

June 14, 1966

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3,255,581

MECHANISM FOR INDICATING MENSTRUAL CYCLES

Filed Nov. 2, 1964

3 Sheets-Sheet 1

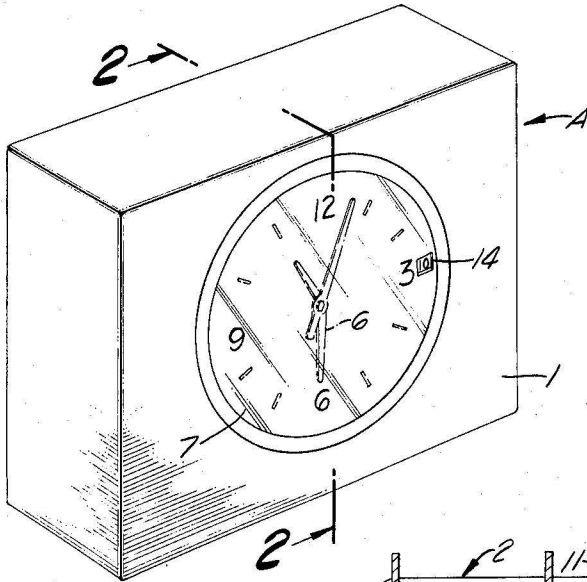


FIG. 1.

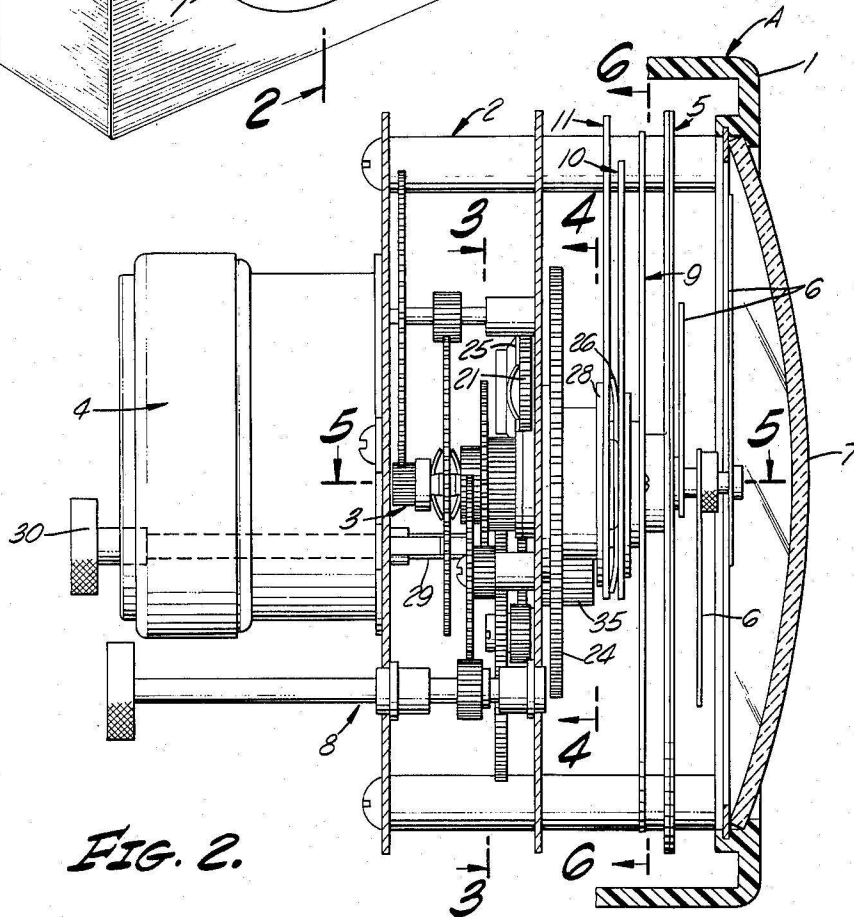


FIG. 2.

