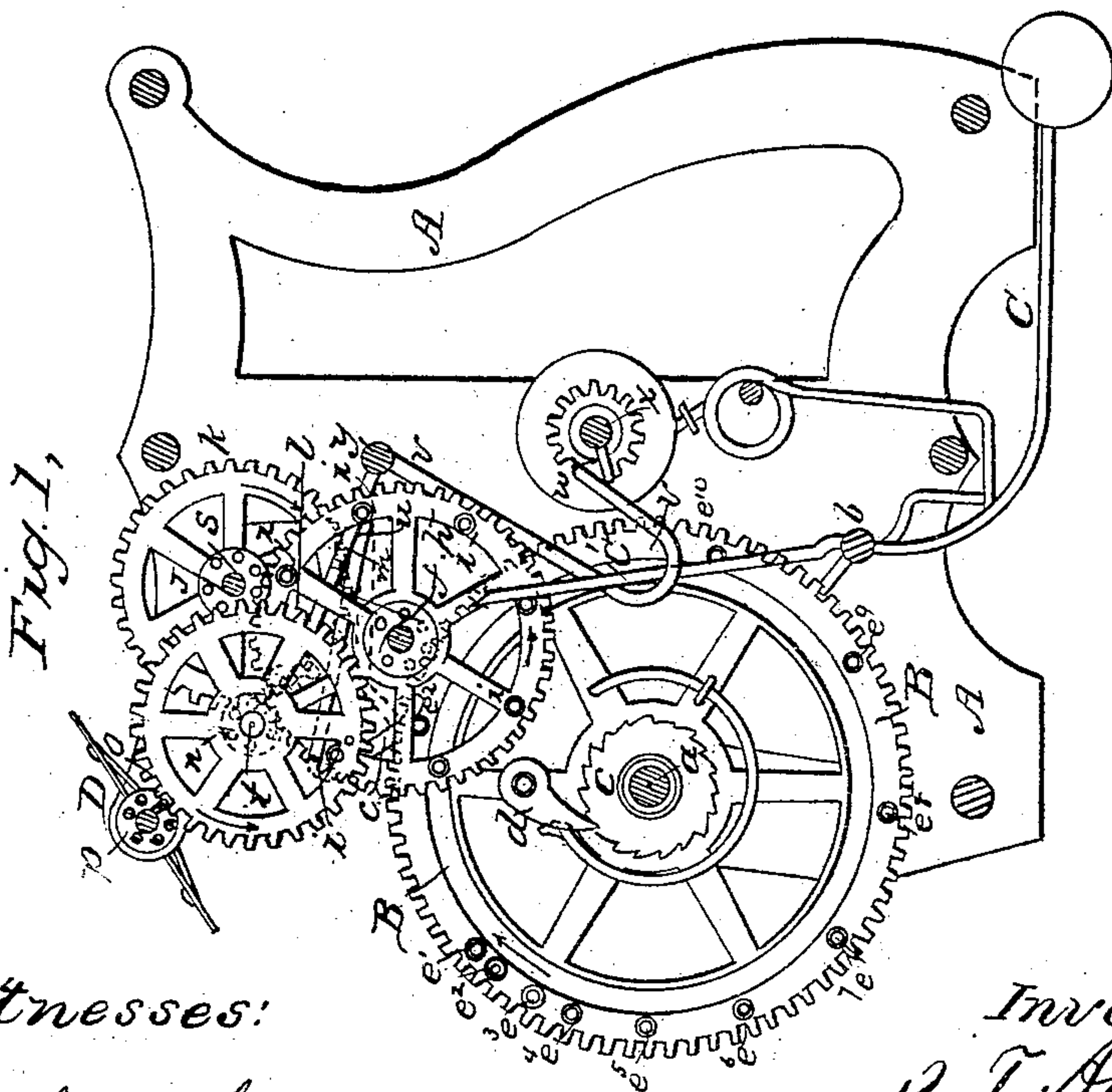
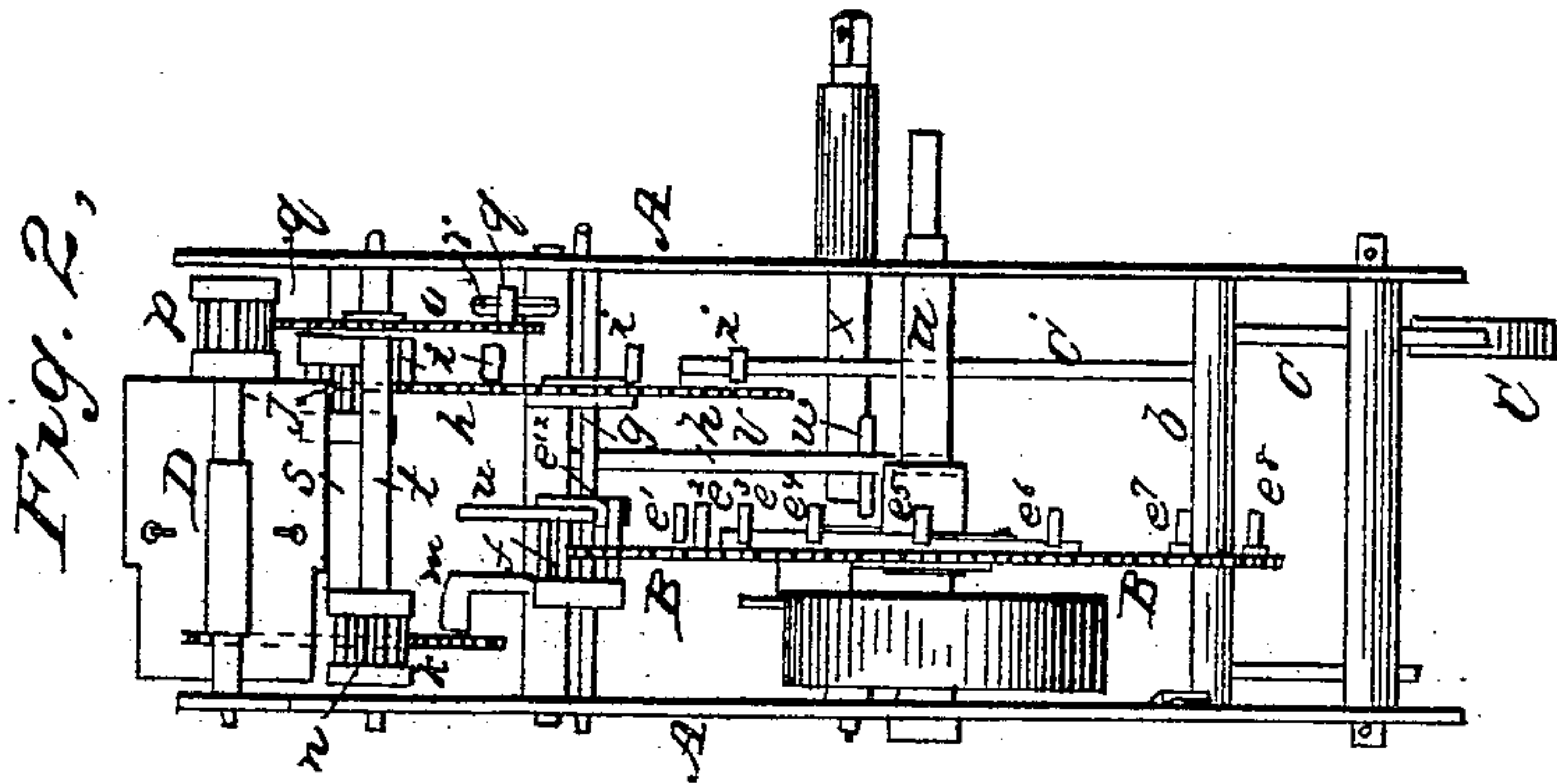


