Oct. 9, 1951 C. HAUSEN 2,570,803

CLOCK

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FIG. 2.

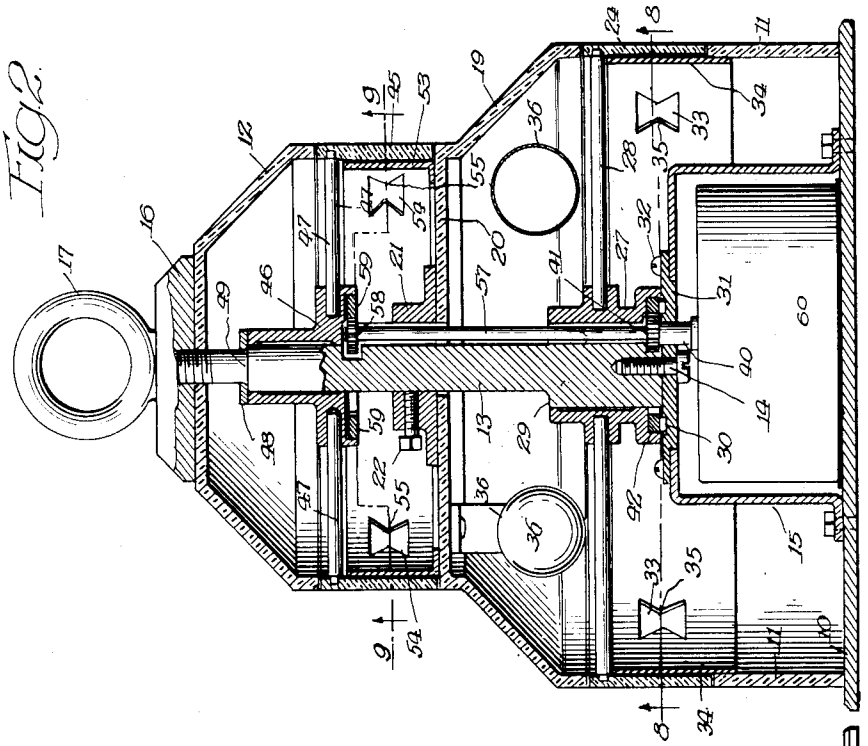
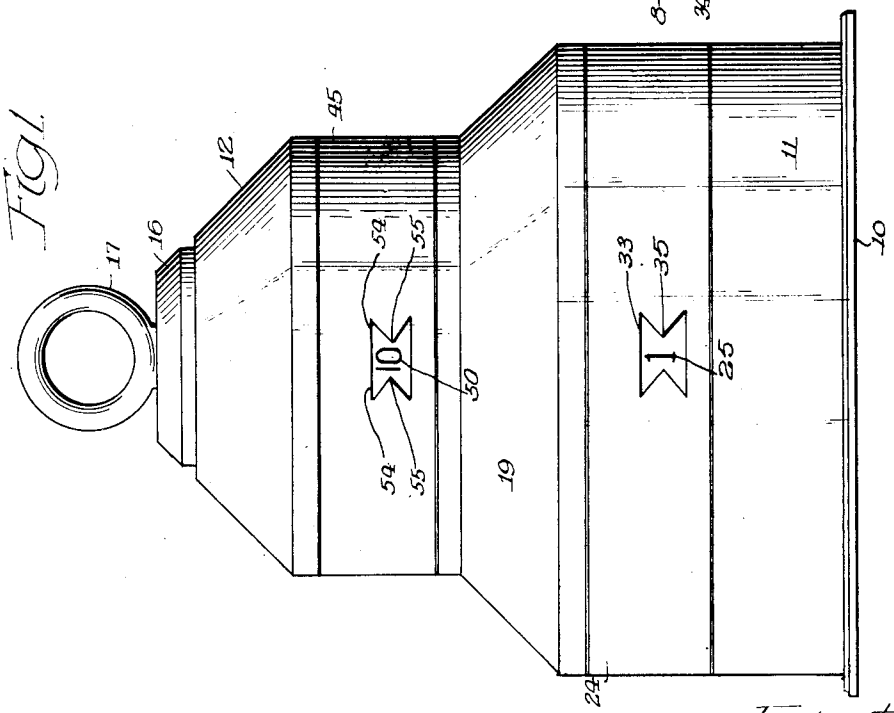


FIG. 1.



