

(No Model.)

E. W. FARNHAM.

APPARATUS FOR COMPUTING PROPORTIONS.

No. 335,906.

Patented Feb. 9, 1886.

Fig. 1.

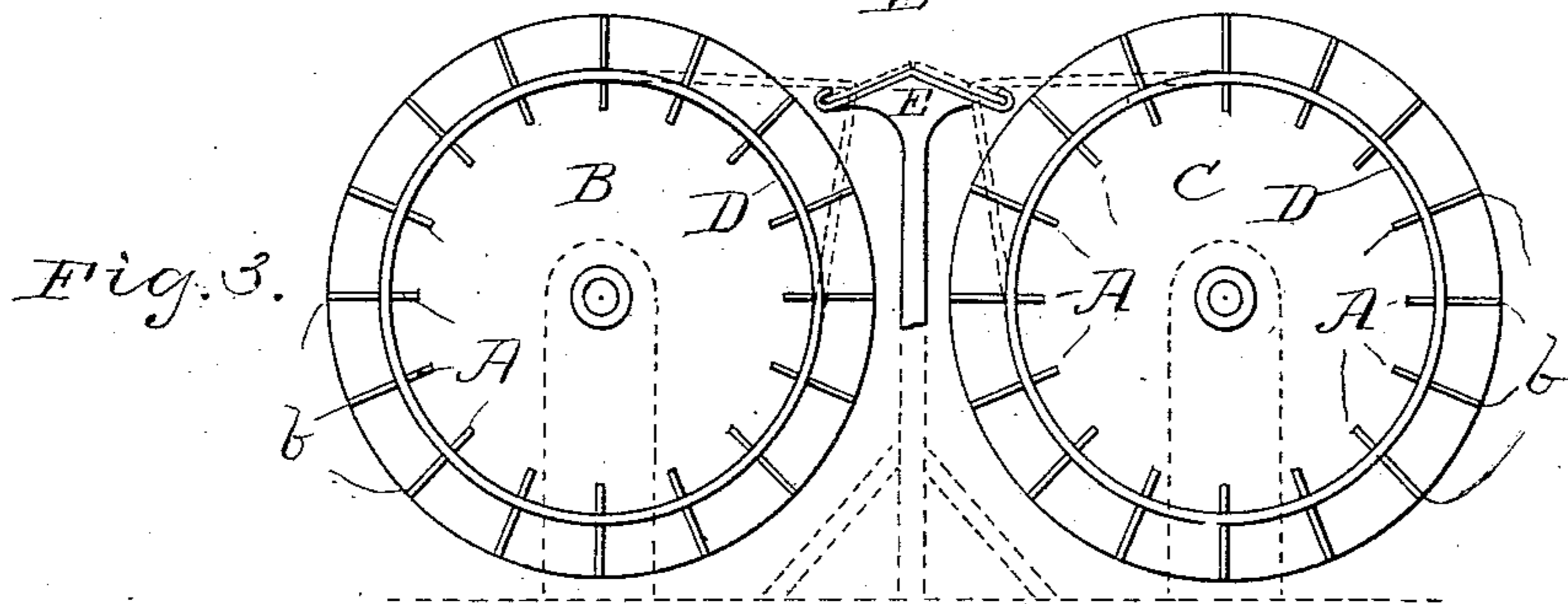
