

May 30, 1944.

M. D. D. S. BRANDAO
MANUAL AUTOMATIC DEVICE FOR INDICATING THE FAVORABLE
PERIODS FOR CONCEPTION IN WOMEN
Filed July 15, 1941

2,350,219

3 Sheets-Sheet 1

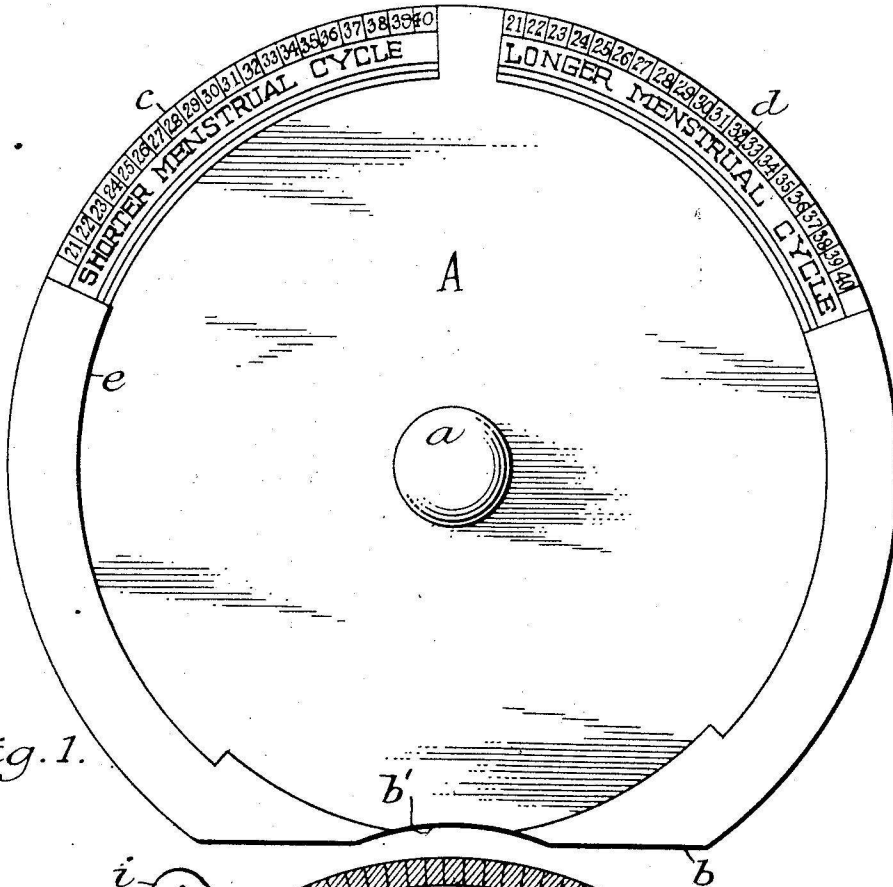


Fig. 1.

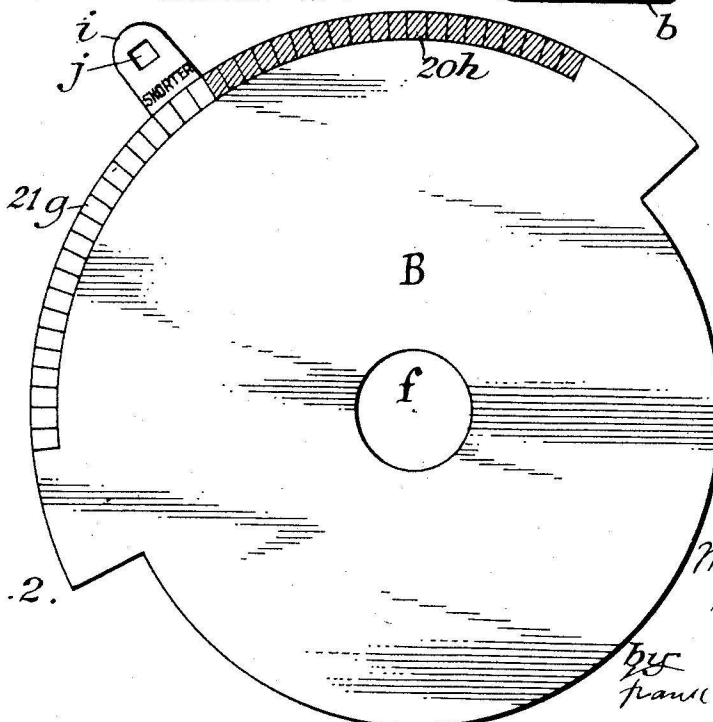


Fig. 2.

