

No. 748,158.

PATENTED DEC. 29, 1903.

A. R. BOYNTON.

ATTACHMENT FOR CALCULATING, PRINTING, OR ANALOGOUS MACHINES.

APPLICATION FILED MAR. 9, 1903.

NO MODEL.

2 SHEETS—SHEET 1.

Fig. 1,

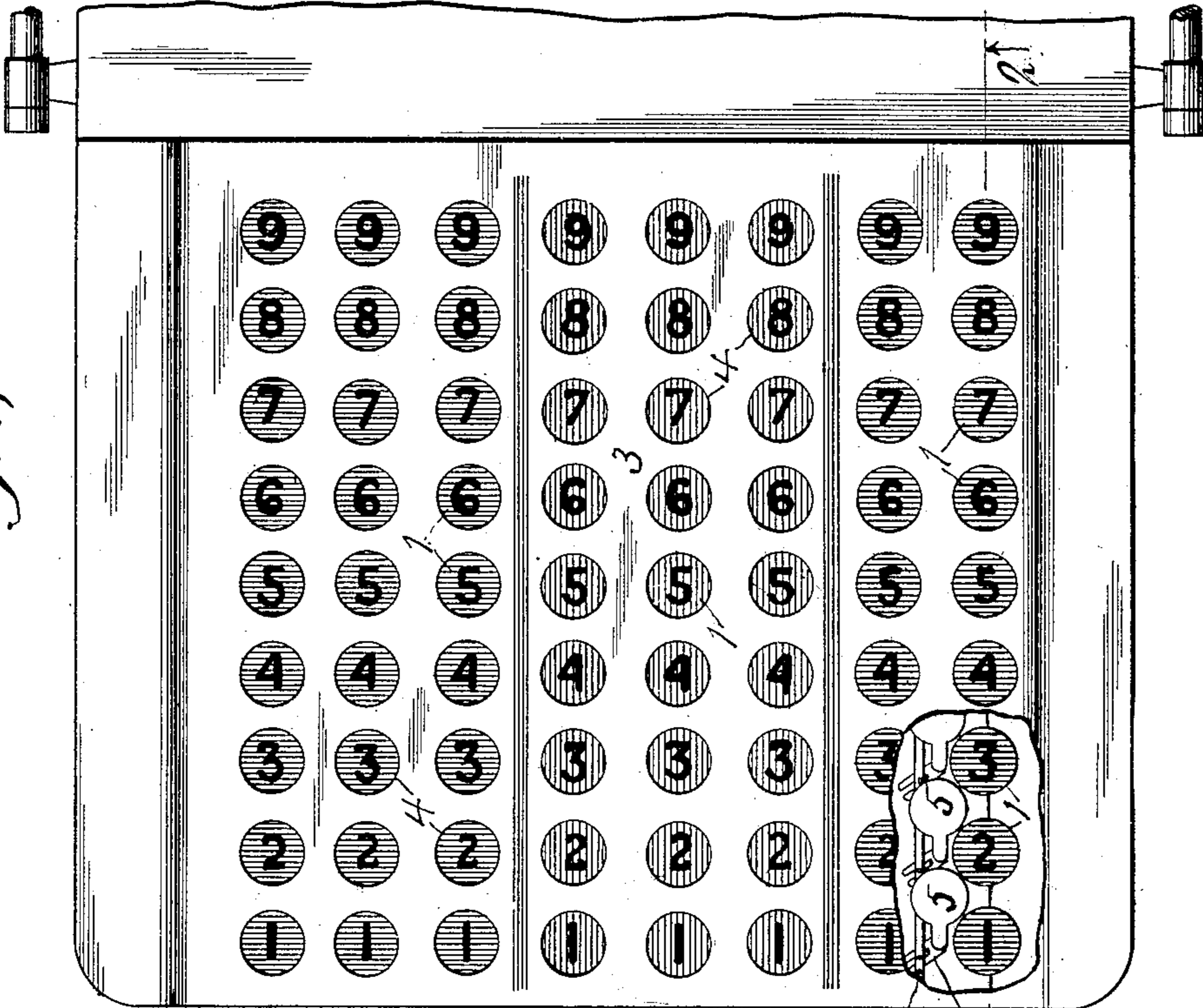
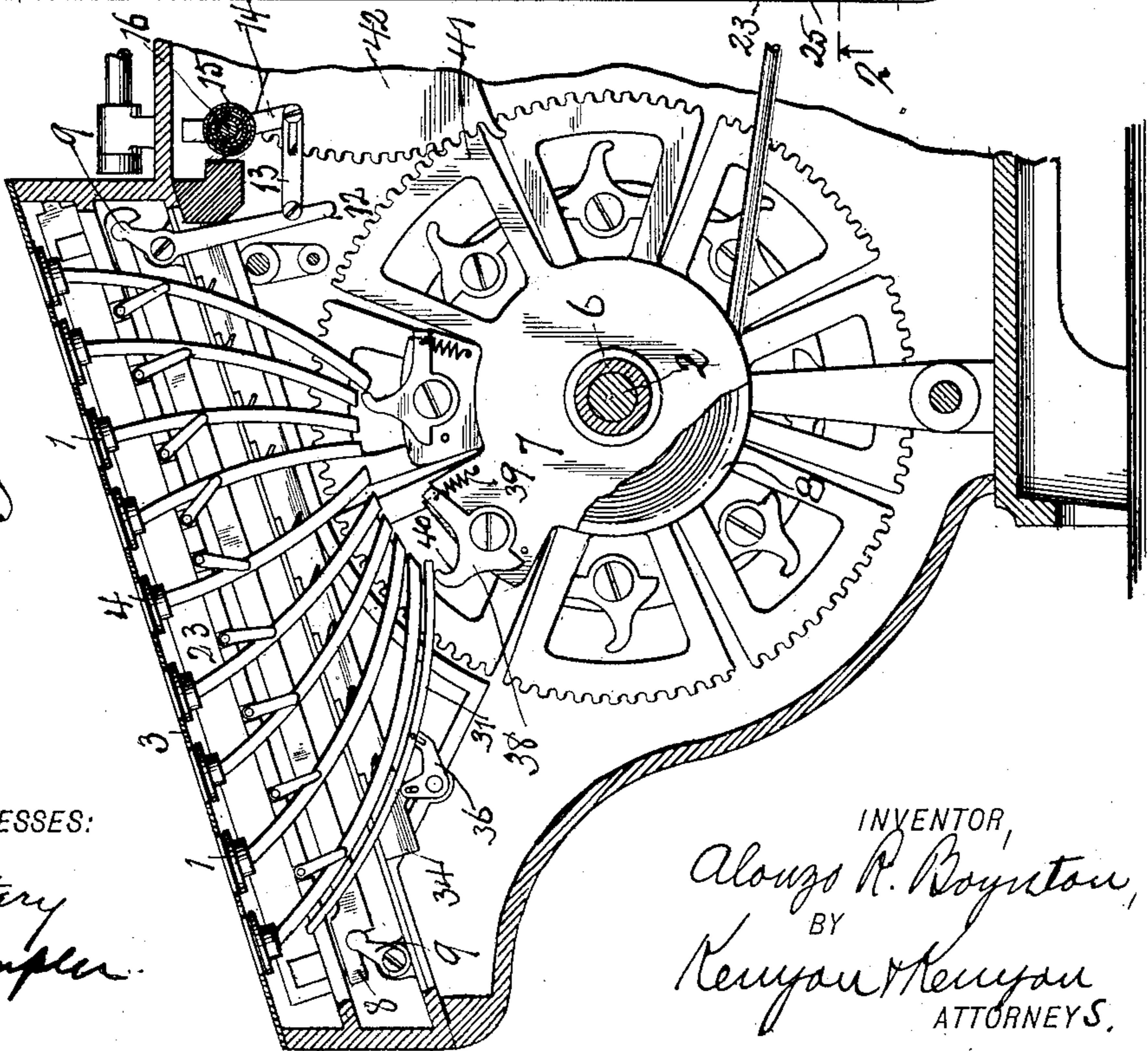


