R. M. HAMBY.

SLIDE RULE.

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1,050,129. Patented Jan. 14, 1913.

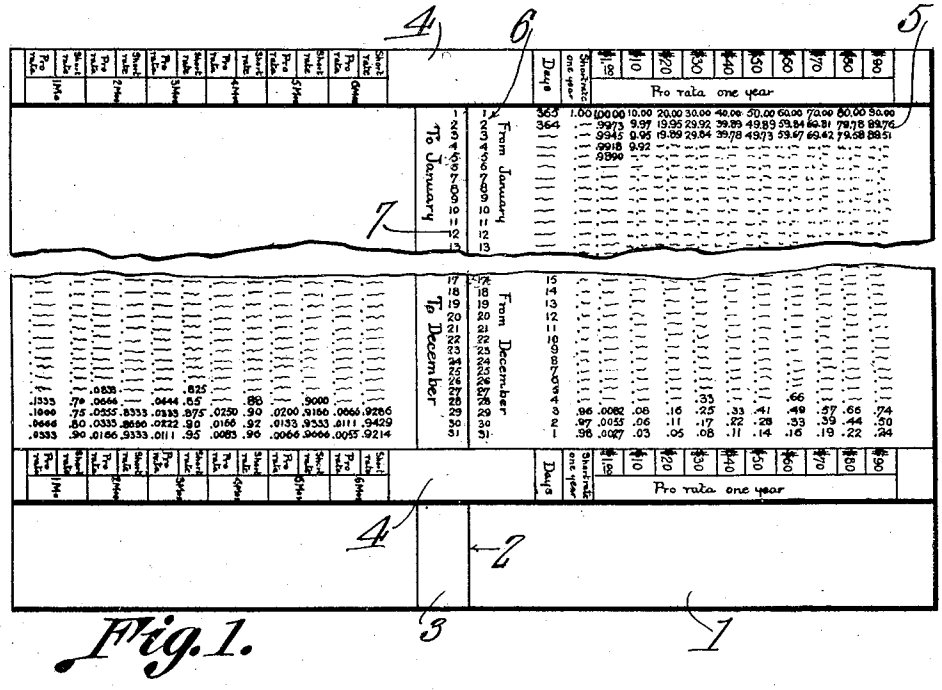

Fig. 1.

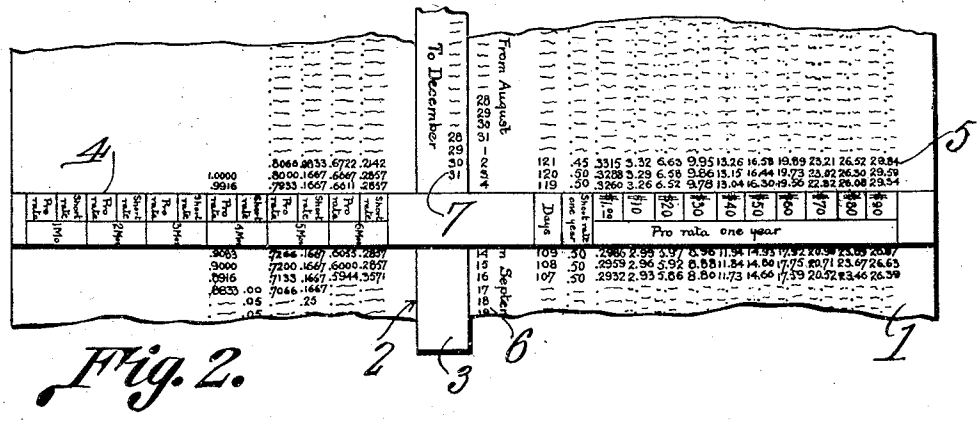

Fig. 2.

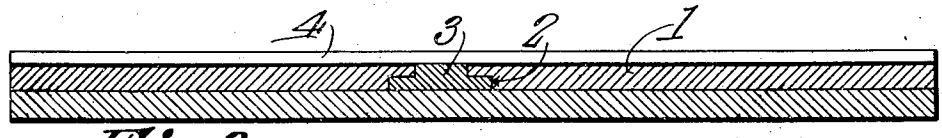

Fig. 3.

