

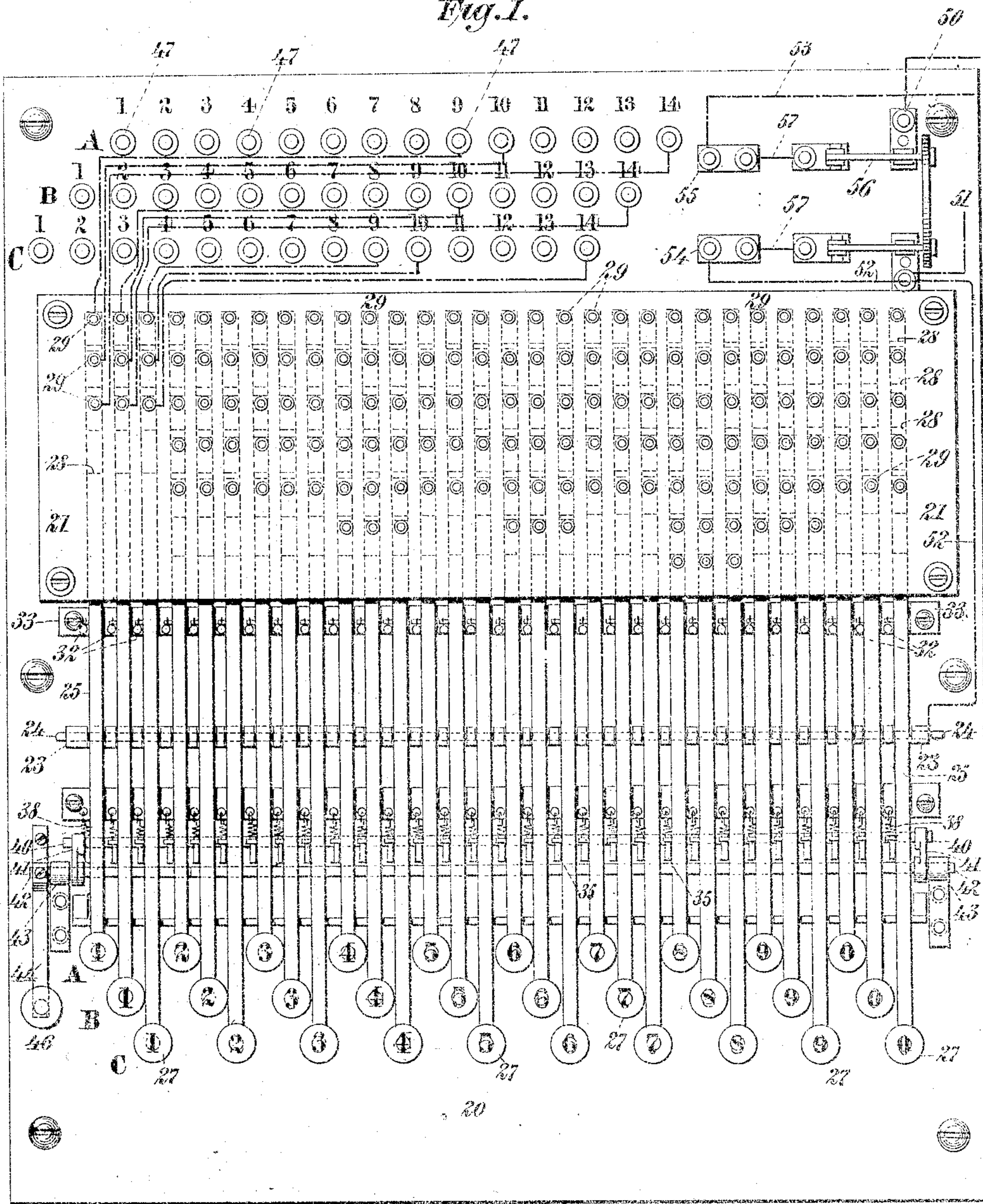
D. LEVY.

INTERCHANGEABLE ELECTRIC DISPLAY APPARATUS.

APPLICATION FILED APR. 5, 1905.

3 SHEETS—SHEET 1.

Fig. 1.



Witnesses  
Gustave Dietrich  
Edwin H. Dietrich

Inventor  
Deronda Levy  
By his Attorney Chas. C. Gill

No. 875,715.

PATENTED JAN. 7, 1908.

