H. P. C. BROWNE.

FARE CALCULATOR.

APPLICATION FILED JAN. 26, 1911.

1,015,419. Patented Jan. 23, 1912.

Fig. 1.

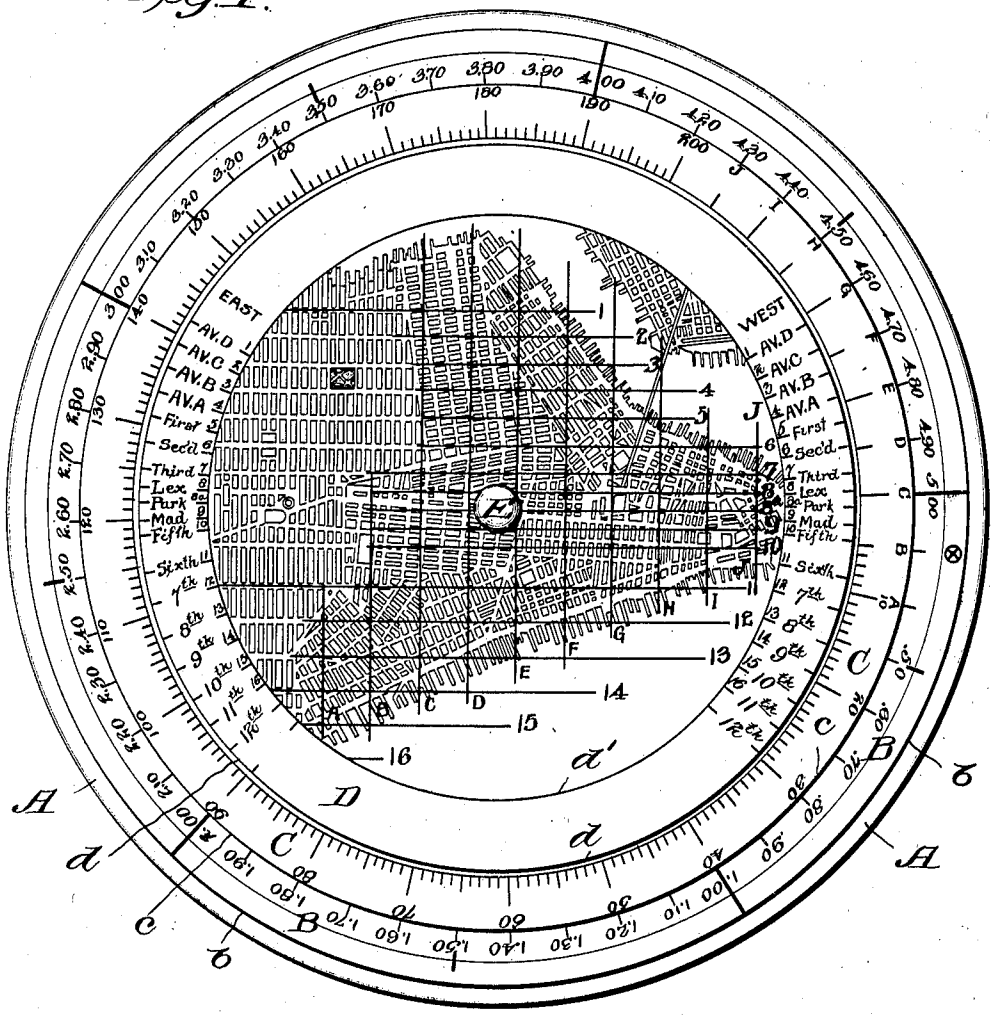
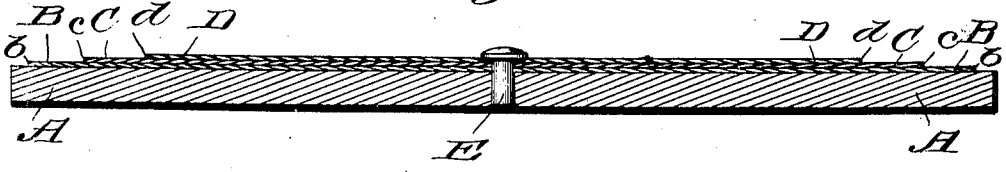


Fig. 2.



