

MODELS

The SMALL Pocket Calculator is made in two models, differing only in dials and runner on under side.

Model No. 1—A complete slide rule for general purposes and with scale of logarithms for fractional powers and roots.

Model No. 2—Special for Architects, Contractors and Structural Designers, omitting the logarithmic scale and adding scales for strength of steel and wooden beams.

In ordering, state clearly which model is desired.

BOOKLET

A complete **Instruction Booklet** is furnished with every instrument. There are 77 pages and cuts,—the first half contains diagrams and elementary examples for beginners, whereas the last half is a discussion of slide rule principles with special reference to deduction of simple rules for location of decimal point.

PROPOSITION

Calculator with Leather Case and Instruction

Booklet..... \$12.00

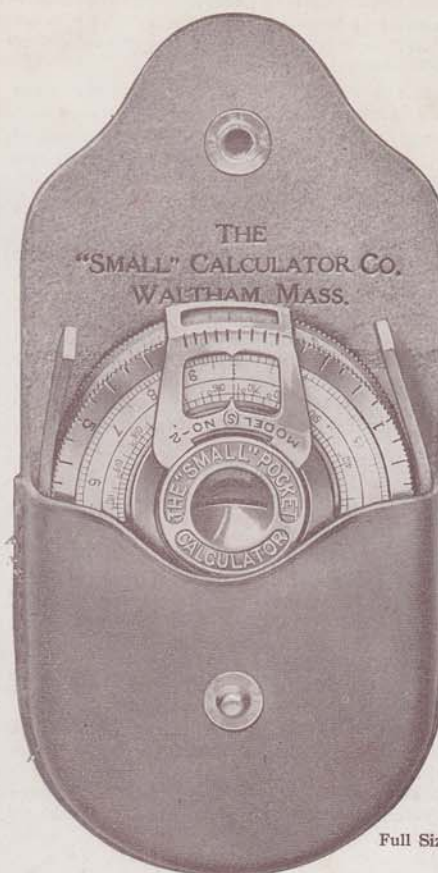
Instrument will be sent Parcel Post to you on approval, and on ten days' trial if you wish. If at the end of that time you do not care to keep it, we will refund your money upon return of the Calculator and Booklet in good condition.

For Sale By

SMALL CALCULATOR CO.
Waltham, Mass.

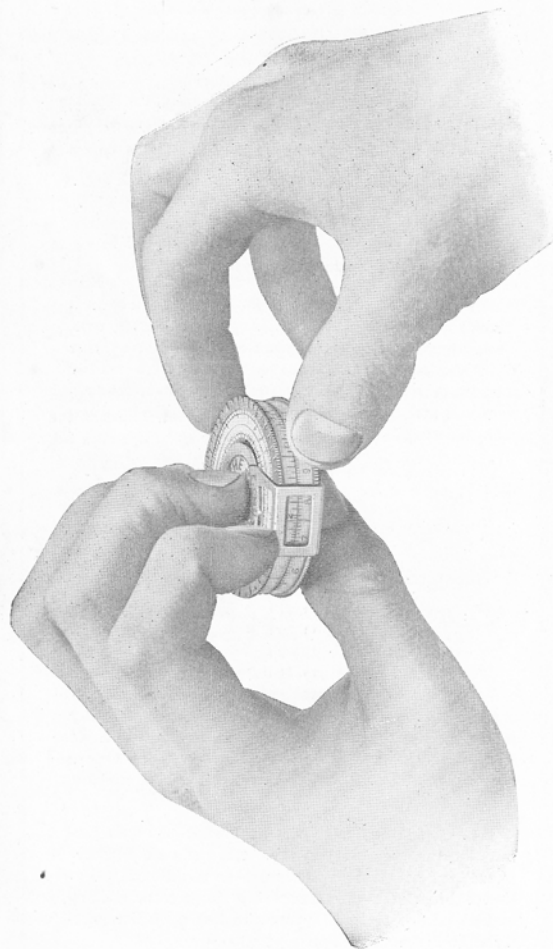
Wholesale Distributors

DESCRIPTIVE BOOKLET



Full Size

THE "SMALL" POCKET
CALCULATOR



CORRECT METHOD OF HOLDING CALCULATOR

MANIPULATION

I. As a Scale for Plans

The Calculator may be conveniently used as a scale to measure off distances on either straight or curved lines. This is accomplished by means of the Six Inch Scale S, with its radial graduations along the flange of the Rotor applied as a map measure.

