No. 864,726. PATENTED AUG. 27, 1907.

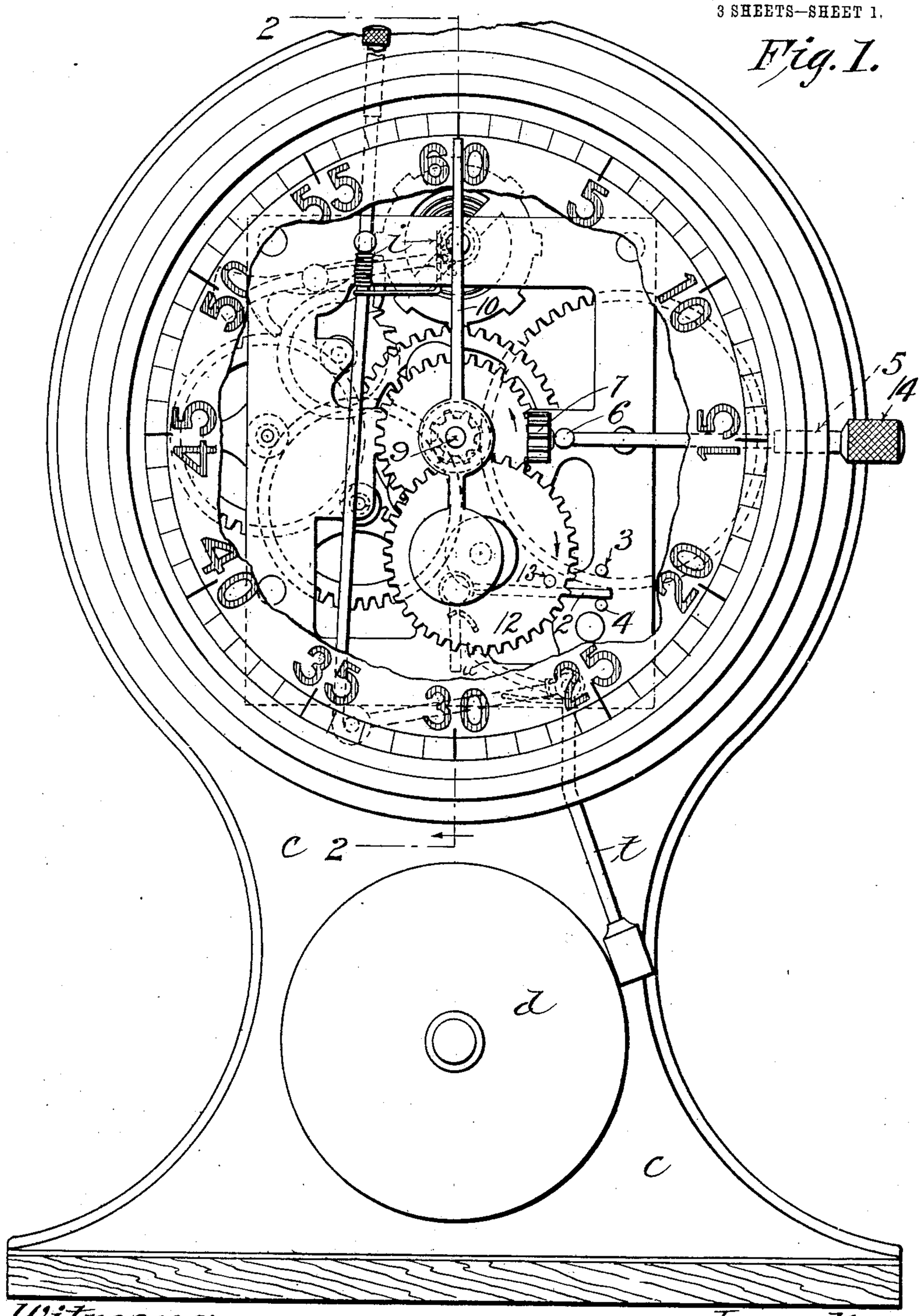
C. J. EMERSON, Jr.