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UNITED STATES PATENT OFFICE.

HARRY P. C. BROWNE, OF NEW YORK, N. Y.

FARE-CALCULATOR.

1,015,419. Specification of Letters Patent. Patented Jan. 23, 1912.

Application filed January 26, 1911. Serial No. 604,895.

To all whom it may concern:

Be it known that I, HARRY P. C. BROWNE, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Fare-Calculators; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My present invention relates to improvements in calculating devices for calculating or checking the fares to be charged for varying distances traversed by a vehicle of any character.

The invention is more especially applicable to use in calculating or checking the fares charged by taxicabs, and it is especially intended to provide a simple mechanical device by which the passenger may either calculate in advance the cost of a proposed trip, or may have a check on the charge made by the driver at the end of any given trip.

The invention is especially adapted to cities laid out in rectangular blocks, but where irregularities exist in the general direction of the streets, lines may be drawn in on the map of the city crossing each other at right angles, in continuation of or parallel to the streets in the more regular portions of the city.

In the accompanying drawings, I have selected the city of New York as one having wide variations in the general arrangement of the streets in the lower portion of the city, and having the streets laid out intersecting at right angles in the upper portion of the city, thus showing the wide latitude with which the device may be used.

Referring to the accompanying drawings—Figure 1 represents a plan view of the device, and Fig. 2 represents a central vertical section through the device.

The device consists essentially of three concentric disks B, C, and D, mounted upon a suitable block A. The disk B is stationary, and the disks C and D are adapted to be rotated about the pivot E. *b*, *c*, and *d* represent the outer edges of the three disks. The upper disk D shows a map of the city, or of a portion of the city inclosed in the circle *d'*, and outside of this circle on the disk are graduations corresponding to the streets running in one direction, say north and south. For convenience of reference, these graduations are put on opposite sides of the disk, those on one side for estimating when traveling to the eastward, or east of the meridian, and those on the opposite side of the disk when traveling westward, or west of the meridian. This is preferable, so that the reading hereinafter to be explained may always be in the same or additive direction, but obviously a single series of graduations might be used reading additively when going to the eastward, and subtractively when going to the westward, or vice versa, as will be hereinafter more fully described.

The disk C projects beyond the disk D, exposing a ring which is graduated to correspond to the streets intersecting those indicated by the graduations on the inner disk D, which in New York, for instance, includes all of the numbered streets uptown, and the cross-town or imaginary streets downtown. Where the direction of the streets is irregular, as in the lower portion of the city, imaginary streets A, B, C, D, E, F, G, H, I, and J are drawn at equidistant intervals, corresponding to say five blocks of the uptown district, and in a similar way the north and south streets (or avenues) are continued in the irregularly laid out district, and numbered 1, 2, 3, 4, 5 to 16, respectively. The imaginary street marked 1 is a continuation of Avenue D, 2 is a continuation of Avenue C, 3 is a continuation of Avenue B, 4 a continuation of Avenue A, 5 a continuation of First avenue, 6 is a continuation of Second avenue, 7 is a continuation of Third avenue, 8 a continuation of Lexington avenue, 8^a a continuation of Park avenue, 9 a continuation of Madison avenue, 10 a continuation of Fifth avenue, 11 a continuation of Sixth avenue, etc. The imaginary avenues and the avenues that they are continuations of are shown on both sides of the disk D. On the projecting annular portion of the disk C, the imaginary cross streets J, I, H, G, F, E, D, C, B, and A are shown, corresponding to the cross lines drawn through the irregularly laid out portion of the city, the imaginary cross street B corresponding to 5th street extended, and the imaginary cross street A corresponding to 10th street extended, above which up to 200th street, the city is laid out in rectangular blocks, and the cross-town streets are spaced equal distances apart, there being

approximately twenty uptown blocks to the mile. Assuming that the fare is charged by miles and quarter miles, the outer and fixed circle is graduated at 50¢, the initial and lowest charge corresponding to the first half mile of travel, and ten cents additional for each additional quarter of a mile, the scale of charges running from 50¢ to $5, as shown. It will be noted that the corresponding divisions on each circle indicate the same length subtended by an angle drawn from the center of the pivot E, and in the same way the sub-divisions on the outer circle correspond to the angle subtended at the center of the pivot E by five blocks of space, as indicated on the circumference of the disks D and C.

