G. LINDEROOS.

Adding Machines.

No. 140,146. Patented June 24, 1873.

Fig. I.

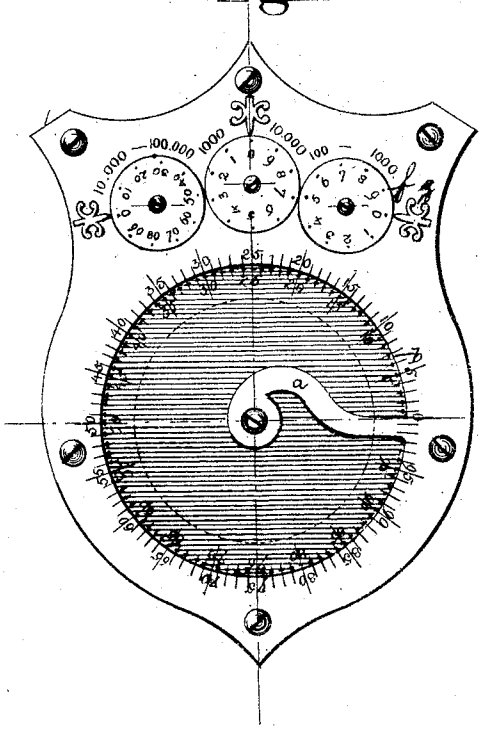
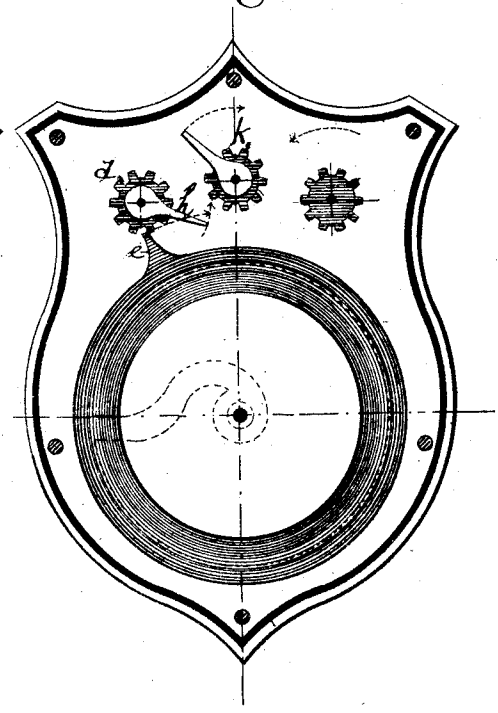


Fig. II.



WITNESSES:—

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GUSTAVUS LINDEROOS, OF POINT ARENA, CALIFORNIA.

IMPROVEMENT IN ADDING-MACHINES.

Specification forming part of Letters Patent No. **140,146**, dated June 24, 1873; application filed August 11, 1871.

To all whom it may concern:

Be it known that I, GUSTAVUS LINDEROOS, of Point Arena, in the county of Mendocino, State of California, have invented a new and useful Improvement in Adding-Machines, the nature of which improvement is fully set forth in the following specification, reference being had to the accompanying drawings, in which—

Figure 1 is a top view of the machine, showing the face-plate with the figures thereon and the indexes. Fig. 2 shows the machine with the back plate removed, disclosing the internal structure and arrangement of the machinery.

The same letters in both the figures refer to identical parts.

The object of this invention is not simply to facilitate the adding of abstract numbers, although by it any numbers the sum of which is equal to or less than one hundred thousand may be readily obtained without the use of paper or pencil, and with perfect accuracy. The main purpose is to afford weighers, measurers, and persons having to keep tally where a continuous succession of small numbers is to be added—and where it is at the same time necessary that there should be no omission, or mistake, or loss through forgetfulness, by interruption or otherwise, of the sum obtained at any point—a simple, cheap, pocket instrument not liable to get out of order, and affording an easy and certain means of keeping the sum of the unity, whether of weight or measure, at any time accumulated. The especial use and advantage may be illustrated by the measuring of boards and other lumber, where an exact account of the number of feet is kept when the lumber is shipped. The person keeping the tally notes the number of feet in each plank as it passes, and, by the ordinary methods of paper and pencil, or by mere memory of items, there is always liability of mistake. But, in order that those skilled in the art to which my invention appertains, may be able to make and use the same, I will proceed to explain the manner in which I have constructed and arranged the details of my invention.