TIME ALARM.

APPLICATION FILED JULY 27, 1906.

3 SHEETS—SHEET 1.

Fig. 1.



Witnesses:
H. L. Sprague
E. H. Scaldwin

Inventor:
Cyrus J. Emerson Jr.
by Chapin & Co.
Attorneys.

No. 864,726. PATENTED AUG. 27, 1907.

C. J. EMERSON, Jr.

TIME ALARM.

APPLICATION FILED JULY 27, 1906.

3 SHEETS--SHEET 2.

Fig. 2.

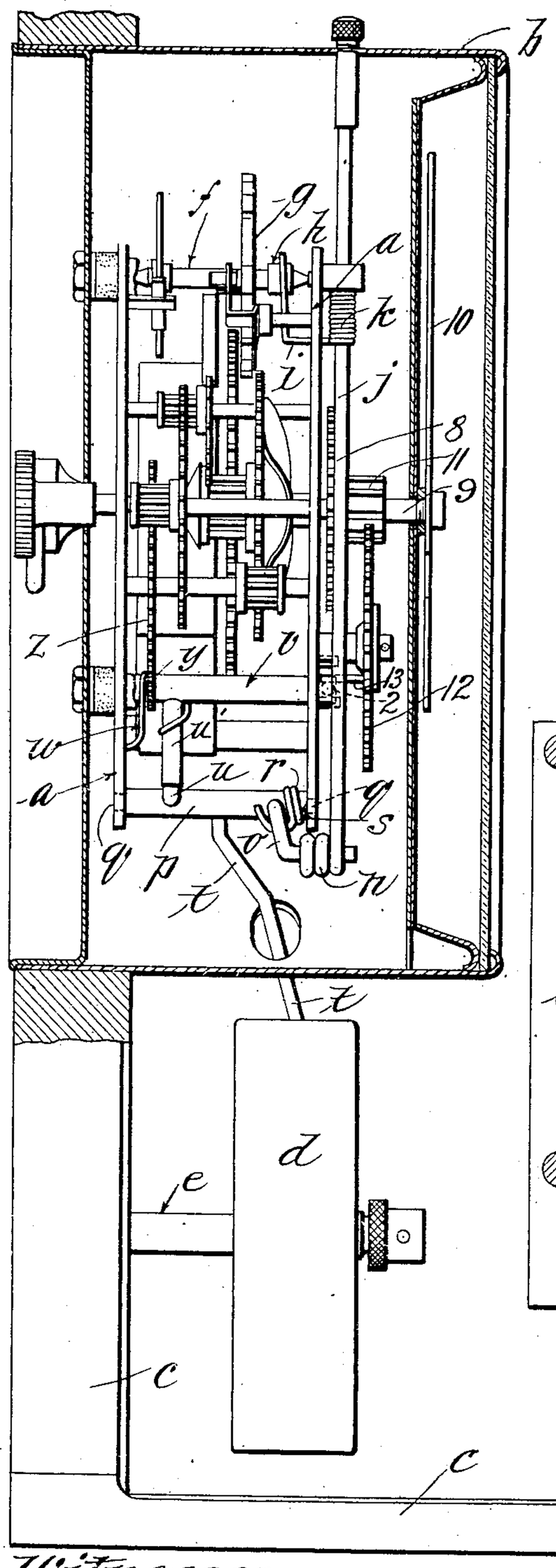
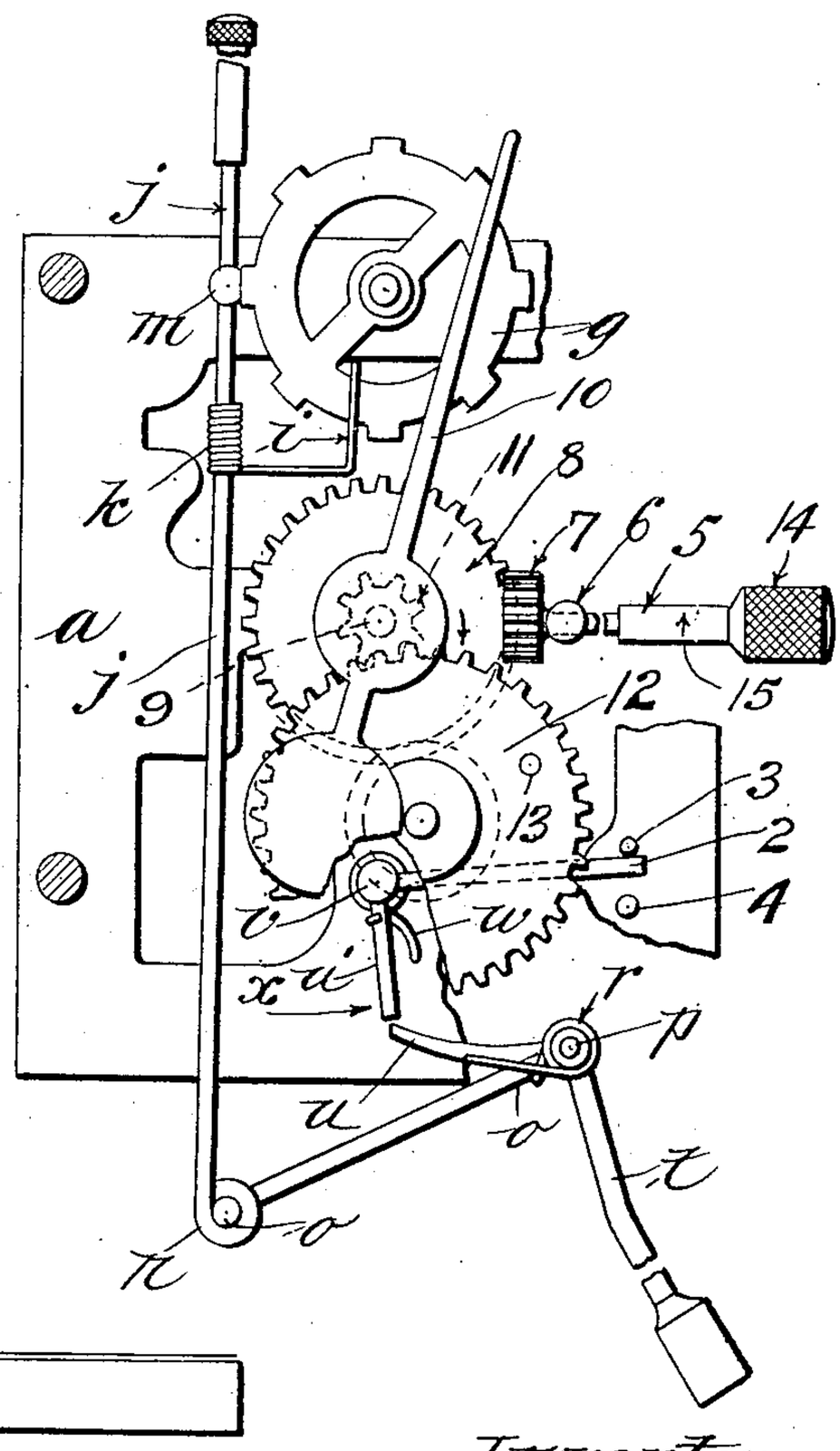


Fig. 3.



Witnesses:
H. L. Sprague
E. H. Scahdin

Inventor:
Cyrus J. Emerson Jr.
by Chapin & Co.
Attorneys.

No. 864,726. PATENTED AUG. 27, 1907.

C. J. EMERSON, JR.

TIME ALARM.

APPLICATION FILED JULY 27, 1906.

3 SHEETS—SHEET 3.

Fig. 4.

