E. M. MILLER.

CUTTING ALLOWANCE COMPUTER.

APPLICATION FILED AUG. 6, 1920.

1,404,158.

Patented Jan. 17, 1922.

2 SHEETS—SHEET 1.

FIG. 1.

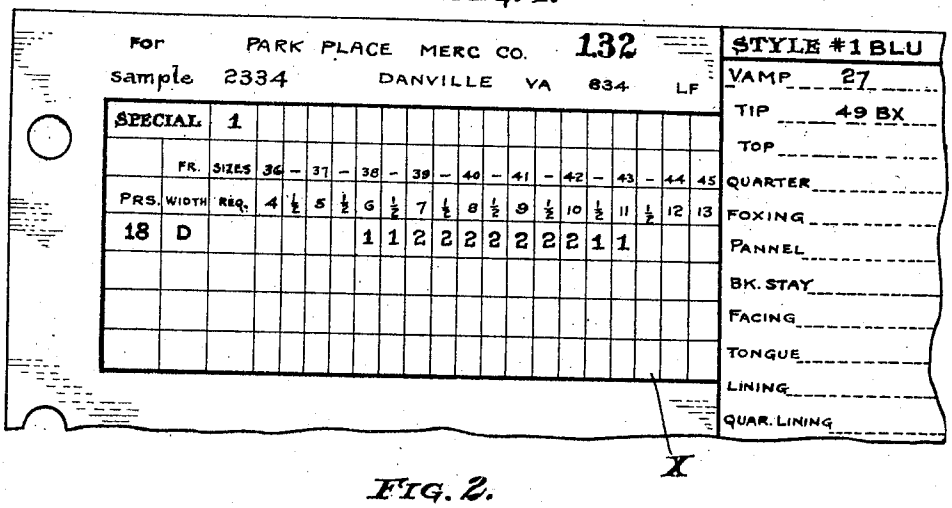


FIG. 2.

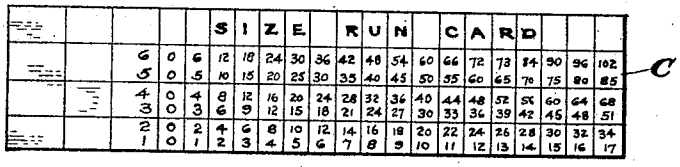
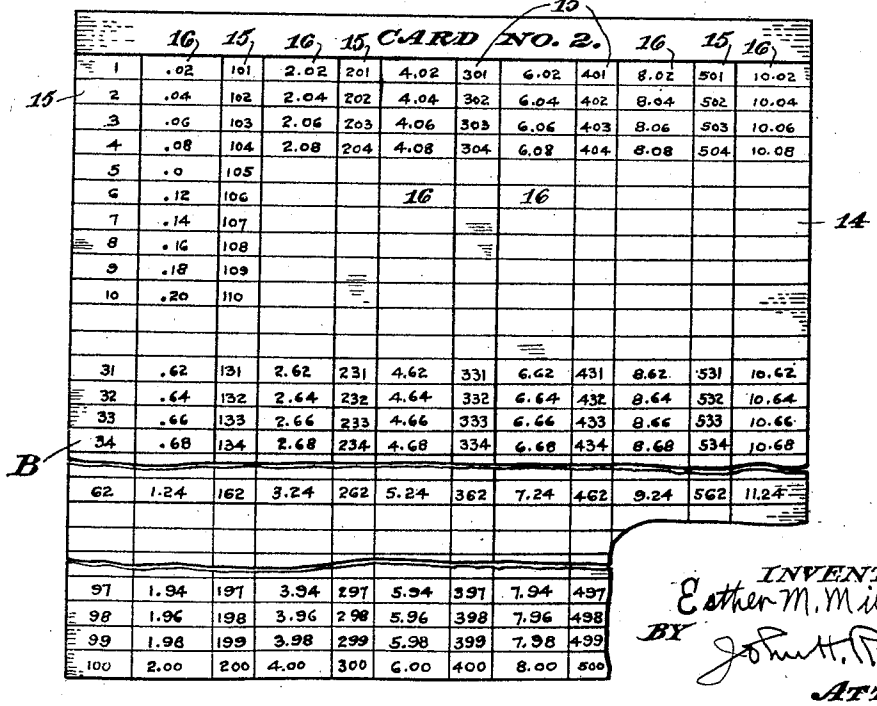


FIG. 3.



