

(No Model.)

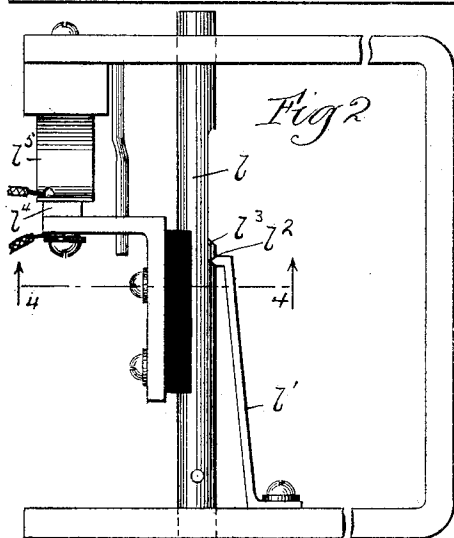
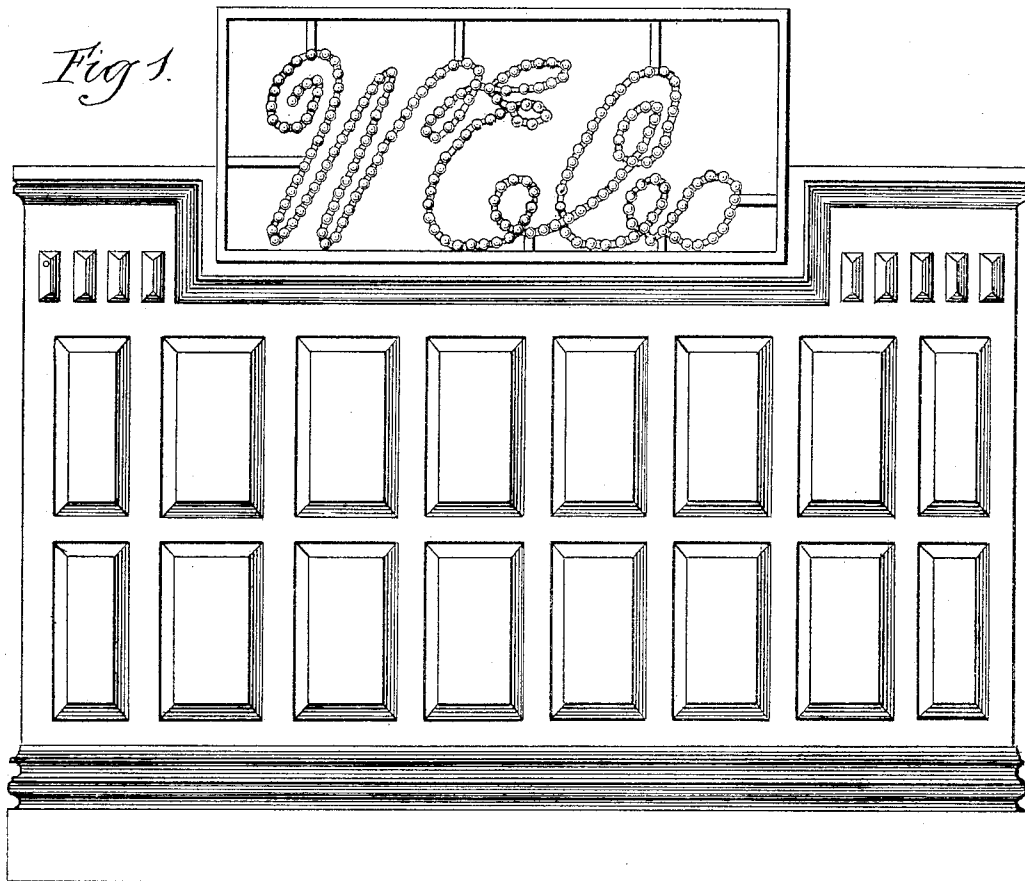
4 Sheets—Sheet 1.

O. P. BRIGGS & W. R. PATTERSON.
SIGN ADVERTISING MACHINE.

No. 531,018.

