Nov. 22, 1949 R. R. HERRICK 2,489,030

FUEL MILEAGE CALCULATOR

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Fig. 1.

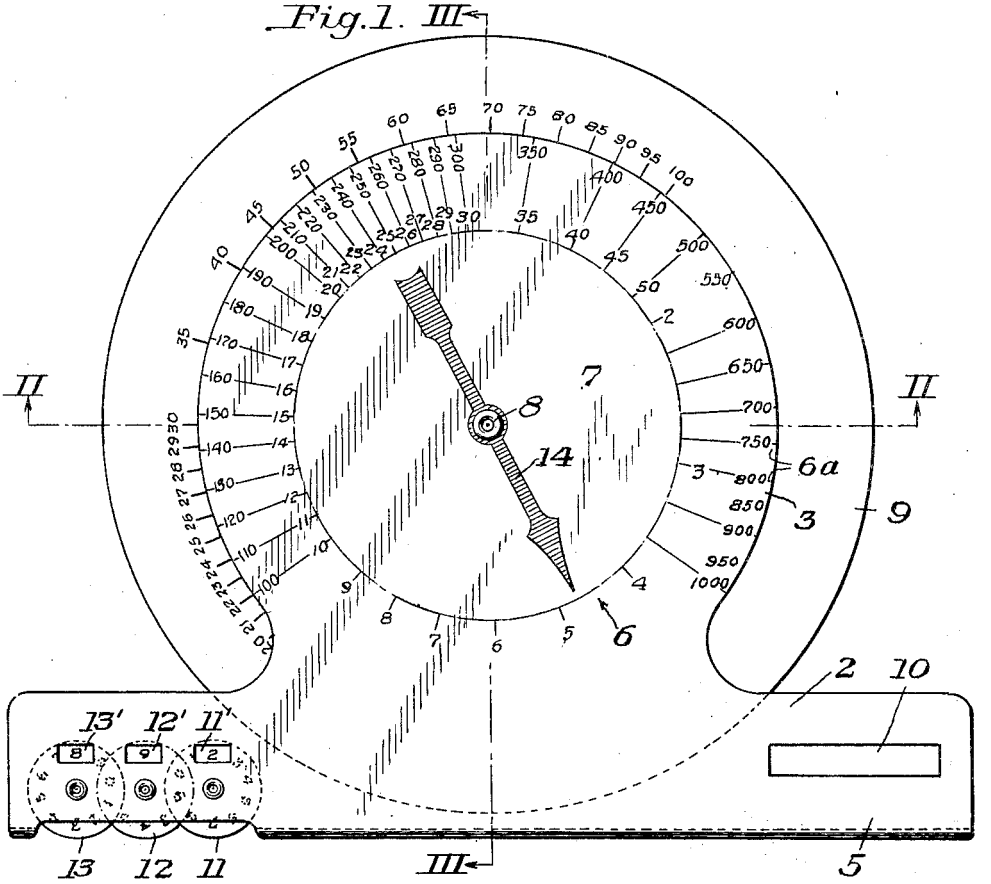


Fig. 2.

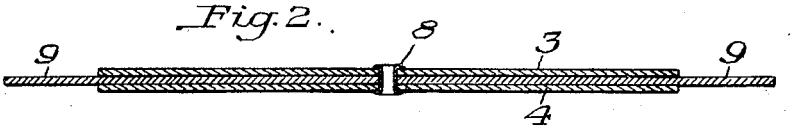


Fig. 3.

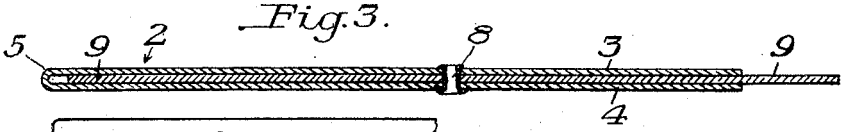
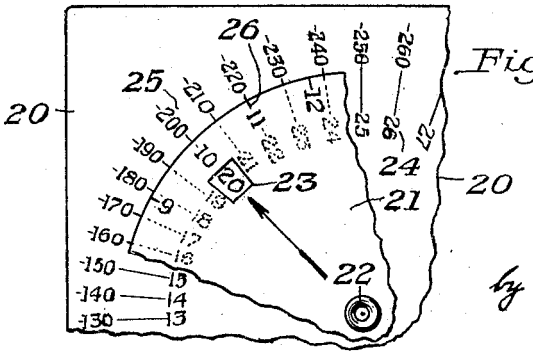


Fig. 4.



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FUEL MILEAGE CALCULATOR

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4 Claims. (Cl. 235—84)

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This invention is for a calculating device and relates more particularly to a calculating device of staple construction to be used in rapidly calculating the distance, as for example, the number of miles per gallon or other unit of fuel obtained by an automobile or other vehicle or vessel.

