

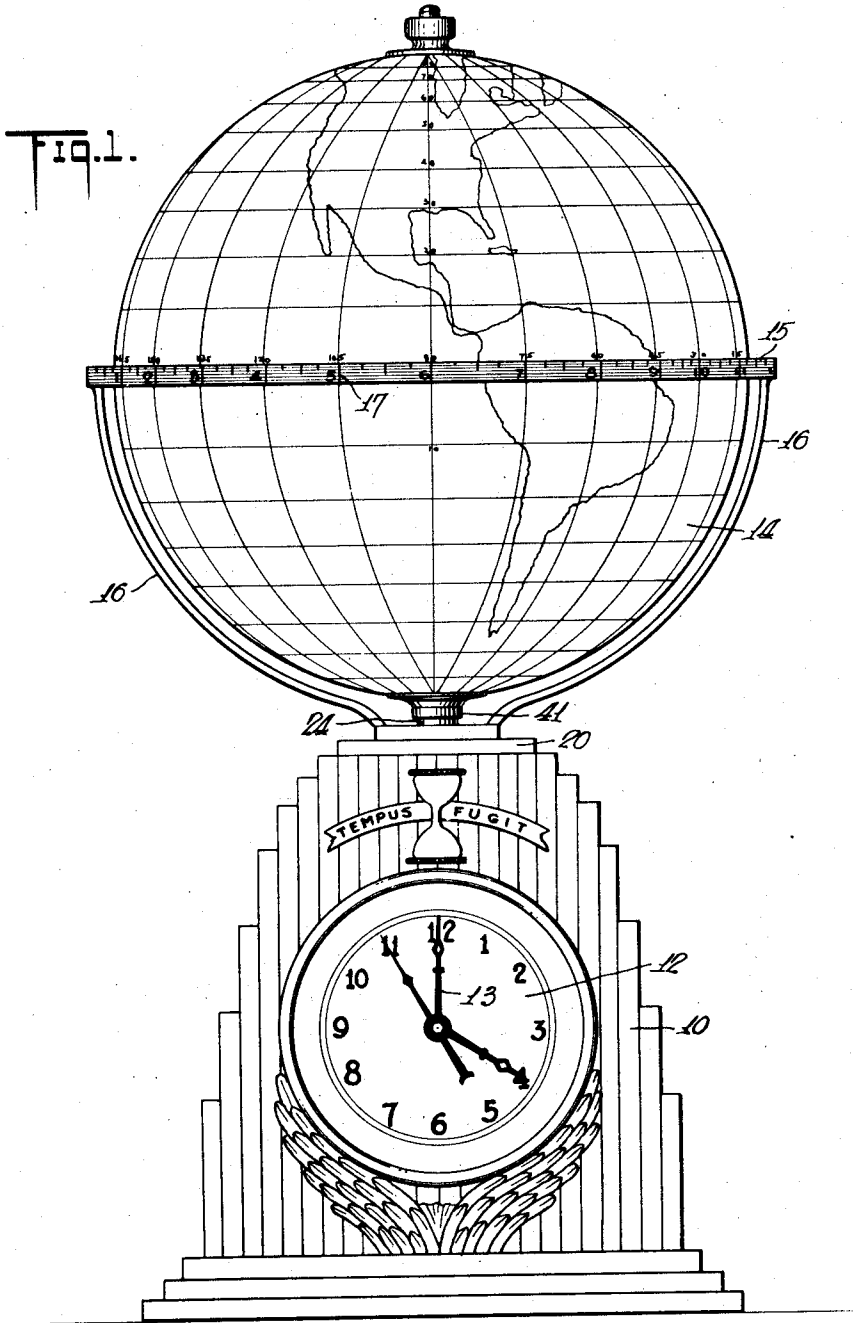
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H. E. SCHULSE

