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(54) **A MULTIPURPOSE WATCH**

MEHRZWECK-UHR

MONTRE MULTIFONCTIONS

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Description

FIELD OF INVENTION

[0001] This invention relates to a multipurpose watch for applications such as solar time, solar day and dates, lunar months, lunar phases, local time of different cities/ countries of the world, constellations (*nakshatros*), signs (*rasis*), time In 24-hours scale, time in decimal system, seasons and Important personal events.

PRIOR ART

[0002] Watches are known in the art (see for example WO 2004 /013708, CH 679 197 or CH 693 599) for showing local solar time, local solar time of limited number of foreign countries, day, date, month of year according to Gregorian calendar.

[0003] A limitation of present watches is that these watches cannot show lunar calendar.

[0004] Another limitation of present watches is that these watches cannot directly distinguish between anti-meridian and post-meridian time or between day and night time, as the present watches have generally marking from 1 to 12 hours.

[0005] Still another limitation of present watches known is that these watches can show local time of only a few foreign countries.

[0006] Further limitation of the present watches is that these watches are not capable of indicating time In decimal system which is useful for calculation purposes.

OBJECTS OF PRESENT INVENTION

[0007] An object of present invention is to propose a multipurpose watch which can show solar time.

[0008] Another object of present invention is to propose a multipurpose watch which shows Gregorian calendar indicating solar day, date and month of the year along with dates of summer/winter solstice and vemal/ autumnal equinox.

[0009] Still another object of the present invention is to propose a multipurpose watch which shows lunar calendar indicating lunar dates and lunar months.

[0010] Further object of the present invention is to propose a multipurpose watch which is made to scale of 24 hours which indicate directly AM/PM or day/night time without any manipulation.

[0011] Still further object of the present invention is to provide a multipurpose watch which can show simultaneously local time of desired countries/cities.

[0012] Yet further object of the present invention is to provide a multipurpose watch which can show signs (*rasis*) and constellations (*nakshatras*).

[0013] Still further object of the present invention is to provide a multipurpose watch which enables direct conversion of 24 hours scale time to equivalent time on 100 hours scale without any manipulation which facilitates scientific calculations.

[0014] Yet further object of the present invention is to provide a multipurpose watch which can show seasons of countries in northern/southern hemisphere.

[0015] Still further object of the present invention is to provide a multipurpose watch which can show position of sun w.r.t. equator in northern/southern hemisphere which is useful in astronomy.

STATEMENT OF INVENTION

[0016] According to this invention there is provided a multipurpose watch for applications such as solar time, solar day and dates, lunar months, lunar phases, constellations *(nakshatras),* signs (*rosis*), local time of different cities/countries of the world, time in 24-hours scale, time in decimal system, seasons and important personal events wherein the said multipurpose watch comprises :-

(a) four hands (5,6,7,8) mounted on pivot (33) and rotated by gears (109, 33, 108, 91) respectively, wherein hand (5) indicates solar date and month according to Gregorian calendar, the hand (6) shows solar time on 24 hours scale dial, hand (7) shows lunar months, and hand (8) shows lunar dates;

(b) a dial plate comprising :

I. an elliptical ring (121) on dial showing seasons;

II. a circular ring (122) showing solar time on 24 hours scale;

III. a circular ring (123) showing decimal representation of time in 100 hours;

IV. rotating circular disc (42) rotated by gear (41) and circular time zone ring (124) which together with said rotating disc (42) shows local time of desired cities/countries marked on the disc;

V. a rotating ring (125) rotated by gear (91) showing different phases of moon marked from 1 to 15, 1 to 14 and 30, with marking '15' showing full moon and marking 30 as new moon;

VI. a circular ring (126) showing lunar months;

VII. a circular ring (127) showing solar months;

VIII. a circular ring (127a) showing solar dates according to Gregorian calendar;

IX. a circular ring (128) showing signs (*rasis*);

X. a circular ring (129) showing constellations (*nakshatras*);

XI. a circular ring (130) showing 108 divisions (*charans*) of *nakshatras*;

XII. outermost ring (131) showing 0° to 360°;

(c) a wrist watch (3) provided on the said dial plate with minute and second hand;

(d) a week days dial (4) with week days indicating needle (9);

(e) a minute watch (11) with minute hand (11a) showing decimal representation of minute;

(f) a motor (13) screwed on two supports (14, 14);

(g) a protective outer covering (12) of transparent material provided over the said dial plate, the said covering being openable by unscrewing the screws (12a);

(h) a housing (1) which houses gears :

- a motor fixed gear (16) having 125 teeth provided on the other axle (15) end of the rod connecting motor (13) which is adapted to rotate in anti-clockwise direction when motor is switched on;
- an adjusting knob (17) adapted to rotate in clockwise direction when said motor fixed gear (16) rotates in anti-clockwise direction;
- an idler (18) adapted to be rotated by said adjusting knob (17);
- a motor revolution decreasing gear (19) having 126 teeth is adapted to be rotated by said idler (18) in clockwise direction;
- worm gear (19a) which rotates gear (20) having 100 teeth in anti-clockwise direction, the said gear further rotating minute hand (11a) of minute watch (11) showing minutes on decimal system taking 14.40 solar minutes as equivalent to 100 minutes on decimal system;
- gear (21) rotated by the said gear (20) which In turn is adapted to rotate worm gear (22) which further rotates gear (23);
- bevel gear (24) rotated by said gear (23), bevel gear (24) being attached to bevel gear (25) which in turn transmits rotation successively to pivot gears (26, 27, 28, 29, 30, 31, 32) mounted on hubs (50, 51, 52, 53, 54, 55, 56) respectively wherein gear (32) is attached to pivot (33) which is attached to hour hand (6); the pivot gear (27) being Integrally attached to one end of connecting rod (34) whose other end Is connected to gear (35);
- gear (36) mounted on hub (60) adapted to be rotated by the said gear (35) which in turn is adapted to transmit rotation successively to gear (37), idler (38), gear (39) and idler (40) mounted on hubs (61, 62, 63, 64) and said idler (40) in turn rotating gear (41) which is attached to a circular disc (42);
- a gear (35) connected to rod (34) which transmit rotation to idler (111), gear (112), change gear (113) having 8 teeth and finally to gear (114) having 56 teeth attached to week days disc (4). Idler (111) gear (112), gear (114) being mounted on hubs (115, 116, 117) respectively,;
- gear (43) having 80 teeth provided on pivot (33) which transmits rotation to gear (44) mounted on hubs (81) which further transmits rotation successively to gear (45), gear (46) and gear (47) mounted on hubs (82, 83, 84) respectively, gear (48) being attached to gear (47) and rotating idler (49) which In turn rotates change gear (90) having 12 teeth;
- gear (91) having 328 teeth (no. of teeth varies /30°) which is adapted to be rotated by change gear (90);
- gear (92) adapted to rotate with rotation of pivot (33) and gear (92) In turn is adapted to successively transmit rotation to idler (93), gear (94), gear (95) having 8 teeth and gear (96), the said gear (96) having 56 teeth in turn rotating gear (97), gear (98), gear (99), Idler (106), gear (100) mounted on hubs (101, 102, 103, 104 and 105) respectively and gear (100) being provided at the lower end of change gear (107) having 7 teeth which in turn is adapted to rotate the gears (108, 109) wherein gear (108) has 354 teeth and gear (109) has 365 teeth (no. of teeth varies /30°), rotation of gears (108, 109) causing rotation of hands (7) and (5) respectively;
- support plate (110) which provides support to the gears (91), (108) and (109);