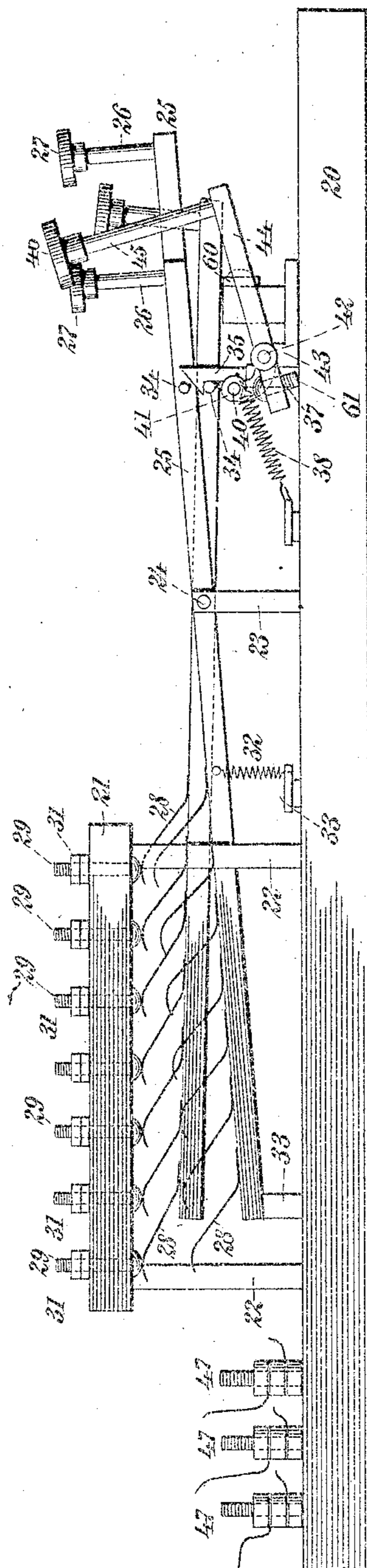
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3 SHEETS—SHEET 2.

Fig. 2.



Witnesses  
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3 SHEETS—SHEET 3.

Fig. 3.

