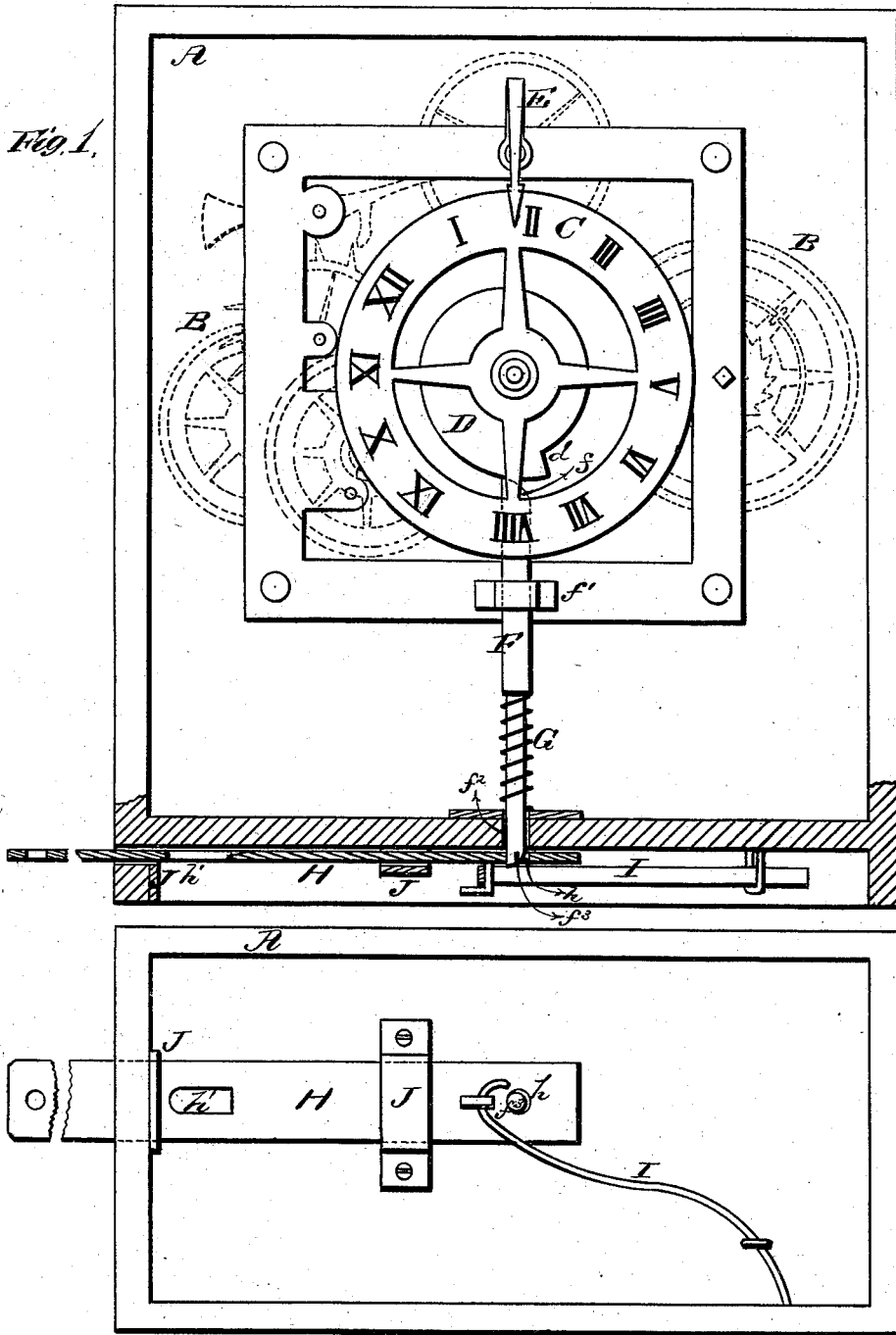


E. H. RANDALL.

CHRONOMETRIC GOVERNORS FOR VARIOUS PURPOSES.