Patented Dec. 18, 1894.

Fig 1.



Witnesses
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W. Clyde Jones.

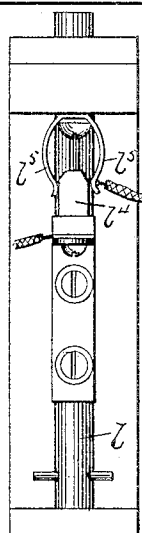


Fig 3.

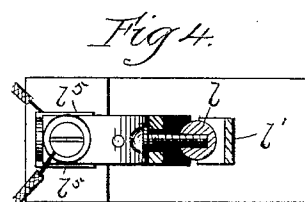


Fig 4.

by

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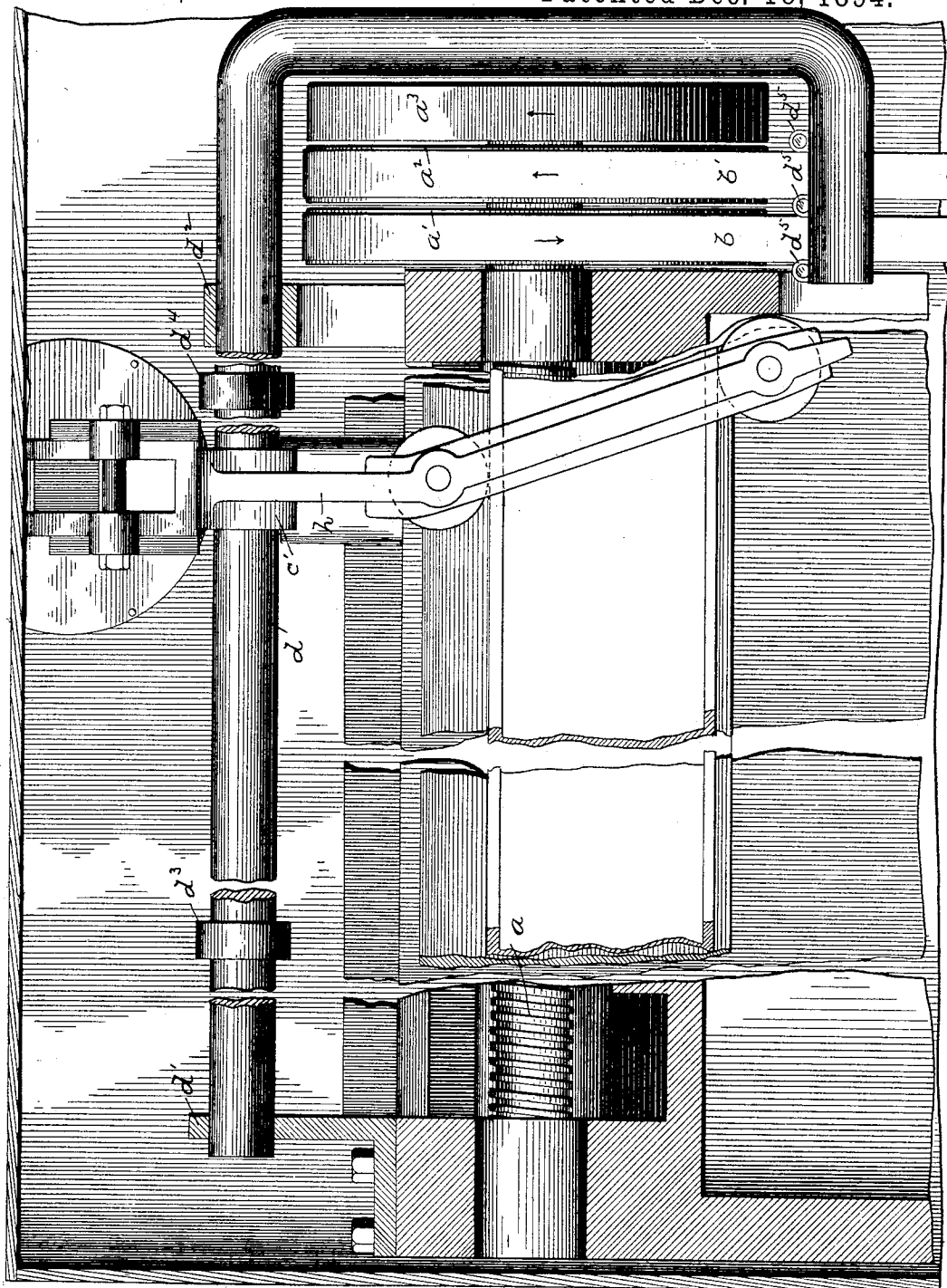
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Fig. 5