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CLOCK

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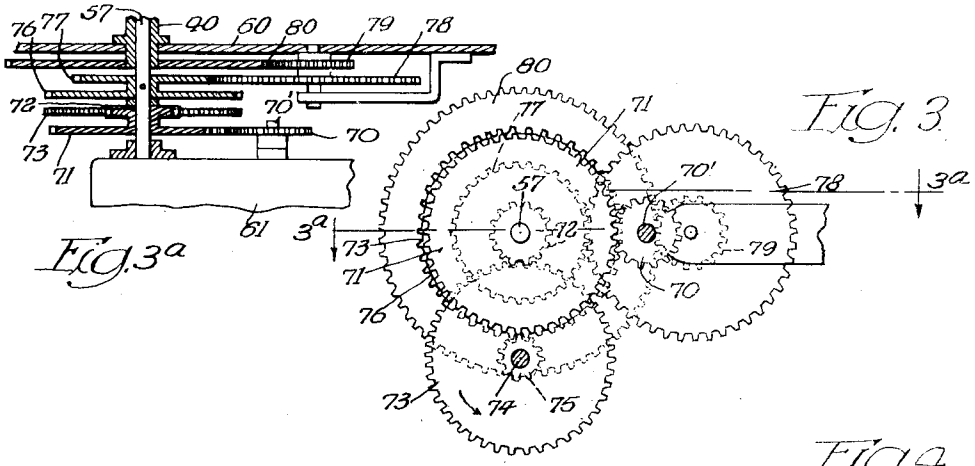
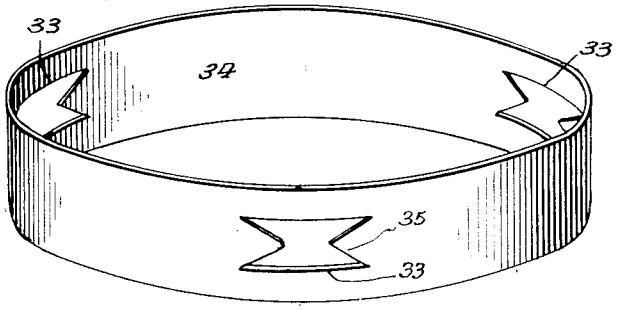


Fig. 3

Fig. 3a

Fig. 4



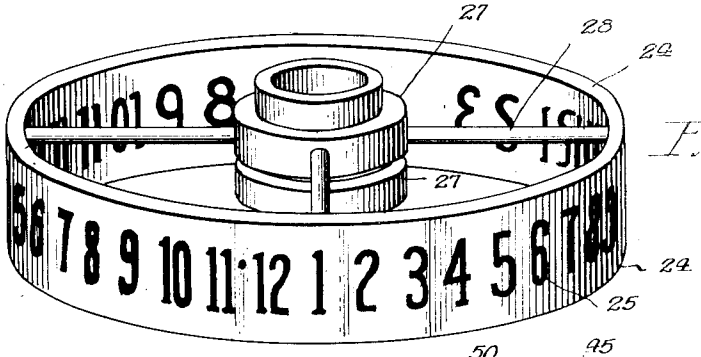


Fig. 5

Fig. 6

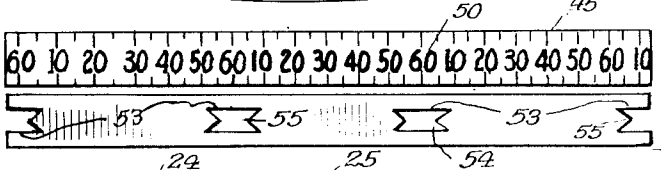
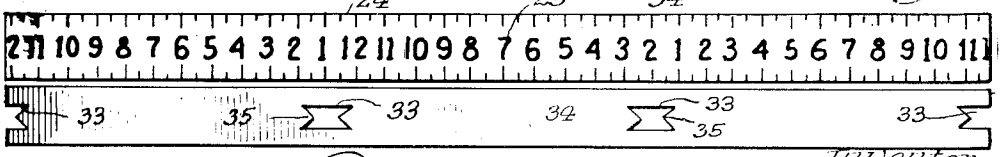


Fig. 7



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CLOCK

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Fig 8.

