No. 772,792. PATENTED OCT. 18, 1904.

J. E. DUNCAN.

CALCULATOR.

APPLICATION FILED FEB. 27, 1904.

NO MODEL. 2 SHEETS—SHEET 1.

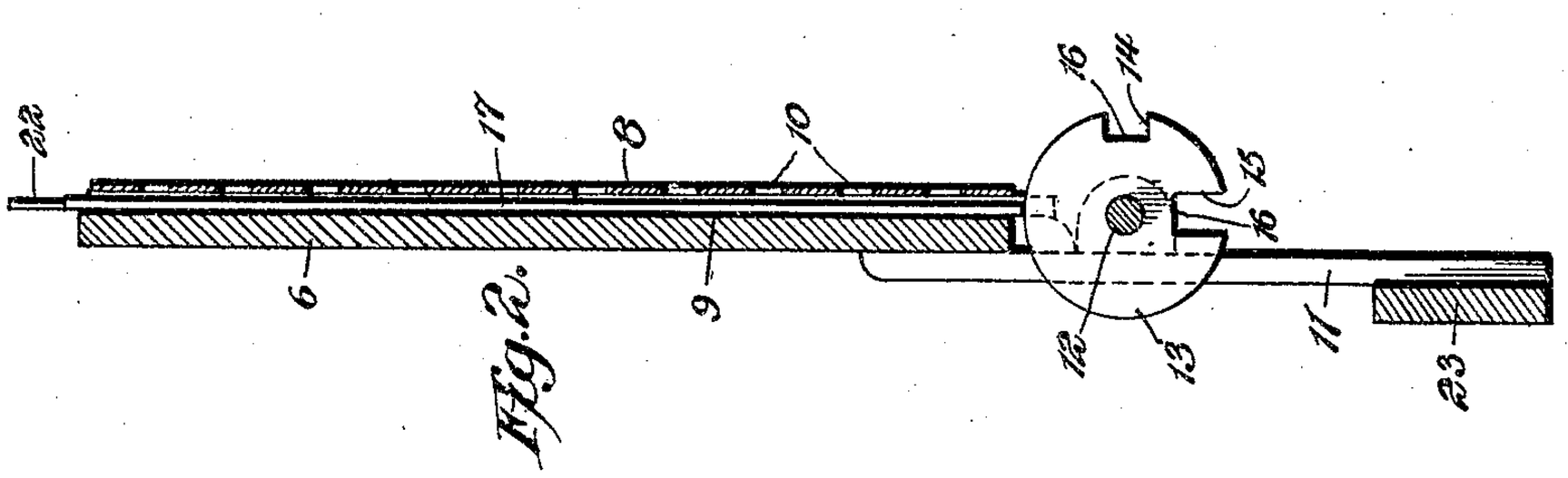

Fig. 2.

