(No Model.) 3 Sheets—Sheet 1.

J. L. KNIGHT.

TAX CALCULATING MACHINE.

No. 571,070. Patented Nov. 10, 1896.

Fig I

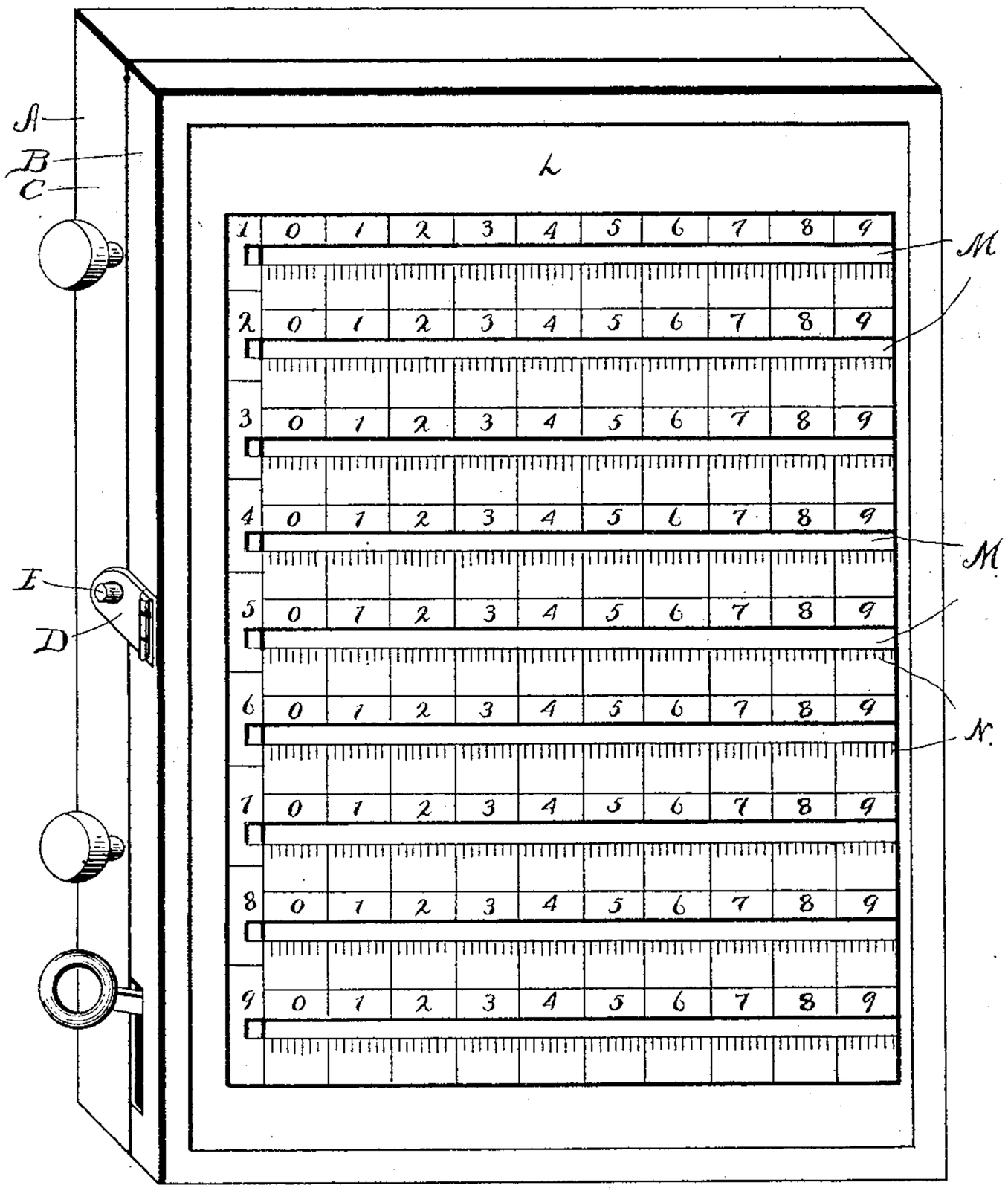


Fig II

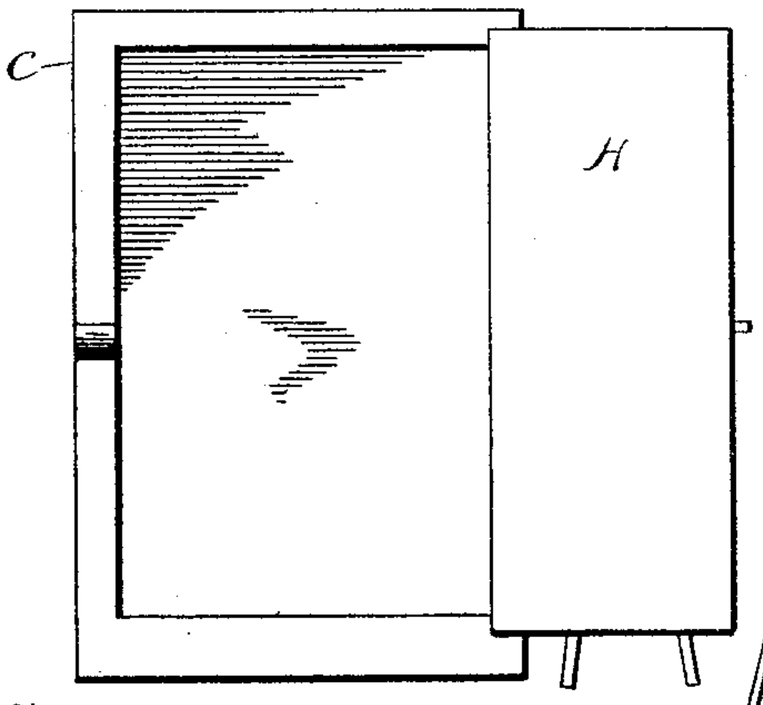


Fig III

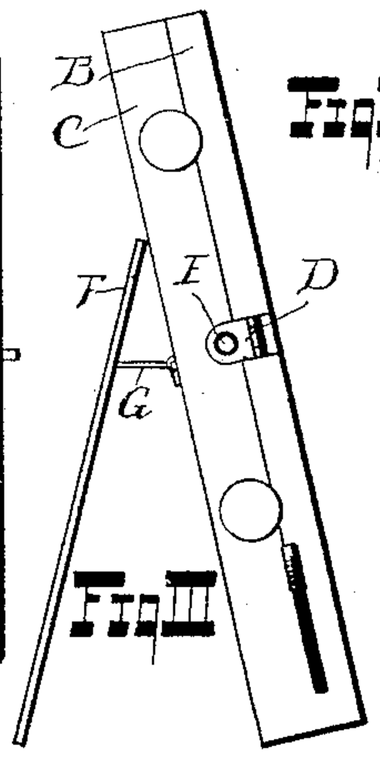