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3 Sheets-Sheet 2

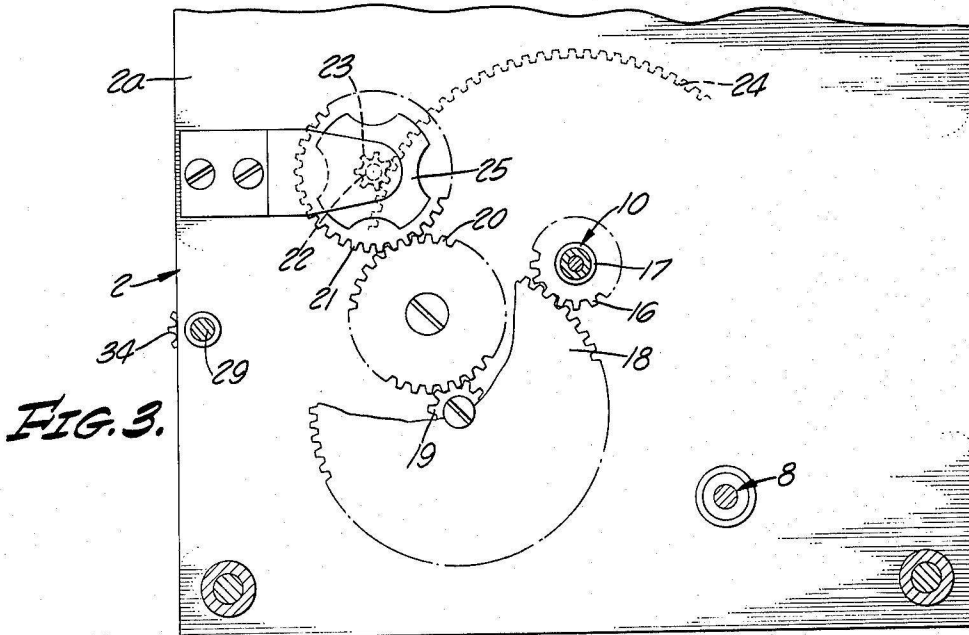


FIG. 3.

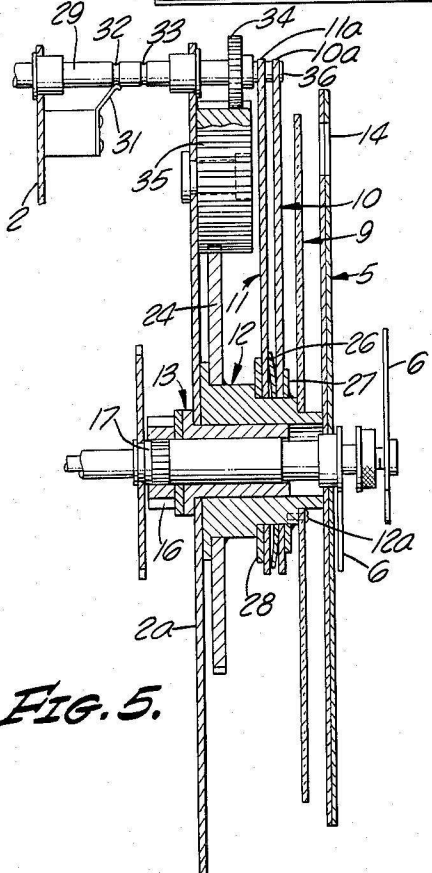


FIG. 5.

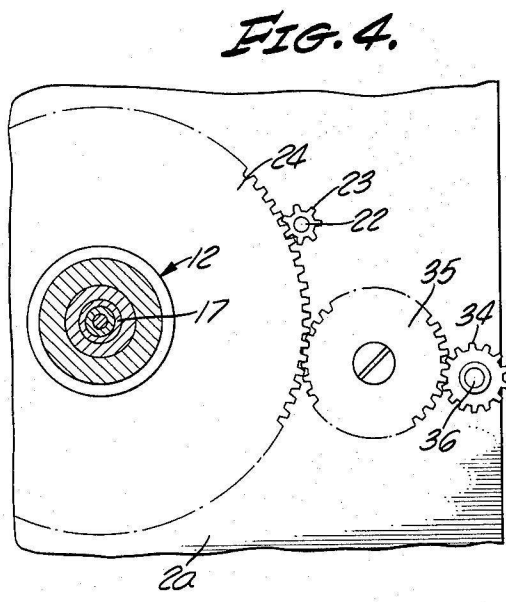


FIG. 4.

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3 Sheets-Sheet 3

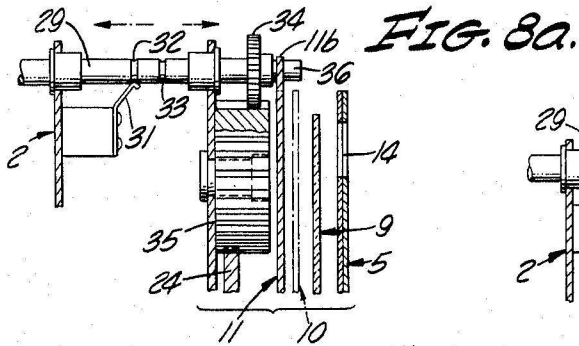


FIG. 8a.