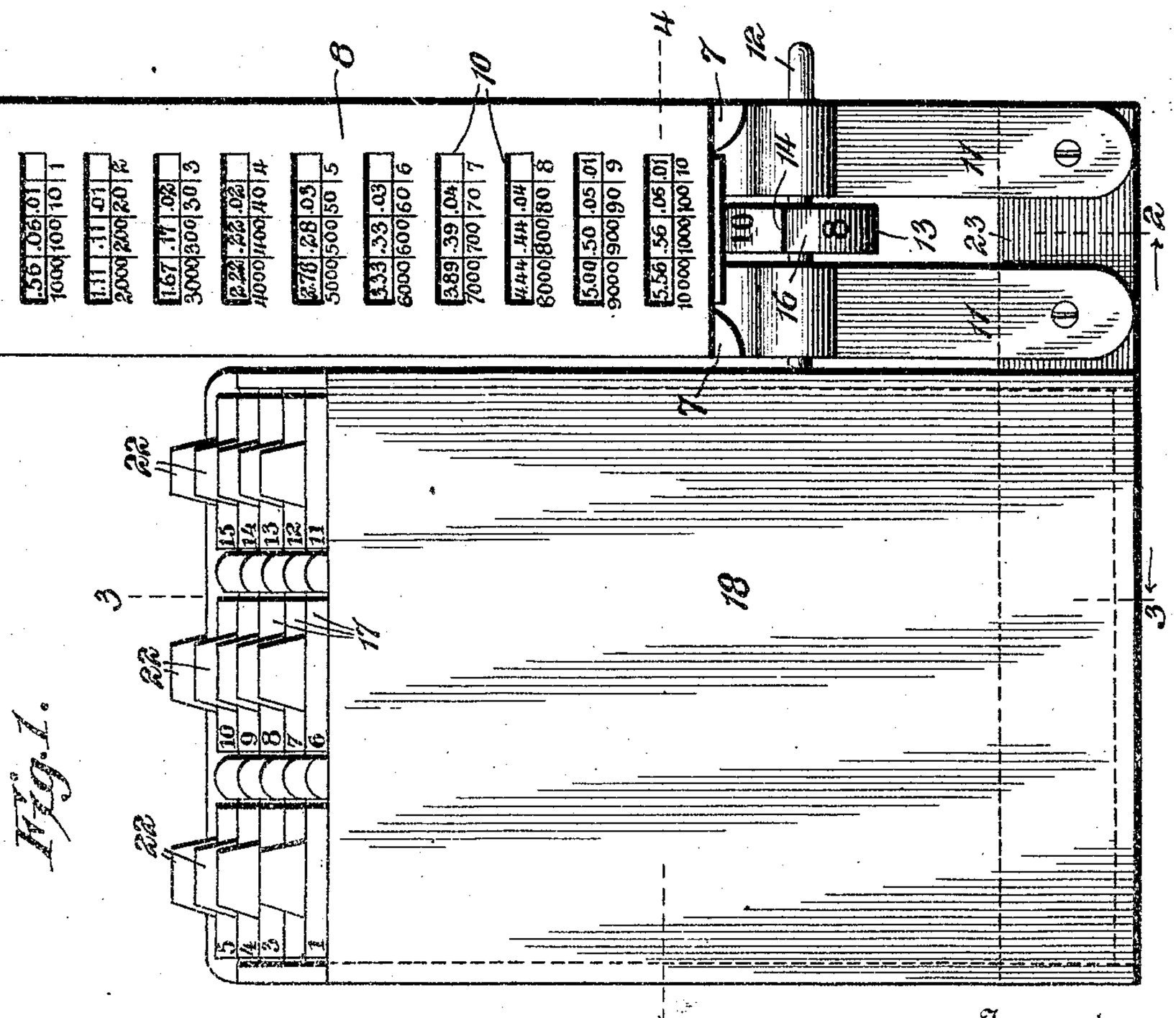

Fig. 1.

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NO MODEL. 2 SHEETS—SHEET 2.

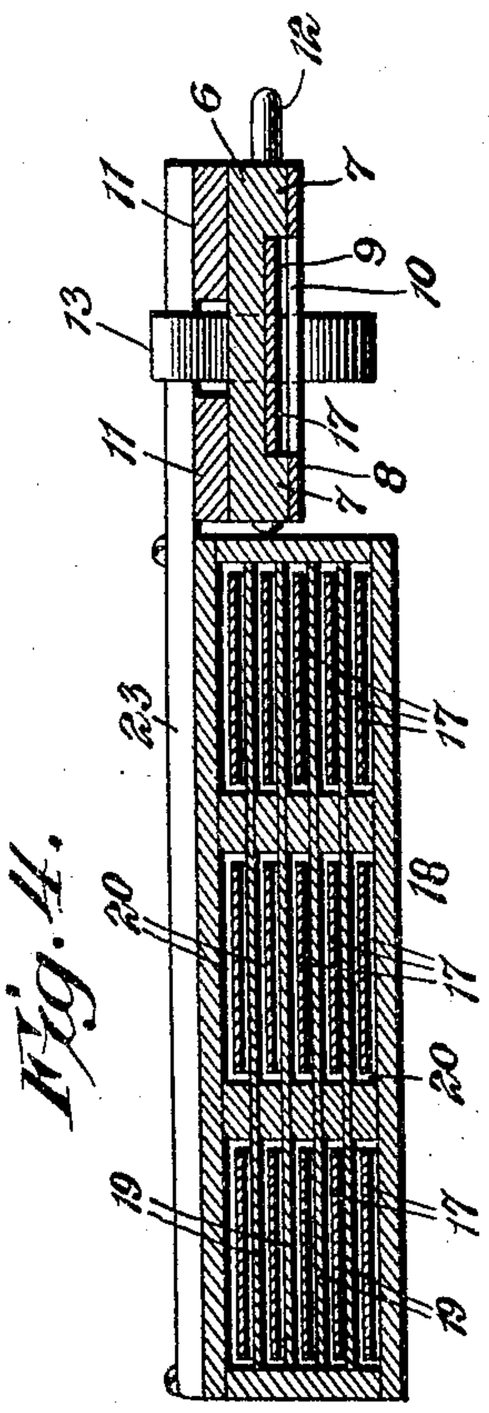

Fig. 4.