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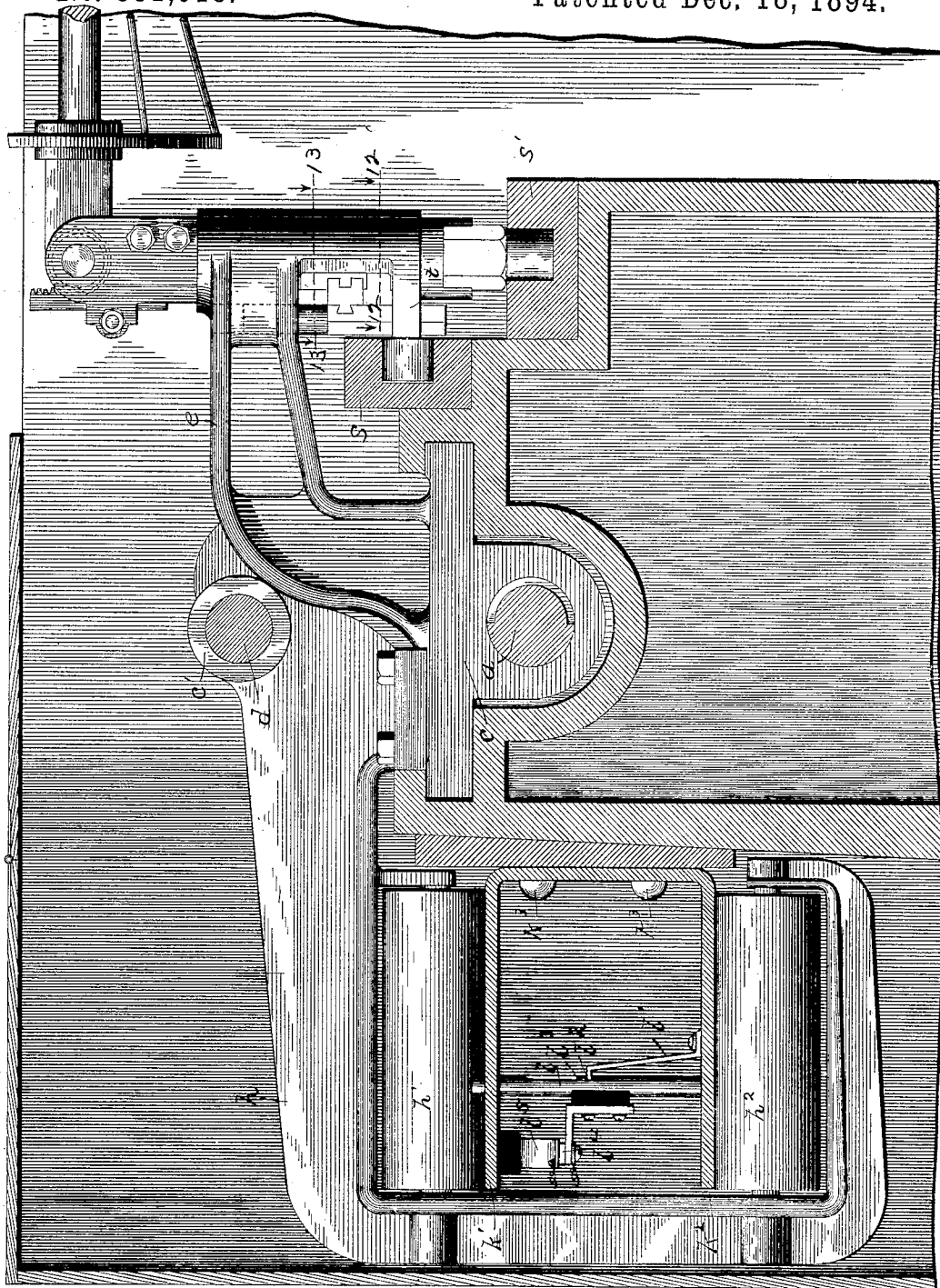
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4 Sheets—Sheet 3.

