

F. E. SMITH.

REVERSIBLE CENTER PINION FOR WATCHES.

No. 171,058.

Patented Dec. 14, 1875.

Fig. 1.

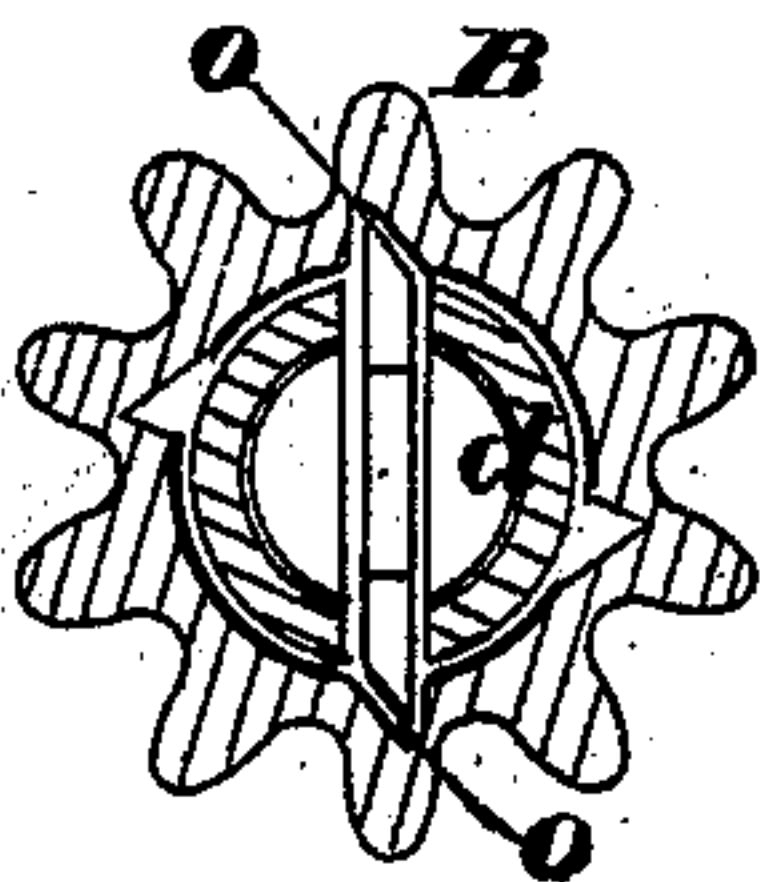


Fig. 2.