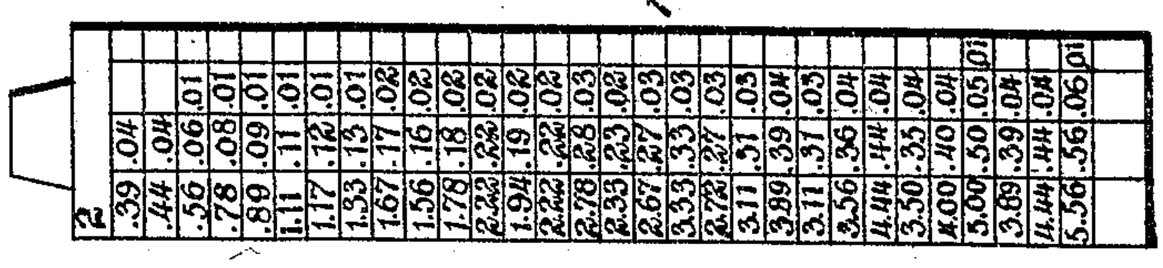

Fig. 5.

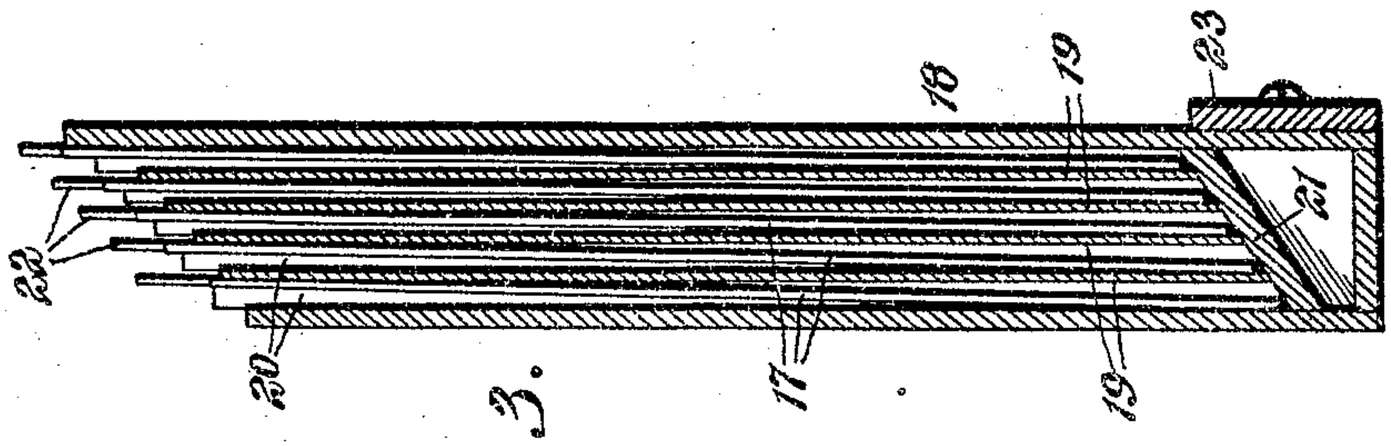

Fig. 3.

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No. 772,792. Patented October 18, 1904.

UNITED STATES PATENT OFFICE.

JAMES E. DUNCAN, OF JENNINGS, LOUISIANA.

CALCULATOR.

SPECIFICATION forming part of Letters Patent No. 772,792, dated October 18, 1904.

Application filed February 27, 1904. Serial No. 195,565. (No model.)

To all whom it may concern:

Be it known that I, JAMES E. DUNCAN, a citizen of the United States, residing at Jennings, in the parish of Calcasieu and State of Louisiana, have invented a new and useful Calculator, of which the following is a specification.