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CUTTING ALLOWANCE COMPUTER.

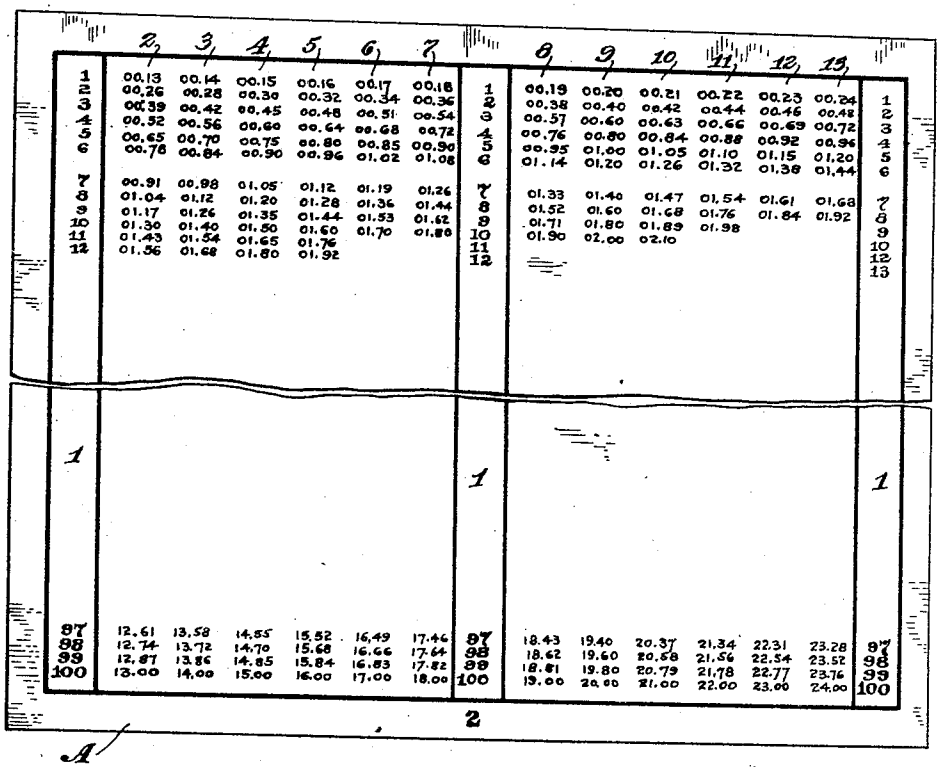
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2 SHEETS—SHEET 2.

FIG. 4.

