

Sept. 27, 1932.

T. NARAHARA

1,880,148

CALCULATOR

Filed July 29, 1929

2 Sheets-Sheet 1

Fig. 1.

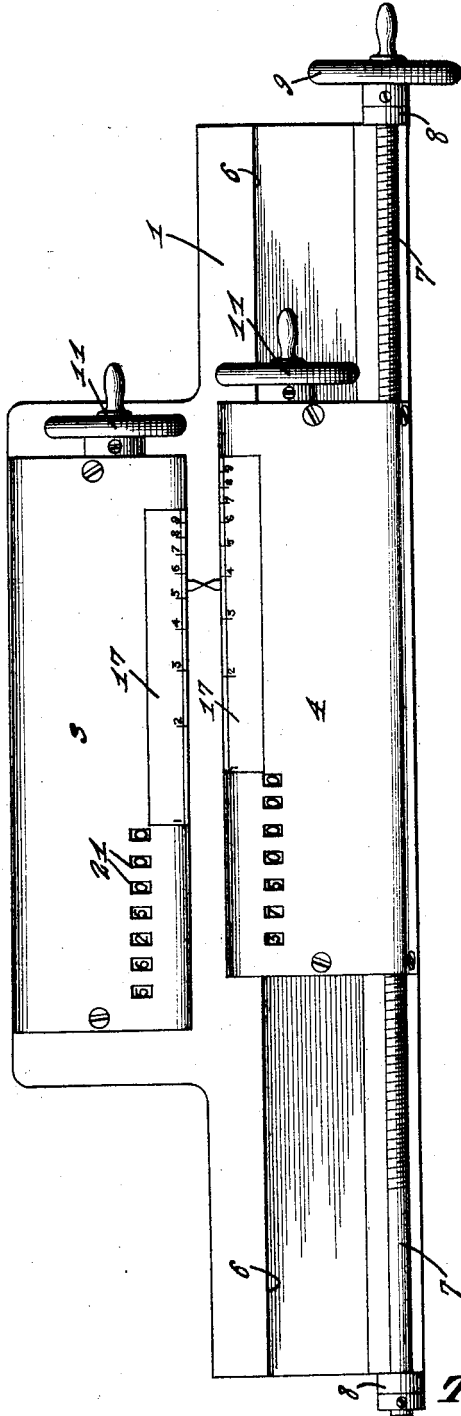
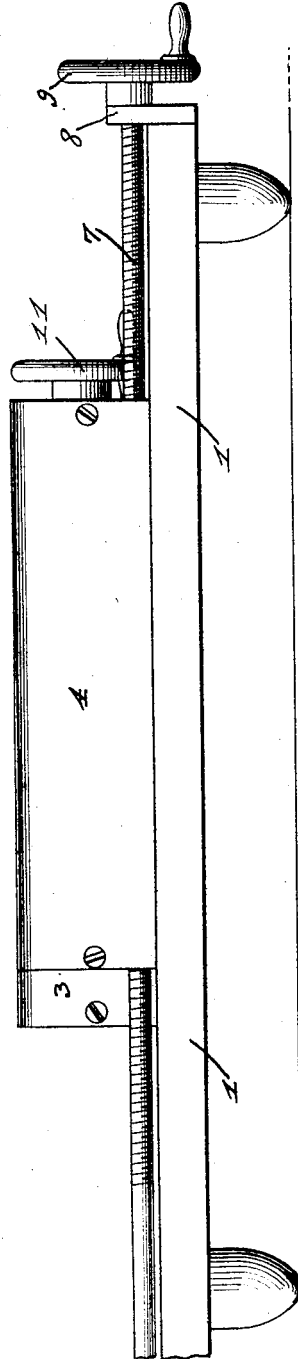


Fig. 2.



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Fig. 3.

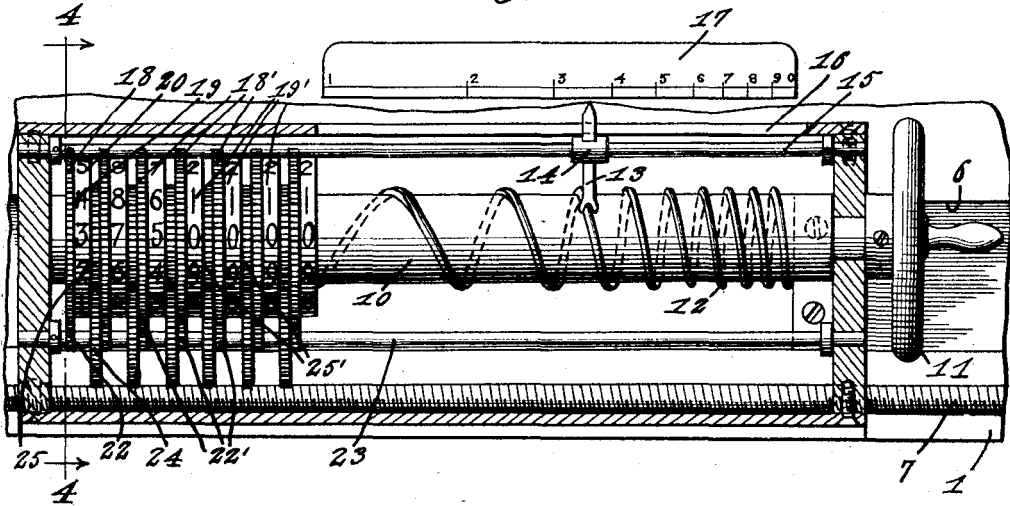
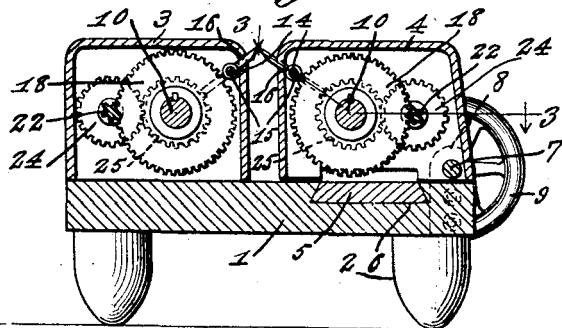


Fig. 4.



