

(No Model.)

A. C. DALZELL.

THE MANUFACTURE OF WATCH CROWNS.

No. 348,620.

Patented Sept. 7, 1886.

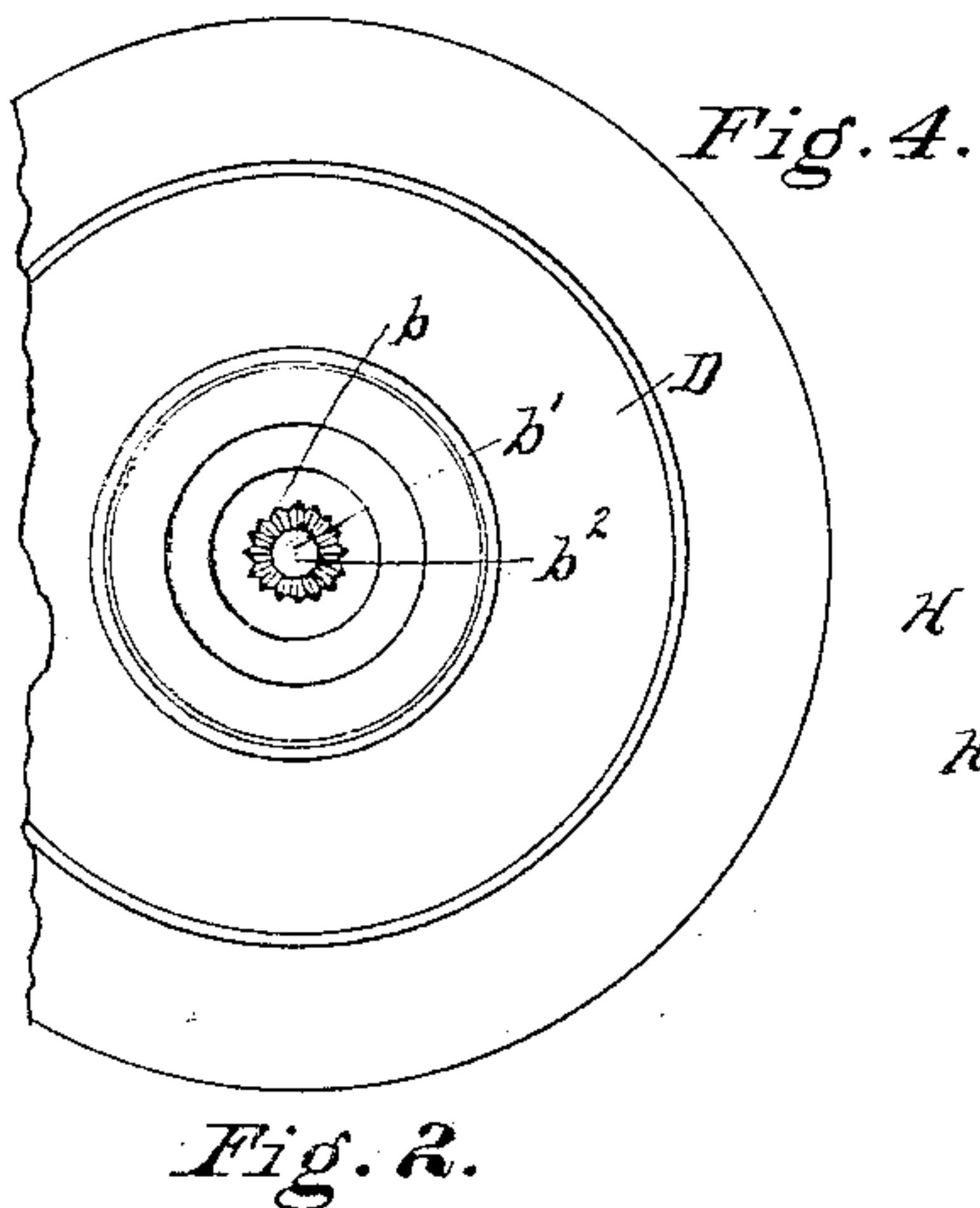


Fig. 1.