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3 Sheets-Sheet 2

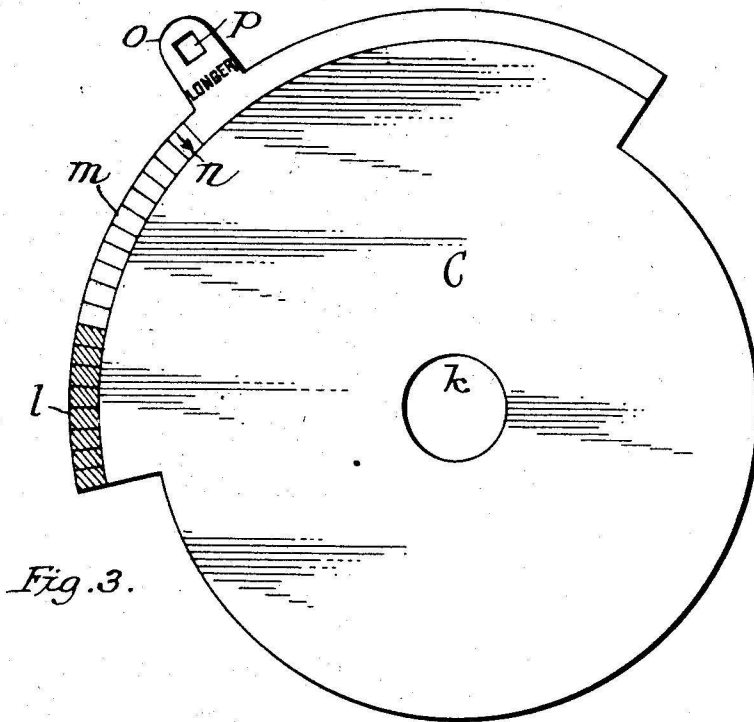


Fig. 3.

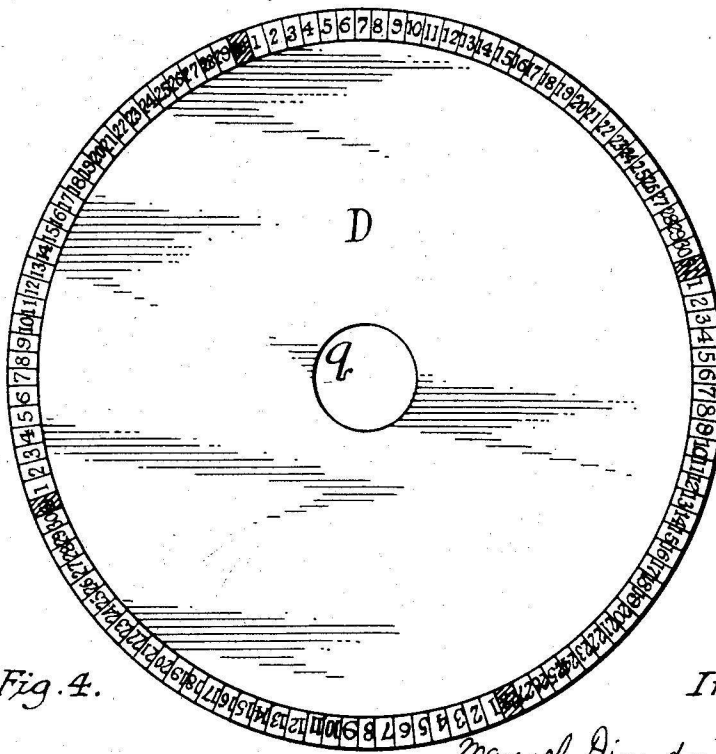


Fig. 4.

