

(No Model.)

3 Sheets—Sheet 1.

A. KAISER.

MECHANICAL MOVEMENT FOR CONVERTING MOTION.

No. 334,173.

Patented Jan. 12, 1886.

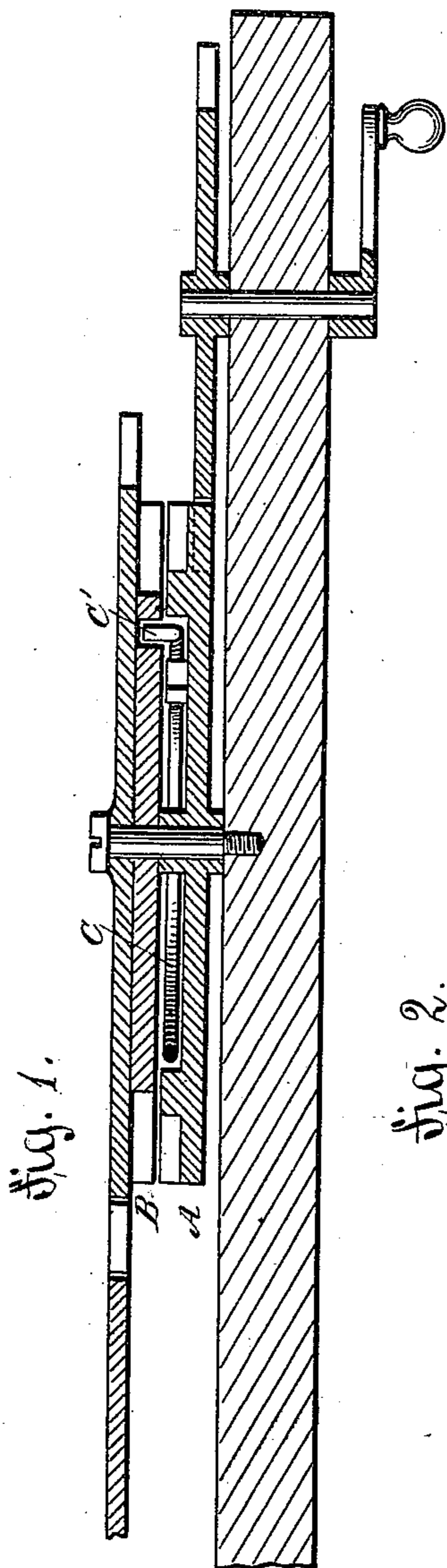
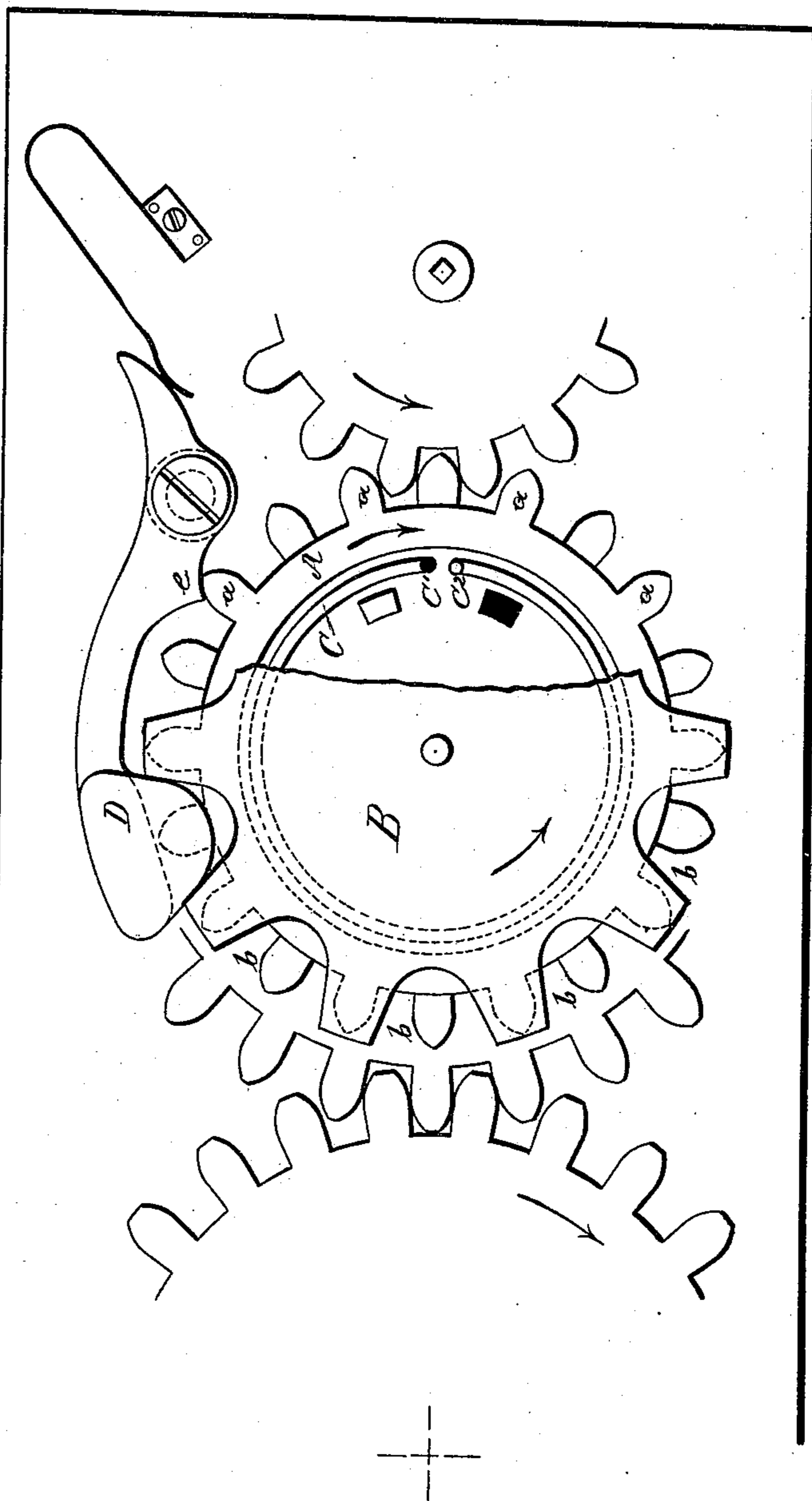


