

(Model.)

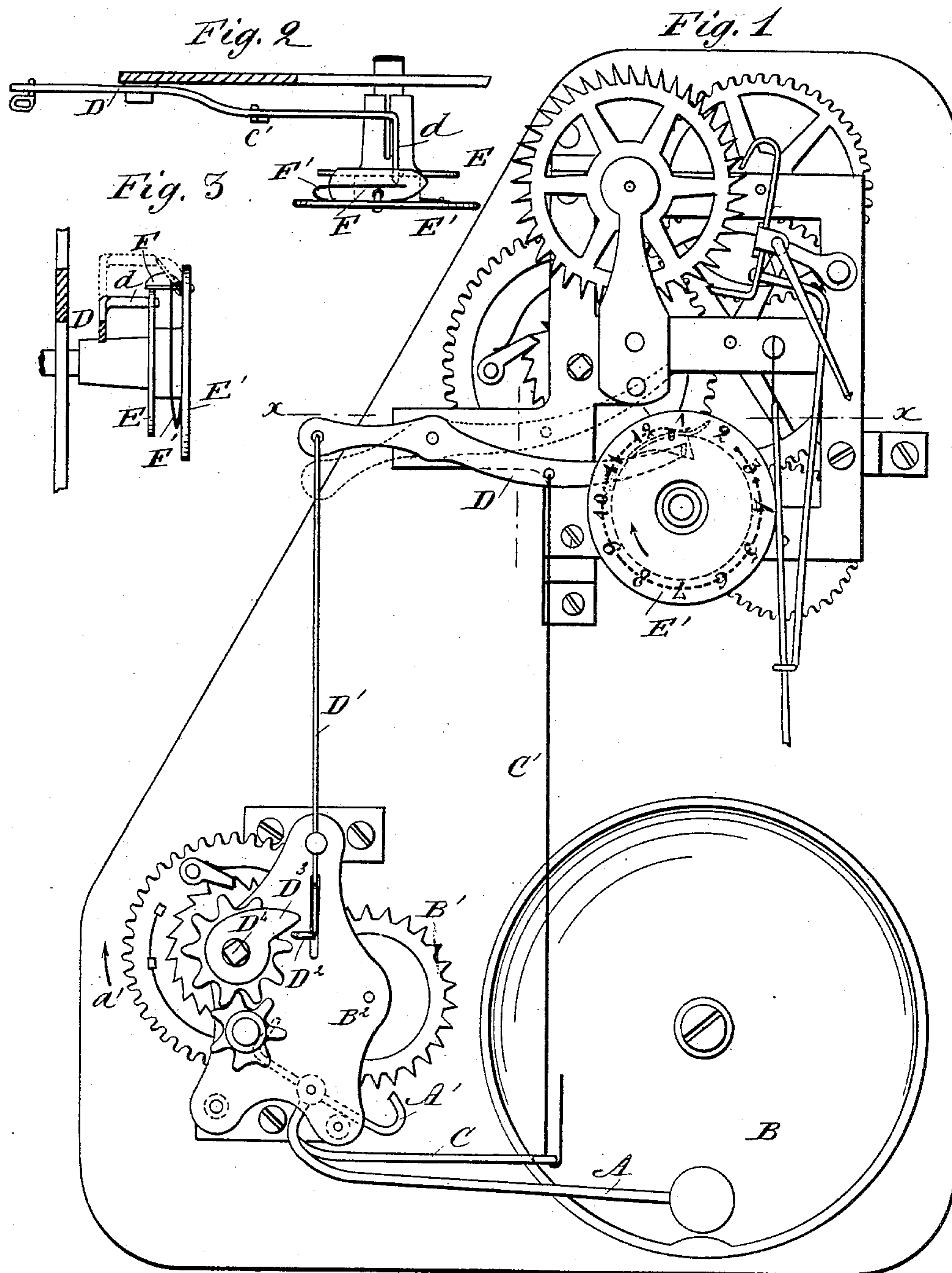
2 Sheets—Sheet 1.

I. ST. CLAIR GOLDMAN.

ALARM CLOCK.

No. 294,220.

Patented Feb. 26, 1884.

