

J. D. SMITH.
CALCULATING DEVICE.

No. 18,711.

Patented Nov. 24, 1857.

Fig. 2.

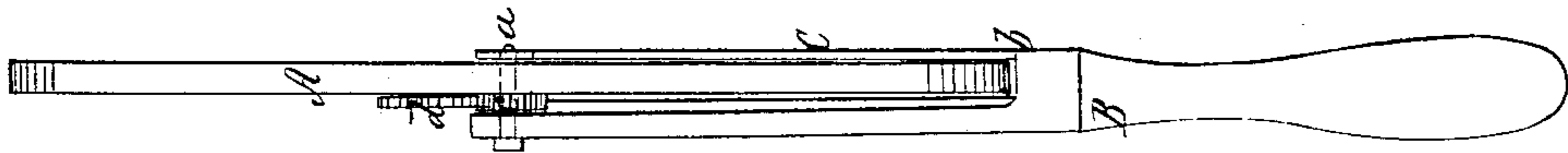
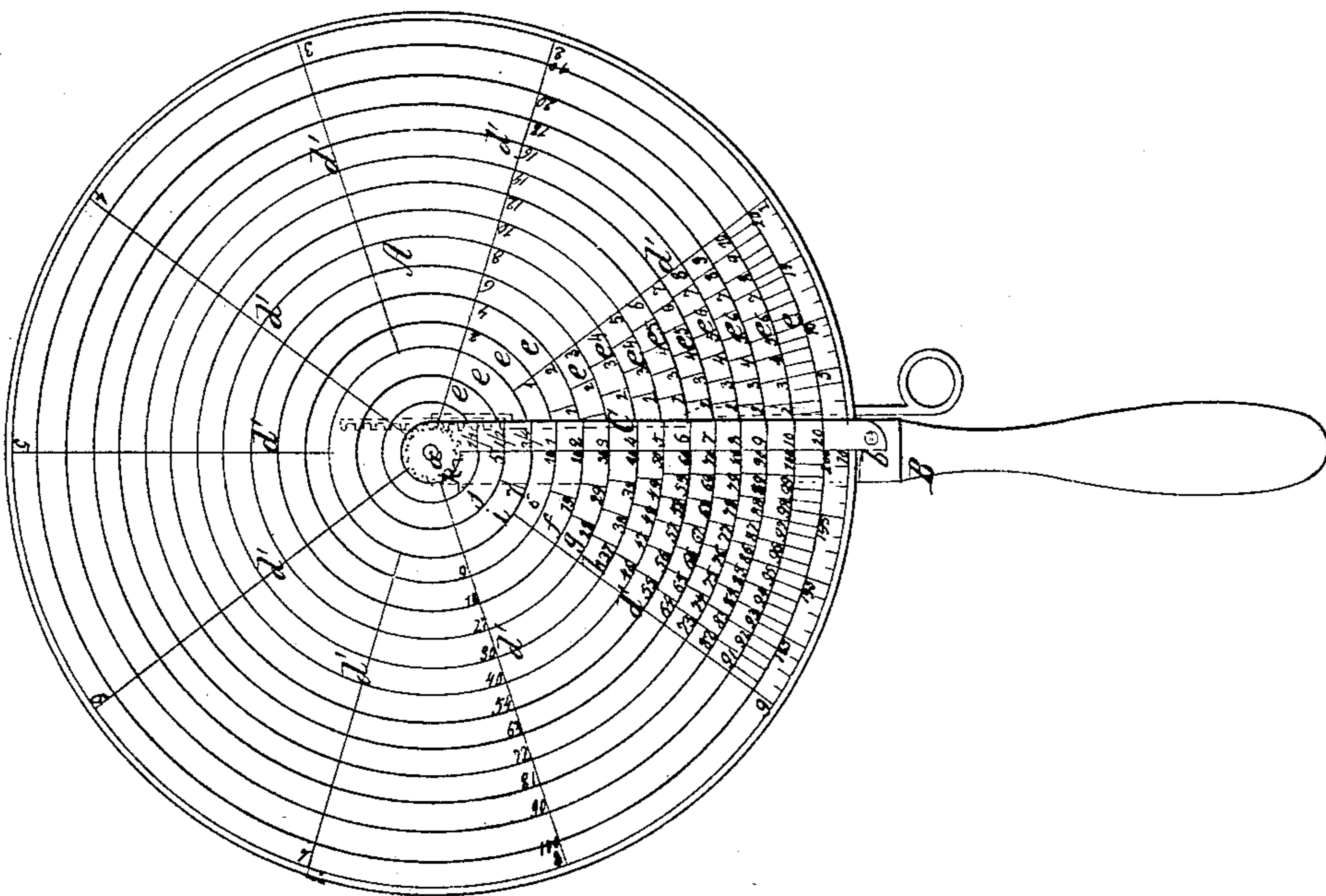


Fig. 1.