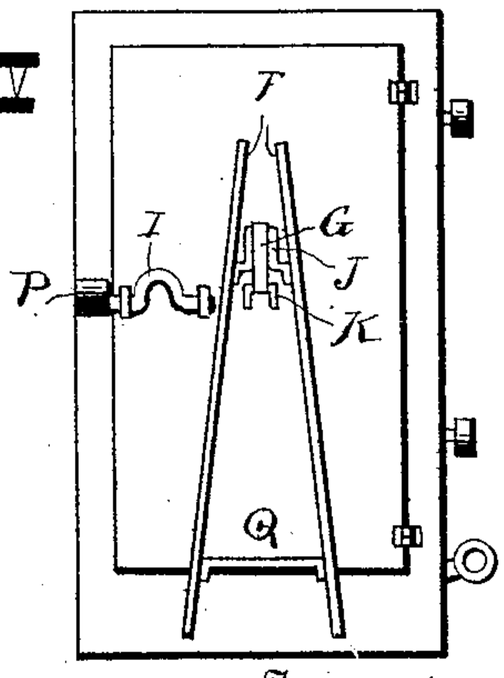


Fig IV



Witnesses.
D. C. Hamilton,
E. A. Pottier.

Inventor.
J. Lee Knight.
By House and Hadley. His Attorneys.

(No Model.) 3 Sheets—Sheet 2.

J. L. KNIGHT.

TAX CALCULATING MACHINE.

No. 571,070. Patented Nov. 10, 1896.