fig. 2.



WITNESSES

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INVENTOR

Alexander Kaiser

By his Attorneys

Georg Meier

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fig. 3.

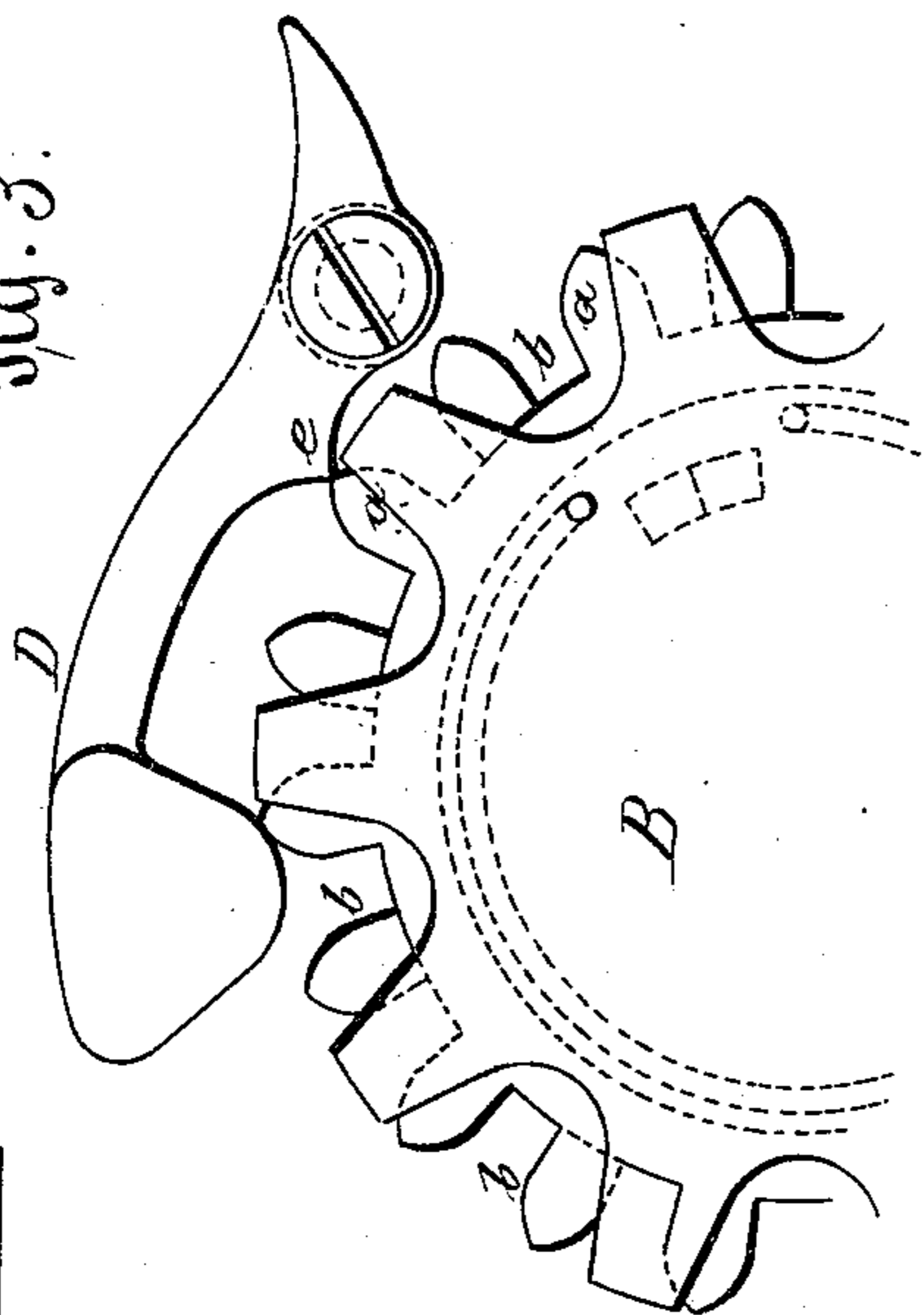


fig. 4.

