

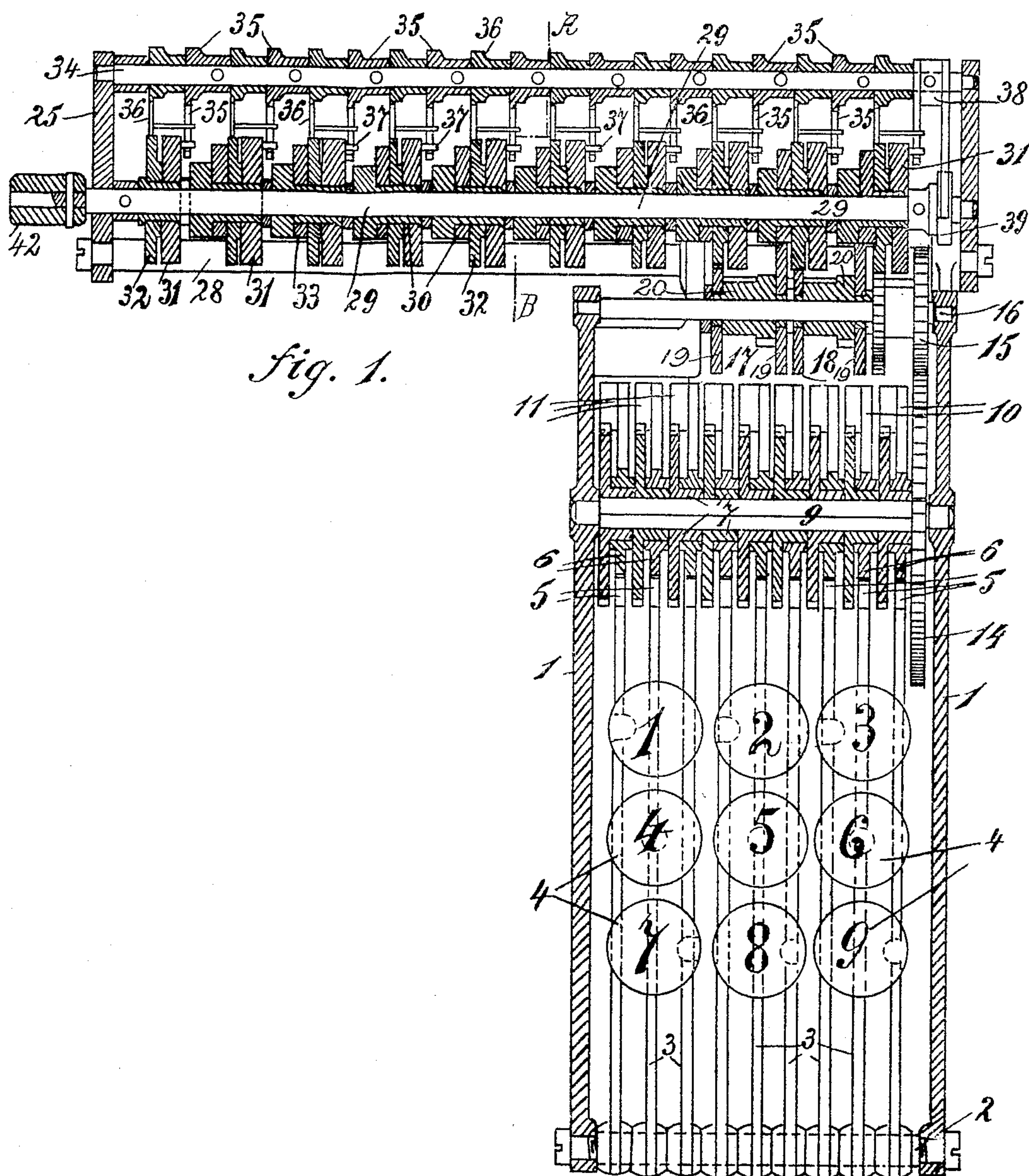
No. 803,571.

PATENTED NOV. 7, 1905.

E. EBINGER.  
ADDING MACHINE.

APPLICATION FILED APR. 6, 1905.