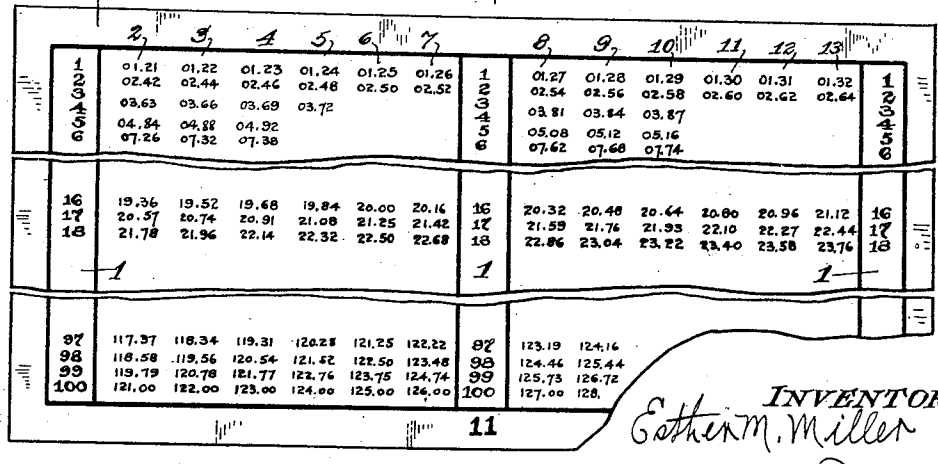


	2	3	4	5	6	7		8	9	10	11	12	13	
1	00.13	00.14	00.15	00.16	00.17	00.18	1	00.19	00.20	00.21	00.22	00.23	00.24	1
2	00.26	00.28	00.30	00.32	00.34	00.36	2	00.38	00.40	00.42	00.44	00.46	00.48	2
3	00.39	00.42	00.45	00.48	00.51	00.54	3	00.57	00.60	00.63	00.66	00.69	00.72	3
4	00.52	00.56	00.60	00.64	00.68	00.72	4	00.76	00.80	00.84	00.88	00.92	00.96	4
5	00.65	00.70	00.75	00.80	00.85	00.90	5	00.95	01.00	01.05	01.10	01.15	01.20	5
6	00.78	00.84	00.90	00.96	01.02	01.08	6	01.14	01.20	01.26	01.32	01.38	01.44	6
7	00.91	00.98	01.05	01.12	01.19	01.26	7	01.33	01.40	01.47	01.54	01.61	01.68	7
8	01.04	01.12	01.20	01.28	01.36	01.44	8	01.52	01.60	01.68	01.76	01.84	01.92	8
9	01.17	01.26	01.35	01.44	01.53	01.62	9	01.71	01.80	01.89	01.98			9
10	01.30	01.40	01.50	01.60	01.70	01.80	10	01.90	02.00	02.10				10
11	01.43	01.54	01.65	01.76			11							11
12	01.56	01.68	01.80	01.92			12							12
														13
1							1							1
97	12.61	13.58	14.55	15.52	16.49	17.46	97	18.43	19.40	20.37	21.34	22.31	23.28	97
98	12.74	13.72	14.70	15.68	16.66	17.64	98	18.62	19.60	20.58	21.56	22.54	23.52	98
99	12.87	13.86	14.85	15.84	16.83	17.82	99	18.81	19.80	20.79	21.78	22.77	23.76	99
100	13.00	14.00	15.00	16.00	17.00	18.00	100	19.00	20.00	21.00	22.00	23.00	24.00	100

2

A

FIG. 5.



	2	3	4	5	6	7		8	9	10	11	12	13	
1	01.21	01.22	01.23	01.24	01.25	01.26	1	01.27	01.28	01.29	01.30	01.31	01.32	1
2	02.42	02.44	02.46	02.48	02.50	02.52	2	02.54	02.56	02.58	02.60	02.62	02.64	2
3	03.63	03.66	03.69	03.72			3	03.81	03.84	03.87				3
4	04.84	04.88	04.92				4	05.08	05.12	05.16				4
5	06.05	06.10	06.15				5	06.35	06.40	06.45				5
6	07.26	07.32	07.38				6	07.62	07.68	07.74				6
16	19.36	19.52	19.68	19.84	20.00	20.16	16	20.32	20.48	20.64	20.80	20.96	21.12	16
17	20.57	20.74	20.91	21.08	21.25	21.42	17	21.59	21.76	21.93	22.10	22.27	22.44	17
18	21.78	21.96	22.14	22.32	22.50	22.68	18	22.86	23.04	23.22	23.40	23.58	23.76	18
1							1						1	
97	117.37	118.34	119.31	120.28	121.25	122.22	97	123.19	124.16					
98	118.58	119.56	120.54	121.52	122.50	123.48	98	124.46	125.44					
99	119.79	120.78	121.77	122.76	123.75	124.74	99	125.73	126.72					
100	121.00	122.00	123.00	124.00	125.00	126.00	100	127.00	128.					

11

INVENTOR.

Esther M. Miller

BY John A. Roney

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UNITED STATES PATENT OFFICE.

ESTHER M. MILLER, OF PITTSBURGH, PENNSYLVANIA.

CUTTING-ALLOWANCE COMPUTER.

1,404,158. Specification of Letters Patent. Patented Jan. 17, 1922.

Application filed August 6, 1920. Serial No. 401,672.

To all whom it may concern:

Be it known that I, ESTHER M. MILLER, a citizen of the United States, residing at Pittsburgh, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Cutting-Allowance Computers, of which improvement the following is a specification.

