W. ELLIS.

MILEAGE TRANSPORTATION TICKET.

APPLICATION FILED APR. 11, 1910.

1,018,749.

Patented Feb. 27, 1912.

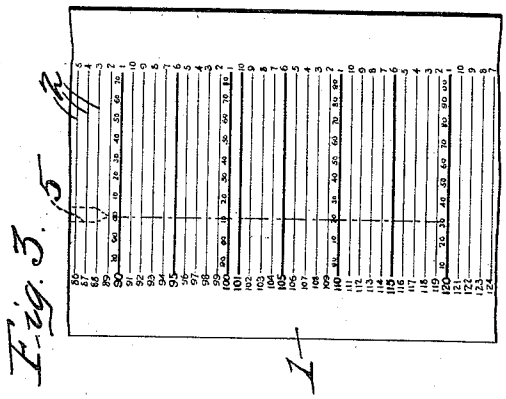

Fig. 3.

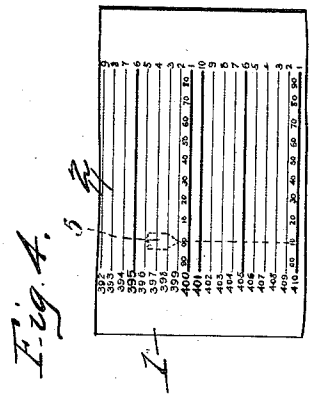

Fig. 4.

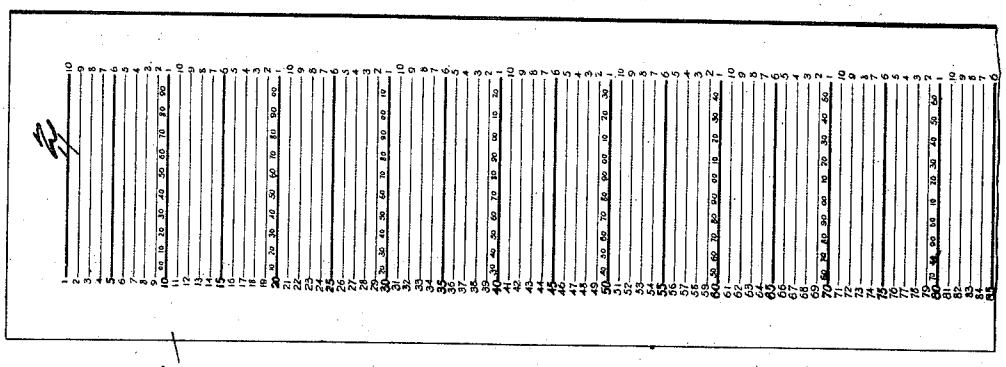

Fig. 2.

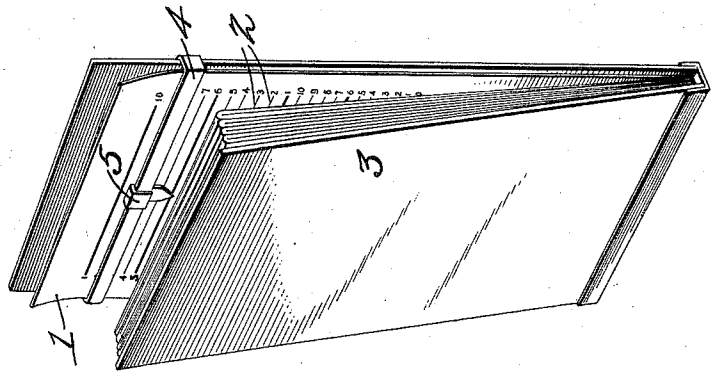

Fig. 1.

WITNESSES

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MILEAGE TRANSPORTATION-TICKET.

1,018,749. Specification of Letters Patent. Patented Feb. 27, 1912.

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To all whom it may concern:

Be it known that I, WILLIAM ELLIS, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Mileage Transportation-Tickets, of which the following is a specification.

This invention relates to that class of transportation-tickets for railways and steamboat lines which are commonly termed "mileage tickets" and "mileage books," the latter term being applied to the mileage ticket or strip folded and contained between book-covers for convenient handling.