3 SHEETS—SHEET 1.



Witnesses:  
Fred. Hogni.  
Paul Garick.

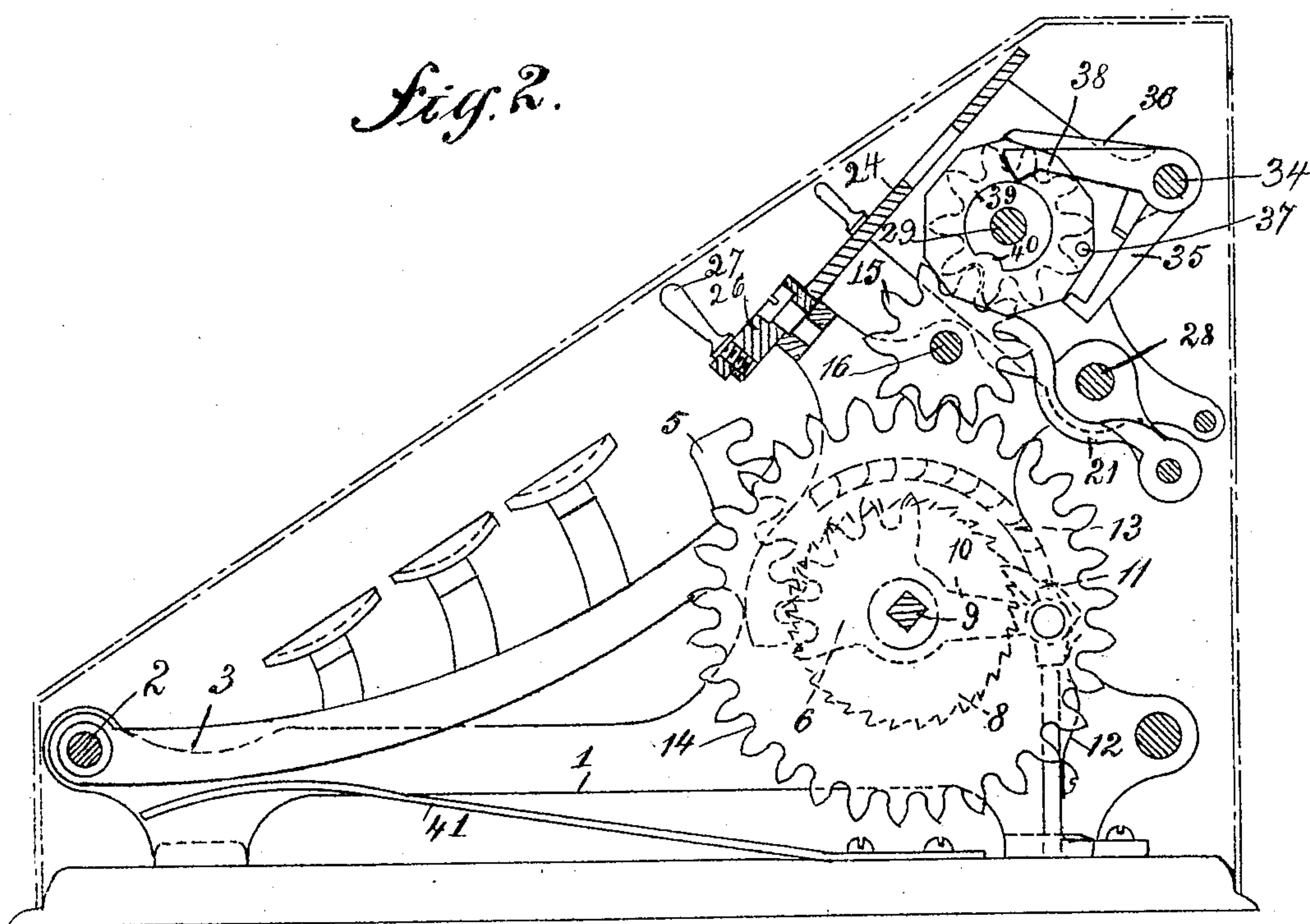
Inventor:  
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3 SHEETS—SHEET 2.