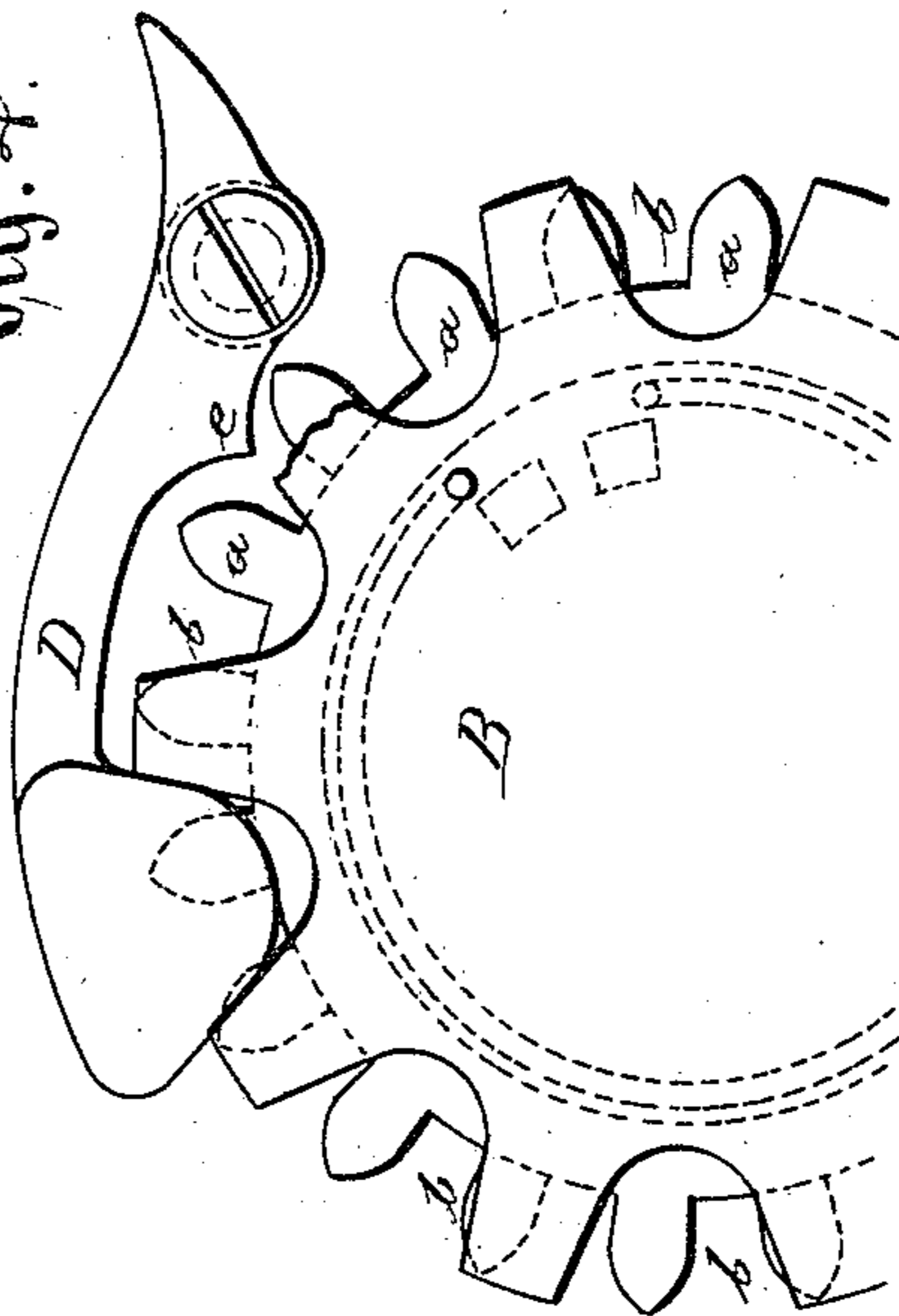


fig. 5.