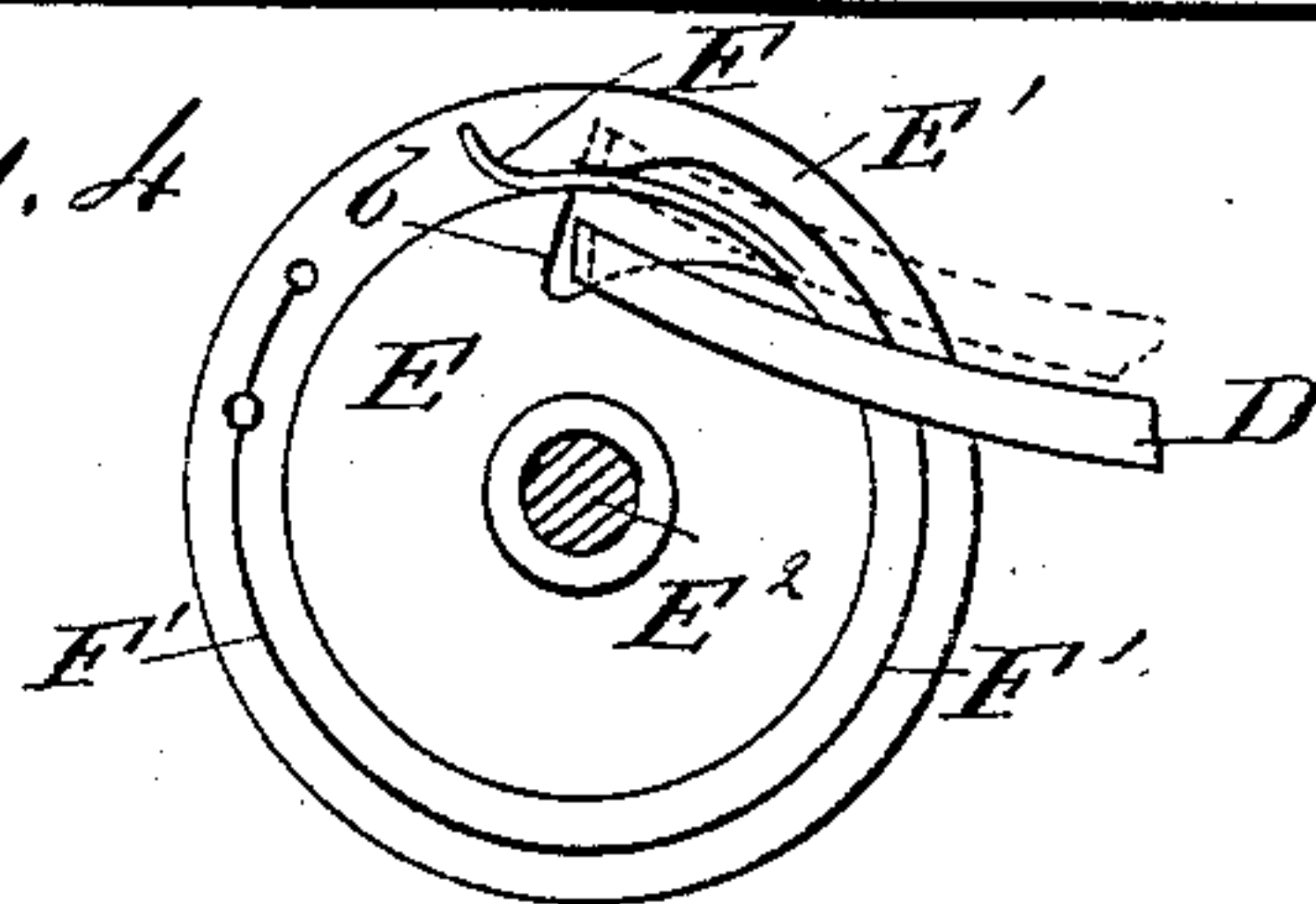


WITNESSES:

C. Neveux

C. Sedgwick

Fig. 4



INVENTOR:

J. S. Goldman

BY

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ATTORNEYS.

(Model.)