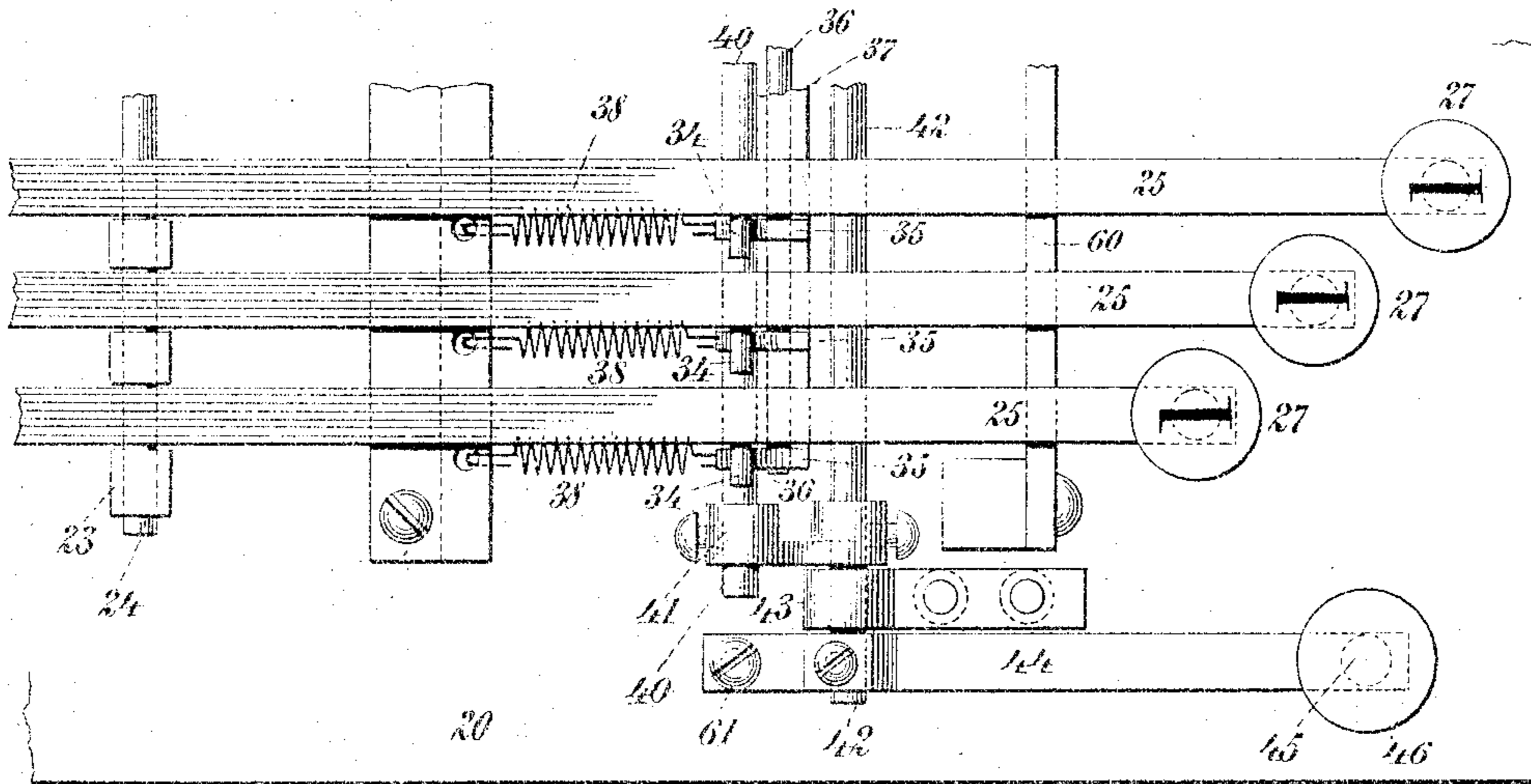
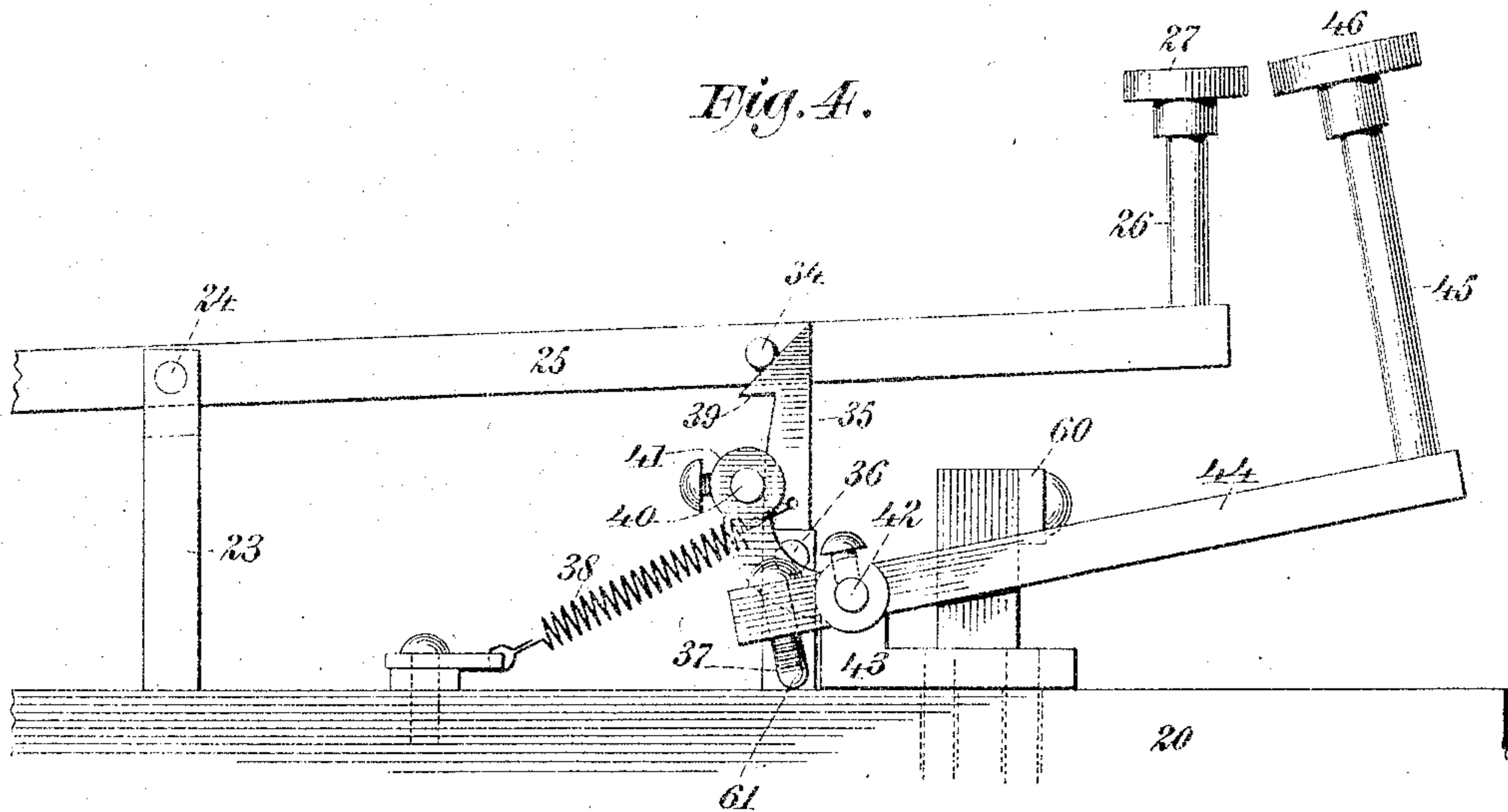


