

J. H. RICHARDSON.  
ILLUMINATED SIGN APPARATUS.

No. 581,011.

Patented Apr. 20, 1897.

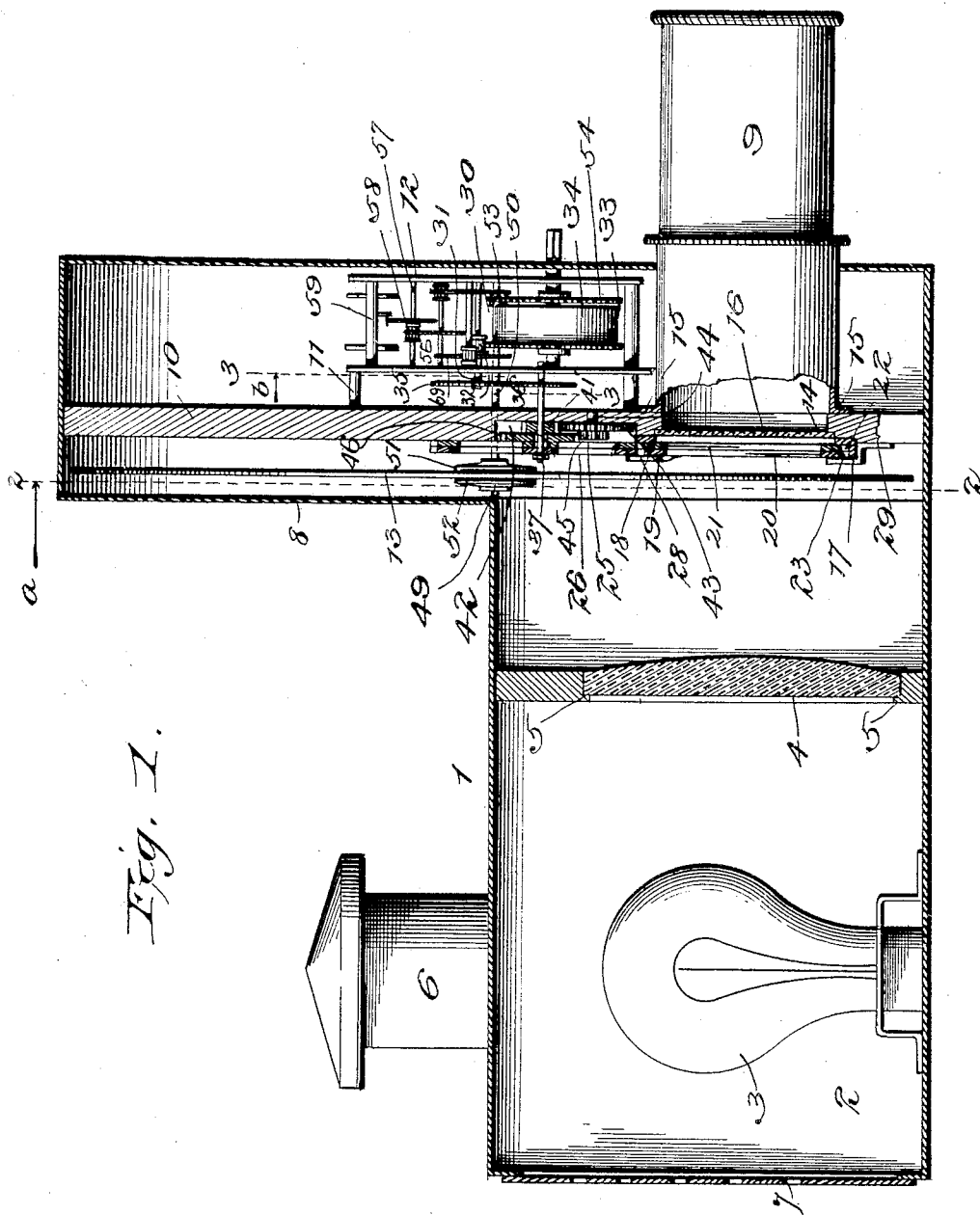


Fig. 1.

Witnesses  
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his Attorney

(No Model.)

2 Sheets—Sheet 2.

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Fig. 3.

