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PERPETUAL CALENDAR.

1,016,370.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, NARAIN SINGH, residing at Dhalleke, district of Ferozepore, Punjab, India, have invented certain new and useful Improvements in Perpetual Calendars, of which the following is a specification.

This invention comprehends certain new and useful improvements in that class of calendars that are known as perpetual, whereby the day of the week and the day of the month may be ascertained for any week or month in any year.

The invention has for its primary object a very simple arrangement of tables whereby an efficient perpetual calendar is produced, and the invention consists in certain arrangements of the parts that I shall hereinafter fully describe and claim.

For a full understanding of the invention, reference is to be had to the following description and accompanying drawings, in which:

Figure 1 is a face view of a perpetual calendar embodying the principles of my invention; and, Fig. 2 is a similar view of another embodiment of the device.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

My improved perpetual calendar embodies a semi-circular table No. 1, designated in the accompanying drawing by the reference numeral A, said table being divided by concentric circular lines into five concentric rings designated from the outermost to the innermost a^1 , a^2 , a^3 , a^4 , and a^5 , respectively. These rings are in turn divided by substantially radial lines B into seven segments, designated respectively, b^1 , b^2 , b^3 , b^4 , b^5 , b^6 and b^7 . Each segment is further divided as to its intermediate ring portions a^2 , a^3 and a^4 into a series of twelve compartments, by means of radial lines C. These compartments are twelve in number for each segment, and the middle series of compartments contains within the ring a^3 the names of the calendar months in their order, namely, January, February, March, April, May, June, July, August, September, October, November and December, abbreviated. In each segment and in the ring portion a^2 thereof are displayed abbreviations of the days of the week of the non-leap years, designated in the accompanying outer ring portion a^1 ,

while the corresponding ring portion a^4 contains the corresponding initial letters or abbreviations of the days of the week for the leap years, which are designated in the adjacent innermost ring portion a^5 . In other words, this circular table is divided into several segments showing the day of the week for each month for each of the years recorded in one segment. The ordinary years occupy the outermost ring portion of the segments, while the leap years occupy the innermost portions of the segments. For example, if it be desired to know what day of the week ushers in the month of November, 1910, the observer will look for the year 1910 or "10" in the ring section a^1 to see in what segment of the semicircular table A, the year 1910 is given. It will be found in the segment b^7 , and on looking at the word "November" in this segment, it will be seen that the month of November commences on Tuesday in the year 1910. Or, again, if it be desired to know what day of the week ushers in the month of November, in the year 1916 which is a leap year, the observer will find the year "16" in the segment b^7 within the corresponding portion of the ring a^5 and will then see that the month of November of that year will be ushered in on Wednesday. Thus the observer, by looking at table No. 1, designated A, can find out what day of the week any month commences with.

To assist the observer, the table A is provided at its top with a relatively small segment D in the outer ring portion of which the words "Non-leap years" occur, and in the next the word "Days", in the next the word "Months", in the next the word "Days", and in the innermost, the word "Leap-years." Preferably, also to assist the observer, the numerals are in contrasting colors, as are also the letters and abbreviations. As an example, next to "W— Jan.—W" which may be in black, will occur "Sa.—Feb.—Sa." in red in the segment b^2 , and so on.

In connection with the table A, I use a preferably rectangular table No. 2, which after having ascertained the day of the week on the first of a certain month may be used to ascertain all of the other days of the week for the respective days of that month. This table No. 2 is divided into four sections, designated E, F, G and H, the section E being headed by the word "Days" and

the section F headed by the word "Dates", the section E is blocked off into a plurality of compartments in which, commencing at the top, and running from left to right, occur the abbreviations of the days of the week commencing with Sunday, and running from top to bottom occur the days of the week in rotation, commencing with the day at the top of the column. Preferably, in the uppermost row of compartments running from left to right, the abbreviations are in red, the remaining being in black or some other contrasting color. The compartment F is correspondingly divided or blocked off into compartments which, commencing at the right, and running from top to bottom in the compartments one after the other, are displayed the days of the month from 1 to 31, and it will thus be understood that in these compartments running from right to left are displayed the corresponding days of the weeks, that is, "1-8-15-22-29" "2-9-16-23-30" and so on.

