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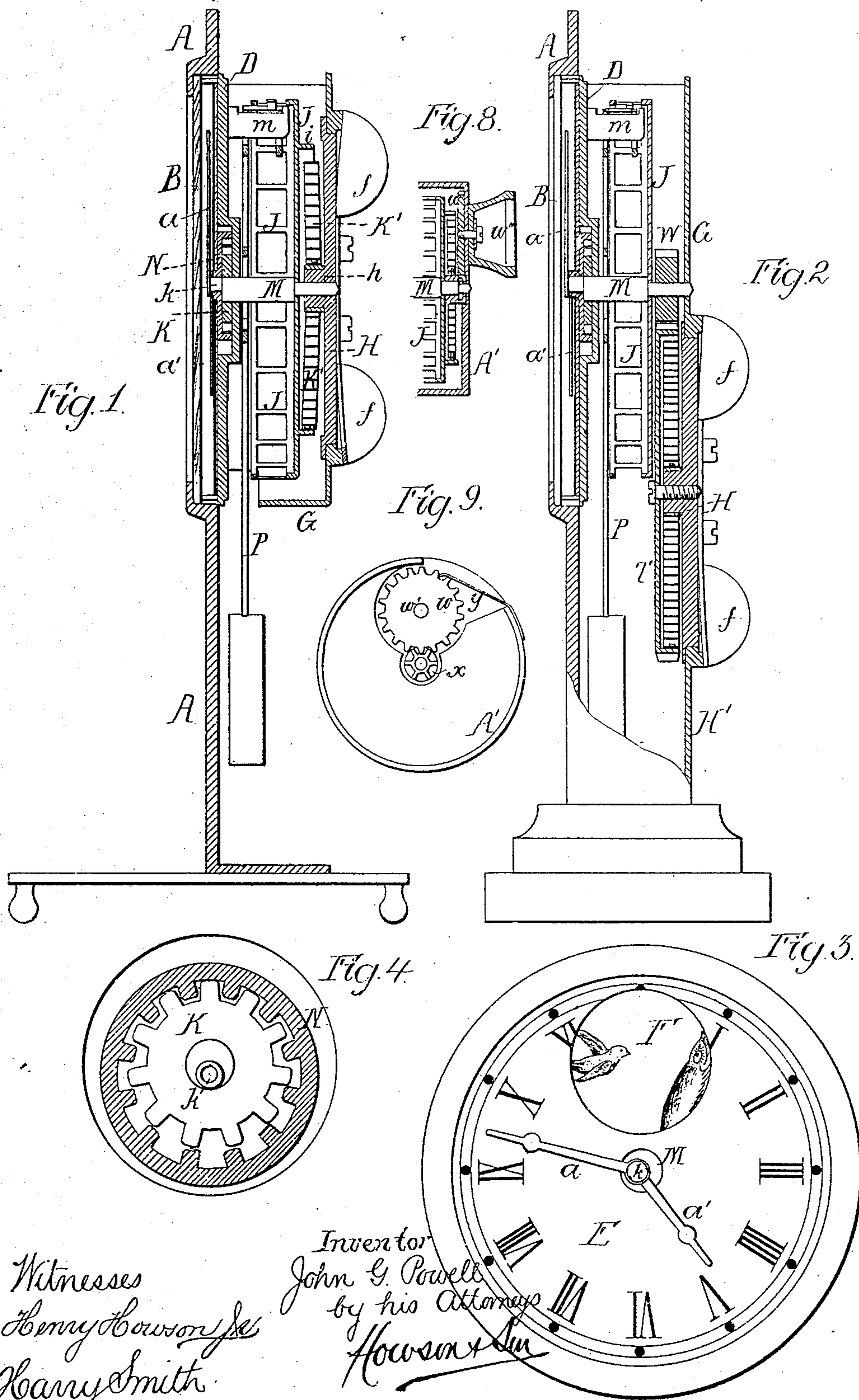
2 Sheets - Sheet 1

J. G. POWELL.

Toy-Watch and Clock.