Fig. 4.



Witnesses  
Gustav Heinrich  
Edwin H. Richter.

Inventor  
Deronda Levy  
By his Attorney Chas. C. Lee

# UNITED STATES PATENT OFFICE.

DERONDA LEVY, OF NEW YORK, N. Y., ASSIGNOR TO MASON MONOGRAM COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

## INTERCHANGEABLE ELECTRIC DISPLAY APPARATUS.

No. 875,715.

Specification of Letters Patent.

Patented Jan. 7, 1908.

Application filed April 5, 1905. Serial No. 253,997.

*To all whom it may concern:*

Be it known that I, DERONDA LEVY, a citizen of the United States, and a resident of New York city, in the county of New York and State of New York, have invented certain new and useful Improvements in Interchangeable Electric Display Apparatus, of which the following is a specification.

The invention relates to improvements in 10 interchangeable electric display apparatus, this apparatus being adapted for electrically producing display-signs, such as letters or numerals, by successively lighting different combinations of lamps arranged within a 15 given field or space to exhibit in the light the formation of the letter or numeral desired.

The general class of apparatus to which my invention pertains is illustrated in Letters Patent of the United States No. 683,133, 20 granted September 24, 1901 to Mason Monogram Company as assignee of G. L. Mason, and No. 728,944 granted May 26, 1903 to Mason Monogram Company as assignee of Deronda Levy.

25 The present invention pertains more especially to a carriage-call apparatus and particularly to a novel switch mechanism for simultaneously throwing the desired lamps in the monogrammic field into and out of circuit, it being necessary that different sets of 30 lamps be lighted from time to time to display the varying numerals by which the carriages may be designated.

The object of the invention is to produce 35 an apparatus by which, in connection with the monogrammic fields described in the aforesaid Letters-Patent, numerals formed by lighted lamps may be displayed for calling carriages at night, and the noise and confusion caused by shouting out the numbers of 40 carriages to call them, may be obviated.

Ordinarily the monogrammic fields are arranged in series, each field containing sufficient lamps to display, in their various combinations, any numeral ranging from "0" to 45 "9" inclusive, and I prefer to employ three of said fields arranged side by side so as to call carriages numbered from, say, "1" to "999."

50 The novel switch mechanism presented in this application is adapted for use in connection with three monogrammic fields and in displaying a numeral on any one or all of said fields, and the said mechanism comprises a

base over which, in suitable supports, sets of 55 numbered switch levers are pivotally mounted, spring contacts carried on the upper sides of the inner ends of said levers and varying in number to correspond with the circuits to be made on depressing a lever, a fixed board 60 over the inner ends of said levers and supporting sets of binding posts whose lower ends are exposed to receive said spring contacts when the same are elevated by the depression of the forward ends of said levers and 65 whose upper ends have the circuit wires to the lamps connected with them; means for locking any depressed lever in its then position for maintaining the circuit established by the same, and means for simultaneously 70 releasing all of the depressed levers when the displayed numerals are no longer required, with accessories, all as hereinafter fully described.