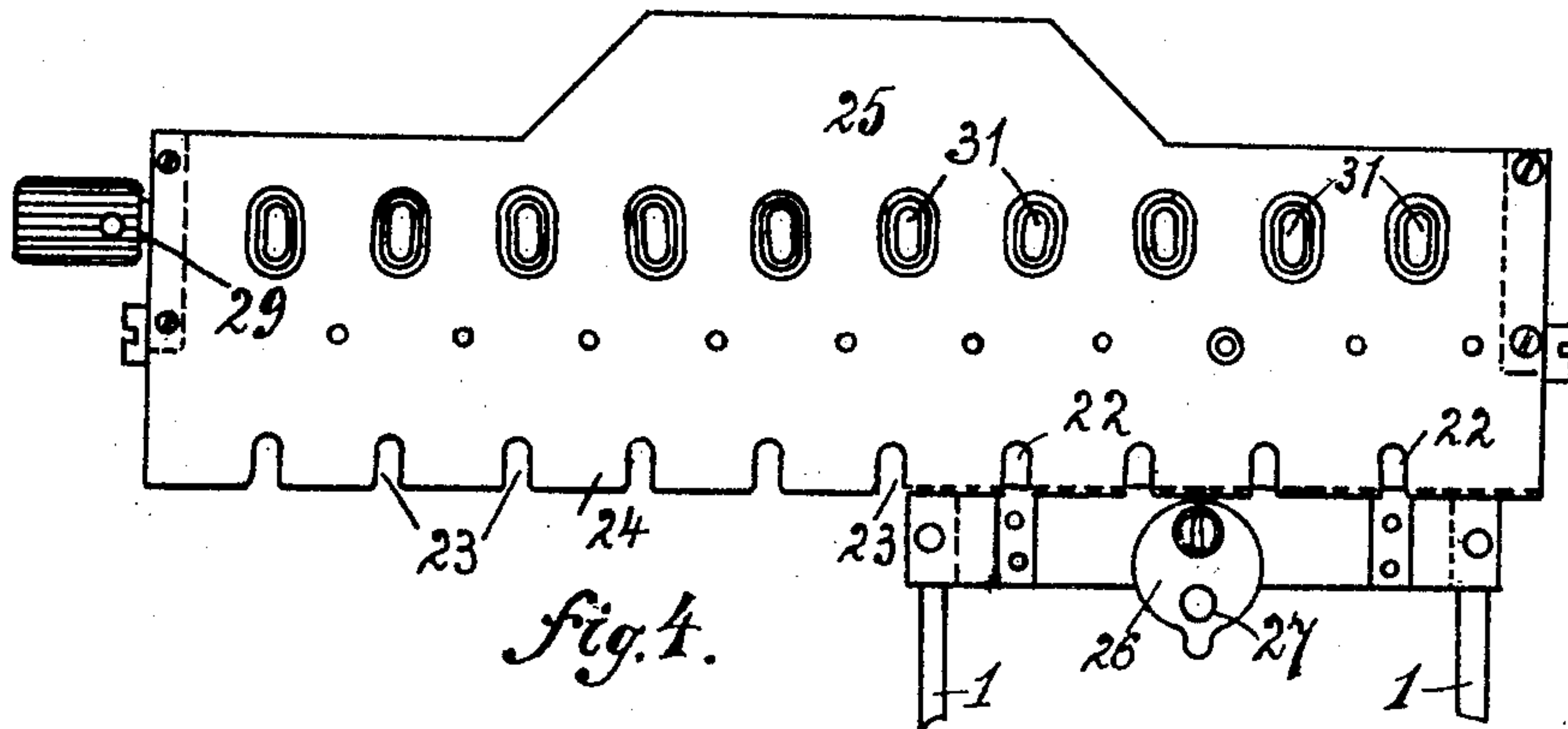


Witnesses:  
Fred. Hoyer.  
Paul Garick.