Fig. 2,



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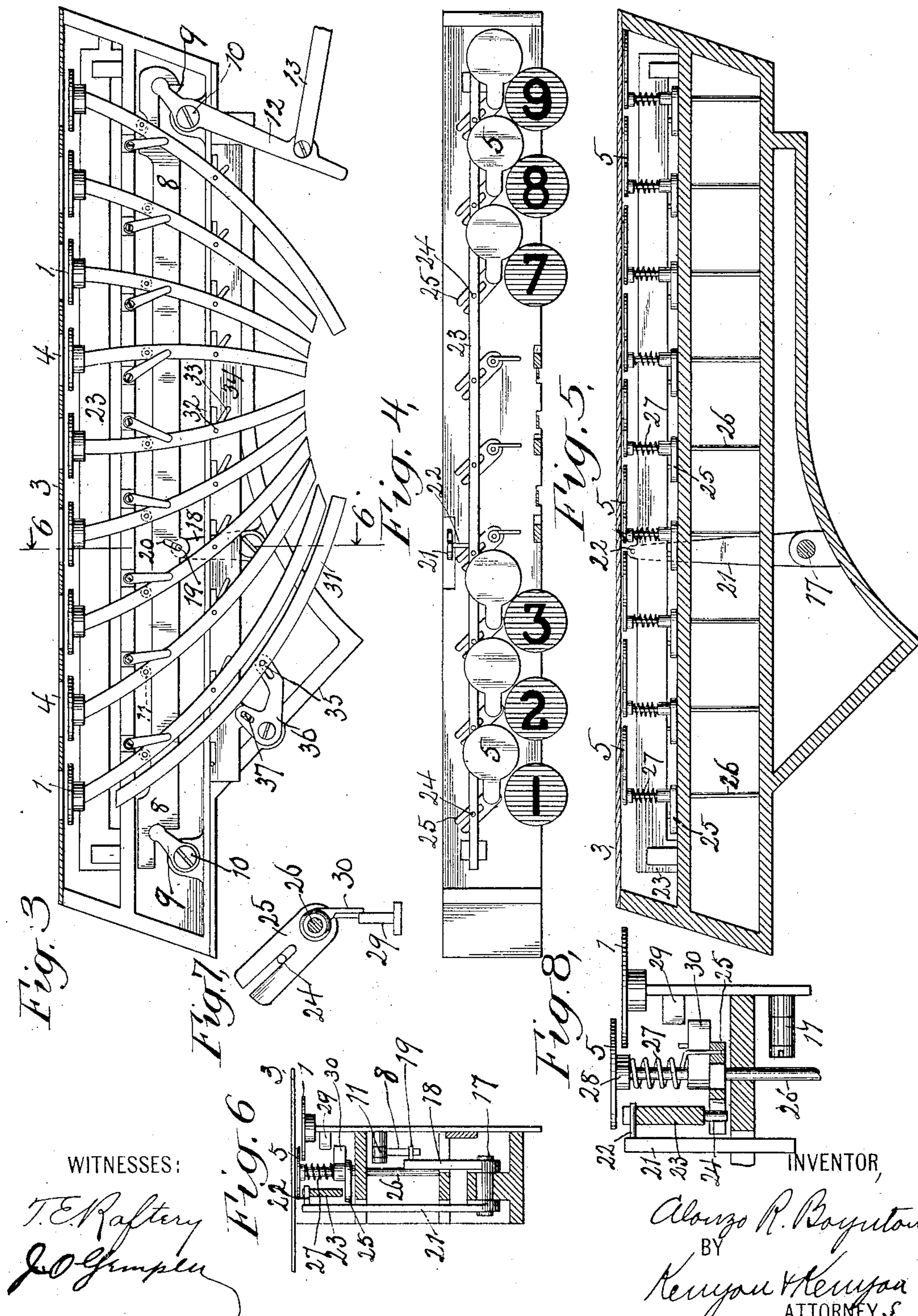
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2 SHEETS—SHEET 2.