Now, in order to show how the table No. 2 is to be used, we will take the same example used for table No. 1. We have ascertained by the use of this table No. 1 that the month of November, 1910, is ushered in on Tuesday. We will then observe in the compartment E, the uppermost row of week designating characters, and find that Tuesday is in the third compartment from the left. If we then desire to find what day of the week the following Sunday comes on, we will look down that column which is headed by Tuesday and then direct our eyes to the left by which we will find that the first Sunday of November, 1910 is the sixth day of the month, the second Sunday the thirteenth, the third Sunday the twentieth and the fourth Sunday the twenty-seventh.

It will thus be seen that by the use of the perpetual calendar herein described and illustrated in the accompanying drawing, not only is it possible to determine on what day of the week, each month comes, but after having ascertained the first day of the week for any month of any year, we can very easily find by use of table No. 2, the day of the week for any day of that month, and consequently may ascertain what day of the week any date falls upon within the one hundred years mentioned.

On looking at the table No. 1, I find that the same day of the week that is ascertained as the first day of a certain month for the twentieth century will fall successively on the 2nd, on the 3rd, on the 4th, on the 5th, on the 6th and on the 7th of the same corresponding months, for the twenty-first century excluding its last ten months, for the last ten months of the twenty-first century, for the twenty-second century excluding its last ten months, for the last ten months of the twenty-second century, for the twenty-

third excluding its last ten months and for the last ten months of the twenty-third century. In accordance with the above fact, the section G is added to the right side of the table No. 2, which may be used to ascertain all the other days of the week for the respective days of a certain month in the different seven periods of the four centuries mentioned above.

The section G is divided into three vertical columns headed respectively, by the letters Y, M and C from left to right, denoting the words years, months and centuries. These vertical columns are correspondingly blocked off into eighteen compartments, in which, running from top to bottom, occur the name numerals of the four centuries commencing with the twentieth, in the right-hand column; the numerals 2 and 10 alternately leaving the top compartment blank in the middle column, and the numerals 100 and 99, the former in the first and the latter in the second, fourth and sixth compartments from the top of the left-hand column, leaving the third, fifth and seventh compartments of said column blank. Thus the period of each century except the twentieth has been divided into two parts, of which the first had 99 years and two months and the second ten months only. Now, in order to show how the table No. 2 is to be used, we will take the following example, namely, find out the day of the week on the twenty-first of December of the year 2200. To accomplish this it will first be ascertained by the use of the table No. 1 that the inner side day of the month of December of the year 100 is Friday. Bringing this day to the table No. 2 it will be ascertained in that horizontal row of the section E which corresponds with the ten months compartment of the twenty-second century in the section H, because the date required is within the last ten months of the twenty-second century. It will thus be seen that Friday is in the fifth horizontal row from the top and in the second vertical row from the left side of the section E. Now, the days of the week contained in this vertical row from top to bottom will correspond with the respective days of the month of December in the year 2200, and thus the first will occur on Monday, the second on Tuesday, the third on Wednesday, and so on, and the twenty-first will fall on Sunday. I may point out that this invention is not limited to the above given four centuries, but it also complies with all of the centuries since the adoption of the Gregorian calendar, that is, from the 15th up to an unlimited space of time, on the principle that the calendar of the centuries, which divided by four leave no remainder correspond with that of the twentieth century; the calendar of the centuries which divided by four leave 1 remainder

corresponds with that of the twenty-first century; the calendar of the centuries which divided by four leave 2 remainder, corresponds with that of the twenty-second century; and the calendar of the centuries which divided by four leave three remainder, corresponds with that of the twenty-third century. For example, the 21st day of December of the year 1800 and 2600 will be found as Sunday, as well as the same day of the month of the year 2200 in the example above given.

In order to make my invention applicable also to the Julian calculating method, I provide the column H at the left of the column F in table No. 2, said column H being headed by the letter C, indicating the word centuries. For example, let it be assumed that one desired to ascertain the day of the week on the 29th day of August of the year 389. The observer will see in the table No. 1 that the day of the week for the month of August of the year 389 is Tuesday. Now, as the year mentioned, namely 389, is in the fourth century, the observer should search for Tuesday in that horizontal row of the table No. 2 which corresponds with the compartment of the fourth century in the column H at the left-hand side of the table No. 2. That is to say, he should observe the last horizontal row from the top, where he will see the Tuesday at the bottom of the fourth vertical row from the left side. Now, the days of the week of this vertical row from top to bottom, will correspond with their respective dates of the required month of August of the year 389, such as Wednesday with the first, eighth, fifteenth and twenty-ninth; Thursday with the second, fourth, sixteenth, twenty-third and thirtieth, and so on. Thus the 29th of August of the year 389 fell on Wednesday and this date after every seven centuries will also fall on Wednesday, such as the 29th of August of the years 1089, 1789, 2489, etc. In this way, the calendar of the first century corresponds with that of the centuries 8, 15 and 22 and according to the same rule the calendars of the second, third, fourth, fifth, sixth and seventh centuries, correspond with their respective centuries. Furthermore, to determine the calendar for the centuries from the first to the fourteenth and in some countries like Russia where the Julian calculating still continues, up to an unlimited space of time, the same method as stated in determining the calendar for the centuries from the fifteenth up to an unlimited space of time, may be followed subject to the principle that the calendar according to the Julian calculating system completes its one full circuit in seven periods of seven centuries successively, while according to the Gregorian calculating system in seven periods of