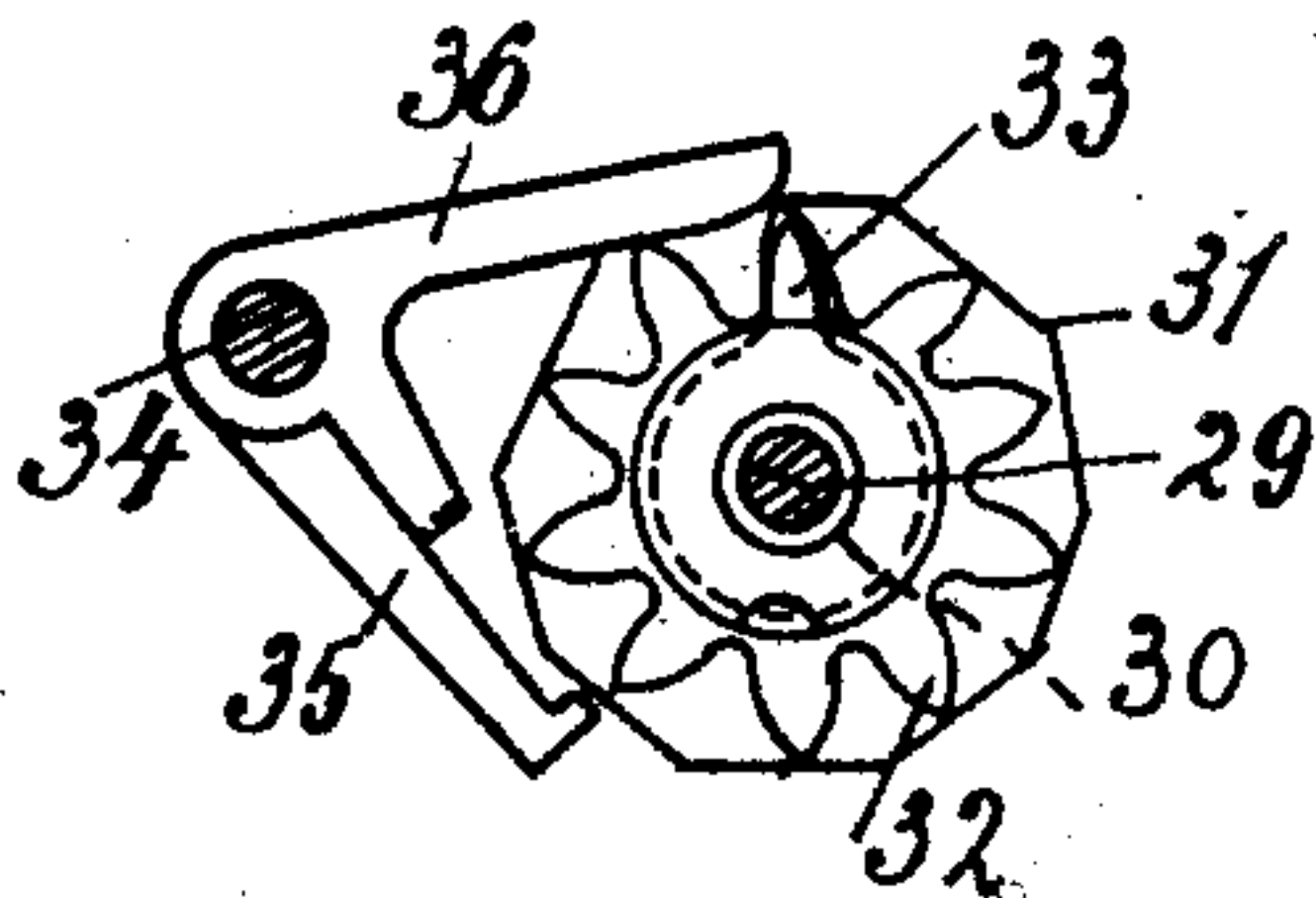
Inventor:  
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