UNITED STATES PATENT OFFICE.

ALONZO R. BOYNTON, OF BINGHAMTON, NEW YORK, ASSIGNOR TO BUNDY MANUFACTURING COMPANY, A CORPORATION OF NEW YORK.

ATTACHMENT FOR CALCULATING, PRINTING, OR ANALOGOUS MACHINES.

SPECIFICATION forming part of Letters Patent No. 748,158, dated December 29, 1903.

Original application filed October 23, 1902, Serial No. 128,476. Divided and this application filed March 9, 1903. Serial No. 146,847. (No model.)

To all whom it may concern:

Be it known that I, ALONZO R. BOYNTON, a citizen of the United States, and a resident of Binghamton, in the county of Broome and State of New York, have invented certain new and useful Improvements in Attachments for Calculating, Printing, or Analogous Machines, of which the following is a specification.

My invention relates to calculating and printing machines and to machines for bringing suitable characters upon a printing or reading line.

The present application is a division of my application, Serial No. 128,476, filed October 23, 1902; and it has for its object to improve such machines and make them more certain and accurate in operation and to provide means for hiding all the keys of a series when one key of the series is operated and to more effectually strike the keys and the parts immediately connected with them.

My invention consists in the construction and combination of parts herein described.

In the accompanying drawings I have shown an embodiment of my invention as applied to a calculating or printing machine, in which—

Figure 1 is a plan view of that part of the machine containing the keys with a portion of the top of the key-casing broken away to display some of the parts beneath it and with the rest of the machine broken away. Fig. 2 is a vertical section taken on the line 2 2 of Fig. 1. Fig. 3 is a section similar to Fig. 2, but in which I show only the upper parts of the machine or the keys, their casing, and immediate connections. Figs. 4 and 5 are plan and sectional details, respectively, of parts shown in Fig. 3. Fig. 6 is a section taken on the line 6 6 of Fig. 3. Figs. 7 and 8 are details in which some of the parts and their connections are shown in the previous figures.

Similar numbers represent like parts in all of the figures.

The machine shown in the drawings is provided with keys arranged in series, preferably a bank of keys consisting of a plural-

ity of series of keys arranged in the usual way. The two series at the bottom of Fig. 1 represent cents and those to the left represent dollars. The machine is operated by depressing the keys corresponding to the number it is desired to set up on the reading or printing line or to add, and by turning a shaft 2 (see Fig. 2) by means of a crank or similar device (not shown) one complete revolution the rest of the work is done automatically by the machine.

I prefer to arrange the keys 1 so that they are seen and will be struck through openings or apertures in a protecting covering or casing. As shown, 3 is a protecting plate or covering extending over the bank of keys and provided with openings or apertures 4, through which the keys can be seen and struck. Each key as it is depressed is locked in its set position, and as it is thus operated it causes a screen 5 to be moved over every other key of its series. I preferably arrange the screens 5 in series, one for each, and so arrange them that whenever a key of the series is struck the screens for all of the other keys will be moved over those keys; but the screen of the key which is struck will not be moved into screening position, so that the only key of the series that will appear is the one that has been struck. In this way the operator can tell at a glance whether he has set up the right number. The shaft 2 extends clear across the machine, and upon said shaft is mounted a sleeve 6, carrying the wheels 7 and 8. The shaft 2 is intended to be always rotated in the same direction. The sleeve 6 is arranged to have a reciprocating motion upon shaft 2 moving in one direction with its wheels to bring the desired characters upon the printing-line and into their positions at the close of the entire operation and when the shaft 2 has substantially rotated the end of a complete revolution. The mechanism for bringing the characters upon the printing-line, &c., are not shown in this application, and they form part of and are specifically described in my application Serial No. 128,476, of which this is a division. The stems of the keys are preferably made in the

arc of the circle, and they are preferably made with the same radius. 8 is a swinging bar supported at each end upon swinging arms 9, which are pivoted at 10 to the machine-frame. The stems of the keys are provided with a roller 11, which rests normally on the top of the swinging bar 8. A lower extension 12 of one of the arms 9 connects pivotally with the rod 13, which is pivotally connected at its other end (see Fig. 2) with an arm 14, secured to one of the sets of sleeves 15, concentrically and loosely arranged on a rod 16, which runs from one side of the machine to the other. These sleeves 15 are for the purpose of connecting the plate 8 with the printing and calculating mechanism of the machine, which is not shown or described in this application.