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Fig. 6

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UNITED STATES PATENT OFFICE.

ORLANDO P. BRIGGS AND WILLIAM R. PATTERSON, OF CHICAGO, ILLINOIS,
ASSIGNORS TO THE WESTERN ELECTRIC COMPANY, OF SAME PLACE.

SIGN-ADVERTISING MACHINE.

SPECIFICATION forming part of Letters Patent No. 531,018, dated December 18, 1894.

Application filed January 26, 1894. Serial No. 498,128. (No model.)

To all whom it may concern:

Be it known that we, ORLANDO P. BRIGGS and WILLIAM R. PATTERSON, citizens of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Sign-Advertising Machines, (Briggs' Case No. 9 and Patterson's Case No. 100,) of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

Our invention relates to sign advertising machines, and its object is to provide means for automatically lighting and extinguishing electric lamps arranged to produce a scenic effect, and more particularly to cause the successive lighting and extinguishment of incandescent lamps arranged to form certain words or characters; and further, to provide a pointer which shall trace the progress of the lighting or extinguishment of the lamps.

Our invention comprises a number of incandescent lamps arranged in the form of the desired characters or words, and connected respectively with switches adapted to be properly actuated by a moving part of the machine to accomplish the lighting and extinguishment of the lamps in the proper sequence.

Our invention consists, further, in a pointer or index adapted to automatically trace the characters or words as they are formed by the successive illumination of the several lamps.

Our invention consists, further, in such other features as will hereinafter be set forth.

In the preferred embodiment of our invention, we arrange the lamps upon a skeleton frame work, connecting the lamps respectively with switches by means of which they may be lighted or extinguished, and provide a pointer or indicator behind the skeleton frame work which travels back and forth tracing out the characters or letters forming the sign in the progress of their illumination, thus presenting the illusion that the pointer effects the lighting of the lamps. The switches which control the individual lamps comprise each a rod mounted to move longitudinally and carrying a contact making ele-

ment adapted in one position of the rod to make contact with a stationary contact making element. These switches are arranged in a row with the rods parallel between a pair of parallel plates to which the rods are perpendicular, holes being provided in both plates through which the ends of the switch-rods extend according as they are at one end of their stroke or the other. A traveling member is provided carrying two rollers, one bearing upon the surface of each plate, the rollers being placed one in advance of the other so that when the roller-supporting member travels in one direction one of the rollers engages with the protruding ends of the switch rods to move them longitudinally to open or close the switches, as the case may be, and to cause their opposite ends to protrude from the opposite plate. Upon the return travel of the roller-supporting member the now protruding ends of the switch rods are engaged by the second roller and moved longitudinally to their original positions, and the operation is thus repeated. As the switch rods are successively engaged by the rollers the lamps are successively lighted and extinguished, and as the tracing pointer follows the illumination it appears to write the characters. To secure the tracing movement of the pointer, the same is mounted at one end upon a horizontal axis which permits its movement in a vertical plane, the support upon which it is mounted being capable of a rotation about a vertical axis, a vertical and a horizontal movement of the pointer being thus provided which, when combined in the proper degree, causes the pointer to trace the desired characters.