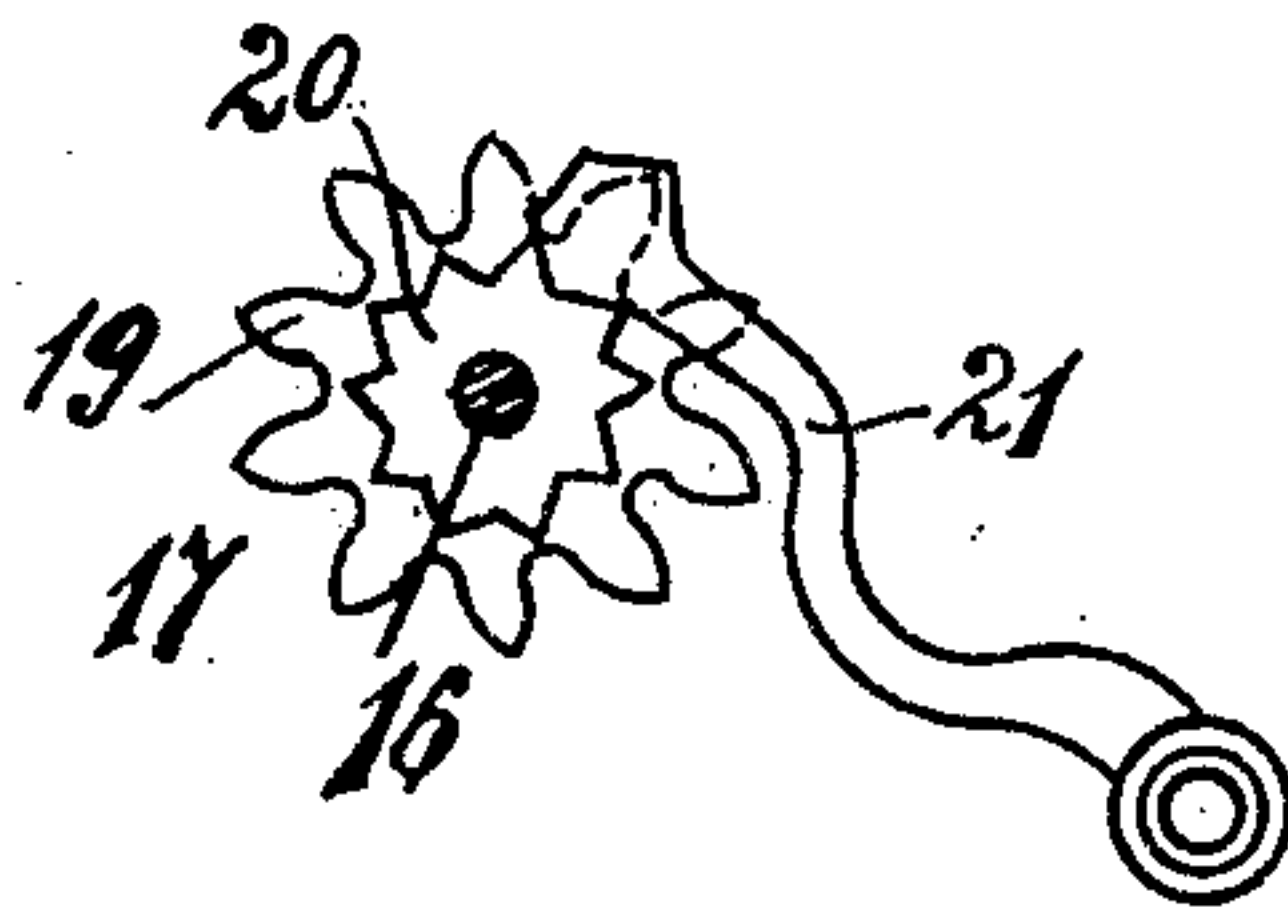
3 SHEETS—SHEET 3.