DESCRIPTION OF INVENTION

[0017] The invention is illustrated with accompanying drawings which are intended to broadly indicate the construction of the watch of the present invention. The concepts and features of the present invention can be embodied in variant embodiments by making changes, adaptations and modification in the construction of the watch. Such variant embodiments are intended to be

within the scope of the present invention. In the accompanying drawings:

Fig.1 : shows the overall construction of the multi-purpose watch of the present invention;
Fig.2 : shows the gear mechanism;
Fig.2(a): shows the section A'A' of gear mechanism;
Fig.3 : shows the section B'B' of gear mechanism;
Fig.4 : shows the dial plate;

DESCRIPTION OF INVENTION w.r.t. DRAWINGS

[0018] Referring to fig.1, the watch of the present invention comprises a housing (1) of a transparent plastic material which houses various gear assemblies as described in the ensuing description. On the top surface of the said housing, there is provided a dial plate (2) having various markings described herein. Over the said dial plate (2), there are four hands

[0019] (5,6,7,8) which are adapted to be separated from each other and mounted on the central pivot (33) and are rotated by the respective gear assemblies provided inside the said housing (1). A wrist watch with minute & second hand (3), a week days dial (4) with a day indicating needle (9) and minute watch (11) with minutes hand (11a) wherein minutes watch shows minutes in decimal system (14.40 minutes of solar time=100 minutes of decimal system) are also provided on the top surface of the said housing. The said dial plate etc. is housed inside a protective covering of transparent material (12). The said covering being openable by unscrewing the screws (12a). A motor, screwed on two supports, rotates the axle (15).

[0020] Referring to the fig.2 and flg.2(a), which shows the section at A'A' a motor fixed gear (16) having 125 teeth is provided at the other end of the said axle (15) inside the said housing (1). When the said motor (13) starts, said motor fixed gear (16) starts rotating in anti-clockwise direction.

[0021] The said motor fixed gear (16) is adapted to rotate the adjusting knob (17) in clockwise direction which in turn rotates idler (18) In anti-clockwise direction. The idler (18) is adapted to rotate the motor revolution decreasing gear (19) having 126 teeth in clockwise direction and consequently the worm gear (19a) which is just an extension of said motor revolution increasing gear (19) will also start rotating in clockwise direction. The said worm gear (19a) will in turn rotate gear (20) in anti-clockwise direction. The said gear (20) has 100 teeth and one tooth of this gear rotates when worm gear (19a) completes one rotation (100 decimal seconds = 8.64 solar seconds). The hand (11a) is attached to the gear (20) and shows minutes In decimal system on the said decimal system minute watch (11) in anti-clockwise direction wherein 14.40 minutes of solar system = 100 minutes of decimal system.

[0022] The said gear (20) In turn rotates (21) in clockwise direction. The worm gear (22) attached to said gear (21) also rotates in clockwise direction and completes one rotation in one hour of decimal system (1 day = 24 hours = 100 hours of decimal system). The said worm gear (22) is adapted to rotate hour gear (23) In anti-clockwise direction.

[0023] When worm gear (22) rotates by one rotation, one tooth of said hour gear (23) gets rotated. Thus after 100 rotations of worm gear (22), the hour gear (23) under goes one complete rotation i.e. hour gear completes one rotation in 100 hours on decimal system or 24 hours. The said hour gear (23) is connected to bevel gear (24) which is adapted such that it rotates bevel gear (25) which in turn is attached to pivot gear (26). The pivot gear (26) is adapted to rotate gear (27) which in turn is attached to pivot gear (26). The pivot gear (26) is adapted to rotate gear (27) which in turn rotates gear (28). The gear (28) rotates gear (29), the gear (29) rotates gear (30) and gear (30) rotates gear (31) which in turn rotates gear (32). The pivot gears (26 to 32) are provided on hubs (50 to 56 respectively).

[0024] The gear (32) is Integrally attached around the central pivot (33) of the watch. In this way pivot of the watch completes one rotation in 100 decimal hours or 24 hours. The gears (26 to 32) are referred as pivot gears as they help to rotate central pivot (33) of the watch. The hour hand (6), which is attached to the central pivot (33) of the watch, which rotates in clockwise direction and completes one rotation In 100 decimal hours or 24 solar hours.

[0025] The said pivot gear (27) is integrally connected to connecting rod (34) at one end and is integrally connected to gear (35) at other end so that when pivot gear (27) rotates In and-clockwise direction, the gear (35) also rotates in and-clockwise direction. The gear (35) rotates gear (36) which in turn rotates the gear (37) and gear (37) rotates idler (38) in clockwise direction which in turn rotates gear (39) in anti-clockwise direction. The gear (39) rotates idler (40) in clockwise direction which in turn rotates the gear (41) in and-clockwise direction. The gears (36, 37, 39) and idlers (38, 40) are provided on hubs (60, 61, 63) and (62, 64) respectively, a circular disc (42) is attached with gear (41). This disc (42) indicates the rotation of earth and different countries and cities are marked on dial of this disc at their respective meridians. The disc (42) with the help of time zone ring (71) (Fig.1) shows the time at different meridians.

[0026] Gear (35) Is Integrally connected to connecting rod (34). So with pivot gear (27), gear (35) also rotates In anti-clockwise direction. Gear (35) rotate idler (111) which in turn rotates gear (112) In anti-clockwise direction. The gear (112) is fixed with change gear (113) which has 8 teeth. With gear (112) change gear (113) also rotates which in turn rotate gear (114) in clockwise direction. Gear (114) having 56 teeth is integrally connected to week days disc (4). So with gear (114) week days disc also rotate in clockwise direction once in one week duration. Week days indicating needle (9) denotes the day on dial e.g. Sunday, Monday etc. Idler (111), gear (112),

gear (114) are mounted on hubs 115, 116 and 117 respectively.

[0027] Gear (43) having 80 teeth is fixed with the central pivot (33) and hence rotates once in 24 hours. The Gear (43) rotates the gear (44) in anti-clockwise direction which in turn rotates the gear (45) in clockwise direction. The gear (45) rotates gear (46) which in turn rotates the gear (47) in clockwise direction. The gear (47) is provided on change gear (48) which has 12 teeth.

[0028] When change gear (48) rotates, it rotates idler (49) in anti-clockwise direction which in turn rotates the change gear (90) in clockwise direction. This change gear (90) is adapted to rotate the gear (91) having 328 teeth (no. of teeth varies /30°). The complete rotation of gear (91) corresponds to 27 days and 8 hours which is the revolution time of moon around the earth. The gear (91) Is attached to the hand (8). The upper surface of the said gear (91) is divided in 30 equal parts which are marked as 1 to 15, 1 to 14 and 30. The marking on gear (91) which In alignment with hand (5) indicates the different phases of moon. The marking 15 on gear (91) in alignment with hand (5) indicates full moon, marking (30) in alignment with hand (5) indicates new moon.

[0029] Referring to Fig. 3, which shows the section at B'B', the gear (92) is adapted to rotate when central pivot (33) rotates. The gear (92) in turn rotates idler (93) in anti-clockwise direction which In turn rotates gear (94) In clockwise direction. The rotation of gear (94) causes rotation of gear (95) having 8 teeth which is attached to gear (94). The rotation of gear (95) leads to chain action of rotating gear (96) having 56 teeth and gears (97 to 100) and idler (106) mounted on hubs (101 to 103), (105) and (104) respectively. The rotation of gear (100) causes rotation of change gear (107) which is fixed to it, in clockwise direction.

