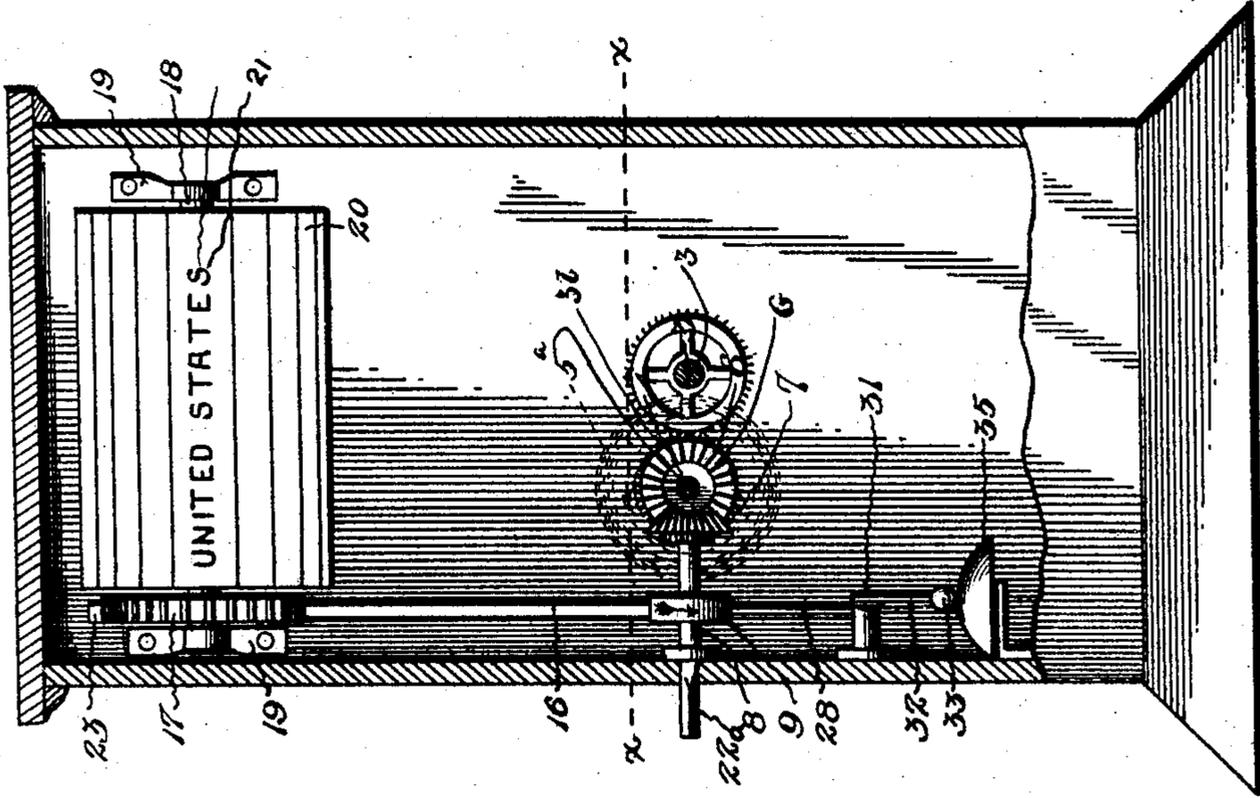


J. J. ST. LEDGER.  
GEOGRAPHICAL CLOCK.  
APPLICATION FILED MAR. 30, 1904.

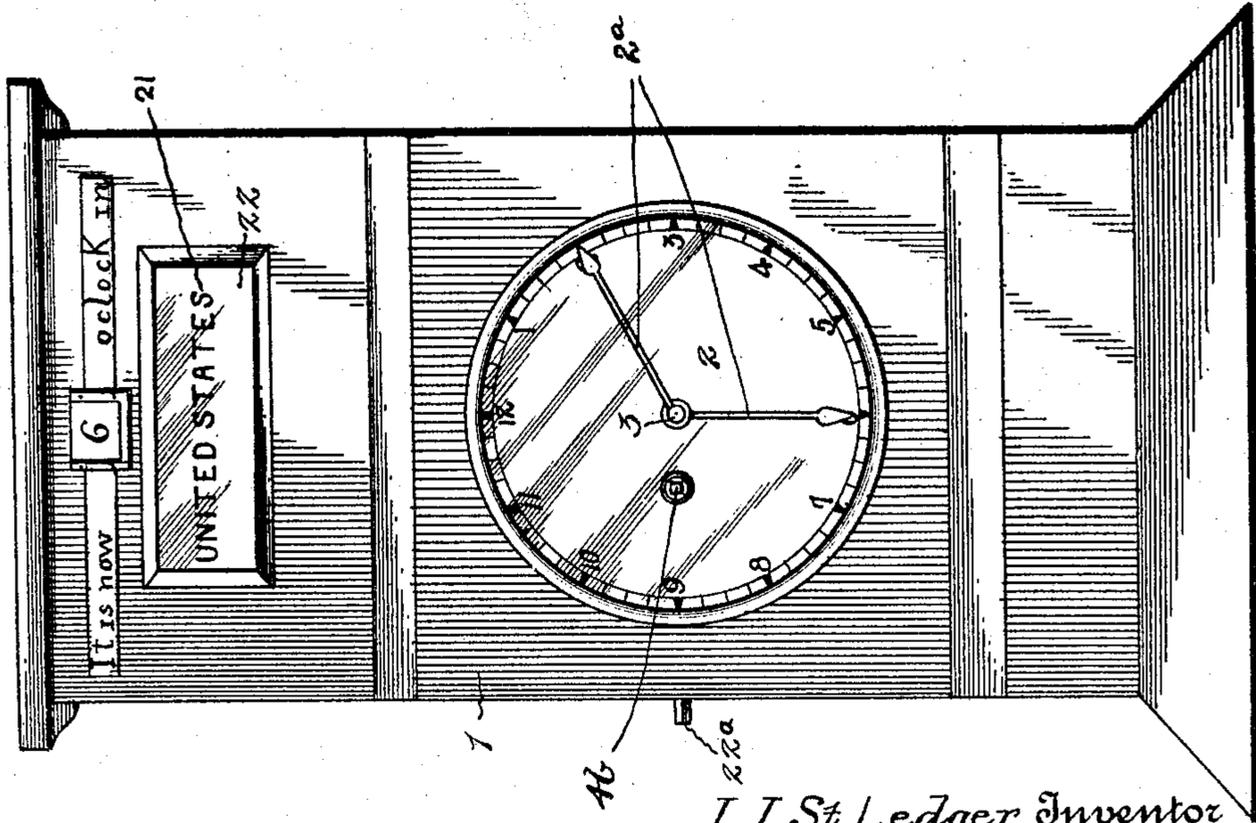
NO MODEL.

2 SHEETS—SHEET 1.

*Fig. 2.*



*Fig. 1.*



J. J. St. Ledger Inventor

Witnesses  
*Ralph A. Shepard*  
*L. L. Morrill*

By  
*Shepherd Parker* Attorneys

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NO MODEL.

2 SHEETS—SHEET 2.

Fig. 4.