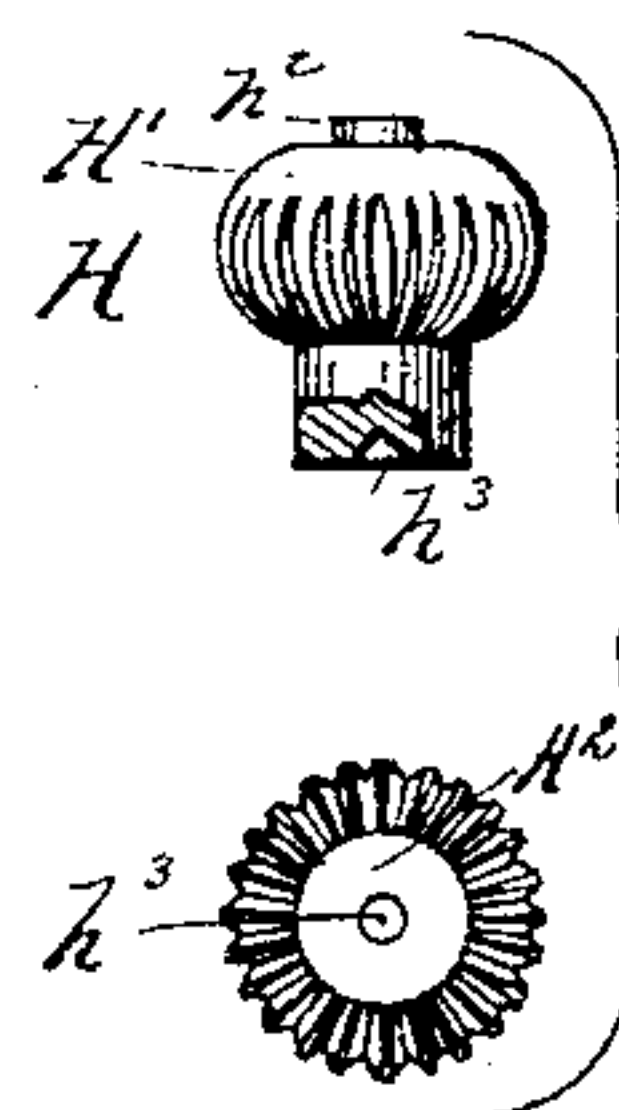
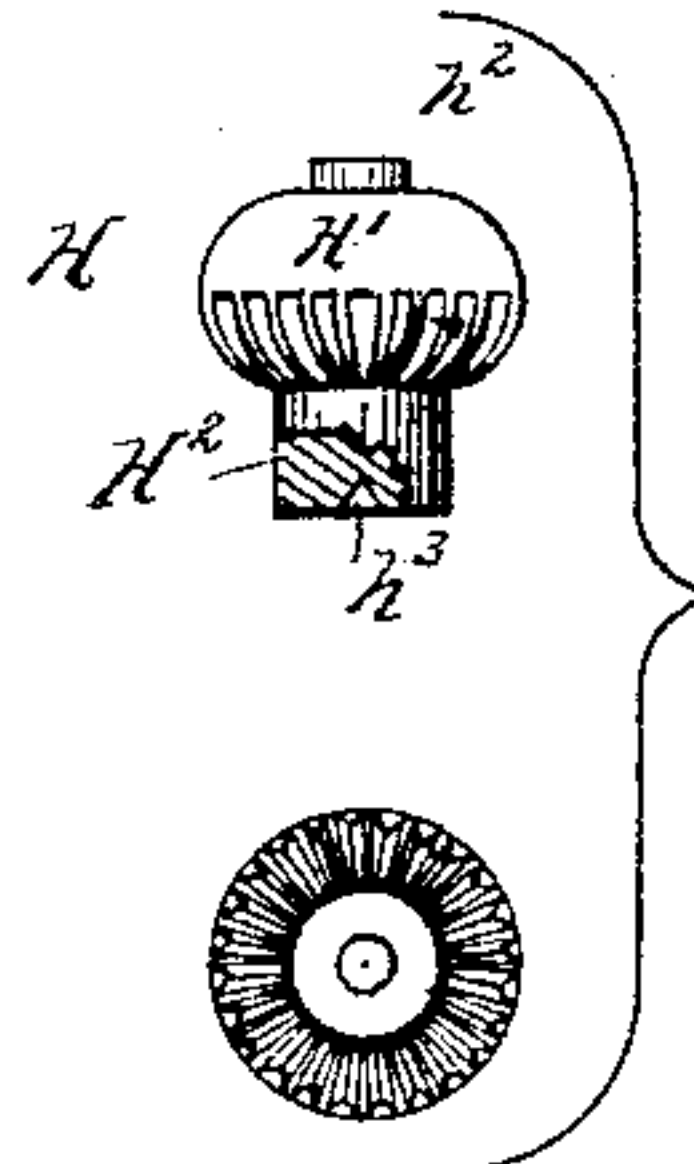


Fig. 3.