2 Sheets—Sheet 2.

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Fig. 5

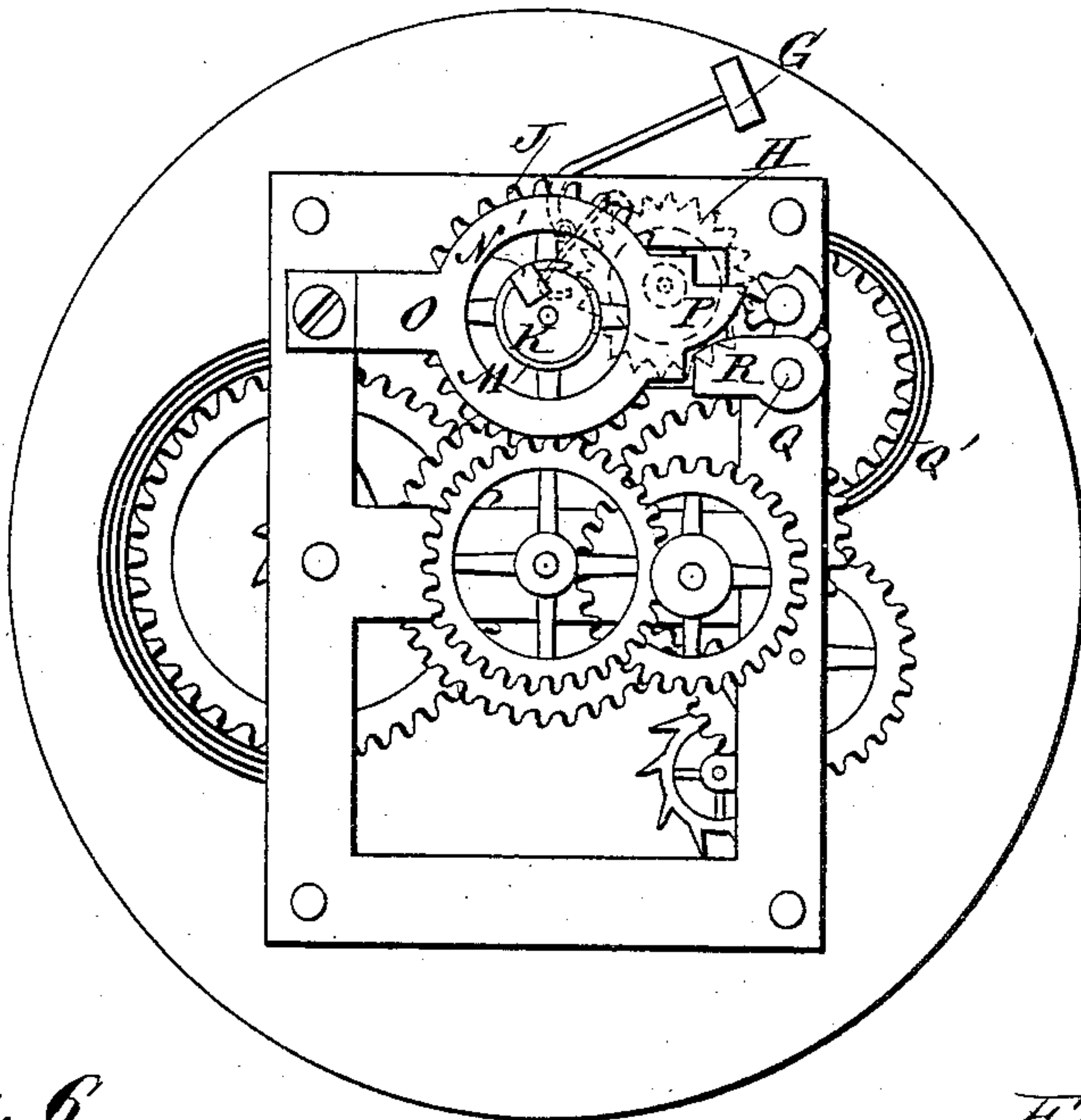


Fig. 6

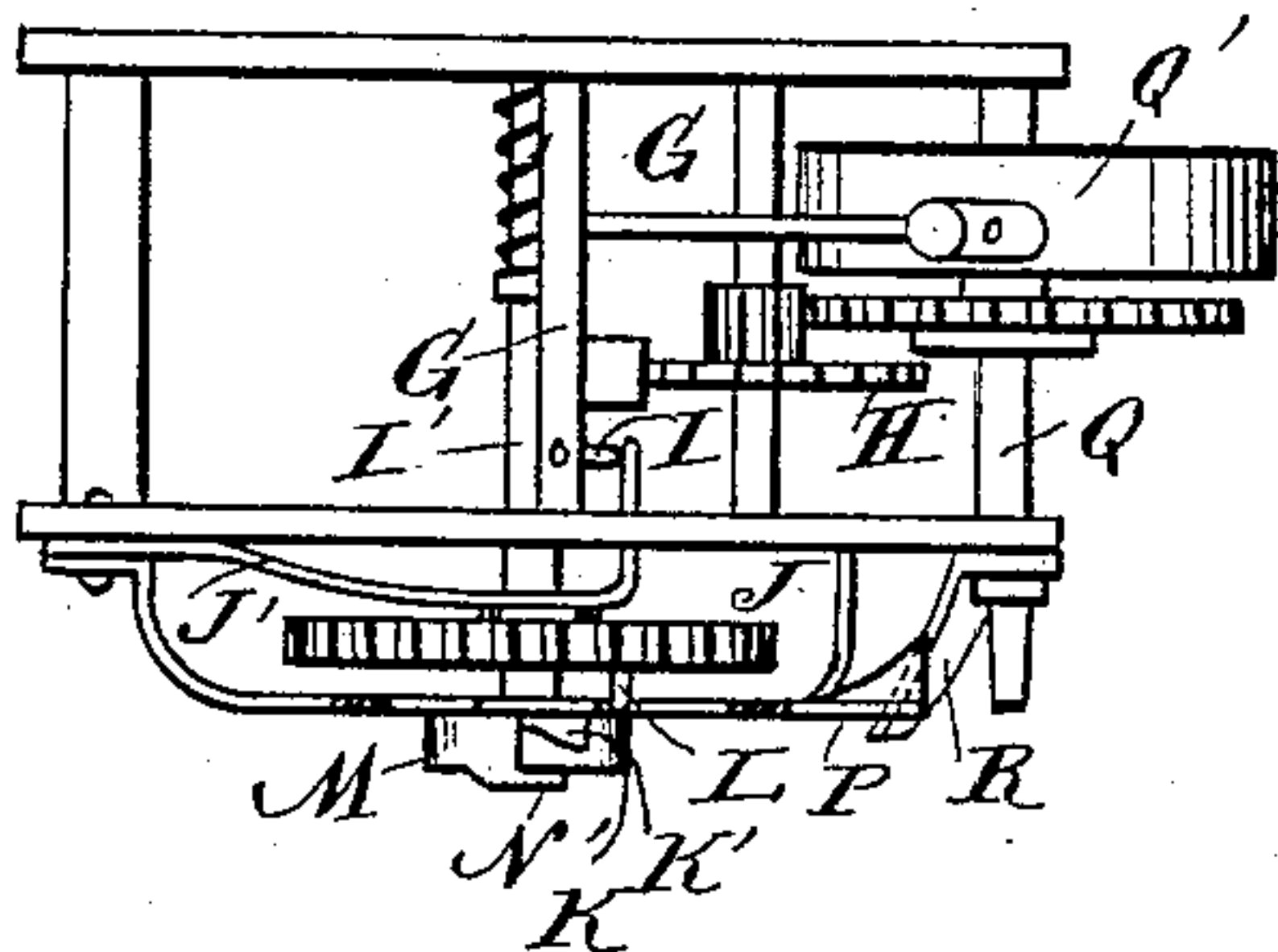


Fig. 8

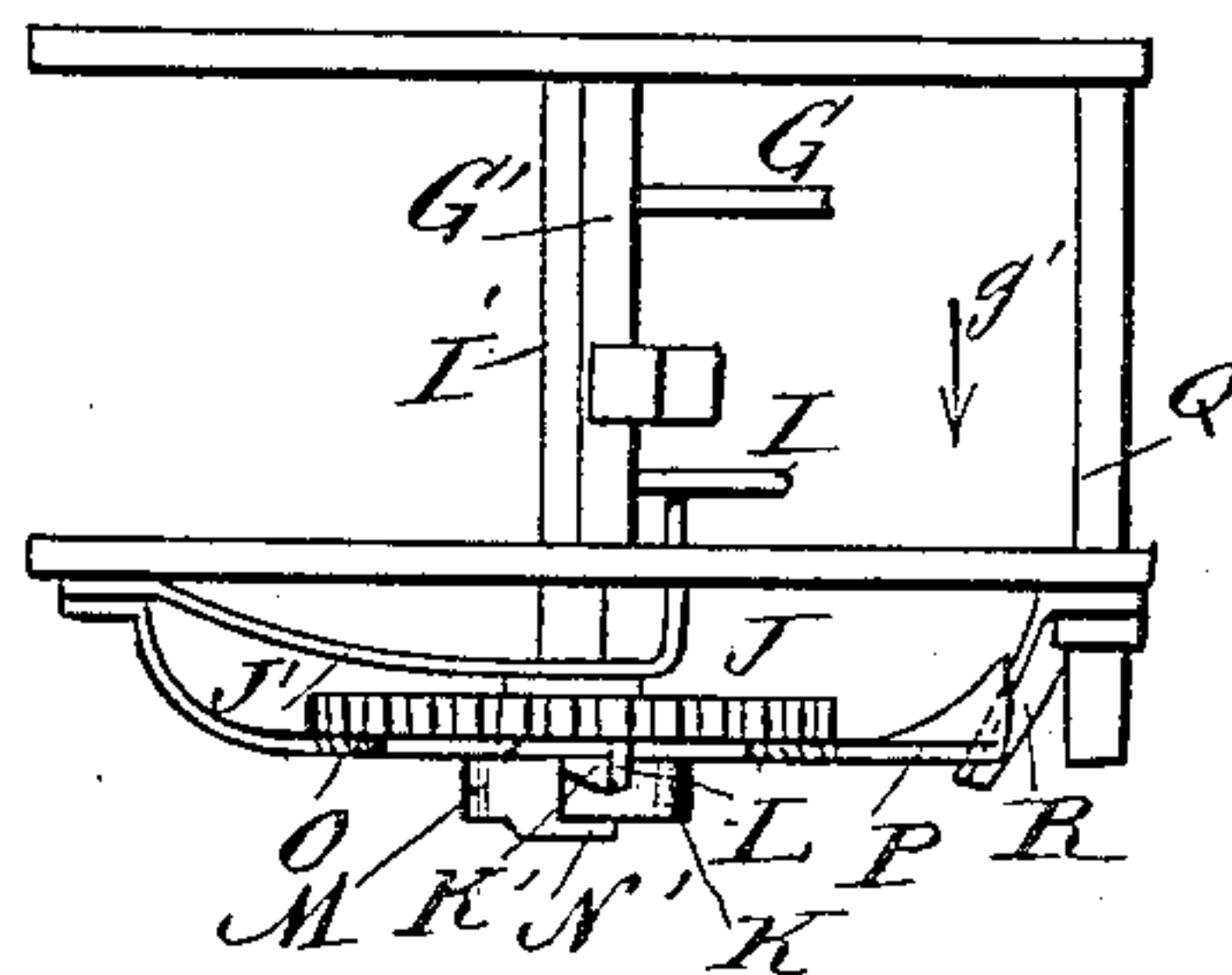


Fig. 10

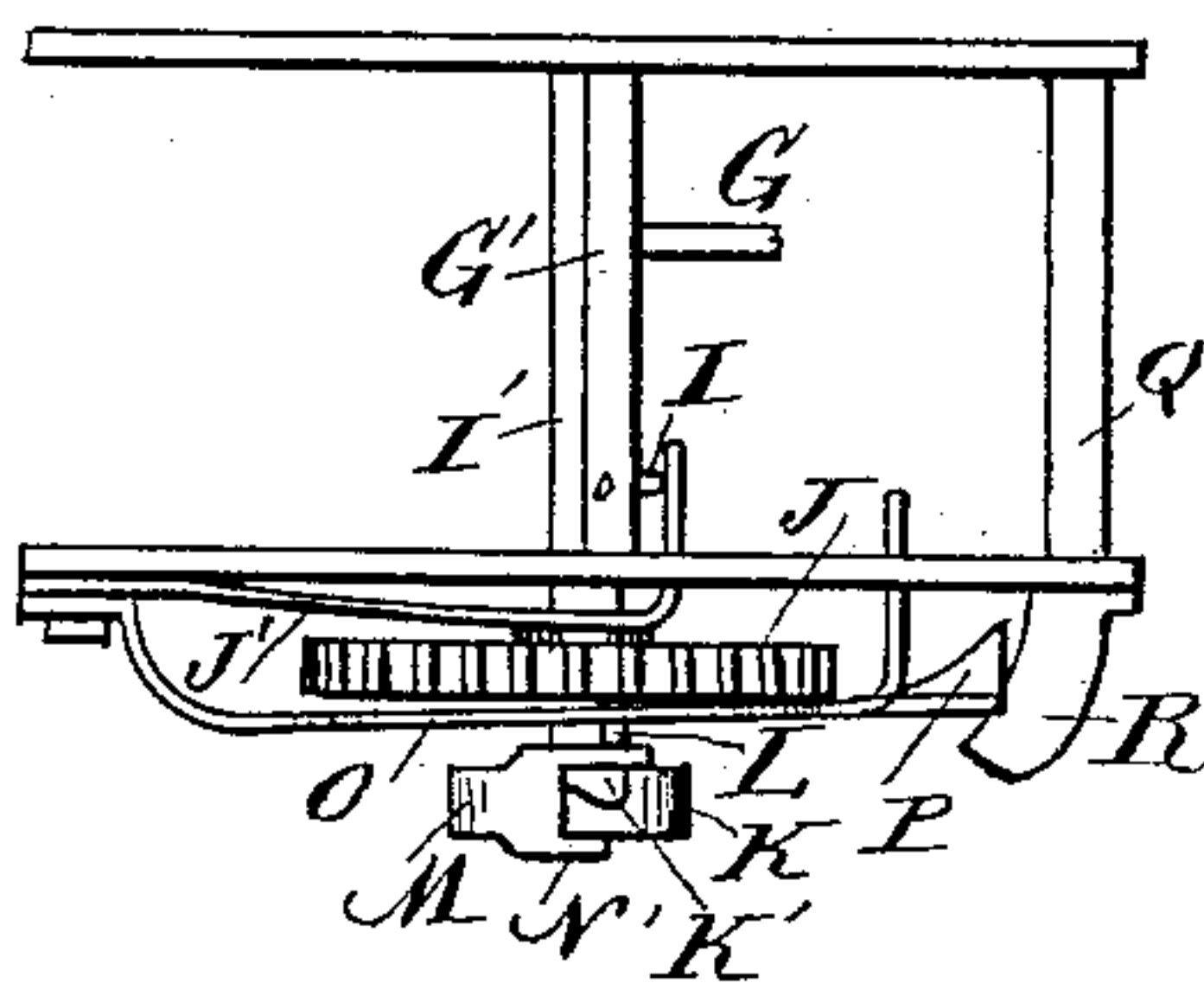


Fig. 7

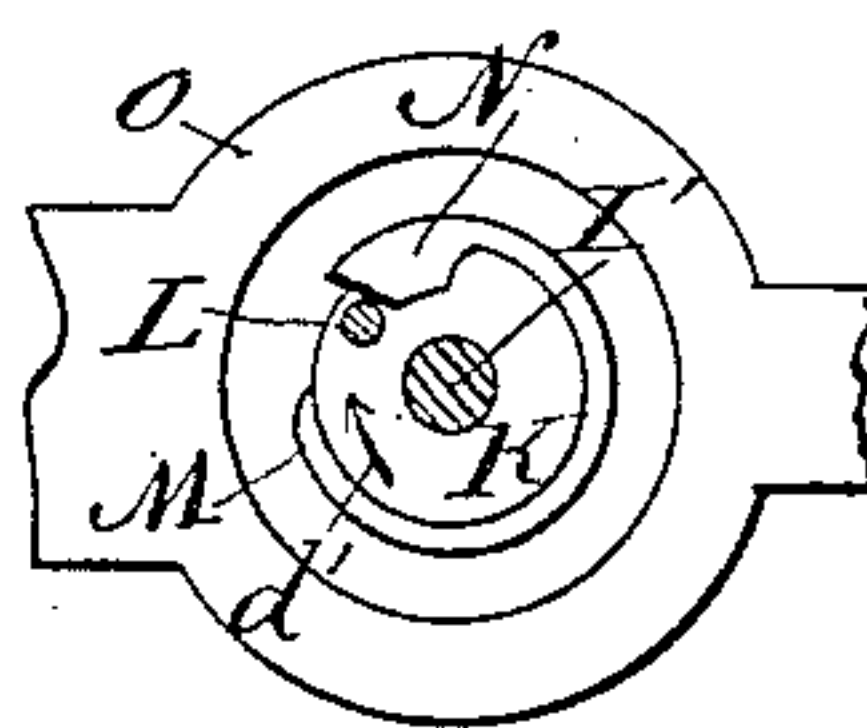


Fig. 9

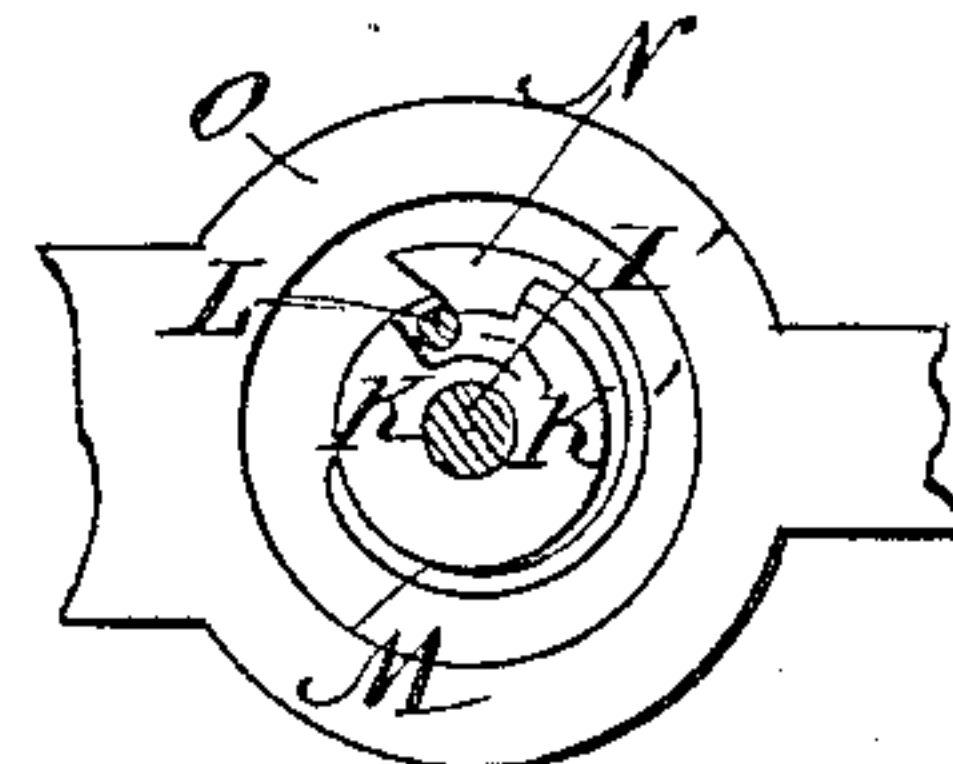
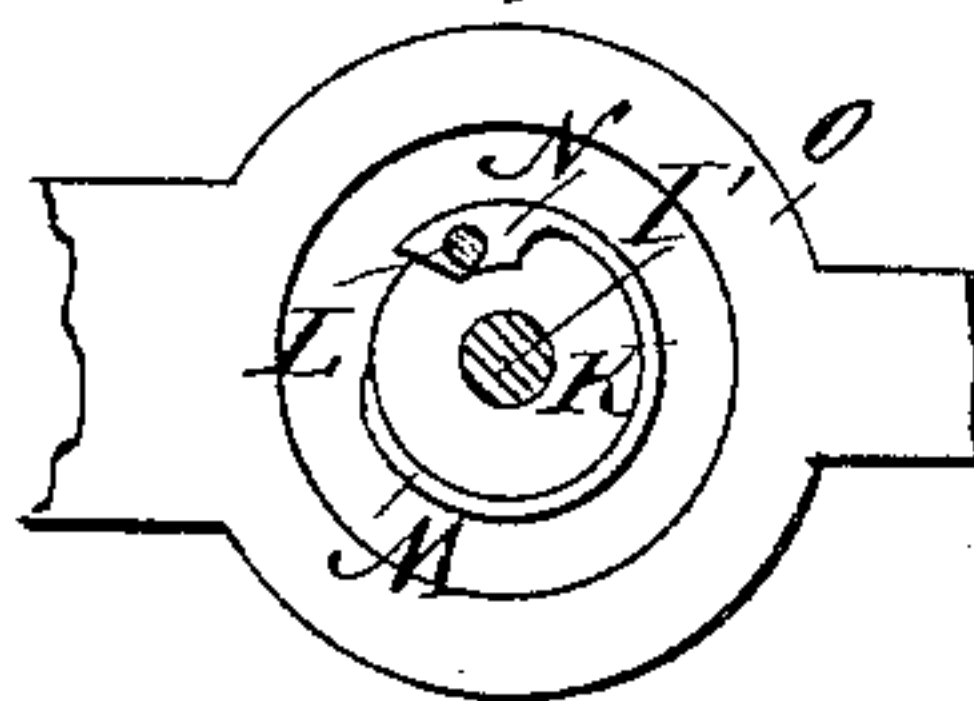


Fig. 11



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UNITED STATES PATENT OFFICE.

ISAAC ST. CLAIR GOLDMAN, OF PASADENA, CALIFORNIA.

ALARM-CLOCK.

SPECIFICATION forming part of Letters Patent No. 294,220, dated February 26, 1884.

Application filed November 23, 1883. (Model.)

To all whom it may concern:

