

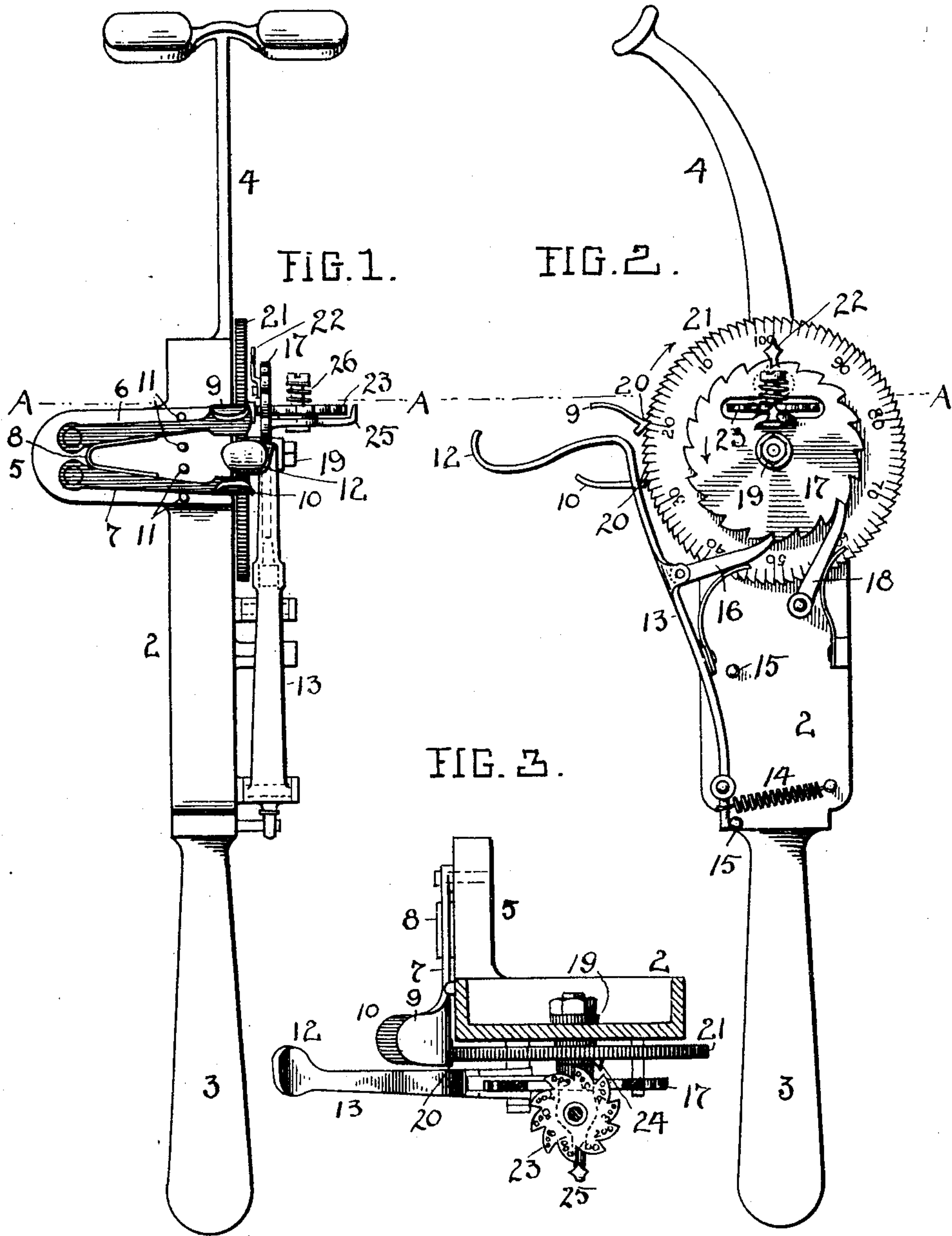
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Patented Apr. 2, 1901.

W. G. SWAN.
ADDING MACHINE.

(Application filed Aug. 27, 1900.)

(No Model.)



ATTEST

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ADDING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 671,152, dated April 2, 1901.

