

(No Model.)

G. P. GANSTER.
CLOCK AND WATCH SPRING.

No. 286,417.

Patented Oct. 9, 1883.

Fig. 1

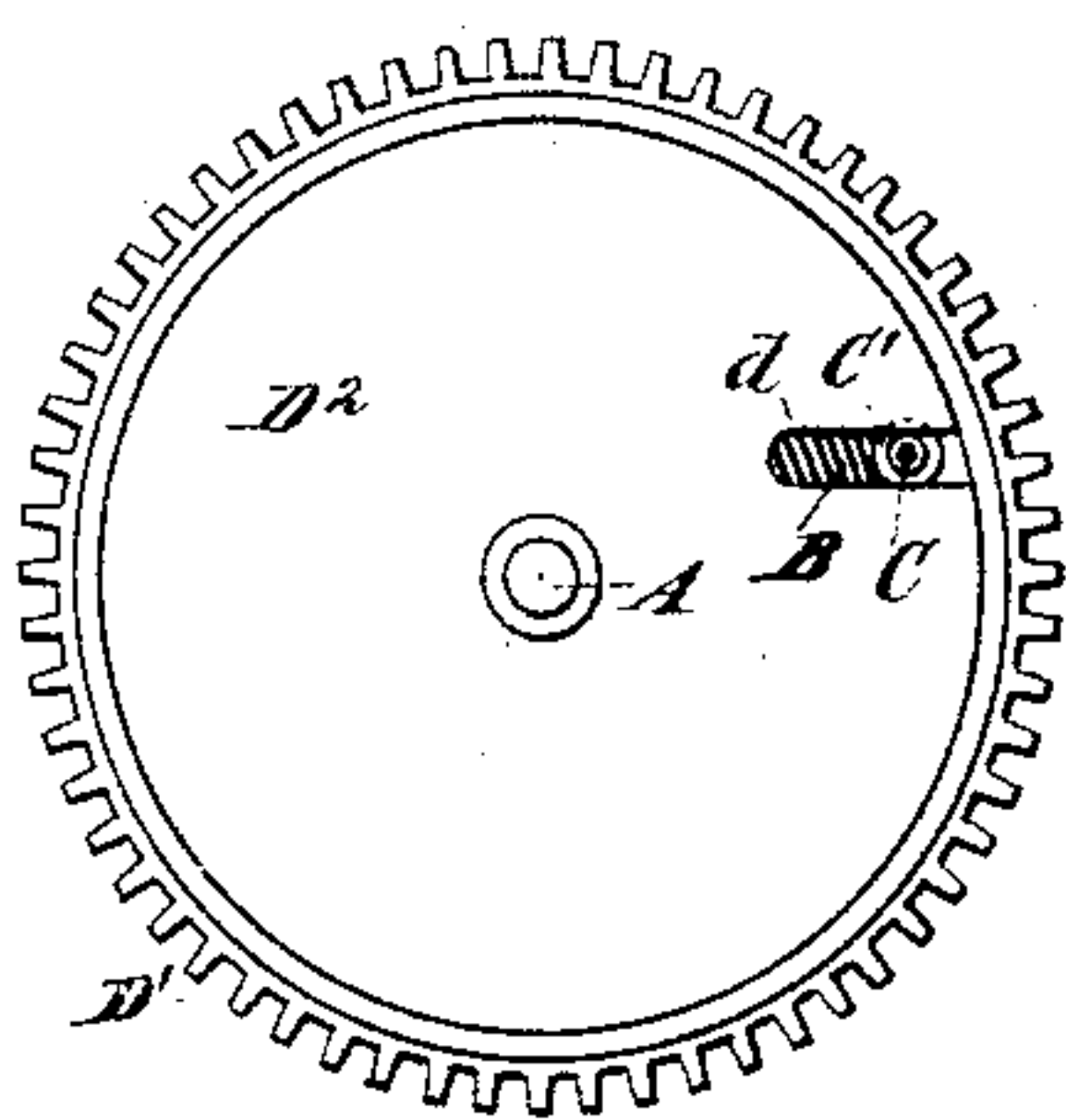


Fig. 2

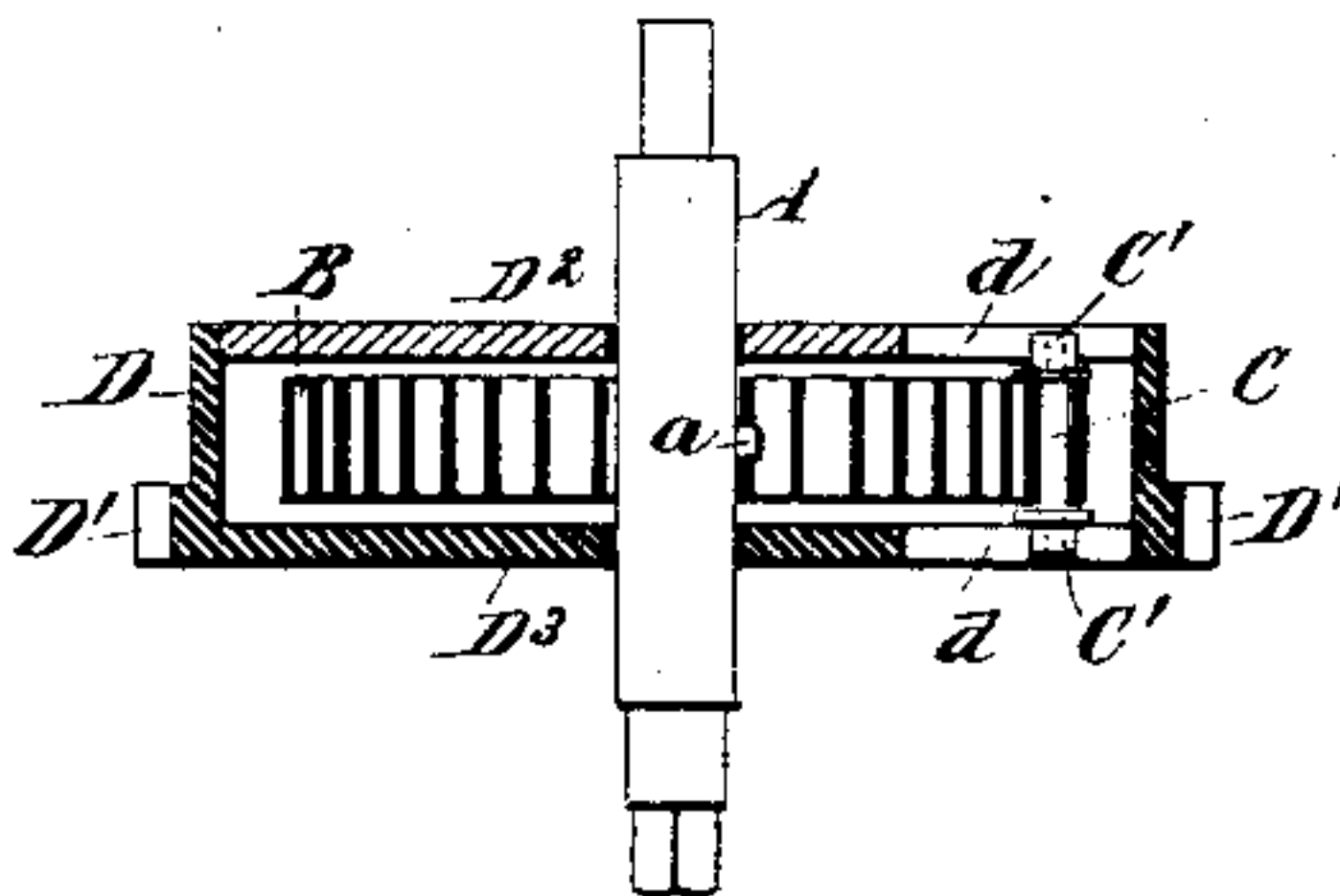
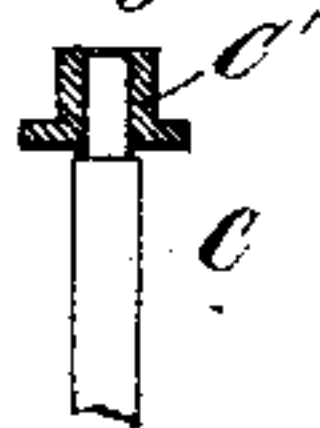


Fig. 3



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UNITED STATES PATENT OFFICE.

GEORGE P. GANSTER, OF READING, PENNSYLVANIA.

CLOCK AND WATCH SPRING.

SPECIFICATION forming part of Letters Patent No. 286,417, dated October 9, 1883.

Application filed February 12, 1883. (No model.)

To all whom it may concern:

Be it known that I, GEORGE P. GANSTER, of Reading, Berks county, in the State of Pennsylvania, (temporarily residing in Newark, in the State of New Jersey,) have invented certain new and useful Improvements Relating to Clock and Watch Springs, of which the following is a specification.

I will describe the invention as applied to a watch.