The scale on movable member D is laid off from the city map as follows: On all three scales equal distances subtend the same angle drawn from the pivot E; the distances being expressed on D and C in fractions of miles, and on B by fractions of dollars. The layout of New York is such that best results are secured by allowing one mile distance, or the charge therefor, to subtend an angle of 30°. So that scale D is laid off by scaling from the city map the number of feet separating avenue from avenue, and calculating from them the angular separation of the avenues on the scale. For example if the distance from 3rd ave. to 2nd avenue, scales 660 feet, or $\frac{1}{8}$ mile, the angular separation of the avenues in question is $\frac{30}{8}$°, or 3° 45′.

Now to operate the device, suppose the passenger, or prospective passenger, wishes to go north from the Battery, at the southwest corner of the city, to 140th street, and west to 11th avenue. The Battery is located at the intersection of the arbitrary Avenue 8 and the arbitrary cross-town street J. Now move the letter J on the street circle to the zero mark to the right of the $5 mark on the tariff circle; then follow the tariff circle in the direction of the hands of a clock to 140th street, and it will be noted that the charge would be $3.80, but the Battery is located on the arbitrary line 8, corresponding to Lexington avenue uptown, and you wish to go to 11th avenue, which is a continuation of the arbitrary line 16. Now, maintaining the intermediate or street circle in this position, turn the inner or avenue circle until the numeral 8 thereon points to the numeral 140 on the street circle, corresponding to 140th street, and then reading around to the right, in the additive direction, you will find that 11th avenue, corresponding to the imaginary avenue marked 16, points between $4.30 and $4.40. Then the charge for the trip from the Battery to 140th street would be $4.40, the charges for taxicab services in New York being always the next high figure. In the same way, suppose you wish to go from 5th street and Third avenue, north to 125th street, and east to First avenue, set the letter B, corresponding to 5th street on the street scale, opposite the zero mark on the fare scale. Then read the charge opposite 125th street, and you will see that this charge would be $2.70. Now to go from Third avenue to First avenue, take the east going scale on the inner circle and place Third avenue, corresponding to the numeral 7, opposite 125th street, and read to the right or in the additive direction. You will find that the charge is something over $2.80, or $2.90 net.

It will be noted that the inner disk has two scales, one for going west, and the other for going east. A single scale could be used to read backward going east, but this would require a little more intelligence, and it is preferable to have the scales on opposite sides of the disk reading in reverse directions, so that the readings may always be had additively. For convenience in distinguishing the real from the imaginary streets or avenues, it would be preferable to have the real streets and avenues and the imaginary streets and avenues in different colors.

It will be noted that where a city is laid out regularly, there will be no necessity for the imaginary streets and avenues, and also that it will not be necessary to show a map of more than a small portion of such a city. This would be particularly the case with Philadelphia, where the city is laid out in regular rectangles.

This herein described arrangement happens to be particularly convenient for Manhattan Island, in the greater portion of which the blocks are laid out in regular rectangles of substantially equal size, and where most of the streets are numbered consecutively, but in a city where the streets are not numbered the map could be divided up into a series of grid lines, and every fifth or every tenth street marked in bold type, whereby the necessity for calculating as to each individual street might be avoided. By this arbitrary arrangement, as is shown in Fig. 1, representing the lower portion of the city of New York, any difficulty in computing fares due to irregularities in the distances between the streets will be provided against, as in some parts of the city the blocks are short, and in others long; and by arranging the arbitrary lines equal distances apart, a substantially accurate apportionment and calculation may be made.

It will be obviously more convenient to mark on the small circle those avenues or streets which are comparatively the fewest in number. For instance, if there are more streets running east and west than there are north and south, the larger scale would

give greater room for graduations, and therefore the smaller circle could more conveniently be used to indicate the lesser number of streets or avenues. With this exception, it is immaterial on which one of the three concentric circles the streets, the avenues, or the fares are indicated. In other words, the fare circle might be put in between the street and avenue circles, and the position of the street and avenue circles might also be reversed, if desired, without varying the capacity of the instrument.