[0030] The change gear (107) has 7 teeth and its rotation causes rotation of gear (108) having 354 teeth in anti-clockwise direction. The gear (108) is attached to the hand (7) over the said dial plate. This hand (7) rotates on the dial of watch once in one lunar year i.e. 354 days.

[0031] The change gear (107) is adapted to cause rotation of the gear (109) in anti-clockwise direction. The gear (109) having 365 teeth (no. of teeth varies /30°) rotates once in 365 days. Accordingly the hand (5) on the dial plate rotates once in 365 days. This hand (5) indicates the dates and months according to solar calendar on the dial of watch, along with *nakshatras, rasis* etc. The gears (91), (108) and (109) are supported on gear supporting plate (110).

[0032] Referring to fig. 4, the dial plate is provided with four hands ,(5,6,7,8). The hand (5) shows the solar date and month accordingly to Gregorian calendar. The hand (6) shows the solar hours on 24 hours scale as well as 100 decimal hours scale. The hand (7) shows the lunar months like *Chaitra, Vaisakha,* etc. The hand (8) shows the lunar dates known as *'tithis'* with phases of moon such as full moon, new moon, etc. The elliptic ring (121) corresponds to the elliptical revolution of earth around the Sun and shows the seasons in the countries in northern/southern hemisphere. The circular ring (122) on the dial shows the solar time on 1 to 24 hours scale thereby directly indicating AM/PM and day/night time.

[0033] The circular ring (123) on the dial plate shows the decimal time on 100 hours scale which directly shows the decimal equivalent time of solar time. The rotating circular disc (42) rotated by gear (41) shows the local time of desired countries/cities along with their respective meridians with the help of time zone ring (124).

[0034] The circular rotating ring (124) shows the time zone 1 to 24 hours in anti-clockwise direction. The said time zone circular ring (124) together with said rotating disc (42) show simultaneously the local time in the different countries printed on the said disc (42). The circular rotating ring (125) shows the different phases of moon, marked from 1 to 15, 1 to 14 and 30, in clockwise direction. The marking '15' shows full moon, the marking '30' shows new moon. The visibility of the moon surface increases from lunar dates 1 to 15 when it is full moon then decreases from lunar dates 1 to 14 and disappears on marking 30 known as new Moon. The circular ring (126) shows the lunar months *chaitra, vaisakha,* etc. The circular ring (127) on the dial shows the solar months according to Gregorian calendar.

[0035] Circular ring (127a) on the dial shows the solar dates according to Gregorian calendar. The important dates of personal requirements can be marked on this ring. The ring is also marked by dates of summer/winter solstice and vernal/autumnal equinox. The circular ring (128) shows signs (*rasis*) like Taurus, Sagittarius; etc. the circular ring (129) shows 27 constellations (*nakshatras*) and the circular ring (130) shows 108 divisions (*charan*) of *nakshatras.* The outer most circular ring (131) show 0° to 360° which enable to locate start and end of *nakshatras* and *rasis.*

[0036] It is to be understood that the process of present intention is susceptible to modifications, changes and adaptations by those skilled in the art. Such modifications, changes and adaptations are intended to be within the scope of the present invention, which is set forth under the following claims :

Claims

1. A multipurpose watch for applications such as solar time, solar day and dates, solar months, lunar months, lunar phases, local.time of different cities/ countries of the world, constellations, signs, time on 24 hours scale, time in decimal system, important personal events wherein the said multipurpose watch comprises:

    (a) four hands (5, 6, 7, 8) mounted on pivot (33) and rotated by gears (109, 43, 108, 91) respectively, wherein the first hand (5) indicates solar date and month according to Gregorian calen-

dar, the second hand (6) shows solar time on 24 hours scale dial, the third hand (7) shows lunar months, and the fourth hand (8) shows lunar dates;
(b) a dial plate comprising:

I. an elliptical ring (121) on dial showing seasons,
II. a first circular ring (122) showing solar time on 24 hours scale,
III. a second circular ring (123) showing decimal representation of time in 100 hours,
IV. a rotating circular disc (42) arranged to be rotated by a first gear (41) and a circular time zone ring (124) which together with said rotating disc (42) shows local time of desired cities/countries marked on the disc,
V. a rotating ring (125) rotated by a second gear (91) showing different phases of moon marked from 1 to 15, 1 to 14 and 30, with marking '15' showing full moon and marking "30" as new Moon;
VI. a third circular ring (126) showing lunar months,
VII. a fourth circular ring (127) showing solar months,
VIII. a fifth circular ring (127a) showing solar dates according to Gregorian calendar,
IX. a sixth circular ring (128) showing signs,
X. a seventh circular ring (129) showing constellations,
XI. an eighth circular ring (130) showing 108 divisions of said constellations,
XII. an outermost ring (131) showing 0 to 360,

(c) a wrist watch (3) provided on the said dial plate with minute and second hand,
(d) a week days dial (4) with week days indicating needle (9),
(e) a minute watch (11) with minute hand (11a) showing decimal representation of minute,
(f) a motor (13) screwed on two supports (14),
(g) a protective outer covering (12) of transparent material provided over the said dial plate, the said covering being openable by unscrewing the screws (12a),
(h) a housing (1) which houses the following gears:

- a motor fixed gear (16) having 125 teeth provided on the other axle (15) end of the rod connecting motor (13) which is adapted to rotate in anti-clockwise direction when motor is switched on,
- an adjusting knob (17) adapted to rotate in clockwise direction when said motor fixed gear (16) rotates in anti-clockwise direction,
- a first idler (18) adapted to be rotated by said adjusting knob (17),
- a motor revolution decreasing gear (19) having 126 teeth adapted to be rotated by said first idler (18) in clockwise direction,
- a first worm gear (19a) adapted to rotate in clockwise direction at 100 decimal seconds = 8.64 solar seconds in one rotation, said first worm gear (19a) being arranged to rotate a first gear (20) having 100 teeth in anti-clockwise direction, said first gear (20) further rotating minute hand (11a) of said minute watch (11) showing minutes on decimal system taking 14.40 solar minutes as equivalent to 100 minutes on decimal system,
- a second gear (21) adapted to be rotated by the said first gear (20) which in turn is adapted to rotate a second worm gear (22) which is adapted to further rotate a third gear (23),
- a first bevel gear (24) adapted to be rotated by said third gear (23), said first bevel gear (24) being attached to a second bevel gear (25) which in turn is adapted to transmit rotation successively to pivot gears (26, 27, 28, 29, 30, 31) mounted on a first set of hubs (50, 51, 52, 53, 54, 55, 56) respectively, wherein a fourth gear (32) is attached to pivot (33) which is attached to said hour hand (6), one (27) of said pivot gears being integrally attached to one end of connecting rod (34) whose other end is connected to a fifth gear (35),
- a sixth gear (36) mounted on a first further hub (60) adapted to be rotated by the said fifth gear (35) which in turn is adapted to transmit rotation successively to a seventh gear (37), a second idler (38), an eighth gear (39) and a third idler (40) mounted on a second set of hubs (61, 62, 63, 64), said third idler (40) in turn rotating gear (41) which is attached to a circular disc (42),
- the fifth gear (35) being connected to said connecting rod (34) which is adapted to transmit rotation to a fourth idler (111), a ninth gear (112), a first change gear (113) having 8 teeth and finally to a tenth gear (114) having 56 teeth attached to week days disc (4), said fourth idler (111), said ninth gear (112) and said tenth gear (114) being mounted on a third set of hubs (115, 116, 117) respectively,
- an eleventh gear (43) having 80 teeth provided on the pivot (33) which is adapted to transmit rotation to a twelfth gear (44) mounted on second further hub (81) which is arranged to further transmit rotation suc-