As ordinarily arranged, watch-springs act to impel the machinery of the watch with less force when they are nearly unwound than when the spring is freshly wound up. Much pains were formerly taken to remedy the mischief by preparing what was known as a "fusee." Of late the inequality has been endured, but it is acknowledged as an evil.

The object of the present invention is to reduce the evil by changing the point of attachment of the spring to the inclosing-case, which is revolved thereby. I prepare a slot in each of the two plane faces of the case, each nearly but not quite radial. A pin is inserted through these slots extending across the interior of the case and engaging with the outer end of the spring. When the spring is wound up, the pin is by the same act drawn inward and stands in the inner end of each slot. In this position it has less leverage to revolve the case than when it is in the outer ends of the slots. As the spring is unwound, the pin moves outward in the slot, and when the spring is in its weakest condition the leverage is greatest.

The objects of this invention have been sought to be attained by different constructions and arrangements, as in Patents Nos. 167,372, of 1875, and 137,468, of 1873.

This invention lies in the details of construction, which will be described hereinafter, and specifically pointed out in the claim.

The accompanying drawings form a part of this specification, and represent what I consider the best means of carrying out the invention.

Figure 1 is a front view of the gear-wheel, the attached barrel, and loose shaft. Fig. 2 is a central longitudinal section. Fig. 3 is on a larger scale. It represents a portion of the sliding pin with a cross-section of one of the flanged

rollers turning thereon. The outer end of the spring is secured to the barrel by means of this pin and roller.

Similar letters of reference indicate like parts in all the figures.

A is the shaft, provided with a projection, *a*, adapted to engage with the inner end of the spring.

B is the spring. The inner end is adapted to engage with the projection *a* on the shaft A. The outer end is looped, and engages with a transverse pin, C, which is provided with a flanged roller, C', at each end.

D is the case which incloses the spring, certain portions being indicated by additional marks, as D', when necessary.

D' is a projecting flange, which is toothed, as represented. By this the force of the spring is communicated to the train of wheel-work. (Not represented.)

In the two plane ends D² D³ of the case D are produced two nearly radial slots, *d d*. They lie directly parallel to each other on the two ends, and the pin C extends across through both and engages with the spring B, which lies inclosed within the case.

All the parts of a watch not represented may be of any ordinary or suitable character. The watch is wound, as usual, by turning the shaft by the aid of a suitable key, or, in stem-winders, by turning suitable gearing which connects to the shaft. When the spring is wound up, the pin C, and consequently the point of attachment of the spring B to the case D, is shifted inward. With the slots arranged as shown, the pin will shift to the extreme inner ends of the slots. In this position the leverage is reduced and the force of the tightly-wound up spring, being exerted on the casing D at a less leverage than usual, exerts only a moderate force on the machinery. As by the gradual turning of the casing and the connected machinery the spring is gradually unwound, the position of the pin C shifts more or less rapidly from the inner ends to the middle of the slots, and ultimately to the extreme outer ends thereof. In this position the spring has more leverage and a given force on the spring exerts a greater force on the gearing D'. The effect is to contribute to the equalization of the

force of the spring on the machinery. The adjustment is automatic. Whenever the spring is wound up the motion draws the pin C inward. Whenever the spring is allowed to uncoil the uncoiling moves the pin C outward. The rollers C', fitted loosely on the slightly-reduced ends of the pin C, facilitate the movement of the latter outward and inward in the slots *d* by reducing the friction which opposes such movement, so that it becomes almost inappreciable.

Modifications may be made in the forms and proportions. I can vary the length of the slots *d*, and to some extent the inclination thereof relatively to the radial line on the casing. My experiments indicate that the device will succeed with a wide range of variations in the positions of the slots. If the slots are extended inward farther, the pin C is likely to shift inward farther than the present inner ends of the slots; but it is not useful to extend them much farther than is here shown. If the slots are extended inward farther, the inner ends of the slots are of no use, the pins will never be traversed inward so far as to stand in them.

I do not confine the invention specifically to "watches," technically so called. It may be used for clocks or chronometers and all forms of time-keeping devices, and even for music-boxes and other classes of like machinery which are suitable to be driven by such springs.

I believe the invention will succeed without the rollers C', allowing the ends of the pins C to slide in the smoothly-finished slots *d* without any provision for reducing the friction.

What I claim as my invention is—

In combination with the case D, having slots *d* and toothed flange D', the shaft A, and spring B, the pin C having flanged friction-rollers C', and the whole adapted to serve as and for the purposes set forth.

In testimony whereof I have hereunto set my hand, at New York city, this 9th day of February, 1883, in the presence of two subscribing witnesses.

GEORGE P. GANSTER.

Witnesses:

H. A. JOHNSTONE,
B. E. D. STAFFORD.