(No Model.) 2 Sheets—Sheet 1.

C. SEILER.

GALVANIC BATTERY.

No. 366,034. Patented July 5, 1887.

FIG. 3.

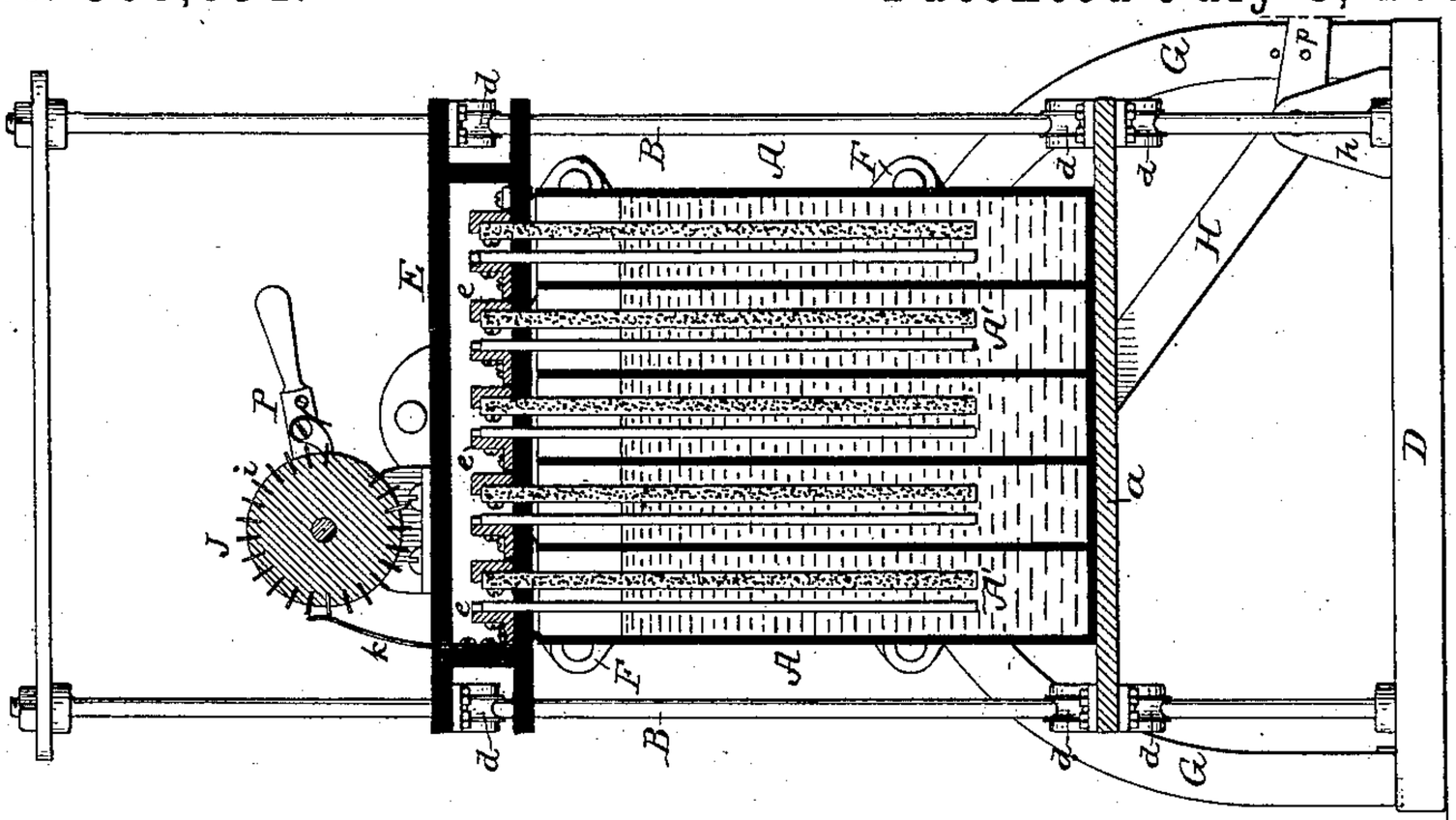


FIG. 2.

