(No Model.)

2 Sheets—Sheet 1.

A. LAPEYRE.

ADDING MACHINE.

No. 346,927. Patented Aug. 10, 1886.

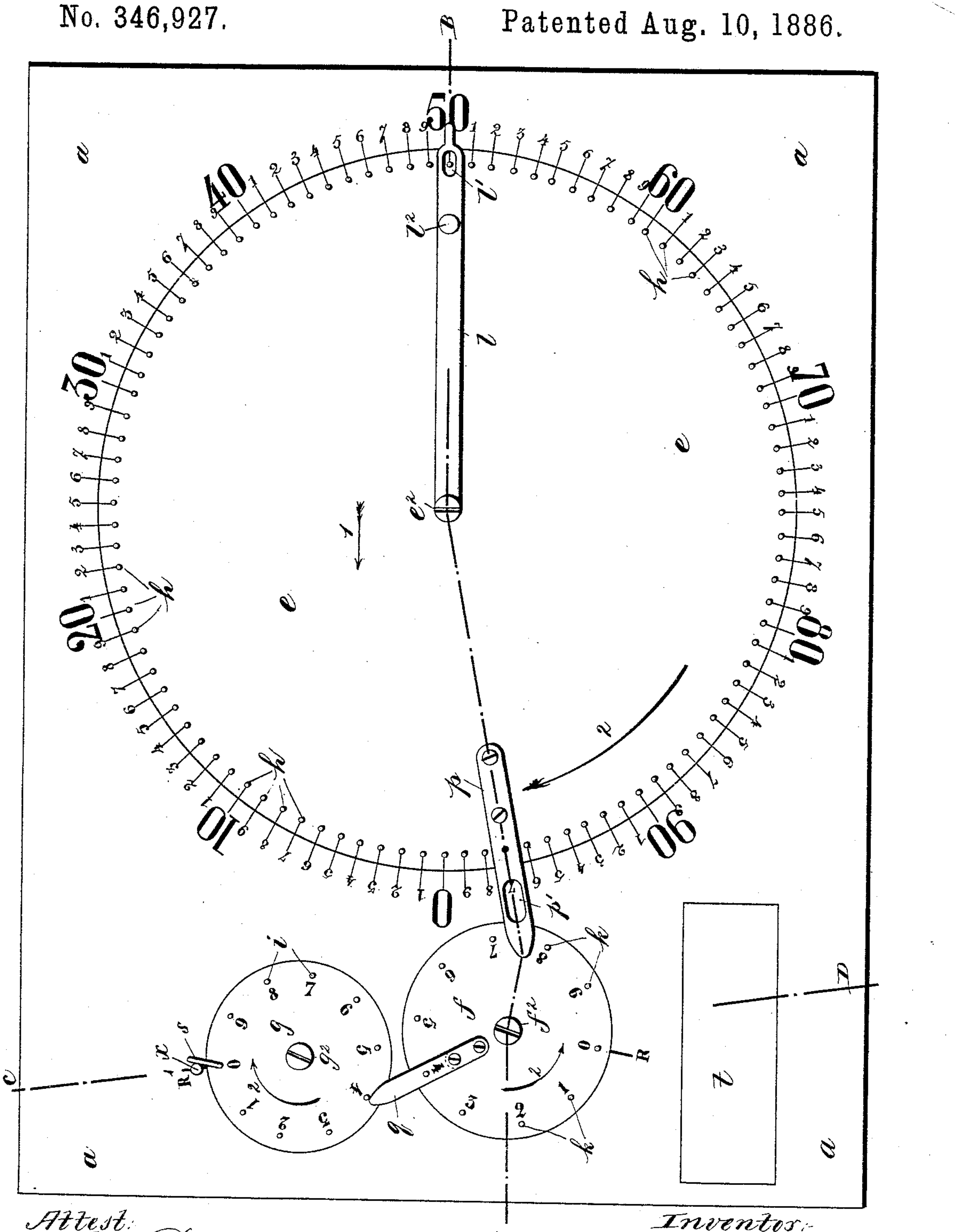

Fig. 1.

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Inventor:-
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per Henry Orth
his attorney

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(No Model.) 2 Sheets—Sheet 2.