2,000,457

CHRONOLOGICAL INSTRUMENT

Original Filed July 16, 1929 2 Sheets-Sheet 1



INVENTOR

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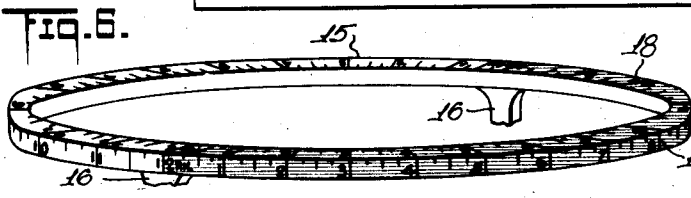
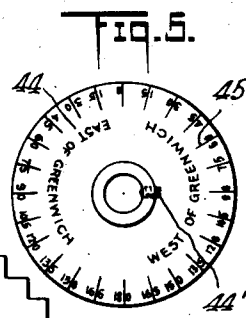
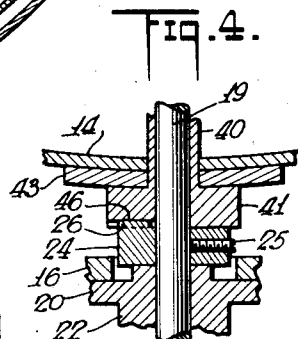
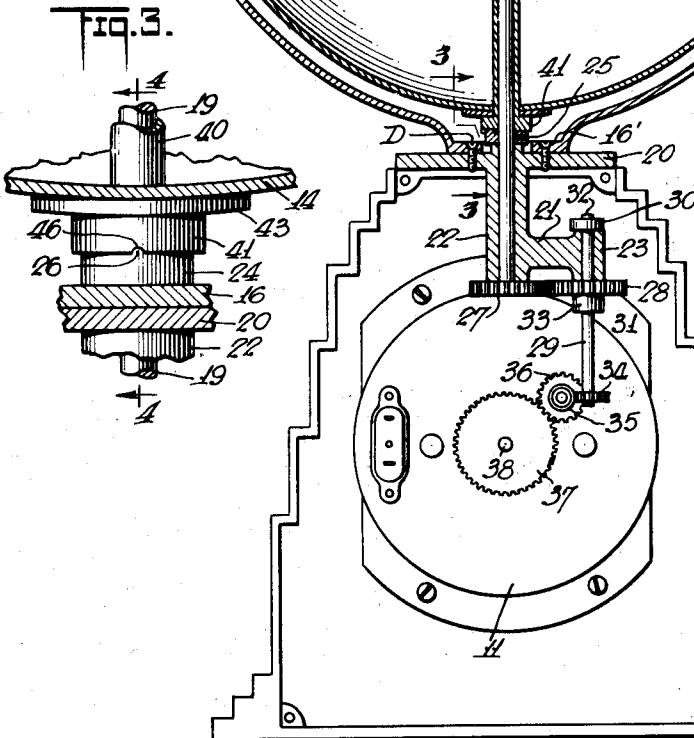
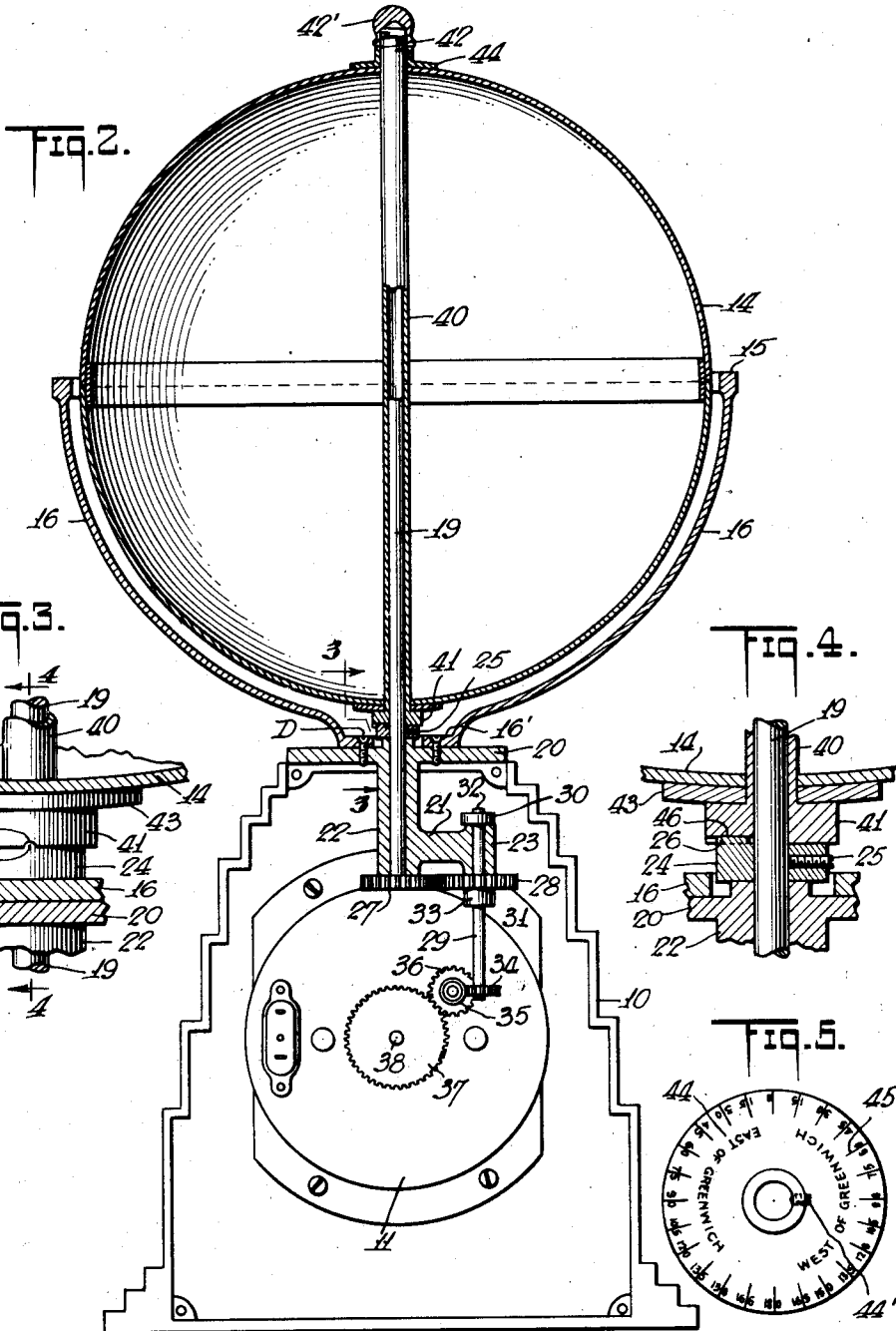
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CHRONOLOGICAL INSTRUMENT

