

COLLAPSIBLE TAP.

No. 408,570.

Patented Aug. 6, 1889.



UNITED STATES PATENT OFFICE.

ARTEMAS B. BABBITT, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO CALEB C. WALWORTH, OF SAME PLACE.

COLLAPSIBLE TAP.

SPECIFICATION forming part of Letters Patent No. 408,570, dated August 6, 1889.

Application filed March 18, 1889. Serial No. 303,796. (No model.)

To all whom it may concern:

Be it known that I, ARTEMAS B. BABBITT, of Boston, in the county of Suffolk and State of Massachusetts, have invented a new and useful Improvement in Collapsible Taps, which will, in connection with the accompanying drawings, be hereinafter fully described, and specifically defined in the appended claims.

In said drawings, Figure 1 is a sectional perspective view, the shell and cutter-holding collar being shown in longitudinal section, and the tap-body with its cutters, being shown in perspective. Fig. 2 is an end elevation of the tap-body and its cutters, taken as viewed from the right in Fig. 1. Fig. 3 is a side elevation of one of the cutters of the tap. Fig. 4 is an end elevation taken at the right of Fig. 3. Fig. 5 is a longitudinal section taken on line W, Figs. 8 and 10. Fig. 6 is a detached longitudinal section of the head portion of the tap-body, taken on said line W. Fig. 7 is a transverse section taken on line V, Fig. 5. Fig. 8 is a transverse section taken on line Y, Fig. 5. Fig. 9 is a transverse section taken on line X, Fig. 5. Fig. 10 is a transverse section taken on line Z, Fig. 5.

This invention relates more especially to taps that are employed in threading the couplings and connections used in uniting steam, gas, water, and other metal pipes, and which are known to the trade as "expanding" and "collapsing" taps; and it consists in certain features of novelty that will be hereinafter described in connection with said drawings, and pointed out in the claims.

Referring again to said drawings, A represents a shell or sleeve having the greater diameter a and the less diameter b , with the resulting shoulder c . The tap-body B is formed with the less diameter d to fit the bore of b , and with the greater diameter e to fit the bore of chamber t in a , and so as to slide freely endwise in said sleeve. In part e are secured the splines h , which extend radially into corresponding slots i , formed internally in part a , said splines, thus interlocking A and B, serve to insure the coincident rota-

tion of said parts, yet allowing B to slide freely endwise in A, for the purpose to be described.

The front portion g of body B is tapered, as shown, and in it are formed the requisite number of slots k to receive the corresponding threaded cutters j , which by the rib m are interlocked in B, but slide endwise therein. The base or bottom of said slots k is indicated by l , and as oblique to a longitudinal line at the periphery of said portion g , and the cutters j are correspondingly tapered, so that their threaded portion or side p will at all times be parallel, or practically so, with the periphery of g . Upon the outer face of the inner and thinner portion of cutters j is formed a projection or stud n , which, when the parts are assembled, is in the annular space v between the outer end face of A and the inner face of collar u , whereby the cutters are secured against end movement, but have a free radial movement, according as body B is advanced or retracted, thereby constituting an expanding and collapsing action.

The shell A is inserted in a hollow arbor C, in which it is secured by pin q , said arbor being driven in a well-known manner and (through shell A and the interlocking therewith of the tap-body B by splines h) driving the tap, a slot s being formed in part d of body B to freely admit the pin q , while the slot is of such length as to properly limit the advancing and retractile movement of the tap.

It will be obvious that when tap B is advanced the cutters j will ride up the inclined bottom of grooves k , and be thereby expanded or moved radially outward and beyond the periphery of portion g of body B, as shown in Figs. 1, 2, and 3, the cutters being held from end movement by their studs n , seated in groove v , as already explained, and when the tap is withdrawn the cutters will by the interlocked rib m be moved toward the axis of B, thus collapsing the tap and allowing its instant withdrawal from the cavity which has been threaded.

The threaded stem f of body B is engaged in rod w , which is arranged axially in arbor

C, and is in a well-known manner automatically actuated to produce the described endwise movement of the tap-body B.

Reference is hereby made to United States Patent No. 252,068, issued January 10, 1882, to C. C. Walworth for a machine for tapping and reaming, as embodying a machine in which expanding and collapsing taps are employed, and consequently with which this invention is connected, and as showing the method of utilizing this class of taps.

It will be obvious that shell A is but a portion or extension of hollow arbor C, but made separate and so attached as to be separated therefrom for purposes of repair or change of parts.

I am aware of United States Patents Nos. 26,487 and 198,945, and I disclaim all that is shown or described therein, as the combination which I claim is entirely lacking in such patents, for in said patent No. 26,487 the threaded cutters there shown are not and cannot be collapsed or expanded by an endwise movement of the tap-body, but they are collapsed and expanded by means of an obliquely-slotted collar, which forces said cutters endwise relatively to the tap-body, according as said collar is rotated in one direction or the other, and in said patent No. 198,945 not only are the threaded cutters not radially actuated by an endwise movement of the tap-body, but such movement is effected by means of a collar mounted on the tap-body, which collar is connected by a stud

with a rod arranged axially in the tap itself, which rod is arranged to move the cutters radially; but in my invention there is no rod in the tap, nor are the cutters ever moved endwise, but they are interlocked in a hollow arbor to secure them from end movement, and they are actuated radially by the endwise movement of the tap-body, which body is interlocked with and rotates coincidently with the hollow arbor, which is another feature not found in said earlier patents.

I claim as my invention—

1. The combination of a hollow arbor, a tap-body arranged axially in said arbor and interlocked therewith to insure coincident rotation, but allowing a free endwise movement of said tap, a series of tapering threaded cutters interlocked in grooves that are oblique to the axis of said tap to allow a sliding movement thereof, said cutters having an external projection interlocked in said hollow arbor, all substantially as specified.

2. The combination of hollow arbor A, with its cap *u* and space *v*, tap-body B, arranged axially in and interlocked therewith and having the radial tapering grooves *k* formed therein, and tapering cutters *j*, interlocked in said grooves by rib *m*, and also interlocked in arbor A by studs *n*, seated in space *v*, all substantially as specified.

ARTEMAS B. BABBITT.

Witnesses:

T. W. PORTER,
EUGENE HUMPHREY.