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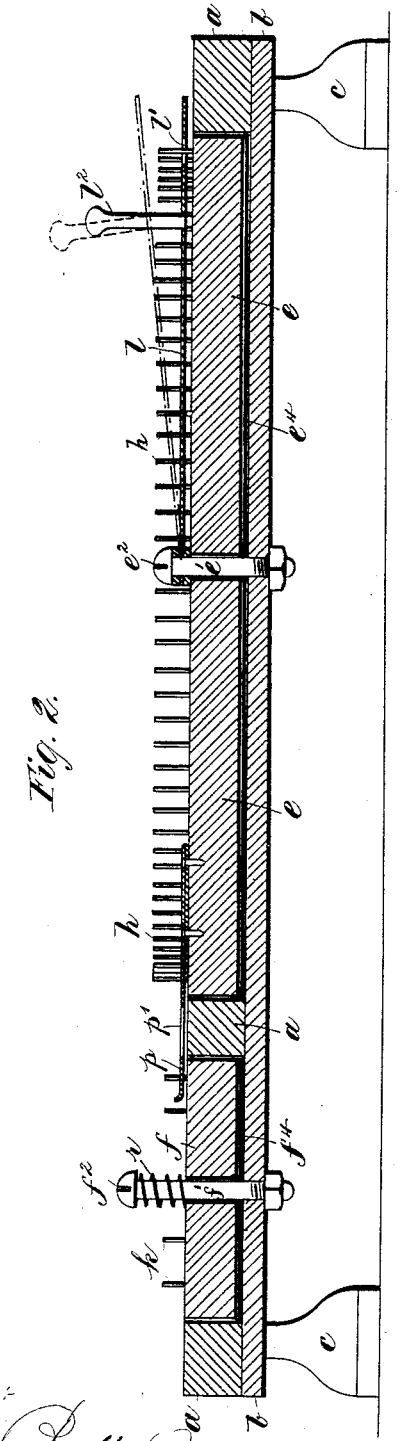

Fig. 2.

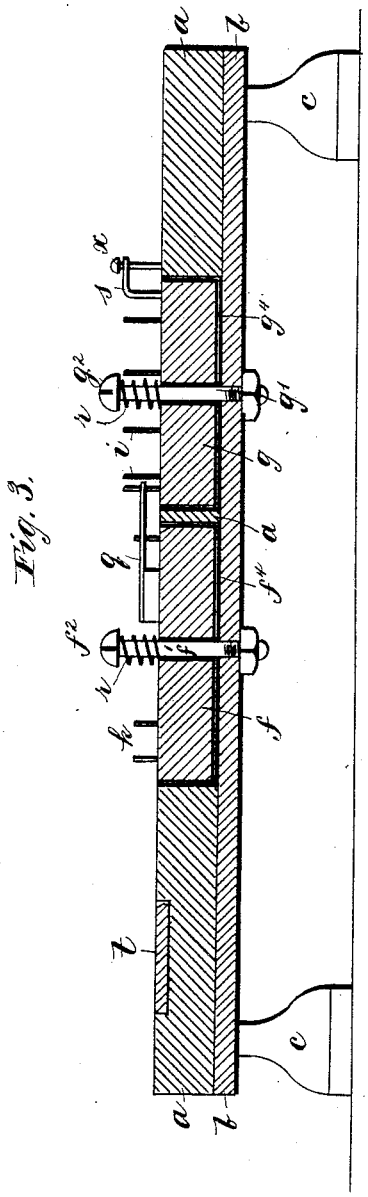

Fig. 3.

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UNITED STATES PATENT OFFICE.

ANTOINE LAPEYRE, OF PARIS, FRANCE.

ADDING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 346,927, dated August 10, 1886.

Application filed December 5, 1885. Serial No. 184,834. (No model.) Patented in France April 15, 1885, No. 168,202.

To all whom it may concern:

Be it known that I, ANTOINE LAPEYRE, a citizen of the French Republic, residing at Paris, in said French Republic, have invented certain new and useful Improvements in Adding-Machines, (for which I have obtained Letters Patent in France No. 168,202, under date of April 15, 1885;) and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

This invention relates to that class of calculating-machines known as "adding-machines," and has for its object to provide an apparatus of simple construction, whereby any desired number of sums may be speedily and conveniently added.

The invention consists in the construction of the apparatus, and in the combination of its parts, substantially as hereinafter described, and then specifically pointed out in the claim.

In the accompanying drawings, Figure 1 is a top plan view of my improved adding-machine, and Fig. 2 is a longitudinal section of the machine, taken on the irregular line A B of Fig. 1; and Fig. 3 is a transverse section on the irregular lines C D of said Fig. 1, looking in the direction of arrow 1.