No. 204,607.

Patented June 4, 1878.



Witnesses
Henry Brown
Harry Smith

Inventor
John G. Powell
by his Attorneys
Howson & Son

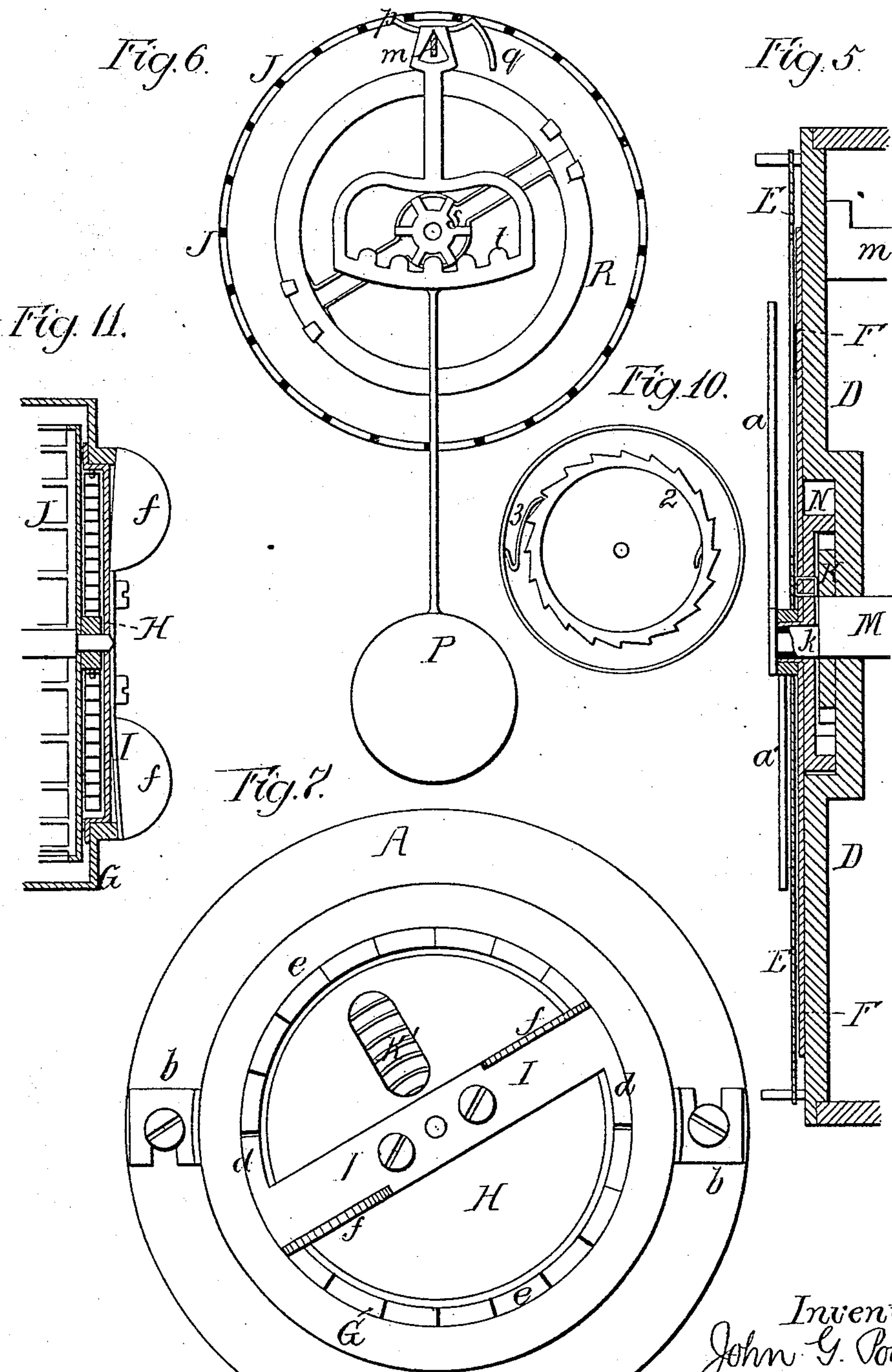
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UNITED STATES PATENT OFFICE

JOHN G. POWELL, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN TOY WATCHES AND CLOCKS.