Original Filed July 16, 1929

2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

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CHRONOLOGICAL INSTRUMENT

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to Uniclox Corporation, a corporation of Dela-
ware

Application July 16, 1929, Serial No. 378,615
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4 Claims. (Cl. 58—44)

My present invention relates more especially to chronological instruments of the type in which a terrestrial globe is associated with a clock.

5 It is an object of the invention to provide an instrument of the above type which in addition to its utility as an ordinary clock or time piece shall afford convenient means for readily reading at a glance the local time at any place
10 on earth.

Another object is to provide an instrument of the above type, useful and ornamental in the home, school, and office, the construction of which shall be simple and relatively inexpensive
15 and in which various operative or driving instrumentalities shall be effectively concealed in the interior to avoid detracting from the attractive appearance of the instrument.

Another object is to provide an instrument
20 having the above utilities, which however, nevertheless shall permit of free movement of the globe for educational or demonstration purpose without impairing the transmitting connection between the clock and the globe, and in which
25 the globe may in fact be bodily removed, for study and manipulation apart from the rest of the instrument and in which the globe may by simple manual action be restored to operative position, and in correct timed relation with the
30 clock.

Another object is to provide an arrangement of the above type which admits of the use of synchronous motor driven electric clocks of various commercial types without requiring reor-
35 ganization, other than the application of one or two gears to the exterior thereof from which the driving transmission is effected.

Another object is to provide an instrument of the above type which may be conveniently set,
40 either at the factory or by the ultimate user, to correct timed relation for use at any longitude, which in shipment will maintain its setting, and which moreover presents no delicate or protruding parts apt to be destroyed or impaired during
45 shipment.

In a simple embodiment of the invention, the clock is mounted within an ornamental case and drives a vertical rod at a 2 to 1 ratio. The terrestrial globe preferably has an axial tube telescoped over the vertical rod and rests on a thrust collar upon the rod from which the globe is
50 friction-driven. Preferably a time ring is sustained in fixed relation upon the top of the case and encircles the equatorial part of the globe, said ring having marked thereon the va-

rious hours of the day. The globe preferably rests merely by gravity upon its thrust bearing, and its upper half protrudes above the time ring, and the globe can be readily lifted from
5 out of the time ring.

The globe being set relative to the time ring so that that part of the globe corresponding to the place of use thereof is adjacent the part of the time ring corresponding to the local time
10 on the clock, the local time may then be read at any part on earth by following the meridian of the corresponding spot of the globe, down or up to the time ring.

In a preferred embodiment the two elements of the driving clutch have coacting finder means
15 which may be a ridge on one element and a cooperating depression in the other, said elements being initially set in accordance with the place of use, so that in initially positioning or in restoring the globe after a manipulation thereof,
20 the finder will upon a simple turn, show the correct properly timed relation of the globe with respect to the driving clock.

In the accompanying drawings in which is shown one of various possible embodiments of
25 the several features of the invention:

Fig. 1 is a view in elevation showing a clock and terrestrial globe constructed in accordance with the present invention.