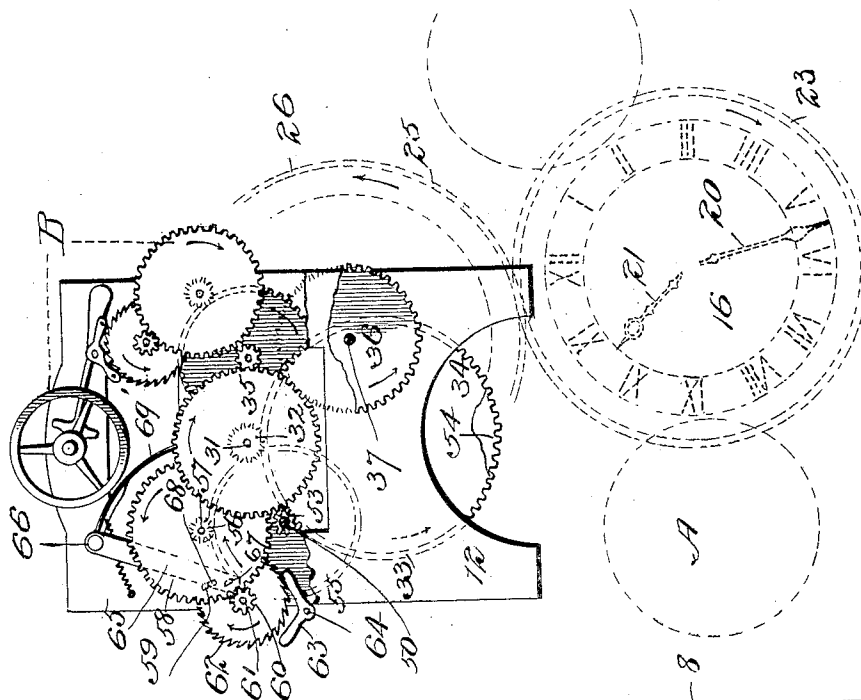
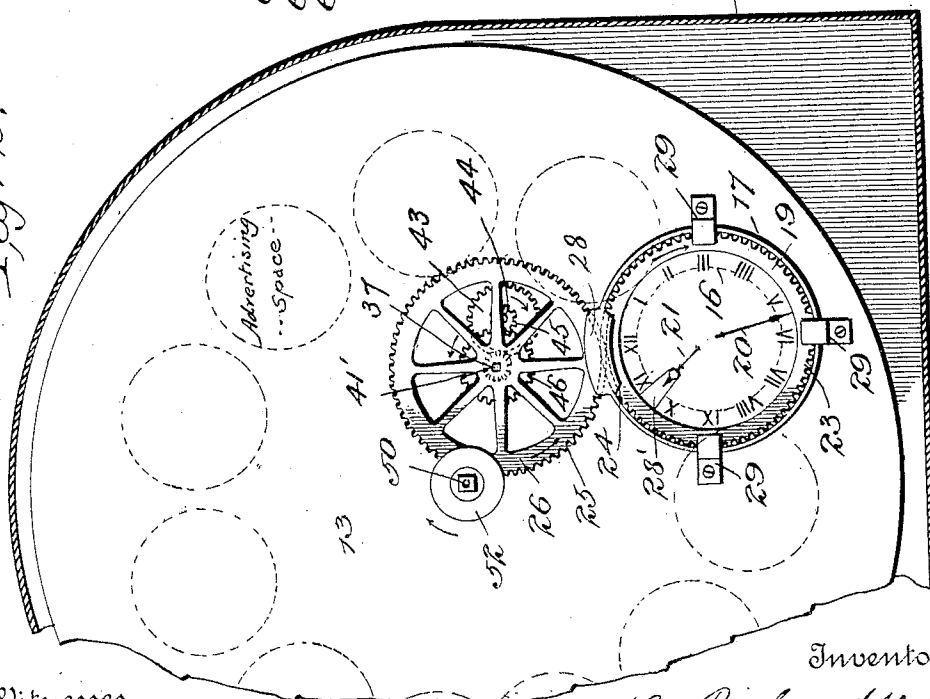


Fig. 2.



Witnesses

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# UNITED STATES PATENT OFFICE.

JOSEPH H. RICHARDSON, OF ALLEGHENY, PENNSYLVANIA.

