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CALCULATOR

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Fig. 1.

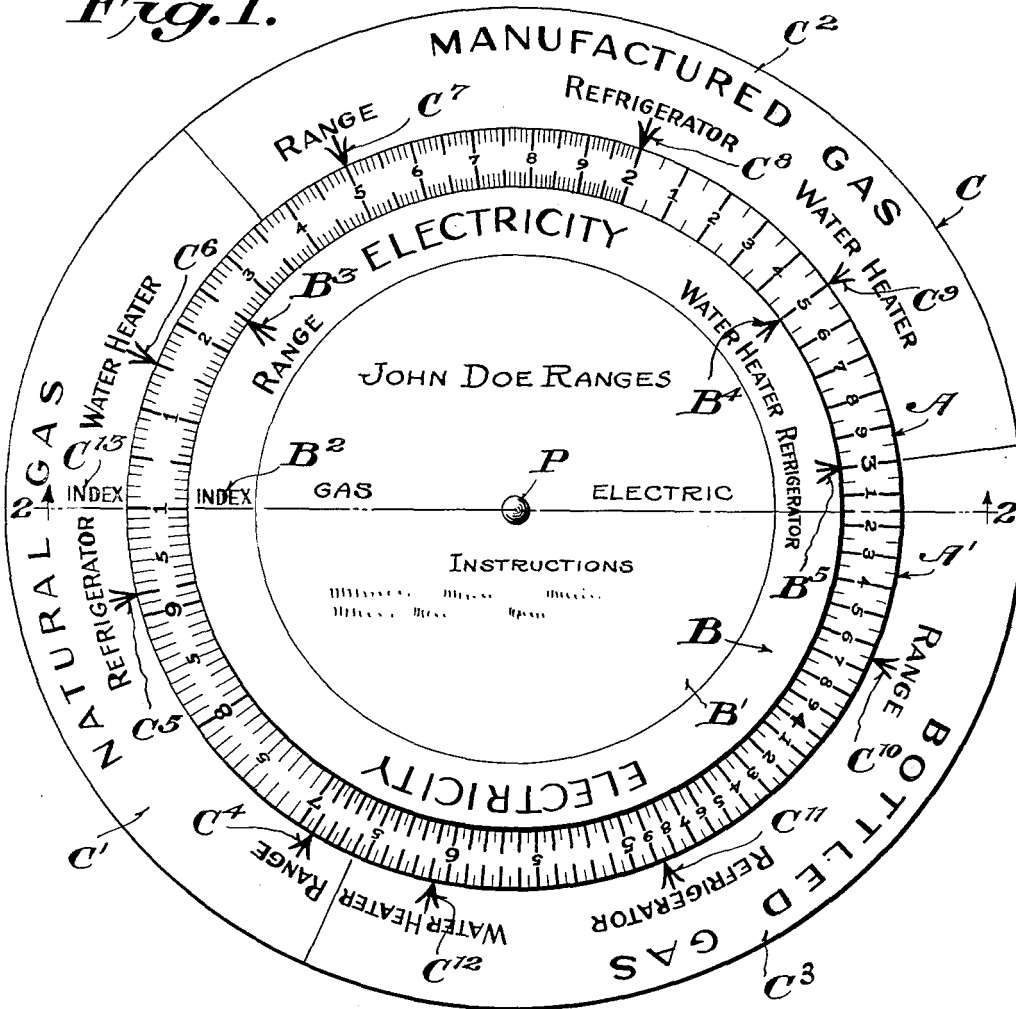


Fig. 2.



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CALCULATOR

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2 Claims. (Cl. 235—84)

This invention is a novel improvement in calculators, and the principal object thereof is to provide a simple calculator for determining the average cost at any given locality of operating ranges, refrigerators, water heaters, and the like, by electricity; also for determining the average cost of operating such appliances by gas, whether natural gas, manufactured gas, or bottled gas; also for comparing the cost of electric and gas operation of such appliances irrespective of whether manufactured, natural, or bottled gas is used at such locality.

It frequently happens that salesmen for gas and/or electric ranges, refrigerators, water heaters, and other appliances, are asked whether gas or electric operation of such appliances is cheaper in a given locality. If the salesman is handling both types of apparatus he would naturally be desirous of installing the more economic type of apparatus, but very few salesmen know how to make the necessary cost calculations for comparative purposes, and those who do know how find that such calculations are difficult and time-consuming. Use of my novel calculator however, when properly set according to the actual gas and electric rates at such locality, will show at a glance the relative costs based upon the national averages of electric current and gas consumed for such ranges, refrigerators, water heaters, or other appliances.

I will explain the invention with reference to the accompanying drawing which illustrates one practical embodiment thereof to enable others to adopt and use the same; and will summarize in the claims, the novel features of construction, and novel combinations of parts, for which protection is desired.

In said drawing:

Fig. 1 is a top plan view of the calculator.

Fig. 2 is a transverse section therethrough on the line 2—2, Fig. 1.

As shown in the drawing, my novel calculator preferably comprises three superimposed disks A, B, C, preferably of Celluloid or other suitable relatively stiff material, the intermediate disk being of larger diameter than the upper disk, and the lower disk being of larger diameter than the intermediate disk. The three disks are mounted for relative rotation by means of an axially disposed pivot pin, rivet, or other means P, transfixing the said disks.

The exposed portion of the intermediate disk A bears a logarithmic scale A', including convenient subdivisions similarly to the ordinary slide-rule, said scale preferably extending the full width

of the exposed peripheral portion of disk A. Scale A' denotes monetary values.