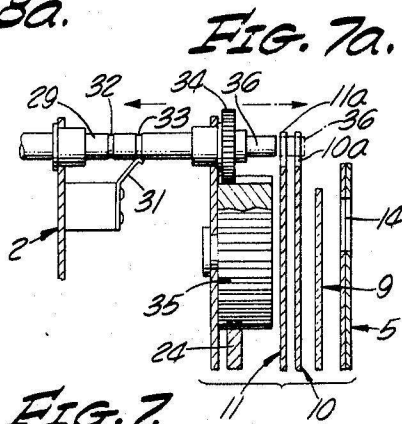


FIG. 7a.

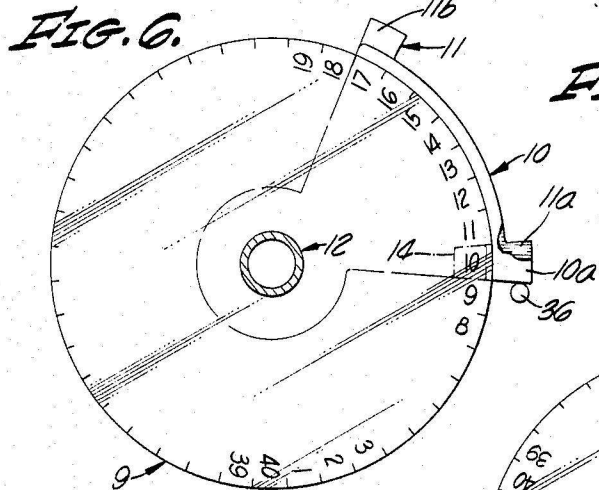


FIG. 6.

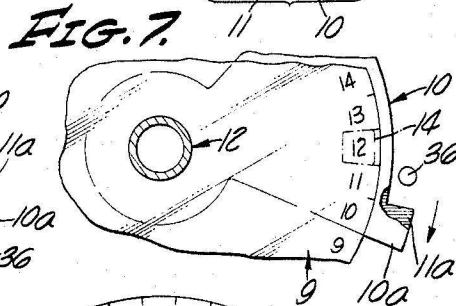


FIG. 7.

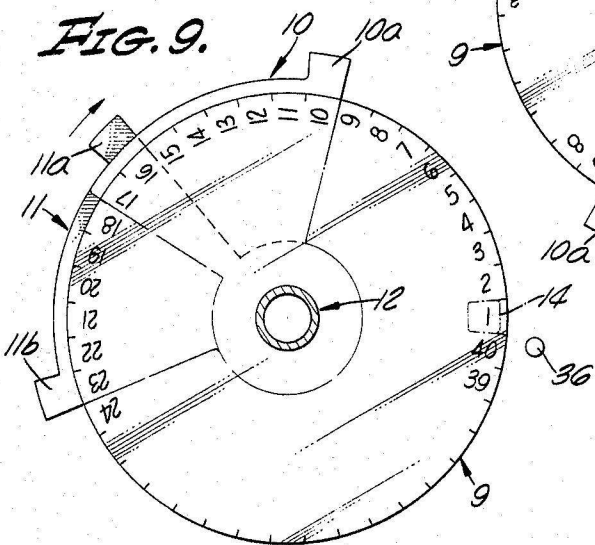


FIG. 9.

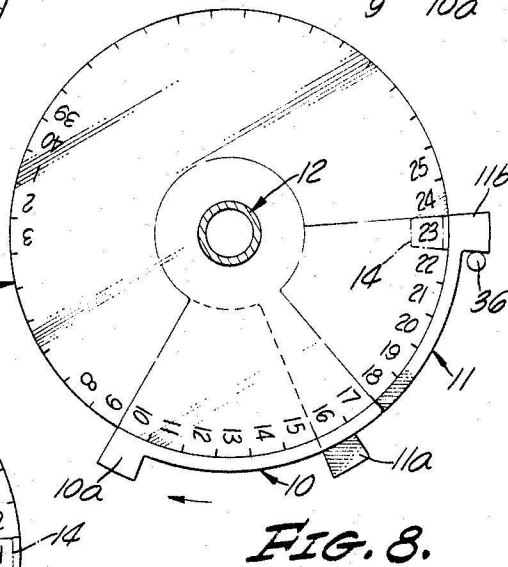


FIG. 8.