Specification forming part of Letters Patent No. **204,607**, dated June 4, 1878; application filed October 23, 1877.

To all whom it may concern:

Be it known that I, JOHN G. POWELL, of Philadelphia, Pennsylvania, have invented a new and useful Improvement in Toy Watches and Clocks or Time-Pieces Generally, of which the following is a specification:

The object of my invention is to make a cheap toy clock for the amusement of children, my improvements being also applicable to the construction of toy watches, and part of my invention being applicable to time-keepers generally. This object I attain in the manner which I will now proceed to describe, reference being had to the accompanying drawings, in which—

Figure 1, Sheet 1, is a vertical section of my improved toy clock, drawn to an enlarged scale; Fig. 2, a modification of Fig. 1; Fig. 3, a view of the front of the dial-plate; Fig. 4, a view drawn to a larger scale, and showing the eccentric-gear through the medium of which the shaft carrying the fast pointer is caused to operate the slow pointer; Fig. 5, Sheet 2, a vertical section of the said gearing; Fig. 6, a view of the escapement-motion; Fig. 7, a rear view of the clock; and Figs. 8, 9, 10, and 11, views illustrating modifications of my invention.

In Figs. 1, 3, 4, 5, 6, and 7, A is the frame of the clock, the stand A' forming part of this frame, the latter having in the back a recess for the reception of the glass B, between which and a disk or plate, D, fitted to the back of the frame, intervene the two pointers or hands *a a'*, the dial-plate E, and, in the present instance, a disk, F, of stiff paper or other suitable material, for a purpose set forth hereinafter.

The works of the clock are inclosed, or nearly so, by the annular case G and its disk H, the said case having slotted lugs *b b* secured to the frame A by set-screws, as shown in Fig. 7.

The disk H is arranged to fit snugly but turn freely in the annular casing G, and is confined to the latter in one direction by a flange bearing against the inner side of the case, and in the other direction by an elastic cross-bar, I, secured to the back of the disk, and having tongues *d d* bearing against an annular ratchet, *e*, on the back of the said case G. This elastic cross-bar performs a three-fold duty: First, it maintains the disk H and

its attachments in place; secondly, it serves as an implement for winding up the main-spring, for which purpose it has lips or projections *f f* adapted to the finger and thumb; and, thirdly, in connection with the ratchet, it serves the purpose of making the desired noise in winding up.

The inner end of the coiled spring K' is attached to a hub, *h*, on the inside of the disk H, and the outer end to a flange, *i*, at the back of the escapement-wheel J, which is secured to the spindle M, the latter having one bearing in the hub of the disk H, and the other in the plate D, and pinion K fixed to the said plate.

There is in the end of the spindle M, and forming part of the same, a pin, *k*, situated eccentrically in respect to the said spindle; and to this eccentric-pin is hung a wheel, N, having internal teeth adapted to those of the pinion, both wheel and pinion being confined in a recess in the disk D. The long pointer or hand *a* is secured directly to the spindle M, and the short pointer to the wheel N, which has twelve teeth, the pinion K having eleven teeth, so that, as the spindle turns, the wheel N, controlled by the eccentric pin *k*, will turn but once thereon while the spindle revolves twelve times, and therefore the long pointer *a* will traverse the dial-plate twelve times as fast as the pointer *a'*.

Although this device has been shown in connection with a toy clock intended for the amusement of children, and not to indicate time, it may be applied to time-keepers, the spindle of the minute-hand having an eccentric, *k*, and the hour-hand being affixed to a wheel hung to the eccentric, and having twelve teeth adapted to a fixed pinion with eleven teeth.