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3 Sheets-Sheet 3

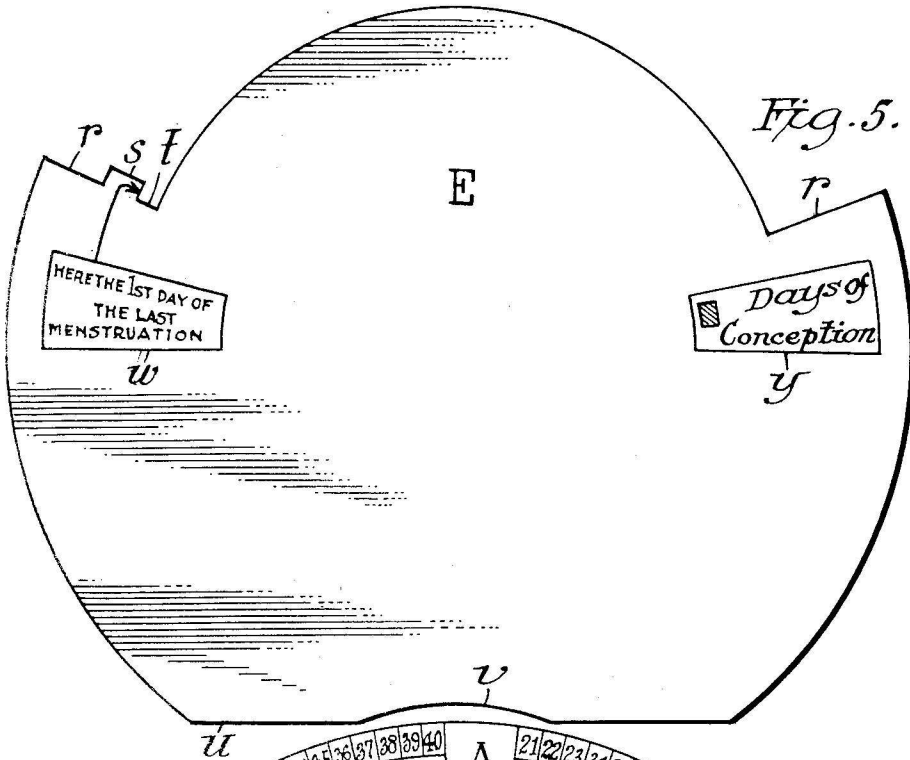


Fig. 5.