Fig. 6.

Fig. 7.

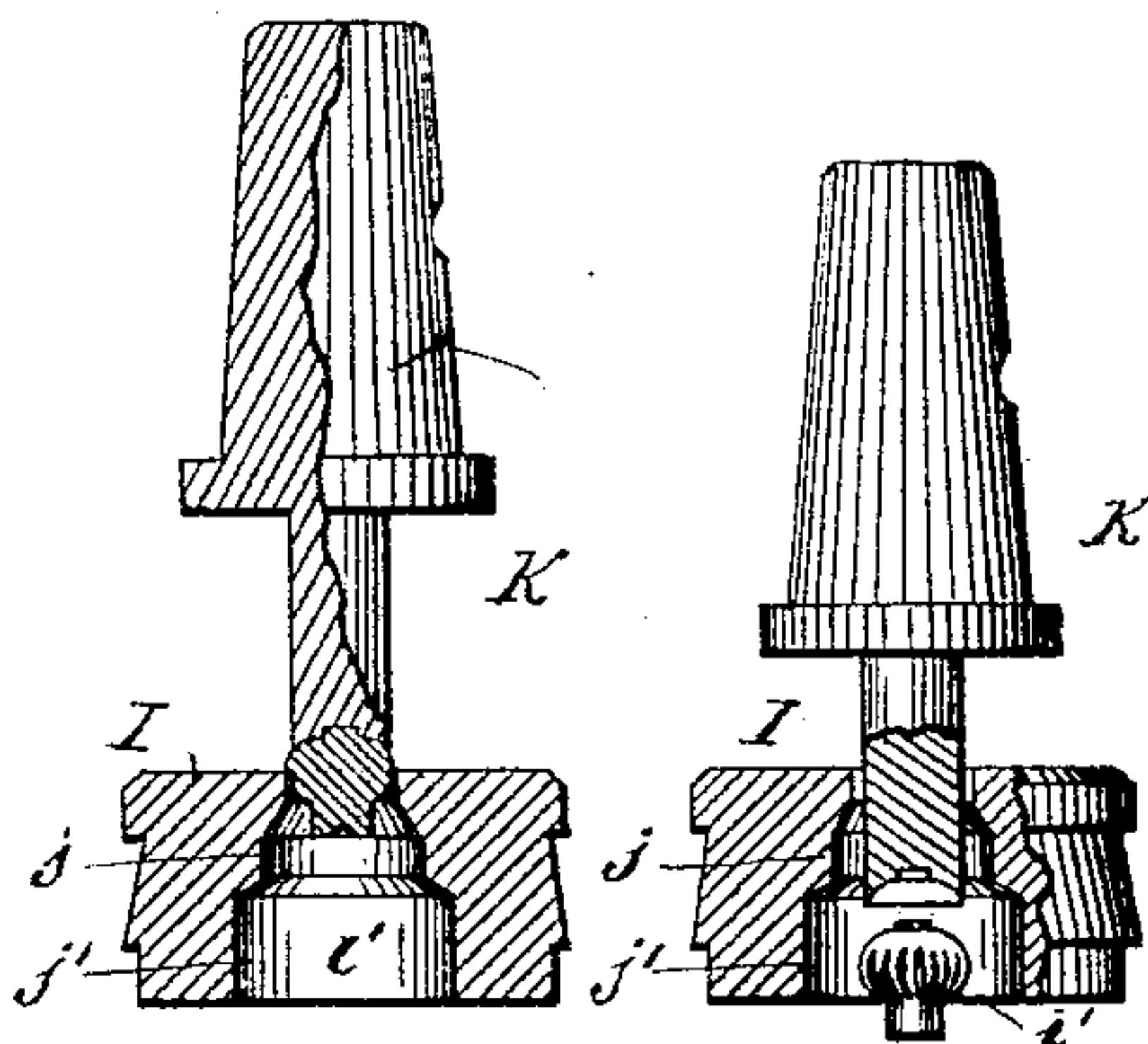