We will describe our invention more in detail in connection with the accompanying drawings, in which—

Figure 1 is a front view of the machine showing the lamps arranged to form certain letters. Fig. 2 is a side elevation of one of the switches. Fig. 3 is a front view thereof. Fig. 4 is a sectional view on line 4—4, Fig. 2. Fig. 5 is a side view of machine shown partially in section. Fig. 6 is an end view of the machine partially in section, but one of the switches being shown in position. Fig. 7 is a detached view showing the location of the

tracing pointer relatively to the lamps. Fig. 8 is a view of the pointer actuating mechanism removed from the supporting arm. Fig. 9 is a view thereof as seen from the rear of the machine. Fig. 10 is a sectional view on line 10—10, Fig. 8. Fig. 11 is a sectional view on line 11—11, Fig. 8. Fig. 12 is a sectional view on line 12—12, Fig. 6. Fig. 13 is a sectional view on line 13—13, Fig. 6. Fig. 14 is a diagrammatic view illustrating the connection between the switches and the lamps.

Like letters refer to like parts throughout the several figures.

Referring more particularly to Figs. 5 and 6, a screw a is provided which is driven alternately in opposite directions through the agency of the pulleys a' , a^2 , a^3 , the pulleys a' and a^3 being keyed to the screw a , while the pulley a^2 is loosely mounted thereon. Belts b b' are driven in opposite directions as indicated by the arrows, the belt b being illustrated as engaging with pulley a' , while the belt b' engages with loose pulley a^2 . When thus engaging the screw a is rotated in a left hand direction, and being a left hand screw causes the carriage c provided with a bore fitting the thread thereof to travel to the right. Carried upon the carriage c is a collar c' which slides upon a rod d supported above the carriage in bearings d' d^2 in which it is longitudinally movable. Said rod d carries collars d^3 d^4 fixed thereon with which said collar c' engages at the ends of its stroke to move said rod d longitudinally. The rod d carries pins d^5 d^5 , or other proper parts, for engaging the belts to shift them from one pulley to another. As shown in Fig. 5 the carriage c is traveling to the right. When the collar c engages with the collar d^4 the rod d will be moved to the right to shift the belt b' onto the loose pulley a^2 , and the oppositely driven belt b' onto the pulley a^3 , the direction of rotation of the screw a being thus reversed to cause the carriage c to travel to the left. When in the travel to the left collar c' engages with collar d^3 , the belts will be again shifted to reverse the travel of the carriage.

Upon the carriage c is provided an arm e which supports the mechanism for actuating the tracing pointer, which will be hereinafter described. The carriage c also carries an arm or bracket h which supports the rollers h' h^2 . The said rollers are adapted to travel upon the surfaces respectively of two parallel plates k' k^2 which may comprise portions of an angle bar secured to the frame of the machine by a series of bolts k^3 k^3 . Between the said plates are located the switches which comprise each a rod l adapted, when in one position, to project from the surface of plate k' , and in the other position from the surface of plate k^2 . The switch rods may be arranged in a single row, or, where more numerous, in diagonal rows. A spring l' rests by its end in a notch l^2 in said rod when the rod is in one position. Above this notch is an inclined surface l^3 against which the end of said spring l' bears,

when the rod has been moved a sufficient distance, for the purpose of imparting to the rod a quick movement for the purpose hereinafter described. Upon the rod l and insulated therefrom is carried a switch blade l^4 , which in one position of rod l engages a pair of contact fingers l^5 l^5 . The end of the blade is tapered so that the contact fingers pressing against the tapering surfaces as the blade is moved from between the contact fingers tend to impart a rapid movement to the blade to effect a quick separation to prevent sparking. The end of spring l' bearing at this time against the oblique surface l^3 assists to impart to the rod l a rapid movement, and, further, the rod moving downward in opening the switch the weight of the rod further augments the rapidity of the movement, the several instrumentalities thus co-operating to effect a rapid opening of the circuit to reduce sparking.