Fig. 2 is a vertical sectional view thereof. 30

Fig. 3 is a detail sectional view on a larger scale, taken on the line 3—3 of Fig. 2.

Fig. 4 is a detail sectional view taken on the line 4—4 of Fig. 3.

Fig. 5 is a plan view of a detail, and 35

Fig. 6 is a detail perspective view of the time ring.

In the drawings, the reference numeral 10 designates a hollow base of any desired ornamental type, in which is suitably supported a
40 clock mechanism 11 having a dial 12 and hands 13, said clock preferably of the synchronous electric motor-driven type.

Top wall 20 of the housing 10 is preferably in the form of a cover plate and it has depending therefrom and unitary therewith a bearing
45 assembly 21. In the bearing 22 of said assembly is mounted the rod 19 which extends upward through plate 20 and centers the globe 14. The position of rod 19 in the bearing 22
50 is determined by the setting of a thrust collar 24, resting on top of plate 20, and secured to shaft 19 by means of a radial set screw 25. Supported above the base 10 is a terrestrial globe 14, driven from the clock mechanism, as
55

will be hereinafter more fully described. The globe 14 is preferably of the hollow molded type, and extending diametrically therethrough from pole to pole is a tubular bearing member 40. The lower end of this member 40 is provided with an enlarged thrust bearing portion 41 resting on thrust collar 24, and the upper end is screw threaded as at 42 to receive a fastening nut 42'. The thrust due to nut 42' is distributed upon the globe structure through washer 43 interposed between the member 41 and the outer surface of the globe 14 and a washer 44, carried by the upper end of the tube 40. The peripheral edge of washer 44 is provided with calibrations 45 which divide the same up into 15° sections and the washer 44 is adapted to be positioned upon the tube by means of set screw 44' with the calibrations 45 thereon in registry with the corresponding meridians of longitude upon the outer surface of the globe.

The rod 19 and with it the globe 14 are driven from the clock by a suitable train of gearing which illustratively consists of a gear wheel 27 mounted upon the lower end of the shaft 19, which meshes with a gear 28 upon a shaft 29 parallel with shaft 19 and mounted in the bearing 23 of the bearing assembly 21. The shaft 29 is maintained in position in the bearing 23 preferably by two thrust collars 30 and 33 which may be secured to the shaft 29 by set screws. Mounted upon the lower end of the shaft 29, is a worm wheel 34 driven by worm gear 35. The worm gear 35 is driven by a gear 36 which in turn meshes with a gear 37 carried by and operatively connected to the main arbor 38 of the clock mechanism 11.

The weight of the globe being sustained by thrust bearing 41 which rests on thrust collar 24, driving torque is readily transmitted from the latter to the former, and under the slow ratio of drive no slip can occur in the friction clutch 24-41.

The ratio of the several gears in the above described train is such that the gear 27 and with it the shaft 19 will be driven one complete revolution each twenty-four hours, and through the medium of the frictional drive between shaft 19 and globe 14, the latter will be correspondingly driven at the rate of one complete revolution in twenty-four hours.

Surrounding the globe is a band 15 which serves as a time ring. This time ring 15 is supported from the base member 10 by a standard comprising an annular hub 16', about the upper pilot end of cover 20 to which cover it is attached by screws D. Integral with hub 16' are curved arms 16 of such length as to position the time ring 15 at the equatorial line of terrestrial globe 14 when supported upon its thrust bearing. The time ring is provided with calibrations 17 on its outer periphery and preferably with similar calibrations 18 on its upper face, to indicate the twenty-four hours of a day. If desired, the calibrations may be arranged to give readings also of minutes or other fractional parts of an hour.

The thrust collar 24 has a small radial ridge 26 coacting with a corresponding radial recess 46 in thrust bearing 41, serving as a finder to aid in setting the globe in timed relation with the clock mechanism in a manner now to be described.

The globe is preferably placed in timed relation with the clock movement at the place of use

in the following manner. In setting the clock to time, the finder means 26, 46 would first be aligned, nut 42' loosened, globe 14 turned to correct time and nut 42' retightened.

The globe is preferably shipped separate from the clock and globe support. The guide rod 19 of the base assembly does not project above the time ring, so that there are no protruding parts that would take up needless space, and that are subject to injury in shipment.