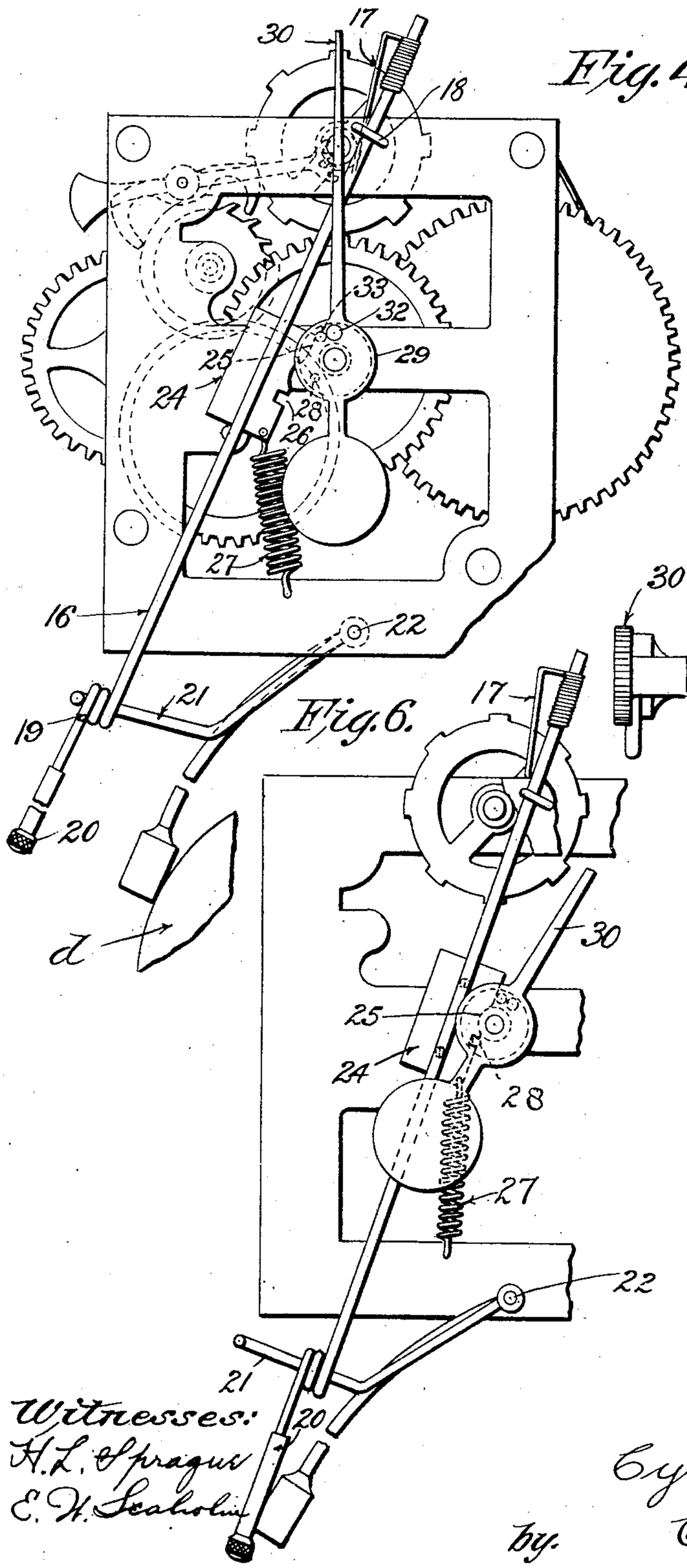


Fig. 5.