The operation of the rollers in actuating the switches may be best understood by reference to Fig. 14. When the machine is not in operation the carriage is to the right. Upon starting the machine the carriage travels to the left and the switches being open the rods l project from the lower plate. As the lower roller h^2 travels along, it thrusts the rods upward successively closing the switches and lighting the lamps. The upper roller h' is placed in advance of roller h^2 so that any rod is not moved upward by the lower roller until the upper roller has passed beyond it. When the carriage has reached the leftward extremity of its travel the switches are all closed, the lights all illuminated and the rods l all project from the upper plate. Through the instrumentality of the collar c' the travel of carriage c is now reversed and the upper roller h' engages with and successively thrusts downward the rods l , opening the switches and successively extinguishing the lamps, the lower roller h^2 now traveling in advance of roller h' so as to be out of the way of the upwardly driven rods l . The roller merely serves to move the rod l to that point where the spring l' engages with oblique surface l^3 , the several instrumentalities before enumerated at this time co-operating to give to the rod an independent and rapid movement to prevent sparking. The carriage having reached the limit of its rightward travel the carriage is again automatically reversed and the operation is repeated.

Referring now to the tracing pointer and the mechanism actuating the same, the pointer m is mounted upon a horizontal pivot or axis m' which permits its movement in a vertical plane. To the pointer are secured a pair of gear wheels or pinions n n , one upon each side, adapted to be engaged respectively by racks n' n' which are moved vertically to impart to said pointer a rotation about said axis m' . The racks n' n' are mounted upon or form part of a bar n^2 , which slides vertically in a channel o' in the shaft o supported in bear-

ings and rotatable about a vertical axis. The bar n^2 is provided with a lateral projection or tongue n^3 which engages a channel p' in a piece p secured to or forming part of the vertically movable bar r . The upper end of said bar r forms a journal to guide the bar in its vertical movement, while at its lower end is journaled a cam roller r' which engages a properly formed groove in a cam plate s , Fig. 6. The lower end of bar r is of a "T" shaped cross section (see Figs. 12 and 13), and is adapted to move in the "T" shaped bearing t' in the arm t . The shaft o' works in bearing t^2 . As the carriage travels back and forth the cam roller r' following the groove in plate s is raised and lowered, thus raising and lowering the bar r and with it, through the engagement of the projection n^3 with the channel p' , raising the bar n^2 carrying the racks n' , thus rotating the pinions n and causing the movement of the tracing pointer m upon the horizontal axis m' .

Upon the lower end of the shaft o is secured a crank arm o^2 carrying a cam roller o^3 , which follows a properly formed groove provided in the plate s' , Fig. 6. As the carriage travels to and fro the roller o^3 is moved back and forth to impart to the shaft o the required rotation, and as the pivot m' upon which the tracing pointer is pivoted is fixedly secured to the upper end of the shaft o , the proper movement of the pointer about a vertical axis is thus secured. The channel p' engaged by the projection n^3 is of an arc-shape, as shown most clearly in Fig. 11, to permit the rotation of shaft o relatively to bar r . The bars r and n^2 are movable relatively to the shaft o through the agency of the slot o' in said shaft in which the bar n^2 is longitudinally movable. As shown in Fig. 10 the upper end of shaft o terminates in a rectangular portion o^4 , to the sides of which the plates o^5 o^5 are secured by bolts o^6 o^6 , which plates support the pivot m' of the tracing pointer. A bolt o^7 passes through the plates back of the racks to properly maintain the plates in position.

From the above description the operation of the mechanism is readily understood. As the carriage travels back and forth the roller s' imparts to the shaft o a rotative movement which affects the horizontal component of the movement of the tracing pointer while the roller s operates the tracks to impart to the pointer the necessary movement to effect the vertical component of its travel.

Having described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. The combination with lamps arranged to form words or characters and adapted to be successively lighted, of an automatically actuated pointer adapted to trace said words or characters as the lamps are lighted, substantially as described.

2. The combination with lamps arranged to form words or characters, of switches adapted to be actuated to successively illumine said

lamps, and an automatically actuated pointer adapted to trace said words or characters as the lamps are lighted, substantially as described.