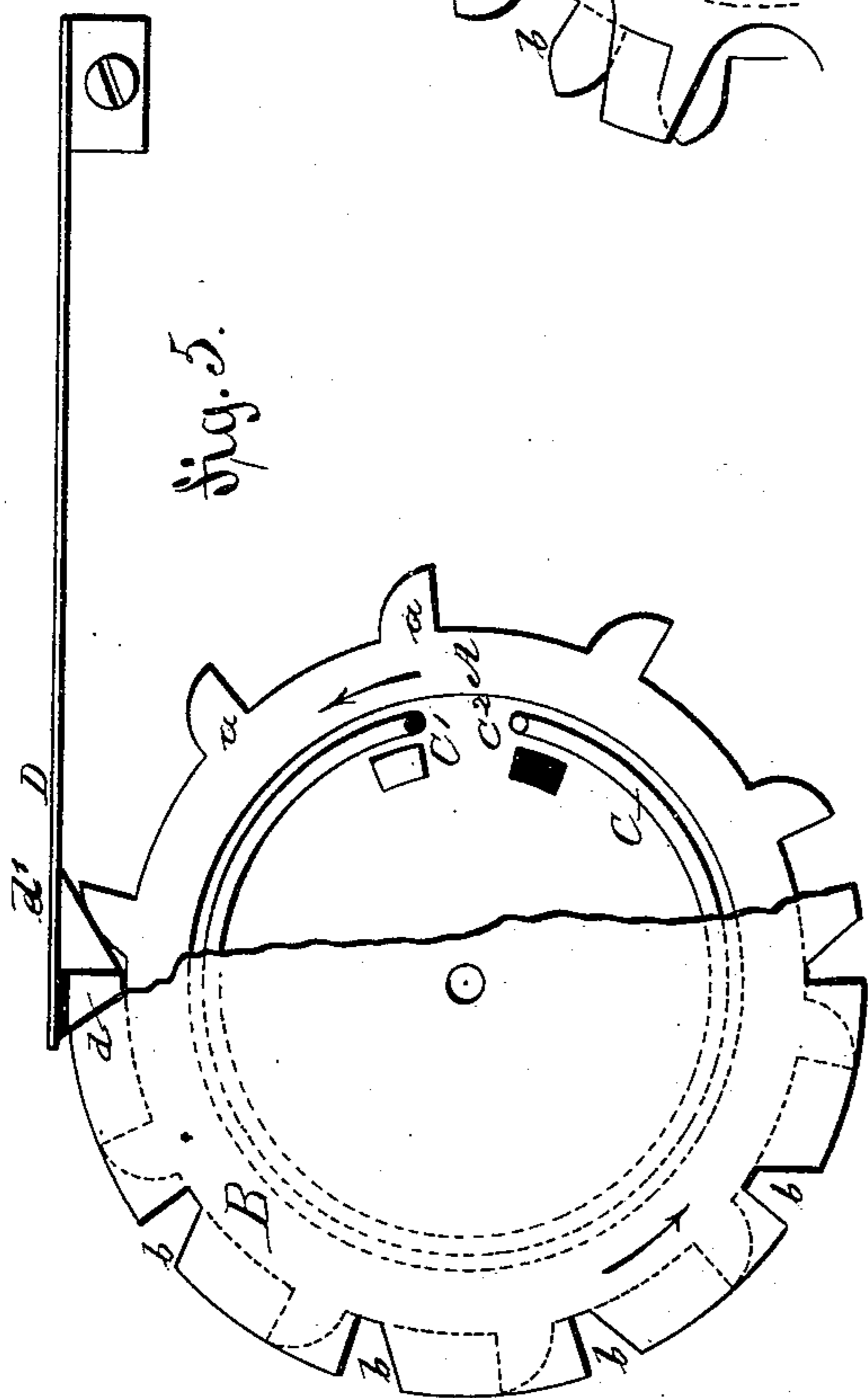