For use at the longitude for which the instrument has been set, it is only necessary to start and set the clock to the hour of day in the ordinary manner. It is obvious that the clutch collar 24 will, through the train of gearing heretofore described, be moved with the movement of the clock and the timing relation thereof with the clock will thus be maintained. If now, the globe is placed upon the rod 19, and rotated slowly until the recess 46 receives the radial projection 26, the globe will be timed with the clock mechanism for the particular longitude of fuse, and from then on will be driven by the clock in timed relation therewith.

The drive is from the clock through the train of gearing 37, 36, 35, 34, 29, 28 and 27 to rod 19, thence through friction clutch 24-41 to the globe. The globe while supported on the thrust bearing is centered or steadied by tube 40 thereof about rod 19.

It is obvious that instead of factory adjustment, the retail dealer or the ultimate consumer could, by following simple instructions, corresponding to the foregoing, make the necessary adjustments to place the clock and globe in timed relation for any specific location of use.

When the clock and the globe are in correct synchronized relation as above set forth, by following along the meridian of longitude from any place on earth, the local time thereof at that instant may be read from the intersection of such meridian with the time ring 15. As the globe is revolved by the clock, points upon its surface will progressively advance with relation to the stationary time ring 15 and thus the time of day will be indicated at the location of use of the instrument as well as for any other location on earth.

For educational or other purposes, the globe can be turned by merely grasping the ornamental nut 42' and rotating by hand. The projection 26 is so shallow as to permit of free rotation of the globe upon the rod 19 without detrimental strain upon or back driving of the clock mechanism.

Furthermore the globe may be raised from its thrust collar 24 and lifted off the upper end of bearing rod 19, and used apart from the clock. After the globe is back on rod 19, it is restored to synchronized relation, by simply turning it by hand until the radial projection of the clutch member 24 drops into recess 46 of the clutch member 41 and thereafter the globe will continue to turn driven by the clock and in timed relation therewith.

While the drawings show one form of synchronous motor electric driven clock, it will be understood that any other type of such clock may be employed. For each such type, simple gearing can be applied to effect the convenient driving connection to the globe. Moreover an ordinary spring driven clock could be adapted for driving the globe, if desired.

If desired the globe may be mounted on a separate time ring fixture upon a suitable sup-

port, unrelated with the clock. Such globe could then be used for educational purpose or for conveniently ascertaining the time at any place on earth by merely setting the globe with the locality of use adjacent that part of the time ring showing local time.

It will thus be seen that there is herein described apparatus in which the several features of this invention are embodied, and which apparatus in its action attains the various objects of the invention and is well suited to meet the requirements of practical use.

As many changes could be made in the above construction and many apparently widely different embodiments of this invention could be made without departing from the scope thereof, it is intended that all matter contained in the above description or shown in the accompanying drawings, shall be interpreted as illustrative and not in a limiting sense.

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

1. A chronological instrument comprising a clock carrying base, a transmission including a driving thrust disc driven from said clock at one revolution per day and at the upper part of said base, a terrestrial globe having a thrust member at its south pole resting gravitationally upon said driving thrust disc, a centering rod extending upward through said thrust members, said globe having an axial bore whereby it is steadied upon said rod, and a time ring encircling said globe at its equator and sustained upon said base whereby said globe is driven from said clock at uniform rate once every twenty-four hours and may be removed by lifting the same off the driving disc and off the rod.

2. A chronological instrument including a

clock and a terrestrial globe, means for driving the globe from the clock including a friction clutch, the driving element of said clutch constituting a support for the globe, a hollow shaft rigidly connecting the polar axes of the globe and affixed with respect to the driven element of the friction clutch and a shaft affixed with respect to the driving element of the clutch and over which said hollow shaft is adapted to telescope.

3. A chronological instrument including a clock and a terrestrial globe, means for driving the globe from the clock including a friction clutch, the driving element of said clutch constituting a support for the globe, a hollow shaft rigidly connecting the polar axes of the globe and affixed with respect to the driven element of the friction clutch and a shaft affixed with respect to the driving element of the clutch and over which said hollow shaft is adapted to telescope, the means for securing the hollow shaft in position including a nut arranged exteriorly of the north polar end of the globe and adapted to serve as a handle when lifting the globe bodily off the centering band over which the hollow shaft telescopes.

4. In apparatus of the character described, a support means, a clock housed therein and an irreversible gear train operable from said clock and terminating in a friction clutch element, a hollow terrestrial globe having a friction clutch element associated therewith and supporting the globe on the first mentioned clutch element, said globe being freely removable from its supported position, and the two clutch elements including interfitting portions adapted to properly correlate the globe with respect to the clock without interfering with manual rotation of the globe independently of the clock.

HERMAN E. SCHULSE.