17 is a rocking shaft situated below and transversely to plate 8, and extending upward from said shaft is an arm 18, provided with a lateral pin 19, which loosely enters the slot 20 in the bar 8. (See Fig. 3.) Another arm 21 also extends upward from shaft 17, and a lateral pin 22 extends from it near the upper end of said arm and enters a recess in a bar 23, which bar extends the length of the series of keys, as shown Figs. 2, 3, 4, and 5 of the drawings. This bar 23 is provided with a series of downwardly-extending pins 24, each of which engages with a rocking piece 25, loosely mounted upon a stud 26, and to the top of each stud is secured a screen 5, as above described. The rocking piece 25 is flexibly or elastically connected with the screen 5 or its stem 26 by means of a spring 27, which is secured at its lower end to the rocking piece 25 and at its upper end to a collar 28, which is fast on the stem 26. The stems of the keys are provided with lugs or stops 29. When any key is depressed, the roller 11 on the stem of said key and which is in engagement with the bar 8 bears down upon said bar and swings the same to the right, as in Figs. 2, 3, and as such bar swings to the right it moves with it the arm 18 through pin-and-slot connection 19 and 20 and by swinging the shaft 17 also rocks the arm 21 and through the pin 22 on said arm swings the plate 23 to the right. When this takes place, all of the rocking pieces 25 (which are in engagement with the plate 23 through pins 24) also swing to the right, and the screens 5 (see Fig. 4) will swing to the right and cover up the orifices over the keys. This operation takes place with every screen of the series except that of the key which is depressed. This screen will be prevented from covering the orifice of its key by means of the stop 29 on the stem of said key being thrown in front of the stop 30 of its corresponding screen the spring 27 permitting the movement of the piece 25 and the plate 23. Each key is provided with a screen and its connecting parts and stops. Each series of keys is provided with the plates 8 and 23 and their connections, as above described.

In order to prevent any setting up, calculating, or printing in the operation which might otherwise take place if the shaft 2 were rotated when a key is depressed, I provide a series of stops or stems 31, one for each series of keys. These are shown at the left of Figs. 2 and 3 in their depressed or stop position. The stem of each key of the series is provided with a pin 32, projecting from the side of the stem and normally directly over an inclined slot 33 in a locking-bar 34, which lies across the machine in a similar way to plate 8. (See Figs. 2 and 3.) When a key is depressed, this pin 32 forces bar 34 to the left. This moves all of the other slots 33 through their respective pins 32 and locks every key of the series in position and prevents their being depressed. The stems 31 are connected by a pin-and-slot connection 25 to one arm of a bell-crank lever 36, the other arm of said lever being connected by a pin-and-slot connection 37 with the bar 34. When the bar 34 slides to the left, as stated above, it throws upward and to the left the two arms of the bell-crank lever 36, (said lever being pivoted to the framework of the machine,) and therefore also throws up the said stems 31. When the keys are returned to their normal position, the locking-bar 34 is moved to the right, throwing the said stems out of their operative position.

Loosely journaled on the shaft 20 is a sleeve 6, and upon said sleeve are mounted a number of wheels, one for each series of keys, to transfer motion from the shaft 2 to the calculating and printing mechanisms. These wheels are composed of the two parts, one part, 8, flexibly connected to the sleeves 6 and the other part, 7, mounted loosely thereon. I provide an attachable lock which is adapted to connect the two parts together. The fast part rotates the loose part at certain distances, whereupon the lock is operated automatically to disconnect them, the loose part to stop while the fast part rotates onward with the shaft. This detachable lock (see Fig. 2) consists of a swinging piece 38, pivoted to the loose part 7 of the wheel and normally held by a spring 39 in the position shown to the left of said figure. The swinging piece 38 has a projecting knob 40, adapted to strike the lower part of the stem or shank of the key when depressed, and it has also means for locking it (with the loose part 7) to the fixed part 8 of the wheel in the locked position of the swinging piece 38. The fast part will rotate the loose part as the main shaft 2 is rotated until the knob 43 strikes against the end of a key-stem. This movement tips the piece 38, throwing the loose part 7 out of engagement with the fast part, whereupon the fast part 8 of the wheel is rotated by the shaft further on. The distance that the loose part of the shaft rotates is of course dependent upon which of the series of keys is depressed—9, for example, allowing a further rotation than any lower key. The