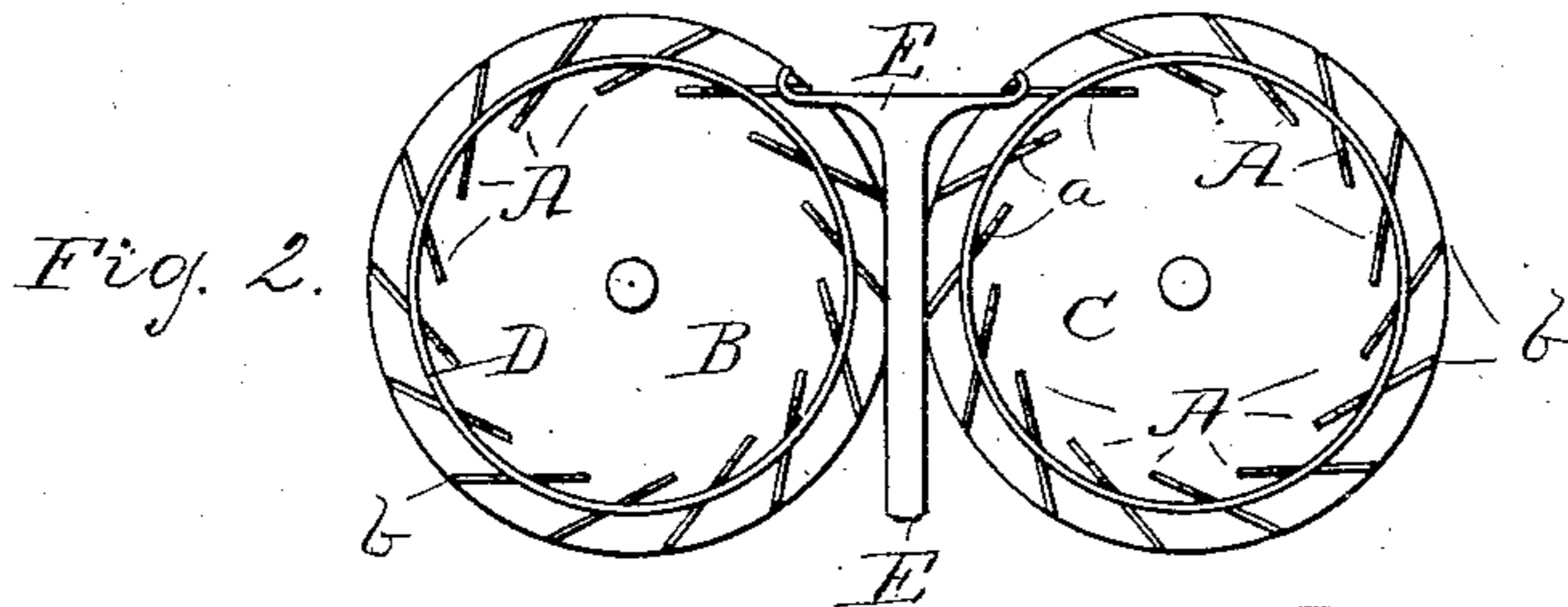
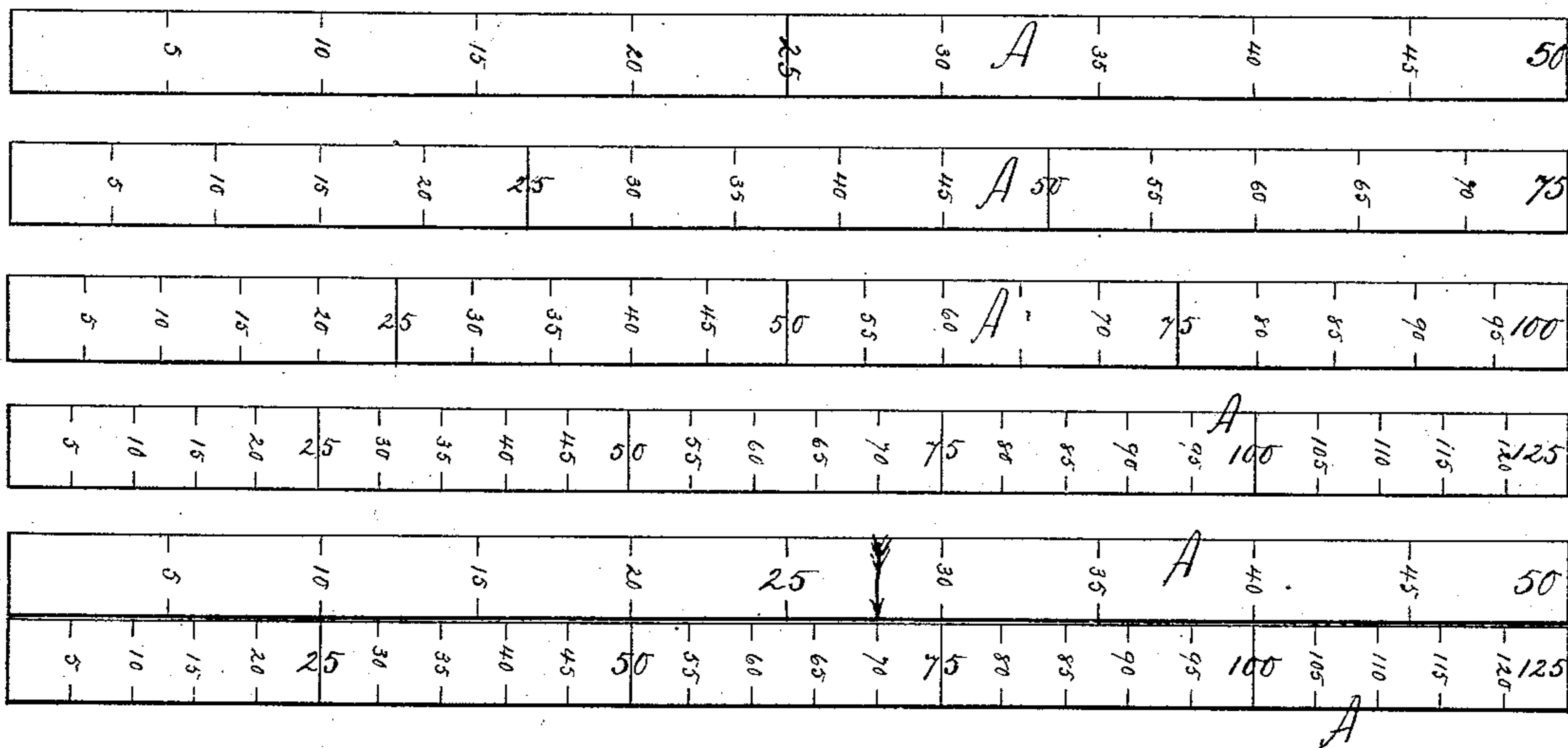
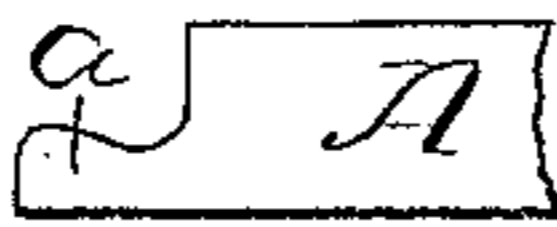