The invention has for its object to provide a calculator of cheap and simple construction, by means of which the owner or operator of a vehicle may very readily and quickly obtain an accurate determination of the distance per unit of fuel being obtained by an automobile or other vehicle. The device is of a character such that it can be manufactured and distributed at low cost, perhaps even being distributed as an advertising novelty. It is designed to give a reasonably accurate indication of mileage per unit of fuel on either short distances or over long distances. While I shall hereinafter refer to "mileage" in reference to distance, and to "gallons" in reference to units of fuel, it will be understood that this is by way of illustration, and that the device may be equally calibrated for use in estimating kilometers or other distances with liters or other units of volume, instead of gallons.

The invention may be readily understood by reference to the accompanying drawing, in which:

Fig. 1 is a front elevation of a calculator embodying my invention;

Fig. 2 is a section in the plane of line II—II of Fig. 1, the section being a transverse horizontal section;

Fig. 3 is a section in the plane of line III—III of Fig. 1, the section being a transverse vertical section; and

Fig. 4 is a fragmentary front elevation of a modification.

Referring first to Figs. 1 to 3, the device may be conveniently formed of sheet plastic material, or may be formed partly of paper and partly of transparent material. It comprises a body designated generally as 2, and formed of thin transparent sheet material folded upon itself to provide a front flap 3 and a rear flap or panel 4 with a folded base portion 5. The parts 3 and 4 are generally circular.

Located between the front and rear panels 3 and 4 is a rotatable disk 9 which is pivotally secured in the structure by an eyelet 8 acting as a pivot.

The base portion 5 may be provided with a panel 10 or other writing surface to provide for the inscription of a speedometer reading at the start of a test run. The inscription panel may

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be of a character on which marks can readily be made with a pencil and subsequently erased. Plastic writing surfaces of this character are well known in the art. At the other end of the base portion of the panel are a plurality (preferably 3) independently rotatable disks 11, 12 and 13, these being pivoted between the two folds of the base, and the base is cut away to expose the peripheries of the disks for turning them. The base is provided with windows 11', 12', and 13' for exposing numbers on the disks 11, 12 and 13 respectively. These disks are adjusted to show the gasoline consumption during the test run. The numbers on the several disks 11, 12 and 13 run from 0 to 9, so that gasoline consumption up to several hundred gallons may, if desired, be indicated.

The circular front panel 3 of the body has a central transparent window area 7, and around this window area is a numbered scale arranged in circular fashion concentric with the pivot 8. Concentric with the inner scale, which is designated generally as 6, there is a second scale on the front panel 3, and which is designated generally as 6a. The inner scale 6 is calibrated from 1 to 50, the numeral 1, however, not being marked, but it coincides with the "12 o'clock position" and the distance between successive digits in the scale decrease according to logarithmic progression. The outer scale 6a progresses in units of 10 from 100 to 300, and units of 50 from 300 to 1000. The spacing of the markings corresponds to the logarithmic values of the numbers, the spacing of course decreasing as the numbers become higher in the logarithmic progression.

On the rotatable intermediate disk 9 around the periphery of the panel 3 is a third scale which is also a logarithmic scale, and which may run from 1 to 100 or higher. In the illustration, the first number of the scale which is visible is 20, and the last number which is shown is 100, this showing sufficient of the scale for the purposes of the present invention. The rotatable disk 9 has an indicator of some kind, preferably an arrow 14, painted on it so that the point of the arrow terminates adjacent the scale 6 on the panel 3. This arrow is visible through the transparent central portion 7 of the panel 3. Being painted on the disk 9, it moves with the rotation of the disk 9 around the scale 6.

The scale on the disk 9 represents gasoline or fuel consumed. The figures in the scale 6a represent distance values, and the figures in the scale 6 represent miles per gallon. In using the device, the operator may conveniently record his odometer reading on the inscription panel 10 at the

beginning of his trip. Using the disks 11, 12 and 13, he may indicate the amount of gasoline in the vehicle at the start of the trip, and as additional fuel is purchased, he may indicate the additional purchases so that at the end of the test run, the total gasoline consumption for the trip will appear in the windows 11', 12' and 13'.

At the end of a given test period, the operator may readily calculate the distance covered by first subtracting the original reading subscribed on the panel 10 from the odometer reading at the end of the test period to determine the distance which has been covered. He will then move the disk 9 to bring the total number of gallons of gasoline consumed opposite the figure on the scale 6a which corresponds to the total distance covered. The arrow 14 will then point to the miles of fuel per gallon which has been obtained during the run, the pointer 14 pointing to the miles per gallon on the scale 6.

For example, with the setting shown in Fig. 1, it happens that the number 22 on the disk 9 coincides with the number 100 on the mileage scale. The arrow 14 points to the scale 6 at a point between the numerals 4 and 5, showing that if 22 gallons were used to go 100 miles, the mileage per gallon would be slightly more than 4½ miles. It will also be observed that with the same setting the figure indicating 90 gallons on the disk of scale 9 registers slightly over the figure 400 on the mileage scale, showing that if it took 90 gallons to go slightly more than 400 miles, the mileage would be slightly more than 4½ miles per gallon. In the drawing the scales are approximate, rather than being precisely accurate, but one skilled in the art may readily correct for this slight inaccuracy, the drawings showing the principle of my invention.