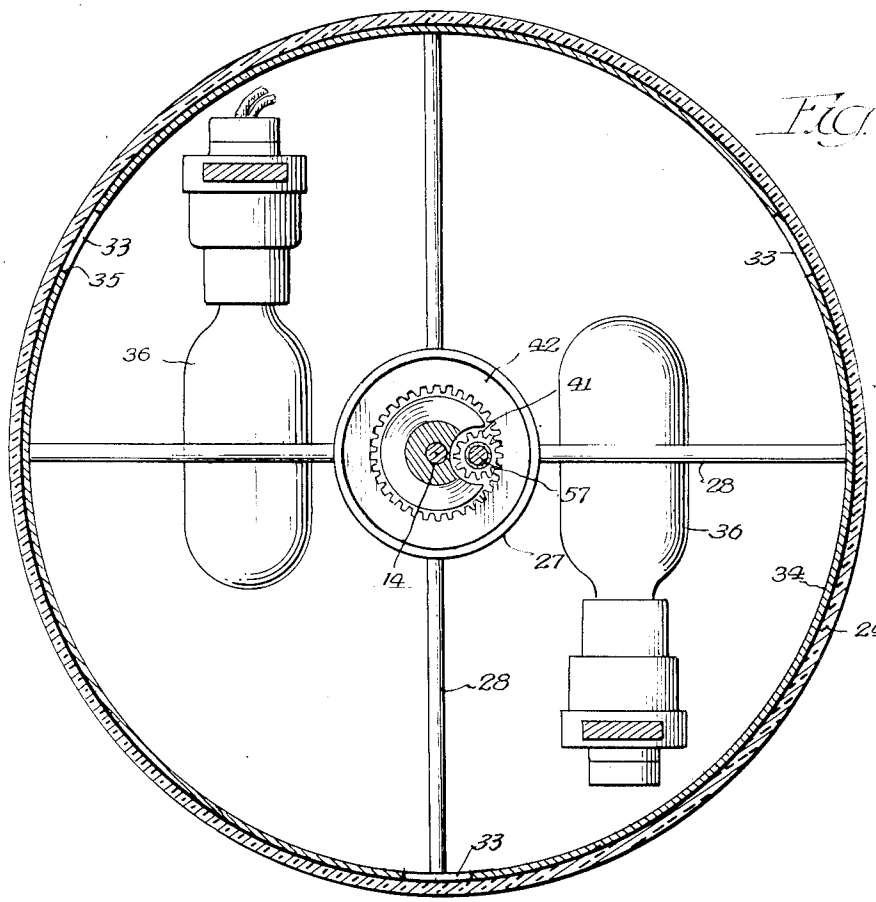
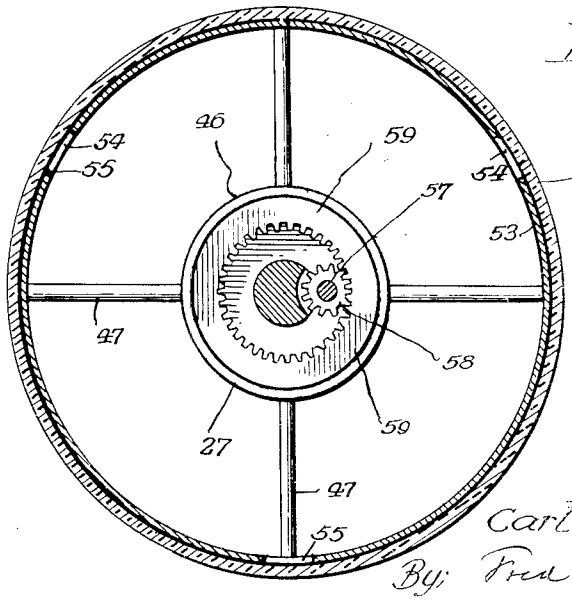


Fig 9.



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Patented Oct. 9, 1951 2,570,803

UNITED STATES PATENT OFFICE

2,570,803

CLOCK

Carl Hausen, Chicago, Ill.

Application September 17, 1947, Serial No. 774,570

9 Claims. (Cl. 58—50)

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The invention relates to clocks.

One object of the invention is to provide a clock which includes a cylindrical or annular case and motor-operated rotatable elements bearing time indicia for hours and minutes for time indications which are visible from different directions around the clock.

Another object of the invention is to provide a clock which is simple in construction and operation, unique and attractive in appearance and is adapted to rest on a table.

