

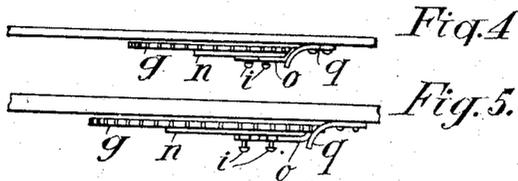
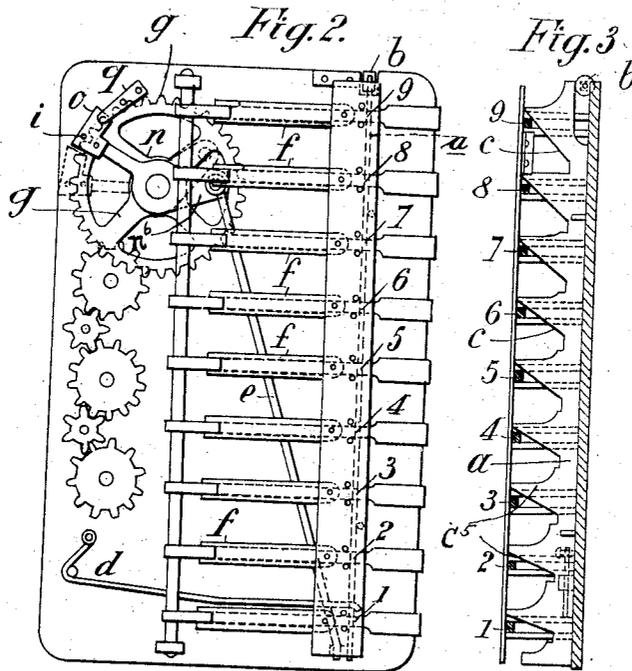
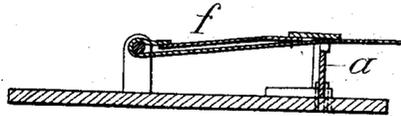
No. 813,578.

PATENTED FEB. 27. 1906.

J. PALLWEBER.  
ADDING MACHINE.  
APPLICATION FILED MAY 13, 1904.

2 SHEETS—SHEET 1.

Fig. 1.



Witnesses:

H. K. Bonetta

W. G. Northrup

Inventor:  
Joseph Pallweber.  
By Wm. E. Boulter,  
Attorney

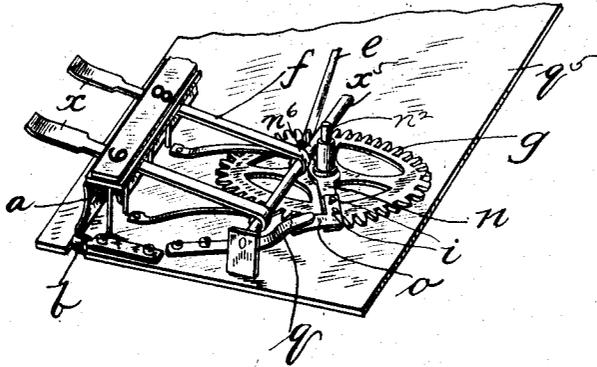
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2 SHEETS—SHEET 2.

Fig. 6.



Witnesses:

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# UNITED STATES PATENT OFFICE.

JOSEPH PALLWEBER, OF MANNHEIM, GERMANY.

## ADDING-MACHINE.

No. 813,578.

Specification of Letters Patent.

Patented Feb. 27, 1906.

Application filed May 13, 1904. Serial No. 207,824.

To all whom it may concern:

Be it known that I, JOSEPH PALLWEBER, a subject of the German Emperor, and a resident of Mannheim, Germany, have invented improvements in Adding-Machines, of which the following is a specification.

This invention relates to an improved adding-machine.

Adding-machines in which the figure-wheels are actuated by means of keys, levers, and stop-pawls are well known. Among other publications the German Patent No. 65,597 describes a machine of this kind. It is, however, important for all these machines to work silently, because any noise would disturb the operator and others working in the same room; but up to the present it has been impossible to avoid this inconvenience, because of the stop-pawls operating the sets of wheels, which when pressed against the teeth by means of springs produce a rattle upon the return motion. When the return motion is limited by a stop, a violent shock takes place at each operation, accompanied by a noise which has a tendency to cause the premature deterioration and putting out of order of the entire mechanism. The control of the adding mechanism is also in many cases arranged in such a manner that a relatively heavy pressure is required to move the keys, thereby easily constituting a reason for the operator pressing much too heavily upon the keys.