Referring to the accompanying drawings: 75 Figure 1 is a top view of a switch mechanism embodying my invention; Fig. 2 is a side elevation of same, one of the switch levers being shown as locked in its depressed position; Fig. 3 is a top view, on an enlarged 80 scale, of a portion of same, and Fig. 4 is an enlarged side elevation of a portion of same.

In the drawings, 20 designates the base, of slate or like suitable substance, for the entire switch mechanism; 21 an elevated 85 board, of slate or like suitable substance, supported by posts 22 over said base and bearing the several series of binding posts; 23 a transverse metal plate secured on edge on said base and having in its upper edge a 90 series of equally spaced notches; 24 a pivot rod extending through the upper edge of said plate 23 and crossing all of the said notches therein, and 25 the switch-levers 95 arranged parallel to one another and mounted on said pivot rod 24, said levers having at their outer or exposed ends the posts 26 carrying button-heads 27 which bear the numerals it may be desired to expose on the monogrammic fields. The levers 25 are of 100 metal and the button-heads 27 are of non-conducting material, and said levers carry on their inner portions below the board 21 the spring contacts 28, which at appropriate times are caused to engage the lower ends of 105 the binding posts 29 supported in said board. The spring contacts 28 are simply pieces of leaf spring metal secured at their lower ends

to the levers 25 and thence curving upwardly and rearwardly therefrom so as to be free to yield when moved into engagement, with the binding posts 29.

5 The binding posts 29 are arranged in rows, as shown in Fig. 1, and the levers 25 are arranged in line with these rows of binding posts, each lever carrying as many spring contacts 28 as there are binding posts in the  
10 row immediately above it. The first three rows of binding posts at the left of Fig. 1, have three posts in each row, and consequently the first three levers 25 at the left of Fig. 1 will each carry three spring contacts  
15 28. The number of binding posts 29 in a row vary in accordance with the circuits to be made, and the number of spring contacts 28 carried by the levers 25 must vary accordingly. The binding posts 29 are simply  
20 metallic bolts passing through apertures in the slate board 21, the heads of said bolts being adapted to receive the pressure of the spring contacts 28, while the upper ends of said bolts are threaded to receive the nuts  
25 31 by which the circuit wires may be connected therewith.

Each of the switch levers 25 has connected with it a spring 32 which normally holds the inner end of the lever down against a transverse stop 33, as represented by the first  
30 lever in Fig. 2, (which is a projection from the left hand side of Fig. 1) in which position of the lever all of its spring contacts 28 are held below and clear of the binding posts  
35 above them. The upper ends of the springs 32 are fastened to small pins projecting from the sides of the levers 25, and the lower ends of said springs are fastened to the edge of a plate 33 extending transversely across and  
40 secured to the slate base 20.

Adjacent to their outer ends the levers 25 are each provided with a small transverse pin 34, shown more clearly in Figs. 3 and 4, adapted to be engaged by a pivoted spring  
45 latch 35 when the outer end of the lever is depressed to move its spring contacts 28 upwardly against the binding posts 29. All of the spring latches 35 are pivotally mounted upon a transverse rod 36 which extends  
50 through the upper edge of a transverse plate 37 secured upon the base 20, the upper edge of this plate 37 being recessed to receive the lower ends of said latches, and said latches normally having their upper ends drawn  
55 inwardly or toward the rear by the tension of the springs 38. Each lever 25 is provided with a pin 34, and the latches 35 are independent of one another and one latch is provided for each lever. The upper ends of  
60 the latches 35 are inclined downwardly and inwardly as shown in Fig. 4 and normally lie immediately below the pins 34; so that upon the depression of a lever its pin will ride down the inclined upper end of the latch  
65 and force the latter to turn outwardly to-

ward the front so that said pin may pass below its engaging point 39, upon doing which the spring 38 will cause the latch to again move rearwardly and carry said point 39 above the pin 34, as shown in Fig. 2, said  
70 latch when in such position being enabled to lock the lever in its depressed position and to maintain the spring contacts 28 carried by said lever in firm engagement with the binding posts 29 immediately above  
75 them.