No. 190,077.

Patented April 24, 1877.



WITNESSES  
*Ch. Bates.*  
*George E. Upham.*

*Fig. 2.* INVENTOR, *Edward H. Randall.*  
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# UNITED STATES PATENT OFFICE.

EDWARD H. RANDALL, OF POULTNEY, VERMONT.

## IMPROVEMENT IN CHRONOMETRIC GOVERNORS FOR VARIOUS PURPOSES.

Specification forming part of Letters Patent No. 190,077, dated April 24, 1877; application filed February 3, 1877.

### To all whom it may concern:

Be it known that I, EDWARD HERBERT RANDALL, of Poultney, in the county of Rutland and State of Vermont, have invented a new and valuable Improvement in Chronometric Governors for Furnaces, &c.; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a representation of a front elevation, part sectional; and Fig. 2 is a plan view of the same.

The object of this invention is to produce a simple and reliable automatic device for closing and opening the doors of furnaces, the cocks of gas-pipes and water-pipes, and other mechanism which requires to be operated at certain periods or intervals. This object is accomplished by providing the center arbor of a clock-movement with a snail-cam, which may be set so as to release, at a set time, a spring-operated detent-rod, and combining therewith a spring-operated slide, which is locked by said detent-rod until said cam effects its release, as stated.

In the accompanying drawing, A designates a casing or box, which incloses and protects a clock-movement, B. (Shown in dotted lines in Fig 1.) Said clock-movement is attached to the back of said case A at a point considerably above the bottom thereof, and is provided with a dial, C, and snail-cam D, arranged on its center arbor. Said cam and dial turn with said arbor, but may also be turned independently thereof. E designates an index or pointer, which is attached to the frame-work of the clock-movement B, and points to the characters on said rotating dial C. As the snail-cam D revolves it presses upon the upper beveled end  $f$  of a detent-rod, F, which passes down through a perforated guide-lug or guide-plate,  $f^1$ , and also through a perforation,  $f^2$ , in the bottom of case A. As soon as the horn  $d$  of said snail-cam D passes beyond the said upper end  $f$ , the said detent-rod F is thrown upward by the action of a spring, G, the form of which may be varied

at will. This upward movement withdraws the beveled lower end  $f^3$  of said detent-rod from a perforation or recess,  $h$ , in a slide, H, leaving said slide free to be operated lengthwise by a spring, I. Said slide works through guides J on the bottom of said case A.

To set said governor for operation at any future hour within half a day, turn dial C (and with it snail-cam D attached thereto) until pointer E indicates on said dial the character or characters which correspond to the number of hours intervening before the time for operation. In this movement the lower end  $f^3$  of detent-rod F enters a slot,  $h'$ , of slide H, to prevent binding. Said slot is beveled at its rear end, and said slide is capable of slight flexure. The latter is now moved longitudinally, allowing the action of said beveled slot  $h'$  and beveled lower end  $f^3$  to bend downward the middle part of said slide, which passes under said lower end until perforation  $h$  is reached, when said lower end  $f^3$  drops through said perforation, locking said slide, as stated.

Said slide is shown as operated by retractile power, but may be thrown forward instead. It may be employed to operate a gas-key, cock, furnace-door, time-lock, or any other suitable mechanism requiring to be acted upon in any way at a certain future hour.

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

1. The combination of a clock-movement having a cam on its center arbor with a detent-rod and a spring-operated slide, substantially as and for the purpose set forth.

2. The combination of clock-movement B with snail-cam D, dial C, pointer E, and spring-operated detent-rod F, beveled at both ends, and spring-operated slide H, having perforation  $h$  and beveled slot  $h'$ , substantially as and for the purpose set forth.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

EDWARD HERBERT RANDALL.

Witnesses:

J. FRED. ACKER, Jr.,  
GEORGE E. UPHAM.