My invention relates to shoe cutting allowance computer method or system and means for calculating and ascertaining the cutting allowance given shoe cutters on all material from which a given number of shoes of varying and increasing sizes are to be produced, over a fixed and determined quantity required in the production of an equal number of shoes of a basic or foundation size. In the manufacture of shoes of varying sizes and widths, allowances in material over and above that amount of material required to produce a pair of some basic or foundation size, usually, in men's sizes, No. 4, is based not only on differences in size, but also upon differences in kind and grade of material used, as different kinds and grades of material require different allowances. The object of the present invention is to produce an efficient and readily applied means for ascertaining with substantial accuracy the allowance given shoe cutters on all kinds and grades of material from which a given number of pairs of shoes of varying and increasing sizes are to be produced.

I accomplish this object by means of the method and appliance which I call a shoe cutting allowance computer, which includes a book, a file and a size run or key card and the method of using the same, hereinafter more specifically described, reference being had to the accompanying drawings, forming part hereof, in which—

Fig. 1 is a plan view of a shop card.

Fig. 2 is a plan view of the size run or key card.

Fig. 3 is a plan view of one of the pages or plates of the file, being page 2 thereof.

Fig. 4 is a fragmentary portion of one page of the book, being page 2 thereof.

Fig. 5 is a fragmentary portion of page 11 of the book.

Referring to said drawings, A is a book two pages of which is shown and contains the data from which the various patterns are built or produced; that is, it shows or contains fixed data of a certain given sized pattern, i. e., the smallest size manufactured, and comprehends or includes the use of different kinds and grades of material, ranging in quantity from one one-hundredth (.01) of a foot up to five (5) feet, in the production of pairs of shoes of varying widths and from one pair to one hundred pairs, and consists of a number of pages, numbered from 1 to 42 inclusive, on each of which are inscribed twelve columns of figures. The marginal column, 1, running in consecutive order from 1 to 100, indicates the number of pairs, and the intermediate or succeeding columns, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, indicate the amount or quantity of material from one one-hundredth (.01) of a foot up to five (5) feet, required in the fabrication of from one pair to one hundred pairs of shoes, of varying widths or patterns manufactured, the initial figure or figures of each column increasing over the initial figure or figures of the preceding column by .01 throughout the book, so that each page increases over the preceding page 0.12 of a foot.

B is the file, one page of which is shown and contains data showing a key number, which is the exponent of increase in quantity of material in sizes and half sizes, starting and increasing from the smallest size to the largest size manufactured, showing also the increase. The said file consists of a number of plates or cards, 14, numbered consecutively from 1 to 10, on each of which is indicated or inscribed a series of columns of figures, the columns, 15, running in consecutive order from 1 to 500 and arranged preferably in divisions or sections, each containing one hundred numbers, and indicate the file number which is the exponent of the allowance on any specific factory card or order above the amount of material required in the construction of an equivalent number of pairs of shoes of the basic or smallest size manufactured. The intermediate columns, 16, or the columns immediately to the right of said consecutive columns, indicate in figures and decimals thereof the increase or variation in amount of material between sizes and half sizes in the different kinds and grades of material over and above the basic size.

The size run card, C, is a card having a series of rows of figures, 16. The lowermost row, running in consecutive order from zero

up to 17, indicates the number of sizes and half sizes from and between the smallest or basic size up to the largest size.

In the application of this key card to ascertain or determine the allowance on any given order indicated on a shop or factory card, X, the key card is applied to the factory card, on which is inscribed the number of pairs of shoes to be made, the sizes and the kind of material and grade thereof, arranged in columns similar to those on the key card. The shop card has also a pattern number on the margin thereof. The size run card is applied to the factory card, so that the basic column represented by the cipher on said card will be in direct alignment and immediately above the smallest size shoe indicated on the factory card. The figures in the lowermost row on the size run card are then multiplied by the figures immediately below them on the factory card, and the aggregate of said figures found by adding the same together is the number in the file which indicates or is the exponent of the allowance on the specific order on the shop card, over the same number of pairs of the basic size, i. e., No. 4. The operator then ascertains the quantity of material required to produce the equivalent number of pairs of shoes of the basic or smallest size, i. e., No. 4, by referring to the pattern number in the book and the number of pairs. The figure so found is added to the allowance ascertained in the file, which gives the quantity required to produce the number of pairs specified on the shop or factory card.