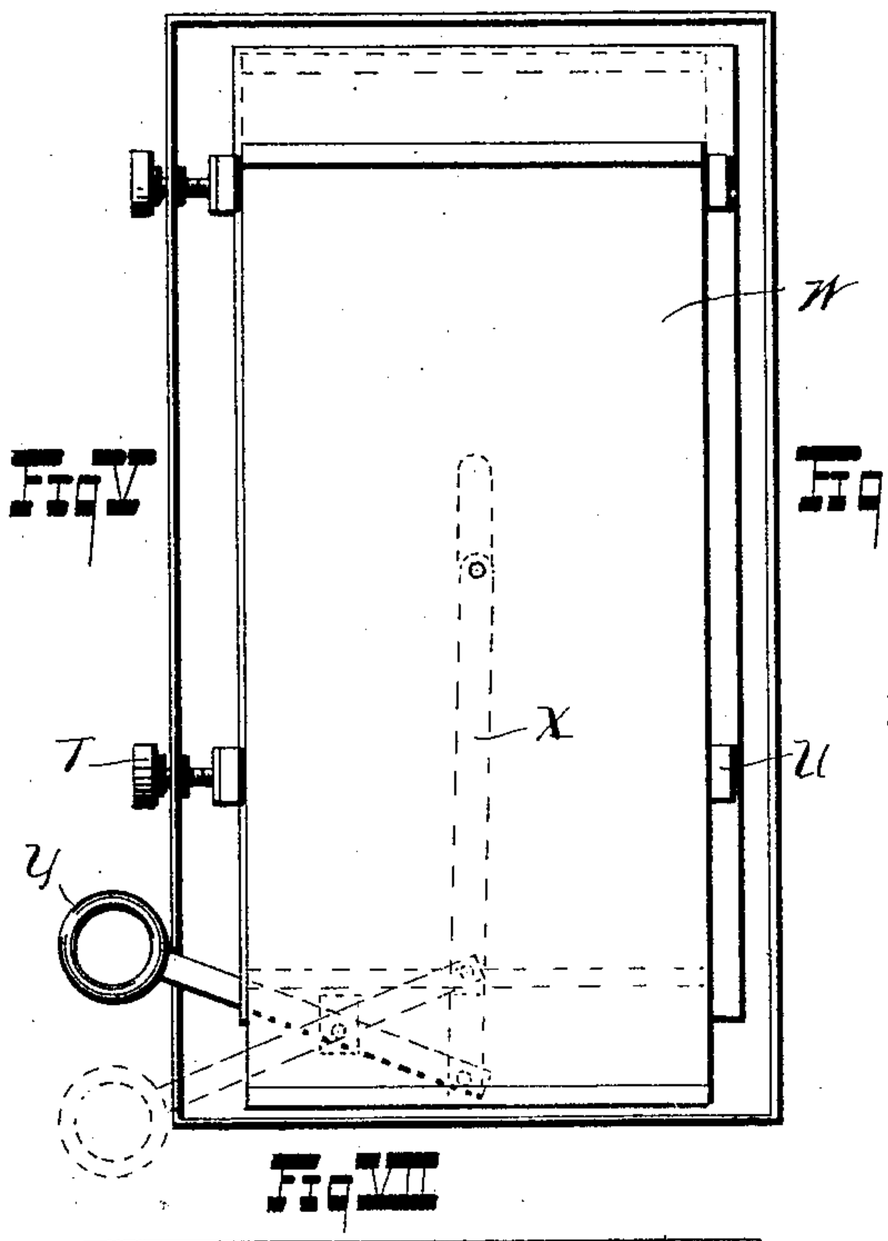


Fig V

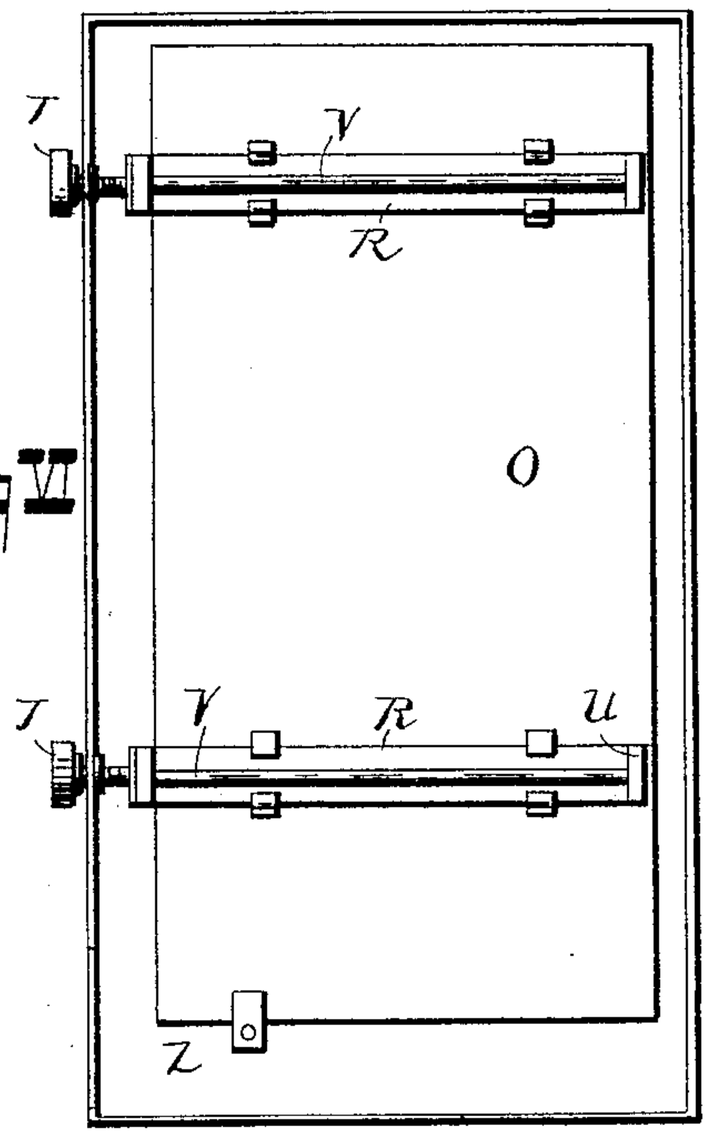


Fig VI

Fig VII

Fig VIII

Rate 2 1/10 mills, 21 mills, 21%																
0	0	0	2	1	0	0	0		0	0	2	3	1	0	0
1			2	1	2	1	0				2	3	3	1	0
2			2	1	4	2	0				2	3	5	2	0
3			2	1	6	3	0				2	3	7	3	0
4			2	1	8	4	0				2	3	9	4	0
5			2	2	0	5	0				2	4	1	5	0
6			2	2	2	6	0				2	4	3	6	0
7			2	2	4	7	0				2	4	5	7	0
8			2	2	6	8	0				2	4	7	8	0
9			2	2	8	9	0				2	4	9	9	0
0	0	0	4	2	0	0	0		0	0	4	4	1	0	0
1			4	2	2	1	0				4	4	3	1	0
2			4	2	4	2	0				4	4	5	2	0
3			4	2	6	3	0				4	4	7	3	0
4			4	2	8	4	0				4	4	9	4	0
5			4	3	0	5	0				4	5	1	5	0
6			4	3	2	6	0				4	5	3	6	0
7			4	3	4	7	0				4	5	5	7	0
8			4	3	6	8	0				4	5	7	8	0
9			4	3	8	9	0				4	5	9	9	0
0	0	0	6	3	0	0	0		0	0	6	5	1	0	0
1			6	3	2	1	0				6	5	3	1	0
2			6	3	4	2	0				6	5	5	2	0
3			6	3	6	3	0				6	5	7	3	0
4			6	3	8	4	0				6	5	9	4	0
5			6	4	0	5	0				6	6	1	5	0

