

E. H. HULL.  
Watch Pinion.

No. 101,464.

Patented April 5, 1870.

FIG. 1



FIG. 2

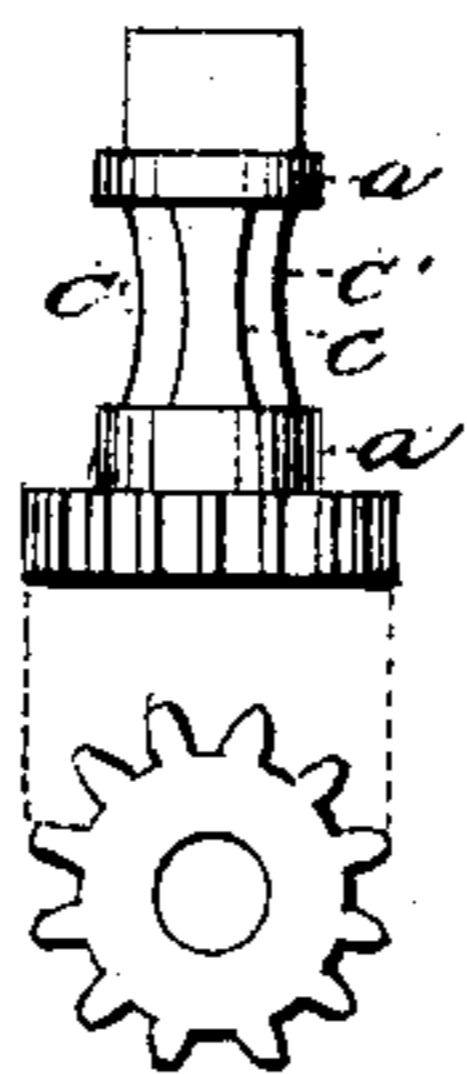


FIG. 3

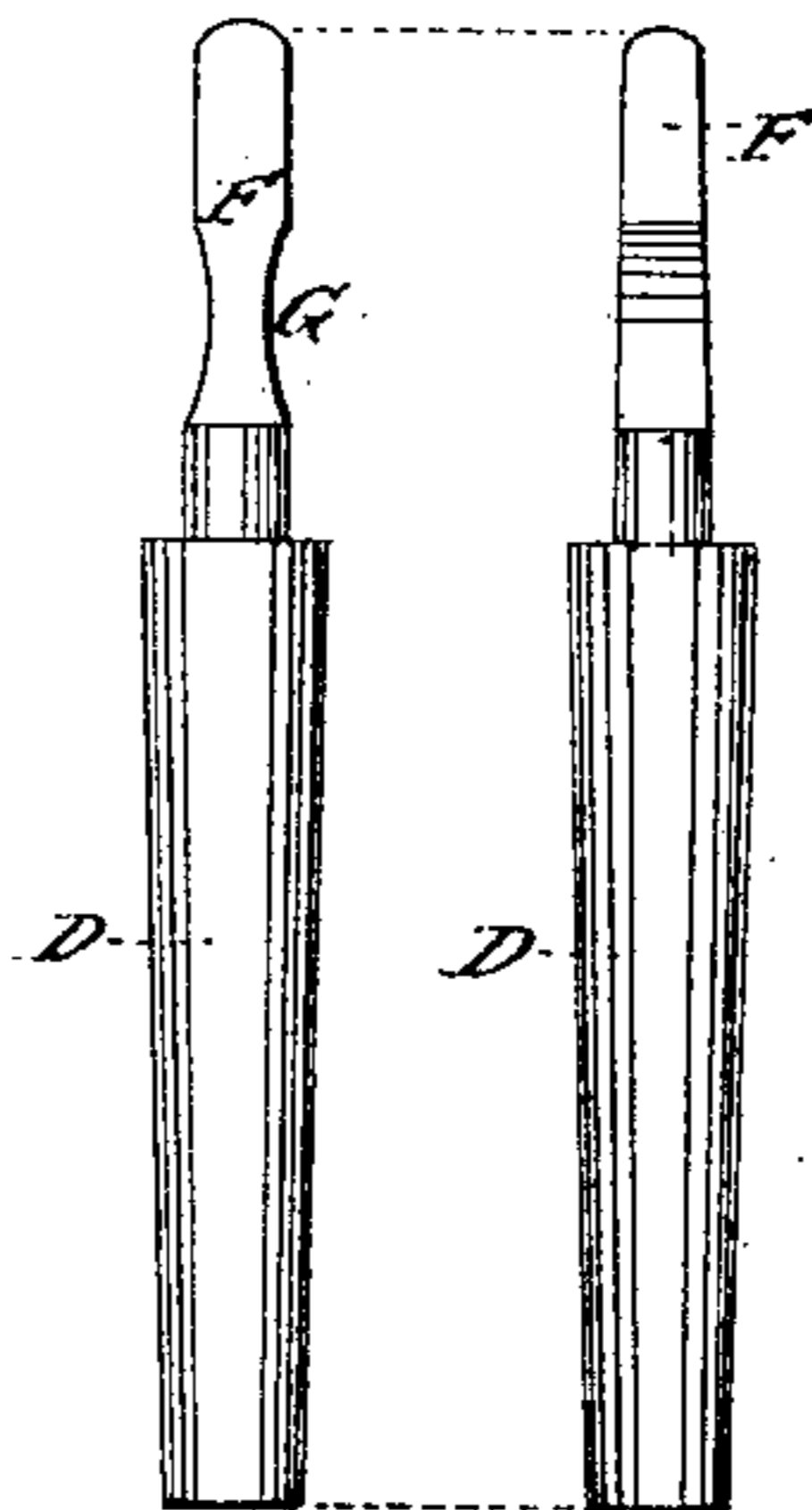


FIG. 4



WITNESSES:  
D. L. Humphrey  
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# UNITED STATES PATENT OFFICE.

ELIAS H. HULL, OF WARREN, OHIO.

## IMPROVEMENT IN CANNON-PINIONS FOR WATCHES.

Specification forming part of Letters Patent No. **101,464**, dated April 5, 1870.

*To all whom it may concern:*

Be it known that I, E. H. HULL, of Warren, in the county of Trumbull and State of Ohio, have invented an Improvement in Watches; and I do hereby declare that the following is a full, clear, and complete description of the same, reference being had to the accompanying drawings, making part of this specification, in which drawings—

Figure 1 is a side view of a cannon-pinion and spindle; Figure 2, a detached view of the pinion; Fig. 3, a view of the former; Fig. 4, a detached view of the spindle, all of which are enlarged views.

Like letters of reference refer to like parts in the several views.

This invention has for its object an increase of the frictional action of the cannon-pinion upon its spindle by so constructing the sides of the cannon as to form a spring, the tension of which is exerted upon the spindle, as hereinafter more fully set forth.

I am aware that cannon-pinions are split at their upper ends to form a spring, which is no part of my improvement.

The sides of the cannon, as usually constructed, are of a uniform thickness and of a rigid character, so that in order to secure the necessary friction upon the spindle for carrying the hands it requires to be very closely fitted thereto, a matter requiring extreme care and exactness in workmanship, for if the fit is not close there will not be sufficient friction to move the hands, and if too close the friction will be too great, and therefore no movement of the hands will ensue; hence much trouble is experienced in fitting the two parts to each other, and frequent losses in time and material result from such defect in the fitting. To avoid this trouble and consequent loss, I make the cannon A of the pinion B with a slotted opening, C, Fig. 2, through its diameter, be-

