H. L. LERNER.

CALCULATOR.

APPLICATION FILED AUG. 1, 1908.

**962,441.**

Patented June 28, 1910.

2 SHEETS—SHEET 1.

*Fig.1.*



*Fig.3.*

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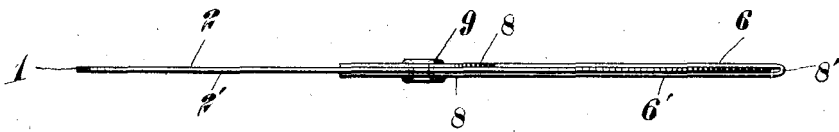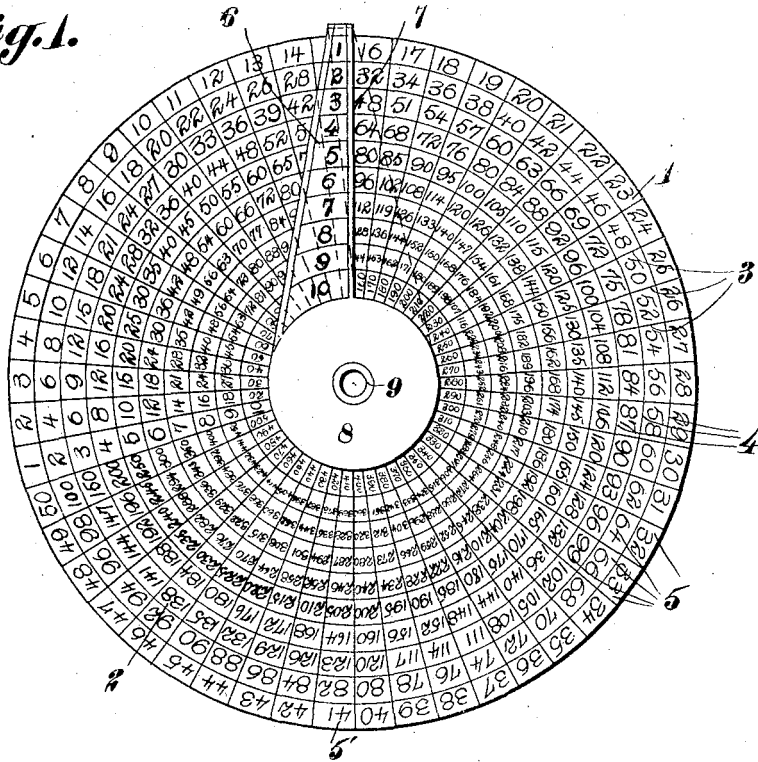
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2 SHEETS—SHEET 2.

*Fig. 2.*



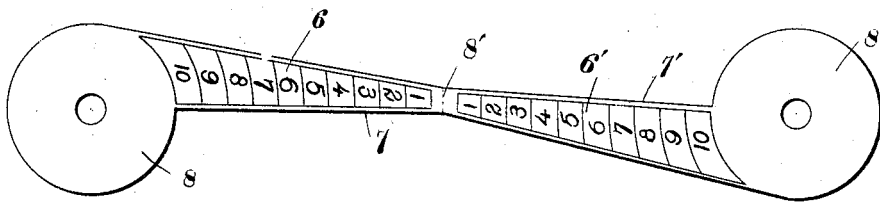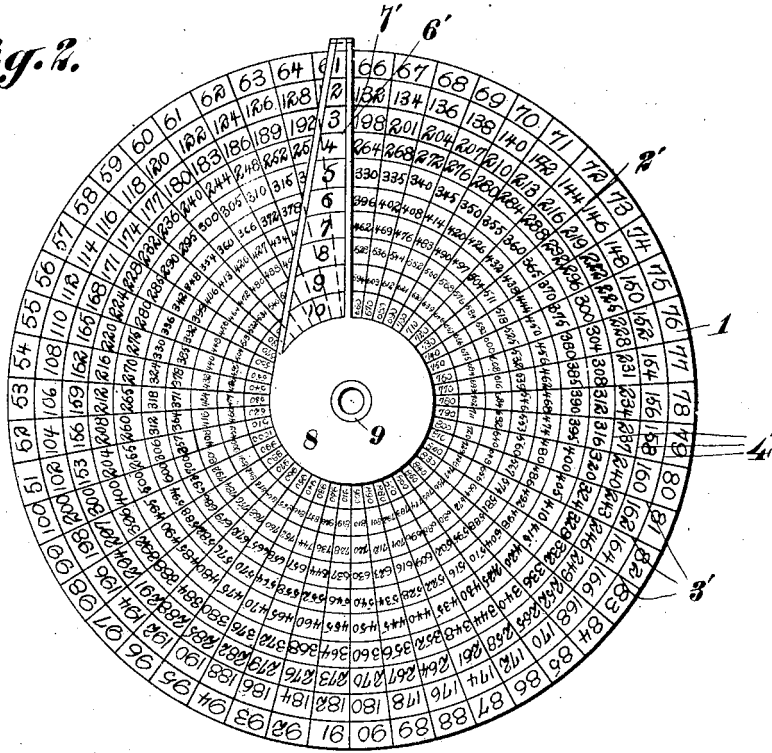*Fig. 4.*

Witnesses;

Inventor:
Harry L. Lerner
by
Joshua R. H. Potts.
Att'y.