3. The combination with lamps arranged to form words or characters, of switches for controlling the circuits through the respective lamps, an automatically actuated part of the machine adapted to successively actuate said switches, and an automatically actuated pointer adapted to trace the progress of the illumination or extinguishment of the lamps, substantially as described.

4. The combination with the switches comprised in part by the longitudinally movable rods, of the plates through which the rods are adapted to alternately extend, and the traveling rollers adapted to successively engage the rods to move the same longitudinally to open or close the switches, substantially as described.

5. The combination with the switches comprised in part by the longitudinally movable rods, of the plates through which the rods are adapted to alternately extend, and the traveling rollers placed one in advance of the other, the rearward roller being adapted to successively engage the rods to move the same longitudinally to open or close the switches, substantially as described.

6. The combination with the traveling carriage, of the rotating screw adapted to impel the same, the switch actuating rollers carried by said carriage, and means for reversing the movement of said carriage, substantially as described.

7. The combination with a shaft adapted to rotate about a vertical axis, of a bar movable longitudinally thereto and carrying a rack, a pivoted member supported upon said shaft and adapted to rotate about a horizontal axis, and a pinion connected with said pivoted member and adapted to engage said rack, substantially as described.

8. The combination with a shaft adapted to rotate about a vertical axis, of a bar movable longitudinally thereto and carrying a rack, a pivoted member supported upon said shaft and adapted to rotate about a horizontal axis, and a pinion connected with said pivoted member and adapted to engage said rack, a cam roller connected with said shaft and adapted to reciprocate the same, and a cam roller connected with said bar and adapted to move the same back and forth longitudinally, substantially as described.

9. The combination with a pivoted member, of a cam channel, a cam roller engaging the same to impart to the pivoted member rotation about an axis, of a second cam channel and a cam roller engaging the same to impart to said pivoted member rotation about an axis perpendicular to said first mentioned axis, substantially as described.

10. The combination with lamps arranged to form words or characters and adapted to be successively lighted, of a pivoted pointer

adapted to be simultaneously rotated about two axes at right angles to one another to trace said words or characters as the lamps are lighted, substantially as described.

5 11. The combination with lamps arranged to form words or characters, of switches adapted to be actuated to successively illuminate or extinguish the lamps, a pivoted pointer adapted to be simultaneously rotated
10 about two axes at right angles to one another to trace said words or characters as the lamps are lighted or extinguished, substantially as described.

12. The combination with the shaft o ,
15 adapted to be rotated by the cam roller o^3 , of the longitudinally movable rack bar n^2 adapted to be reciprocated by the cam roller, r' , substantially as described.

13. The combination with the rotatable
20 shaft o carrying the pivoted pointer, of the longitudinally movable rack bar n^2 , the longitudinally movable bar r and the connection between said bars n^2 and r permitting relative rotation but constraining relative longitudinal movement, substantially as described.
25

14. The combination with the rotatable shaft o actuated by cam roller o^3 , the pointer m pivoted to the upper end thereof, the longitudinal

movable rack bar n^2 adapted to rotate said pointer, and provided with tongue
30 n^3 , the longitudinally movable bar r , carrying the arc-shaped channel p' engaged by said tongue, said bar r adapted to be actuated by cam roller r' , substantially as described.

15. The combination with a longitudinally
35 movable rod, of a spring bearing by its end thereon, said rod being provided with a notch in which said end is adapted to rest, and an inclined surface adapted to be engaged by the end of said spring when the same is moved
40 out of said notch, a contact point provided with a tapering end, contact fingers adapted to make contact with said tapering end, said rod being situated to move downward when the same is moved to open the switch, where-
45 by the weight of the rod and the oblique surfaces coact to give the rod a rapid motion, substantially as described.

In witness whereof we hereunto subscribe our names this 26th day of December, A. D. 50
1893.

ORLANDO P. BRIGGS.
WILLIAM R. PATTERSON.

Witnesses:

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HARRIET G. TEMPLETON.