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UNITED STATES PATENT OFFICE

TERUO NARAHARA, OF SETAGAYA, JAPAN

CALCULATOR

Application filed July 29, 1929. Serial No. 381,913.

This invention relates to a logarithmic calculator, the general object of the invention being to provide a simple device which will take the place of the logarithmic slide rules and eliminate the disadvantages of such rules.

This invention also consists in certain other features of construction and in the combination and arrangement of the several parts, to be hereinafter fully described, illustrated in the accompanying drawings and specifically pointed out in the appended claim.

In describing the invention in detail, reference will be had to the accompanying drawings wherein like characters denote like or corresponding parts throughout the several views, and in which:—

Figure 1 is a plan view of the device.

Figure 2 is a side view thereof.

Figure 3 is a section on line 3—3 of Figure 4.

Figure 4 is a section on line 4—4 of Figure 3.

In these views, the numeral 1 indicates a base supported by the legs 2 and having a stationary housing 3 thereon and a movable housing 4, the lower part of which is attached to a slide 5 of dovetail shaped fitting in a dovetail shaped groove 6 in the base. This housing 4 is moved through means of a spirally threaded shaft 7 journaled in the uprights 8 on the base and passing through threaded portions of the housing so that by turning the shaft through means of its hand wheel 9, the housing 4 and its slide 5 is caused to travel on the base.

Each housing contains a cylinder 10 which is rotatably mounted in the ends of the housing and has a hand wheel 11 on one of its ends so that the cylinder can be turned. Each cylinder is formed with a spiral rib 12 which is engaged by the forked inner end of a needle or marker 13 carried by a block 14 which is slidably arranged on a rod 15 carried by the housing, the outer end of the needle passing through a slot 16 formed in the housing and cooperating with a logarithmic scale 17 carried by a part of the housing adjacent the slot so that the scale will indicate the position of the needle. As will be seen, by turn-

ing the cylinder by its handle, the spiral rib will cause the needle to move on the rod 15 and thus the needle will indicate on the scale the extent of rotary movement of the cylinder.

A gear 18 is fastened to one end of the cylinder and has attached thereto a drum 19 containing the numerals 20 on its periphery and similar drums and gears 18' and 19' are loosely arranged on the cylinder, the numerals on the drums appearing through the windows 21 formed in the housing. The gear 18 meshes with a pinion 22 loosely arranged on a shaft 23 in each housing, and this pinion is attached to a gear 24 which meshes with a gear 25 which is fastened to the gear 18' of the next drum, these gears being so constructed that while the first drum is making one revolution, the next drum will be making ten revolutions. The gears 18' of the other drums mesh with pinions 22' on the shaft 23 and these pinions mesh with gears 25' connected with the other drums, these other gears and pinions causing the third drum to make 100 revolutions, while the second drum is making ten revolutions and so on throughout the series of drums. The first gear 18 is turned a complete revolution each time the cylinder 10 makes a complete revolution.

Thus as each cylinder 10 is turned, its needle 13 will indicate the logarithmic figure on the scale according to the amount of turning movement given the cylinder and the drums will be turned to give the multiples.

For instance, if it is desired to multiply 375 by 15, the device in housing 3 is turned until the number 1,500,000 appears at the windows of this housing. Then the device in housing 4 is moved until a reading of 1,000,000 appears at the windows of this housing. Then the housing 4 is moved by the shaft 7 and its handle 9 until the two needles of the housings coincide. Then the device in housing 4 is moved until a reading of 3,750,000 appears at the windows of said housing. Then the device of housing 3 is moved until its needle coincides with the needle of the housing 4, which will give the results, namely, 5,625,000, at the windows of housing 3. The principle

of manual operation of this calculator is the same as an ordinary slide rule.

It is thought from the foregoing description that the advantages and novel features
5 of the invention will be readily apparent.

It is to be understood that changes may be made in the construction and in the combination and arrangement of the several parts, provided that such changes fall within
10 the scope of the appended claim.

What I claim is:—

A device of the class described comprising
a base having a longitudinally extending
15 dovetail groove therein, a stationary housing
on the base, a dovetail slide in the groove a
movable housing thereon, a threaded shaft
journalled to the base and passing through
threaded openings in the movable housing
20 whereby turning movement of the shaft will
cause longitudinal movement of the slide
and housing, a cylinder rotatably arranged in
each housing and having one end projecting
therefrom, said housings being arranged side
25 by side in parallel relation to each other, a
handle on said end, a spiral rib on each cylinder,
a needle supported for sliding movement
in each housing and having its inner
end engaging the rib, each housing having
30 a slot therein through which the needle projects,
a scale on the housing cooperating with the
needle, a drum having numerals thereon
attached to the cylinder, other drums having
numerals thereon rotatably mounted on the
35 cylinder, each housing having windows
therein through which the numerals on the
drums are visible and gearing connecting the
drums together whereby each drum will be
rotated ten times while the preceding drum
is making a complete revolution.

40 In testimony whereof I affix my signature.
TERUO NARAHARA.

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