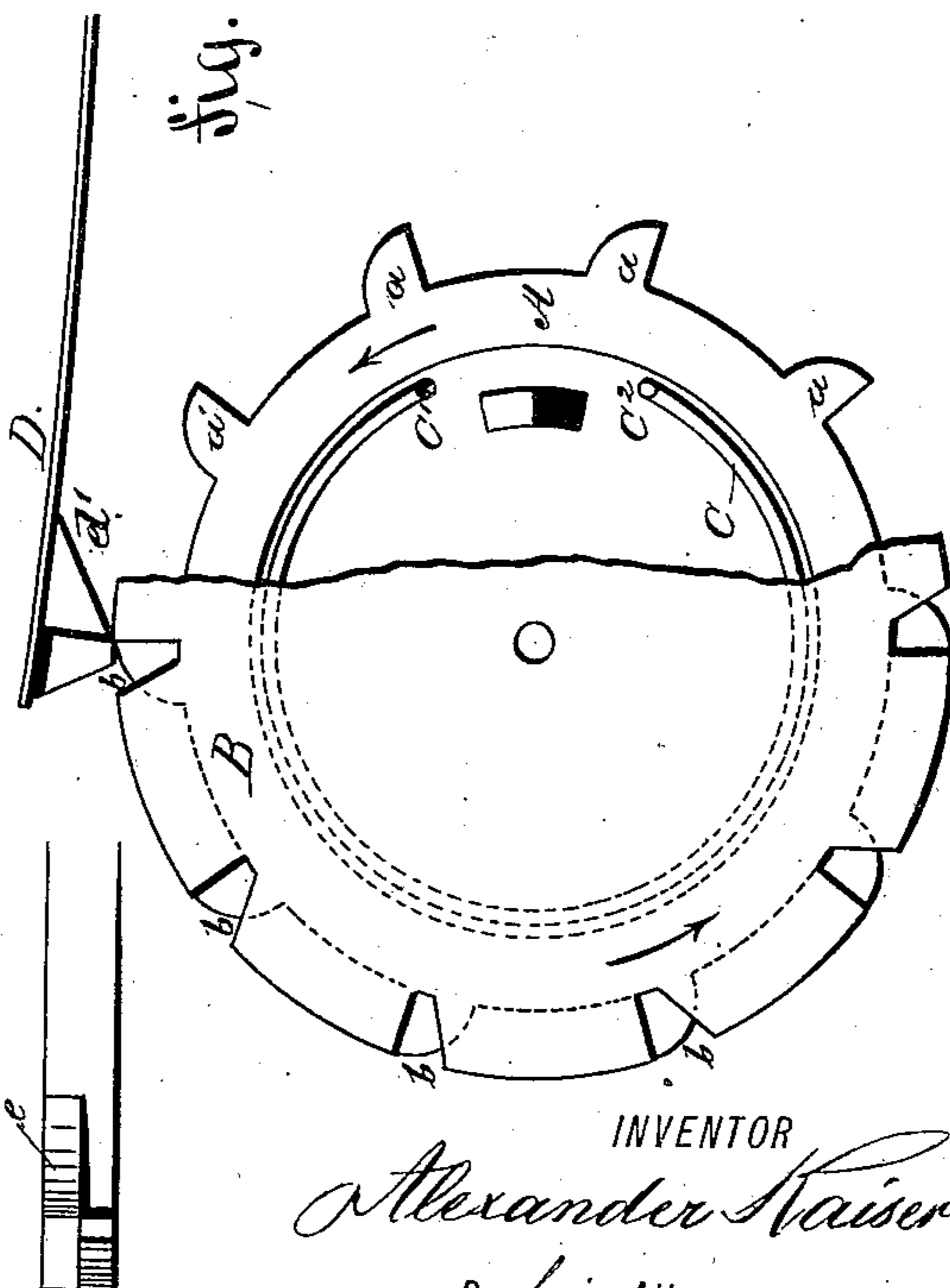