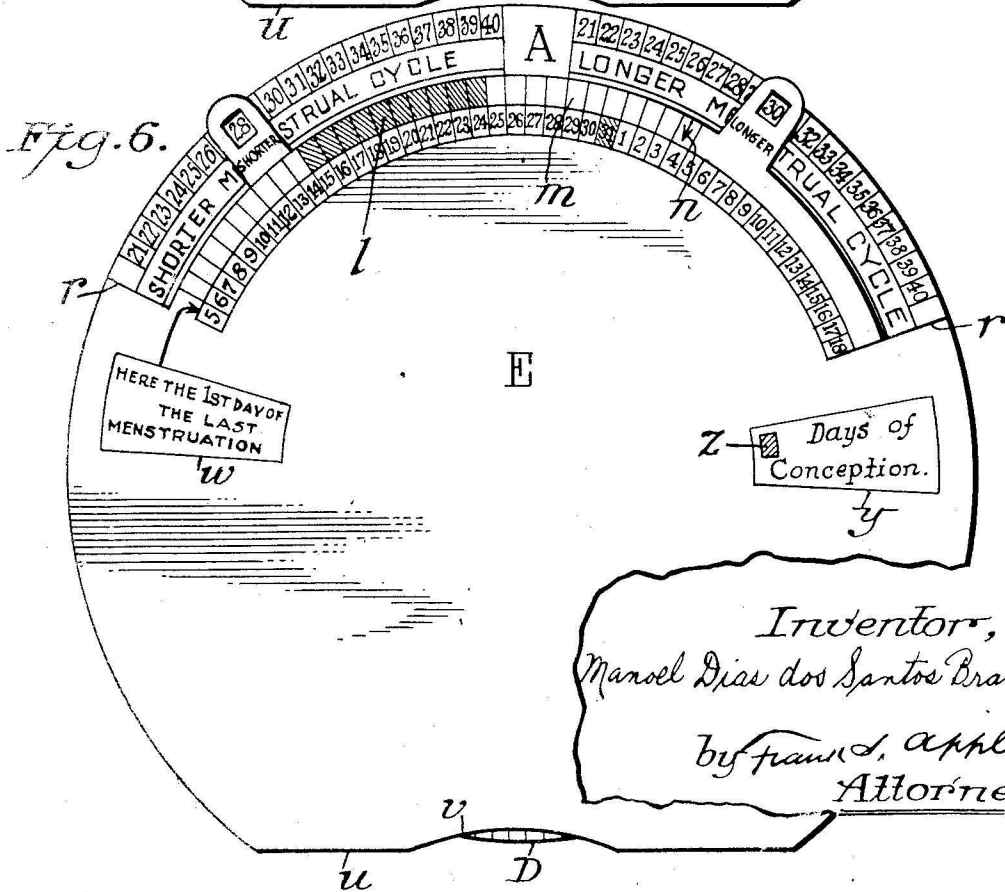


Fig. 6.

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UNITED STATES PATENT OFFICE

2,350,219

MANUAL AUTOMATIC DEVICE FOR INDICATING THE FAVORABLE PERIODS FOR CONCEPTION IN WOMEN

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In Brazil December 26, 1940

4 Claims. (Cl. 40—115)

Several processes are known in the medical literature of gynecology to determine the most favorable days for conception in women, such days having been first established by the investigations of Ogino and Knaus. However, a simple manual automatic device, eliminating the necessity of rather complicated calculations, has not to date been designed, nor is as yet known, to indicate the most favorable days for conception in a woman. This is precisely the object of the present invention.

The manual automatic device for indicating the favorable periods for conception in women, covered by this invention, comprises in substance two fixed outer discs, between which three inner discs are so disposed as to rotate on a common axis.

An example of an embodiment of the invention is illustrated in the attached drawings, in which—

Figure 1 shows the first fixed disc or base disc;

Figure 2 shows the first rotating disc, which is superimposed over the base disc;

Figure 3 shows the second rotating disc, which is superimposed over the first rotating disc;

Figure 4 shows the third rotating disc, which is superimposed over the second rotating disc;

Figure 5 shows the second fixed disc or cover disc; and

Figure 6 shows the complete device, after all discs are mounted.

With reference to the drawings, A (Fig. 1) is the first fixed disc or base disc provided with a central circular projection *a* which serves as an axis for the rotating discs of the device. The bottom *b* of the disc is longitudinally cut, and presents at its center a re-entrant round cut *b'*. In the upper part of this disc two sector bands *c* and *d* of 60 degrees each are marked and subdivided in 21 divisions each. In these divisions, numbers from 21 to 40 are printed or engraved in consecutive order, representing the intermenstrual periods or menstrual cycles in days. These two sector bands are spaced from each other by an interval corresponding to three subdivisions. The sector band at the left represents the shorter menstrual cycle and, to avoid confusion and facilitate the use of the device, it has the following words printed below the respective numbers: "Shorter menstrual cycle." The sector band at the right represents the longer menstrual cycle, and the following words are printed below the respective numbers: "Longer menstrual cycle." The remaining portion of the border of the disc beyond the sector bands is provided with a strip

e of the same thickness as the central projection or axis *a*.