R. T. ANDREWS.

Clock.

No. 38,543.

Patented May 19, 1863.



Witnesses:
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UNITED STATES PATENT OFFICE.

RANDAL T. ANDREWS, OF PLYMOUTH HOLLOW, CONNECTICUT.

IMPROVEMENT IN CLOCKS.

Specification forming part of Letters Patent No. 38,543, dated May 19, 1863.

To all whom it may concern:

Be it known that I, RANDAL T. ANDREWS, of Plymouth Hollow, in the county of Litchfield and State of Connecticut, have invented a new and useful Improvement in the Striking-Movement of Clocks; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figures 1 and 2 are elevations at right angles to each other of a striking-movement constructed according to my invention.

Similar letters of reference indicate corresponding parts in both figures.

This invention consists in a certain novel construction, arrangement, and combination of the parts of the striking-movement, whereby it is rendered simpler than the movement in common use and less liable to get out of order.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

A A are the cheek-plates of the frame. *a* is the main shaft of the striking-movement, having the weight or spring applied in the usual manner. *b* is the vibrating shaft to which the hammer C is attached, arranged in the usual way. The main shaft *a*, instead of having two wheels upon it, as in the common movement, has but the driving-wheel B, which is a spur-toothed wheel having seventy-eight teeth—viz., one tooth for every blow the hammer is to strike in twelve hours, which is the time occupied in its revolution. This wheel is connected with the shaft *a* by a ratchet-wheel, *c*, and spring-pawl *d*, in the same manner as the spur-toothed wheel usually employed on the said shaft, and the said wheel has secured in it and projecting from its front side twelve pins, (marked *e'* *e*² *e*³ *e*⁴ *e*⁵ *e*⁶ *e*⁷ *e*⁸ *e*⁹ *e*¹⁰ *e*¹¹ *e*¹²), all arranged in a circle concentric to its axis, the first being at a distance from the twelfth corresponding with twelve of the spur-teeth and their spaces, the second at a distance from the first corresponding with one spur-tooth and space, the third at a distance from the second corresponding with two spur-teeth and spaces, and so on throughout the series, the distances increasing progressively to the extent of one tooth and space. The spur-teeth of the wheel B gear with a pinion, *f*, of eight teeth, fast on the shaft *g*,