To this end the invention specially has in view a novel form of mileage ticket or strip wherein the process of ascertaining the amount of mileage strip to be detached is simplified and liability to error is reduced to a minimum. In this connection the invention claimed herein enables the conductor to quickly ascertain, and accurately add, the mileage to be detached, and likewise permits the auditing to be accomplished with equal facility, despatch and accuracy.

In the accomplishment of the above general objects, the present invention provides a novel and thoroughly reliable system of numbers and digits bearing such relation to each other as to permit the detachment of any number of miles to be made with but one process of mental arithmetic, and that one involving only the consideration of units and tens. By this system the work of the conductor is simplified and rendered less liable to error, and likewise the work of the auditor.

With these and other objects in view, which will more readily appear as the nature of the invention is better understood, the same consists in the novel combination and arrangement of parts hereinafter more fully described, illustrated and claimed.

The essential features of the invention involved in the arrangement of the consecutive mileage numbers and the computation digits are necessarily susceptible to modification according to the particular requirements of the transportation company without departing from the spirit or principle of the invention, but for illustrative purposes a preferred and practical embodiment of the invention is shown in the accompanying drawings, in which—

Figure 1 is a perspective view of a mileage book, embodying an indicating device of a type in connection with which the improved mileage ticket may be employed. Fig. 2 is a plan view of a detached strip from the ticket, said detachment representing eighty-five miles of mileage. Fig. 3 is a similar view giving another illustration, representing a detachment from the ticket of thirty-nine miles of mileage. Fig. 4 is a similar view furnishing another illustration representing a detachment of nineteen miles of mileage.

Like references designate corresponding elements in the several figures of the drawings.

In carrying out the invention it will of course be understood that the complete mileage ticket for use will have printed or otherwise placed thereon any special identifying data or conditions of use that may be prescribed by the particular transportation company, so it is not deemed necessary to include any illustration herein of these well known and conventional features of a mileage transportation-ticket; so, for illustrative purposes, there is shown in the drawings a mileage ticket 1 bearing thereon the novel features forming the subject-matter of this application.

The mileage ticket proper, designated by the numeral 1, is formed preferably in one continuous length so as to be capable of being made up into the ticket commonly known as the "one thousand mile" ticket, though it will of course be understood that the ticket strip may be made in any desired length without affecting the present invention.

According to the plan or system proposed by the present invention, the strip of paper or other material constituting the ticket 1 is provided thereon with a continuous series of regularly spaced transverse divisional lines 2, which, in consecutive order, represent single mile lines, or one mile lines, and at one side of this series of transverse lines 2 indicating single miles, preferably at the left-hand side of the ticket, there is printed a continuous longitudinal row of consecutive numbers for each single mile of the entire ticket, said consecutive numbers running consecutively from 1 to 1000, or to a greater or less number as the case may be, according to the total mileage on the said strip. In this connection it will also be observed that the consecutive numbering representing single miles is so arranged that the numbers are

disposed directly opposite the single mile lines 2, which they represent.

Preferably, each ten mile line is made more conspicuous by being printed heavier or darker than the other single mile lines, and likewise the five mile lines may be printed heavier or darker than the others, though it is desirable that the ten mile lines particularly be made conspicuous, inasmuch as there is associated with each ten mile line a transverse row of double digits, from zero to 90, that is to say, each transverse row of double digits includes in regularly spaced order, the following: "00 10 20 30 40 50 60 70 80 90". It will be observed that these double digits run transversely of the ticket in arithmetical progression, that is to say, being a series of numbers increasing by a common difference. Likewise, the double digits arranged at each ten mile line are arranged in rows running longitudinally of the ticket, or, in other words, run longitudinally of the ticket in arithmetical progression, so that beginning with the 00 in any ten mile line the next double digits in a longitudinal row with that 00 are 10 20 30 40 50 60 70 80 90, and repeat, throughout the entire length of the ticket, for the purpose to be presently explained.