# UNITED STATES PATENT OFFICE.

HARRY L. LERNER, OF CHICAGO, ILLINOIS.

## CALCULATOR.

**962,441.**　　Specification of Letters Patent.　**Patented June 28, 1910.**

Application filed August 1, 1908. Serial No. 446,361.

*To all whom it may concern:*

Be it known that I, HARRY L. LERNER, a citizen of the United States, residing at Chicago, county of Cook, and State of Illinois,
5 have invented certain new and useful Improvements in Calculators, of which the following is a specification.

My invention relates to calculators and particularly to a multiplying device.
10 The object of my invention is to provide a device for rapidly and accurately multiplying, which shall be of simple construction and readily operated.

A further object of my invention is to pro-
15 vide a device as mentioned which shall have a large range in comparison with its size.

Other objects will appear hereinafter.

With these objects in view, my invention consists generally in a disk or dial and an
20 arm rotatably mounted thereon and having a radially disposed edge, the arm having a series of numbers thereon constituting the multipliers, and the face of the disk being divided by a plurality of concentric circles
25 corresponding in position to the multipliers on the arm and by a plurality of radial lines, and the spaces thus formed being provided with numbers, those in the peripheral spaces being the multiplicands and those in the re-
30 maining spaces being the products of the peripheral numbers or multiplicands and the corresponding multipliers on the arm.

My invention further consists in a device as mentioned, both faces of the disk being
35 divided as mentioned and provided with numbers which form a continuation of those on the opposite side.

My invention further consists in certain details of construction and arrangements of
40 parts all as will be hereinafter more fully described and particularly pointed out in the claim.

My invention will be more readily understood by reference to the accompanying
45 drawings forming a part of this specification, and in which,

Figure 1 is a view of one face of the device, Fig. 2 is a similar view of the reverse face, Fig. 3 is an edge view thereof, and Fig.
50 4 is a view of the arm detached and in unfolded position.

Referring to the drawings 1 indicates a disk which may be of any suitable material but is preferably formed of cardboard. This
55 has its obverse face 2 divided by a plurality of radial lines 3 and a plurality of concen-

tric circles 4 into a large number of number bearing spaces 5. Rotatably mounted on the disk is an arm 6 having a radially disposed edge 7 which may register with either of
60 the radial lines 3. The arm is provided with a plurality of consecutive numbers corresponding in number and position to the spaces between the several circles 3. It will be obvious that any series of numbers may
65 be used, but in the drawings, I have illustrated them as from 1 to 10 respectively, 1 being at the outer end of the arm and 10 toward the inner end of the arm or center of the disk. The numbers in the peripheral
70 row 5' of the spaces into which the disk is divided, extend from 1 to 50 inclusive and these constitute the multiplicands, the numbers on the arm being the multipliers. The remaining spaces on the disk are provided
75 with numbers which are the product of the peripheral number or multiplicand and the corresponding multiplier on the arm.

To use the device the arm is set with the digit "1" thereon adjacent to the multipli-
80 cand to be used and the product is the number on the disk then adjacent the desired multiplier on the arm. For example, if it is desired to find the product of 16 times 9 the arm is swung until the digit "1" on
85 the arm is adjacent to the number "16" on the disk in the peripheral row, and the product will be found in the space adjacent to the digit "9" on the arm.

The reverse side of the disk is divided by
90 the concentric circles 4' and the radial lines 3' in a manner similar to the obverse side, and the numbers in the spaces thus formed are continuations of the series on the opposite face, that is, the peripheral numbers
95 or multiplicands extend from 51 to 100 inclusive, the multipliers on the arm being the same as those on the opposite side. 2' indicates the reverse side and 6' its corresponding arm. Instead of the numbers on
100 the reverse side of the disk being from 51 to 100 and multiples thereof as mentioned, the multiplicands in the peripheral row may be identical with those on the obverse, the numbers on the arm being a continuation of
105 the series on the arm 6. that is for example, from 11 to 20 inclusive.

The arms are preferably made of one piece doubled upon itself as shown in Fig. 3 with the disk between them, and Fig. 4 shows the
110 arms as stamped out. Each arm is provided with a disk 8 by which it is secured

to the disk 1. When the arms are folded as at 8', the disks are one above the other and are secured to the disk 1 by a single eyelet 9.

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

In a device of the class described a dial of sheet material having both faces divided into a plurality of concentric circles and a 10 plurality of radial lines into a large number of spaces in combination with an arm rotatably mounted on said disk, said arm being formed of a single strip of sheet material bent double with the dial between the 15 parts, said strip having a disk at each end forming means for attaching the arm to the dial, one edge of the arm extending radially from the disk and the other edge being substantially tangential thereto, said disk and said arm being provided with series of num- 20 bers, the arm bearing numbers corresponding in position to the circular row of spaces, said spaces each being provided with a number, those in the peripheral row being the multiplicands and those in the remaining 25 spaces the products of said multiplicands and the corresponding numbers on said arms, and the numbers on one side of the device being the continuation of the series of numbers on the opposite side, substantially as de- 30 scribed.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HARRY L. LERNER.

Witnesses:
ARTHUR A. OLSON,
WILLIAM C. SMITH.