D. S. KERR.

DATE CALCULATING DEVICE.

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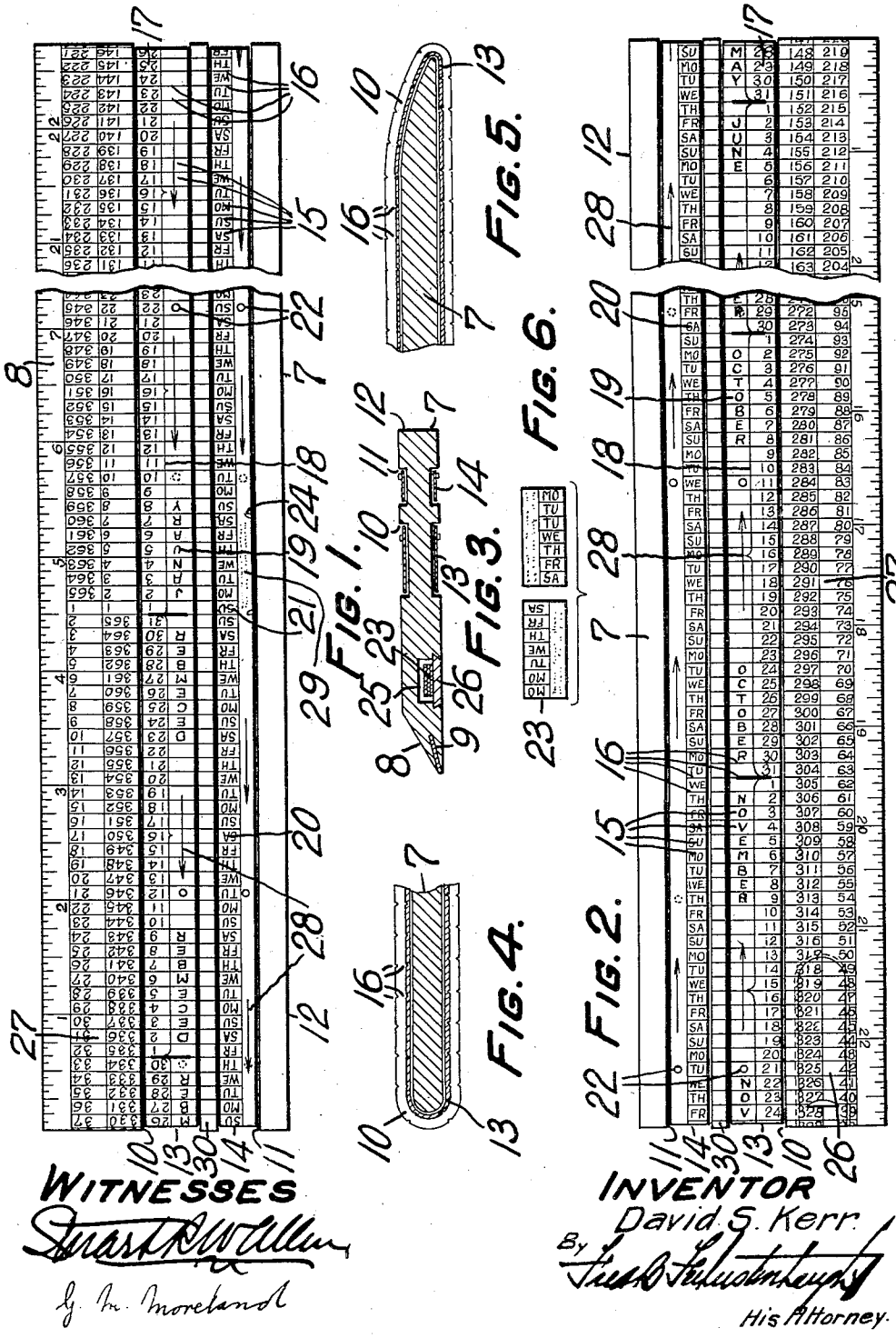


FIG. 1.

FIG. 5.

FIG. 3.

FIG. 4.

FIG. 6.

FIG. 2.

WITNESSES

Sarah R. Wallen

G. A. Moreland

INVENTOR

David S. Kerr.

By Fred B. Fehlmann Lloyd

His Attorney.

UNITED STATES PATENT OFFICE.

DAVID SMITH KERR, OF MONTREAL, QUEBEC, CANADA.

DATE-CALCULATING DEVICE.

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To all whom it may concern:

Be it known that I, DAVID SMITH KERR, of the city of Montreal, in the Province of Quebec and Dominion of Canada, have invented new and useful Improvements in Date-Calculating Devices, of which the following is a full, clear, and exact specification.

This invention relates to improvements in calculating instruments, and the object is to provide a simple, compact and convenient instrument wherewith the number of days from one date to another for a period of one year may be calculated with great rapidity, and also the days of the week on which such dates fall indicated.

A further object is to provide a date calculating instrument of such form that it may be handled and stored with the greatest ease.

A still further object is to provide a date calculating instrument which will be perpetually useful and which will not require supplementary calculations to be made for leap years.