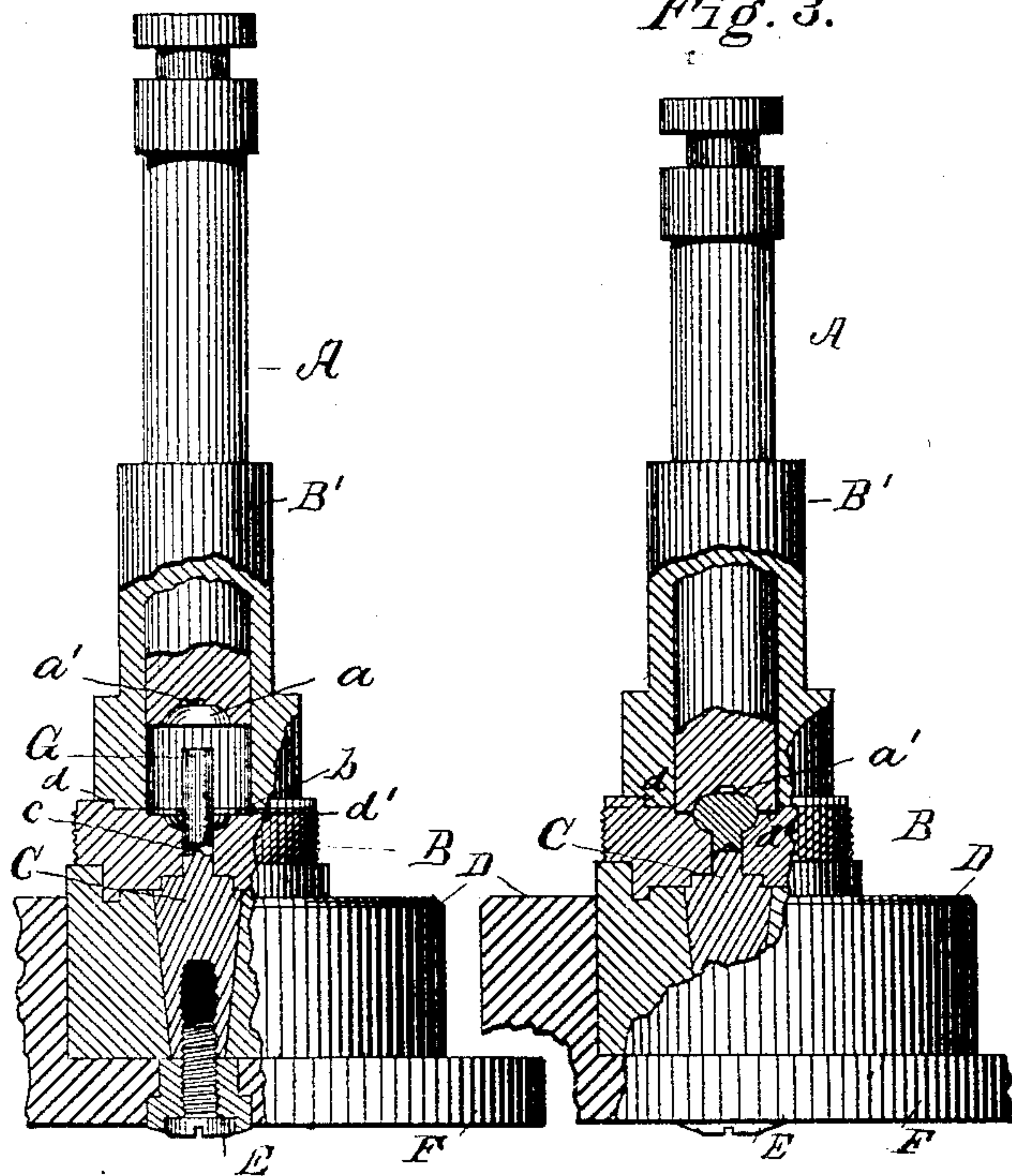