Other objects of the invention will appear from the detailed description.

The invention consists in the several novel features hereinafter set forth and more particularly defined in claims at the conclusion hereof.

In the drawings:

Figure 1 is a side elevation of a clock embodying the invention;

Fig. 2 is a central vertical section—parts being shown in elevation;

Fig. 3 is a diagrammatic view of the gear train for operating the rotatable elements bearing the minute and hour indicia;

Fig. 3A is a section taken on line 3A—3A of Fig. 3;

Fig. 4 is a perspective of one of the light shielding rings provided with openings or windows for exposing the time indicia on the rotatable elements;

Fig. 5 is a perspective of the rotatable element bearing the hour indicia;

Fig. 6 is a developed diagrammatic view of the minute indicia on one of the rotatable elements and the openings in the coacting light shield ring;

Fig. 7 is a developed diagrammatic view of the hour indicia on one of the rotatable elements and the coacting light shielding ring;

Fig. 8 is a section taken on line 8—8 of Fig. 2; and

Fig. 9 is a section taken on line 9—9 of Fig. 2.

The invention is exemplified in a clock which comprises a stationary case which includes a bottom 10, an upstanding cylindrical wall 11 on the bottom, a frusto-conoidal top section 12 which is fixedly secured on a standard 13 which is secured by screws 14 on the top of a frame 15 which is secured on the bottom 10. The top 12 is screw threaded to the upper end of standard 13 and a cap 16 with a carrying ring 17 is screwed onto the upper projecting end of standard 13 and secures the top against rotation on said standard. The stationary case also comprises an intermediate section which includes a frusto-conoidal

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peripheral wall 19 and a cross wall 20 to which is fixedly secured a collar 21 which fits around the standard 13 and is secured thereon by one or more set screws 22.

A rotatable cylindrical ring section or element 24 carries the hour indicia 25, and extends vertically between and is of the same diameter as, the upper end of cylindrical wall 11 on base 10 and the lower edge of the wall 19 of the intermediate section. Ring 24 is formed of transparent material such as suitable plastic or glass and is fixed to a hub 27 by spokes 28. Hub 27 is journaled on an enlarged portion 29 of the standard 13 and rotates on a thrust roller bearing 30 in a flange 31 on the lower end of standard 13 which is secured by screws 32 to the frame 15. Ring 24 bears in circumferential succession three series of hour indications 25 each from 1 to 12 and is rotated at the rate of one revolution during each period of 36 hours by mechanism hereinafter described.

The corresponding hour indications of each series on ring or element 24 are simultaneously illuminated through slots or windows 33 in a cylindrical light shield 34 which is adapted to prevent illumination of the remaining hour indications. The lower portion of shield 34 extends into and is fixedly secured in the cylindrical wall 11. This light shielding ring simultaneously exposes the corresponding hour indications of the three series on element 24 so that at least one of them is visible from practically all directions around the clock. Each slot or window 33 is provided with pointers 35 to index one of the hour indicating numerals between them.

The interior of the case is illuminated by electric lamps 36 which are stationarily supported from the wall 20 of the intermediate section of the casing. The windows in light shielding ring 34 cause the successive illumination of the hour indicating numerals 25 on ring or element 24 during its rotation. Element 24 is continuously rotated by a pinion 41 on a motor driven sleeve 40, and an internally toothed gear 42 which is fixed in an annular recess in the lower end of hub 27.

A rotatable element for minute indications is exemplified by a cylindrical ring 45 of transparent material. Ring 45 extends between the upper end of intermediate section 19 of the case and the lower end of top section 12. A hub 46 is journaled to rotate around the upper portion of standard 13 and is secured by spokes 47 to ring 45. A thrust bearing 48 fixed to the upper end of hub 46 engages a shoulder 49 on standard 13