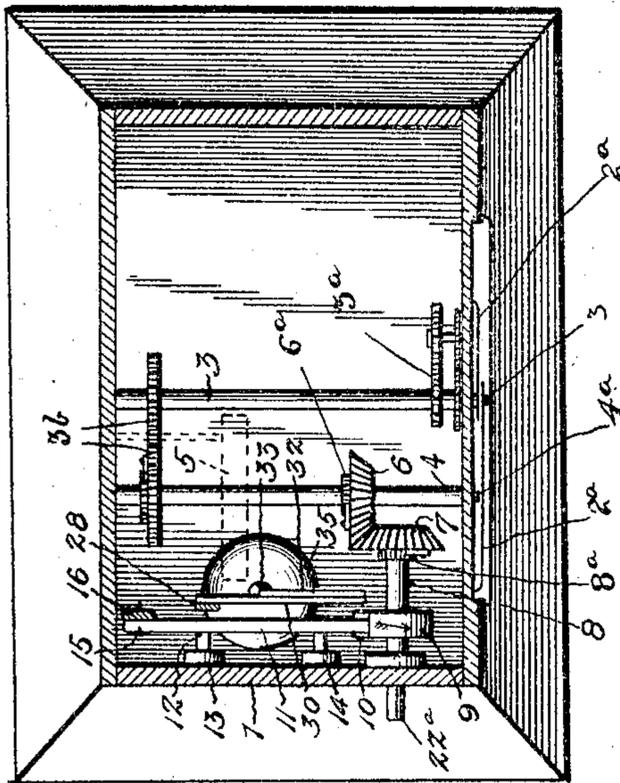
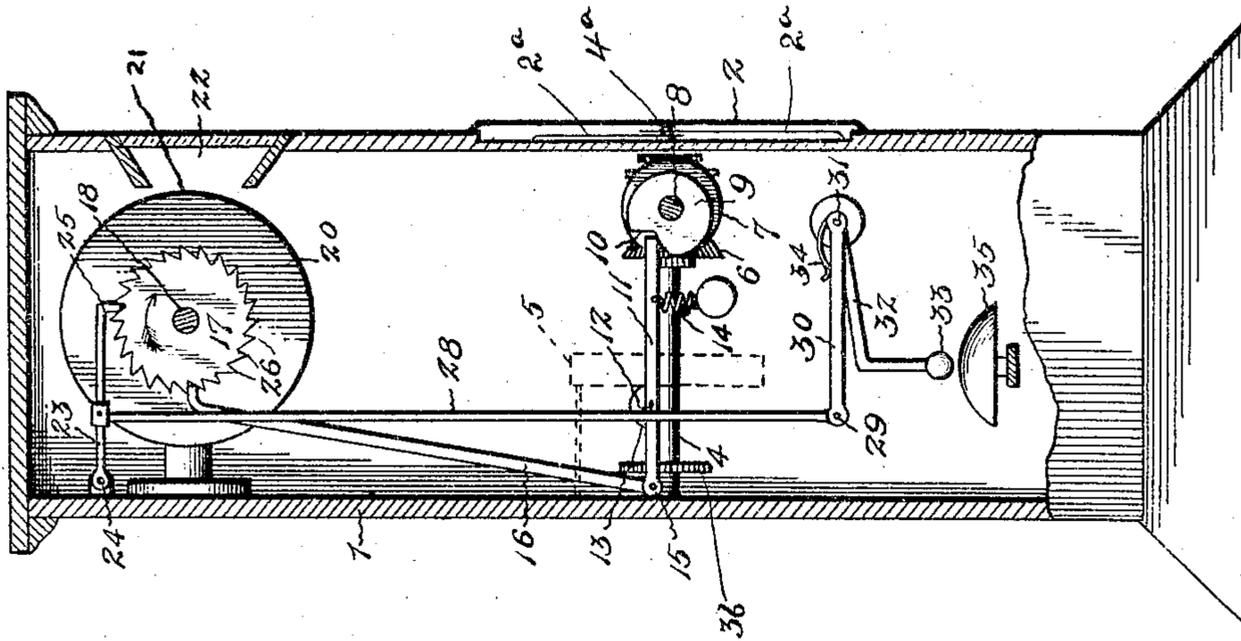


Fig. 3.



J. J. St. Ledger Inventor

Witnesses  
*Ralph Shepard*  
*R. L. Morrill*

By  
*Shepherd Parker*, Attorneys

# UNITED STATES PATENT OFFICE.

JOSEPH J. ST. LEDGER, OF PHILADELPHIA, PENNSYLVANIA.

## GEOGRAPHICAL CLOCK.

SPECIFICATION forming part of Letters Patent No. 773,238, dated October 25, 1904.

Application filed March 30, 1904. Serial No. 200,748. (No model.)

*To all whom it may concern:*

Be it known that I, JOSEPH J. ST. LEDGER, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a certain new and useful Improvement in Clocks, of which the following is a specification.

My invention relates to clocks, particularly what are known as "geographical" clocks, and has for its object to provide means whereby a clock constructed in accordance with my invention shall exhibit at all times a sign indicating in what country or at what point upon the earth any predetermined hour is the then prevailing time—as, for instance, in what country it is then noon or six o'clock a. m.

With these and other objects in view the present invention consists in the combination and arrangement of parts, as will be hereinafter more fully described, shown in the accompanying drawings, and particularly pointed out in the appended claims, it being understood that changes in the form, proportion, size, and minor details may be made within the scope of the claims without departing from the spirit or sacrificing any of the advantages of the invention.