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MECHANISM FOR INDICATING MENSTRUAL CYCLES

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 Filed Nov. 2, 1964, Ser. No. 408,238
 12 Claims. (Cl. 58-4)

This invention relates to signal mechanism which will indicate menstrual and ovulation cycles in such a manner as to reliably enable women to keep an accurate account of such cycles.

Mechanism of the character above noted forms the subject matter of my U.S. Letters Patent No. 2,979,884 issued Apr. 18, 1961, for Menstrual Cycle Indicating Mechanism. The present invention constitutes improvements in the mechanism covered by the aforementioned patent and which will hereinafter be fully described.

The mechanism of the above noted patent is embodied in a conventional clock and provides setting means that requires rotation in one direction and then in the opposite direction to move signal members into the desired positions. In addition, there are provided two separate stop units independently movable into and out of positions for arresting and permitting movement of the signal members. It is necessary with the setting means and the stop units to use both hands of the person setting the mechanism as it is required that first one and then the other stop unit be moved into and held in position to arrest movement of the signal members while at the same time actuating the setting means. Although the mechanism covered by the patent serves its purpose in a highly efficient manner, the operation of the setting means and of the two separably operable stop units, in other words the provision of three separate controls, makes it difficult and somewhat awkward for the operator to set the signal members as desired. Moreover, the provision of the two stop units and the setting means separate therefrom necessitated use of a considerable number of parts in addition to standard clockworks employed for operating the mechanism.

An object of the present invention is to provide improved mechanism of the character described in which a novel setting is operable with one hand and without requiring reversal of rotation thereof to easily, quickly and accurately set the signal members.

It is another object of this invention to provide signalling mechanism such as described which readily may be manually set to suit the particular woman's menstrual cycle and thereafter actuated to indicate the times of ovulation and other significant data relating to the cycle.

It is a further object of this invention to provide novel mechanism of the character described which, when set in accordance with the estimated ovarian cycle of the particular woman, will enable the woman to be apprised of the following information:

- (1) The interval of time which elapses between the menstrual periods, and where such intervals are of varying length, the extent and pattern of such irregularity.
- (2) The probable day of the onset of a menstrual period without requiring a computation based upon the varying number of days in calendar months.
- (3) The number of days, from day to day, which have passed since the first day of the last menstrual period without requiring any computation after proper setting of the mechanism.
- (4) The determination in advance of the next onset of the menstrual period, as to when ovulation has taken place.
- (5) The interval between menstrual periods when the particular woman is fertile or infertile.
- (6) The period of time best suited for conception.

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Other objects and advantages of the invention will be hereinafter described or will become apparent to those skilled in the art and the novel features of the invention will be defined in the appended claims.

Referring to the drawings:

5 FIG. 1 is a perspective view of an indicator constructed in accordance with the present invention and as embodied in an electric clock;

FIG. 2 is an enlarged fragmentary sectional view taken on the line 2-2 of FIG. 1;

10 FIG. 3 is a fragmentary sectional view taken on the line 3-3 of FIG. 2;

FIG. 4 is a fragmentary sectional view taken on the line 4-4 of FIG. 2;

15 FIG. 5 is a fragmentary sectional view taken on the line 5-5 of FIG. 2;

FIG. 6 is a sectional view taken on the line 6-6 of FIG. 2 showing the signal members disposed in a typical position preliminary to a desired setting thereof;

20 FIG. 7 is a fragmentary sectional view similar to FIG. 6, but showing the signal members adjusted from position shown in FIG. 6 in preparation for a typical setting;

25 FIG. 7a is a fragmentary sectional view of the combined setting and stop unit showing in full lines how this unit is adjusted to permit of movement of the signal members into position shown in FIG. 7;

FIG. 8 is a sectional view corresponding to FIG. 6, but showing the segment signal members and the numbered signal disk in a set position preliminary to being moved into position for a typical indicating operation;

30 FIG. 8a is a fragmentary sectional view similar to FIG. 7a but showing the setting and stop unit in the position in which it is disposed to permit of movement of the signal members from the position shown in FIG. 7 to the position shown in FIG. 8; and

35 FIG. 9 is a sectional view similar to FIG. 8 showing the signal members disposed in position for a typical signalling operation in accordance with this invention.

40 As shown in the accompanying drawings, the present invention is embodied in an electric clock A but may be operated by other types of clocks or similar suitable timing means.

45 The clock A includes the usual housing 1, frame 2, clockworks 3, electric motor 4, numbered clock face 5, hands 6, transparent cover 7 for the face 5, and setting means 8 for the hands.