on which is also fast the spur-wheel *h*, of forty-eight teeth, carrying the pins *i i*, by which the hammer is actuated in the usual manner. This shaft *g*, pinion *f*, and wheel *h* correspond with a shaft pinion and wheel used in the old movement, except in the number of the teeth of the pinion and wheel and in the number of pins *i*, only two of such pins being required in the old movement, and eight being used in this movement, arranged at equal distances apart, the cam which is provided on the shaft *g*, in the old movement, to raise the stop from the notched wheel provided on the shaft *a* in that movement, being dispensed with, as well as the said notched wheel. The wheel *h* gears with a pinion, *j*, of six teeth, on a shaft, *s*, which also has fast on it a wheel, *k*, of thirty-six teeth, carrying a pin, *l*, which is acted upon by a stop, *m*, which will be presently described, to stop the striking-movement in the intervals between the hours. The wheel *k*, gears with a pinion, *n*, of six teeth, on a shaft, *t*, on which is also secured a wheel, *o*, the number of whose teeth is not material, gearing with a pinion, *p*, on the shaft of the fan D. This wheel *o*, besides serving to drive the fan, carries a pin, *q*, which is operated upon by a stop, *r*, as will be presently described, to stop the striking-movement temporarily after the "warn," which takes place before the operation of the hammer.

Instead of two stop-shafts, each having three arms operating either as lifters or stop, as used in the old movement, there is in this movement but one stop shaft, *y*, having four arms, two of which are the stops *m* and *r*, hereinbefore mentioned. Another of the said arms (marked *u*) is acted upon by the pins *e'* *e*² *e*³ &c., of the wheel B, after the hammer has struck the required number of times, for the purpose of raising up the stop *m* to a position to arrest the pin *l*, in which position the said stop is represented in both figures of the drawings, the mechanism being all represented at rest after striking. The fourth arm (marked *v*) is acted upon by the cam *w*, which is commonly provided on the central or minute-hand shaft, *x*, of the clock, to set the striking-movement in operation. When the striking-movement is at rest, the point of the arm *u* rests upon one of the pins *e'* *e*² *e*³, &c. It is shown resting upon *e*¹². When, near the termination of each hour, the cam *w* comes into contact

with and begins to move the arm *v*, it soon causes the stop *m* to be lifted up above the pin *l*. The striking-movement then starts; but by the time the wheel *o* has made half a revolution, which is before the wheel *B* has made a perceptible movement, the pin *q* comes into contact with the stop *r*, which has also been lifted up, thus producing what is called the "warn," and at the completion of the hour the cam passes the end of the arm *v*, and lets it drop against the shaft *x*, thus allowing the front of the stop *r* to drop away from the pin *q*, and the point of the arm *u* to drop behind that pin of the wheel *B* which has previously supported it, and the stop *m* to drop below the circle described by the pin *t*, thus removing all obstacles to the operation of the whole train until the next pin of the series *e' e² e³* in the wheel *B* comes into operation upon the inclined terminal portion of the arm *u* and lifts it up, and so brings up the stop *m* to a position to arrest the pin *l* and stop the whole train, the point of the arm *u* now having arrived at and resting on the top of the next of the pins *e' e² e³*, &c., to that on which it last rested.

It will be understood that the distances

between the pins *e' e² e³*, &c., in the wheel *B* determine the length of time the striking-action remains in motion, and hence the number of blows of the hammer, which strikes once every time the arm *C'* of the hammer, shaft is passed by one of the pins *i i* of the wheel *h*.

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

1. The driving-wheel *B*, furnished with a series of twelve pins, *e' e² e³*, &c., which are arranged to act upon an arm of the stop-shaft to bring the stop *m*, or its equivalent, into operation, substantially as and for the purpose herein specified.

2. The combination, on the same shaft, *y*, of the stops *m* and *r* and the lifting-arms *v* and *u*, substantially as herein set forth.

3. The combination of the driving-wheel *B*, furnished with pins *e' e² e³*, the wheels *o* and *h*, carrying the stop-pins *t* and *q*, the two stops *m* and *r*, and the lifting-arm *u*, the whole applied to operate substantially as herein specified.

RANDAL T. ANDREWS.

Witnesses:

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