Be it known that I, ISAAC ST. C. GOLDMAN, of Pasadena, in the county of Los Angeles and State of California, have invented a new and useful Improvement in Alarm-Clocks, of which the following is a full, clear, and exact description.

Alarm-clocks made heretofore have been so constructed that, if they were wound up at or about the time corresponding with that at which the alarm-hand points, the alarm-bell would ring and the alarm-spring would unwind as rapidly as it was wound.

The object of my invention is to provide certain new and useful improvements in alarm-clocks, whereby the alarm-spring can be wound at any time without unwinding until the alarm-hand again comes to the time at which the alarm is to be sounded—that is, the alarm-spring can be wound immediately after the alarm-bell has been sounded.

The invention consists in the combination, with an alarm-clock mechanism, of a latch-plate for covering the notch in the disk or wheel for releasing the alarm-spring, which latch-plate is so combined with other mechanism that when the alarm-spring is wound immediately after the alarm has been sounded the latch-plate covers the disk, and thus prevents the lever from passing into the notch, thereby preventing the releasing of the alarm mechanism.

The invention also consists in various parts and details, as will be fully described and set forth hereinafter.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a front view of a clock-work and alarm mechanism provided with my improvement. Fig. 2 is a sectional plan view on the line *x x*, Fig. 1, of the wheel for releasing the alarm mechanism, my improvement being applied on the said wheel. Fig. 3 is a side view of the same. Fig. 4 is a rear face view of the same. Fig. 5 is a face view of the alarm-clock mechanism, showing another construction of my improved alarm-clock work. Fig. 6 is a plan view of the same. Fig. 7 is a plan view

of the under side of the notched disk for releasing the alarm mechanism. Fig. 8 is a plan view of the clock-work, showing the alarm mechanism released. Fig. 9 is a plan view of the under side of the alarm-mechanism-releasing disk, showing the alarm mechanism released. Fig. 10 is a plan view of the clock mechanism, showing the parts in position as they are if the alarm-mechanism spring is not wound immediately after the alarm has sounded. Fig. 11 is a plan view of the under side of the alarm mechanism, showing the position of the parts in the same if the alarm-spring is wound immediately after the alarm has been sounded.