Fig. 8.

Fig. 9.

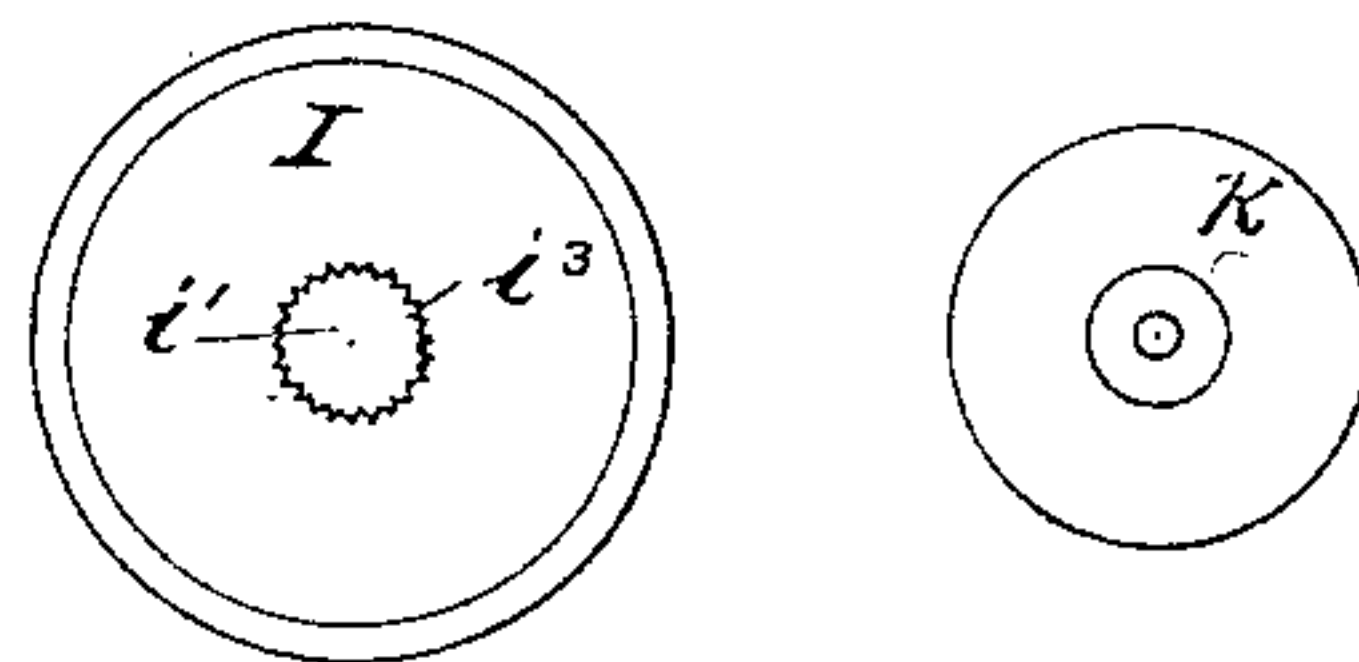
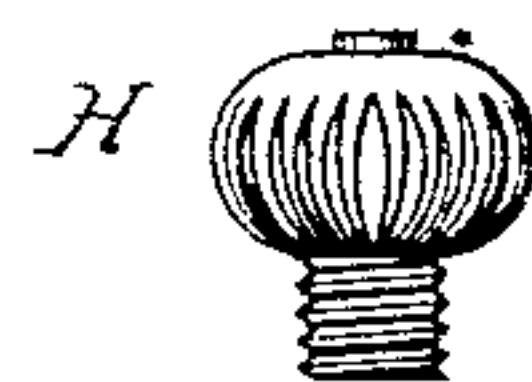


Fig. 11.



WITNESSES

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MANUFACTURE OF WATCH-CROWNS.

SPECIFICATION forming part of Letters Patent No. 348,620, dated September 7, 1886.

Original application filed April 15, 1885, Serial Nos. 162,294 and 162,295. Divided and this application filed January 20, 1886. Serial No. 189,205. (No model.)

To all whom it may concern:

Be it known that I, ALLAN CAMERON DALZELL, of the city of Newport, county of Campbell and State of Kentucky, have invented certain new and useful Improvements in the Method of Manufacturing Watch-Crown Cores and similar Articles, of which the following is a specification.

This invention relates to the manufacture of corrugated articles—such as watch-crown cores—from solid metallic blanks, and is intended as a division and part of the applications filed by me in the United States Patent Office April 15, 1885, marked “Case A” and “Case B,” this being an application for the method of making watch-crown cores, while the applications referred to described and claimed one form of apparatus for carrying out this method.

In the manufacture of watch-crown cores, as heretofore practiced and as set forth in the applications above referred to, much difficulty has been experienced in corrugating or ridging the head of the core, the corrugates being as a rule formed therein by milling, the head being previously turned or rolled into the proper shape. Where the corrugates were formed in the head of the core by milling it was impossible to provide a stem (or collar) integral with the head and extending beyond the periphery or base of said head, as the milling tool or cutter in cutting the radial corrugates upon the under side of the head would be obstructed by the projecting stem and prevented from cutting the corrugates to a point flush with said stem, which is absolutely necessary to the perfect fitting of the corrugated crown cap or shell which is subsequently drawn over and fitted to the core-head. In most instances the core-head has been made spherical and corrugated, after which it was tapped at the base and a stem, or what is known as a “core-washer,” screwed therein.

The purpose of and reasons for corrugating or ribbing the cores of watch-crowns is obvious to those skilled in the art, and therefore an explanation is unnecessary.