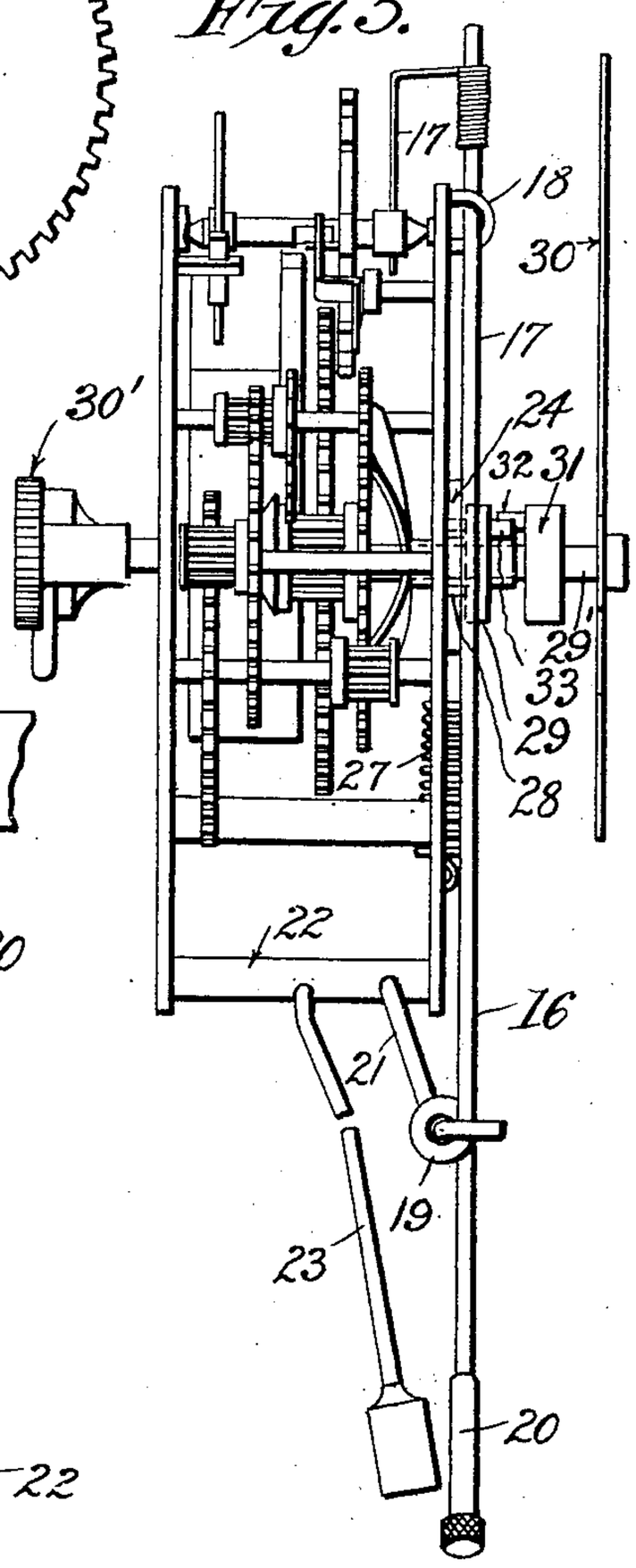


Fig. 6.

Witnesses:
H. L. Sprague
E. H. Scahobin

Inventor.
Cyrus J. Emerson Jr.
by. Chapin & Co.
Attorneys.

UNITED STATES PATENT OFFICE.

CYRUS J. EMERSON, JR., OF WESTFIELD, MASSACHUSETTS, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, OF ONE-HALF TO SAMUEL E. THAYER AND ONE-HALF TO EDWARD C. BRYAN, OF WESTFIELD, MASSACHUSETTS.

TIME-ALARM.

No. 864,726. Specification of Letters Patent. Patented Aug. 27, 1907.

Application filed July 27, 1906. Serial No. 328,030.

To all whom it may concern:

Be it known that I, CYRUS J. EMERSON, Jr., a citizen of the United States of America, residing at Westfield, in the county of Hampden and State of Massachusetts, have invented new and useful Improvements in Time-Alarms, of which the following is a specification.

This invention relates to clocks and particularly to what are known as interval clocks, or clocks that are adapted to be set so as to run for a predetermined period of time and at the end of that period to stop running and at the same time sound an alarm giving notice that the predetermined interval of time has elapsed.