Because of the logarithmic values of the several scales, the device enables the amount of fuel consumed to be brought into register with the total mileage covered on the test run to give the mileage obtained per gallon of fuel. It will of course be observed that in lieu of "gallons," liters or other units of measure may be substituted, and in lieu of "miles," kilometers or other units of distance may appear.

Fig. 4 shows a slight modification embodying the same principle. In this figure, there is a card 20 on which is pivoted a disk 21, the pivot for the disk being designated 22. The disk is provided with a window 23. Printed on the card 20 is a circularly arranged series of figures 24, located so as to be invisible except as such figures may be exposed through the window 23. The figures in the scale 24 correspond to the figures representing miles per gallon in the scale 6 described in Fig. 1.

Around the periphery of the disk 21 there is a second scale designated generally as 25, representing the total mileage covered and corresponding to the scale 6a in Fig. 1. On the periphery of the disk 21 there is a third scale 26, representing the total fuel consumption for the test run. It corresponds to the scale on disk 9 of Fig. 1.

In using this device, the figure indicating total fuel used on the scale 26 is moved to register with the number representing the total mileage covered on the scale 25. That number on the scale 24 will then be visible through the window which represents the number of miles per gallon of gasoline consumed on the trip. In the example shown, the total mileage is 200, the gallons of fuel is 10, so that the number 20 appears in the window.

While I have illustrated and described certain specific preferred embodiments of my invention, it will be understood that this is merely illustrative, and that various changes and modifications may be made therein, and that various materials may be used, all within the contemplation of my invention and under the scope of the following claims.

I claim:

1. A fuel mileage calculating device comprising two members, one of which is pivotally supported for movement in a circle relatively to the other, one of said members having a circular logarithmically calibrated scale indicative of total fuel consumption, and having an indicator associated therewith, the other member having two separate concentrically arranged logarithmically calibrated scales along circles having different diameters, one of which is indicative of the total distance traveled and the other of which is indicative of fuel units per unit of distance traveled, the indicator on the former member being positioned to follow the latter of said two concentrically arranged scales, whereby when a figure on the scale representing total fuel consumption is brought opposite a figure on the scale representing total distance traveled, the indicator will point to the number of distance units obtained for each fuel unit.

2. A fuel mileage calculator comprising a body having two spaced concentric scales thereon, one of which is a logarithmic progression of distance values, and the other of which is a logarithmic progression representing distance covered per unit of fuel, a rotatable disk concentrically arranged with reference to the scales on the body and having a scale thereon in juxtaposition to the first of said scales on the body, the scale on the disk being logarithmically proportioned and representing total fuel consumption values, and indicating means on said disk movable in a circle adjacent the second of said scales on the body so that when the scale on the disk representing total fuel consumption is adjusted to bring the figure representing the fuel consumed opposite that figure on the body which represents total distance covered, the indicator will point to a position on the second scale on said body to indicate the number of miles traveled per unit of fuel.

3. A fuel mileage calculating device comprising a body having concentric inner and outer scales, the outer of said scales being calibrated according to a logarithmic progression of distance values, the inner of said scales being calibrated according to a logarithmic progression representing mileage per unit of fuel, a rotatable disk pivotally supported on the body and having a scale thereon concentrically positioned with reference to the outermost scale on the body and having markings thereon adapted to be brought into registration with the markings of the outermost scale on the body, the scale on the disk being logarithmically arranged according to the number of fuel units consumed, the rotatable disk having an indicator thereon movable adjacent the inner scale on the body and visible through the body, the several scales being so arranged that when the figure on the disk representing the total number of fuel units consumed is brought opposite the calibration on the outermost scale of the body representing the total distance covered, the said indicator and inner scale will register the number of distance units traveled per unit of fuel used.

4. A fuel mileage calculating device comprising a member having two concentrically arranged circular logarithmically calibrated scales with

numerical values indicated thereon, radially aligned values on one scale being an even multiple of the correspondingly positioned values on the other, the scale having the smaller series of numbers indicating miles per gallon of fuel used and the other scale designating total distance traveled, a second member pivotally attached to the first so that one may rotate relatively to the other with the scales being concentric about the axis of rotation, and another logarithmically calibrated scale on the second member concentrically arranged about the axis of rotation and in juxtaposition to that scale on the first member which indicates total distance covered, and an indicator on the second member movable along the miles-per-gallon scale of the first member.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
387,070	Hart	July 31, 1888
508,435	Miller	Nov. 14, 1893
980,867	Fenn	Jan. 3, 1911
1,075,124	Scheibli	Oct. 7, 1913
1,563,284	Laurin	Nov. 24, 1925
1,656,993	Searle	Jan. 24, 1928

FOREIGN PATENTS

Number	Country	Date
241,908	Great Britain	June 17, 1926

OTHER REFERENCES

Pages 384–388 of Dec. 1917 issue and page 247 of Nov. 1917 issue of "Industrial Management."

Page 8 of "Graphical and Mechanical Computation," by Joseph Lipka; published by John Wiley & Sons, Inc., New York, N. Y. in 1918.