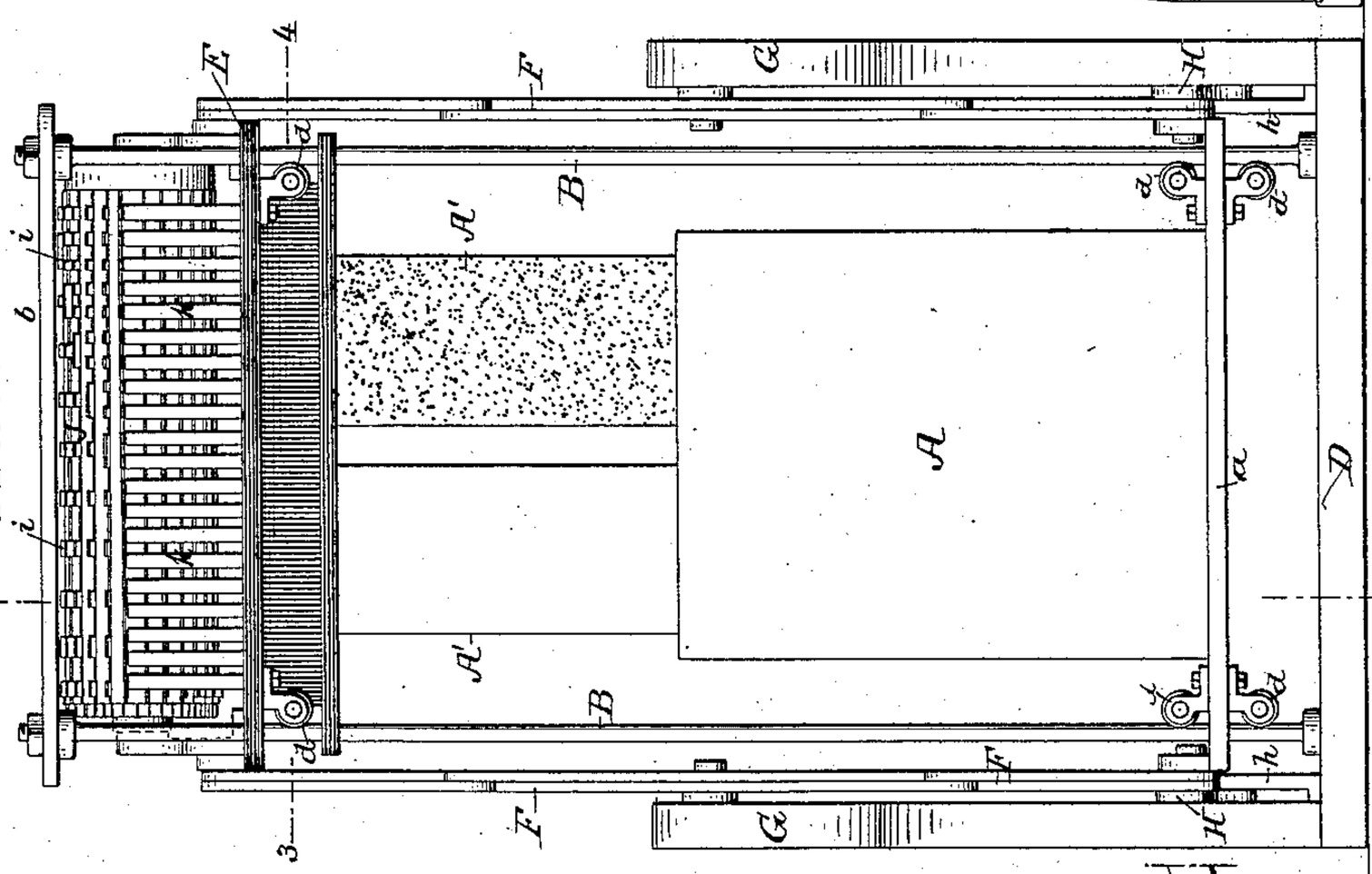
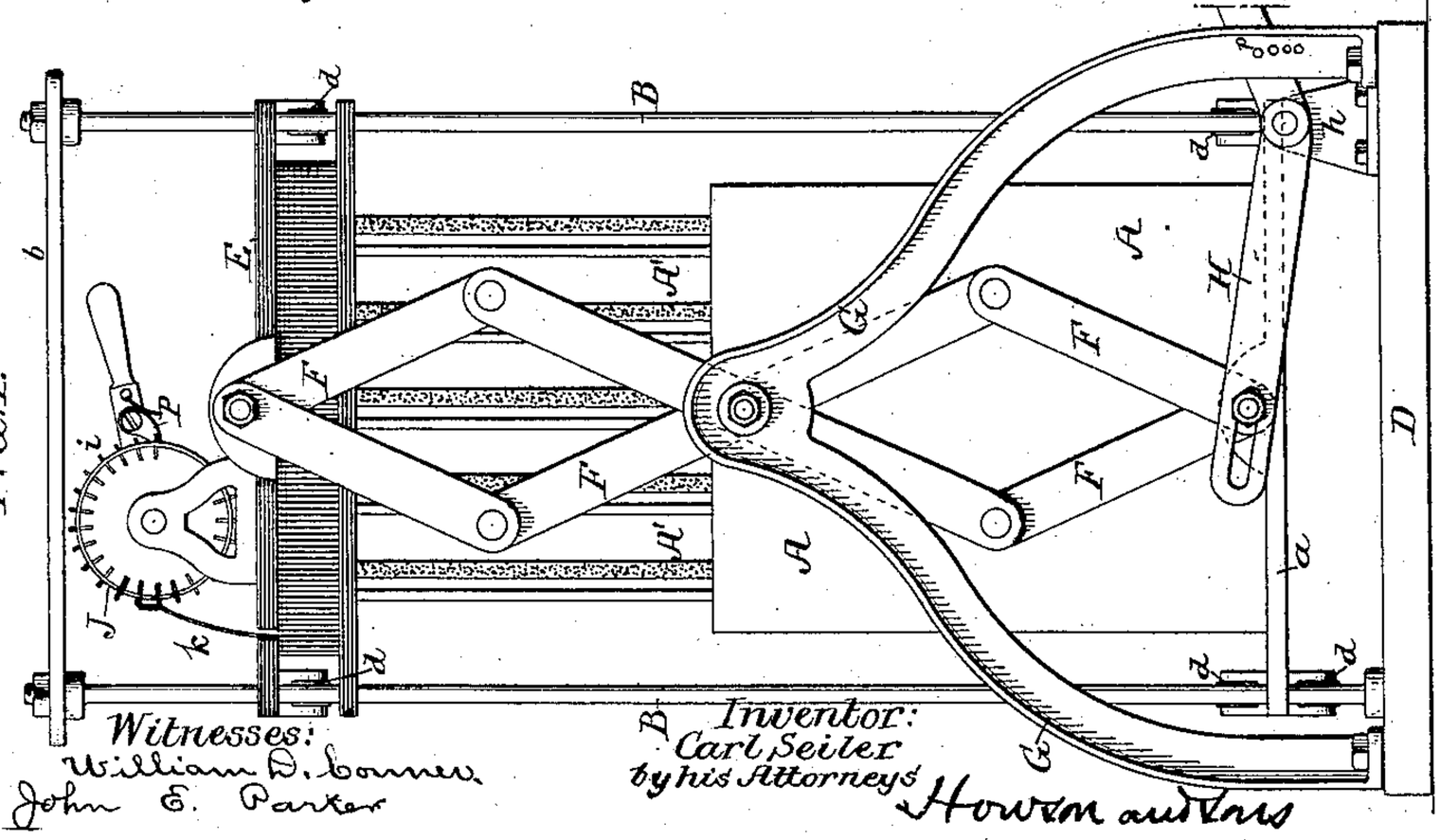