In the drawings forming part of this application,—Figure 1 is a general view of the invention showing the entire structure with a portion of the clock face cut away. Fig. 2 shows a vertical sectional view of the ordinary clock mechanism and in addition my interval attachment. Fig. 3 is a detail elevational view of my attachment removed from the case. Fig. 4 is a front elevation of a modification. Fig. 5 is an end elevation of the same. Fig. 6 is a detail view of the modification.

Referring to the drawings in detail, *a* designates the framework of the clock mechanism; *b* the sheet metal casing; *c* a standard to which the clock-casing is secured; *d* a gong secured to the standard *c* by means of the post *e*; *f* the ordinary escapement shaft carrying the balance-disk *g*. The escapement shaft *f* is preferably enlarged at the point *h*, (though not necessarily so) for the purpose of increasing the leverage of the spring starting finger *i* which is secured to the starting rod *j* by being coiled tightly around the same, as shown at *k*.

m designates a guiding-post on the frame through which the starting rod *j* freely passes.

n designates the coiled lower end of the starting rod *j* affording a proper bearing for the bent arm *o* which is secured to the shaft *p* that is pivotally supported in the two sides of the main frame *a* at *q*.

r designates a coiled spring that has one of its ends secured to the frame at *s*, and its other end hooked under the inner end of the bent arm *o*, as shown in Fig. 1. The purpose of this spring *r* is to normally hold the bell-striking arm *t* against the gong *d*. The arm *t* is carried by the shaft *p*, as shown, to which is secured a trip finger *u* which is held normally in the dotted line position shown in Fig. 1. Pivoted in the sides of the main frame is a shaft *v* carrying a trip-finger u^1 which is normally held by the spring *w* in the direction of the arrow *x* (Fig. 3). Secured to the shaft *v* is a pinion *y* meshing with the gear *z*, see Fig. 2.

2 designates an arm projecting at right angles to the shaft *v* and extending, as shown in Fig. 2, between two pins 3 and 4 on the main frame.

5 designates a shaft rotatably supported in the guide-post 6 and carrying a crown pinion 7 at its inner end adapted to mesh with the teeth of the disk 8. This disk is secured to the arbor 9 and carries the hand or pointer 10. On the arbor 9 is a pinion 11 meshing with a gear 12. Carried by the gear 12 is a trip-pin 13 which travels in the path of the arm 2.

In order to set the clock, the operator rotates the milled thumb-piece 14 on the outer end of the rod 5 (which extends through the clock casing) in the direction of the arrow 15. The gear 8 is rotated by the crown gear 7 downward in the direction of the arrow,—thus turning the pointer 10 forward five, ten, or fifteen minutes, or whatever interval is determined upon. This movement of the disk 8 operates the shaft 9 which carries the pinion 11, and therefore the gear 12 is rotated in the direction of the arrow shown in Fig. 3, and of course carries the tripping-pin 13 with it away from the arm 2 integral with the shaft *v*. The spring *w* then rotates the shaft *v* upward bringing the arm 2 against the upper pin 3, as shown. The next step is to impart a downward motion to the push-rod *j*. This operation, by means of the spring-finger *i* wiping across the enlargement *h* on the shaft *f* starts the clock-train in motion. At the same time the finger *u* is locked under the finger u^1. The pointer 10, pinion 11, gears 8 and 12, then rotate in the opposite directions. The trip-pin 13 moves downward with the gear 12 until it engages the trip-arm 2. Continued pressure on the arm 2 by the pin 13 rotates the shaft *v* and also the trip-arm u^1 until it is moved out of locking engagement with the trip-arm *u*. At this instant the spring *r* throws the starting-rod *j* upward bringing the spring-finger again onto the enlargement *h* thus stopping the clock by reason of the friction between the parts *h* and *i*. The spring *r* at the same time causes the hammer to sound the alarm *d* thus giving notice that the predetermined interval for which the clock was set has expired.

It should be stated that the spaced relation of the pins 3 and 4 indicates the distance that the arm 2 must travel before the trip-fingers *u* and u^1 become disengaged. The operator can therefore set his clock so as to sound the alarm within a very short interval.