For ordinary purposes, it is not as a rule necessary to calculate the day of the week on which past dates fell, but it is very necessary in many cases to determine the day of the week upon which future dates will fall and also to determine the number of days from one date to another. This information is necessary in business and banking houses in order to determine whether notes or the like fall due on Sundays, and also to determine the number of days between the date of discounting a note and the due date thereof.

This device consists of a strip of wood or other suitable material which is preferably beveled at one edge, and for the purposes of general convenience inscribed on the bevel with a suitable scale of measurement. Two grooves are formed longitudinally in the ruler body entirely around the same, and in these grooves endless ribbons of metal or other suitable materials are located. Each of these ribbons is divided into 365 equal portions and on one of these ribbons the divisions are numbered according to the days of the months, while on the other ribbon the divisions are marked to indicate the days of the week. The combined front, back and ends of the rule are also divided into 365 parts located so as to register exactly with the divisions of the ribbons. These divisions are divided into two columns and numbered around the rule left to right and right to left from 1 to 365.

In the drawings which illustrate this invention:—Figure 1 is a plan view of the top or front of the rule. Fig. 2 is a plan view of the back or bottom of the rule. Fig. 3 is a cross sectional view. Fig. 4 is an enlarged partial longitudinal section through one of the ribbon grooves. Fig. 5 is a view similar to Fig. 4 showing a slightly modified form of end. Fig. 6 is a plan view of one of the supplementary slips used to adapt the day ribbon to all years.

Referring more particularly to the drawings, 7 designates a strip of material having a beveled portion 8 at one edge thereof. This edge will be considered as the front edge, and if the ruler is made of wood this edge will be provided with a suitable metal reinforcing strip 9. In the approximate center of the rule 7 a shallow groove 10 is formed in the top and bottom of the rule, said groove being continuous around the ends of the rule. A second similar and preferably narrower groove 11 is formed intermediate the groove 10 and the back edge 12 of the ruler. Endless ribbons 13 and 14 of metal or other suitable material are located in the grooves 10 and 11 respectively, the ribbon 13 being hereinafter referred to as the date ribbon and the ribbon 14 as the day ribbon. Both ribbons are of equal length and are divided into 365 equal spaces designated 15 by means of lines 16 so that the spaces on the ribbons can be set in proper alinement. On the date ribbon 13 these divisions are numbered for the days of the month, as clearly shown in the drawings. It will be seen that these numbers 17 are therefore arranged in twelve groups corresponding to the 12 months, the numbers extending from 1 to 28 or 30 or 31 in each group, according to the month which it represents. These groups are for convenience indicated by brackets 18 opposite each end of which the name 19 of the month is inscribed. The divisions 15 of the day ribbon 14 are inscribed with the names of the days of the week designated 20. It will be obvious that since there are fifty-two weeks and one day in each year, there will

be two days of the same name appearing together on the ribbon, as indicated at the point 21 where two Sundays occur. In order to enable the ribbons to be shifted with ease, each ribbon is provided with four small pins 22 which are placed at convenient distances apart.

In order to adapt the day ribbon 14 to all years, I provide small strips 23 preferably three in number and of the same material as the ribbon. These strips are each equal in length to seven divisions of the ribbon 14, so that the strips may be superposed on the ribbon and cover the spaces of one week. These strips are inscribed on each side with the names of the days of the week, and each side shows a different day repeated. The repeat Sunday is permanently inscribed on the ribbon 14; and one of the strips, for instance that shown in Fig. 6, carries on one side the repeat Monday and on the opposite side the repeat Tuesday. The second and third strips will carry the repeated Wednesday, Thursday, Friday and Saturday. These strips 23 are adapted to be superposed over the week containing the repeat Sunday, where they will be held by four small pins or other suitable fastening devices 24. The strips not in use are stored in a small recess 25 formed in the bottom of the ruler at one end thereof, and provided with a suitable sliding cover 26.

The portion of the ruler between the front edge and the groove 10 is divided into 365 divisions 27 arranged to exactly register with the divisions of the ribbon 13. It is to be noted that these divisions are not all of the same size, there being divisions on the ends of the rule which are larger than the divisions on the flat surfaces thereof. It is obvious that this must be the case since the circumference of the ribbons is a trifle less than the circumference of the rule. This enlargement of the divisions at the ends of the rule is necessary in order that the divisions of the rule and ribbons may register at all times. In Fig. 4 the rule is shown with a semi-circular end, while in Fig. 5 the upper surface of the rule is beveled away gradually so that the variation in the size of the divisions is not so noticeable. In these two figures the division lines 16 are indicated by small notches. These divisions 27 are divided into two columns and numbered right to left and left to right from 1 to 365 inclusive, the 1's of both columns being in the same division. As shown in the drawings, these divisions correspond on the top of the rule with the 1/8 inch divisions of the scale of measurement on the beveled edge 8, but this feature is not at all essential as the divisions may be made of any size desired. In any case the divisions on the bottom of the rule will not register with the scale of measurement owing to the larger divisions on the ends of the rule, as is shown in Fig. 2.

Arrows 28 are inscribed in both ribbons to indicate the direction in which the ribbons should be shifted, although the ribbons can be shifted in the opposite direction.