four centuries only. Consequently, I arrange seven centuries, being the first circuit of the Julian calculating system, to the left-hand side of the table No. 2, which correspond respectively from top to bottom with the seven periods of the four centuries arranged to the right-hand side of the same table.

That embodiment of the invention illustrated in Fig. 2 is designed to avoid the repetition of the names of the calendar months and their respective corresponding days of the week, within each of the last six segments. In this embodiment of the device, it will be noted that the abbreviations for the calendar months and the days of the weeks are only given in the first segment, designated b^{11} and corresponding to the segment b^1 of Fig. 1, while the remaining segments of Fig. 2, designated respectively b^{22} , b^{33} , b^{44} , b^{55} , b^{66} and b^{77} are divided respectively into two ring portions arranged in concentric relation to each other, the outermost being designated a^{11} and the innermost a^{55} . Thus, to find the day of the week corresponding with a certain month of any year within one of the segments b^{22} , b^{33} , b^{44} , b^{55} , b^{66} and b^{77} , it is only necessary to first look at the day of the week corresponding with the same month given in the segment b^{11} and to then observe this day within the first vertical row of the days of the week of table No. 2^a from the left-hand side and to then follow after this day toward the right-hand side, the day being found there is made the vertical row for at its bottom the number of the segment of the year required, it being noted that at the bottom of the table No. 1^a, are numerals 1, 2, 3, 4, 5, 6 and 7, underneath the respective vertical columns of the section E' of the table No. 2^a. In front of these numerals are the words "Segments number" referring to the segments of the table No. 1^a. The table No. 2^a contains not only section E' corresponding with the section E of Fig. 1, but also the sections F', G' and H' corresponding to the sections F, G and H of Fig. 1. The groups of the years within the last three segments designated b^5 , b^6 and b^7 in Fig. 1 are purposely arranged in the following order, namely, b^{77} , b^{55} and b^{66} in Fig. 2.

Having thus described the invention, what is claimed as new is:

1. A perpetual calendar, embodying a table divided into sections each of which contains in order, the names of the calendar months, the name of one day of the week opposite each month name and alongside the day of the week, figures designating the years in which each month is begun by the day of the week next to the displayed name of such month.

2. A perpetual calendar, divided into sections, each of which contains in their or-

der the names of the calendar month, on each side of each of said names, the name of one day of a week, thus constituting two sets of week days, and on one side of one set of the week day names, numbers indicating the non-leap years in which the respective months contained in said sections begin with the corresponding week days of the first set, and on the opposite side of the second set of week day names, the leap years in which the respective months begin with the week days of the second set.

3. A perpetual calendar, embodying a table divided into sections, each of which contains in order, the names of the calendar months, the name of one day of the week, and alongside of the day the week figures designating the years in which each month has begun by the day of the week next to the table name of such month in combination with another table which embodies three sections the second of these sections being divided into compartments containing in serial order the days of the month from 1 up to 31, the first of these last named compartments containing the abbreviations for the days of the week and the third of these sections being divided into three columns designating the centuries and pro-

vided with indicia for determining the day of the week of any day of the month of any century.

4. A perpetual calendar, embodying a table, including four sections, the first of these sections being provided with compartments containing the abbreviations for the days of the week, the second of these sections being divided into compartments containing in serial order the days of the month, from 1 up to 31, the third of these sections being divided into three columns, designating the centuries and the manner of locating the day of the week of any day of the month of any century under the Gregorian method, and the fourth section comprising a column designating centuries and the manner of locating the day of the week or any day of the month of said centuries in the Julian calendar combined with means for determining the day of the week of the first day of the month of a given year.

In testimony whereof, I affix my signature in presence of two witnesses.

NARAIN SINGH. [L. s.]

Witnesses:

GHULAM MUSTAFA KHAN,
BHAGWAN SINGH.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."