loose part 7 of the wheels is provided with a segmental extension 41, having peripheral teeth which engage with teeth of another segment, 42. These two segments connect the
5 wheels 7 8 with the calculating and printing mechanism of the machine.

My invention in its broader aspects is not limited to the precise construction shown and described, as many changes other than
10 those suggested may be made without departing from the principles of my invention or sacrificing its chief advantages.

What I claim as new, and desire to secure by Letters Patent, is—

15 1. In a machine for bringing characters upon a line, the combination of a bank of keys composed of a plurality of series of keys, a series of screens, and means adapted to be actuated by each key, as it is struck to move
20 the screens over the other keys of the series, whereby when a key is struck the other keys of the series will be hidden.

2. In a machine for bringing characters upon a line, the combination of a series of
25 keys, a screening device, and means adapted to be actuated by each key, as it is struck to actuate the screening device so as to hide the other keys of the series.

3. In a machine for bringing characters
30 upon a line, the combination of a series of keys, a series of screens, and means adapted to be actuated by each key, as it is struck to move the screens over the other keys of the series, whereby when a key is struck the
35 other keys of the series will be hidden.

4. In a machine for bringing characters upon a line, the combination of a bank of keys composed of a plurality of series of keys, a series of screens for each series of keys, and
40 means connected with each series adapted to be actuated by each key of the series, as it is struck, to move the screens over the other keys of the series, whereby when a key of any series is struck the other keys of the se-
45 ries will be hidden.

5. In a machine for bringing characters upon a line, the combination of a series of keys, a series of screens, a common actuating part for the screens adapted to be moved
50 by each key of the series when it is struck, a yielding connection between each screen, and the common actuating part adapted normally to transmit motion from the latter to move the former over its key, and a stop for each
55 screen adapted to be thrown by its key, when

struck, into the path of its screen to prevent the latter from hiding its key.

6. In a machine for bringing characters upon a line, the combination of a series of keys, a series of screens, a common actuating
60 part for the screens adapted to be moved by each key of the series when it is struck, a yielding connection between each screen, and the common actuating part adapted normally to transmit motion from the latter to move
65 the former over its key, and a stop for each screen adapted to be thrown by its key, when struck, into the path of its screen to prevent the latter from hiding its key, and means for automatically restoring the parts to their nor-
70 mal positions.

7. In a machine for bringing characters upon a line, the combination of a bank of keys composed of a plurality of series of keys, a se-
75 ries of screens for each series of keys, a common actuating part for the screens of each series adapted to be moved by each key of the series when it is struck, a yielding connection between each screen and its common ac-
80 tuating part adapted normally to transmit motion from the latter to move the former over its key, and a stop for each screen adapted to be thrown by its key, when struck, into the path of its screen to prevent the latter
85 from hiding its key, a casing covering the keys and screens and provided with apertures below which the keys are placed, all so arranged that the keys are operated by being struck through the apertures and whereby
90 such parts are protected.

8. The combination of a plurality of keys, a screening device, means adapted to be ac-
95 tuated by each key, when struck, to actuate the screening device so as to hide other keys of the series and means for restoring the parts to their normal positions.

9. The combination of a plurality of keys, a plurality of screens effective to conceal some
100 of the keys after one of the keys is operated and until restored to its normal position, and means for restoring the parts to their normal positions.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ALONZO R. BOYNTON.

Witnesses:

JOHN O. GEMPLER,
EDWIN SEGER.