## ILLUMINATED-SIGN APPARATUS.

SPECIFICATION forming part of Letters Patent No. 581,011, dated April 20, 1897.

Application filed June 16, 1896. Serial No. 595,773. (No model.)

*To all whom it may concern:*

Be it known that I, JOSEPH H. RICHARDSON, a citizen of the United States, residing at Allegheny, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Illuminated-Sign Apparatus; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements, as hereinafter set forth, in illuminated-sign apparatus.

The object of my invention is to produce an apparatus having the advantages of simplicity of construction and detail, compactness, the least number of parts, and perfection of operation for automatically exhibiting upon the street, pavement, wall, screen, or the like a series of illuminated pictorial or other objects in succession for advertising or other purposes, and also for simultaneously indicating the exact time as well as the advertising or other matter.

In the accompanying drawings, Figure 1 represents a sectional side elevation of my complete apparatus. Fig. 2 represents a sectional elevation thereof on the line 2 2 of Fig. 1, viewed in the direction of the arrows *a*. Fig. 3 represents a sectional elevation on the line 3 3 of Fig. 1, viewed in the direction of the arrow *b*.

The design of my invention is to produce an apparatus for automatically exhibiting advertising or other matter and the time of day, either with or without pictorial or other objects, in fully as effective a manner as has heretofore been attempted, the mechanism employed by me, however, being of fewer parts and less complexity than has heretofore been required in apparatus of this character.

1 represents the box or case within which the devices to be exhibited, the mechanism for actuating the advertisement-carrier and the clock, and the exhibiting devices are contained. This box or case may be of any metal or material and of any shape or size, as desired or found most convenient. In the drawings I have shown the box or case of the utmost compactness, in which 2 represents the

rear horizontal portion, in which is contained any source of light—such, for instance, as an incandescent lamp 3, though any other suitable lighting device may be equally well employed, according to preference or requirement—a light-condensing lens 4, and grooved sockets 5, in which said condensing-lens is supported.

6 represents a ventilating-hood, and 7 the rear slide or door, which may be perforated, as shown, to admit air, if desired.

The front of the box or case, within which the devices to be exhibited—the clock-dial and their automatically-operating gearing or clockwork—are contained, extends vertically upward in the form of a hood 8, which has an opening in its lower portion through which the focusing-tube 9, carrying the usual lenses, projects, as shown.

10 represents a diaphragm or disk upon which is hung or supported by arms or hangers 11 the framework 12, within and on which is supported the clockwork or other mechanism for automatically operating at predetermined intervals—such, for instance, as every minute or every half-minute or other fraction of time—the transparent disk 13 or other device carrying the advertising or other matter to be exhibited, and also for actuating the mechanism for actuating the hour and minute hands of the clock.

14 represents a circular or other shaped opening in the lower portion of the diaphragm or disk 10. The rear end of the focusing-tube 9 is secured by flanges 15 to the outer face of said diaphragm or disk 10, so as to surround said opening 14, the clock-face 16 being seated within a circumferential groove in said opening and the transparent disk 13 rotating, as will presently appear, across the rear face of said opening 14, so as to bring the advertising or other matter thereon in registry with said opening at predetermined intervals, in order that as said advertising or other matter is brought into alinement with said opening 14 the light will, through the condensing-lens 4, project the matter to be exhibited through the focusing-lenses onto the screen or other surface on which the exhibition is to take place.

17 represents a flanged ring which is seated

in a circumferential groove in the rear face of the diaphragm or disk 10, around the view-opening 14 therein. Within the ring 17 are contained with freedom of rotating therein a pair of rings 18 19, carrying, respectively, the minute and hour hands 20 21. Each of these hand-carrying rings 18 19 has a toothed periphery 22 23, respectively, which, as said rings are rotated, project through a slot or opening 24 in the periphery of the ring 17 to admit of their teeth intermeshing with the teeth of a pair of peripherally-toothed gears 25 26, carried by one of the arbors 27 of the clockwork.

28 represents a flange or lip which serves to prevent the lateral displacement of the toothed gears 18 19 25 26. The minute-hand is secured at its outer end by solder or otherwise to the inner edge of the ring 19, while the hour-hand is held in position by a strip of glass or mica or other transparent material 28', secured to the other ring 18, so as to obviate the shadow on the exhibition-surface which would result were said hand attached to the ring by wire.