tween the collars *a a*. The remaining sides C' are then reduced in thickness to such a degree as to allow of their being pressed inwardly or toward the center by the application of a slight pressure, thereby making the sides a little curving in the direction of the axial line, as shown in Fig. 2. The depressed sides of the cannon will thus act as a spring upon the pivot D of the spindle E when inserted therein, and will therefore embrace the pivot, though it may not be of the exact size to fill the cannon in order to obtain frictional action in the ordinary way. The curves given to the sides of the cannon are made exactly alike by forming them on a spindle D, Fig. 3.

It will be observed that the pivot F of the spindle is formed with a slight hollow or neck, G, and that the two opposite sides are flattened. Now, on inserting the pivot F into the untempered cannon, having its sides reduced as above described, they are then compressed into the neck G. The pivot is then withdrawn by turning it until the flattened sides are in line with the slotted opening, which will bring the full side into the slot. In this position of the pivot it can now be withdrawn, leaving the sides of the cannon still compressed. The cannon is now tempered, and the compressed sides made permanently elastic—a pair of springs.

What I claim as my invention, and desire to secure by Letters Patent, is—

A cannon-pinion constructed with an opening, C, elastic or spring sides A, between the collars *a a*, formed by reducing the thickness of said sides, in the manner substantially as described, and for the purpose set forth.

ELIAS H. HULL.

Witnesses:

W. H. BURRIDGE,  
J. H. BURRIDGE.