Suitable directions may be inserted on the margin of the day ribbon 14 as indicated at 29, or may be inserted in the recess 25, giving instructions for the use of the slips 23.

For convenience of alining the day and date ribbons, the rib 30 between the ribbons is graduated in the same manner as the ribbons themselves.

The instrument is set as follows:—January 1 is placed and must always be kept in alinement with the repeat day. If the date ribbon be moved the day ribbon should also be moved so that January 1 and the repeat day will always register.

The instrument is shown set for a year in which the 1st day of January falls on a Sunday. It is obvious that the number of days between January 1st and any date falling within one year may be determined by finding the day of the month on the date ribbon, and noting the number in the column next the date ribbon. For instance, from January 1st to December 4th is 338 days, both days inclusive, and the latter date falls on a Monday, as indicated by the inscription on the day ribbon in register with the date. If it is desired to find the number of days from two dates in the middle of the year, for example, from March 15th to August 27th, both inclusive, the date ribbon is moved in the direction of the arrow until March 15th comes opposite the numeral 1 on the rule. August 27th is then found on the date ribbon and the number opposite on the rule noted, which is 166, this being the required number. In all cases where the week day is desired, the repeat day on the day ribbon must be set opposite January 1 on the date ribbon. If both dates are not desired to be included in the calculation, then deduct one from the total shown.

To adapt the calendar for the following year, the slip 23 containing the repeat Monday would be superposed on the portion of the day ribbon containing the repeat Sundays and held there by means of the pins 24. The day ribbon is now shifted until the repeat Monday comes opposite January 1 on the date ribbon.

The second column of figures, *i. e.*, the column next the beveled edge of the ruler, is arranged in reverse order for convenience in reckoning the number of days expired from a given date.

As regards leap years, in calculating the number of days from one date to another into which calculation February 29th enters, it would simply be necessary to take the succeeding number shown in the col-

umn. On February 29th the day ribbon is moved one space so that in leap year after February 29th the day ribbon shows the proper day of the week opposite the date ribbon for days succeeding February 29th, as on that date slips 23 are inserted as hereinafter explained.

The slips 23 are inserted on January 1st to provide for the repeat days which occur, and in leap years an additional slip is inserted on February 29th. On each occasion the slip which contains the repeat day following the one in use on the instrument must be inserted. In other words, the order of the changes would be as follows:—On Jan. 1st, 1912, insert repeat Monday; on Feb. 29th, 1912 (leap year) insert repeat Tuesday; on January 1st, 1913, insert repeat Wednesday; on January 1st, 1914, insert repeat Thursday; on January 1st, 1915, insert repeat Friday; on January 1st, 1916, insert repeat Saturday; on February 29th, 1916 (leap year), insert repeat Sunday. The day ribbon will show in an ordinary year the day upon which any date from January 1st to December 31st following, both inclusive, falls, and in leap years the day ribbon will show the day upon which any date falls from January 1st to February 28th, both inclusive. After inserting slip 23 on February 29th as before explained, the day ribbon will in leap years show the day upon which any date falls from March 1st to December 31st, both inclusive.

At all times, the device may be used as a ruler and being thin and flat, is not in the way when lying on a desk. It is also light and easily carried and operated, the pins 22 in the ribbons serving as a finger nail catch to enable the ribbons to be easily moved. The slips 23 have the same flexibility as the ribbon 14 and will therefore move around the end of the rule as readily as the simple ribbon. It is obvious that this instrument will be of great use to banking and business houses where it is constantly necessary to calculate the number of days between two given dates, and also to determine the day of the week on which a date in the future will fall. These calculations are necessary in determining interest on accounts, notes, bonds and the like.

Having now fully described my invention, what I claim is:—

1. In a calculating instrument a stationary scale divided into 365 numbered parts, a movable scale divided into 365 parts and numbered to indicate the days of the month, and a second movable scale divided into 365 parts, and inscribed to indicate the days of the week, and strips adapted to be superimposed on a predetermined portion of the second movable scale, said strips being inscribed consecutively with the days of the week from Monday to Saturday inclusively, one day of each week being repeated.

2. In a calculating instrument a body portion having endless grooves formed therein, an endless stationary scale formed on said body parallel with the grooves thereof, said scale being divided into 365 parts numbered right to left and left to right from 1 to 365, an endless movable scale arranged in one of the body grooves and divided into 365 parts adapted to register with the stationary scale, inscriptions on said movable scale indicating the days of the month and months of the year, a second endless movable scale arranged in another groove of the body and divided into 365 parts adapted to register with the stationary scale and with the first movable scale, inscriptions on said second movable scale indicating the days of the week for 52 weeks and one day whereby at one point of the scale a day will be duplicated, a plurality of strips divided to correspond with the divisions of the second movable scale, means for releasably attaching said strips to the second movable scale, said strips having thereon a series of inscriptions on said strips, each inscription indicating the days of one week and each having a different day duplicated.

In witness whereof I have hereunto set my hand in the presence of two witnesses.

DAVID SMITH KERR.

Witnesses:

STUART R. W. ALLEN,

G. M. MORELAND.