II. As a Calculator

The Cut on the opposite page shows the method of operating the instrument.

Proceed as follows:—

First. By means of the "dimples," top and bottom, hold the Calculator between the Thumb and Second Finger of the Left Hand, the Runner being at the front, with the Index Finger resting lightly upon it.

Second. Place the Thumb of the Right Hand against the milled edge of the lower flange, and by means of the Index Finger applied to the upper flange, rotate the upper scales as desired. (This is the position shown in the Cut.)

Third. To rotate the whole instrument beneath the Runner, remove the Index Finger, previously applied to the upper flange, and substitute the Second Finger, using it, together with the Thumb, to apply power to the lower flange, thus turning the instrument with all its scales in either direction. It is perhaps the best practice to keep the Runner always in front, with the window in full view, turning the scales of the main instrument beneath it, and making all settings, and reading off all such answers as require interpolation by means of the cross hair.

For accurate setting of one scale on another, a differential motion may be obtained by pressing the Right Thumb against both flanges simultaneously and twirling it slightly.

III. With One Hand

If the flanges are rotated by means of the Third to Fourth Fingers of the Left Hand, the Right Hand is left free for setting down results. Many prefer this method of operation and seldom use both hands.

DESCRIPTION

The "Small" Pocket Calculator is a six inch, logarithmic slide rule, bent into a circle so as to form a compact and easily operated instrument. It is composed of four fundamental members, as follows:—

- (1). A circular **Base Plate** carrying continuous scales on its periphery and lower face.
- (2). A movable **Top Plate** or **Rotor** arranged to turn on the hub of the first member and carrying similar scales on its periphery and upper face.
- (3). A slotted **Hub Nut** to keep the Rotor in place and adjust the friction thereof.
- (4). A **Slider** or **Runner** with cross hair and pointers to be used in conjunction with the first two members. Its frame is of bent metal enveloping all the scales and by two pairs of feet running in grooves top and bottom, is made to travel around the instrument and yet not interfere with the fingers grasping it. For accurate setting, the cross hair is on the inside of the transparent window, and the four pointers are close to the dials, and in the same radial plane.

MATERIALS

Calculator Parts 1, 2 and 3 are of hard unplated metal with permanent "gun metal" finish that will not rust or corrode.

The **Runner** is of Oxydized German Silver and like other parts is unaffected by moisture or ordinary changes of temperature.

Rim Scales C and D are of white seamless celluloid, polished and engraved, shrunk onto the metal frame and protected by the flanges.

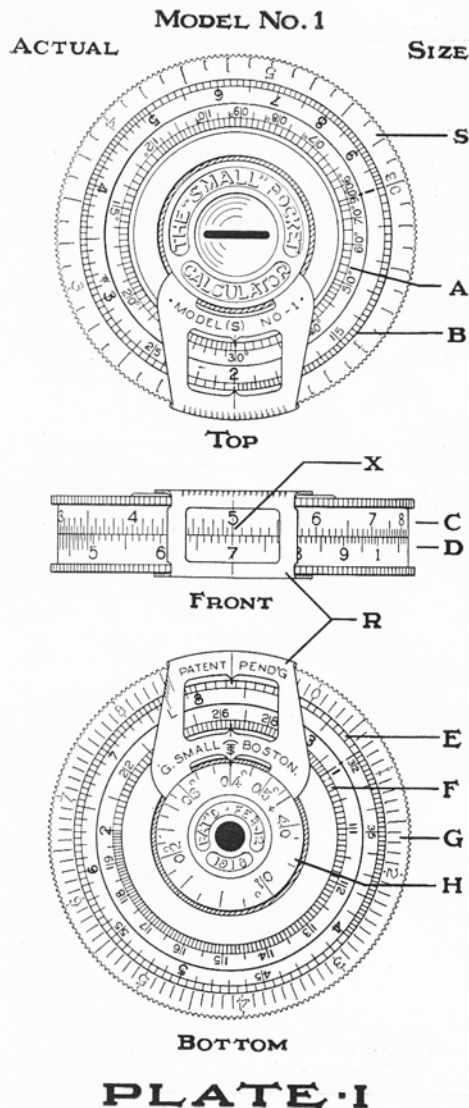
Dials AB and **EF** are of brass with white celluloid face, figures and graduations die-stamped in black.