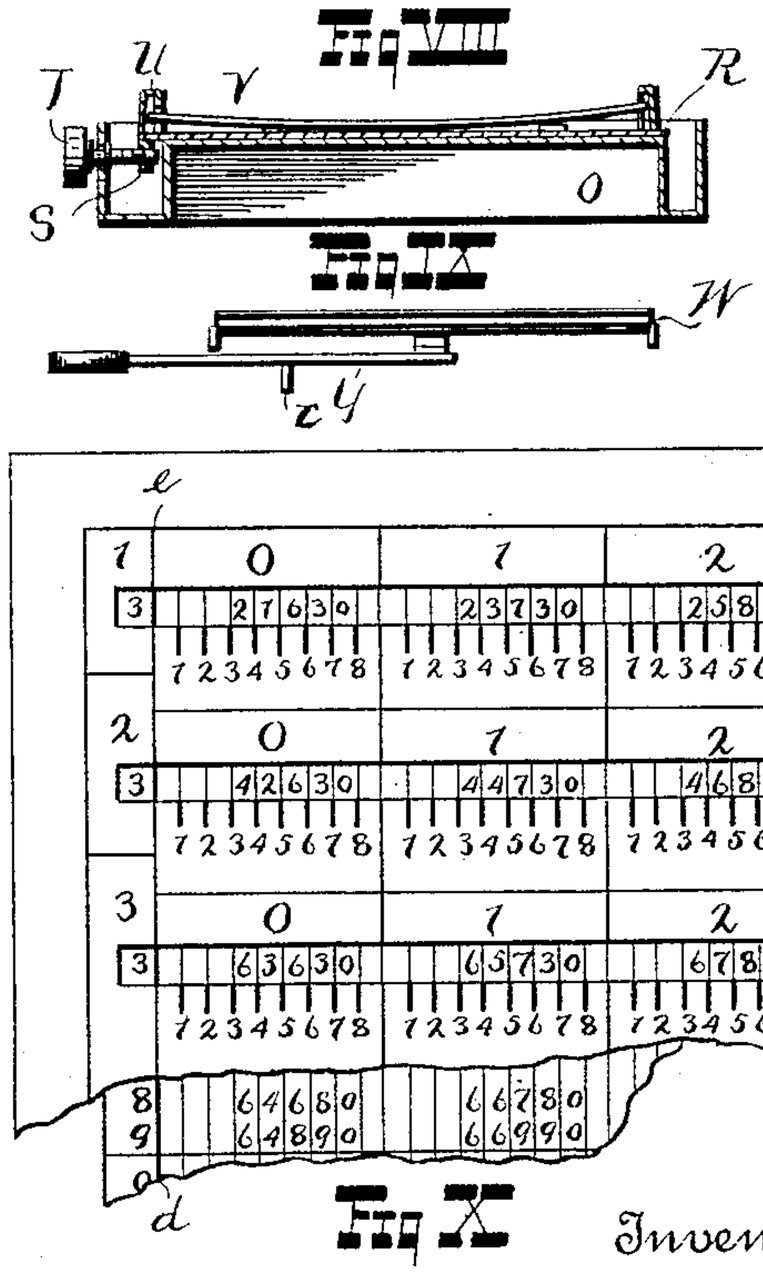


Fig IX

Fig X

Witnesses.
E. A. Pottier.
M. C. Nichols.

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His Attorneys.

(No Model.) 3 Sheets—Sheet 3.

J. L. KNIGHT.

TAX CALCULATING MACHINE.

No. 571,070. Patented Nov. 10, 1896.

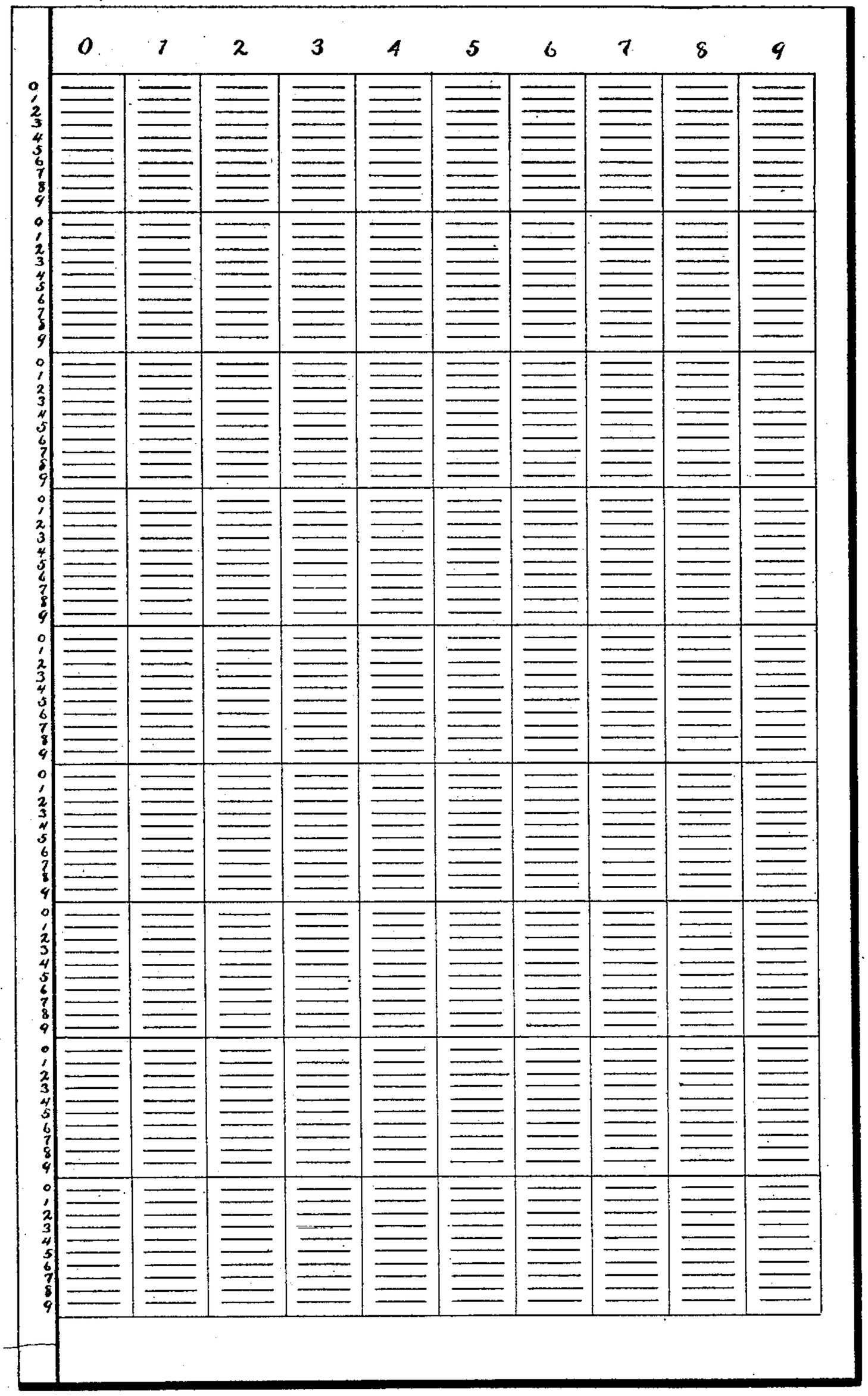

Fig. XI

Witnesses
K. M. Imboden
E. H. Hatcher

J. Lee Knight,
Inventor,

By His Attorneys
House and Hadley,

UNITED STATES PATENT OFFICE.