FIG. 1.



Witnesses:
William D. Bowers
John E. Parker

Inventor:
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by his Attorneys
Howson and Sons

(No Model.) 2 Sheets—Sheet 2.

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FIG. 4.

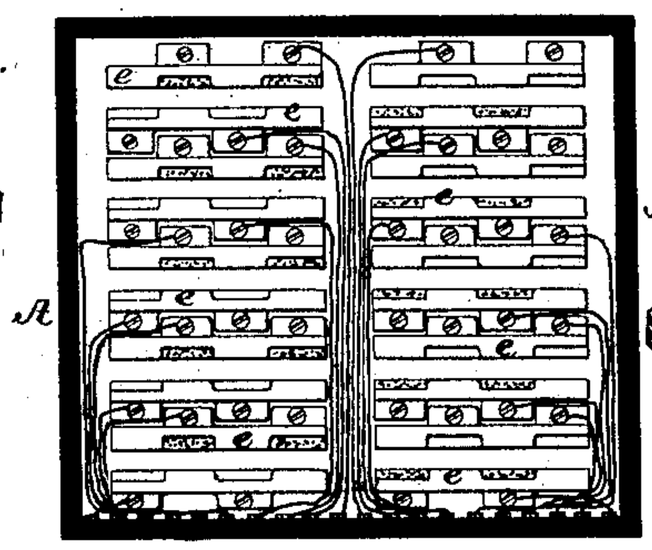


FIG. 5.