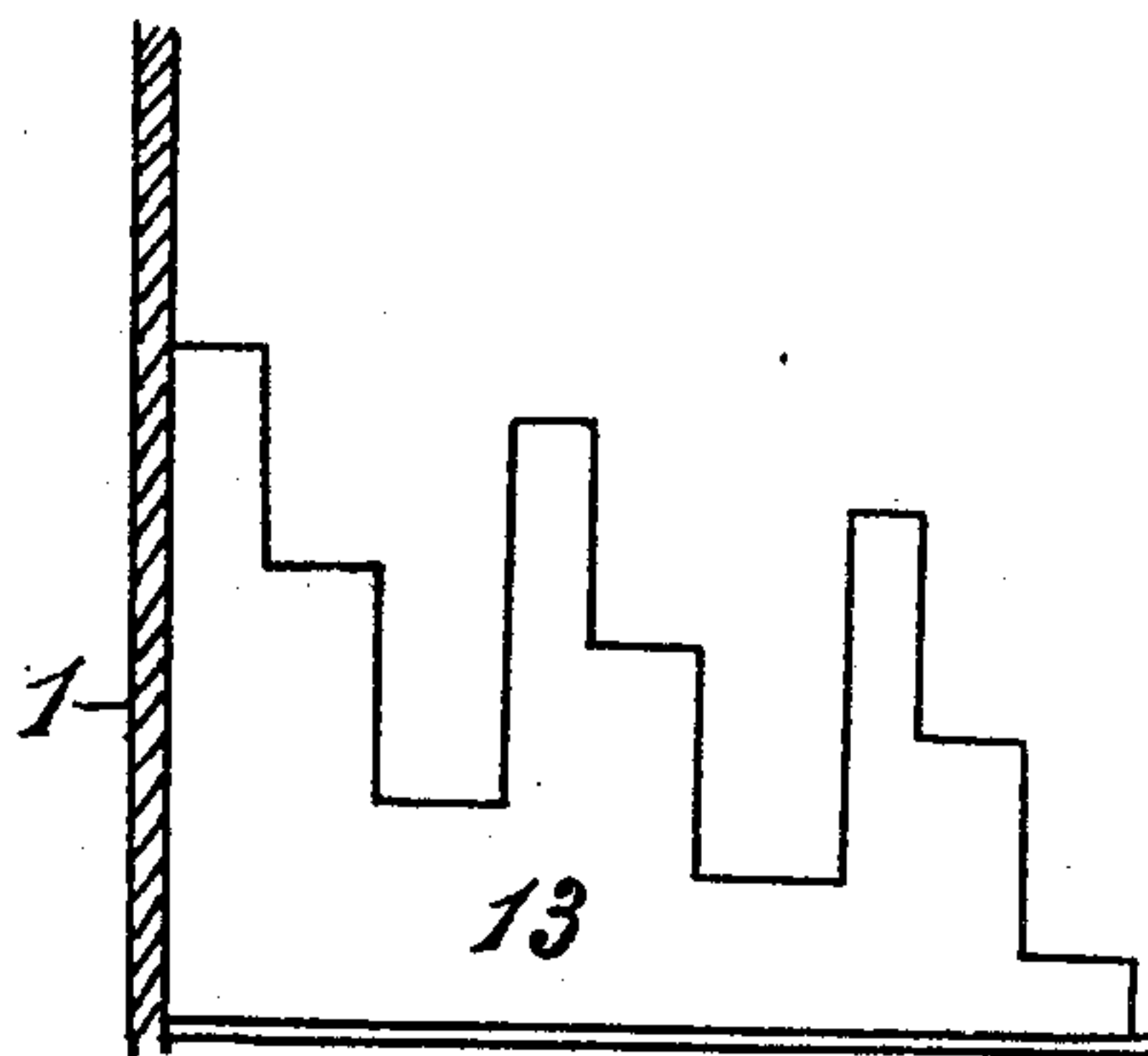
*Fig. 4.*



*Fig. 3.*



*Fig. 5.*



*Fig. 6.*

Witnesses:

*Fred. Hynes.*  
*Paul Garick.*

Inventor:

*Emmanuel Ebinger*  
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# UNITED STATES PATENT OFFICE.

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## ADDING-MACHINE.

No. 803,571.

Specification of Letters Patent.

Patented Nov. 7, 1905.

Application filed April 6, 1905. Serial No. 254,175.

*To all whom it may concern:*

Be it known that I, EMANUEL EBINGER, a citizen of the Swiss Confederation, and a resident of Zürich, Switzerland, have invented new and useful Improvements in Adding-Machines, of which the following is a specification.

This invention relates to an adding-machine which is of extremely simple construction and so arranged that it adds up sums up to millions.