cessively to a thirteenth gear (45), a fourteenth gear (46) and a fifteenth gear (47) mounted on a fourth set of hubs (82, 83, 84) respectively, a further sixteenth gear (48) being attached to said fifteenth gear (47) and arranged to rotate a fifth idler (49) which in turn rotates a second change gear (90);
- a seventeenth gear (91) having 328 teeth which is adapted to be rotated by said second change gear (90),
- an eighteenth gear (92) adapted to rotate with rotation of pivot (33) and adapted to successively transmit rotation to a sixth idler (93), a nineteenth gear (94), a twentieth gear (95) having 8 teeth and a twenty first gear (96) having 56 teeth arranged to in turn rotate a twenty second gear (97), a twenty third gear (98), a twenty fourth gear (99), a seventh idler (106), a twenty fifth gear (100) mounted on a fifth set of hubs (101, 102, 103, 104 and 105) respectively, said twenty fifth gear (100) being provided at the lower end of a third change gear (107) having 7 teeth which in turn is adapted to rotate twenty sixth and twenty seventh gears (108, 109) wherein the twenty sixth gear (108) has 354 teeth and the twenty seventh gear (109) has 365 teeth whereby the rotation of the latter two gears (108, 109) causes rotation of the third and first hands (7, 5) respectively,
- a support plate (110) which provides support to the seventeenth gear (91), the twenty sixth gear (108) and the twenty seventh gear (109).

2. A multipurpose watch as claimed in claim 1 wherein the said housing (1) is made of transparent plastic material.

3. A multipurpose watch as claimed in claim 1 wherein the said motor is 7.00 RPM A/c. motor which is replaceable by D/c. motor.

Patentansprüche

1. Mehrzweckuhr für Anwendungen wie Sonnenzeit, Sonnentag und - daten, Sonnenmonate, Mondmonate, Mondphasen, Ortszeit verschiedener Städte/Länder der Welt, Mondhäuser (Nakshatras), Tierkreiszeichen (Rasis), Zeit auf einer 24-Stunden-Skala, Zeit im Dezimalsystem, wichtige persönliche Ereignisse, wobei die Mehrzweckuhr umfasst:

(a) vier Zeiger (5,6,7,8), die an einem Drehzapfen (33) angebracht sind und jeweils von einem Zahnrad (109, 43, 108, 91) gedreht werden, wobei der erste Zeiger (5) Sonnendatum und -monat nach dem Gregorianischen Kalender anzeigt, der zweite Zeiger (6) Sonnenzeit auf einer 24-Stunden-Rundskala zeigt, der dritte Zeiger (7) Mondmonate zeigt und der vierte Zeiger (8) Monddaten zeigt;
(b) eine Zifferblattplatte, umfassend:

I. einen elliptischen Ring (121) auf einem Zifferblatt, der Jahreszeiten zeigt,
II. einen ersten Kreisring (122), der Sonnenzeit auf einer 24-Stunden-Skala zeigt,
III. einen zweiten Kreisring (123), der eine Dezimaldarstellung von Zeit in 100 Stunden zeigt,
IV. eine rotierende Kreisscheibe (42), die von einem ersten Zahnrad (41) drehbar angeordnet ist, und einen kreisförmigen Zeitzonenring (124), welcher zusammen mit der rotierenden Scheibe (42) die Ortszeit gewünschter Städte/Länder zeigt, die auf der Scheibe bezeichnet sind,
V. einen rotierenden Ring (125), der von einem zweiten Zahnrad (91) gedreht wird und verschiedene Mondphasen zeigt, die mit 1 bis 15, 1 bis 14 und 30 **gekennzeichnet** sind, wobei die Kennzeichnung "15" Vollmond und die Kennzeichnung "30" Neumond bezeichnet,
VI. einen dritten Kreisring (126), der Mondmonate zeigt,
VII. einen vierten Kreisring (127), der Sonnenmonate zeigt,
VIII. einen fünften Kreisring (127a), der Sonnendaten nach dem Gregorianischen Kalender zeigt,
IX. einen sechsten Kreisring (128), der Tierkreiszeichen (Rasis) zeigt,
X. einen siebenten Kreisring (129), der Mondhäuser (Nakshatras) zeigt,
XI. einen achten Kreisring (130), der 108 Abteilungen der Mondhäuser zeigt,
XII. einen äußersten Ring (131), der 0 bis 360 zeigt,

(c) eine Armbanduhr (3), die auf der Zifferblattplatte vorgesehen ist, mit Minuten- und Sekundenzeiger,
(d) ein Wochentage-Zifferblatt (4) mit einer Wochentage-Anzeigenadel,
(e) eine Minutenuhr (11) mit einem Minutenzeiger (11a), die eine Dezimaldarstellung von Minuten zeigt,
(f) einen Motor (13) der auf zwei Trägern (14) festgeschraubt ist,
(g) eine äußere Schutzabdeckung (12) aus durchsichtigem Material, die über der Zifferblattplatte vorgesehen ist, wobei die Abdeckung durch Lösen der Schrauben (12a) geöffnet wer-

den kann,
(h) ein Gehäuse (1), welches die folgenden Zahnräder beherbergt:

- ein am Motor befestigtes Zahnrad (16) mit 125 Zähnen, das auf dem anderen Achszapfen (15) der mit dem Motor (13) verbundenen Stange vorgesehen ist und welches dazu eingerichtet ist, entgegen dem Uhrzeigersinn zu rotieren, wenn der Motor eingeschaltet ist;
- einen Einstellknopf (17), der dazu eingerichtet ist, im Uhrzeigersinn zu rotieren, wenn das am Motor befestigte Zahnrad (16) entgegen dem Uhrzeigersinn rotiert,
- ein erstes Zwischenrad (18), das dazu eingerichtet ist, von dem Einstellknopf (17) gedreht zu werden,
- ein die Motordrehzahl verringerndes Zahnrad (19) mit 126 Zähnen, das dazu eingerichtet ist, von dem ersten Zwischenrad (18) im Uhrzeigersinn gedreht zu werden,
- ein erstes Schneckenrad (19a), das dazu eingerichtet ist, im Uhrzeigersinn mit 100 Dezimalsekunden = 8,64 Sonnensekunden pro Umdrehung zu rotieren, wobei das erste Schneckenrad (19a) dafür vorgesehen ist, ein erstes Zahnrad (20) mit 100 Zähnen entgegen dem Uhrzeigersinn zu drehen, wobei das erste Zahnrad (20) ferner den Minutenzeiger (11a) der Minutenuhr (11) dreht, welche Minuten im Dezimalsystem zeigt, wobei 14,40 Sonnenminuten als äquivalent zu 100 Minuten im Dezimalsystem angesehen werden,
- ein zweites Zahnrad (21), das dazu eingerichtet ist, von dem ersten Zahnrad (20) gedreht zu werden, und welches wiederum dazu eingerichtet ist, ein zweites Schnekkenrad (22) zu drehen, welches dazu eingerichtet ist, weiterhin ein drittes Zahnrad (23) zu drehen,
- ein erstes Kegelrad (24), das dazu eingerichtet ist, von dem dritten Zahnrad (23) gedreht zu werden, wobei das erste Kegelrad (24) an einem zweiten Kegelrad (25) befestigt ist, welches wiederum dazu eingerichtet ist, die Drehbewegung nacheinander auf Drehzapfen-Zahnräder (26, 27, 28, 29, 30, 31) zu übertragen, die jeweils an einer Nabe aus einem ersten Satz von Naben (50, 51, 52, 53, 54, 55, 56) angebracht sind, wobei ein viertes Zahnrad (32) an dem Drehzapfen (33) befestigt ist, welcher an dem Stundenzeiger (6) befestigt ist, wobei eines (27) der Drehzapfen-Zahnräder mit einem Ende einer Verbindungsstange (34) stoffschlüssig verbunden ist, deren anderes Ende mit einem fünften Zahnrad (35) verbunden ist,
- ein sechstes Zahnrad (36), das an einer ersten weiteren Nabe (60) angebracht ist und dazu eingerichtet ist, von dem fünften Zahnrad (35) gedreht zu werden, und welches wiederum dazu eingerichtet ist, die Drehbewegung nacheinander auf ein siebentes Zahnrad (37), ein zweites Zwischenrad (38), ein achtes Zahnrad (39) und ein drittes Zwischenrad (40) zu übertragen, die an einem zweiten Satz von Naben (61, 62, 63, 64) angebracht sind, wobei das dritte Zwischenrad (40) wiederum ein Zahnrad (41) dreht, welches an einer kreisförmigen Scheibe (42) befestigt ist,
- wobei das fünfte Zahnrad (35) mit der Verbindungsstange (34) verbunden ist, welche dazu eingerichtet ist, die Drehbewegung auf ein viertes Zwischenrad (111), ein neuntes Zahnrad (112), ein erstes Wechselrad (113) mit 8 Zähnen und schließlich ein zehntes Zahnrad (114) mit 56 Zähnen, das an der Wochentage-Scheibe (4) befestigt ist, zu übertragen, wobei das vierte Zwischenrad (111), das neunte Zahnrad (112) und das zehnte Zahnrad (114) jeweils an einer Nabe aus einem dritten Satz von Naben (115, 116, 117) angebracht sind,
- ein elftes Zahnrad (43) mit 80 Zähnen, das an dem Drehzapfen (33) vorgesehen ist und welches dazu eingerichtet ist, die Drehbewegung auf ein zwölftes Zahnrad (44), das an einer zweiten weiteren Nabe (81) angebracht ist, zu übertragen, welches dazu vorgesehen ist, die Drehbewegung nacheinander weiter auf ein dreizehntes Zahnrad (45), ein vierzehntes Zahnrad (46) und ein fünfzehntes Zahnrad (47) zu übertragen, die jeweils an einer Nabe aus einem vierten Satz von Naben (82, 83, 84) angebracht sind, wobei ein weiteres, sechzehntes Zahnrad (48) an dem fünfzehnten Zahnrad (47) befestigt ist und dazu vorgesehen ist, ein fünftes Zwischenrad (49) zu drehen, welches wiederum ein zweites Wechselrad (90) dreht;
- ein siebzehntes Zahnrad (91) mit 328 Zähnen, welches dazu eingerichtet ist, von dem zweiten Wechselrad (90) gedreht zu werden,
- ein achtzehntes Zahnrad (92), das dazu eingerichtet ist, mit der Drehbewegung des Drehzapfens (33) zu rotieren, und dazu eingerichtet ist, die Drehbewegung nacheinander auf ein sechstes Zwischenrad (93), ein neunzehntes Zahnrad (94), ein zwanzigstes Zahnrad (95) mit 8 Zähnen und ein einundzwanzigstes Zahnrad (96) mit 56 Zäh-

nen zu übertragen, das dafür vorgesehen ist, wiederum ein zweiundzwanzigstes Zahnrad (97), ein dreiundzwanzigstes Zahnrad (98), ein vierundzwanzigstes Zahnrad (99), ein siebentes Zwischenrad (106) und ein fünfundzwanzigstes Zahnrad (100) zu drehen, die jeweils an einer Nabe aus einem fünften Satz von Naben (101, 102, 103, 104, 105) angebracht sind, wobei das fünfundzwanzigste Zahnrad (100) am unteren Ende eines dritten Wechselrades (107) mit 7 Zähnen vorgesehen ist, welches wiederum dazu eingerichtet ist, ein sechsundzwanzigstes und ein siebenundzwanzigstes Zahnrad (108, 109) zu drehen, wobei das sechsundzwanzigste Zahnrad (108) 354 Zähne hat und das siebenundzwanzigste Zahnrad (109) 365 Zähne hat, wobei die Rotation der letzten zwei Zahnräder (108, 109) die Rotation des dritten bzw. ersten Zeigers (7, 5) bewirkt,

- eine Tragplatte (110), welche das siebzehnte Zahnrad (91), das sechsundzwanzigste Zahnrad (108) und das siebenundzwanzigste Zahnrad (109) trägt.

2. Mehrzweckuhr nach Anspruch 1, wobei das Gehäuse (1) aus durchsichtigem Kunststoff hergestellt ist.

3. Mehrzweckuhr nach Anspruch 1, wobei der Motor ein Wechselstrommotor mit 7.00 U/min ist, welcher durch einen Gleichstrommotor ersetzbar ist.

Revendications

1. Montre multifonction pour des applications telles que l'heure solaire, le jour et les dates solaires, les mois solaires, les mois lunaires, les phases lunaires, l'heure locale de différentes villes / différents pays du monde, les constellations, les signes, le temps sur une échelle de 24 heures, le temps dans le système décimal, les événements personnels importants, dans laquelle ladite montre multifonction comprend :

(a) quatre aiguilles (5, 6, 7, 8) montées sur pivot (33) et entraînées en rotation par des engrenages (109, 43, 108, 91) respectivement, dans laquelle la première aiguille (5) indique la date et le mois solaires selon le calendrier Grégorien, la deuxième aiguille (6) représente l'heure solaire sur un cadran avec une échelle de 24 heures, la troisième aiguille (7) représente les mois lunaires et la quatrième aiguille (8) représente les dates lunaires ;
(b) un cadran comprenant :

I. un anneau elliptique (121) sur le cadran représentant les saisons,
II. un premier anneau circulaire (122) représentant l'heure solaire sur une échelle de 24 heures,
III. un deuxième anneau circulaire (123) représentant la représentation décimale du temps sur 100 heures,
IV. un disque circulaire rotatif (42) agencé pour être entraîné en rotation par un premier engrenage (41) et un anneau circulaire de fuseau horaire (124) qui conjointement audit disque rotatif (42) représente l'heure locale des villes/pays souhaités indiqués sur le disque,
V. un anneau rotatif (125) entraîné en rotation par un deuxième engrenage (91) représentant différentes phases de lune marquées de 1 à 15, de 1 à 14 et 30, avec le marquage « 15 » qui représente la pleine lune et le marquage « 30 » qui représente la nouvelle lune ;
VI. un troisième anneau circulaire (126) représentant les mois lunaires,
VII. un quatrième anneau circulaire (127) représentant les mois solaires,
VIII. un cinquième anneau circulaire (127a) représentant les dates solaires selon le calendrier Grégorien,
IX. un sixième anneau circulaire (128) représentant les signes,
X. un septième anneau circulaire (129) représentant les constellations,
XI. un huitième anneau circulaire (130) représentant 108 divisions desdites constellations,
XII. un anneau situé le plus à l'extérieur (131) indiquant de 0 à 360,