As an example, in the drawings is shown a shop card, X, which calls for eighteen pairs of D width shoes, in varying sizes, ranging from size 6 to size 11. The pattern number on the margin of said card is 132. By placing the size run card immediately above the line on which the various numbers of pairs are indicated, we bring the column "0" on the size run card over the column 4 on the shop card. We then find that we have immediately above the first single pair ordered, the figure 4, which we put in a column. The next we have, one single pair and above 1 the figure 5, next, two pairs and above that 6. Two times six is twelve; two times seven, fourteen; two times eight, sixteen; two times nine, eighteen; two times ten, twenty; two times eleven, twenty-two; two times twelve, twenty-four; one pair of No. 13 and one pair of No. 14; which figures added together produce the file number 162, which is the exponent of the allowance sought, and upon reference to the file, we find that 162 is the exponent or key number for 3.24 feet of material, i. e., the amount of material in excess of the amount required to make eighteen pairs of No. 4 shoes. By then referring to the book, we find that width D, eighteen pairs of No. 4 size shoes, requires 23.76 feet of material, which added to the allowance due to the variation in the order from No. 4, i. e., 3.24 feet, gives 27 feet, being the amount of material required to produce the specific order set forth on the shop card.

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

1. A shoe cutting allowance computer for calculating and ascertaining the quantity of material required in the manufacture of shoes of varying sizes and widths, which includes a book having tables showing the amount of material in feet and fractions of a foot required to make pairs of basic size shoes of varying widths fabricated from material of different kinds and grades, a file having tables and key numbers thereto, showing the increase in quantity or allowances of material required in the manufacturing of shoes of increasing sizes and half sizes above said basic size, a shop card showing the number of pairs of varying sizes to be made and varying kinds and grades of material, and means applied to said shop card for ascertaining the key number corresponding with the allowance of material required above the basic size in the production of the specific order set forth in said shop card.

2. A shoe cutting allowance computer for calculating and ascertaining allowances in material in the manufacture of shoes of varying sizes and widths, which includes a book, comprising series of pages, each page provided with series of columns of figures, the initial figure of the first column beginning with one one-hundredth (.01) of a foot, each page containing twelve columns, the last column of every page increasing over the corresponding column on the preceding page by 0.12, until the figure 500 has been attained, the said columns showing in feet and fractions of a foot of the smallest dimension used in shoe measurements, the quantity of material entering into the fabrication of a basic sized shoe, a file having tables showing a file or key number and columns of figures in whole numbers and decimals showing the increase in material in sizes and half sizes of all shoes of varying widths over the basic sized shoe, a size run or key card and a shop card, to which the said key card is applied as herein specified, for the purpose of ascertaining the allowance of material on any number of pairs of shoes of varying sizes and widths above a basic size.

3. A shoe cutting allowance computer for calculating and ascertaining allowances in material in the manufacture of shoes of varying sizes and widths, which includes a book containing data of the amount of material required in the fabrication of a basic size shoe or pair of shoes, a file containing data

showing the increase in quantity of material required in the fabrication of shoes of varying sizes and widths above said basic size, and a size run card adapted to be applied to a shop card containing any specified order of shoes, for the purpose of ascertaining the allowance of material required to fill said order, above an equivalent number of pairs of shoes of a basic size.

4. A system of calculating and ascertaining the quantity of material of any kind and grade required to make any given number of pairs of shoes of varying and increasing sizes and widths, which includes a book containing the quantity of material of every kind and grade from the smallest factor of measurement to the largest required to make given numbers of pairs of shoes of a basic size, a file containing columns of figures showing the increase in quantity of material of varying sizes and half sizes above said basic size, and columns of figures giving the key number or exponent of said allowances or variations, a shop card having inscribed thereon the number of varying pairs of shoes of varying sizes and patterns required, and a size run card adapted to be applied to said shop card to ascertain the key number, and allowance of material over the basic size, required to make the specified number of shoes shown on the shop card.

In testimony whereof, I have hereunto signed my name in the presence of two subscribing witnesses.

ESTHER M. MILLER.

In the presence of—
JOHN H. RONEY,
CLARENCE A. WILLIAMS.