JONATHAN LEE KNIGHT, OF TOPEKA, KANSAS, ASSIGNOR OF ONE-HALF TO THE CRANE & COMPANY.

TAX-CALCULATING MACHINE.

SPECIFICATION forming part of Letters Patent No. 571,070, dated November 10, 1896.

Application filed March 20, 1893. Serial No. 584,134. (No model.)

To all whom it may concern:

Be it known that I, JONATHAN LEE KNIGHT, a citizen of the United States, residing at Topeka, in the county of Shawnee and State of Kansas, have invented certain new and useful Improvements in Tax-Calculating Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to improvements in calculating-machines.

The object of my invention is to provide a device by which the results of multiplication are obtained quickly and accurately by mechanical means instead of by tedious mental exertion.

My invention is particularly adapted to be used in determining taxes, customs-duties, and other fixed percentages.

My invention comprises a suitably-inscribed card or chart, a face-plate also suitably inscribed and provided with observation-openings therethrough, by means of which the inscriptions on the chart, which is located in the rear of the face-plate, may be read, and means by which the chart may be moved to any desired position relative to the face-plate.

My invention further provides a suitably-inscribed chart located in the rear of a face-plate, also suitably inscribed, and which is provided with transverse slots for reading the inscriptions on the chart, a chart-holder, and means for longitudinally and transversely adjusting the chart-holder, whereby the relative position of the inscriptions on the chart and the slots in the face-plate may be changed.

My invention also provides novel features of construction hereinafter fully described, and set forth in the claims.

In the accompanying drawings, illustrative of my invention, Figure 1 represents a front perspective view of a device constructed in accordance with the principles of my invention. Fig. 2 represents a rear-elevation view with the door in the open position. Fig. 3 represents a side-elevation view. Fig. 4 represents a rear-elevation view with the door closed. Fig. 5 represents a front-elevation view of the case with the chart and cover removed. The dotted lines represent the chart-holder in the raised position. Fig. 6 represents a front-elevation view of the case with the chart-holder and cover removed. Fig. 7 represents a portion of a chart-card. Fig. 8 represents a transverse sectional view taken on the dotted line *a b* of Fig. 6. Fig. 9 represents an end view of the chart-holder and operating-lever. Fig. 10 represents a fragmental view of the face-plate, showing a portion of the chart in the rear thereof. Fig. 11 represents a view of the chart, showing its divisions and subdivisions and index-characters.

Similar letters and numerals of reference indicate similar parts.

A indicates the case, consisting of a rectangular box C and a cover B, having a hinged connection with the box at one side and a hinged flap D at the other side, adapted to engage a projection E on the box. The cover B is provided in its front side with a rectangular opening, to the rear of which is located a transparent plate of glass, celluloid, mica, or other suitable material. To the rear of the transparent plate and within the cover is secured a face-plate L, which is provided with nine transverse slots M, which are parallel with each other and are located at equal distances apart. At the left end of each slot is an ordinal, beginning at the top slot with 1, the second slot being numbered 2, and so on, the lowest slot being numbered 9. The face-plate is divided by vertical lines into ten columns, the left column being No. 0, the next to the right No. 1, the next to the right being No. 2, and so on, the column at the right side being numbered 9. Immediately below each slot each vertical column is provided with scale-marks which are used to determine the location of the decimal point in making calculations, as will be described hereinafter. These scale-marks number to the right and are indicated by N. The rear of the box C is provided with a raised portion O, which constitutes a chart-receptacle. The rear side of the receptacle O is provided with an opening for the insertion of the charts that are not in use. This opening is normally closed by means of a door H, one side of which is hinged to the rear side

of the box C. The other edge of the door is provided with a sliding bolt I, adapted to have its outer end inserted in a loop P, which is secured to the box near the edge. Two rods F, are secured, respectively, at their upper and lower ends by two transverse rods J and Q. The upper transverse rod J is preferably of an inverted-U shape and has pivotally connected to it the outer end of a strap G, the inner end of which is pivotally secured to a U-shaped lug K, which is rigidly secured to the rear of the door H.

To the front side of the raised portion of the box C are movably secured two parallel transverse plates R, each of which is movable to the right or left. Each of the plates R is provided at its left end with a rearwardly-extending lug S, which is provided with a transverse screw-threaded opening, to which is fitted the inner end of a horizontal thumb-screw T, which in turn is journaled near its outer end in a transverse opening in the left side of the box C, the milled portion of the thumb-screw being located upon the outside of the box, so as to permit of being turned by the thumb and finger. Each of the plates R is provided at each end with a forwardly-extending lug U, the inner sides of which are perpendicular and are recessed, so as to provide for the insertion of the ends of a transverse curved spring-strip V. The springs V are arcuate in form and are placed in position with the convex side in contact with the front side of the raised portion O.