In the employment of the switch mechanism it will frequently happen that the levers which are depressed will be distributed over the base 20 in an irregular relation, this being in accordance with the special numerals  
80 it may be desired to display in the monogrammic field, and after any set of levers have been depressed to create the circuits and effect the display of the proper numerals, they will be held in their depressed position by the appropriate spring latches 35 until the occasion for the display has ceased and it is desired to display a new set of numerals, whereupon all of the depressed keys  
85 must be released to return, under the tension of the springs 32, to their initial position with their spring contacts 28 entirely free of the binding posts 29, and I have therefore provided means for effecting the simultaneous  
90 release of all of the depressed levers, these means comprising a transverse rod 40 extending across the switch board immediately in the rear of the spring latches 35 and at its ends carried in the upper ends of crank  
100 arms 41 which are secured upon a lower transverse rod or rock-shaft 42, which is mounted in bearings 43 and has secured to it at one end a special lever 44, which I term a releasing lever and which carries at its outer  
105 end a post 45 upon which is secured a button head 46 for convenience in operating said lever. All of the spring latches 35 are in line with one another and immediately in front of the rod 40 and hence upon any movement  
110 of the rod 40 toward the front of the switch board it will be carried against all of the latches 35 and turn them toward the front, whereby all of the levers 25 which may have been depressed and held in their depressed  
115 position by the latches will be simultaneously released and permitted to return to their initial position under the tension of the springs 32. The rod 40 will be moved toward the front to release the latches from the  
120 depressed levers by simply depressing the outer end of the lever 44, this action serving to turn the rock shaft 42 and move the crank arms 41 and rod 40 on the arc of a circle toward the front of the base 20.

Upon the rear portion of the base 20 I provide a series of binding posts 47, and the circuit wires for the lamps will extend from the binding posts 29 to the binding posts 47 and thence to the lamps rather than from the  
125 130

binding posts 29 to the lamps, it being deemed more convenient and expeditious to utilize the binding posts 47.

The switch mechanism shown is intended for use in connection with three monogrammic fields and to effect the display of numerals on any or all of said fields, and hence I illustrate three sets (A, B and C) of the switch levers 25, each set being in a transverse row, and three corresponding sets (A, B, C) of the binding posts 47, each set of the latter being in a transverse row. Each set of the levers 25 and each set of the binding posts 47 is intended for one monogram on which may be displayed any of the numerals represented on the button heads 27 of said set of levers. If only one monogrammic field was intended to be used the switch mechanism might comprise only one set of levers 25 and one set of binding posts 47, and in any instance in which it may be desired to only employ two monogrammic fields, two sets of the levers 25 and two sets of the binding posts 47 will be made use of. It is preferable to employ three monogrammic fields and hence in the apparatus shown I make use of three sets of levers 25 and three sets of binding posts 47, the set A of levers and set A of binding posts being intended for each other and for one monogrammic field, the set B of levers and set B of binding posts being intended for each other and for another adjoining monogrammic field, and the set C of levers and set C of binding posts being intended for each other and for the third monogrammic field.

When any one of the levers in the set "A" is depressed it will effect the display of the numeral indicated on it, in the monogrammic field provided for set A; when any one of the levers in the set "B" is depressed it will cause the display of the numeral indicated on it, in the monogrammic field for set "B" and when any one of the levers in the set "C" is depressed it will cause the display of the numeral indicated on it in the monogrammic field for set "C". If only one numeral is displayed only one lever bearing that numeral will be depressed, and this may be a lever of any of the three sets. If two numerals are to be displayed in the monogrammic fields, one lever of one set and one lever of the next set will be depressed, and if three numerals are to be displayed in the monogrammic fields, one lever of each set will be depressed, the levers in set "C" indicating units, the levers in set "B" tens and the levers in set "A" hundreds.

I do not desire to limit my invention to any special wiring, because I desire to claim the switch mechanism comprising the levers 25 carrying the spring contacts, the board carrying the binding post 29, the means for holding the levers depressed and the means for releasing the depressed levers, without