fig. 6.



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fig. 5a.

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(No Model.)

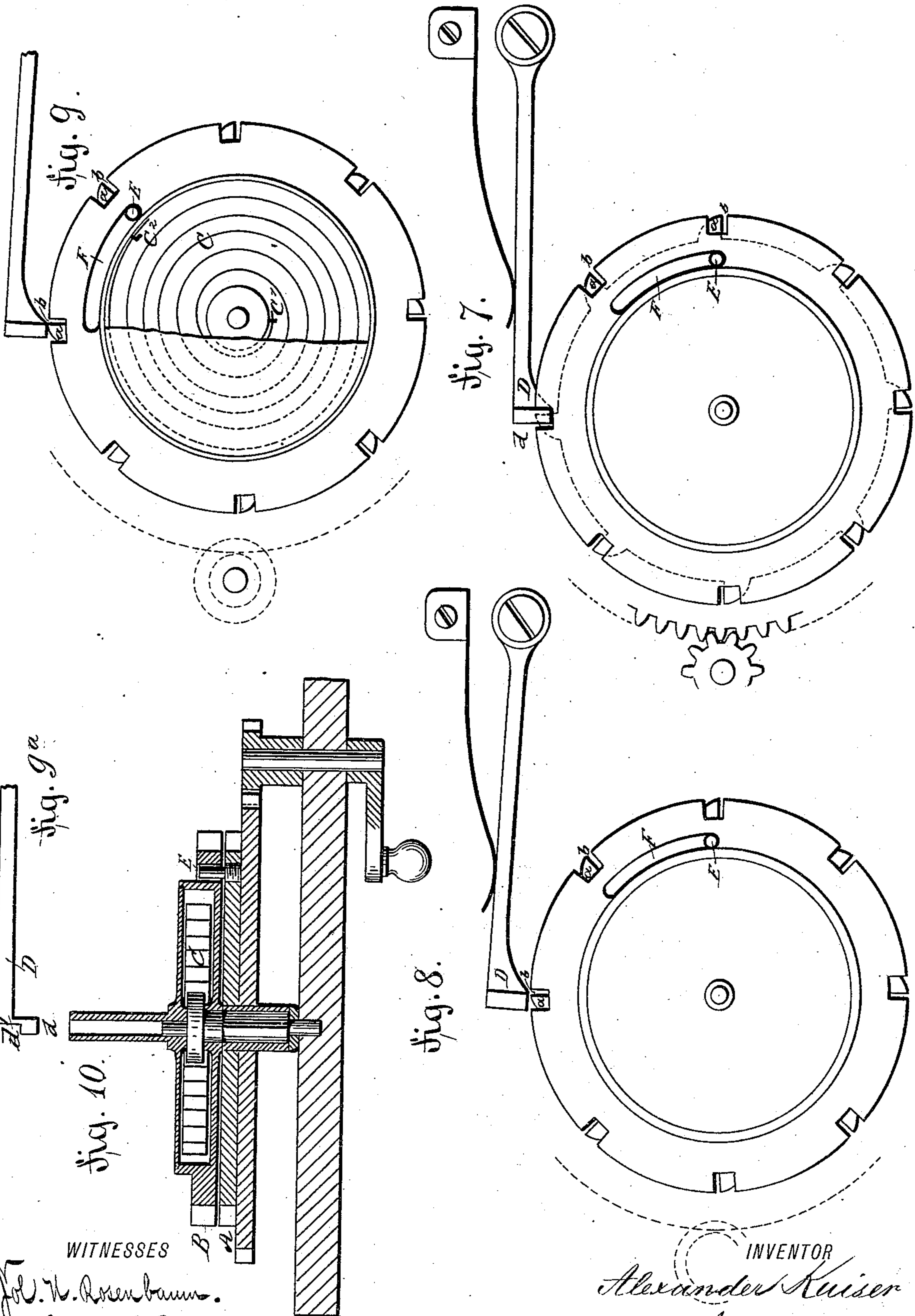
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UNITED STATES PATENT OFFICE.

ALEXANDER KAISER, OF FREYBURG, SWITZERLAND.

MECHANICAL MOVEMENT FOR CONVERTING MOTION.

SPECIFICATION forming part of Letters Patent No. 334,173, dated January 12, 1886.

Application filed June 10, 1885. Serial No. 168,244. (No model.) Patented in Germany December 19, 1883, No. 27,626; in England December 21, 1883, No. 5,833, and in France December 24, 1883, No. 159,376.

To all whom it may concern:

Be it known that I, ALEXANDER KAISER, of the city of Freyburg, Switzerland, have invented certain new and useful improvements in mechanical movements for converting continuous rotary motion into step-by-step rotary motion applicable to counters, watches, and similar apparatus, of which the following is a specification.

This invention has reference to an improved mechanical movement for converting continuous rotary motion into rotary step-by-step motion, said movement being applicable to counters, watches, and similar instruments; and the invention consists of a mechanical movement composed of a rotating gear-wheel, a ratchet-wheel, a tension-spring connecting the ratchet-wheel and gear-wheel, and a spring-actuated pawl that engages the ratchet-wheel and has a nose projecting into the path of the teeth of the gear-wheels, as will be more fully described hereinafter, and finally be pointed out in the claims.

In the accompanying drawings, Figure 1 represents a vertical longitudinal section; Fig. 2 a side elevation, with parts broken away, of my improved mechanical movement. Figs. 3 and 4 are side elevations showing it in different positions. Figs. 5 and 6 are side elevations, with parts broken away, of modified forms of the same; and Fig. 5^a is a detail bottom view of the pawl shown in Fig. 5, and Figs. 7, 8, 9, and 10 show another modified construction in which a spiral spring is used as the tension-spring, and Fig. 9^a is a detail of the pawl shown in Fig. 9.