Fig. 4. 

WITNESSES

R. E. Moore

Wm. N. Ashton

INVENTOR

E. W. Farnham

UNITED STATES PATENT OFFICE.

E. WILSON FARNHAM, OF CHICAGO, ILLINOIS.

APPARATUS FOR COMPUTING PROPORTIONS.

SPECIFICATION forming part of Letters Patent No. 335,906, dated February 9, 1886.

Application filed April 30, 1885. Serial No. 164,040. (No model.)

To all whom it may concern:

Be it known that I, E. WILSON FARNHAM, of Chicago, Cook county, Illinois, have invented certain new and useful Improvements in Apparatus for Computing Proportions; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and letters of reference marked thereon.

Heretofore great difficulty and inconvenience has been experienced by the companies of two connecting lines of railroad in ascertaining when freight or express matter is sent from a given point on one line to a given point on the other line, and when the regular rate made by the two companies is different from their combined local rates, what would be the proportion of the regular rate that each company should receive. This difficulty is principally due to the fact that the many officials having charge of the transportation of freight at the various stations on each road use different methods of mathematical computation, and are liable to err now and then. I obviate this difficulty by an apparatus, which, by mechanical means, is reduced to such simplicity that an error in computation is impossible.

In the drawings, Figure 1 represents a series of graduated bars. Fig. 2 is a side elevation of the mechanical devices for manipulating said graduated bars. Fig. 3 is a modification of the same, and Fig. 4 shows the construction of an end of one of the bars.

In the drawings, A represents a graduated bar of a given length divided into a given number of equal parts. Thus in Fig. 1 there are four of these bars marked, respectively, fifty, (50,) seventy-five, (75,) one hundred, (100,) and one hundred and twenty-five, (125,) and these numbers indicate the number of equal spaces the respective bars are divided into.