This invention relates to devices whereby arithmetical problems of certain kinds may be readily solved without the necessity of involved figuring or mental arithmetic of a high order.

The object is to provide novel mechanical means of a very simple nature whereby said problems and calculations can be readily performed by an inexperienced person, said means having a wide range of usefulness.

The preferred embodiment of the invention is illustrated in the accompanying drawings, wherein—

Figure 1 is a front elevation of the new calculator. Fig. 2 is a vertical sectional view taken on the line 2 2 of Fig. 1. Fig. 3 is a similar view taken on the line 3 3 of Fig. 1. Fig. 4 is a horizontal sectional view taken on the line 4 4 of Fig. 1. Fig. 5 is a view in elevation of one of the cards employed.

Similar reference-numerals indicate corresponding parts in all the figures of the drawings.

In the preferred embodiment illustrated an upright guide element is employed comprising a rear plate 6, having forwardly-projecting flanges 7, connected by a facing-plate 8, thereby leaving a vertical guideway 9, that is open-ended and extends from the top to the lower portion of said guide element. The facing-plate 8 is provided with a series of transversely-disposed sight-openings 10, communicating with the guideway, as shown particularly in Fig. 4. Standards 11, connected to the lower portion of the guide element, are arranged to support the same in upright position, and journaled on these standards directly below the guideway is a shaft 12, which shaft preferably projects beyond the outer standard to form an operating-stem. Secured to the shaft and located between the standards 11 is a positioning or supporting disk 13, said disk being located directly beneath the guideway of the element and preferably having a plurality of notches 14 and 15, said notches being of different depths, so that their bottoms 16 will be located at different distances from the axis of revolution of the disk.

A plurality of card elements 17 are arranged to be separately placed within the guideway of the guide element and are adapted to rest upon the periphery of the disk 13 or in the notches thereof, the bottoms of these notches and the periphery thereby constituting bearing-shoulders which will support the cards at different elevations. Arranged upon the face of each card is a table of calculations. In the present instance these calculations are for interest at different days. Thus said cards are consecutively numbered and each bears a table of interest calculations on different amounts and at different rates per cent. for a certain number of days. In Fig. 5 there is illustrated a card numbered 2. The first line of this card contains the interest on one thousand dollars, one hundred dollars, ten dollars, and one dollar at seven per cent.; the second for the same amounts at eight per cent., and the third line for the same amounts at ten per cent. The fourth line contains the interest on two thousand dollars, two hundred dollars, twenty dollars, and two dollars at seven per cent.; the fifth for the same amounts at eight per cent., and the sixth at ten per cent. Thus the computations are continued to the bottom of the card at increasing amounts, shown in the present illustration from one thousand to ten thousand and from one to ten. These calculations are preferably in vertical columns and separated by horizontal lines. The face-plate 8 is provided alongside the sight-openings with indicator-scales, indicating the principals upon which the various computations are based, and said lines of computations are so arranged that every third is exposed through one of the sight-openings. Thus in the present instance with the card resting upon the periphery of the supporting or positioning disk the third line from the top will be exposed directly adjacent to the one

thousand dollar, one hundred dollar, ten dollar, and one dollar marks, thereby showing the interest on one thousand dollars, one hundred dollars, ten dollars, and one dollar for two days. In like manner the interest on the other various elements are shown directly adjacent thereto. If the disk is revolved, so that the deepest notch is brought into alinement with the guideway and the card dropped thereinto, the first, fourth, seventh, &c., lines are exposed, thus giving the interest on the various amounts at seven per cent. In like manner the second bearing-shoulder or notch is employed for the purpose of holding the cards, so that the seven per cent. computations are exposed, the notches and periphery of the disk being preferably numbered so as to form a rate-per-cent. scale. The various other cards are provided with other tables of calculations of an analogous nature for the different days, and as many may be employed as desired. In like manner it will be readily understood that a greater or less number of notches or bearing-shoulders may be employed for the purpose of increasing or decreasing the number of calculations at different per cents. Moreover, the structure is useful for calculations of different kinds besides that involving the finding of percentages, and the only change required would be in the scales and tables of calculations, which changes could be readily made by any person familiar with mathemathics.