In the accompanying drawings the adding-machine is shown in Figure 1 in a ground plan. Fig. 2 is a side view, the side wall removed. Fig. 3 is a section on line A B of Fig. 1. Fig. 4 is a front view of the carriage. Fig. 5 shows a detail of construction, and Fig. 6 represents the abutment for the key-levers in an unrolled view.

In the front end of the frame 1 of the machine an axle 2 is rigidly mounted, which serves as a pivot for the key-levers 3. The key-levers 3 are each fitted with a key 4, the keys being consecutively numbered "1" to "9." For each of the wire key-levers a blade-spring 41 is provided for keeping the key-levers in working position. Each key-lever 3 terminates in a rack 5, each of which racks engages with a toothed segment 6. All the toothed segments 6 are loosely mounted on the hubs 7 of ratchet-wheels 8, which are keyed to a shaft 9, revolubly mounted in frame 1. Each segment 6 has a rearwardly-projecting arm 10, to which a pawl 11 is linked, which is kept in engagement with the corresponding ratchet-wheel 8 by a blade-spring 12. An abutment-piece 13 is rigidly fixed to the frame of the machine. This abutment-piece is curved concentric with the ratchet-wheels 8 and reaches with abutments of different lengths into the way of the pawls 11.

On the right-hand end of axle 9 a large toothed wheel 14 is mounted, which engages with a small toothed wheel 15, keyed to an axle 16, mounted in the upper part of the frame 1. On this axle 16 two bushes 17 18 are loosely mounted, which, as can be seen from Fig. 5, each have two similar spur-wheels 19 and a ratchet-wheel 20. Spring-influenced pawls 21, which are fixed in any suitable manner to the frame 1, engage with the said ratchet-wheels 20.

The carriage 25 is pivoted to frame 1 by means of the pivot 28, so that it can be lifted

and turned over. Above the pivot 28 of the carriage 25 an axle 29 is rotatably mounted in the carriage, on which ten or more sleeves 30 are loosely mounted. On each of the sleeves 30 a numeral-disk 31, a spur-wheel 32 with ten teeth, a braking-disk, and a catch 33 are mounted. The first spur-wheel 32 gears with the spur-wheel 15 on axle 16. In the upper part of the carriage 25 an axle 34 is revolubly mounted, on which hooked levers 35 and loose angular brakes 36, one for each sleeve 30, are mounted. The brakes 36 have the shape of an angle-lever and slide with their thickened front edge on the corresponding spur-wheel 32. The lower and shorter arm of the brakes 36 abut against the corresponding hooked levers 35, which are rigidly connected with the axle 34.

Each numeral-disk 31 is divided into ten parts and provided with a stop 37 on the zero-point. Near the right-hand end of axle 34 a spring-catch 38 is fixed, which slides on a disk 39, keyed to the right-hand end of axle 29 and provided with an incision 40. On the left-hand end of axle 28 a hand-wheel 42 is provided.

For moving the carriage 25 from left to right for the space of one numeral-disk, which has to be done as soon as the third numeral-disk 31 has completed its rotation, any suitable mechanism can be used which acts automatically or is operated by hand. By way of example the following arrangement is described, to which, however, I do not confine my invention. In the upper part of the frame 1 there are provided two projections 22, which engage with incisions 23, provided in the bottom edge of the front wall 24 of the carriage 25. On the front surface of the frame 1 an eccentric 26 with handle 27 is rotatably mounted, which serves for lifting the carriage 25.

In the front cover-plate of the carriage three openings are provided, in which appear the numbers of the number-disks 31.

The addition-machine operates as follows: Before the machine can be used for summing up all numeral-disks 31 must be brought to the zero-point, as shown in Figs. 1 and 4. The carriage 25 is lifted by means of the eccentric 26, so that the spur-wheel 32 comes out of engagement with the spur-wheel 15 of axle 16. The axle 29 is now rotated to the left by means of hand-wheel 42, whereby the