It will be obvious that the lower fixed disk B may be cut away in its center, leaving only a ring exterior to the disk C, and said disk C may be inclosed in and flush with said ring.

While I have shown the instrument as applied for use in the city of New York, it will be obvious that it might be applied to any city in which the general formation of the blocks is rectangular.

The instrument is not only adapted for use by prospective and actual passengers for estimating or checking the fares imposed by taximeters or similar devices, but is adapted to form a substitute for taximeters in many cases, such as those in which the vehicle is owned by the driver or where the privacy of the service is incompatible with the display of a taximeter. For such purposes its value lies in the fact that the distance charged for is the shortest distance between the termini of the trip. It affords a quick method of estimating the cost of a trip in any vehicle whose charges are fixed by law, and also affords a ready means for checking any material error in the reading of the fare register installed on the vehicle, or any attempted extortion on the part of the driver.

Having thus described my invention, what I claim and desire to secure by Letters Patent of the United States is:—

1. An apparatus comprising a fixed, circular scale and two rotatable, concentric, graduated disks, the upper disk being provided with means for indicating the region to be traversed including intersecting lines representing roadways, graduations on said upper disk corresponding to the distances between the roadways running in one direction, graduations on the other disk corresponding to the distances between the roadways crossing the first mentioned roadways, and graduations on said circular scale to indicate fares for the distance traversed, substantially as described.

2. An apparatus comprising three superposed, concentric, graduated disks, one fixed and the other two rotatable, the upper disk being rotatable and provided with means for indicating the region to be traversed including intersecting lines representing roadways, graduations on said upper disk corresponding to the distances between the roadways running in one direction, graduations on another of said disks corresponding to the distances between the roadways crossing the first mentioned roadways, and a disk graduated to indicate fares for the distance traversed, substantially as described.

3. An apparatus comprising three concentric, graduated disks, one fixed and the other two rotatable, the upper disk being rotatable and provided with means for indicating the region to be traversed including intersecting lines representing roadways, graduations on said upper disk corresponding to the distances between the roadways running in one direction, graduations on the second rotatable disk to indicate roadways crossing the other distances between the roadways at right angles, and the third or fixed disk graduated to represent fares for the distance traversed, substantially as described.

4. An apparatus comprising three superposed, concentric, graduated disks, one fixed and the other two rotatable, with a map of the region to be traversed indicated on the upper disk, including intersecting lines representing roadways, graduations on said upper disk corresponding to the distances between the roadways running in one direction, graduations on another of said disks, corresponding to the distances between the roadways crossing the first mentioned roadways, and a disk graduated to indicate fares for the distance traversed, substantially as described.

5. An apparatus comprising three superposed, concentric, graduated disks, one fixed and the other two rotatable, with a map of the region to be traversed indicated on the upper disk, the said map indicating the roadways crossing each other in said region, with lines indicating imaginary streets, crossing each other at right angles, marked on the map, graduations on said upper disk corresponding to the roadways running in one direction, graduations on another of said disks corresponding to the roadways crossing the first mentioned roadways, and a disk graduated to indicate fares for the distance traversed, substantially as described.

6. An apparatus comprising three superposed, concentric, graduated disks, one fixed and the other two rotatable, with a map of the region to be traversed indicated on the upper disk, the said map having intersecting lines thereon representing intersecting roadways, graduations on said upper disk corresponding to the roadways running in one direction, the second movable disk graduated to indicate roadways crossing the other roadways at right angles, and the third or fixed disk graduated to represent fares for the distance traversed, substantially as described.

7. A fare calculating apparatus compris-

ing means for representing a system of intersecting roadways, three circular concentric scales; the graduations of one of said scales corresponding to the roadways running in one direction, the graduations of another of said scales corresponding to the roadways crossing the first mentioned roadways, and the graduations of the third of said scales corresponding to the fare charged for the distance traversed; with means for preserving the said scales in concentric rotatable relation the one with the others, substantially as described.

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

HARRY P. C. BROWNE.

Witnesses:
G. L. WILLEMS,
JOSEPH S. HUNT.