(c) une montre bracelet (3) prévue sur ledit cadran avec une aiguille pour les minutes et les secondes,
(d) un cadran des jours de la semaine (4) avec l'aiguille (9) indiquant les jours de la semaine,
(e) une montre des minutes (11) avec une aiguille des minutes (11a) représentant la représentation décimale des minutes,
(f) un moteur (13) vissé sur deux supports (14),
(g) un couvercle externe de protection (12) en matériau transparent prévu sur ledit cadran, ledit couvercle pouvant s'ouvrir en dévissant les vis (12a),
(h) un logement (1) qui loge les engrenages suivants :

un engrenage fixe de moteur (16) ayant 125 dents, prévu sur l'autre extrémité d'essieu (15) du moteur de raccordement de tige (13)

qui est adapté pour tourner dans le sens inverse des aiguilles d'une montre lorsque le moteur est mis en marche,
un bouton de réglage (17) adapté pour tourner dans le sens des aiguilles d'une montre lorsque ledit engrenage fixe de moteur (16) tourne dans le sens inverse des aiguilles d'une montre,
un premier pignon intermédiaire (18) adapté pour être entraîné en rotation par ledit bouton de réglage (17),
un engrenage de réduction de révolution de moteur (19) ayant 126 dents, adapté pour être entraîné en rotation par ledit premier pignon intermédiaire (18) dans le sens des aiguilles d'une montre,
un premier engrenage à vis sans fin (19a) adapté pour tourner dans le sens des aiguilles d'une montre à 100 secondes décimales = 8,64 secondes solaires sur une rotation, ledit premier engrenage à vis sans fin (19a) étant agencé pour faire tourner un premier engrenage (20) ayant 100 dents dans le sens inverse des aiguilles d'une montre, ledit premier engrenage (20) faisant en outre tourner l'aiguille des minutes (11a) de ladite montre des minutes (11) représentant les minutes sur le système décimal en prenant 14,40 minutes solaires comme étant l'équivalent de 100 minutes sur le système décimal,
un deuxième engrenage (21) adapté pour être entraîné en rotation par le premier engrenage (20) qui est adapté à son tour pour faire tourner un deuxième engrenage à vis sans fin (22) qui est adapté pour faire tourner en outre un troisième engrenage (23),
un premier engrenage conique (24) adapté pour être entraîné en rotation par ledit troisième engrenage (23), ledit premier engrenage conique (24) étant fixé sur un deuxième engrenage conique (25) qui est adapté à son tour pour transmettre la rotation successivement à des engrenages pivotants (26, 27, 28, 29, 30, 31) montés sur un premier ensemble de moyeux (50, 51, 52, 53, 54, 55, 56) respectivement, dans laquelle un quatrième engrenage (32) est fixé sur le pivot (33) qui est fixé sur ladite quatrième aiguille (6), l'un (27) desdits engrenages pivotants étant fixé de manière solidaire à une extrémité de la tige de raccordement (34) dont l'autre extrémité est raccordée à un cinquième engrenage (35),
un sixième engrenage (36) monté sur un premier moyeu supplémentaire (60) adapté pour être entraîné en rotation par ledit cinquième engrenage (35) qui est adapté à son tour pour transmettre la rotation successivement à un septième engrenage (37), un deuxième pignon intermédiaire (38), un huitième engrenage (39) et un troisième pignon intermédiaire (40) montés sur un second ensemble de moyeux (61, 62, 63, 64), ledit troisième engrenage intermédiaire (40) faisant à son tour tourner l'engrenage (41) qui est fixé sur un disque circulaire (42), le cinquième engrenage (35) étant raccordé à ladite tige de raccordement (34) qui est adaptée pour transmettre la rotation à un quatrième pignon intermédiaire (111), un neuvième engrenage (112), un premier pignon interchangeable (113) ayant 8 dents et finalement un dixième engrenage (114) ayant 56 dents, fixé sur le disque des jours de la semaine (4), ledit quatrième pignon intermédiaire (111), ledit neuvième engrenage (112) et ledit dixième engrenage (114) étant montés sur un troisième ensemble de moyeux (115, 116, 117) respectivement,
un onzième engrenage (43) ayant 80 dents, prévu sur le pivot (33) qui est adapté pour transmettre la rotation à un douzième engrenage (44) monté sur le second moyeu supplémentaire (81) qui est agencé pour transmettre en outre la rotation successivement à un treizième engrenage (45), un quatorzième engrenage (46) et un quinzième engrenage (47) montés sur un quatrième ensemble de moyeux (82, 83, 84) respectivement, un seizième engrenage supplémentaire (48) étant fixé sur ledit quinzième engrenage (47) et agencé pour faire tourner un cinquième pignon intermédiaire (49) qui fait tourner à son tour un deuxième pignon interchangeable (90) ;
un dix-septième engrenage (91) ayant 328 dents, qui est adapté pour être entraîné en rotation par ledit deuxième pignon interchangeable (90),
un dix-huitième engrenage (92) adapté pour tourner avec la rotation du pivot (33) et adapté pour transmettre successivement la rotation à un sixième pignon intermédiaire (93), un dix-neuvième engrenage (94), un vingtième engrenage (95) ayant 8 dents et un vingt-et-unième engrenage (96) ayant 56 dents, agencé pour faire tourner à son tour un vingt-deuxième engrenage (97), un vingt-troisième engrenage (98), un vingt-quatrième engrenage (99), un septième pignon intermédiaire (106), un vingt-cinquième engrenage (100) montés sur un cinquième ensemble de moyeux (101, 102, 103, 104 et 105) respectivement, ledit vingt-cinquième engrenage (100) étant prévu au ni-

veau de l'extrémité inférieure d'un troisième pignon interchangeable (107) ayant 7 dents, qui est à son tour adapté pour faire tourner les vingt-sixième et vingt-septième engrenages (108, 109), dans laquelle le vingt-sixième engrenage (108) a 354 dents et le vingt-septième engrenage (109) a 365 dents moyennant quoi la rotation des deux derniers engrenages (108, 109) provoque la rotation des troisième et première aiguilles (7, 5) respectivement,
une plaque de support (110) qui fournit le support au dix-septième engrenage (91), au vingt-sixième engrenage (108) et au vingt-septième engrenage (109).

2. Montre multifonction selon la revendication 1, dans laquelle ledit boîtier (1) est réalisé avec une matière plastique transparente.

3. Montre multifonction selon la revendication 1, dans laquelle ledit moteur est un moteur à courant alternation à 7.00 tours par minute qui peut être remplacé par un moteur à courant continu.