In accordance with this invention there are provided three relatively movable signal members consisting of a circular member or disk 9 and signal means comprising two signal disk segments 10 and 11 disposed as best shown in FIGS. 2 and 5 in axially spaced relation on a clockwork driven arbor 12 rotatably freely on the main shaft assembly 13 of the clockworks. This arbor, however, is driven by the clockworks in one phase of operation, in a manner which will be hereinafter set forth.

55 The disk 9, as shown in FIGS. 6, 8, and 9, is provided on its outer face adjacent the periphery thereof with signal characters, for example numbers 1-40, equidistantly spaced and consecutively arranged. The entire disk 9, or at least the numbered portion thereof, is transparent. The numbers 1-40 represent any consecutive number of twenty-four hour days in the signalling system provided by this invention, and but one number at a time will be visible through a window 14 in the clock dial 5, this window being in the present instance located at the three o'clock point on the dial, just to the right of the three o'clock numeral as shown in FIG. 1.

60 The signal means, that is the segments 10 and 11, are capable of rendering a number of the signal characters on the disk 9 less than the total number, distinct in appearance from the other of the characters, for example by having the segments distinctly colored, for example

a red color, and located rearwardly of the transparent disk 9. With this arrangement the transparent numbered disk 9 is close to the window 14 and the numerals thereon as well as the colored portions of the segments 10 and 11 visible through the transparent disk 9 are more clearly displayed than was provided for with the arrangement in my aforementioned patent wherein the numbered disk was located behind the two signal segments which were transparent.

The arbor 12 is driven by a gear train which as shown in FIGS. 2, 3 and 4, includes a drive pinion 16 driven by the hour shaft 17 and which in turn drives gears 18, 19, 20 and 21 suitably supported on the rear wall 2a of the clock frame 2. The gear 21 drives a shaft 22 journaled in the wall 2a as shown in FIG. 4 and the shaft 22 drives a pinion 23 which in turn drives a large gear 24 as shown in FIG. 5 fixed to rotate with the arbor 12.

As shown in FIG. 3 a spring clutch member 25 is operable between the shaft 22 and gear 21 as a friction drive for the shaft 22 and pinion 23 upon rotation of gear 21. This friction drive causes the pinion 23 to drive the gear 24 and arbor 12 when the gear 21 is driven by the clockworks, but provides for the pinion 23 being turned relative to gear 21 upon rotation of the pinion 23, when otherwise driving the gear 24 in setting the signal segments 10 and 11 in a manner which will be hereinafter described.

As shown in FIG. 5, the numbered signal disk 9 is mounted on the arbor 12 in any suitable manner which will provide for rotation thereof with the arbor, for example by means of fastening 12a.

The signal segments 10 and 11 are mounted on the arbor so as to rotate therewith as well as relative thereto and relative to one another. For this purpose the segments have end portions rotatably surrounding the arbor 12 as shown in FIGS. 2 and 4 and are urged by means of an annular spring clutch 26 into frictional driving engagement with metal rings 27 and 28 fixed to the arbor for rotation therewith. With this arrangement the segments 10 and 11 may be frictionally driven with the arbor 12 but when both segments are held against turning, the arbor and transparent numbered disk 9 may be rotated relative to the segments. The clutch 26 will also permit one segment to rotate with the disk 9 if the other segment is held.

In accordance with this invention the signal elements 10 and 11 are of like size as to the portions thereof which are disposed opposite the numerals on the signal disk 9, each segment being dimensioned so that the arcuate outer portion thereof will lie opposite or in line with eight numbers on the signal disk 9 whereby the colored portions of the segments 10 and 11 will be visible at the window 14 and behind the eight numbers by reason of the transparency of the disk 9. However, if desired, the segments 10 and 11 may be sized to "cover" a lesser or greater number of numerals on the disk 9 depending upon the significance of the signals to be made. There is, however, a slightly different formation on segment 11 than on segment 10 in that the former has at opposite ends of its arcuate outer edge a pair of radial stop projections 11a and 11b, while segment 10 is provided with but one radial stop projection 10a at one end of its arcuate outer edge.