To ascertain what proportion of the regular rate each or either company should receive, I first ascertain what the regular established rate is, and then what the local rate is from the receiving on one road to the connecting point of the two roads. Now, supposing that the regular rate is fifty cents, and the com-

bined local rates amounts to one dollar and twenty-five cents, I take the bars A, marked 50 and 125, respectively, and place them side by side, parallel to and conterminous with each other. Then, ascertaining what the local rate is from the receiving-point on one road to the connecting-point of the two roads—say it is seventy cents—I space from the foot of the bar representing the combined local rates seventy spaces, then take the number of the space on the bar representing the regular rate (marked 50,) in transverse alignment with the said seventieth space on the bar marked 125, and such number will represent the number of cents which is the proportion of the said receiving road of the regular rate.

The spaces on the bars A may, if desired, be numbered, or, as in the drawings, every fifth space may be numbered. These bars A may be made of sheet metal or of stiff cardboard, and there may be as many of them as desired, ranging from the lowest regular rate to the highest, and always divided into as many equal spaces as indicated by the number marked thereon. In order that none of these bars may be lost, and that when wanted they may be easily found, I provide a couple of rolls B and C, of a suitable diameter, and journaled in suitable bearings parallel and conterminous with one another, and make in their peripheries the longitudinal grooves *b*, which are made oblique to said periphery, for the reception of a corresponding number of graduated bars, A. These bars A are provided with the extensions *a a*, which, when the bars are properly placed in the grooves *b* of the rolls, extend an equal distance beyond the ends of the rolls B and C, and are held in position by a rubber band or strap, D. Placed perpendicularly between or at the ends of these rolls are the T-standards E, having the ends of their horizontal arms hooked, as shown.

When it is desired to use the above apparatus, the rolls are revolved until the bars desired are on the same horizontal plane as the horizontal arms of the T. They are then pulled out of the grooves *b* until their extensions can be caught and held by the hooked ends of the horizontal arms of the standards, thus bringing the edges of the bars flush together and enabling the operator to easily make his computations.

Fig. 3 shows a modification of the above apparatus, in which the slots *b* in the rolls B and C are arranged radially, instead of obliquely, and the horizontal arms of the standards are inclined or dipped toward the rolls.

I do not wish to be confined to the use of bars A, as disks of a given diameter, having their peripheries graduated or spaced, might be used instead.

10 If desired, the proportion of the regular rate each road would be entitled to might be ascertained on a mileage basis. For instance, the bar representing the total number of miles might be placed beside the bar marked 100,
15 and then the number of miles between the receiving and connecting point being ascertained spaced off on the bar representing the total number of miles. The number of the space on the hundred-bar in transverse alignment
20 with the point designated on the total-mileage bar will be the per cent. of the regular rate the company receiving the freight would be entitled to.

What I claim, and desire to secure by Letters Patent, is—

1. In an apparatus for computing proportions, the combination, with the graduated bars A, of the rollers B and C, placed parallel with each other, having longitudinal grooves
30 in their peripheries for the reception of said bars.

2. In an apparatus for computing proportions, the combination, with the bars A, of the rollers B and C, having longitudinal grooves

in their periphery made oblique thereto for the reception of said bars. 35

3. In an apparatus for computing proportions, the combination, with bars A, of the rollers B and C, placed parallel and conterminous with each other, having longitudinal
40 grooves in their periphery and standards, as described, placed between the same, for the purpose set forth.

4. In an apparatus for computing proportions, the combination, with bars A, of the rollers B and C, parallel to and conterminous with each other and having longitudinal
45 grooves in their periphery, in which said bars are placed, so that the ends extend beyond the ends of said rolls, band D, and standards
50 E, as and for the purpose set forth.

5. In an apparatus for computing proportions, the combination, with bars A, of the rollers B and C, parallel to and conterminous with each other and having longitudinal
55 grooves in their periphery, in which said bars are placed, so that the ends extend beyond the ends of said rolls B and C, band D, and standard E, said standard supporting a rack or shelf, on which the bars A may be placed for
60 purposes of comparison and computation.

In testimony that I claim the foregoing as my own I hereunto affix my signature in the presence of two witnesses.

E. WILSON FARNHAM.

Witnesses:

R. E. MOORE,
WM. N. ASHTON.