regard to the special manner of wiring. It is much better to extend the circuit wires from the binding posts 29 to the binding posts 47 and thence to the lamps in the monogrammic fields, and the manner of wiring from the binding posts 47 to the lamps in the monogrammic fields is familiar practice and will be fully understood from the prior art represented by the aforesaid Letters Patent numbered 683,133 and 728,944, respectively. The wiring from the binding posts 29 to the binding posts 47 may vary with individual judgment, but as an illustration of my method of performing this wiring I would explain that I connect the binding posts 29 for the levers 25 of the "A" set with the binding posts 47 of set "A" thereof, the binding posts 29 for the levers 25 of set "B" to the binding posts 47 of set "B" thereof, and the binding posts 29 for the levers 25 of set "C" to the binding posts 47 of set "C" thereof. Thus, as an example, I connect the binding posts 29 above the first "1" lever 25 to the left, to the binding posts 9, 10 and 14 of the set "A" of binding posts 47, and likewise connect the binding posts 29 above the second "1" lever 25 at the left (this being the lever bearing the numeral "1" in set B) with the binding posts 9, 10 and 14 of set "B" of binding posts 47, and likewise connect the three binding posts 29 above the third lever 25 at the left (this being the lever bearing the numeral "1" in set C) with the binding posts 9, 10 and 14 of set "C" of binding posts 47, so that on the depression of any one of the first levers at the left of sets A, B and C, the numeral one will be displayed in the monogrammic field. If it were desired to display the number "11" I would depress the "1" levers of sets B and C, and if it were desired to display the number "111" I would depress the first lever in each of the sets A, B and C. Upon the depression of these levers they will be held by the latches 35 provided for them, and so long as said latches hold the front ends of these levers in their depressed position the number "111" will be displayed in the monogrammic fields. Should it thereafter be desired to display another number the releasing lever 44 will be depressed to release the then depressed "1" levers of sets "A", "B" and "C" and extinguish the lamps denoting "111", and then the proper levers 25 of each set will be depressed to display the new number whatever it may be. The operator need only observe the numbers on the levers 25 and depress the special levers making up the number he desires to display, the number displayed serving as a call or sign for the carriage wanted.

The main feed wires are numbered 50 and 51, and the main circuit wires through the switch mechanism and the return from the

lamps are numbered, respectively, 52, 53, the wire 52 passing from the fuse-block 54 to the pivot rod 24 which is in contact with all of the metal levers 25. The return wire 53 from the lamps connects with the fuse-block 55. I provide an ordinary cut-out switch 56 and fuse wires 57 on the base 20, as shown in Fig. 1. The circuit is thus through the wire 52, rod 24, levers 25, switches 28, binding posts 29, wires from said posts to the binding posts 47 and thence through wires leading to the lamps in the monogrammic fields, the return from the latter being by way of the wire 53. When the levers 25 are in their initial position, their spring contacts 28 do not engage any of the binding posts 29, and hence at such time there would be no circuit through the machine and the lamps in the monogrammic field would not be lighted. Upon the depression of any of the levers 25 the circuit to the lamps would be established through the spring contacts 28 then engaging binding posts 29, and at such time, the circuits to the lamps being established, the latter will be lighted and display the proper numerals.

Below the outer ends of the levers 25 is provided a transverse bar 60 to limit the downward movement of said levers, and on the inner end of the releasing lever 44, is provided a usual form of screw stop 61 to limit the downward movement of said end of said lever. The screw stop 61 is of importance in that by its adjustment the relation of the rod 40 to the spring-latches 35 may be nicely regulated. The rod 40 by being initially located close to the latches 35 prevents the latter from being turned unduly toward the rear of the base 20 under the tension of the springs 38, said rod then acting as a stop for all of said latches, and said location of said rod enables the same with only a slight movement of the releasing-lever 44 to move all of the latches of the depressed levers forwardly to release said levers.

What I claim as my invention and desire to secure by Letters-Patent, is:

1. In electric-display carriage-call apparatus, employing a monogrammic field of electric lamps to be lighted in the outline of the numerals to be displayed thereon, the switch mechanism comprising the base, the set of parallel pivotally mounted numbered switch-levers thereon carrying spring contacts in varying numbers at the upper side of their inner ends, the board over said switch-lever contacts and having the parallel rows of binding posts in varying numbers to be engaged by said contacts, the circuit wires connected to said posts, springs normally holding said contacts free of said posts, spring latches for independently locking the front end of said levers in their depressed position when said ends are depressed to move said contacts into connection with

said posts, a second series of binding posts (47) to which said circuit wires lead, and wires leading therefrom to the lamps, said levers being of conducting material and in the electric circuit for the lamps, and said circuits and wires leading to the lamps being arranged to display a complete numeral on the monogrammic field on the depression of any one of said levers, the numeral thus displayed corresponding with that delineated on the lever; substantially as set forth.