Novel setting means for the disk 9 and segments 10 and 11 is provided in accordance with this invention as a simply constructed unit. In this unit is an actuating member that is rotated to achieve the turning movement of the signal disk and segments and is reciprocated to effect the stopping and releasing of the signal segments 10 and 11. It is only necessary that the actuating member be rotated in one direction to dispose the signal elements in desired signalling position, but one hand being required for the rotation and reciprocation of the actuating member. As shown in FIGS. 5, 7a and 8a the afore-

mentioned setting means for the disk 9 and signal segments 10 and 11 and which also constitutes stop means for controlling movement of the segments 10 and 11, comprises a shaft 29 or like element rotatably mounted in the clockwork frame 2 so that it also may be reciprocated as a plunger between two positions shown in FIGS. 5 and 7a. The rear end of the shaft 29 is provided with a knob 30, as shown in FIG. 2, for effecting the reciprocal as well as rotative movements of the shaft. As the shaft 29 is designed to be shifted into two different positions, a spring detent member 31 is mounted on the clock frame 2 so as to engage in axially spaced annular grooves 32 and 33 in the shaft. Upon rotation of the shaft 29 whether in either of its two positions, a pinion 34 fixed on the shaft, drives and is axially shiftable on a relatively wide idler gear 35 which meshes with the large gear 24 fixed to the arbor 12.

The end of the shaft 29 which is disposed outwardly from the pinion 34 acts as a stop member 36 when engaged by the radial stop projections 11a and 11b on the segment 11 also the radial stop projection 10a on the segment 10, all in a manner which will be pointed out in the description of the operation of the mechanism of this invention as hereinafter set forth.

It should be noted that the mechanism comprising this invention may be operated according to any recognized rhythm cycle suited to a particular woman. A calendar need not be depended upon, since all significant uses of the mechanism may be based upon a visible signal automatically presented each twenty-four hour day of any predetermined number of consecutive days according to the setting of the signal members.

As an example of one use of the mechanism of this invention it is assumed that the menstrual cycle of a particular woman according to a recognized or prescribed rhythm cycle theory or formula, indicates that her fertile period is between cycle days 10 and 23. With this assumption the mechanism is set by pushing the shaft 29 inwardly so that the stop member 36 on the inner end thereof is in position as shown in FIG. 5 to stop rotative movement of the segments 10 and 11, the detent 31 being then engaged in the groove 32 on the shaft 29 to hold the shaft 29 in stop position for both disks 10 and 11. Upon now turning the shaft 29 in one direction the pinion 34 thereon will drive the idler gear 35 which in turn drives the gear 24 and arbor 12, thereby moving both disks 10 and 11 with the arbor, until the stop projection 10a on segment 10 and the stop projection 11a on segments 11 are engaged alike with the stop element 36 as shown in FIG. 6, this stopped position of the segments being determined by looking into the window 14 in the clock face 5 and by noting that upon continuing rotation of shaft 29 in the same direction as previously, the numeral dial 9 will move relative to segments 10 and 11 due to the stopping of movement of the segments.

With both of the segments 10 and 11 now in stopped position, shown in FIG. 6, continued rotation of the shaft 29 in the same direction as previously will, by reason of the spring clutch 26, move transparent numbered disk 9 relative to both segments to consecutively reveal the numerals thereon at the window 14 until, in this example, the numeral 10 appears. When this takes place, each segment will extend behind and be visible in connection with eight numerals on the disk 9 as this disk is rotated past window 14. Therefore, when the segments are stopped, as shown in FIG. 6, and the numeral 10 is revealed at the window, it is now necessary to continue movement of the segments 10 and 11 in the same direction a short extent. This is accomplished by first shifting the shaft 29 from the stopped position shown in FIG. 5 to the releasing position so that both of the projections 10a and 11a on the segments are free and then by turning the shaft in the same direction as previously to move the segments a distance below the stop member 36, for example, an extent equivalent to two numerals on the dial

9 as indicated in FIG. 7. This releases both segments 10 and 11 for joint movement with the disk 9, and the shaft 29 is again pushed inwardly to the stop position shown in FIG. 8a and so held by the detent 31. Continued rotation of the shaft 29 in the same direction as previously will cause the two segments 10 and 11 to be moved correspondingly with the dial 9 until the second projection 11b on the segment 11 comes into contact with stop member 36 which thereby prevents further turning movement of segment 11 and leaves segment 10 free for further movement with the disk 9. It is now necessary to continue turning the shaft 29 to rotate the disk 9 and segment 10, since it is desired in this signal example that the red segments extend behind numbers 10 through 23 on the dial 9. Therefore, upon carefully watching at the window 14, when the numeral 23 appears at the window, rotation of the shaft, disk 9, and segment 10 is stopped. The shaft 29 is now retracted to releasing position (FIG. 7a).

The two segments 10 and 11 are now behind the numbers 10-23 representing the fertility period in this particular woman. Having thus set the signal for the particular woman, on the first day of her menstrual period she must turn the shaft 9 in the same direction as previously in order to dispose the numeral 1 on the dial 9 at the window 14.