29 represents a plurality of turn buttons or clips turnably secured at one end to the face of the disk 10 and extending up therefrom angularly, so as to extend over the rings 18 and 19 and retain them in position.

With the exceptions hereinafter mentioned the gearing or clockwork connections, with the usual coiled spring employed for actuating the hour and minute hands to indicate time, is of the usual construction and may be generally designated as 30, it not being deemed essential or necessary to specifically refer by numerals to each individual gear and arbor of the well-known and common construction.

A few changes and modifications, however, are necessary in the construction of my improved apparatus, and they will now be referred to. On the inner end of the central arbor 31, having barrel-pinion connection 32 with the toothed periphery 33 of the drive-spring barrel 34, the escapement mechanism for which is generally indicated by B, is a gear 35, which meshes with a laterally-positioned gear 36, which is mounted on an arbor 37, having rotatable bearing at one end in the framework 12 and near its other end having rotatable bearing in the outer face of the diaphragm or disk 10.

41' represents a pinion mounted on the inwardly-extending and threaded inner end of the arbor 37 and having rotary movement within a recess 42. This pinion 41' meshes with a gear 43, rotatably mounted within said recess 42 on a stud or pin 44, having stationary bearing on the disk 10. Centrally of this gear 43 and either mounted thereon or formed integrally therewith is a pinion 45, which meshes with the peripheral teeth of a small gear-wheel 46, secured centrally to the inner face of a large gear wheel or ring 25, having loose rotatable bearing on the threaded inner end of the arbor 37. The peripheral teeth of

this gear 25 mesh with the peripheral teeth of the ring 18, carrying the hour-hand 21.

26 represents another peripherally-toothed wheel, which has a threaded central bore to operatively connect with the threaded inner end of the arbor 37. This toothed wheel 26 meshes with the teeth of the ring 19, carrying the minute-hand.

It will thus be seen that while I locate the clock-face, the clock-hands, and the rings carrying the latter laterally of and below the regular clockwork and opposite the lenses I dispense with the necessity of employing a distinct or dual series of clockwork, as 30, one for operating the clock-hands and another for operating the disk carrying the advertising or other matter to be exhibited.

I will now proceed to describe the device carrying the advertising or pictorial matter to be exhibited and the mechanism for operating the same intermittently at predetermined intervals.

The disk 13, carrying the advertising or other matter to be exhibited, is preferably of transparent material—as glass, mica, or the like—in order that the light from the lamp or other lighting device, as 3, may always pass through the same and through the clock-face to continuously exhibit on the screen or other space on which the exhibit is to be made the time of day or night. At suitable intervals around this disk are displayed or attached in

any suitable manner a series of advertisements, pictures, or the like, as indicated at A, so that, as said disk is intermittently rotated, at each partial rotation thereof one of said devices to be exhibited is brought into alinement with and between the condensing-

lens 4 and the opening 14 in said disk 10, whereby such subject-matter is, through the media of the source of light and the lenses, projected, in conjunction with the clock-face and the hour and minute hands, onto the exhibition-surface. This advertisement-carrying disk 13 is centrally mounted on the threaded inwardly-extending end 49 of the central shaft 50. 51 represents flexible washers and 52 a pair of concaved washers or rings having threaded bores to admit of adjustment on said central shaft 50, and by means of which said disk 13 is removably and adjustably clamped securely in position on said shaft 50.

53 represents a small gear or barrel pinion carried by said central shaft and meshing with the large drive-gear 54. 55 represents a small gear mounted on the outer end of said central shaft 50 and meshing with a barrel-pinion 56 on the outer end of an arbor 57, on whose other end is mounted a gear 58, having a pin 59, extending laterally from its outer face and meshing with a barrel-pinion 60, carried by the shaft 61, on which is mounted the ratchet-wheel 62. With this ratchet-wheel engages a double-armed or V-shaped pawl or dog 63, rockingly mounted on a rock-shaft 64, for the dual purpose of permitting said ratchet-wheel rotating the necessary amount,

according to the distance the disk 13 is to rotate, and of holding said ratchet-wheel locked to prevent its rotation at improper times.