The chart-holder consists of a rectangular plate W, the two sides of which are bent rearwardly and are movably fitted between the lugs U, the ends being folded forwardly and parallel to but not in contact with the body of the chart-plate W. To the rear side of the plate W is pivotally secured the upper end of a vertical plate X, the lower end of which is pivotally secured to the inner end of a transverse lever Y, the outer end of which is provided with a finger-ring and extends through a vertical slot in the right side of the casing. Secured to the rear side of the lever Y, at a point between the ring and the pivotal connection with the plate X, is a rearwardly-extending pin *c*, movably fitted in an opening in a lug Z, which is secured to the lower end of the raised portion O. This pin *c* forms a fulcrum upon which the lever Y operates.

I will now describe the chart that I use and the principles employed in its formation.

The chart is transversely divided into nine principal divisions. Each of the principal transverse divisions is again divided into ten subdivisions. To the left of the principal divisions is a vertical line *d*, which serves as a registering-line, by means of which the chart is made to register with the divisions upon the face-plate. Outside of the registering-line *d* and opposite each subdivision is an ordinal, the ordinal of each uppermost subdivision being 0, the one next below 1, the next below being 2, and so on until the last, the ordinal for which is 9. The chart is again vertically divided into ten vertical principal divisions numbered from left to right, respectively, from 0 to 9, inclusive. It will now be seen that we have ninety transverse subdivisions, and each transverse subdivision is vertically divided into ten subdivisions, making a total of nine hundred subdivisions on the chart. In each subdivision is a group of figures, the upper left-hand subdivision containing the initial base or rate per cent. for which the chart is to be used in showing the results of calculation. All of the other eight hundred and ninety-nine groups of figures are derived from the first or initial-base group, as will be described hereinafter.

The width of the vertical columns on the chart are made to correspond with the ten vertical columns on the face-plate. The vertical line *d* on the chart is so disposed on the chart as to coincide with the vertical line *e* on the face-plate. The index-figures 0 to 9, inclusive, at the left side of the chart, I will term "chart index-figures." The slots in the face-plate extend sufficiently to the left and are of sufficient width to expose to view one of the chart index-figures.

The spacing of the chart index-figures vertically is such that the same chart index-figures will be in view through each slot in the face-plate in any one position of the chart.

The formation of the chart is based upon that principle of the decimal system by which any figure or combination of figures in passing from one order of enumeration to the next higher or next lower order takes an accretion or suffers a decrease equal to nine times its original numerical value. For instance, the figure 1 in going up the scale of enumeration becomes 10, equal to its original value plus nine times that value. Likewise the numeral 2 becomes 20, a sum equal to its original value plus nine times that value. In the same manner a group of figures, as, for instance, 25, in passing to the next higher order in the scale of enumeration becomes 250, nine times the original value plus the original value, and so all figures or groups of figures acquire an accretion of nine times their original value in moving up one step in the scale of enumeration. The annexation of a cipher to a group of figures occupying different positions in the scale will be equivalent to multiplying them by ten, and by reason of their changed local values they will express the sum equal to their original value plus nine times that value. For example, by annexing a cipher to the group of figures 21 it becomes 210, which is equal to nine times the original value plus the original value. This principle has been applied in the construction of the chart, whereby I can obtain mechanically the results of multiplications, said results being always accurate and derived from the changed local values of the figures used. The numerical value of any figure or

group of figures in my invention is measured by its position in the scale and not by means of any mental process. The groups of rating-figures are built by sequences or fixed ratios and compose, as before stated, nine hundred groups of figures, which form the terms of an arithmetical progression. Two ratios are used in composing the progression. The upper left-hand group is the initial or base term and is a statement decimally of the amount of tax or duty on one dollar at the rate per cent. for which the chart is computed and to be used.

Proceeding with the first upper left-hand group of figures as a base in a downward direction in column 0, as indicated on the face-plate, the ratio of the progression is by successive additions of one-hundredth part of the first term until nine derived terms have been formed, which, with the first term, complete column with index 0 of division 1. The tenth derived term of progression by this ratio is placed at the top of the next column to the right in division having vertical-column index 1. This tenth derived term being derived on the progressive ratio of hundredths of the first term is the first derived term of a progression on a ratio equal to additions of the tenth part of the first term. In a like manner nine other terms are derived by additions of hundredths of the first term to the first derived term of the second progression. The tenth from it being the twentieth from the first term becomes a second derived term on the ratio of tenths and is placed at the top of the next column to the right in division 2. Proceeding thus vertically line by line on a ratio of hundredths of the first term and laterally column by column on a ratio of additions of tenths of the first term until we reach the radix 9 each way we have completed the one hundred terms of the first transverse division. In other words we have the base or first term and ninety-nine derived terms. If we now form another term on the ratio by hundredths, this last or one-hundredth derived term will be equal to just double the first term. This term of the progression is placed on the chart at the upper left-hand corner of transverse division 2, and on the line of that division having the chart-index 0. Proceeding downward from it on a ratio of hundredths of the base, we form the other nine terms of column 0 of transverse division 2. Proceeding, as before, with the dual ratio of hundredths vertically and tenths horizontally or by column, we complete the second one hundred terms which compose transverse division 2. In like manner the term equal to three times the base or first term is placed at the beginning of transverse division 3, and is followed by the remainder of the hundred terms of that division, which are derived and arranged in the same way as with those of divisions 1 and 2. The other divisions are compiled and arranged in a like manner, when it will be seen that we have nine hundred groups of rating-figures on the chart in ninety lines of ten groups each, and each series of ten lines comprising a division is provided with the chart-index 0 to 9, respectively. Each of these groups of rating-figures is a multiple of the base. Hence by the combination of the chart and face-plate we have all the factors and the products of multiplication by the base. The base or rate per cent. being the multiplier, the figures composing the multiplicant become the index-figures which point out the group of rating-figures which form the product. The scale-marks on the face-plate measure the value of that product in dollars and cents. All of these groups of rating-figures are combinations of figures representing the original base plus some changed local value of the figures composing the base. If the primary or initial base be 210, for instance, we first change the local value of these figures by annexing two ciphers, equivalent to multiplying them by one hundred. They now appear, respectively, as the third, fourth, and fifth orders from the decimal point of unity in the increasing scale of enumeration. This group of figures we call the "first" or "key" term of the progression, and, by combining with it the original local value when the figures stood as first, second, and third orders of the decimal scale, being the primary base, we obtain the first derived term of the progression. For instance, 21,000, the first term, plus 210, equals 21,210, which is the first derived term. The second derived term is 21,000 plus 210, plus 210, equals 21,420, which is the second derived term. The last or eight hundred and ninety-ninth derived term from the primary base 210 we find is 209,790, and its position as indexed by the different indices is division 9, column 9, and chart-index 9, indicating that it is equal to nine hundred and ninety-nine times the primary base. By adding to this combination or group the primary base 210 we shall have formed the nine-hundredth derived term and have a group equal to one thousand times the primary base, or 210,000. This combination of figures is simply a repetend of the first term, with the difference that the figures occupy, respectively, the fourth, fifth, and sixth orders in the increasing scale of enumeration instead of the third, fourth, and fifth orders, in which orders they originally were. Changing the local value of the figures of the primary base by annexing the two ciphers, so as to include three orders of the scale, then taking the same figures at their original or primary local value and by successive additions of this primary value building them back again by fixed ratios of increase to the third order, we reach the threefold radix of the system, that is, the division, column, and chart index-figures 9. We now have a series of combinations representing all the intermediate values which the figures acquired in moving up the scale. We have found that the position they occupy on the chart, as defined by the index-figure of the