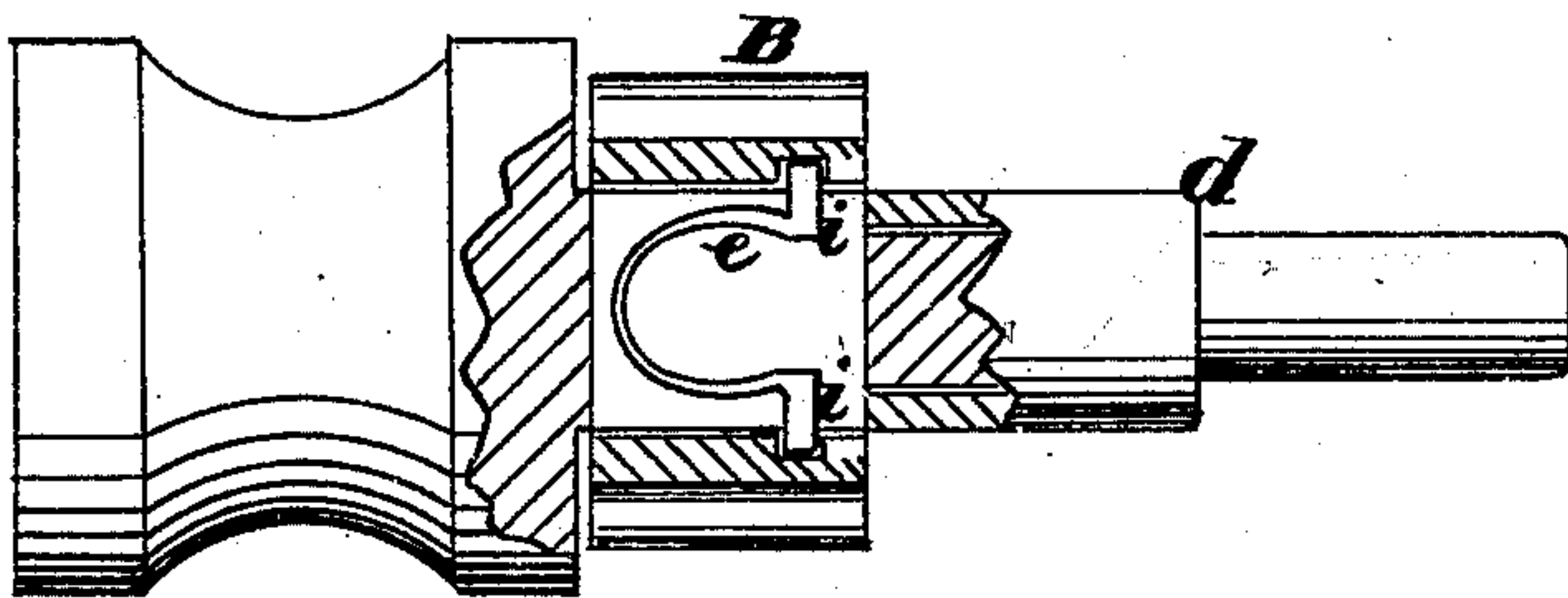
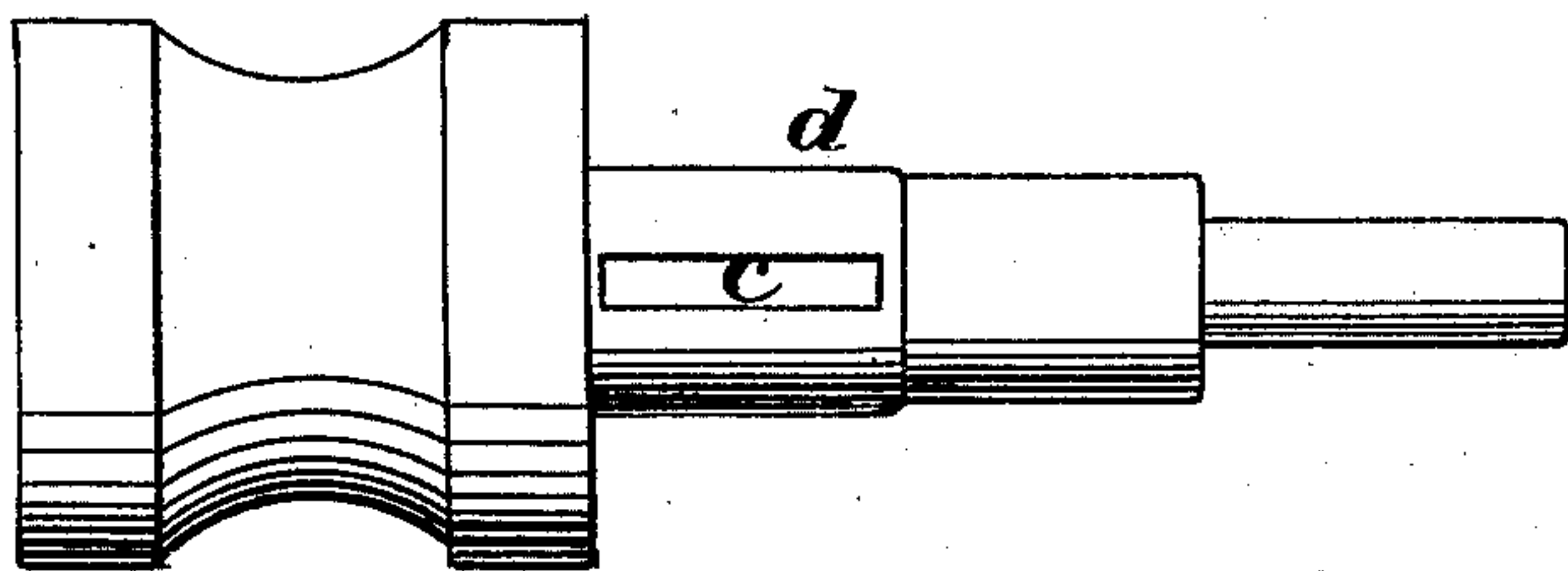