The disk F, referred to above as being composed of stiff paper or other suitable material, is attached to and turns with the wheel N and with the short pointer, and on the face of this disk are a series of pictures of objects attractive to, or a source of instruction for, children, object after object appearing through an opening in the dial-plate while the disk is in operation.

At the rear of the plate D, near the upper end of the same, is a projection, *m*, to which

pendulum P is hung, the pendulum-rod having pallets *p* and *q* adapted to the teeth of the escapement or pallet wheel J, these teeth being formed by perforating the flange of the said wheel.

By hanging the pallet-lever within the rim of the pallet-wheel, as described, I am enabled to bring the fulcrum of the lever close up to the pitch-line of the teeth of the said wheel, whereby the friction on the said fulcrum is reduced, and the lever caused to swing more freely than when hung outside of the pallet-wheel, as usual.

In Fig. 6 I have shown both a pendulum and balance-wheel escapement, either of which may be used when my improvements are applied to the construction of a toy clock. When they are applied to a toy watch, however, the balance-wheel escapement only must be used. This consists of a balance-wheel, R, hung loosely to the spindle M, and having a pinion, *s*, adapted to the teeth of a segment, *t*, on the pallet-lever.

It will be understood that when the mechanism described above is used in connection with a toy watch, the case will be made to accord in shape with that of an ordinary watch.

In the modification shown in Fig. 2 the disk H, its elastic cross-bar, and the mainspring are situated below the spindle M, the disk H being arranged to turn in an opening in a frame, H', being confined laterally thereto in the manner described above. The mainspring is contained within a cog-wheel, T, to which the outer end of the spring is attached, this cog-wheel gearing into a pinion, W, on the spindle M. By this arrangement the spring is made to serve as an effective driving medium for a much longer time than when the spring is connected directly to the pallet-wheel.

In the modification, Figs. 8 and 9, a pinion, *w*, in the inside of the case A' is secured to a spindle, *w'*, passing through and arranged to turn in the said case, and provided with a handle, *w''*, on the outside of the same, the wheel gearing into a pinion which is loose on the spindle M, and to which one end of the mainspring is secured, the other end being attached to the pallet-wheel. In this instance the elastic bar I and exterior ratchet are dispensed with, and in their place is used a spring-pawl, *y*, bearing against the teeth of

the wheel *w*. In this modification the winding up of the spring is accelerated by the gearing described.

Another substitute for the elastic bar I and exterior ratchet is shown in Fig. 10, where 2 is an ordinary ratchet-wheel on the inside of the case, and 3 a spring-pawl bearing against the said wheel, to which one end of the mainspring is attached, the other end being connected to the pallet-wheel. This ratchet-wheel may be turned by the aid of any suitable projection on its exterior face.

In the modification, Fig. 11, the elastic cross-bar I and exterior ratchet *e* are used as in Fig. 1; but the disk H is recessed for the reception of the mainspring, the outer end of which is attached to the said disk and the inner end to a hub on the pallet-wheel.

I claim as my invention—

1. In a toy clock, toy watch, or time-keeper, the combination of the following elements, namely: first, a spindle carrying the large pointer; second, a wheel carrying the small pointer, and having internal teeth; third, a pinion geared to the wheel; and, fourth, an eccentric for controlling the relative movements of the wheel and pinion, all substantially as set forth.

2. The combination of the frame A of a clock or watch, the plate or disk D, and glass B with the wheel N, pinion K, and two pointers interposed between the said disk D and the glass, as set forth.

3. The combination of the spindle M, the recessed disk D, the pinion K, secured in the said recess, and the wheel N, hung to an eccentric on the spindle, all substantially as set forth.

4. The combination of the pallet-wheel J and its perforated flange with a pendulum hung to the disk or plate D, between the latter and the pallet-wheel, as set forth.

5. The combination of the disk H, the elastic cross-bar I, and the ratchet at the back of the case.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN G. POWELL.

Witnesses:

RICHARD L. GARDINER,
HARRY SMITH.