My improved adding-machine is composed of a suitable rectangular board or frame, *a*, secured upon a board or table, *b*, provided with supporting-legs *c*. The frame *a* is provided with three cylindrical openings for the reception of three disks or wheels, *e*, *f*, and *g*, respectively, mounted loosely on pivot-pins *e'*, *f'*, and *g'*, respectively. The pivot-pin *f'* of disk *f* and the pivot-pin *g'* of disk *g* project some distance above said disks, and terminate in a head, f^2 and g^2, that forms an abutment for one end of the coiled springs f^3 and g^3, the other ends of which bear on their respective disks. The power of these springs is exerted to press the disks downward onto their seats f^4 and g^4, which consist of any suitable flexible material—such as leather, cloth, felt, or analogous material—a like seat, e^4, being provided for the disk or wheel *e*, the pivot-pin whereof also terminates in a head, e^2, that secures the pointer-handle *l* in place and holds the disk or wheel to its seat.

The object of providing the coiled springs and the flexible seats for the disks above described is to prevent the disks or wheels from rotating too freely in their operation, and thereby prevent them from being carried by momentum beyond the point to which they should move.

Of course it will be understood that instead of forming the carrying-frame of two parts, *a b*, as described, it may be made of a single piece, either of metal, wood, or other suitable material, and provided with cylindrical recesses for the reception of the disks, a sufficient thickness of material being left at the bottom of each recess for the respective pivot-pins of said disks or wheels.

The wheel *e* is the largest of the three, and is subdivided into one hundred equal spaces by means of metallic pins *h*, projecting vertically from the upper face of the said disk, the frame around the disk *e* having a corresponding number of subdivisions arranged in series of ten subdivisions, indicated by proper numbers from 0 to 90, radial lines extending from the circle of subdivisions on the frame to the concentric circle of subdivisions on the disk. For convenience of numbering the tenths of each section they are indicated by 1 2 3 4, &c.; but in adding these will of course be read 11 12 13 14, &c., or 21 22 23 24, &c., as will be readily understood, the tens being numbered in full 10 20 30, &c.

On the pivot-pin *e'* of disk *e* is loosely mounted a spring-pointer or index-handle, *l*, composed of a flexible strip of metal that has near its outer end a slot, *l'*, and a hand-hold, l^2, that projects vertically from its upper face. To said wheel is also fixed a pointer-finger, *p*, that is also slotted near its outer end, the slot *p'* being so located as to enable the operator to see the numbers on the circle of subdivisions on frame *a* around disk *e*.

The small wheel or disk *f* has ten subdivisions indicated by numbers, a pin, *k*, projecting from each subdivisional point into the path of the finger *p*, and it is provided, like wheel *e*, with a fixed finger, *q*, that projects into the path of the pins *i* of the still smaller wheel or disk *g*, which is, like disk *f*, also subdivided

into ten parts, and from each of the divisional points of which also projects a pin, *i*, which pins lie in the path of the finger *q* on disk *f*.

R and R′ are zero-marks on the frame *a*, to which the corresponding marks on disks *f g* are to be brought in commencing the operation of adding, as hereinafter explained.

A pin, *x*, projects from the zero-mark R′ on frame *a* into the path of a lug, *s*, secured to disk *g*. The object of providing the lug *s* is to lock the disk *g* against further rotation when the sum of ten thousand has been reached in the operation of adding. The arm *q* of disk *f*, projecting between the pins of disk *g*, prevents said disk *f* from rotating, while the arm *p* of disk *e*, projecting between the pins of disk *f*, prevents said disk *e* from rotating, the three disks being thus locked against rotation in a forward direction.

t is a tablet, of ivory, or bone, or slate, or other suitable material, secured to frame *a*, upon which the partial additions are noted.

The large disk *e* adds the units and tens to a hundred, the disk *f* indicates the hundreds, and the disk *g* the thousands.