UNITED STATES PATENT OFFICE.

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MACHINE FOR MULTIPLYING NUMBERS.

Specification of Letters Patent No. 18,711, dated November 24, 1857.

To all whom it may concern:

Be it known that I, JAMES D. SMITH, of Brantingham, in the county of Lewis and State of New York, have invented a new and useful Implement or Device for Computing or Calculating; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1, is a face view of my improvement. Fig. 2, is an edge view of ditto.

Similar letters of reference indicate corresponding parts in the two figures.

The object of this invention is to enable persons to ascertain readily the gross value of articles when a certain price for fractional parts is given. It is a multiplying device which may be used with the greatest facility and will effect a saving of time and also prevent inaccuracies which frequently occur in computing mentally.

The invention consists in having a rotary disk graduated on one side and numbered so as to form a table; said table being used in connection with a graduated stationary index; the parts being arranged as hereinafter described whereby the desired object is attained.

To enable those skilled in the art to fully understand and construct my invention, I will proceed to describe it.

A, represents a circular disk, the axis (*a*) of which is fitted in the end of a handle and C, is a bar which is attached at one end to the handle B, as shown at (*b*), the opposite end receiving one end of the axis (*a*)—see Fig. 2. The disk A is allowed to rotate freely, and motion may be given it when desired by having a pinion (*c*) on its axis, and by having a sliding ratchet (*d*), fitted in any proper way in the handle B; said rack gearing in the pinion (*c*), and as it is moved rotating the pinion and disk.

The face side of the disk A has radial lines (*d'*) marked on it at equal distances apart, said lines extending from the center of the disk to its periphery; and the outer ends of these lines at their junction with the periphery of the disk form a unit circle, that is, each line is numbered, commencing with the figure 1, and continuing around the disk—see Fig. 1, in which ten lines are shown numbered from 1 to 10. The spaces

between the lines (*d'*) at the periphery of the disk A, are graduated into fractional parts. The spaces between the radial lines (*d'*) on the disk A are also graduated as follows:—The disk has a series of concentric circles (*e*) made on it at equal distances apart from its center to its periphery; and the spaces between these circles are graduated, thus: the space (*f*) is divided into two equal parts, the space (*g*) into three equal parts, the space (*h*) into four equal parts, and so on, each succeeding space being so divided as to have one more part than the one next preceding it toward the center, as shown in red, Fig. 1. These circular spaces or subdivisions are all numbered around the disk, the numbering commencing in the first space or that included between the radial lines 1 and 10, see Fig. 1. The bar C is also divided into equal parts by the circles (*e*) which extend across or are marked on said bar, and these lines are numbered as shown in Fig. 1, the line 1, corresponding with the line between the spaces (*f*) and (*g*).

The implement or device is used as follows:—Suppose, for instance, that the gross sum or value of an article is required to be known, the article weighing 10 lbs. and the price 6 cts. per pound. The disk A is turned until the line (*d*) numbered 10 at the periphery of the disk is brought in line with the left edge of the index or bar C, and the amount opposite or by the side of the figure 6 on the bar or index will be the gross or aggregate sum, viz: 60 cts.

I would remark that the central circular spaces (*i*), (*j*), (*k*), may be reserved for fractions, the sum of the fractions being mentally added to that of the whole numbers; for instance, if the price per pound be $6\frac{1}{2}$ cts. instead of 6 cts. as above stated, the figure 5 in the space *j* is added to the sum 60, making the aggregate or gross value 65 cts. It is not essential, however, that the fractional spaces be in the precise place indicated; they may be placed between the circular spaces of whole numbers if desired. I would also remark that the within described device may be applied to a spring-balance, so that the weight and price of an article may be ascertained at the same time. In this case the disk A would serve as the dial of the balance, the dial being connected with the spring and the weight or article

applied to the lower end of the rack
bar (d).

Having thus described my invention,
what I claim as new, and desire to secure by
5 Letters-Patent, is:

The combination of the rotating disk A,
and stationary index or bar C, graduated

and numbered as described, for the pur-
pose set forth.

JAMES D. SMITH.

Witnesses:

ADAM DEITZ,
JACOB DEITZ.