Similar letters of reference indicate corresponding parts.

My improved mechanical movement consists of a gear-wheel, A, having teeth *a a*, a ratchet-wheel, B, having recesses *b b*, a tension-spring, C, and a pivoted and spring-actuated pawl, D. The pawl D engages the teeth of the ratchet-wheel B, which is of the same exterior diameter as the gear-wheel A and mounted loosely on the arbor of the same. The gear-wheel A receives continuous rotary motion by a suitable gear-wheel transmission, while the ratchet-wheel B is retained by the

pawl D until the pawl is released after the ratchet-wheel B has moved for a certain distance.

The ratchet-wheel B is connected in any suitable manner to the mechanism to which my improved mechanical movement is applied, so as to impart to the same the intermittent rotary motion which it receives from the continuously-moving gear-wheel A. The tension-spring C is connected at one end, C', to the gear-wheel A and at the other end, C², to the ratchet-wheel B, so that when the latter is locked by the pawl D a tension is imparted to the spring by the continuous motion of the gear-wheel A. The tension of the spring C causes, at the moment when the pawl D releases the ratchet-wheel B, the quick forward motion of the latter for a distance corresponding to the distance between the teeth of the gear-wheel A.

The unlocking of the pawl D from the recesses of the ratchet-wheel B is secured by a nose, *e*, that is engaged by the teeth *a a*, as shown in Figs. 2, 3, and 4.

In Figs. 2, 4, and 5 the pawl is shown in position to lock the gear-wheel while the spring is placed in tension, while in Figs. 3 and 6 the device is shown when the pawl is lifted out of the teeth of the ratchet-wheel, so that the intermittent forward motion of the ratchet-wheel takes place.

In place of the tension-spring C, (shown in Figs. 2 to 6,) a spiral spring may be used, as shown in Figs. 7, 8, 9, and 10. The spiral spring is attached, respectively, at its inner end to the gear-wheel A and at its outer end to the ratchet-wheel B. The gear-wheel A is provided with a pin, E, that moves in an arc-shaped slot, F, of the ratchet-wheel, which has the advantage that the wound-up spiral spring cannot unwind to a greater extent than the distance between the teeth of the gear-wheel A.

In Fig. 7 the ratchet-wheel is shown immediately after its forward motion has taken place; in Fig. 8, at the moment when the forward motion is to take place; and in Fig. 9, after the same has been accomplished, but before the locking of the ratchet-wheel by the pawl has taken place. It will be readily seen

that in the latter position the ratchet-wheel B is stopped by the pin E until the pawl is dropped into the next recess of the wheel B.

5 Figs. 5^a and 9^a show a modified shape of the pawl D, in which the nose *d'* is arranged sidewise of the end of the pawl D, so as to be engaged by the teeth of the gear-wheel A.

10 In place of attaching the stop-pin E to the gear-wheel A it may be applied to the ratchet-wheel B, in which case the slot F is arranged in the gear-wheel A.

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

15 1. A mechanical movement for converting continuous rotary motion into intermittent rotary motion, consisting of a rotating gear-wheel, a ratchet-wheel, a tension-spring connecting the ratchet-wheel and gear-wheel, and a spring-actuated pawl engaging the ratchet-

wheel and having a nose projecting into the 20 path of the teeth of the gear-wheel, substantially as set forth.

2. A mechanical movement for converting continuous rotary motion into intermittent rotary motion, consisting of a rotating gear- 25 wheel having a stop-pin, a ratchet-wheel having an arc-shaped slot, a tension-spring connecting the gear-wheel and ratchet-wheel, and a spring-actuated pawl having a nose projecting into the path of the gear-wheel, substan- 30 tially as set forth.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

ALEXANDER KAISER.

Witnesses:

B. ROI,

JOHN R. ROSLYN.