In the accompanying drawings, Figure 1 is a front view of a clock embodying my invention. Fig. 2 is a transverse sectional view. Fig. 3 is a sectional view taken at right angles to the view shown in Fig. 2, showing a side view of the arrangement of parts of my invention. Fig. 4 is a cross-sectional view on line *x x* of Fig. 2.

Like numerals of reference designate corresponding parts throughout the several views.

In the drawings, 1 is a clock of any convenient construction having the usual face 2 and hands 2<sup>a</sup>, mounted upon shaft 3 and connected to rotate in the usual manner by means of the usual train 3<sup>a</sup>. Said shaft 3 is connected by a gear 3<sup>b</sup> or in any desired manner as practiced in clock construction with the winding-shaft 4, which is actuated by any usual means, as a spring, (indicated at 5.) Upon shaft 4 is mounted a bevel gear-wheel 6, secured to shaft 4 by the usual pawl-and-ratchet con-

nection, as 6<sup>a</sup>, to permit of winding spring 5 by the use of a key on squared shoulder 4<sup>a</sup>. At right angles to and engaging bevel-gear 6 is another bevel-gear, 7, mounted upon arbor 8 and connected therewith by means of any well-known pawl-and-ratchet connection, as 8<sup>a</sup>, to permit of the rotation of arbor 8 in one direction independently of the gear-wheel 7. Mounted rigidly upon arbor 8 is cam 9, having in its periphery a notch 10 and having when in operation a rotary motion in the direction indicated by the arrow.

Engaging the peripheral surface of cam 10 and adapted to be operated thereby is a lever 11, pivoted at point 12 to any convenient support, as bracket 13. Lever 11 is held in operative contact with cam 9 by the spring 14.

To the end 15 of lever 11, is pivotally secured a pawl-arm 16, disposed to engage with a ratchet-wheel 17, rigidly secured to shaft 18, journaled in any convenient manner, as brackets 19, in the upper portion of the clock-casing and having rigidly mounted thereon a drum 20.

The drum 20, which may be cylindrical or polygonal, carries at regular intervals upon its surface or upon its polygonal faces a plurality of signs or exhibits, as shown at 21. The front of the clock-case is provided with an opening 22, through which is exhibited a portion of drum 20 and one of signs 21, carried thereon.

22<sup>a</sup> is a squared end on arbor 8 for engagement with a key to rotate arbor 8 independent of the clock-movement for the purpose of setting drum 20 at any desired position.

23 is a pawl pivotally secured at one end to any convenient stationary pin 24, its other end 25 forming a hooked portion for engagement with teeth 26 of ratchet-wheel 17. Pivotaly connected with pawl 23 at a point intermediate of its ends is a rod 28, which in turn is pivotally connected at its other end at point 29 with a lever 30, fulcrumed upon any convenient bracket on pin 31, to which is also fulcrumed a bent lever 32, carrying hammer 33. A spring 34, secured to lever 32 and bearing against lever 30, holds hammer 33.

normally out of contact with a bell 35, so disposed as to receive a blow from hammer 33 when it is allowed to fall.

The operation of my invention is as follows:  
 5 Spring 5 having been wound in the usual way, energy is imparted to shaft 4, tending to rotate it. This rotary motion is transmitted through bevel-gears 6 and 7 to arbor 8 and through any convenient mechanism, (not  
 10 shown,) as by means of the usual spur-gears, to the operating mechanism of the time-indicating portion of the clock. I so proportion the gears connecting shaft 4 and arbor 8 that the latter perform one complete rotation in  
 15 the direction indicated by the arrow in exactly one hour. Starting with cam 9 in the position shown in Fig. 3 and with lever 11 depressed by means of the spring into notch 10, as the cam rotates the end of lever 11 in contact therewith is lifted, thereby depressing the  
 20 opposite end and with it pawl-arm 16, which is held down until cam 9 has completed its revolution, whereupon lever 11 is drawn by the spring 14 into notch 10, thereby raising  
 25 pawl 16, which through engagement with teeth 26 causes ratchet 17, shaft 18, and drum 20 to rotate in the direction of the arrow through a circumferential arc equal to the distance between teeth 26, thereby bringing  
 30 into view through opening 22 another exhibit 21, carried by drum 20. When ratchet 17 is caused to rotate by pawl 16, pawl 23 rides up the inclined portion of teeth 26, and at the completion of the movement of pawl 16 it  
 35 drops over the vertical portion of the said teeth, thereby allowing connecting-rod 28 to fall. This in turn causes a sudden depression of lever 30 at point 29, which in turn depresses lever 32, bringing hammer 33 in contact with  
 40 bell 35 to ring the same. Hammer 33 is then withdrawn from contact with bell 35 by spring 34, thus producing one clear sharp tone.