In the annexed drawings, given by way of example, Figure 1 shows a cross-section through the keys and control-slide *a*. Fig. 2 is a plan view of the complete mechanism. Fig. 3 shows a front view of the apparatus with the control-slide *a*. Fig. 4 shows in side view how the stop-pawl *o* engages against the small plate *q* and in the toothed wheel *g*. Fig. 5 shows the same part upon a larger scale. Fig. 6 is a perspective view of the device, partly broken away.

The noiseless or practically noiseless working of the pawls, as well as of the keys, (numbered "1" to "9," inclusive,) is obtained in my machine by giving to the stop-pawl *o*, which is held loosely at one end upon the lever *n* by means of two studs *i*, sufficient play so that by its own weight its opposite end has a tendency to fall into the space between the teeth of the wheel *g* when the device is lying horizontally, or substantially so, as seen in Fig. 2. The shifting of the pawl over the teeth is such that hardly any noise is produced. The

lever *n* is loosely mounted on the shaft *n*<sup>2</sup> of the gear-wheel *g* of the said gear-wheels shown and is adapted for oscillation on said shaft *n*<sup>2</sup>. In order to limit the movement of the stop-pawl *o*, the latter works in conjunction with a small plate *q*, secured to the back plate *q*<sup>5</sup>, one end of which plate *q* is bent obliquely upward, so that the stop-pawl enters like a wedge into the tapered space beneath said plate, and the latter acting like a stop deadens all shocks and also stops further oscillation of the lever *n*. The easy manipulation of the keys and working of the adding mechanism is obtained by employing the control-slide *a*, arranged to bear at one end upon a roller *b* and the shifting whereof is obtained by keys *x*, of which there are nine in number and which bear in their descending motion upon the inclined surfaces or edges *c*<sup>5</sup> of the teeth *c*, and thus move the slide more or less to one side. The inclined edges or surfaces *c*<sup>5</sup> of the teeth have successively-increasing inclinations, beginning with the key No. 1 at one extremity of the device and ending with the key No. 9 at the other extremity, so that when key 1 is depressed it acts to move the slide *a* the minimum distance, so as to cause the lever *n* to be oscillated just enough to cause the gear-wheel *g* to move a distance of one tooth only, so that when the key is released the slide will be moved reversely, thus causing the lever *n* to oscillate reversely, and the pawl *o*, which has previously dropped into the space between two of the teeth, will cause the gear-wheel to be turned a distance of one tooth, and therefore this movement of the gear-wheel *g* will be transmitted to a suitable indicating dial or disk. (Not shown.) When key 2 is depressed, it will move the slide just twice the distance that key 1 did and cause lever *n* to oscillate sufficiently to cause the wheel *g* to be moved a distance of two teeth by the pawl *o* when the key 2 is released, and so on. A spring *d* has a constant tendency to move the slide in a direction the reverse of that in which it is moved when a key is depressed and to move the keys upward again when released by the finger. A link *e* establishes the connection between the stop-pawl and the slide by being connected at one end with the arm *n*<sup>6</sup> of lever *n* and at the other end with the slide. To facilitate the upward movement of each of the keys, each key at one end is bent around a supporting-shaft *x*<sup>5</sup>, and the bent end bears upon one end of a flat spring *f*<sup>5</sup>, which at the

other end is secured to a bar  $f^6$ . Thus when a key is depressed by the finger the spring  $f^5$  will be flexed, and when the key is released from the pressure of the finger the tension of the spring  $f^5$  causes the key to rise, this action of the spring being supplemented by the tension of the spring  $a$ , which causes the inclined surface of the slide  $a$  to bear against the edge of the key.

10 What I claim is—

An adding - machine comprising a set of toothed intermeshing wheels and operating means therefor comprising a lever oscillatably mounted on the shaft of one of the toothed  
15 wheels, a pawl loosely connected at one end with the lever and adapted to engage at the

other end with the teeth of said gear-wheel, a slide having teeth each provided with an inclined edge, keys arranged to bear upon the inclined edges of the teeth and shift the slide  
20 when said keys are depressed, a link connected at one end with an arm of the oscillatable lever and at the other end with the slide, and a plate  $q$  bent as described and with which the pawl is adapted to engage in the manner  
25 and for the purpose specified.

In testimony whereof I have hereunto set my hand in presence of two witnesses.

JOSEPH PALLWEBER.

Witnesses:

H. W. HARRIS,  
JOSEPH H. LEUTE.