Witnesses

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UNITED STATES PATENT OFFICE.

ROBERT M. HAMBY, OF AUSTIN, TEXAS.

SLIDE-RULE.

1,050,129. Specification of Letters Patent. Patented Jan. 14, 1913.

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To all whom it may concern:

Be it known that I, ROBERT M. HAMBY, a citizen of the United States, residing at Austin, in the county of Travis and State of Texas, have invented a new and useful Slide-Rule, of which the following is a specification.

This invention relates to slide rules for accurately and quickly computing the "return premium" on a fire insurance policy.

It is well known that when a policy is canceled before the expiration of the term, that portion of the premium covering the unexpired term is returnable to the policy holder. Various books and tables have been produced for the purpose of saving time and labor in ascertaining the return premiums. All of them however necessitate finding the elapsed time from the date of cancellation to the date of expiration after which it becomes necessary to refer to other portions of the book or chart to find the percentage or the return premium. This, in many cases, requires several operations in order to find the proper result and, moreover, considerable time is usually wasted in finding the particular page and the particular line bearing the desired data.

One of the objects of the present invention is to provide a slide rule whereby the dates may be brought together to show the percentage without further reference.

Another object is to provide a rule which shows the amount in dollars and cents on premiums of ten dollars, twenty dollars, thirty dollars, etc., at pro rata of one year, the same figures being also conveniently used for three and five year terms.

Another object is to provide a chart containing the "short rate" percentages for one, two, three, four, five and six months.

With these and other objects in view the invention consists of certain novel details of construction and combinations of parts hereinafter more fully described and pointed out in the claims.

In the accompanying drawings the preferred form of the invention has been shown.

In said drawings:—Figure 1 is a plan view of a slide rule constructed in accordance with the present invention, the middle portion thereof being removed. Fig. 2 is a plan view of a portion of the chart and showing the cross head adjusted to an intermediate position. Fig. 3 is a transverse section through the slide rule.

Referring to the figures by characters of reference, 1 designates the body of the rule, the same being preferably in the form of a board of any suitable proportions having a central longitudinally extending groove 2 within which is mounted a slide 3. The side edges of this slide are preferably lapped by the walls of the groove, as indicated in Fig. 3, so as to hold the slide against displacement except in a longitudinal direction relative to the body 1.

A cross head 4 is connected to the slide 3 and extends throughout the width of the body. One of these cross heads is located adjacent each end of the slide and either one of them is adapted to be shifted into register with any one of a series of transversely extending columns 5 indicated upon the body 1. One of these transverse columns is provided for each day of the year and the said columns are designated by a column of numerals such as indicated at 6 and which extends along one side of the groove 2, these numerals being arranged to indicate the days of the months. The first thirty-one columns beginning at one end of the chart are numbered from 1 to 31 successively to indicate the thirty-one days of January, and the words "From January" are printed adjacent these numerals 1 to 31. The next succeeding twenty-eight columns are designated by the numerals 1 to 28 inclusive and the words "From February" are printed adjacent thereto. A similar arrangement of numbers for the different days of the remaining months of the year is also provided throughout the length of the chart. A similarly arranged column of numerals is located upon the slide 3, as indicated at 7, and when the slide is in its normal position with the inner edges of the cross head registering with the end columns, the corresponding numerals in the two columns 6 and 7 will be found in the same transverse columns 5. The various groups of numerals upon the slide are designated by the words "To January," "To February," "To March," etc.

The columns 5 are located solely at one side of the slide 3 and contain numerals which are readable in connection with data carried by the cross heads 4. That portion of each cross head which is movable over the columns 5 is subdivided into spaces registering with longitudinal columns formed by the numerals in the columns 5. One of these

spaces is designated by the word "Days," and the numerals in the longitudinal column registering therewith are arranged successively from 1 to 365 to indicate the number of days in the year, the numeral 1 being placed opposite the numeral 31 in the December group of numerals in column 6. The next space upon the cross head contains the words "Short rate one year." This space alines with another column of numerals extending longitudinally of the body. The remaining spaces on the cross head are designated by "$1," "$10," "$20," "$30," "$40," "$50," "$60," "$70," "$80," "$90," these amounts indicating the yearly premium and all of them being in place under the heading "Pro rata one year."