Figure 2 shows the first rotating disc B with a central circular opening *f* into which projection *a* of disc A fits when disc B is superimposed over disc A. This first rotating disc has a longer radius along 163 degrees of its circumference than the remaining portion of the disc, but this longer radius is shorter than the radius of the first fixed disc. The difference between these two radii corresponds to the width of the sector bands of the fixed disc, including the numbered subdivisions and the printed words. In the sector of the disc corresponding to the longer radius, there are 41 identical consecutive subdivisions so disposed to leave a blank space corresponding to 7 subdivisions at each end of the sector; thus the length of the sector corresponds to 55 subdivisions. Of the 41 marked subdivisions, the first 21 *g*, from the left to the right, are left blank, and the remaining 20 *h* are filled in in any convenient way. The disc carries a projecting ear *i* fixed at the 19th, 20th and 21st subdivisions. This projecting ear is provided with a central opening or window *j*, which falls exactly upon the subdivisions of the base disc and has the same dimensions as these subdivisions. As this window serves to mark the shorter menstrual cycle, the word "Shorter" is printed or engraved thereunder.

Figure 3 shows the second rotating disc C with a central circular opening *k* into which projection *a* of the base disc A also fits, on top of the first rotating disc B. This rotating disc C is similar to disc B, but its longer radius portion only covers 135 degrees of its circumference. The length of this sector corresponds to 46 subdivisions; starting from the left end of the sector, 19 identical consecutive subdivisions are marked, leaving blank the remaining spaced corresponding to 27 subdivisions. Of the 19 marked subdivisions, the first 8, *l*, from the left to the right, are filled in in the same way used on the first rotating disc, and the remaining 11, *m*, are left blank, except the last subdivision *n* which carries an arrow for the purpose hereinafter explained. As the first rotating disc, this second rotating disc also carries a projecting ear *o* provided with a central window *p*. This projecting ear corresponds to three subdivisions, and is so disposed to leave a blank space corresponding to one subdivision after the last subdivision carrying the arrow. The central window of this ear falls exactly upon the right hand subdivisions of the base disc A and, as it serves to mark the

longer menstrual cycle, the word "Longer" is printed or engraved thereunder.

Figure 4 shows the third rotating disc D with a central circular opening q into which projection a of the base disc A also fits, on top of the second rotating disc C. The circumference of this third rotating disc D is uniform, its radius being shorter than the radii of the above described sectors of the first and second rotating discs, so as to uncover only those portions of these discs containing the subdivisions of the shorter and longer menstrual cycles. The entire circumference of this third rotating disc is subdivided into 120 subdivisions, in which numbers are printed or engraved representing the days of the months, in the following order: a first series of consecutive numbers from 1 to 28; a second series of numbers from 1 to 31; a third series of numbers from 1 to 30; and a fourth series of numbers from 1 to 31, or a total of 120 numbers corresponding to the 120 subdivisions of the disc. The disposition of the subdivisions of the three rotating discs is such that those of the third rotating disc fall in line and just under those of the first and second rotating discs.

Finally, Figure 5 shows the second fixed disc or cover disc E of the device, which is secured by pasting or soldering, depending on the material used, to the strip e , and the projection a of the base disc A, thus leaving a free space between the non-pasted, or non-soldered portions of the two fixed discs A and E, in which the rotating discs B, C and D can move. The upper part of the cover disc E is cut at r as shown in Fig. 5 and this cut corresponds to 133 degrees of the disc circumference and is wide enough to uncover the numbers and subdivisions of the former discs. At the left of this cut r , a projection s is provided in coincidence with the subdivisions 21g and 20h of disc B. This projection is of such shape that it forms with the left corner of the cut r a void space t which falls upon and is of the same dimensions as the subdivisions of the rotating disc D. Similarly to the base disc A, the bottom u of this cover disc E is longitudinally cut and presents at its center a re-entrant round cut v , where the border of the rotating disc D is exposed. The cover disc contains explanatory inscriptions and figures; thus, under the left corner of the cut r there is a quadrangle w containing the inscription "Here the 1st day of the last menstruation"; from this quadrangle to the space t an arrow x indicates that the number of the disc D corresponding to the 1st day of the last menstruation should be inserted in this space t . In the same position, but on the right corner of the cut r , there is another quadrangle y containing a smaller quadrangle z of the same dimensions as the subdivisions of discs B and C and filled in in the same way as the filled in subdivisions of said discs, followed by the inscription "Days of conception."