65 represents another pawl depending from a rock-shaft 66 and having at its lower end a pair of rearwardly-extending fingers 67 68, with which the forwardly-extending pin 59 on the gear 58 engages. When the balance-wheel and the gearing connected therewith have run the necessary degree, as for a minute, the gear 69 is released one tooth, being then engaged and held from further rotation by a spring-pawl 69', carried on the rock-shaft 66, thus forming an escapement mechanism for the power-pinion 54. This act releases the main gear-wheel and permits it to rotate the barrel-pinion on the central shaft, on which is journaled the advertisement-carrying disk, and consequently rotate said central shaft 50 a sufficient space to bring another advertisement opposite the focusing and condensing lenses. The rotation of the central shaft and of the disk 13 carried thereby beyond the space necessary to exhibit the succeeding advertisement or picture, or beyond the space between the individual pairs thereof, is prevented by the two-fingered rocking pawl depending from the rock-shaft, said fingers the one engaging the finger on the adjacent gear after said gear has shifted to give warning of the turning of the disk 13 and the other to lock said gear after its rotation once around, said gear being actuated by the barrel-pinion meshing with the gear on the central shaft, as before stated, the ratchet-wheel and its double-fingered dog permitting said fingered gear to rotate once around and then additionally locking it, as will be readily apparent to those skilled in this art on reference to the drawings.

Having thus described my invention, what I claim is—

1. An illuminated-sign apparatus, consisting of a box or case, a source of light and a condensing-lens contained within the rear portion of said box or case, a focusing-tube extending forwardly from the lower portion of the front of said case, focusing-lenses carried by said focusing-tube, a stationary, vertical, diaphragm contained within the front portion of said case and having a view-opening at its lower portion, a single set of clockwork contained within the front of said case and having bearing thereon and on said diaphragm, an intermittently-rotating horizontal shaft extending from said clockwork to and through said diaphragm, a rotatable transparent disk mounted on said shaft, a pair of cup-shaped, or concaved, and elastic washers mounted on said shaft on opposite sides of said transparent disk, and clamp-nuts also mounted on said shaft and adapted to adjustably clamp said washers against the respective faces of said transparent disk so as to regulate and maintain the transparent disk in adjusted position on said shaft and afford cushion connection between said disk and

shaft, substantially as and for the purpose set forth.

2. An illuminated-sign apparatus for automatically displaying the time and intermittently displaying pictorial or advertising matter, consisting of a box or case, a source of light and condensing and focusing lenses contained therein, a stationary, vertical diaphragm located between the condensing and focusing lenses and having a view-opening in alinement with said lenses, a transparent clock-face seated in said view-opening, a flanged ring seated in said view-opening and having a notch or slot in one portion of its periphery, a pair of peripherally-toothed rings having loose rotatable seating in said notched ring and carrying, respectively, the hour and minute hands, the minute-hand being secured to the inner edge of one of said rings and the hour-hand being carried by a projecting piece extending inwardly from the edge of the other ring, a pair of peripherally-toothed rings having rotatable shaft-bearing in said stationary diaphragm and meshing, respectively, with said hand-carrying rings, one of said first-named rings being actuated by said shaft and the other through the medium of a pinion thereon, and gearing located in a recess in said stationary diaphragm and connected with said shaft, a single clockwork carried by said stationary diaphragm, a transparent disk having thereon the subjects to be represented and an intermittently-rotating shaft connected with and extending from said clockwork through said stationary diaphragm and transparent disk, respectively, and serving to intermittently rotate said transparent disk, substantially as and for the purpose set forth.

3. An illuminated-sign apparatus for automatically displaying the time and intermittently displaying the matter to be exhibited, consisting of a case, a source of light and condensing and focusing lenses contained therein, a stationary vertical diaphragm or disk located forwardly of the condensing-lens and having a view-opening in alinement with said lenses, a transparent clock-face seated in said view-opening, a flanged ring seated in said view-opening and having a notched periphery, a pair of peripherally-toothed rings having loose rotatable bearing in said notched ring and carrying, respectively, the hour and minute hands, the minute-hand being secured to the inner edge of one of said rings and the hour-hand being carried by a projection extending inwardly from the other ring, a pair of peripherally-toothed rings having rotatable shaft-bearing in said stationary disk or diaphragm and meshing, respectively, with said hand-carrying rings, one of said first-named rings being actuated by said shaft and the other through the medium of a pinion thereon and gearing located in a recess in said stationary diaphragm and connected with said shaft, a single clockwork carried by said stationary dia-