Fig. 3.



Witnesses

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IMPROVEMENT IN REVERSIBLE CENTER-PINIONS FOR WATCHES.

Specification forming part of Letters Patent No. **171,058**, dated December 14, 1875; application filed July 7, 1875.

To all whom it may concern:

Be it known that I, FRANK E. SMITH, of San José, Santa Clara county, State of California, have invented a Reversible Pinion for Watches; and I do hereby declare the following description and accompanying drawings are sufficient to enable any person skilled in the art or science to which it most nearly appertains to make and use my said invention without further invention or experiment.

My invention relates to an improved method of attaching the center-wheel pinions of watches to the arbors or shafts of the center-wheels, in order to allow the pinion to turn in a reverse direction, and receive the strain upon the mechanism of the watch in case the mainspring should break.

My invention is fully illustrated in the accompanying drawings, in which Figure 1 is a transverse section of my device. Fig. 2 is a side elevation, with a part broken away. Fig. 3 is a side elevation.

d represents the arbor, which carries the center-wheel for transmitting the power derived by the pinion B from the spring-barrel to the train of gearing comprising the operative mechanism of a watch. The pinion B has an axial bore, which permits it to be slipped on over the arbor *d*, so that it will lie close to the center-wheel, and the power which is transmitted to the center-wheel must first pass through the pinion, and this power is always transmitted in one and the same direction. In order to secure this pinion to the arbor *d* of the center-wheel, so that it will engage with the arbor when turned in one direction, and rotate freely independent of the arbor when turned in a reverse direction, I make a narrow mortise, *c*, diametrically through the arbor at the point which the pinion is to permanently occupy. I then construct a spring-pawl, *e*, to fit in this mortise in the following manner: This spring-pawl is made in the form of a U, with its points or ends *i i* sufficiently spread to cause them to project slightly from

the mortise on each side of the arbor when it is placed in the mortise, thus providing two catches, one on each side of the arbor, both of which are formed on the opposite ends of the same U-shaped spring. In the bore of the pinion B I then make two or more notches, *o o*. One side of each notch is inclined, while the opposite side is straight, in the manner of forming ratchet-teeth, so that the points or ends *i i* of the spring-pawl *e* will engage with them on opposite sides of the arbor. Now, when the pinion B is turned so as to cause the projecting points or ends of the spring-pawl to engage with the straight sides of the notches, the pinion and arbor will rotate together, and the power will be transmitted through them to the operative mechanism of the watch; but in case of the rupture or breakage of the main spring the recoil or reverse movement of the spring-barrel will cause the pinion to rotate in a reverse direction, so that the pressure of the teeth or points *i i* is transferred to the inclined sides of the notches, and the consequent compression of the spring will allow the teeth to pass over the notches without catching, thus permitting the pinion to rotate freely and independent of the arbor until the recoil ceases.

The above-described arrangement is very simple, and can be cheaply applied, while it does not encumber the pinion with outside attachments, which are at the same complicated and unsightly in a watch.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

The U-shaped spring *e* fitted in a mortise, *c*, in the arbor *d*, and having the projecting ends or points *i i*, in combination with the notches *o o* in the axial bore of the pinion B, substantially as and for the purpose described.

FRANK E. SMITH.

Witnesses:

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