Application filed August 27, 1900. Serial No. 28,132. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM G. SWAN, a citizen of the United States, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Adding and Recording Machines; and I do declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to adding-machines; and the invention consists in a device adapted to be operated with the tongue and lips to add a single column of figures and record the total, the figures from "1" to "9," inclusive, being represented by a combination of syllables, each of which when spoken will cause the lips or tongue, or both, to actuate the mechanical adding parts in varying degree, all substantially as hereinafter shown and described, and more particularly pointed out in the claims.

Referring to the drawings, Figure 1 is a side elevation of my invention, and Fig. 2 is a front view thereof. Fig. 3 is a section looking down from line A A, Figs. 1 and 2.

As here shown, the operating parts are mounted on a body 2, having a handle 3 at its bottom and a steadying rest-arm 4 at its top, adapted to engage the brow preferably at a point above the eye and beneath the eyebrows to prevent any upward movement. At the side and upon the arm 5 of body 2 two separate pivoted arms 6 and 7 are mounted and have a bow-spring 8 bearing between them to keep the free ends 9 and 10, respectively, spread apart. A set of stops 11 for each of the arms limits their movement. The arm ends 9 and 10 extend outward at right angles to the arms proper and when inserted in the mouth of the operator are engaged by the upper and lower lips and are actuated separately or together, as occasion demands. The inner edges 20 of each arm end 9 and 10 are constructed to engage the teeth of a large ratchet-wheel 21, mounted to rotate on a stud 19 on body 2, and if either of said arm ends 9 and 10 are actuated singly wheel 21 is rotated one tooth, stop 11 limiting the move-

ment of each arm 6 and 7; but if both of the arms are actuated wheel 21 will be rotated a distance of two teeth, arm end 10 being raised by the lips of the operator to impart the first rotation, while at the same time arm 9 is brought down by the upper lip, its edge 20 making an engagement, and then when released spring 8 throws the said wheel a second tooth, or the last half of the double movement. The wheel 21 is provided with one hundred of these teeth, and suitable graduations are marked on the face of the wheel opposite each tooth and are numbered, as here shown, in groups of ten up to one hundred. One revolution of the wheel represents the carrying forward of the sum of one hundred. A third extension 12 on arm 13 of somewhat greater length than arm ends 9 and 10 is located centrally between and slightly at one side of said arms and is pivoted at the lower part upon the face of body 2, a spring 14 serving to keep the extension 12 normally in outward position and stops 15 on body 2, limiting the movement of the arm and its extension. This extension 12 is engaged by the tongue of the operator, and a spring-pressed pawl 16 on arm 13 engages the teeth of a ratchet-wheel 17, and whenever extension 12 is forced forward by the tongue the ratchet-wheel 17 is rotated one tooth, a second spring-pressed pawl 18, pivoted on body 2, serving to prevent backward movement of the ratchet-wheel. This wheel is also mounted on stud 19. A pointer or finger 22 is fastened to the under side at the edge of wheel 17 and is set at starting position opposite the "100" mark on wheel 21, as shown in Fig. 2. Wheel 21 is actuated by arm ends 9 and 10 to rotate one or two teeth at a time, and wheel 17 is rotated one tooth at a time; but the latter having only only one-fifth the number of teeth that wheel 21 has its rotation represents five graduations on wheel 21. These wheels are caused to rotate in opposite directions, so that five graduations are counted up by means of wheel 17, the finger 22, which records the movement, being always rotated to the left from the starting position. In order to carry forward the additions into the thousands, I provide a third ratchet-wheel 23, which is

mounted to rotate upon wheel 17 at right angles to said wheel and wheel 21. A single engaging tooth 24 on the face of wheel 21 is located in the path or circle of travel of wheel 23, and whenever wheels 21 and 17 have rotated to record the sum of one hundred tooth 24 engages wheel 23 and rotates the same a distance of one tooth, a pointer or finger 25 on wheel 17 serving to show the number of rotations imparted to wheel 23. In the present instance the wheel 23 has but ten teeth, representing numbers from one hundred to one thousand; but as many teeth as may be desired can be used so that the sum of five thousand, ten thousand, or more can be added. Wheel 23 is held in the position rotated by a spring 26 about its fastening-bolt bearing against the face of said wheel. A back-stop pawl could be used instead, if desired.