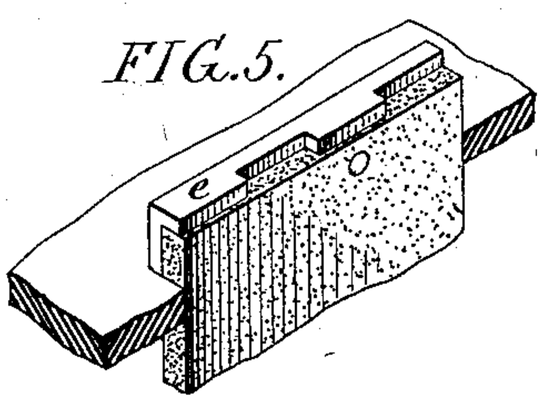


FIG. 6.

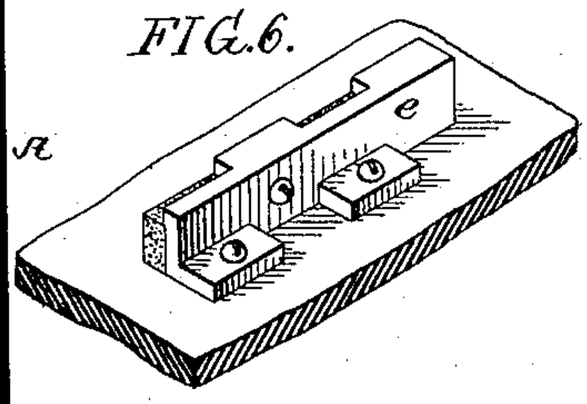
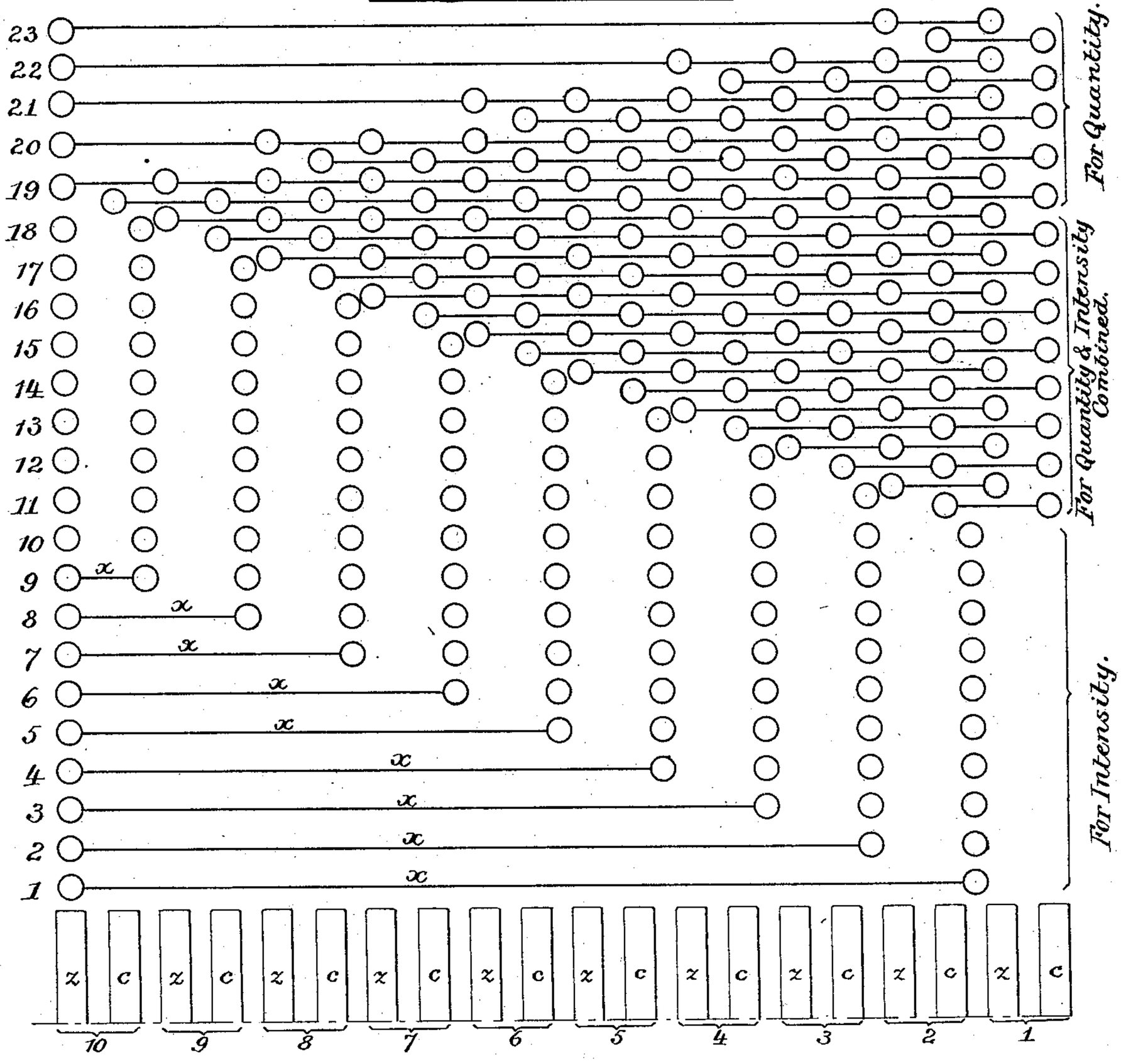