The object of my invention is, primarily, to upset a solid wire blank, to form thereby a watch-crown core having a head, preferably spheroidal in shape, with radial depressions or corrugates upon its under side, a stem in-

tegral with said head, a teat or projection at the apex of the head, and a central indentation in the base of the stem, said indentation enabling the core to be readily centered during the operation of tapping it for the reception of the key-pipe.

Another object of the invention is to form screw-threads upon the stem by upsetting the metal blank spirally at its lower end simultaneously with the operation of upsetting the blank at its upper end to form the corrugated head, as will be hereinafter pointed out. This last operation of screw-threading the stem (or core-washer) is only necessary with crown-cores used with key-winding watches or with watches having stationary crowns, which crowns are usually screwed into the pendant, and are provided with push-pins extending out through their centers.

With the objects in view above stated my invention consists in an improved method of making watch-crown cores and similar articles from solid metallic blanks, which consists in subjecting said blank to pressure endwise to thereby upset the metal at one end to form a head, (preferably spheroidal in shape,) form a stem integral with said head, and at the same operation indenting portions of the head radially upon its under side to form corrugates or ribs extending from a point flush with the stem to a point nearly central between the base and apex of the head, substantially as hereinafter described.

The invention also consists in the method of forming watch-crown cores, which method consists in upsetting a metallic blank by pressure endwise to form a corrugated head and projecting stem, and at the same operation upsetting the metal of the stem spirally in the direction of its length to form screw-threads thereon, substantially as hereinafter described.

The invention also consists in an improved method of making watch-crown cores, which consists, first, in subjecting a solid wire blank to pressure endwise to thereby upset the metal at one end to form a head, forming a stem integral with said head, indenting portions of the head upon its under side to form radial corrugates extending from a point flush with the stem to a point nearly central between the base and apex of the head, forming an indentation in the end of the stem central to its lon-

itudinal axis, and a teat or projection at the apex of the head of the core; and, second, n extending the corrugates past the center of the head to a point near the apex by stripping 5 or cutting the metal away at the terminus of the indents which extend to the center, as will be hereinafter described.

It also consists in an improved watch-crown core as a new article of manufacture, as hereinafter described.

In the drawings, Figure 1 represents in side elevation a metallic or wire blank from which the watch-crown core is formed; Fig. 2, a side elevation, partially in longitudinal section, 15 one form of apparatus for partially carrying out the method of forming cores for watch-crowns herein described, the said apparatus upsetting the blank to form the head, indenting the under side of the head to form corrugates, forming a stem integral with the head, 20 indenting the end of the stem centrally, and forming a teat or projection at the apex of the head, the said figure showing a blank in place to be operated upon and the upper die elevated; Fig. 3, a side elevation, partially in longitudinal section, of the same, the upper die 25 having descended and the blank being upset to form a core; Fig. 4, a plan view of the lower die, die-holder, male center, and base-piece; Fig. 5, a side elevation, partially in section, and underside view of the watch-crown core with the corrugates extending from the base to the center of the head, as formed with the apparatus 30 illustrated in Figs. 2, 3, and 4; Fig. 6, a longitudinal section, partially in elevation, of one form of apparatus for extending the corrugates of the core illustrated in Fig. 5 past the center, the core being shown in position and the punch in position to press it through 35 the lower or female die; Fig. 7, a similar view of the apparatus illustrated in Fig. 6, the core being shown as pressed through the female die and corrugated past the center; Fig. 8, a plan view of the lower die; Fig. 9, an under 40 side view of the punch; Fig. 10, a side elevation and plan of the core with the corrugates extending past the center of the head; and Fig. 11, a side elevation of a crown-core having a screw-threaded stem.

In the drawings two sets of apparatus are shown for carrying out the method herein 45 claimed, (they being one form, other forms of apparatus or other contrivances might, however, be used with good results,) one for upsetting the blank to form the core-head, to 50 corrugate said head to its center, to indent the end of and form the stem integral with the head and form a teat or projection at the apex of the head, and the other apparatus for 55 extending the corrugates past the center and completing the core ready to receive the corrugated crown-cap.

