(No Model.)

W. M. HOWLAND.

ADDING MACHINE.

No. 250,541. Patented Dec. 6, 1881.

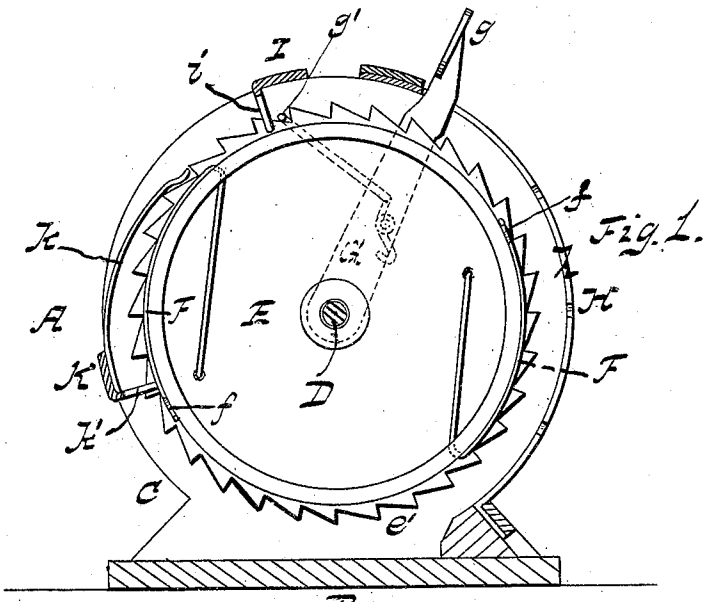

Fig. 1.

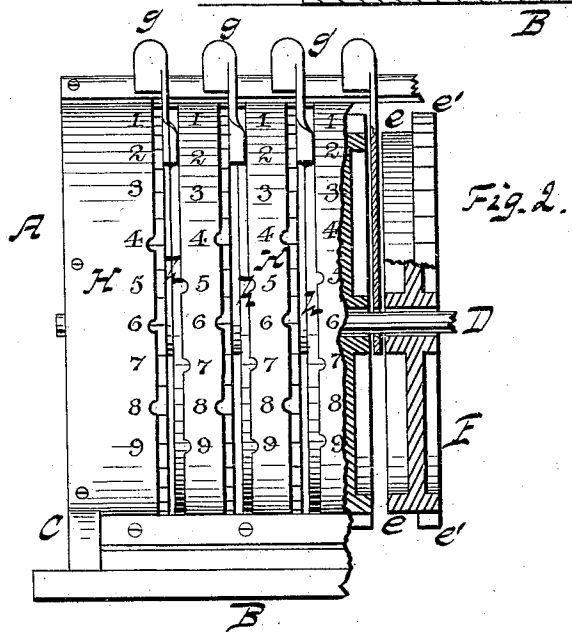

Fig. 2.

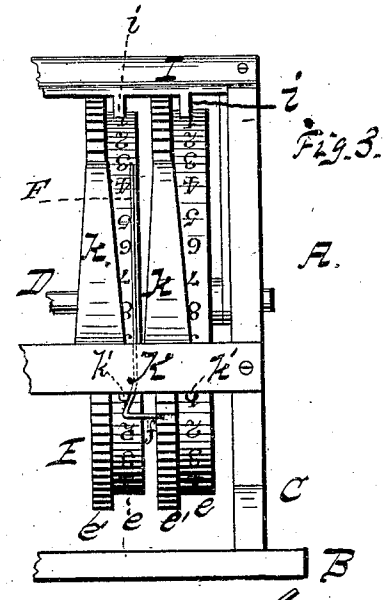

Fig. 3.

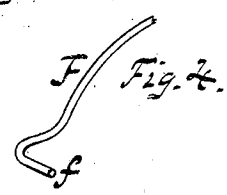

Fig. 4.

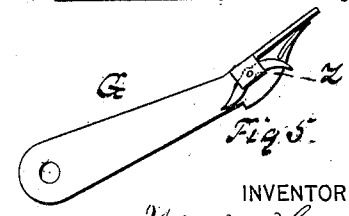

Fig. 5.

WITNESSES

E. L. Bates

Philip C. Masi

INVENTOR

Wm. M. Howland

by Audrons & Smith

his ATTORNEYS

UNITED STATES PATENT OFFICE.

WILLIAM M. HOWLAND, OF TOPSHAM, MAINE.

ADDING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 250,541, dated December 6, 1881.

Application filed April 23, 1881. (No model.)

To all whom it may concern:

Be it known that I, WM. M. HOWLAND, a resident of Topsham, in the county of Sagadahoc and State of Maine, have invented a new and valuable Improvement in Adding-Machines; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a transverse section. Fig. 2 is a side view, partly in section, looking through the shield. Fig. 3 is a side view from the other side. Fig. 4 is a detail; Fig. 5, a modification of the pawl.

This invention relates to improvements in adding-machines.

The invention consists in the construction hereinafter set forth.

In the annexed drawings, A is a frame, consisting of base B and posts C C. Running from post to post is the axle D, on which are sleeved the wheels E, their number depending on the amount liable to be needed. These wheels are cup-shaped, having a flat head, *e*, and ratchet-flange *e'*. Secured to the wheel and lying along the tread are the two hooks, F, their hooked ends *f* being diametrically opposite. On the surface of the tread are arranged the figures from 1 to 0 four times. G is a lever, having handle *g* and moving in axle D, a pawl, *g'*, attached to said lever, engaging the ratchet-flange *e'*. These wheels, with their levers, are put in place, the hooked end *f* of the hook F being turned toward the next wheel.

H is a slotted apron secured to the frame, through the slots *h* of which the handles *g* project. These slots are graduated downward from 1 to 9, and notched as shown.

I is a bar running from the top of one post to that of the other, and having the dependent pins *i*, in number equal to the wheels.

At the side opposite to the apron is placed a bar, K, having spring-pawls *k* playing in the ratchet-rims, and the dependent pins *k'*, similar to pins *i*. It will be seen by the location of these pins *i* and *k'*, and the hooks F, that as a wheel turns, when the hook *f* comes in contact with a pin it is thrown over and catches one of the teeth of the next wheel and moves the wheel one tooth. After passing the pin the spring in the tooth throws it back into position. The position of these hooks is such that it makes each succeeding wheel turn one tooth for ten of that preceding.

For use the wheels are set with a zero on each at the slot between the top of the apron and bar I, and the handles of the levers at the top of the apron-slots. The handle of the unit-wheel is brought down to the number on its slot corresponding with the unit of the first number of those to be added. By this the pawl on this handle turns the wheel as many teeth as units. Then the handle of the tens-wheel is worked the same way, and so on for the first number. For the next number the handles are returned and the operation continued, and so on for all the numbers which are to be calculated. After all are calculated the number which is under the slot is the sum of the numbers.

It will be seen that when the number of any two or more digits in order of the same denomination goes over nine it causes the next wheel to be turned one tooth by reason of the engagement of one of the hooks on the first wheel.

Instead of using the drag-pawl *g'* on the levers D the push-pawl *z* may be used.

I am aware that an adding-machine consisting of a series of numbered disks arranged on a shaft and having interlocking pawls is not broadly new, and I simply lay claim to my special construction.

I claim—

The frame A, having the slotted apron H, provided with series of numbers, and bars I and K, having pins *i* and *k'*, in combination with handles G and wheels E, having ratchet-flanges *e'*, and spring-hooks F, as set forth.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

WILLIAM M. HOWLAND.

Witnesses:

SAMUEL T. WHITE,

MARY E. WHITE.