Dials S, G and **H** are of dark gun metal with sunken white letters, giving a pleasing contrast with the white dials.

Main Bearing is of two different metals of large diameter, slight taper and spring washer to take up end shake, and insure uniform friction.

WORKMANSHIP

Care is taken to produce a pocket slide rule of really high grade, and only skilled mechanics accustomed to fine tool work and watchmaking have been employed.

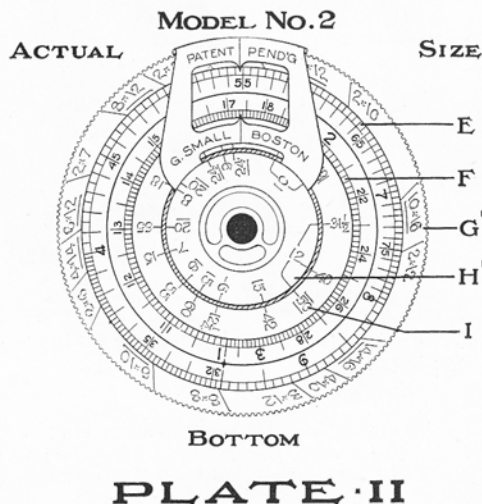


KEY TO PLATE I

SCALE	USE
S	Six Inch Scale for distances on plans.
A	Sines of Angles greater than $05^{\circ}-44'$.
B	Tangents of Angles greater than $05^{\circ}-43'$.
C & D	Ordinary scales for multiplication and division; like scales of straight slide rule.
E & F	Square Roots of numbers on D Scale.
G	Logarithms of numbers on D Scale.
H	Sines and Tangents of Small Angles between $00^{\circ}-34'$ and $05^{\circ}-44'$.

KEY TO PLATE II

E & F	Square Roots of numbers on D Scale.
G'	Rectangular Wooden Beams. When right hand edge of Runner coincides with slant line on Beam Scale, Cross Hair X is on corresponding Section Modulus on D Scale.
H' & I	Standard Steel I Beams:—H' giving the depth in inches, and I the weight in pounds per linear foot. Read Section Modulus in the same manner as for Wooden Beams.



COMMENDABLE FEATURES

(1). Its **Compactness**, which appeals to College Students, Engineers in the field, etc.

(2). Its **Continuous Scales**, insuring that the results are always ready, and never off the scale, as often occurs with the straight slide rule.

(3). Its **Mechanical Construction** is such that changes of temperature and humidity will not affect its operation, and the device for friction adjustment is extremely simple.

(4). **Graduations** on the continuous six-inch Rim Scales are 20% larger than on the double five inch scales most generally used on the ten inch slide rule. Even the spaces on the Square Root Dials are larger than on a single scale ten inches long, as may be readily seen by comparing, for instance, the arc space between figures 8 and 9 with the corresponding space on a ten inch slide rule.

(5). Its **Accuracy** is equivalent to a three place log, table giving three significant figures. Tests show that, with ordinary care in manipulation, the probable error may be kept well within one third of one percent, even when solving compound fractions requiring several different settings to obtain a single result.

(6). As a **Map Measure** it is always ready to scale lengths of *straight* or *curved* lines.

(7). When extracting **Square Roots**, the Runner can never be at the wrong end of the scale, since this scale takes two revolutions to complete itself, thereby giving the square roots of numbers of both *even* and *odd* numbers of digits at a single setting:—e. g. the square root of 3 or 30 (see Plate III) may both be read without moving the Runner.

(8). On both models the **Scale of Reciprocals** permits short cuts such as may be performed on the "Poly-phase" type of straight slide rule,—e. g. the multiplication of three different factors with a single setting, elimination of one setting in case the last operation of a series be division, etc., etc.