to support the hub 46 vertically. Cylindrical ring or section 45 bears in circumferential succession three symmetrical series of minute indications 50 in multiples of ten. A light shield ring 53 is stationarily supported and fixed on the wall 20 of the intermediate section 19 of the case and is provided with three windows or slots 54 for simultaneously exposing corresponding numerals of the three series of minute indications on the rotating ring 45. Each window 54 is provided with pointers 55 directed to the numeral registering with it. The ring 45 which carries the minute indications is continuously driven by a shaft 57, a pinion 58 fixed to the upper end of said shaft, and an internally toothed gear 59 which is fixedly secured in a recess in the under-side of hub 46. Shaft 57 extends through sleeve 40 which drives the hour indicating element, and is driven at a rate of speed to cause the minute indicator to complete a rotation during each three-hour period. Sleeve 40 for driving the rotatable element with the hour indications and the shaft 57 for driving the rotatable element with the minute indications are driven by a synchronous electric motor 61 which drives a train of gearing by which the sleeve will be driven at a rate which will impart through internal gear 52 one complete rotation to element 24 every 36 hours and to drive shaft 57 so that pinion 58 and gear 59 will rotate the rotatable element with the minute indications one complete revolution every 3 hours. Motor 61 and said gearing are enclosed in a housing 60.

The gearing for driving shaft 57 which drives the minute indicator element comprises: a pinion 70 on the shaft 70' of motor 61; a gear 71 which is loose on shaft 50 and meshes with pinion 70; a pinion 72 which is integral with gear 71; a gear 73 which meshes with pinion 72 and is supported on a shaft 74; a pinion 75 integral with gear 73; a gear 76 which meshes with pinion 75 and is secured to shaft 57. This gearing imparts rotation to shaft 57 at the proper ratio to impart one complete revolution every 3 hours to the minute indicator element. Sleeve 40 is driven by a gear 77 which is integral with gear 76; a gear 78 meshing with gear 77; a pinion 79 integral with gear 78; and a gear 80 which meshes with pinion 79 and which is fixed to sleeve 40. This gearing is adapted to drive gear 42 at the proper ratio to impart a complete revolution to the hour indicating element 24 every 36 hours.

The operation of the clock will be as follows: The synchronous motor will constantly drive the shaft 57 and the sleeve 40 at proportionate speeds so that the minute indicator ring 45 will rotate one-third of the revolution during each hour and the hour indicator element 24 will rotate one thirty-sixth of a revolution during each hour. As the corresponding minute indications 50 of the three series on ring 45 register with the windows 54 in the light shielding ring 53, they will be illuminated to index and render readily and distinctively visible the numerals indicating the elapsed minutes of each hour. Calibrations indicating fractions of the 10 minute periods indicated by the numerals are also indicated on the element 45 and calibrations of fractions of the hours are indicated on element 24. During the continuous rotation of the hour indicator element 24 the corresponding hour indicating numbers of the three series will register with the windows 33 in the light shielding ring 34 so that said numbers will

be illuminated to indicate the hour of the day and the hours successively.

The invention exemplifies a clock which is provided with rotatable elements bearing indicia for minutes and hours with light shields through which the current hour and minute indications are illuminated at points spaced apart circumferentially approximately 120° so that at least one of the indications is visible from any angle of approach to the clock.

The invention also exemplifies a clock with rotatable minute and hour indicating elements which is simple in construction and attractive in appearance.

The invention also exemplifies a clock with time indications which are clearly visible to the observer.

The invention is not to be understood as limited to the details described since these may be modified in the appended claims without departing from the spirit and scope of the invention.

Having thus described the invention, what I claim as new and desire to secure by Letters Patent is:

1. A clock comprising a case, a transparent vertical, cylindrical, rotatable element on the outer side of the case provided with plural series of corresponding time indications for a predetermined period, circumferentially spaced around the element, means in the case for illuminating said element, stationary light shielding means inside of said element provided with openings for corresponding numerals in each series, and motor operable mechanism for rotating the element proportionate to the elapsed time.

2. A clock comprising a case including bottom, top and intermediate annular sections, a transparent rotatable, vertical, cylindrical element on the outer side of the case between the lower section and the intermediate section provided with hour indications, stationary means inside of said transparent element for indexing the hour indications on said element, a rotatable, vertical, cylindrical element on the outer side of the case between the intermediate section and the top section provided with minute indications, stationary means inside of said last named transparent element for indexing the minute indications, and motor operable mechanism for rotating said elements at different speeds proportionate to the elapsed time in minutes and hours.

3. A clock comprising a case including bottom, top and intermediate annular sections, illuminating means in the case, a rotatable, vertical, cylindrical transparent element on the outside of the case between the lower section and the intermediate section provided with corresponding series of hour indications, an annular light shield inside of said transparent element provided with openings for rendering visible by illumination the hour indications on said element, a second rotatable, vertical, cylindrical transparent element on the outside of the case between the intermediate section and the top section provided with minute indications, an annular light shield inside of said second transparent element provided with openings for successively rendering visible by illumination the minute indications, and motor operable mechanism for rotating said elements at different speeds proportionate to the elapsed time in minutes and hours.