The alarm-hammer A, which strikes a gong, B, is provided with an anchor, A', which is operated by a ratchet-wheel, B', actuated by a suitable spring in the ordinary manner. An arm, C, projects from the shaft of the anchor A', and the outer end of the said arm C is connected by a wire, C', with a lever, D, pivoted on the frame of the clock-work. To the outer end of the lever D a rod, D', is pivoted, the said rod D' being on the opposite side from the rod or wire C', which rod or wire D' is guided in a slot in the plate B² of the alarm mechanism; and the said rod or wire D' is provided at its lower end with an arm or projection, D², adapted to be acted upon by a cam, D³, mounted on the key-spindle D⁴ of the alarm-mechanism spring, so that when the said key-spindle is turned in the direction of the arrow *a*—that is, when the spring is wound—the cam D³ will strike the arm D² and will move the same and its rod D' and the outer end of the lever D downward. A disk, E, provided with a notch, *b*, is mounted on the same sleeve with a disk, E', provided with the numerals from 1 to 12, which sleeve is mounted on the spindle E², which revolves once every twelve hours, or the distance between every two numerals every hour, these disks E and E' being of the usual construction. The inner end of the lever D is provided with a lateral projection, *d*, which rests on the edge of the disk E, and is pressed on the same by the weight of the hammer, which weight of the hammer acts on the said lever D by means of the wire C'. A curved latch-

plate, F, is provided at the rear side of the disk E' in such a manner that it can rest on the edge of the disk E over the notch b, and the said plate F can also swing up against the rear surface of the disk E'. The said latch-plate F is pressed on the edge of the disk E by a wire spring or other suitable spring, F', secured to the rear surface of the disk E'. That end of the latch-plate pointing in the direction toward which the disk E is revolved, as indicated by the arrow, is pointed, and is turned upward, as shown in Fig. 4.

The operation is as follows: The disks E and E' are revolved in the direction of the arrow, as shown in Fig. 1, and when the bent end d of the lever D arrives at the notch b of the disk E it drops into the said notch, thereby releasing the alarm mechanism in the usual manner, and the alarm-spring vibrates the hammer A and sounds the bell. If the alarm-spring is to be wound immediately after the bell is sounded, the key-spindle D' is turned in the direction of the arrow a', and the end of the cam D'', striking against the arm D' at the lower end of the wire or rod D', throws the outer end of the lever D downward and the inner end upward, causing the inner bent end, d, of the lever D to swing the latch-plate F upward, and to pass above the said latch-plate. Then the inner end of the lever D descends again, and the projection or bend d will rest upon the latch-plate F. By means of the wire C', the hammer and anchor are held raised, and the ratchet-wheel B' is locked and cannot vibrate the hammer. The disk E then continues to revolve in the usual manner, as stated above, and when the notch b again arrives at the bent end d of the lever D the said bent end d passes under the latch-plate F, drops into the notch b, and thus releases the alarm mechanism, all in the usual manner.

By providing my improvement I am thus enabled to wind the alarm mechanism immediately after the alarm has been sounded, which is a matter of very great convenience, as in the alarm-clocks constructed heretofore the alarm-spring could not be wound until one or two hours after the time the alarm was sounded.

In Figs. 5 to 11, inclusive, I have shown a modified construction of my improvement, which, however, is made on the same principle and operates in the same manner, and is only described to show that my improvement can be applied to different clocks and in different styles. The gong B is struck by a hammer, G, operated by a ratchet-wheel, H. The rocking shaft G', to which the hammer G is fastened, is provided with a projecting arm, I. A cog-wheel, J, is loosely mounted on a spindle, I', and is pressed outward—that is, toward the free end of the spindle—by a spring-strip, J', which is secured to the outer plate of the works, and is bent to project inward from the inner surface of the said front plate to such an extent that it can engage with the arm

I of the rocking hammer-shaft G. On the end of the shaft I' a disk, K, is rigidly mounted, which is provided in its under surface with a notch, K', into which a stud, L, projecting from the outer surface of the cog-wheel J, is adapted to pass. A spring-band, M, has one end secured to the edge of the disk K, and is passed around the edge of the said disk, and is pressed against the same. At its free end the band M is provided with a flange, N, on its inner edge, which flange extends to and projects over the inner or back surface of the disk K, and which flange N has its forward end beveled, as shown. The free end of the spring-band M is also provided with a flange, N', which extends over the outer surface of the disk K, and serves to guide the free end of the spring-band. A bridge, O, provided with a central aperture, into and through which the disk K can pass, is secured at one end to the front plate of the clock-works, and is provided at its opposite or free end with a tongue, P, the surface of which is slightly beveled. A shaft, Q, on which the alarm-mechanism spring Q' is fastened, is provided at its outer end with a cam, R, adapted to engage with the beveled tongue P, and to press the same toward the front plate of the works. The wheel J engages with the other wheels of the clock-work.