The dies (illustrated in Figs. 2 and 3) for carrying out the first step of the method consist of the upper die or half, A, the lower die 60 or half, B, and the male center die, C. The upper die, A, works in and is guided in its

movement by a collar, B', the said die and its collar being connected to the die-holders or 70 plunger of the press (which may be of the usual double-acting pattern) in the usual manner. The upper die, A, is provided with a matrix, *a*, at its lower end, said matrix being semi-spheroidal in shape (or substantially so) 75 with a smooth face and a central cylindrical indentation, *a'*, at its upper end or apex, which matrix *a* and indentation *a'* form the upper half, H', of the head of the core H and its teat or projection *h*². The 80 lower die, B, constructed preferably of hardened or chilled steel, is seated in a steel die-holder, D, and is provided at its upper central face with a matrix, *b*, having a series of radial grooves and ridges or corrugates, *b'*, and having a central cylindrical plain-faced 85 opening, *b*², communicating with said matrix, said opening being of a length and diameter equal to the length and diameter of the stem H² of the core H, desired to be formed from the wire blank G. By reference to the draw- 90 ings, Figs. 2, 3, it will be seen that the central opening, *b*², extends from the central matrix, *b*, entirely through the lower die, B, and that the male center die, C, is inserted into the same from 95 below, which die C is provided with a conical projection, *c*, at its upper end central to its longitudinal axis, said projection *c* forming the indentation *h*³ in the lower end of the stem H² of the core H as said core is pressed into 100 shape. As shown, the male center die, C, is devedged or tapered and extends through the steel die-holder D, where it is held in place from longitudinal movement by means of a 105 screw, E, extended through the base-piece F, in which the die-holder is seated and screwed into the die C, said screw holding the die C and die-holder D against movement. The 110 lower die, B, is provided with an annulus or downwardly-projecting flange, which has its bearing in an annular groove formed in the face of the die-holder D. The lower die has its upper face "stepped" or rabbeted, as shown at *d d'*, to form guiding-faces for the collar B' and the upper die, A.

Inasmuch as the dies and apparatus herein 115 shown to carry out the method of forming cores for watch-crowns, as hereinafter claimed, form the subject-matter of the two applications marked "Case A" and "Case B" before 120 referred to, and in which their construction is minutely described, it will be unnecessary to enter into the minor details in this present application, as reference may be had to the 125 applications before referred to.

Having briefly described one form of apparatus for carrying out one step of this method, I 130 will proceed to describe one form of apparatus for carrying out the second step, or for carrying the corrugates past the center of the head of the core after said core has been formed into the shape illustrated in Fig. 5, which apparatus is represented in Figs. 6 and 7, to which reference will now be had.

I represents a cutting-die, the said die being

constructed, preferably, of chilled or hardened steel, and being of a shape best adapted to fit into a die-holder, which die-holder (not shown) will also be of steel. The die I is provided
 5 with a central opening, i' , which opening extends entirely through the die from its upper to its lower face, said opening at the upper face of the die being of a diameter slightly less than the greatest diameter of the core-head,
 10 and has a corrugated cutting-edge, i'' , the said corrugates corresponding to and fitting the corrugates of the core-head (which have been previously formed) at their upper or terminal point, (see Fig. 5,) which corrugates terminate
 15 approximately at the center between the base and apex of the core-head and leaving a seam, as shown in the drawings, Fig. 5. The lower part of the opening, as shown at j j' , is of greater diameter than the upper or cutting
 20 part, i' , which permits the core to pass through the die I without obstruction after the corrugates are cut past the center of the head, as described.

K represents a punch, which has a concaved
 25 lower face corresponding to the shape of the upper half of the core-head represented in Fig. 5, and which is, at its operating end, of a diameter slightly less than the diameter of the cutting-opening i' of the die I. This punch K
 30 is intended to press or push the partially-finished core through the die I to continue the corrugates past the center of the head of the core, as before specified. The punch K will be connected to the plunger or die-holder of
 35 the press in the usual manner, the die I and punch K being used with a die-press of any ordinary pattern.

The operation of forming the core with apparatus such as are herein described is as follows:
 40 The blank G, of suitable length and diameter, is placed vertically in the central opening, b^2 , of the lower die, B, which opening corresponds in diameter to the diameter of the said blank and supports the same in vertical
 45 position. The sleeve B' and upper die, A, are then allowed to descend, the sleeve B' contacting with the lower die, B, before the upper die, A, strikes the metallic blank, the sleeve entering the rabbet d , which holds the
 50 die B from lateral movement, after which the die A strikes the upper end of the blank, upsetting the same at its upper end into the matrix of both the upper and lower dies, thus forming the core-head to the exact shape of
 55 the upper-die matrix and indenting portions of the lower face of the head radially, in accordance with the shape of the matrix of the lower die, (which is corrugated, as before described,) forming the stem integral
 60 with the head, a teat or projection at the apex of said head, and making a conical indentation in the lower face of said stem central to its longitudinal axis. By this first step in the operation or method of forming the core it will
 65 be observed that the core-head is ridged or corrugated upon its under face from a point flush with the periphery of the stem to a point

central between the base and apex of the core-head where they terminate, thus leaving a seam centrally around the periphery of the
 70 said head. The second step in this method is to obliterate the seam and extend the corrugates over the upper face of the core-head and past the center, which is necessary to the perfect fitting of the crown-cap, which is subsequently drawn over and pressed around the
 75 said head. This is done by means of the apparatus illustrated in Figs. 6 and 7.