For the purpose of maintaining the various cards in convenient and proper relation a holder is employed comprising a receptacle 18, the interior of which is subdivided by partitions 19 into various pockets 20, having open upper ends. Said upper ends of the pockets are preferably arranged at different elevations, and the bottoms thereof are formed by an inclined board 21. The cards 17 are arranged in order in the various pockets, and being of the same length their upper ends are supported at different levels, so that the numbers thereof are exposed, as illustrated in Fig. 1. They are preferably provided with suitable tabs 22, so that they may be readily removed or replaced, as desired.

The calculator proper is preferably secured to some portion of the holder at any desired point and in any desired manner. In the present embodiment a cross-bar 23 is employed, to which the lower ends of the standards 11 are secured, said cross-bar being fastened to the rear side of the holder. This calculator is thus in convenient relation to said holder, and the latter constitutes a support for it.

The manner of using this device is very simple. For example, if it is desired to learn the interest on one thousand four hundred and fifty-three dollars at ten per cent. for two days the card numbered 2 is removed from the holder and inserted in the guideway, being arranged to rest upon the periphery of the disk. By seggregating the above amount into thousands, hundreds, tens, and units, the interest on said amount be readily found. Thus

	Interest.
On $1,000	$0.56
On 400	.22
On 50	.03
On 3	.00
$1,453	$0.81

Though this is a comparatively simple problem, it will be evident that others of a more involved nature can be readily computed and that involved figuring or mental calculations may be thereby avoided.

From the foregoing it is thought that the construction, operation, and many advantages of the herein-described invention will be apparent to those skilled in the art without further description, and it will be understood that various changes in the size, shape, proportion, and minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

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

1. In a calculator, the combination with relatively movable elements, one of which has a table of calculations, the other having an indicator coacting therewith, of a positioning device having bearing-shoulders located in different planes, one of said elements being arranged to rest against the different shoulders for holding the elements in different relations and maintaining the indicator in coacting relation with different portions of the table of calculations.

2. In a calculator, the combination with relatively movable elements, one of which has a table of calculations, the other having an indicator coacting therewith, of a positioning device movably mounted on one of the elements and having bearing-shoulders located in different planes, the other element being arranged to rest against the different shoulders for the purpose of maintaining the indicator in coacting relation with different portions of the table of calculations.

3. In a calculator, the combination with a guide element, of a positioning device movably mounted thereon and having a plurality of seats, the bottoms of which are located in different planes, an indicator-scale carried by the guide element, and a card element movably mounted in the guide element and having a table of calculations coacting with the indicator, said card element being arranged to rest on the different shoulders for main-

taining the different portions of the table of calculations in coaction with the indicator-scale.

4. In a calculator, the combination with a guide element having an indicator-scale, of a positioning device movably mounted on the indicator-scale and having bearing-shoulders located in different planes, and a plurality of card elements adapted to be respectively mounted in the guide element and rest upon the different shoulders of the positioning device, said card elements each having a table of calculations different portions of which are in coacting relation with the scale of the guide element when the card elements are in engagement with the different shoulders of the positioning device.

5. In a calculator, the combination with relatively movable elements, one of which has a table of calculations thereon, the other having an indicator coacting with said table, of a revoluble positioning device having bearing portions for one of the elements located at different distances from the axis of revolution of said device for the purpose of holding the elements in different relations to maintain the indicator in coacting relation with different portions of the table of calculations.

6. In a calculator, the combination with a guide element having an indicator, of a positioning device revolubly mounted on the guide element and having a plurality of seats, the bottoms of which are located at different distances from the axis of revolution of the device, and a card element movably mounted in the guide element and having a table of calculations that coact with the indicator.

7. In a calculator, the combination with a guide element having an indicator-scale, of a positioning device revolubly mounted on the guide element and having a plurality of notches of different depths, and a card element slidably mounted in the guide element and carrying a table of calculations with which the indicator-scale coacts, said card element being adapted to seat itself in the different notches of the positioning device.

8. In a calculator, the combination with a guide element having a plurality of transverse sight-openings, of indicator-scales disposed alongside the sight-openings, a disk journaled upon the lower portion of the guide element and having bearing-shoulders located at different distances from the axis of revolution of the disk, and a card element slidably mounted in the guide element behind the sight-openings and carrying a table of calculations that is exposed through said sight-openings, said card element being adapted to rest upon the disk and the bearing-shoulders thereof.

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

JAMES E. DUNCAN.

Witnesses:
W. H. ADAMS,
S. A. WRIGHT.