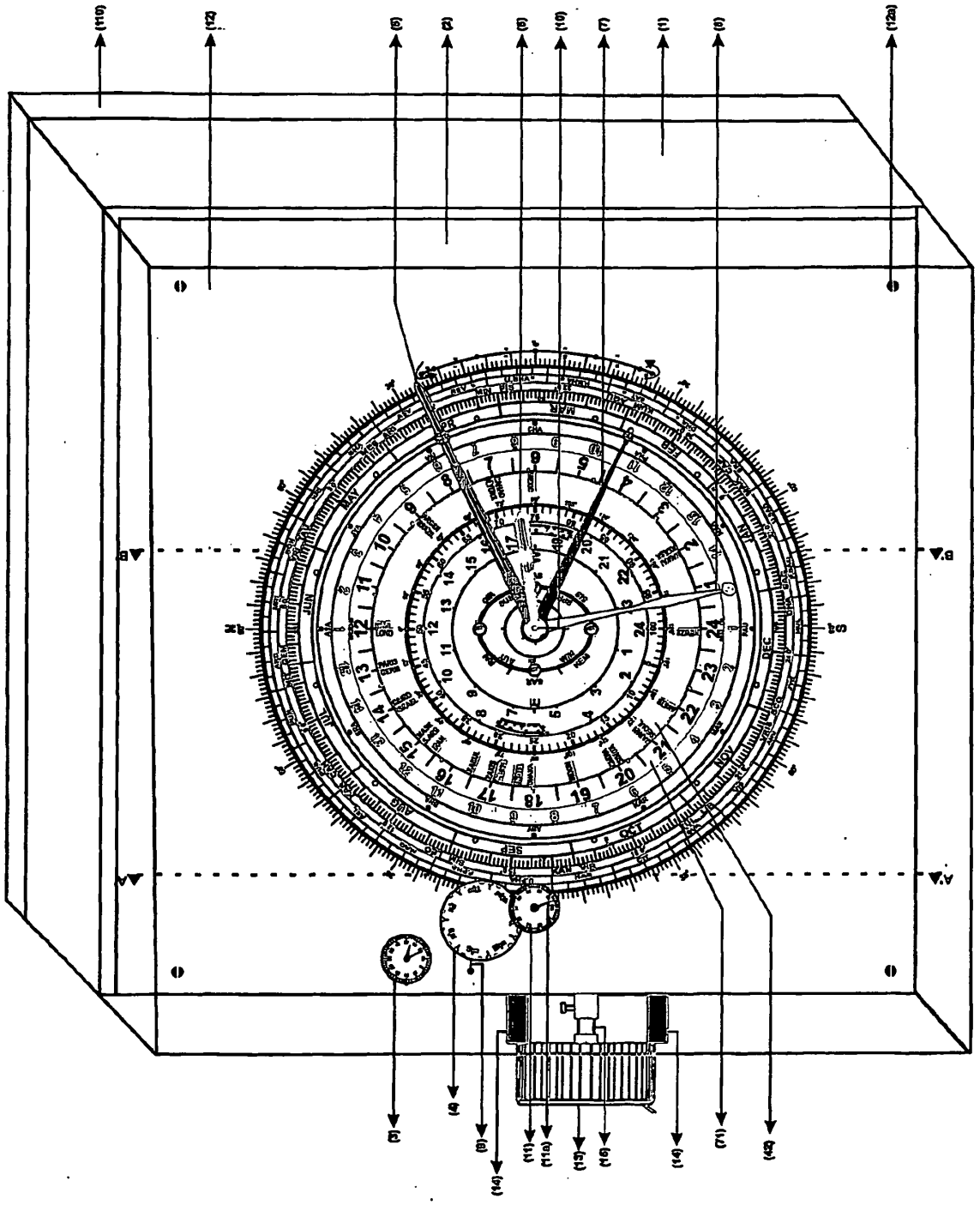


Fig. -1

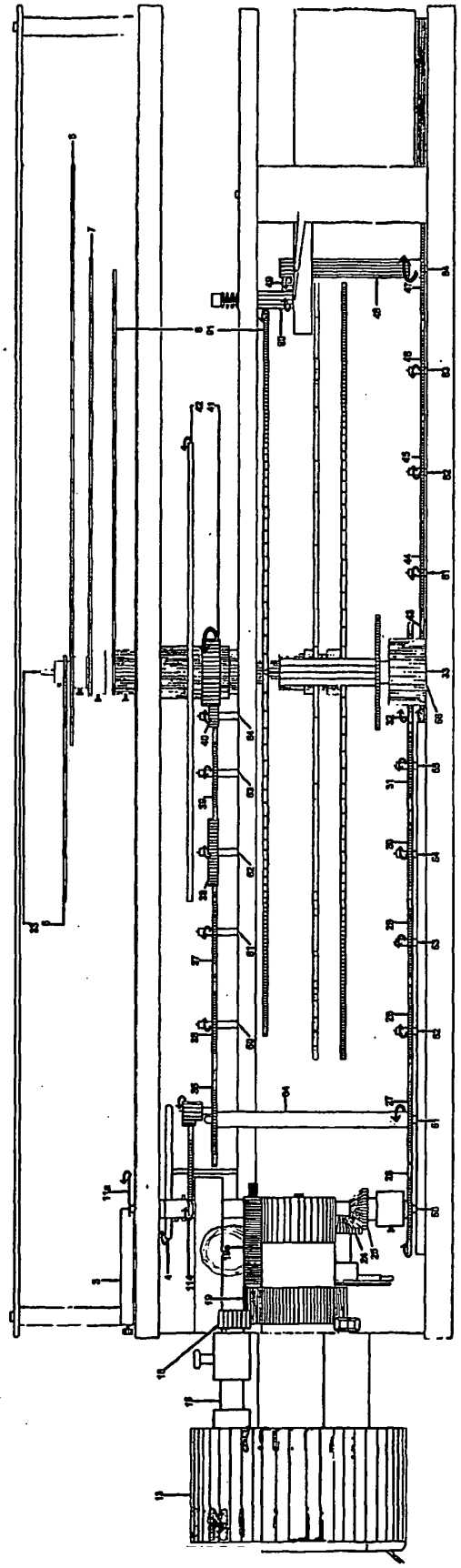


Fig. 2 (gear mechanism)

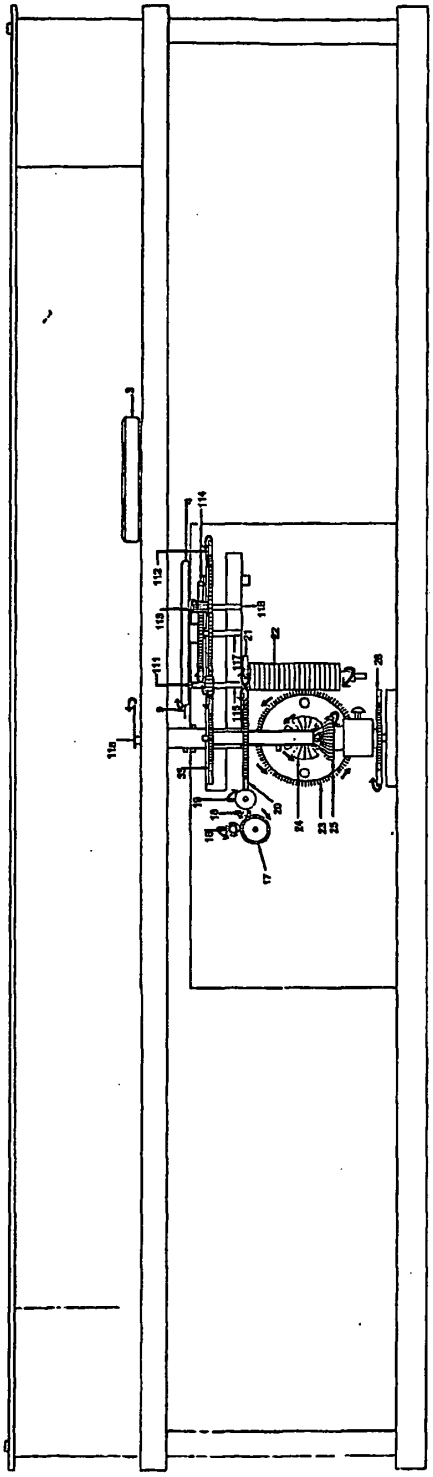


Fig. 2a (SECTION A'A')