FIG. 7.



Witnesses:
William D. Bowers,
John E. Parker

Inventor:
Carl Seiler
by his Attorneys
Howson and Sons

UNITED STATES PATENT OFFICE.

CARL SEILER, OF PHILADELPHIA, PENNSYLVANIA.

GALVANIC BATTERY.

SPECIFICATION forming part of Letters Patent No. 366,034, dated July 5, 1837.

Application filed November 19, 1886. Serial No. 219,376. (No model.)

To all whom it may concern:

Be it known that I, CARL SEILER, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain Improvements in Electrical Batteries, of which the following is a specification.

My invention relates to certain improvements in the construction of electrical batteries, and has more particular reference to batteries of that class in which the electrodes can be immersed in or withdrawn from the liquid in the cells at pleasure, according to the current desired, and which are especially adapted for medical and similar uses.

The objects of my invention are to improve the construction of the mechanism for immersing the electrodes in the liquid in the cells and withdrawing them therefrom, to prevent injury to and destruction of the connections of the conductors with the electrodes, and to provide a combined commutator and cell-selector, whereby the cells can be connected up not only for quantity or intensity, but, if desired, for both quantity and intensity combined, and in any desired number within the capacity of the battery.

In the accompanying drawings, Figure 1 is a side view of my improved battery. Fig. 2 is an end view of the same. Fig. 3 is a vertical section. Fig. 4 is a sectional plan on the line 1 2, Fig. 3. Figs. 5 and 6 are perspective views illustrating the manner of securing the electrodes to the carrying-plate, and Fig. 7 is a diagram illustrating the contacts of the commutator and cell-selector.

In the drawings, I have illustrated the battery A as having ten cells and a corresponding number of pairs of electrodes, A′; but the number of elements may be varied, of course. The cells A are mounted on a movable platform, *a*, guided by vertical standards or rods B on the base D. These vertical guide-standards B are connected at the top by suitable cross-bars, *b*. The electrodes are carried by a movable platform, E, which is similarly guided on the vertical rods or standards B; and for convenience I prefer to provide both the platform *a* and platform E with anti-friction rollers *d*, bearing against the guide-standards B, to facilitate the movements of the cells and electrodes. The two platforms *a* and E are connected on opposite sides by levers F, which constitute a "lazy-tongs" movement, and which are pivoted at the center to fixed standards G on the base plate D, so that when the platform E, with its electrodes, is raised the cells will be depressed, and when the electrodes are depressed, the cells will be raised. By this means the extent of movement needed to immerse or withdraw the electrodes is but slight, and the two moving parts nearly counterbalance each other, the cells for the liquid being of course a little heavier than the platform with its electrodes, in order that the latter may be normally out of the liquid.