The clock mechanism by reason of the clutch 25 will drive the gear 24, arbor 12, disk 9 and segments 10 and 11 through the clock work gears including pinion 23 when the gear 24 is not being driven by the setting means 1. Accordingly, on each twenty-four hour day a different numeral will appear at the window 14. When the numeral 10 is revealed at the window and shows up in a colored background, for example red, as afforded by the segments 10 and 11 being visible through the transparent disk 9, this indicates to the user the beginning of fertile days according to her cycle. Each day during this fourteen day period a new colored signal appears at the window until on the fifteenth day there is no colored signal visible through the window, and this indicates the beginning of the non-fertile cycle.

It will now be apparent that the mechanism of this invention is subject to efficient use by women whose menstrual cycle varies from the usual twenty-eight day pattern, for example, twenty-six or thirty or more days, inasmuch as the mechanism does not depend upon calendar computation but on the passage of any predetermined number of cycle days and is therefore adaptable to use according to any cycle variance once the cycle pattern is determined. Moreover, the two disk segments 10 and 11 arranged in accordance with this invention render the mechanism desirably flexible for use by women whose menstrual cycle is such that the period in which fertility may occur is greater than eight days.

A particular advantageous feature of the mechanism of this invention is the novel combined signal setting and stop unit operable in an especially easy manner with one hand while rotating the combined shaft and stop plunger element of the unit. Continuous rotation of the combined shaft and plunger element in one direction while appropriately actuating it as a stop plunger to move it into and from positions arresting movement of the colored signal segments 10 and 11 and to permit of setting of the numbered signal disk, is all that is required accurately to set the mechanism to suit a particular woman.

I claim:

1. In indicating mechanism of the character described: a signal member having signal characters thereon; signal means; means mounting said signal member and said signal means for relative movement; said signal member and said signal means having means embodied therein for rendering a number of said characters less than the total number distinct in appearance from the other of said characters; setting means operatively connected with said signal member and said signal means operable for effecting said relative movement and the setting of said

signal means and said signal member to render a selected number of said characters distinct in appearance from the other of said characters; said setting means including an actuating member; means mounting said actuating member for rotation as well as for being shifted into and from a stop position to stop movement of said signal means relative to said signal member; drive means operatively connecting said actuating member with said signal member and said signal means operable in response to rotation and said shifting of said actuating member to effect said relative movement and said setting of said signal member and signal means.

2. The indicating mechanism as set forth in claim 1, including timed driving means operatively connected with said signal member and said signal means operable after said setting thereof for jointly moving said signal member and said signal means.

3. The indicating mechanism as set forth in claim 1, including timed driving means operatively connected with said signal member and said signal means operable after said setting thereof for jointly moving said signal member and said signal means; and means providing a window through which said selected number of characters are displayed one at a time during operation of said timed driving means.

4. The indicating mechanism as set forth in claim 1 wherein said means embodied in said signal member and said signal means for rendering said characters distinctive includes a transparent portion of said signal member on which said characters appear and an appearance of at least a portion of said signal means distinct from said transparent portion.

5. The indicating mechanism as set forth in claim 1, including timed driving means operatively connected with said signal member and said signal means operable after said setting thereof for jointly moving said signal member and said signal means to display said selected number of characters; and means providing a window through which said selected number of characters are displayed one at a time during operation of said timed driving means; said signal means including a pair of disk segments.

6. The indicating mechanism as set forth in claim 1, including timed driving means operatively connected with said signal member and said signal means operable after said setting thereof for jointly moving said signal member and said signal means to display said selected number of characters; means providing a window through which said selected number of characters are displayed one at a time during operation of said timed driving means; said signal means including a pair of disk segments; and means for effecting movement of one segment relative to the other when said actuating member is rotated.

7. The indicating mechanism as set forth in claim 1 wherein said signal means includes a pair of disk segments; a stop portion on each of said segments disposed for engaging said actuating member when the latter is shifted to said stop position to stop movement of both disk segments; another stop portion on one of said disk segments engageable with said actuating member to limit movement of said one segment relative to the other segment; said two segments being free to rotate with said signal member upon rotation of said actuating member when said actuating member is shifted from said stop position.