4. A clock comprising a case including bottom, top and intermediate annular sections, a transparent rotatable, vertical, cylindrical element on the outer side of the case between the lower sec-

tion and the intermediate section provided with corresponding plural series of indicia for hours, an annular light shield inside of said transparent element provided with openings for simultaneously rendering visible by illumination corresponding hour indications on said element, a second transparent rotatable, vertical, cylindrical element between the intermediate section and the top section provided with plural series of corresponding minute indications, an annular light shield inside of said second transparent element provided with openings for rendering visible by illumination corresponding minute indications, and motor operable mechanism for rotating said elements at different speeds proportionate to the elapsed time in minutes and hours.

5. A clock comprising: a case including a base section, a top section and an intermediate section, a standard supported in the base section on which the top and intermediate sections are supported, a transparent rotatable, vertical, cylindrical element on the outer side of the case between the intermediate section and one of the other sections provided with hour indications, stationary means inside of said transparent element for indexing the hour indications, a second transparent rotatable, vertical, cylindrical element on the outer side of the case between the intermediate section and one of the other sections provided with minute indications, stationary means inside of said second transparent element for indexing the minute indications, and motor operable mechanism for rotating said elements at different speeds proportionate to the elapsed time in minutes and hours.

6. A clock comprising: a case including a base section, a top section and an intermediate section, a standard supported in the base section on which the top and intermediate sections are supported, illuminating means in the case, a rotatable, vertical, cylindrical transparent element on the outer side of the case between the intermediate section and one of the other sections provided with hour indications, stationary light shielding means for said element inside of said transparent element provided with openings for indexing and rendering visible by illumination the hour indications, a second rotatable, vertical, cylindrical transparent element on the outer side of the case between the intermediate section and one of the other sections provided with minute indications, stationary light shielding means inside of said second tranparent element provided with openings for indexing and rendering visible by illumination the minute indications, and motor operable mechanism for rotating said elements at different speeds proportionate to the elapsed time in minutes and hours.

7. A clock comprising: a case including a base section, a top section and an intermediate section, a standard supported in the base section on which the top and intermediate sections are supported, illuminating means in the case, a rotatable, vertical, cylindrical element on the outer side of the case between the intermediate section and one of the other sections provided with hour indications, a stationary ring inside of said cylindrical element provided with means for indexing the hour indications, a second rotatable, vertical, cylindrical element on the outer side of the case between the intermediate section and one of the other sections provided with minute indications, a stationary ring inside of said second cylindrical element provided with openings for indexing the minute indications, and motor operable mechanism for rotating said elements at different speeds proportionate to the elapsed time in minutes and hours, said mechanism including gearing with a vertical shaft for driving the minute indicating element and gearing with a sleeve around said shaft for driving the hour indicating element.

8. A clock comprising: a case including a base section, a top section and an intermediate section; a standard supported in the base section on which the top and intermediate sections are supported, a rotatable, vertical, cylindrical element on the outer side of the case between the intermediate section and one of the other sections provided with hour indications, stationary means inside of said cylindrical element for indexing the hour indications, a second rotatable, vertical, cylindrical element on the outer side of the case between the intermediate section and one of the other sections provided with minute indications, stationary means inside of said second cylindrical element for indexing the minute indications, and motor operable mechanism for rotating said elements at different speeds proportionate to the elapsed time in minutes and hours, said mechanism including gearing with a vertical shaft and a pinion on said shaft and an internal gear meshing with the pinion and on the minute indicating element and gearing including a sleeve around said shaft, a pinion on the sleeve and an internal gear on the hour indicating element meshing therewith.

9. A clock comprising an annular stationary case, transparent rotatable cylindrical elements on the outer side of the case and provided with indicia for minutes and hours, respectively, motor operable mechanism in the case for rotating said transparent elements at different speeds proportionately to the elapsed minutes and hours, stationary shielding rings inside of said transparent elements and provided with openings for successively exposing and indexing the minute and hour indications on the elements, respectively, and means in the case for illuminating the openings for displaying the indicia on the elements.

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