The cutaway portions in the base and cover disc elements expose the rotatable elements whereby they may be free for manual rotation by grasping same with the fingers.

An explanation of the manner of using the device may be printed on the back of the base disc A and is as follows:

In the first place, it is necessary to know the interval in days elapsed between menstruations. As this interval or menstrual cycle is not always constant, before using the device, it is necessary to take note of these intervals for a period of at least 6 months, in order to determine the varia-

tions of the menstrual cycles. For example, in a particular case the menstruations occurred at the following dates: April 15th, May 11th, June 8th, July 8th, August 3rd and September 1st. Thus there were intervals of 26 days from April 15th to May 11th; 28 days from May 11th to June 8th; 30 days from June 8th to July 8th; 26 days from July 8th to August 3rd and 29 days from August 3rd to September 1st. From this it will be noted that the shorter menstrual cycle was of 26 days and the longer menstrual cycle of 30 days. With this information, the windows j and p of the rotating discs B and C, respectively, are set over the subdivisions of the corresponding sectors of the base disc A, to mark the shorter and the longer menstrual cycles noted. In case these menstrual cycles were always equal, the same procedure should be applied, the windows being set over identical numbers on the two sectors of the base disc. After this is done, the disc of the months D is rotated to place the 1st day of the last menstruation within the space t below the projection s , care being taken to use for a particular month the corresponding portion of the rotating disc (28, 30 or 31 days). The result is automatically given as follows: the days falling under the filled in subdivisions of the rotating discs B and C indicate the days of fecundity, and those falling under the blank subdivisions, indicate the days of sterility. The arrow n of the second rotating disc C points to the remotest day of the next menstruation.

I claim:

1. Manual automatic device for indicating the favorable periods for conception in women, characterized by the fact that it is constituted by superimposed disc elements and sectors, composed of three disc elements and two sector elements in the following order: a fixed disc or base disc, a rotating sector, a second rotating sector, a rotating disc and a fixed cover disc; the rotating elements being mounted on a common axis between the base and cover discs, and the elements of the device carrying the necessary marks to determine the favorable periods for conception in women; further characterized by the fact that the fixed base disc is provided with a central circular projection, which serves as an axis for the rotating elements of the device, with the bottom longitudinally cut and presenting at its center a re-entrant round cut, the upper part of the disc presenting two sector bands of 60 degrees each, and each with a series of subdivisions numbered from 21 to 40, the series of subdivisions at the left being marked by the words "Shorter menstrual cycle," and the series of subdivisions at the right being marked by the words "Longer menstrual cycle," the remaining portion of the border of the disc beyond the sector bands being provided with a strip of suitable material and having the same thickness as the central projection; further characterized by the fact that one of the rotating sectors is provided with a central circular opening into which the projection of the base disc fits, this sector being formed by a disc having a longer radius along 163 degrees of its circumference than the remaining portion of the disc, this longer radius being shorter than the radius of the base disc, the difference between these two radii corresponding to the width of the band formed by the numbered subdivisions and the respective inscriptions of said base disc, the longer radius sector of the disc presenting 41 marked subdivisions so disposed to leave a blank space corre-

sponding to 7 subdivisions at each end of the sector, the first 21 marked subdivisions from the left being left blank, and the remaining 20 subdivisions being filled in in any convenient way, the disc also carrying a projecting ear, fixed at the 19th, 20th and 21st subdivisions, said projecting ear being provided with an opening or window falling exactly upon the subdivisions of the base disc and having the same dimensions as these subdivisions, said window being marked by the word "shorter."