face-plate and chart, determines with certainty the value of the figures at any step of their journey from the first, second, and third to the fourth, fifth, and sixth orders of the scale of enumeration.

If we change the local value of a figure or group of figures by moving it up the scale from the first to the second order by annexing a cipher, we shall have but two terms of a progression represented by two groups of figures and having two distinct values, each value being capable of being measured by their place in the scale which the figures occupied. Should we again write the same figures and annex two ciphers, we would have three terms of a progression, the value of each being determined by position. This is what is done in forming the first term of the progression, as shown on the chart: We write the figures and annex two ciphers and then by means of the scale-marks on the face-plate determine in which order the figures shall be valued, whether as the primary base, a local value equal to ten times the base, or the full first term, equal to one hundred times the base. Hence by the scale-marks being used to cut off one or both ciphers we can use the first term as of either of the three different orders of local values.

Each and every tenth derived term, counting from the first term, will terminate in a cipher, and these in like manner, by cutting off a cipher by the use of the scale-marks on the face-plate, may be used as either of two orders measured by their position in the scale. Thus the nine terms standing at the heads of the nine transverse divisions are equivalent to twenty-seven terms, and the eighty-one terms standing at the heads of each of the other nine columns are equivalent to one hundred and sixty-two terms, making a total gain of ninety-nine terms. Thus with nine hundred groups on the chart, eighty-one groups having two values as repetends and nine groups having three values each from the same cause, our nine hundred terms as they appear on the chart are equivalent to nine hundred and ninety-nine terms, although they occupy but nine hundred positions.

If another term be formed, as hereinbefore stated, being the nine hundredth derived term and the nine hundred and first of the series or progression, it would have no position on the chart, but as it would be but a repetend of the first term in the next higher order we have recourse to the scale-marks, and, measuring its value by its position, use the first term as if it were the thousandth term. Considering now that the chart-slide has lateral movement by means of the adjusting-screws T, by means of which the entire chart may be placed in different positions with relation to the face-plate and scale-marks equivalent to moving the entire series up or down the scale of enumeration a distance of nine figure-spaces, it will be seen that the capacity for exhibiting the results of multiplication by the machine by changing local values and measuring such values by position alone is so vast as to be almost incomprehensible. As an example of the capacity of the machine take the initial base 210, and by adjusting the chart-slide so that scale-mark No. 8 falls at the left of the group and calling scale-mark No. 1 the decimal point of unity then these figures would have a local value equal to two hundred and ten thousandths of millionths of a single unit, a value so small that the mind cannot conceive it. Then take the last term of the progression, which, if calculated as described hereinbefore, would be 209,790, and adjust the chart-slide so that the scale-mark No. 1 falls at the right of the group and calling this scale-mark the decimal-point of unity and the initial base has been increased until it now is equal to two hundred and nine thousand seven hundred and ninety units, a sum equal to nearly one quadrillion of times what it was in the first illustration.

Thus by intermittently moving the chart-slide by means of the thumb-screws T laterally, and vertically by means of the lever Y, so that the ten lines of each division pass successively under the slots in the face-plate, we can measure the local value of the initial base 210 at each step in its long journey from its position as the eighth, ninth, and tenth orders of the decreasing scale until it takes the form of 209,790 and occupies the position of first to sixth orders, inclusive, of the increasing scale, that is, to the left of the decimal point of unity, and in this way we can find each and every one of these quadrillion of intermediate local values and measure them by their position as fixed by the movement of the chart-slide and pointed out by the division, column, and chart indices and the scale-marks.