The upper or smallest disk B has a central field B' which may be used for advertising purposes, or for receiving printed instructions for using the calculator, or for other purposes, and adjacent the periphery of disk B is displayed the word "Electricity." In the peripheral portion of disk B is an index mark B2 for the purpose hereinafter described, said peripheral portion also bearing an arrow B3 marked "Range," an arrow B4 marked "Water heater," and an arrow B5 marked "Refrigerator," the arrows B3, B4 and B5 pointing to the scale A' on the intermediate disk A. The spacing on the inner disk B, of the arrows B3, B4, B5 is based on the average power consumption in kilowatt hours of each of the three appliances listed.

To determine the average cost of operation of such electric appliances, it is merely necessary to rotate the smaller or inner disk B on the intermediate or money disk A to such position that the index line B2 lies opposite the rate per kilowatt hour on scale A' for electricity at the particular locality in question, and the average cost of operation of an electric range, electric water heater, or electric refrigerator, based on the national average of current consumed, may then be read directly on scale A' opposite the arrows B3, B4 and B5, respectively.

On the peripheral portion of the disk C is an index line C13 cooperating with the logarithmic scale A' on the intermediate disk A. The periphery of the lower or largest disk C is preferably divided into three segments, one segment C' bearing the notation "Natural gas"; another segment C2 bearing the notation "Manufactured gas"; and a third segment C3 bearing the notation "Bottled gas." In the segment C' are arrows C4, C5 and C6, respectively marked "Range," "Refrigerator," and "Water heater," each arrow pointing towards the scale A' on the intermediate or money disk A. Similarly, in the segment C2 are three arrows C7, C8 and C9, respectively marked "Range," "Refrigerator," and "Water heater," each arrow pointing to the scale A' on the intermediate disk A; and similarly in the segment C3 are three arrows C10, C11, and C12, respectively marked "Range," "Refrigerator," and "Water heater," each arrow also pointing to the scale A'.

The spacings of the arrows C4 to C12, respectively, on the gas disk C are based upon the average monthly consumption in hundreds of cubic feet of manufactured and natural gas.

For bottle gas, either propane or butane, sold at rates in cents per pound or per one-hundred pounds, the spacing is based on average fuel consumption in pounds per month of each of the three appliances. Inasmuch as the number of pounds of butane and propane consumed per month in a gas range varies only about 1.4%, the same arrows C10, C11 and C12 will serve as a basis for both butane and propane in bottle gas consumption.

The calculator is based upon the following table of fuel consumption, as shown by the positions of the disks B and C on disk A in Fig. 1.

	Manu- factured gas 520 B. t. u.	Natural gas 1135 B. t. u.	Bottled as butane- propane	Elec- tricity
	<i>Cu. ft.</i>	<i>Cu. ft.</i>	<i>Liquid lbs.</i>	<i>KWH</i>
Range.....	1500	690	26.5	125
Refrigerator.....	2000	920	48.7	30
Water heater.....	2500	1150	60.8	250

To determine the average cost of operation of a gas range in a city where natural gas is used, the intermediate disk A is rotated on the disk C until the rate per thousand cubic feet for natural gas, which applies to that particular locality, coincides with the index line C13, and the average cost of operation of a range is read directly beneath the arrow C4 marked "Range" in the natural gas segment C'. If the average cost of operating a gas refrigerator is desired, the average cost may simultaneously be read directly opposite the arrow C5 marked "Refrigerator" in the natural gas segment C'. The average cost of operation of the water heater using natural gas may also be read directly opposite the arrow C6 marked "Water heater." Similarly, the average costs of operating on manufactured and bottle gas may be readily ascertained, using the related arrows in the segments C2 and C3 as the case may be, after setting the index line C13 with respect to scale A' in accordance with the rates at a given locality.

If a comparison of the average cost of operation of gas and electrical appliances is desired, the upper or smallest disk B marked "Electricity" is then rotated upon disk A until the index line B2 thereon points to the rate per kilowatt hour for electricity at that same locality. The cost of

electrical operation of the range, the refrigerator, and the water heater may be read directly opposite the arrows B3, B4 and B5 marked "Range," "Refrigerator," or "Water heater."

I do not limit my invention to the exact form shown in the drawing for obviously changes may be made therein within the scope of the claims.

I claim:

1. A calculator for determining and comparing average costs of operation of electric and gas appliances, comprising three relatively rotatable coaxial members; the intermediate member carrying at its periphery a circular logarithmic scale extending entirely across the exposed peripheral portion thereof; one end member having an index line and at least one marking on its periphery cooperating with said scale, said marking being disposed with respect to the index line to accord with the national average consumption of electric current for a given period for an electric appliance; and the other end member having an index line and at least one marking on its periphery cooperating with said scale, said marking being disposed with respect to the index line of the last mentioned member to accord with the national average gas consumption for a like period for a gas appliance used for the same purpose as the electric appliance.

2. A calculator for determining and comparing average costs of operation of electric and gas appliances, comprising three superimposed relatively rotatable coaxial disks of progressively increasing diameters; the intermediate disk carrying a circular logarithmic scale extending entirely across its exposed peripheral portion; one end disk having an index line and at least one marking adjacent its periphery cooperating with said scale, said marking being disposed with respect to the index line to accord with the national average consumption of electric current for a given period for an electric appliance; and the other end disk having an index line and at least one marking adjacent its periphery cooperating with said scale, said marking being disposed with respect to the index line of the last mentioned disk to accord with the national average gas consumption for a like period for a gas appliance used for the same purpose as the electric appliance.

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