I make a face and bottom plate of the shape shown in the drawings, or in any other which may be dictated by convenience or fancy. The face-plate has a circular opening of suitable size, from one side of which an arm, marked *a* in the drawings, serves as a base or starting-point, to which the zero-figure on the disk is brought, and also affords a support for the pivot-screw which holds the revolving disk. This revolving disk, which I have marked *b* in the drawing, is divided by short radial lines, and by holes or by the holes alone, (or small radial grooves may be used instead,) into one hundred (100) equal spaces, and marked with the corresponding figures. In the form shown, only the fives and tens are marked, but the number may be increased or diminished in frequency at pleasure. The holes serve to mark the units, and also to receive the point which turns the disk. The edge of the revolving disk extends slightly underneath the face-plate, and the row of holes in the disk is near to inner edge of this plate. On the upper surface of this inner edge, as is clearly shown, are radial lines and numbers corresponding exactly to those described on the disk. Further, on the revolving disk, located at a convenient point for the purpose of striking on the right-hand side of one of the cogs on the small pinion *d*, where the zero is brought down to the upper edge of the arm on the face-plate, is a finger, *e*, of convenient form and length, adapted to move or pass the cog, as will be more fully described hereafter. This cog-wheel *d*, as shown on the right-hand side above the disk, is provided with ten cogs. It carries attached thereto a small circular disk, *f*, revolving on the outside of the face-plate, and marked with numbers from one to ten, as shown. On the right-hand side is fixed to the face-plate a small index, *g*, the point of which rests near the edge of the disk *f*. On the small pinion *d* is fixed an arm, *h*, like that heretofore described on the large revolving disk, and for a similar purpose. This arm is so arranged that when the zero or ten point on the small disk is under the index the arm *h* shall just touch or rest near the under side of one of the cogs of a pinion, *k*; and when the disk revolves, bringing the numbers up past the index, the arm travels around and again impinges against the upper side of the same cog, and just before disk *d* in its revolution has brought the zero-

point again around to the index the arm h has turned the second pinion k one-tenth of the entire revolution. This second pinion being also provided with a disk marked and numbered like the first, and having an index similar to g, it will be evident that one revolution of d will move k in such a manner as to carry the index from zero to one.

On the left of k is another disk with the same construction and arrangement of pinion and index, as the second is moved by the first. This third disk, however, is numbered from ten to one hundred by tens. Other pinions, with numbers similarly arranged, constructed to be moved in the same way, and carrying an index similar to the last, may be used, if desired.

In my machine I have provided a spring underneath the large disk to keep it steady and pressed up to the face-plate.

The operation of my machine is as follows: To adjust the machine, move the figure 8 on the small disk to the right, to the index, (this is done to avoid any mistake in adjusting the other small disks in the manner underneath described.) Move the figure 9 on the middle small disk to its index. Move the figure 90 on the small disk to the left, to the index. Having set the several small disks as above directed, turn the large disk by placing the pointed bar in the holes on the disk until the small disk to the right moves to zero, but care must be taken that the zero on the large disk is in a line with the corresponding zero on the face-plate at the arm, when all the corresponding figures on the large disk will coincide with those on the face-plate, and the machine will be ready for operation, during which the figures on the large revolving disk is not regarded, but only those on the face-plate, inasmuch as the figures on the large revolving disk are only used to find the final result of the operation, and then only the figure opposite zero at the arm attached to the face-plate is the proper figure to be added.

To use the machine, place the pointed bar in the hole on the large revolving disk corresponding to the figure on the face-plate desired to be added, and turn the disk down to the arm. Remove the pointed bar and place it in the hole on the large revolving disk corresponding to another figure desired to be added to the former, and so on, from figure to figure until the end. It must be borne in mind that the large revolving disk only numbers from 1 to 100, consequently only units and tens can be used at one time, but hundreds, as well as thousands, can be used in the same manner, always remembering that hundred or thousand, whichever used, must be implied. As for the other three small disks, they will regulate themselves without further attention, the one to the right pointing out one hundred to thousand, the one in the middle from one thousand to ten thousands, and the one to the left from ten thousands to one hundred thousands, be the same dollars, cents, pounds, ounces, or feet, inches, &c.

It will be observed, from the foregoing description of construction, that when the large disk has made one revolution, the arm thereon will strike, if moved further, a cog, the right-hand pinion moving its disk from zero to one, thereby carrying the sum to one hundred; this will indicate that one hundred is to be added to the sum already indicated on the large disk. When the small right-hand disk has made one revolution, having marked at each step an additional hundred to the tens and units on the large disk, it will have reached one thousand, or its limit. When the right-hand disk now passes the one-thousand point, its finger on the pinion will strike and move the middle pinion one space, bringing the figure 1 on its disk under the index, and marking thus a record of one thousand, while the first small disk goes on marking hundreds, and the large units and tens. The third operates in the same, and marks tens of thousands.

To find the result, first look at the small disk on the left-hand side; it will give the tens of thousands if any one reached at its index. Second, the small disk in the middle points out at its index the thousands, if any. Third, the small disk on the right the hundreds, if any. Fourth, the large revolving disk at the arm gives the number from one to one hundred, all of which must be added together; as, for instance, if the small disk in the left-hand side points out 90, the small middle disk 5, the small disk on the right-hand side 2, and the large disk 40, the whole sum would then be equal to 90,000+5,000+200+40, equal to ninety-five thousand two hundred and forty.

I am aware that the main elements shown by me are old, and I make no claim to them. I have simply aimed to make such a new combination as would afford a compact, cheap, and durable machine.

What I claim as new, and desire to secure by Letters Patent, is—

The device shown, consisting of the main and secondary wheels and disks, marked as shown and provided with arms, when inclosed between the plates, the upper having the openings, and the bar a and the wheels being held adjustably in place by the spring, the whole constructed and arranged as described.

GUSTAVUS LINDEROOS.

Signed in presence of—

CHARLES LYMAN,

M. GAY.