The core H, (illustrated in Fig. 5,) having the radial corrugates upon the under side or from
 80 a point flush with the stem to a point central between the apex and base, is placed stem downward in the corrugated opening i' , or the opening having a corrugated cutting-edge, the diameter of the opening i' between the
 85 cutting-points being equal, or nearly so, to the head of the core inside the radial grooves or indents at their terminus and the greatest diameter of the opening i' or outer cutting-edge being equal, or nearly so, to the outside
 90 diameter of the radial ribs of the core-head at their terminus or at the center of the head, after which the punch K, which has a concaved lower face corresponding to the shape of the
 95 upper face of the head, and which is at its operating end of a diameter less than the diameter of the opening i' , is allowed to descend to push the core through the opening i' , thereby cutting away the metal at the terminus of
 100 the radial indents or grooves and continuing the grooves past the center of the head and over a portion of the upper face of the core-head, as represented in Fig. 10, thus forming radial corrugates from the base approximately
 105 to the apex of the core-head.

To form a crown-core of the shape illustrated in Fig. 11, it is simply necessary to have a two-part die with the opening b^2 screw-threaded, as illustrated in Case A, referred
 110 to, the same operation being gone through with as with the apparatus illustrated, the metal of the stem in this instance being upset spirally and forming screw-threads thereon. By this method I am enabled to form a watch-crown core with a depending stem integral
 115 with the head and without waste of material, securing uniformity and cheapening the cost of manufacture.

I claim—

1. The herein-described method of making
 120 watch-crown cores and similar articles from solid metallic blanks, which consists in subjecting said blank to pressure endwise (in a former) to thereby upset the metal blank at one end to form a head, preferably spheroidal
 125 in shape, forming a stem integral with said head, and indenting portions of the metal of the head radially upon its under side to form grooves or corrugates extending from a point flush with the circumferential line of the stem
 130 to a point nearly central between the base and apex, substantially as and for the purpose described.

2. The herein-described method of making

watch-crown cores, which method consists in upsetting a metallic blank by pressure endwise to form a head at one end, a stem integral with said head, indenting portions of the head 5 to form corrugates, and at the same operation upsetting the metal of the stem spirally in the direction of its length to form screw-threads thereon, substantially as described.

3. The herein-described method of making 10 watch-crown cores, which consists in subjecting a solid metallic blank to pressure endwise, to upset the metal at one end to form a head preferably spheroidal in shape, forming a stem integral with said head, forming a teat or pro- 15 jection at the apex of the core-head, indenting portions of the metal radially at the under face of the head from a point flush with the stem to a point central, or substantially so, between the base and apex of the head, and at 20 the same operation forming a conical indentation in the lower face of the stem, substantially as and for the purpose described.

4. The herein-described method of making watch-crown cores from metallic blanks, which 25 consists, first, in subjecting said blank to pressure endwise in a suitable former to form thereby a core having a head preferably spheroidal in shape, corrugated on its under side radially from the base to a point central, or nearly so,

between the base and apex of said head, a teat 30 or projection at the apex of the head, a central indentation in the end of the stem; and, second, to extend the corrugates of the head past the center and over the upper face of the head by stripping the metal from between the 35 ridges of the corrugates at their terminus to a depth equal to the depth of grooves on the under side of the head to a point approximately close to the apex of the head, thereby continuing said grooves and ridges and form- 40 ing a corrugated upper face to the core-head, substantially as described.

5. As a new article of manufacture, a watch-crown core upset from a solid metallic blank, and having a head with compressed portions 45 forming radial indentations or corrugates, having a teat or projection at the apex of the head, a stem or core-washer integral with said head, and a central indentation in the lower face of the stem, substantially as described. 50

In witness whereof I have hereunto set my hand and seal, at Newport, Kentucky, this 10th day of June, A. D. 1885.

ALLAN C. DALZELL. [L. S.]

In presence of—

EDWARD BEESCH,
JOS. BECKER, Jr.