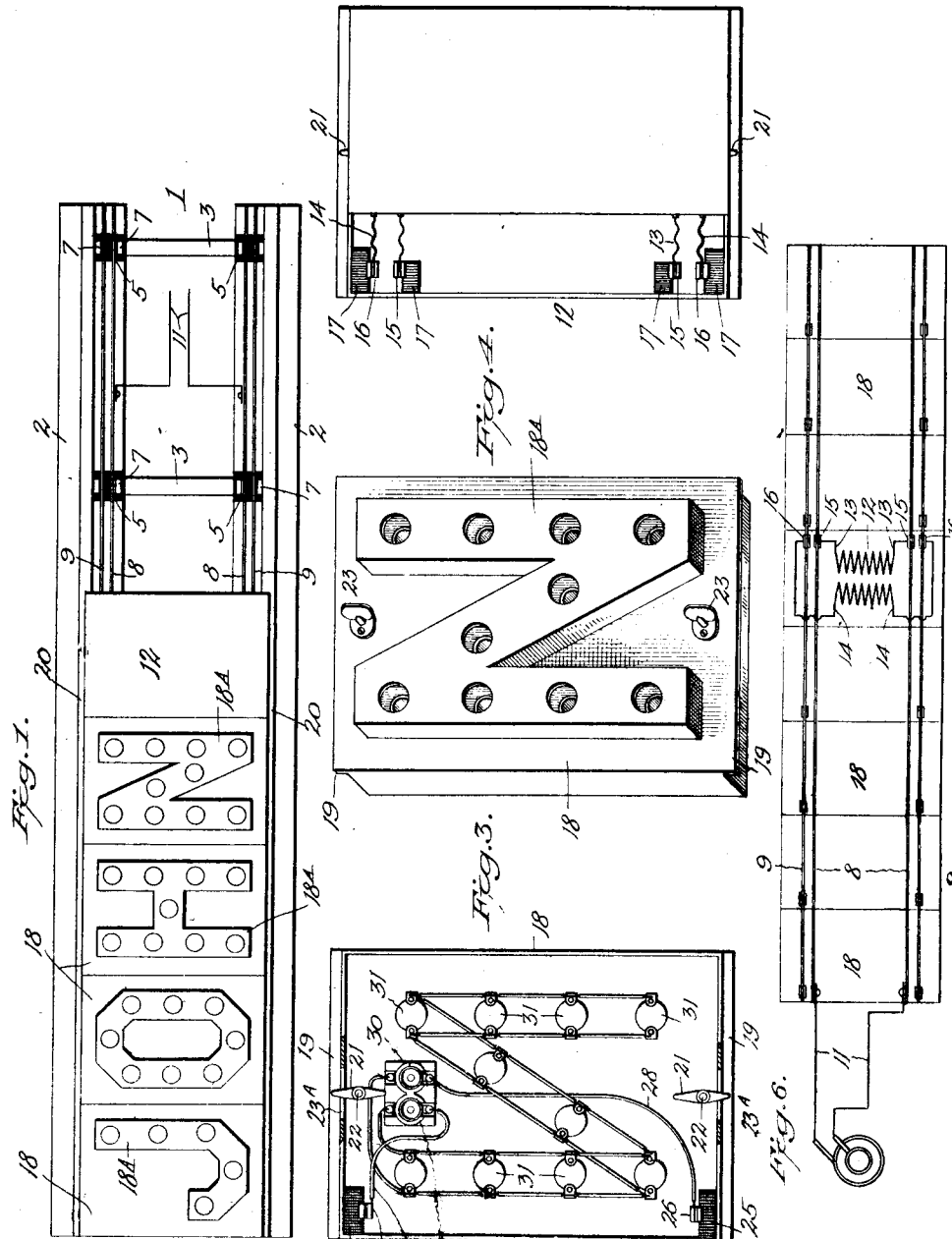


J. W. ELLIS.
INTERCHANGEABLE LETTER ELECTRIC SIGN.
APPLICATION FILED DEC. 7, 1910.

1,066,591.