The slide 3 extends between the longitudinal columns of numerals which aline with the spaces on the cross head which have been heretofore referred to and between additional columns of numerals indicating short rates and pro rata rates for periods up to six months. Those portions of the cross heads which are designed to travel over these columns of numerals are subdivided into spaces indicated by "1 mo.," "2 mos.," "3 mos.," "4 mos.," "5 mos.," "6 mos." Each of these subdivisions extends across two adjoining columns of numerals and is, in turn, subdivided in two portions indicated by "Short rate" and "Pro rata."

It is to be understood that each cross head is a duplicate of the opposed cross head and that desired readings can be obtained by the use of either of them.

Should it be desired to use the rule to find the return premium of an annual policy with a $20 premium expiring September 3, and canceled, short rate, on December 31st, the slide 3 is shifted longitudinally until the 31st day of December is brought directly opposite the third day of September. It will then be seen that the cross head on the end of the slide has stopped on line 119, as shown by the "days'" column. Also, in the adjoining "short rate one year" column will be found the numeral .50 indicated by the cross head. By multiplying this numeral .50 by $20, a return premium of $10 is obtained.

Should a six months' policy having a premium of $35 and which was written on September 3, be canceled, at short rates, on December 31st, the slide is moved so as to bring December 31st directly opposite September 3rd. The indicator will thus show that the policy has been in force 119 days and by then referring to the "6 mos.," "short rate" column it will be seen that the numeral .2857 is indicated. By multiplying this numeral by $35, the amount of the premium, the short rate return premium may be obtained.

Should it be desired to find the return premium on a one year policy having a premium of $80, said policy expiring on December 31st, and being canceled on September 3rd, the slide 3 is shifted until December 31st is brought opposite September 3rd. The cross head of the slide will stop at the numeral 119 in the days' column and on the same line in the $80 column is found the numeral 26.08 which shows that $26.08 is the pro rata return premium.

It will be found that various other problems can be worked out as readily as has been illustrated in connection with the foregoing problems.

It is of course to be understood that various changes may be made in the construction and arrangement of the parts constituting the rule without departing from the spirit or sacrificing any of the advantages of the invention as defined in the appended claims.

What is claimed is:—

1. A slide rule including a body having spaced groups of longitudinal columns of numerals thereon, a slide mounted on the body between the groups and having a longitudinal column of numerals any one of which is shiftable into register with any one of the numerals in one of the adjoining columns on the body, and cross heads at the ends of and movable with the slide and extending above the body across the two groups of numerals to indicate numerals readable in connection with the registering numerals upon the slide and body.

2. A slide rule including a body with spaced groups of longitudinally extending columns of numerals designating return premiums and having columns of numerals indicating the days of the month, and the numbers of the days of the year, a slide mounted on the body between said groups and having a column of numerals indicating the days of the month, any one of said numerals being shiftable to register with any one of the numerals on the body indicating the days of the month, and cross heads connected to the two ends of and movable with the slide and extending across said columns of numerals on the body, there being indicating data upon the cross heads readable in connection with said columns of numerals on the body, and additional designating data on the cross heads and readable in connection with longitudinally extending columns of numerals in the groups upon the body for designating return premiums.

3. A slide rule including a body having columns of numerals indicating the days of the month the numbers of the day of the year, a slide mounted on the body and extending throughout the length thereof and having a column of numerals indicating the days of the month, any one of said numerals

being shiftable to register with any one of the numerals on the body indicating the days of the month, and cross heads connected at their center to the ends of and movable with the slide and extending across said columns of numerals on the body, there being indicating data upon the cross head readable in connection with said columns of numerals on the body, and additional designating data on the cross heads and readable in connection with longitudinally extending columns of numerals upon the body for designating return premiums, said last named columns of numerals being arranged in spaced groups and the slide being interposed between the groups.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

ROBERT M. HAMBY.

Witnesses:
M. E. MARSHALL,
HARRY L. WRIGHT.