2. In electric-display carriage-call apparatus employing a monogrammic field of electric lamps to be lighted in the outline of the numerals to be displayed thereon, the switch mechanism comprising the base, the set of parallel pivotally mounted numbered switch-levers thereon carrying spring contacts in varying numbers at the upper side of their inner ends, the board over said switch-lever contacts and having the parallel rows of binding posts in varying numbers to be engaged by said contacts, the circuit wires connected to said posts, means normally holding said contacts free of said posts, spring latches for independently locking the front ends of said levers in their depressed position when said ends are depressed to move said contacts into connection with said posts, releasing means for simultaneously acting on all said latches for releasing all of said depressed levers, a second series of binding posts (47) to which said circuit wires lead, and wires leading therefrom to the lamps, said levers being of conducting material and in the electric circuit for the lamps, and said circuits and wires leading to the lamps being arranged to display a complete numeral on the monogrammic field on the depression of any one of said levers, the numeral thus displayed corresponding with that delineated on the lever; substantially as set forth.

3. In electric-display carriage-call apparatus employing a monogrammic field of electric lamps to be lighted in the outline of the numerals to be displayed thereon, the switch mechanism comprising the base, the set of parallel pivotally mounted numbered switch-levers thereon carrying spring contacts in varying numbers at the upper side of their inner ends, the board over said switch-lever contacts and having the parallel rows of binding posts in varying numbers to be engaged by said contacts, the circuit wires connected with said posts, springs normally holding said contacts free of said posts, a row of pivoted independent spring latches between and for engaging and locking the front ends of said levers when they are depressed to move said contacts into connection with said posts, the pivotally supported transverse rod extended along all of said latches, and a releasing lever at one side of said base for moving said rod to release said

latches from all of the depressed switch-levers, said switch-levers being of conducting material and in the electric circuit, and said circuits and wires leading to the lamps being  
 5 arranged to display a complete numeral on the monogrammic field on the depression of any one of said levers, the numeral thus displayed corresponding with that delineated on the lever; substantially as set forth.

10 4. In electric-display carriage call apparatus employing three monogrammic fields of electric lamps to be lighted in the outlines of the units, tens and hundreds numerals to be  
 15 displayed thereon, the switch mechanism comprising the base, the three sets of parallel pivotally mounted and correspondingly numbered switch-levers representing units, tens and hundreds, respectively, and carrying  
 20 contacts in varying numbers at the upper sides of their inner ends, the board over said switch-lever contacts and having the series of parallel rows of binding posts in varying numbers to be engaged by said contacts, the  
 25 circuit wires connected with said posts, means normally holding said contacts free of said posts, spring latches for locking the front ends of said levers in their depressed position when said ends are depressed to move said contacts into connection with said  
 30 posts, and releasing means for simultaneously releasing all of said depressed levers, said levers being of conducting material and in the electric circuit for the lamps, and said circuits and wires leading to the lamps being  
 35 arranged to display a complete numeral on the monogrammic field on the depression of any one of said levers, the numeral thus displayed corresponding with that delineated on the lever; substantially as set forth.

40 5. In electric-display carriage call apparatus employing three monogrammic fields

of electric lamps to be lighted in the outlines of the units, tens and hundreds numerals to be displayed thereon, the switch mechanism comprising the base, the three sets of parallel  
 45 pivotally mounted and correspondingly numbered switch-levers representing units, tens and hundreds, respectively, and carrying, at the upper sides of their inner ends, spring-contacts in varying numbers, the board over  
 50 said switch-lever contacts and having the series of parallel rows of binding posts in varying numbers to be engaged by said contacts, the circuit wires connected with said posts, means normally holding said contacts  
 55 free of said posts, a row of spring latches for locking the front ends of said levers in their depressed position when said ends are depressed to move said contacts into connection with said posts, means for simultaneously  
 60 releasing all of the depressed levers, the three sets of binding posts 47 corresponding with the said three sets of switch-levers and connected with the wires leading from the posts on said board, and wires leading from  
 65 the posts 47 to the lamps, said levers being of conducting material and in the electric circuit for the lamps, and said circuits and wires leading to the lamps being arranged to display a complete numeral on the monogrammic  
 70 field on the depression of any one of said levers, the numeral thus displayed corresponding with that delineated on the lever; substantially as set forth.

Signed at New York city, in the county of New York and State of New York this fourth day of April A. D. 1905.

DERONDA LEVY.

Witnesses:

ARTHUR MARION,  
 CHAS. C. GILL.