My invention is operated as follows: The chart having been inserted under the folded ends of the chart holder or slide, with the printed side to the front, the cover is then closed and secured to the box by means of the locking device. The lever Y is moved vertically upwardly or downwardly in order to bring any desired line of figures on the chart in view behind the slots in the face-plate. The thumb-screws T are then revolved in the proper direction to bring the chart-holder in a position such that the line *d* of the chart will coincide with the line *e* on the face-plate. If it is desired now to find the amount of tax or duty upon any given sum, the following rules will be observed: If the sum on which the tax is to be computed be of a value employing more than three significant figures, the amount is divided off into periods of three figures each, beginning at the left. The figure at the left of any valuation always being a significant figure, is taken as the transverse-division index-figure pointing out the division in which the group of rating-figures is to be found which expresses the tax or duty on that valuation. The sec-

ond figure of the valuation, counting from the left, is taken as the column-index which points out the column of that division in which the group expressing the tax on that valuation is to be found. The third figure, counting from the left, is taken as the chart index-figure and gives the number of the line on the chart where the group is to be found. The number of orders of enumeration representing dollars in the valuation is taken as the number of the scale-mark on the face-plate by which the group of rating-figures on the chart is to be pointed off or divided into dollars and cents. Where a valuation includes significant figures beyond the third orders, counting from the left, take the left-hand period of such valuation as pointed out by the division, column, and chart indices corresponding to those three figures, write it down, and point into dollars and cents by the scale-mark whose number is equal to the total number of orders representing dollars in the complete valuation. Then take the next period of three figures, and, finding its group of rating-figures in the same way, point it off by the scale-mark whose number is equal to the number of orders representing dollars, counting from the left-hand significant figure of that period to the last or right-hand figure of the total valuation. In the same manner proceed to find the group of rating-figures for any number of periods. Then add the several sums so found and the result will give the total tax or duty on the whole valuation. The following example will illustrate the rules above given:

Say it is desired to find the tax or duty upon the sum of twenty-one thousand three hundred dollars. By the rules just given the group representing the tax valuation on that amount will be found in division No. 2, the first left-hand significant figure being 2. The next figure to the right being 1, indicates that the group will be in column No. 1, and as the third figure is number 3 the lever Y is depressed at its outer end, so as to bring the chart index-figure 3 in view through the slot in the face-plate. Looking now through the slot in the face-plate opposite division-index No. 2 and in column No. 1 we find, if the chart is computed at the rate per cent., say, of two and one-tenth mills, printed the figures 44730. There being five orders of enumeration representing dollars in the total valuation, we consult the scale-marks under the group and find that scale-mark 5, counting from the left, falls between the 4 and 7, thus indicating the position of the decimal point, and the group thus divided represents a value of forty-four dollars and seventy-three cents, which by making a mathematical calculation by mental process we find to be the correct tax on that valuation at the rate per cent. given.

If the valuation had been a total of two hundred and thirteen thousand dollars, or the same figures used in the example, but an order higher in the scale of enumeration, the group of rating-figures would be found in the same manner, but there being six orders in the valuation instead of five, as in the case just cited, the scale-mark denoting the position of the decimal point would fall one point farther to the right, making the tax equal to the sum of four hundred and forty-seven dollars and thirty cents. If the total valuation were but twenty-one dollars, the first figure being 2 would indicate that the group of rating-figures would be found in division having index 2 on the face-plate. The figure next to the right being 1, indicates that the group will be found in column having index 1, and there being no third order the group will be found on line 0 of the chart. Upon thus locating, we point off two spaces to the right, being the number of orders in the scale of enumeration in the total valuation, and we obtain a result of four cents and four and one-tenth mills as being the tax or duty on twenty-one dollars at a rate per cent. of two and one-tenth mills. This on calculation will be found to be the correct amount.

The same chart may be used where the rate is twenty-one mills, twenty-one per cent., two hundred and ten per cent., and for any amount where the per cent. increases by ten times, by using the adjusting-screws T, so as to draw the chart one space each for each of such increases to the left. I have found that for ordinary commercial use sixty charts will suffice, although any number may be computed as described and used.

In the drawings I have shown but a portion of a full chart, as it is not deemed necessary to illustrate a complete chart, inasmuch as the basis of computing the chart is clearly illustrated and described as fully as if the entire nine hundred groups of rating-figures were shown.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a calculating-machine, the combination with a face-plate provided with suitable inscriptions on its front side, and having a series of transverse slots therethrough, of a casing in which the face-plate is secured, a chart-holder vertically and laterally movable within the casing, a plate or chart having suitable inscriptions on its face and adapted to be held by the said holder in the rear of the face-plate, and means by which the chart-holder is moved vertically or laterally, whereby the inscriptions on the chart-plate may have their relative positions changed with reference to the slots in the face-plate, substantially as described.

2. In a calculating-machine, the combination with a face-plate suitably inscribed on its front side, and having a series of transverse slots therethrough, of a casing in which the face-plate is secured, a chart-holder movably mounted within the casing, a chart, one or more transversely-movable slides mounted in

the casing, and adapted to receive the chart-holder, means for moving the slides laterally, and means for vertically moving the chart-holder within the slides, whereby the relative position of the chart-holder and the slots in the face-plate may be varied, substantially as described.

3. In a calculating-machine, the combination with a face-plate provided with suitable observation-openings, of a chart-holder located in the rear of the face-plate and adapted to receive an inscribed chart, a casing in which the face-plate is mounted, vertical guides located within the casing for the chart-holder, a lever pivoted to the casing, a link connecting the chart-holder and one end of the lever, and means for laterally moving the said guides, substantially as described.

4. In a calculating-machine, the combination with a face-plate provided with suitable observation-openings, of a casing in which the face-plate is secured, a chart or card holder located in the rear of the observation-openings, one or more guiding-plates movably mounted within the casing, a thumb-screw revoluble in an opening in the casing-wall and having a screw-threaded connection with one end of the guiding-plate, a lever pivoted to the casing, and a link pivotally connected at one end to the chart-holder and at the other end to the inner end of the lever, substantially as described.

5. In a calculating-machine, the combination with a face-plate having suitable observation-openings, of a chart-holder located in the rear of the said observation-openings, one or more guiding-plates in which the chart-holder is vertically movable, a spring located between the said guiding-plates and the rear of the chart-holder and adapted to press the holder against the rear of the face-plate, and means for vertically and laterally adjusting the chart-holder with reference to the said openings, substantially as described.

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

J. LEE KNIGHT.

Witnesses:

E. F. MITCHELL,

GEO. W. CRANE.