While I have described and shown my sign-carrying member as a drum, it is evident that a plurality of signs carried in any form of series would serve the same purpose with but slight mechanical change and that other changes could be made without departing from the spirit of my invention.

50 While I prefer that the cam 9 should make one complete revolution, thus changing the exhibit once each hour, it is evident that it can be so arranged by properly proportioning the gears 6 and 7 as to change at the end of  
 55 any predetermined interval.

I design to exhibit upon the drum or signs a series of geographical names arranged in the order in which they occur on the earth's surface longitudinally from east to west. For  
 60 example, while Panama would be described as southerly from Washington, District of Columbia, it is located on a longitudinal meridian which is west from the longitudinal meridian

upon which Washington is located and is therefore longitudinally west from "Washington." 65 My clock, if located at Washington, might exhibit the name "Washington" at six o'clock, "Minneapolis, Minnesota," at seven o'clock, and "Denver, Colorado," at eight o'clock.

It is obvious that a clock exhibiting geographical names, as above described, and changing the exhibits each hour is a valuable educational device. If placed in a school-room, it becomes valuable not only as exhibiting the prevailing time where the school is  
 75 located, but forcibly draws the attention of the pupils to the divisions of time now recognized as standard.

While my object is to show the country or place in which it is any predetermined hour, 80 it is evident that the sign-carrying member may carry exhibits of any other character as well.

Having thus fully described my invention, what I claim as novel, and desire to secure by 85 Letters Patent, is—

1. In combination, a clock of any convenient structure, a drum carrying a plurality of exhibits upon its peripheral surface and having a toothed ratchet-wheel rigidly secured to its axis, mounted within the case of  
 90 such clock, an opening through the front of such case so disposed as to bring into view one of the exhibits upon such drum, an arbor mounted within such case, means connecting  
 95 the arbor and the clockwork mechanism whereby a rotary motion is imparted to the arbor, a cam rigidly mounted upon and rotating with such arbor, a spring-retracted lever in contact with, and thrown by such cam, a pawl pivotally  
 100 connected with the opposite end of such lever, so disposed as to engage the toothed ratchet-wheel upon the axis of the drum, and rotate such drum with each throw of the lever through a circumferential arc, equal to  
 105 the space occupied by one exhibit.

2. In combination, a clock of any convenient structure, a drum carrying a plurality of exhibits upon its peripheral surface and having a toothed ratchet-wheel rigidly secured to its axis, mounted within the case of  
 110 such clock, an opening through the front of such case so disposed as to bring into view one of the exhibits upon such drum, an arbor within such case, means connecting the arbor  
 115 and the clockwork mechanism whereby a rotary motion is imparted to the arbor, a cam rigidly mounted upon and rotating with such arbor, a spring-retracted lever in contact with, and thrown by such cam, a pawl pivotally  
 120 connected with the opposite end of such lever, so disposed as to engage the toothed ratchet-wheel upon the axis of the drum and rotate such drum with each throw of the lever through a circumferential arc, equal to the  
 125 space occupied by one exhibit, a pawl secured

at one end to any convenient portion, its other  
end engaging the toothed ratchet-wheel to  
prevent retractive movement of the drum, a  
connecting-rod, one end pivotally connected  
5 with said pawl at an intermediate point, its  
other end pivotally connected with one end of  
the lever, the other end of which is pivotally  
secured to any conveniently-disposed, station-  
ary pin, a lever pivotally secured at one end  
10 to the same pin and carrying a hammer upon

its opposite end, a spring connection whereby  
the two levers are held in an elastic relation  
to each other, a bell secured to any convenient  
portion of the clock, and so disposed as to be  
struck by said hammer.

JOSEPH J. ST. LEDGER.

In presence of—  
LEWIS THOMAS,  
MARY THOMAS.