In operation the several figures from "1" to "9," inclusive, are represented by syllables, and it is by uttering these syllables that either one or all of the lip and tongue members 9, 10, and 12 are actuated. The upward movement of the lower lip, as in speaking the consonant "F," raises the arm end 10 and causes wheel 21 to revolve upward one notch or tooth. The downward movement of the upper lip, in combination with the upward movement of the lower lip, is obtained by uttering a word of two syllables, as in "up," which double movement causes the wheel 21 to rotate a distance of two notches or teeth. The tongue is brought into play and the tongue-engaging arm 12 actuated where a word like "ahth" or "eth" is spoken. I find that it is only necessary to use five words of one syllable and four words of two syllables to obtain the requisite movements whereby the figures from "1" to "9" are recorded, and the words representing "1" to "9," inclusive, are, 1, "of;" 2, "up;" 3, "upof;" 4, "upup;" 5, "eth;" 6, "ofth;" 7, "upth;" 8, "upthof;" 9, "upthup." Thus it will be seen that uttering the word "of" will work the lower lip only and actuate wheel 21 one notch or tooth; that the word "up" will work both lips and carry wheel 21 two notches or teeth forward; that "upof" will work first both lips and then only the lower lip, causing a movement on wheel 21 of three teeth; that "upup" causes both lips to move twice, counting up four; that "eth" when spoken will cause the tongue to come forward and rotate wheel 17 and add five points on wheel 21, as indicated by finger 22; that "ofth" works the lower lip and tongue to add six; that "upth" works both lips and tongue to add seven; that "upthof" works both lips, the tongue, and then the lower lip for eight, and that nine is obtained by uttering "upthup," which works both lips twice and the tongue once.

Before beginning operations the wheels are set to "0," finger 22 on wheel 17 being brought

around to point between "1" and "100" and finger 25 between "100" and "1,000." The total is indicated jointly by fingers 22 and 25.

What I claim is—

1. In an adding-machine, the adding-wheels and a supporting-body therefor, and actuating members for said wheels mounted on said body having separate arms comprising the upper and lower lip extensions and a central independent tongue extension arranged between said lip extensions, substantially as described.

2. In an adding-machine, the combination of adding-wheels having actuating members therefor provided with two separate pivoted arms to fit between the lips of an operator, and a third arm independently mounted in close working relation with said arms to be engaged by the tongue of the operator, substantially as described.

3. In an adding-machine adapted to be operated by the lips and tongue, the adding-wheels and actuating members for said wheels having independent upper and lower arms to engage the upper and lower lips of the operator, in combination with a separate and independent wheel-actuating member having an extension of somewhat greater length than said upper and lower arms, substantially as described.

4. In an adding-machine adapted to be operated by the lips and tongue, the combination of an adding-wheel to carry the ones and an adding-wheel to carry the fives, and actuating mechanism for said wheels having a set of operating-arms for the one-adding wheel and an independently-operating arm for the five-adding wheel, substantially as described.

5. In an adding-machine, the body and the adding-wheels mounted to rotate thereon, means to rotate said wheels having arm members pivoted on said body, and extensions on said arms grouped together and comprising three separate independent members, and having one of said extensions constructed longer than the others, substantially as described.

6. In an adding-machine operated by the mouth, the body and the adding-wheels mounted thereon, means to rotate said wheels comprising ratchet-and-pawl mechanism and operating-arms therefor, extensions for said arms arranged in close working relation one above the other and having the upper and lower extensions constructed to move in a vertical plane and the intermediate extension in a horizontal plane, substantially as described.

7. The body and the adding mechanism mounted thereon, and means to operate said adding mechanism comprising two arms constructed to be moved in a vertical plane, and a third arm constructed to move at right angles thereto, substantially as described.

8. The body having a handle and a steady-

ing-arm adapted to rest against the face of
the operator, adding and recording wheels
mounted to rotate on said body, and ratchet
mechanism for said wheels having lip and
5 tongue actuating arms pivoted on said body
and adapted to enter the mouth of the oper-
ator, substantially as described.

Witness my hand to the foregoing specifi-
cation this 10th day of August, 1900.

WILLIAM G. SWAN.

Witnesses:

R. B. MOSER,

M. A. SHEEHAN.