The operation is as follows: The wheel J is revolved by the clock-work mechanism, and its stud L, resting against the under surface of the disk K, is moved along the inner surface of the said disk K in the direction of the arrow d', Fig. 7, and encounters the beveled end of the flange N of the spring-band M. As the said wheel J continues to revolve, the stud L, in acting against the beveled end of the said flange, presses it outward, and thus removes it from over the recess or notch K'. The spring J' then forces the wheel J and its stud L in the direction of the arrow g', Fig. 8, and the free part of the spring also moves in the same direction, whereby the inner part of the free end of the spring J' will be disengaged from the arm I of the hammer-shaft G', thus permitting the ratchet-wheel H to act on the hammer-shaft G' and vibrate the hammer. As the wheel J continues to revolve, the stud L slides along the beveled edge of the notch to the under surface of the disk K, and when the stud L has passed the inner end of the flange N the free end of the spring-band M snaps back on the edge of the disk again, and so remains until the stud L again arrives at the beveled end of the flange N. When the hammer is being vibrated, the stud L is in the position shown in Fig. 9—that is, it is within the notch K'—and the inner end of the spring J' will be disengaged from the arm I of the shaft G'. If the alarm-spring Q' is wound, it will immediately uncoil and sound the alarm. In order to prevent this uncoiling of the spring Q', the spring J' must be pressed inward so that its inner end engages with the arm I of the hammer-shaft G', so as to prevent the vi-

brating of this shaft G'. To accomplish this the bridge O is provided. If the key-shaft Q is revolved to wind the spring Q', the cam R strikes the beveled tongue P of the spring-bridge O and presses the same toward the front plate of the clock-work, thereby pressing the wheel J and the inner end of the spring J' inward, so that it can engage with arm I of the hammer-shaft G'. At the same time the wheel J is pressed toward the front plate of the machine to such an extent that the stud L will be drawn out of the notch K'; but as soon as this stud L is drawn out of the notch K' the spring-tension of the band M throws the free end of the same against the edge of the disk K and the flange N will cover or close the notch K'. When the cam R has passed the tongue P, the spring-tension in the bridge O throws the bridge outward again; but the wheel J cannot move outward with it, as the stud L rests on the flange N, as shown in Fig. 11, and cannot pass into the notch K'; but if the stud L cannot pass into the notch K' the spring J' cannot be moved outward, and thus its inner end cannot become disengaged from the arm I of the hammer-shaft G'. When the stud L arrives at the end of the flange N, it slides down the under surface of the disk K and continues to pass over the same in the usual manner. As the hammer-shaft is locked by the spring J' as soon as the spring Q' is wound, the hammer-shaft cannot be operated by the ratchet-wheel. I thus obtain the same results as in the device previously described—that is, I prevent the sounding of the alarm whenever the alarm-spring is wound immediately after the alarm has been sounded. The constructions are the same in principle, as in both cases the notch into which the stud passes for the purpose of releasing the alarm mechanism is covered by a latch-plate, which latch-plate is thrown in place automatically by a cam on the key-shaft of the alarm-mechanism spring.

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

1. The combination, with an alarm-clock mechanism, of a latch-plate for covering the notch in the wheel for releasing the alarm-clock mechanism, substantially as herein shown and described.

2. The combination, with an alarm-clock mechanism, of a latch-plate for covering the notch in the wheel for releasing the alarm-clock mechanism, and of a cam on the arbor for winding the alarm-spring, which cam is adapted to adjust the alarm-releasing device in such a manner that it will rest upon the latch-plate, and thus cannot pass into the notch in the releasing disk or wheel, substantially as herein shown and described.

3. The combination, with an alarm-clock

mechanism having a notched wheel, of a latch-plate for covering the said notch, a spring for pressing the said latch-plate over the notch, and of a cam adapted to act on the lever for releasing the alarm mechanism, for adjusting the said lever in such a position that it will rest on the latch-plate, substantially as herein shown and described.

4. The combination, with an alarm-clock mechanism having a notched wheel or disk, of a latch-plate covering the said notch, a spring for pressing the latch-plate over the said notch, a cam on the spring-winding shaft of the alarm mechanism, and of a lever or a spring-bridge adapted to be acted on by the said cam, substantially as herein shown and described.

5. The combination, with an alarm-clock mechanism having a notched disk or wheel, of a spring-latch adapted to cover a notch, a cog-wheel mounted to slide on the arbor carrying the notched disk, which cog-wheel is provided with a stud, and of a spring for pressing the stud against the notched disk, which spring extends inward, and is adapted to engage with an arm or projection on the hammer-vibrating shaft, substantially as herein shown and described.

6. The combination, with an alarm-clock mechanism, of the notched disk or wheel K, mounted on the end of the shaft I', the spring-band M, terminating in a beveled flange, N, and secured to the edge of the disk K, the cog-wheel J, adapted to slide on the shaft I', the stud L, projecting from the cog-wheel J', adapted to engage with the arm I of the hammer-vibrating shaft G', and of the spring-bridge O, substantially as herein shown and described.

7. The combination, with an alarm-clock mechanism, of the notched disk K, mounted on the end of the shaft I', the spring-band M, terminating in a beveled flange, N, and secured to the edge of the disk K, the cog-wheel J, adapted to slide on the shaft I', the stud L, projecting from the cog-wheel J, the spring J', adapted to engage with the arm I of the hammer-vibrating shaft G', the spring-bridge O, provided with a beveled tongue, P, and of the cam R, mounted on the spindle for winding the alarm-spring, substantially as herein shown and described.

8. The combination, with an alarm-clock mechanism having a notched disk, of means for automatically covering the notch when the clock is wound immediately after the alarm has been sounded, substantially as herein shown and described.

ISAAC ST. CLAIR GOLDMAN.

Witnesses,

T. P. LUKENS,
S. WASHBURN.