8. Menstrual cycle indicating mechanism comprising: a plurality of signal members; one of said signal members having thereon signal characters representing a consecutive number of days; means mounting said plurality of signal members for rotation in axially spaced relation to one another about an axis; means embodied in said plurality of signal members operable for rendering a selected number of said characters distinct in appearance from the other of said characters; an actuating member; means mounting said actuating member for rotation and for movement into and from a stop position; stop por-

tions on the other of said signal members for engaging said actuating member when the latter is in said stop position; drive means operatively connecting said actuating member with said plurality of signal members operable to effect rotation of said signal members relative to one another and operable when said actuating member is moved out of said stop position to rotate said plurality of signal members; timed actuating means operatively connected with said signal members for rotation at a predetermined rate; and means providing a window through which said selected distinctive characters are visible one at a time during said operation of said timed driving means.

9. In indicating mechanism of the character described: a signal member having signal characters thereon; signal means; means mounting said signal member and said signal means for relative rotative movement; said signal member and said signal means having means embodied therein for rendering a number of said characters less than the total number distinct in appearance from the other of said characters; setting means operatively connected with said signal member and said signal means operable for effecting said relative movement and the setting of said signal means and said signal member to render a selected number of said characters distinct in appearance from the other of said characters; said setting means including a shaft; means mounting said shaft for movement between a position for engaging and stopping rotation of said signal means and a position for releasing said signal means; means for rotating said shaft when in either of said positions; and drive means operatively connecting said shaft with said signal member and said signal means operable upon rotation of said shaft in one direction and movement of said shaft into and from said positions, for effecting said relative movement and said setting of said signal member and said signal means.

10. In indicating mechanism of the character described: a signal member having signal characters thereon; signal means; means mounting said signal member and said signal means for relative rotative movement; said signal means including a pair of disk segments disposed behind said signal member; said signal member having a transparent portion on which said characters appear to enable the viewing of said disk segments; said disk segments having an appearance different from that of said transparent portion and said characters; setting means operatively connected with said signal member and said disk segments operable for effecting said relative movement and the setting of said segments and signal member to positions for rendering a selected number of said characters distinct in appearance from the other of said characters; said setting means including a rotative and axially movable shaft; means mounting said shaft for rotative movement and axial movement between a position for engaging and stopping movement of said disk segments and a position for releasing said disk segments; means for rotating said shaft when in either of said positions; drive means operatively connecting said shaft with said signal member and said disk segments operable upon rotation of said shaft in one direction as well as upon said axial movement of said shaft to effect said relative movement and said setting of said signal member and said disk segments.

11. In indicating mechanism of the character described: a signal member having signal characters thereon; signal means; means mounting said signal member and said signal means for relative rotative movement; said signal

means including a pair of disk segments disposed behind said signal member; said mounting means providing for movement of said segments relative to one another as well as for movement with said signal member; said signal member having a transparent portion on which said characters appear to enable the viewing of said disk segments; means providing a window in which said characters are visible one at a time and portions of said segments are visible; said disk segments having an appearance different from that of said transparent portion and said characters; setting means operatively connected with said signal member and said disk segments operable for effecting said relative movement and the setting of said segments and signal member to positions for rendering a selected number of said characters distinct in appearance from the other of said characters and visible through said window; said setting means including a rotative and axially movable shaft; means mounting said shaft for rotative movement and axial movement between a position for engaging and stopping movement of said disk segments and a position for releasing said disk segments; means for rotating said shaft when in either of said positions; drive means operatively connecting said shaft with said signal member and said disk segments operable upon rotation of said shaft in one direction as well as upon said axial movement of said shaft to effect said relative movement and said setting of said signal member and said disk segments.

12. In indicating mechanism of the character described: a signal member having signal characters thereon; signal means; means mounting said signal member and said signal means for relative rotative movement; said signal means including a pair of disk segments disposed behind said signal member; said mounting means providing for movement of said segments relative to one another as well as for movement with said signal member; said signal member having a transparent portion on which said characters appear to enable the viewing of said disk segments; means providing a window in which said characters are visible one at a time and portions of said segments are visible; said disk segments having an appearance different from that of said transparent portion and said characters; setting means operatively connected with said signal member and said disk segments operable for effecting said relative movement and the setting of said segments and signal member to positions for rendering a selected number of said characters distinct in appearance from the other said characters and visible through said window; said setting means including a rotative and axially movable shaft; means mounting said shaft for rotative movement and axial movement between a position for engaging and stopping movement of said disk segments and a position for releasing said disk segments; means for rotating said shaft when in either of said positions; drive means operatively connecting said shaft with said signal member and said disk segments operable upon rotation of said shaft in one direction as well as upon said axial movement of said shaft to effect said relative movement and said setting of said signal member and said disk segments; and clockwork operatively connected with said signal member and said segments operable for rotating said signal member and segment at a timed rate following said setting operation.

No references cited.

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