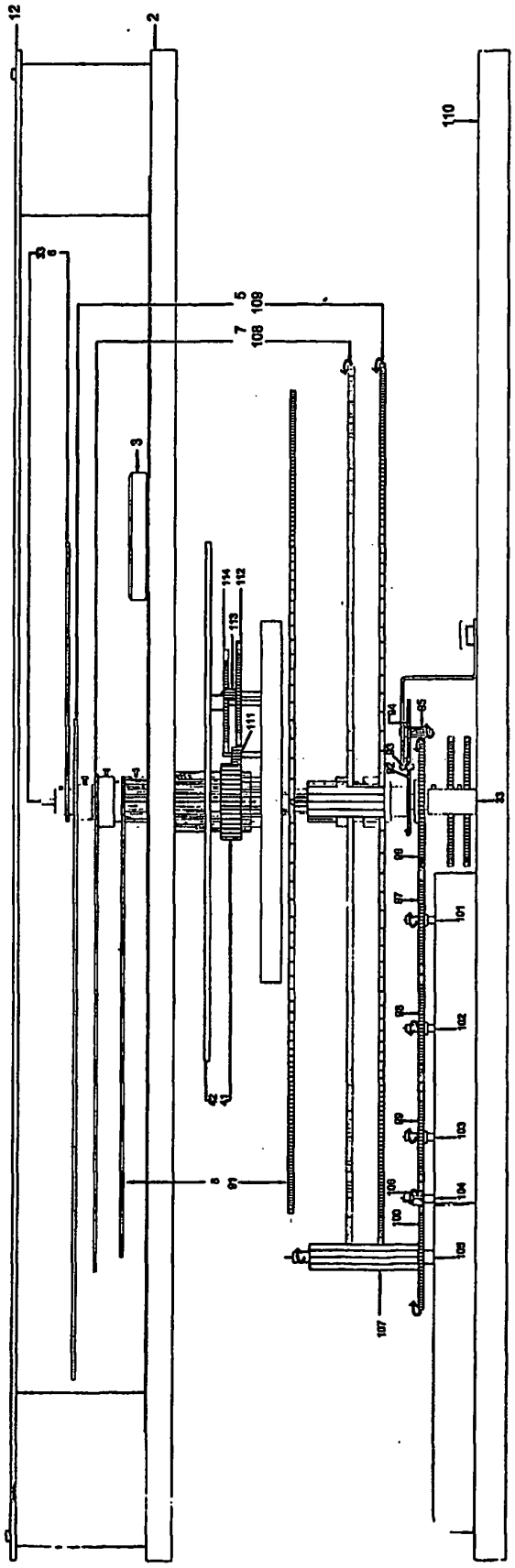


Fig. 3 (SECTION B'B')

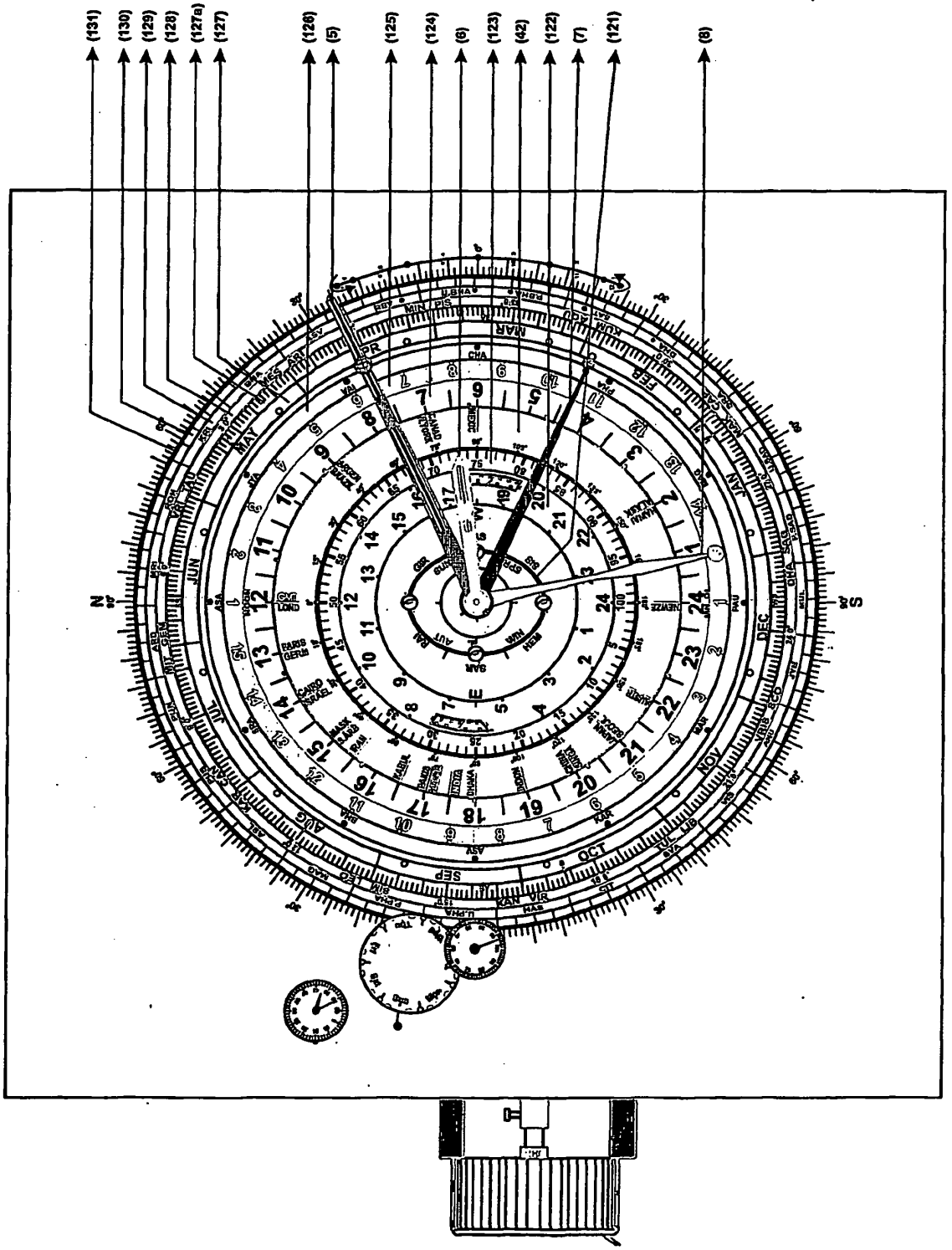


Fig. -4

REFERENCES CITED IN THE DESCRIPTION

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