phragm, a transparent disk having thereon the subjects to be exhibited, an intermittently-rotating shaft connected with and extending from said clockwork to and connecting the stationary diaphragm and the transparent disk, respectively, said shaft being threaded at that portion thereof on which the transparent disk is mounted, concaved washers having threaded bores and engaged with the threaded portion of said shaft on opposite sides of said transparent disk, flexible washers interposed between said concaved washers and the faces of said transparent disk and clamp-nuts adapted to clamp said concaved washers in position to cushion and firmly clamp said disk on said shaft, substantially as and for the purpose set forth.

4. An illuminated-sign apparatus, consisting of a case, a source of light and condensing and focusing lenses contained therein, a stationary vertical disk or diaphragm located between the condensing and focusing lenses and having a view-opening in alinement with said lenses, a single set of clockwork carried by said stationary disk, a transparent disk having thereon the subjects to be represented, a shaft extending from said clockwork through said stationary and transparent disks and serving to intermittently rotate said transparent disk, gearing connected with said shaft, a toothed wheel connected with said shaft-operating gearing and having a laterally-extending pin, a rock-shaft, a pawl depending therefrom and having a bifurcated lower end to engage the pin on said gear, and a second spring-pawl depending from said rock-shaft and adapted to ride over and engage the teeth of the principal gear, substantially as and for the purpose set forth.

5. An illuminated-sign apparatus, for automatically displaying the time and intermittently displaying pictorial or advertising matter, consisting of a box or case, a source of light and condensing and focusing lenses contained therein, a stationary vertical disk or diaphragm located between the condensing and focusing lenses and having a view-opening in alinement with said lenses, a transparent clock-face seated in said view-opening, a flanged ring seated in said view-opening and having a notch or slot in one portion of its periphery, a pair of peripheral toothed rings having loose rotatable seat in said notched ring and carrying, respectively, the hour and minute hands, a pair of peripherally-toothed rings having rotatable shaft-bearing in said stationary disk and meshing,

respectively, with said hand-carrying rings, one of said first-named rings being actuated by said shaft and the other through the medium of a pinion thereon and a pinion on said shaft, clockwork carried by said stationary disk, a transparent disk having thereon the subjects to be illustrated, a shaft extending from said clockwork through said stationary and transparent disks and serving to intermittently rotate said transparent disk, concaved washers carried by said shaft and flexible washers interposed between said concaved washers and the transparent disk to clamp said disk on said shaft, gearing connected with said shaft, a toothed wheel connected with said shaft-operating gearing and having a laterally-extending pin, a rock-shaft, a pawl depending therefrom and having a bifurcated lower end to engage the pin on said gear, and a second spring-pawl depending from said rock-shaft and adapted to ride over and engage the teeth of the principal gear, substantially as and for the purpose set forth.

6. An illuminated-sign apparatus, consisting of a box or case, an illuminating device and light condensing and focusing lenses contained therein, a transparent disk located between said illuminating device and the lenses and having thereon the subject-matter to be displayed, a diaphragm located forwardly of said disk and having a transverse opening in alinement with said lenses, a transparent clock-face and a pair of clock-hand-carrying toothed rings seated within said opening, a single set of clockwork mounted on said diaphragm, a shaft having bearing on said diaphragm and connecting, respectively, with said transparent disk and with said clockwork, a rock-shaft, a spring-pawl carried by said rock-shaft and engaging with one of the gears of said clockwork, and a bifurcated dog also carried by said rock-shaft and engaging with a pin on another of said gears to intermittently rotate the shaft connecting the transparent disk and clockwork, a shaft connected with said clockwork and extending rearwardly therefrom, and pinions mounted on the rear of said last-named shaft and gearing with the clock-hand-carrying rings, substantially as and for the purpose set forth.

In testimony whereof I affix my signature in presence of two witnesses.

JOSEPH H. RICHARDSON.

Witnesses:

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D. L. SCHAUM.