2. Manual automatic device for indicating the favorable periods for conception in women, characterized by the fact that it is constituted by superimposed disc elements and sectors, composed of three disc elements and two sector elements in the following order: a fixed disc or base disc, a rotating sector, a second rotating sector, a rotating disc and a fixed cover disc; the rotating elements being mounted on a common axis between the base and cover discs, and the elements of the device carrying the necessary marks to determine the favorable periods for conception in women; further characterized by the fact that the fixed base disc is provided with a central circular projection which serves as an axis for the rotating elements of the device, with the bottom longitudinally cut and presenting at its center a re-entrant round cut, the upper part of the disc presenting two sector bands of 60 degrees each, and each with a series of subdivisions numbered from 21 to 40, the series of subdivisions at the left being marked by the words "Shorter menstrual cycle," and the series of subdivisions at the right being marked by the words "Longer menstrual cycle," the remaining portion of the border of the disc beyond the sector bands being provided with a strip of suitable material and having the same thickness as the central projection; further characterized by the fact that the second rotating sector is provided with a central circular opening into which the projection of the base disc also fits on top of the first rotating sector, said second rotating sector being similar to the first rotating sector, but its longer radius portion covering only 135 degrees of its circumference, the length of this portion corresponding to 46 subdivisions, of which only 19 subdivisions starting from the left are marked, leaving blank the remaining space corresponding to 27 subdivisions, of the 19 marked subdivisions only 8 being filled in in the same way used on the first rotating sector and the remaining 11 being left blank, except the last subdivision which carries an arrow pointing in the direction of the center of the device; said second rotating sector also carrying a projecting ear provided with a central window, said projecting ear corresponding to three subdivisions, and being so disposed to leave a blank space corresponding to one subdivision after the last subdivision carrying the arrow, the central window of this ear falling exactly upon the right hand subdivisions of the base disc, said window being marked by the word "Longer."

3. A device of the character described comprising a fixed base disc element having a cutaway portion and a central projection, a rotatable sector element having subdivisions mounted on said base element through said projection, a second rotatable sector element having subdivisions mounted over said first sector element

through said projection, a rotatable disc element over said sector elements, a section of said fixed base disc element being provided with a built up strip corresponding in height to the height of the central projection, a fixed cover disc element having a cutaway portion secured to said central projection and to said built up strip whereby said rotatable elements may be rotated between that portion of the base disc element which is not built up, the radius of said rotatable disc element being shorter than the radii of the rotatable sectors, whereby only the subdivisions of said rotatable sectors are uncovered, said rotatable elements being of such size that the indicia along their perimeters will be exposed through the cutaway portion in the cover disc element, said rotatable disc element having its entire circumference subdivided into 120 subdivisions comprising four series of consecutive numbers, numbered 1 to 28, 1 to 31, 1 to 30 and 1 to 31, said subdivisions being so arranged that they fall in line under the subdivisions of the rotatable sectors, said cutaway portions in the base and cover disc elements exposing the rotatable elements to facilitate their rotation.

4. A device of the character described comprising a fixed base disc element having a cutaway portion and a central projection, a rotatable sector element having subdivisions mounted on said element through said projection, a second rotatable sector element having subdivisions mounted over said first sector element through said projection, a rotatable disc element over said sector elements, a section of said fixed base disc element being provided with a built up strip corresponding in height to the height of the central projection, a fixed cover disc element having a cutaway portion secured to said central projection and to said built up strip whereby said rotatable elements may be rotated between that portion of the base disc element which is not built up, the radius of said rotatable disc element being shorter than the radii of the rotatable sectors, whereby only the subdivisions of said rotatable sectors are uncovered, said rotatable disc element having its entire circumference subdivided into 120 subdivisions comprising four series of consecutive numbers, said subdivisions being so arranged that they fall in line under the subdivisions of the rotatable sectors, said cover disc element cutaway portion adapted to uncover the subdivisions of the other elements of the device, there being at the left of the cut a projection in coincidence with the subdivisions of the first mentioned rotating sector element and of such shape that it forms with the left corner of the cut a void space which falls upon and is of the same dimensions as the subdivisions of the rotating disc, said cover disc element containing explanatory inscriptions and figures, such as a quadrangle under the left corner of the cut, containing the inscription "Here the 1st day of the last menstruation," and from which an arrow points to the space, as well as another quadrangle under the right corner of the cut, containing a smaller quadrangle of the same dimensions as the subdivisions of the rotating sectors and filled in in the same way as the filled in subdivisions of said sectors, followed by the inscription "Days of conception."

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