Referring to Figs. 4, 5 and 6, which show a modification, 16 designates the sliding push-rod which carries at its upper end the spring-starting finger 17. This rod passes loosely through a staple or eye-piece 18 on the main-frame. The spring-finger wipes across an enlargement on the escapement shaft in the same manner

as in the other figures of the drawings. The lower end of the sliding push-rod is coiled forming a bearing at 19, and is extended below this coil, as shown at 20, constituting a handle for the operator. Passing through the coil 19 is an arm 21 secured to a rock-shaft 22 which carries the bell-striking hammer-arm 23, as shown in Fig. 6. Secured to the sliding push-rod 16 by screws or other means, is a piece of sheet metal 24 which has a curved part 25 and a notch 26 therein below the curved part 25. 27 designates a coil-spring normally under tension and secured to the lower edge of the plate 24 and the main frame of the clock. This spring exerts a tension to normally hold the push-rod 16 downward, as shown in Fig. 4. 28 designates a pin on the disk 29 carried by the minute-arbor 29^1 and adapted to enter the notch 26 when the push-rod 16 is forced upward into the position shown in Fig. 6 by the operator exerting pressure on the part 20. The means of turning the pointer or hand 30 forward employed in this construction is the usual thumb-piece 30^1 in the back of the clock-case. Also located on the minute-arbor 29^1 is a disk 31 carrying a pin 32 adapted to engage the pin 33 on the disk 29. It will therefore be seen that when the minute-arbor 29^1 is rotated by the thumb-piece 30^1 to set the pointer 30 ahead any given number of minutes, that the pin 33 engages the pin 32 to rotate the pointer 30. Upon the reverse movement of the clock-train, the pin 32 acts against the pin 33, which, in turn, forces the plate 24 outward until the plate is disengaged from the latch or trigger-pin 28, when the spring 27 pulls the rod 16 downward causing the shaft 22 to be rotated and the alarm sounded. It being understood that the alarm will not be sounded until the pointer reaches the zero position. When the rod 16 is forced upward, the wiping finger 17 starts the clock-train in motion.

Having thus described my invention, what I claim and desire to secure by Letters Patent of the United States, is:—

1. In an interval clock mechanism, a push-rod carrying a starting finger, an alarm device, a pointer carried by the minute-arbor, a pinion also carried by the minute-arbor, a gear meshing with said pinion and carrying a trip-pin, an oscillatory shaft in the lower part of the main frame, a trip-finger carried thereby, an arm also carried by the oscillatory shaft, two pins for limiting the movement of the arm, a coiled bearing formed at the lower end of the push-rod, a second oscillatory shaft, an arm secured to the same and passing through the coil-bearing on the push-rod, a trip-finger carried by the second oscillatory shaft, and in the path of the trip-finger carried by the first-named oscillatory shaft, means for rotating the minute-arbor in one direction and the gearing meshing therewith at a given interval of time, whereby when the push-rod is operated the clock-train is set in motion and whereby the trip-fingers are disengaged from each other at the expiration of the predetermined interval and the alarm sounded.

2. In an interval clock, a minute-arbor carrying a pointer, a starting and stopping push-rod for the escapement arbor, connecting means between the push rod and trip mechanism and including an alarm hammer, said trip mechanism being operatively connected to the minute-arbor whereby the clock-train is stopped at the expiration of the predetermined interval and the alarm sounded.

3. In an interval clock mechanism, means for rotating the minute-arbor, a pointer carried thereby, a spring-finger for engaging the escapement arbor, a push-rod carrying the spring-finger, connecting means between the push-rod and the trip-mechanism including two oscillatory shafts carrying trip-fingers, said trip-fingers adapted to engage each other, one of the oscillatory shafts being connected to the push-rod and the other oscillatory shaft being connected to the minute-arbor and driven from the clock-train.

CYRUS J. EMERSON, JR.

Witnesses:
HARRY W. BOWEN,
K. I. CLEMONS.