In addition to the consecutive single mile numbering at one side of the series of single mile lines 2, the present invention contemplates placing at the directly opposite side of said series of lines inverse unit numbering between every two ten mile lines, that is to say, beginning at the extreme bottom of the ticket strip at the 1000 mile line, the digit or unit 1 appears opposite one end of that line, and the next preceding lines are numbered respectively 2, 3, 4, 5, 6, 7, 8, 9 and 10, up to the next preceding ten mile line, or, in other words, up to the 990 mile line, where the inverse or reverse unit numbering is repeated. According to this inverse unit numbering at the right-hand side of the ticket strip, the said numbering commencing with the unit 1, starts at each ten mile line, as plainly shown in Figs. 2, 3 and 4 of the drawings. Now, it is to be observed that there is a special arithmetical relation between the consecutive numbering at the left, the rows of double digits, and the inverse unit numbering at the right. The purpose of this arrangement is to provide a method of detachment which reduces the actual mental process to carrying the first unit shown in the column at the right of the strip to the longitudinal column of double digits which commences in the next ten mile line with 00, and carrying the computation down that row until less than ten is left, and carrying that result over to the unit column, on the left of this strip, and there completing the detachment. The detachment of any number of miles can, therefore, be made with but one process of mental arithmetic, and that one only involving units.

By way of example, reference is made to the accompanying drawings wherein the mileage ticket 1 is shown folded in a conventional cover or retainer 3, and arranged to be drawn through a metal or equivalent guide 4 constituting a combined guide and shearing blade, and having mounted thereon a shiftable indicating pointer 5 which may be readily moved to the 00 at the head of any longitudinal row of the double digits. Of course, the first detachment is simply made by referring to the consecutive single mile numbering, and assuming that there is to be a detachment of 85 miles mileage, as shown in Fig. 2 of the drawings, it is simply necessary for the conductor to draw out the strip to the 85 mile line and tear the same off at that point. Now, assuming that the second detachment (as per Fig. 3) is to be for 39 miles of mileage, the conductor observes that the inverse unit numbering at the right of the strip shows that five miles remain above the first ten mile line, leaving 34 miles to detach. The indicator or pointer 5 is placed over the 00 on said first ten mile line, and the ticket strip pulled through, as indicated by the dotted line on Fig. 3, to the 30 in that longitudinal row of the double digits, from which point the unit in the consecutive numbering at the left of the strip is used, that is, in the example given, the unit 4 in the number 124. For auditing, the unit 4 of last number at the left, added to the unit 5 first appearing at the right, gives 9, which added to the last double digit (30) appearing in the longitudinal row with the 00 in the first ten mile line of the detached strip, makes 39, the total of the detachment. The same process applied to each detachment shows how the detachment is made by use of the units at the right and left in connection with the double digits, and how the auditing is done by using the two units and the indicated 10.

Fig. 4 of the drawings illustrates a detachment of 19 miles of mileage, where the consecutive single mile numbers are quite large, the same process of detachment and auditing being observed in connection with this detachment.

From the examples and explanations given, it will be observed that the double digits at each ten mile line are in arithmetical progression, both transversely and longitudinally of the strip, and also that each of these double digits is an arithmetical complement of single digits in the numbers at the left and at the right of the strips, by arithmetical complement meaning the sum which a number lacks of ten or the next higher power of ten.

As already indicated, the essential features of the invention are necessarily sus-

ceptible to modification, and it will be understood that changes may be made in the minor details of construction, within the scope of the appended claims. In this connection, it should be explained that the guide 4 carrying the shiftable binder 5 may be either a permanent part of the cover or book or may be temporarily attached thereto when a detachment of mileage is to be made, without in the least affecting the essential features of the invention.

I claim:

1. A mileage ticket consisting of a strip provided with a longitudinally extending series of consecutive numbers running from the free end of the strip and representing single miles, and transversely extending series of numbers at every ten mile point upon the strip, the said transverse series of numbers running by tens from zero to ninety and being in arithmetical progression both transversely of the ticket and longitudinally thereof.

2. A mileage ticket consisting of a strip provided with divisional lines representing single miles, a series of consecutive numbers upon one side of the ticket for said divisional lines, a transverse series of numbers for every ten mile line, the said transverse series of numbers running by tens from zero to ninety and being in arithmetical progression both transversely and longitudinally of the ticket, and inverse unit numbering from one to ten upon the opposite side of the ticket for the single mile lines between the ten mile lines.

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

WILLIAM ELLIS.

Witnesses:

R. C. BRADDOCK,

A. M. PARKINS.