spring-catch 38 is lifted and the axle 34 rotated so far that the hooked levers 35 are lifted forward and brought into the way of the stops 37 of the numeral-disks 31, so that as soon as the stop 37 of one of the numeral-disks 31 abuts against the corresponding hooked lever 35 this number-disk does not further participate in the rotation of axle 29. In consequence of the rotation of the axle 34 the brakes 36 are lifted by means of their levers 35, so that the toothed wheels 32 are not prevented from participating in the rotation of axle 29. After all number-disks 31 have been brought to zero position the carriage 25 is turned forward and the eccentric 26 is brought back into the position shown in Fig. 4, whereby the corresponding incision 31 of the carriage falls over the projections 22 of the frame, thus securing the carriage in its position. In this position sums up to nine hundred and ninety-nine can be added. For summing up numbers one key-lever after the other is struck. If, for example, the numbers "3," "5," and "7" are to be summed up, the first key-number "3" is struck, whereby the corresponding key-lever rotates the axle 9 by means of its rack, the toothed segment 6, and the toothed wheel 7, which is taken along by the pawl 11 until this pawl 11 abuts against the corresponding abutment-piece 13. This rotation of axle 9 is transferred by the large toothed wheel 14 to the small spur-wheel 15 on axle 16, and hence by means of the first toothed wheel 32 to the first numeral-disk 31, which is thus rotated through three parts, so that in the first opening of the front plate 24 of the carriage 25 the number "3" appears. When the key "3" is released, the corresponding key-lever is returned to its original position by the blade-spring 41, whereby the segment 6 is also returned to its original position by the rack 5. The axle 9, however, does not participate in this movement of the segment 6, this segment being loosely mounted on the hub 7 of the toothed wheel 8. Now the key "5" is struck, the movement of which is transferred in the same manner as hereinbefore described with reference to key "3" to the first toothed wheel 32 and numeral-disk 31, respectively, so that the numeral-disk is rotated through five further parts, and consequently number "8" appears in the first opening. By striking the key "7" the movement of the key-lever is again transferred to the first toothed wheel 32 and numeral-disk 31. As during this movement the catch 33 terminates an entire rotation, its finger rotates the pair of toothed wheels 18, mounted on axle 16, the rotation of which is transferred to the second catch 33 and to the second numeral-disk 31, which is thus rotated through one part, so that in the second open-

ing of the front plate of the machine the number "1" appears and in the first opening the number "5," which is the sum of the three numbers added up.

Having fully described my invention, what I claim, and desire to secure by Letters Patent, is—

An adding-machine comprising in combination with the frame of the machine and key-levers pivoted to a rigid axle in the front end of the frame, a rack at the end of each key-lever, an axle revolvably mounted in the frame of the machine, catch-wheels keyed to said axle and toothed segments loosely mounted on the hubs of said catch-wheels and engaging with the racks of the corresponding key-levers, cams rearwardly projecting from one of each toothed segments, a spring-influenced pawl for each ratchet-wheel linked to said frame and engaging with the corresponding ratchet-wheel, an abutment-piece with abutments of various lengths arranged above the ratchet-wheels, a large toothed wheel at the right-hand end of the revoluble axle, an axle revolvably mounted in the upper end of the frame, a small spur-wheel keyed to said upper axle and gearing with the large toothed wheel of the lever-axle, two pairs of double wheels loosely mounted on the upper axle, each consisting of a toothed wheel and a ratchet-wheel, spring-catches one for each ratchet-wheel fixed to the frame of the machine, a carriage movably pivoted in the upper end of the frame, a revoluble axle above the pivot of the carriage, ten sleeves keyed to said axle, spring-catches for braking said sleeves, number-disks, one on each sleeve, toothed wheels with ten teeth one on each sleeve and cams one on each sleeve, an axle movably located in the upper end of the carriage, hooked levers one for each sleeve rigidly fixed to said upper axle, and brakes one for each sleeve loosely mounted on said upper axle and abutting with their rearward shorter arms against the corresponding hooked levers, a stop-pin on the zero-point of each number-disk, a spring-catch at the right-hand end of the upper axle, a disk keyed to the right-hand end of the lower axle of the carriage provided with an incision for the spring-catch, blade-springs one below each key-lever and a hand-wheel at the left-hand side of the pivot of the carriage, substantially as described and shown and for the purpose set forth.

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

EMANUEL EBINGER.

Witnesses:

E. ROTH,

A. LIEBERKNECHT.