Before describing the operation of the apparatus I would state that two columns at a time are added, and that if there are three columns, that on the left is added separately. If there are four, two at a time are added, and if there are five, two columns at a time are added, and the extreme left column of the five is added separately, &c. Of course if there are three, four, or five columns the large wheel, when adding the third and fourth columns to the left, will add units and tens of hundreds, &c., as will be readily understood. This being borne in mind the operation of the apparatus may be briefly described, as follows: Supposing 35, 27, and 48 are to be added, the operator will bring all the disks to their zero-marks. This he effects by first moving the finger *p* of disk *e* to the zero-mark on frame *a*, and by rotating the disks *f* and *g* in a direction the reverse of that in which they move in operation (which latter direction is indicated by arrows) until the zeros of both disks reach their respective zero-marks, R and R′, on said frame. The large disk *e* is next rotated by lifting the pointer-lever *l* out of contact with the pins *h* of the disk and rotating the same until the finger *p* stands at 35. To add the next number, 27, to the 35, the lever *l* is then brought to the pin *h*, opposite, the zero-mark is brought into engagement therewith, and the disk *e* is rotated until said lever stands at 27, when, to add the number 48, the lever is again disengaged from the pin and brought back to the zero-mark, and brought into engagement with the pin opposite thereto and again rotated until it stands at 48. During the first partial rotation of the disk *e* the finger *p* has been brought to 35 by the second partial rotation to 62, and by the third partial rotation said finger will pass over the edge or disk *f*, and, engaging pin 7, will rotate the said disk the distance of one space, and will move until it reaches ten, this being indicated by the large disk through the slot of finger *p*, and as the 100 is indicated by the smaller disk at the zero-mark the total of 110 is thus indicated.

From the above it will be readily understood how any number of figures may be added up to ten thousand. Each addition of two columns, when there are more than two, and when the amount of these two columns does not exceed ten thousand, is marked on the tablet *t*. When the sum-total exceeds ten thousand, the disks are locked against further rotation by the lugs *s* and pin *x*, as before described, and the parts are again brought to their zero-marks and the operation resumed, this being of course also the case after each addition of two columns.

Supposing it is desired to add several numbers composed of units, tens, and hundreds—as, for instance, 157, 962, and 843—the disks *f g* are rotated to bring the zero-marks thereon opposite the zero-marks R R′ on the frame, while the disk *e* is rotated to bring the arm *p* opposite the zero-mark near the edge of said disk. The disk *e* is rotated by means of the lever *l* engaging one of the pins *h* until the arm *p* stands opposite 57. Lever *l* is then disengaged from the pin, moved back to zero, where it engages the pin opposite the zero-mark, and the disk is rotated until lever *l* comes opposite 62 on the frame, the arm *p* during this second rotation of the disk striking one of the pins on disk *f* and causing said disk to rotate to bring pin numbered 1 opposite zero-mark R, said arm *p* stopping opposite the number 19. The lever *l* is again disengaged from the pin and moved back to zero, engages the pin at that point, and again rotates the disk *e* until said lever arrives opposite the 43, the arm *p* then standing opposite number 62. This completes the operation of adding the units and ten of the three numbers, which amounts to 162, as indicated by disks *e* and *f*. To add the hundreds, the lever *l* is moved back to zero, engages the pin opposite the latter, and disk *e* is rotated one complete revolution corresponding to the 1 of the number 157, the arm *p* during this revolution striking against a pin on disk *f*, to rotate the same one division-point farther, the pin 2 then standing opposite zero R. The lever *l* is then again brought to the zero-mark and disk *e* revolved nine times, corresponding to the 9 of number 962, during each of which revolutions the disk *f* will be rotated one division-point farther until, during the ninth revolution of disk *e*, the arm *q* will strike one of the pins of disk *g* and rotate the same until pin 1 stands opposite zero R′. The pin 1 on disk *f* will then stand opposite zero R. The disk *e* is again rotated eight times, corresponding with the 8 of number 843, at the completion of which revolutions the pin 9 on disk *f* will stand opposite zero R, the sum total of the three numbers being indicated as follows: The pin 1 on disk *g*, standing opposite zero R′, indicates one thous-

and; the pin 9 on disk *f*, standing opposite zero R, indicates nine hundred, and the arm *p* of disk *e*, still standing at 62, the sum total of 1,962 is thus indicated.

It will be seen that the apparatus is extremely simple in construction, has no mechanism that is liable to get out of repair, and that its operation is absolutely correct when the disks are properly proportioned and subdivided.

Having described my invention, what I claim is—

The combination of the pivoted disks *e f g*, subdivided as described, pins projecting from the subdivisions, the pointer-lever *l*, pivoted upon the pivot of the disk *e* and slotted at its outer end, and the arms *p q*, secured, respectively, to disks *e f*, with a stop for locking the disk *g* at the completion of each revolution of the latter against further rotation, as and for the purpose specified.

In testimony that I claim the foregoing I have hereunto set my hand this 21st day of September, 1885.

ANTOINE LAPEYRE.

Witnesses:
ROBT. M. HOOPER,
C. H. LOUIS, Sr.