To operate the moving parts of the battery, I provide a lever or levers, H, pivoted to brackets or lugs *h* on the base, and having a pin-and-slot connection with one or other of the platforms *a* E or with the levers constituting the lazy-tongs movement. This operating-lever may be put centrally under the platform; but I prefer to construct it in the form of a yoke, so that it will act on opposite sides of the battery, the cross-bar of the yoke forming a treadle to be operated by the foot of the operator.

In order that when necessary the electrodes may be maintained at any desired degree of immersion, I provide means for securing the lever H in the proper position. For this purpose I have shown, as an example, a number of openings in one of the standards G and an opening in the lever or levers H, with a retaining-pin, *p*.

In order to protect the connection of the conductors with the electrodes from the actions of the liquids or fumes from the cells, the upper ends of the electrodes are passed through corresponding openings in the bottom plate of the platform, (which I prefer to make in the form of a covered box,) and are secured by screws or other means to L-shaped brackets *e*, to which the conductors are connected. By thus passing the upper ends of the electrodes through the platform-bottom and connecting the conductors to them above, those connections cannot be injured by the liquids or fumes from the cells. The inclosure of these parts in the box further protects them.

I provide my battery with a combined commutator and "cell-selector," which not only provides for connecting up the cells for either quantity or intensity, but also provides for the

selection of any desired number of cells, and also for their connection for quantity and intensity combined. This commutator and cell-selector I prefer to make in the form of a cylinder, J, of suitable non-conducting material, having contact-points *i* on its periphery. These contact-points I prefer to make of stamped-out sheet metal of the necessary form, simply inserted in the radial slots in the wooden or other non-conducting cylinder. In connection with this commutator and cell-selector are spring contact-fingers *k*, equal in number to the electrodes of the battery—twenty in the present instance. A conductor from each electrode connects with one of these spring contact-fingers. The projecting sheet-metal contact-points *i* on the cylinder acting against the spring-fingers *k* form scraping-contacts, which are thereby kept clean. The arrangement of the contact pins of this combined commutator and cell-selector will be understood on reference to the diagram, Fig. 7, in which the contact-points *i* are represented by circles in twenty-three lines. When the commutator and cell-selecting cylinder is turned to the position with the first line opposite the ends of the contact-fingers *k*, the pin *i* in that first line will make contact between the zinc and carbon of the first and second pair, and assuming that the lines *x* represent conductors, the circuit will be from the carbon of the first pair through the conductor *x* and out at 10. This will put one cell in circuit. When the cylinder is turned to the second line, two cells will be connected up for intensity, and so on as the cylinder is turned, until the ten cells are connected up for intensity at line 10. When line 11 is reached, the carbons of the first two cells and the zincs of the first two cells will be connected up, so that there will be two cells connected for quantity and the remaining eight for intensity. As the cylinder is further turned, the number of cells connected for intensity will decrease, while those connected for quantity will increase until line 19 is reached, when all the cells will be connected up for quantity. As the cylinder is further turned, the number of cells connected up for quantity will decrease until line 1 is reached again.

To facilitate the turning of the commutator and cell-selector cylinder, I may provide at one end thereof a ratchet-wheel and a handled pawl, P.

I claim as my invention—

1. The combination of the base and guide standards with platforms carrying the cells and electrodes, guided on said standards, lazy-tongs movement connecting the two platforms, and standards to which the lazy-tongs levers are pivoted.

2. The combination of the electrodes of an electrical battery with a carrying-platform, through the bottom of which the upper ends of the electrodes pass, and brackets to which the said electrodes are secured, substantially as specified.

3. An electrical battery having electrodes and contacts connected therewith, in combination with a combined commutator and cell-selector, having contacts, such as 1 to 10, for connecting the cells in intensity in varying number, contacts, such as 11 to 18, for connecting them in intensity and quantity combined in varying number, and contacts, such as 19 to 23, for connecting the cells in quantity, also in varying number, all substantially as set forth.

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

CARL SEILER.

Witnesses:
WILLIAM D. CONNER,
HENRY HOWSON.