Patented July 8, 1913.

2 SHEETS—SHEET 1.



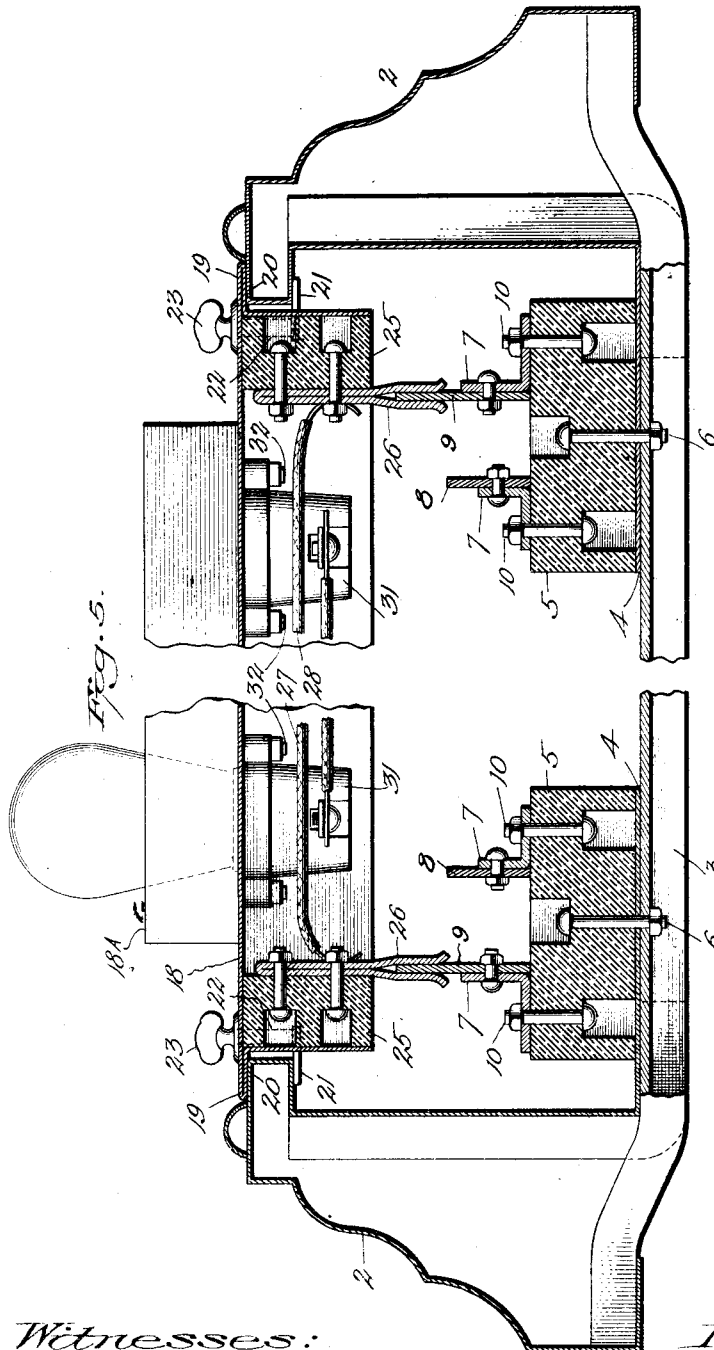
Witnesses:
G. Sargent Elliott.
Adella M. Fowle

Inventor:
By James W. Ellis.
H. S. Bailey Attorney.

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UNITED STATES PATENT OFFICE.

JAMES W. ELLIS, OF DENVER, COLORADO, ASSIGNOR TO THE ELLIS NATIONAL ELECTRIC SIGN COMPANY, A CORPORATION OF COLORADO.

INTERCHANGEABLE-LETTER ELECTRIC SIGN.

1,066,591.

Specification of Letters Patent.

Patented July 8, 1913.

Application filed December 7, 1910. Serial No. 596,116.

To all whom it may concern:

Be it known that I, JAMES W. ELLIS, a citizen of the United States of America, residing in the city and county of Denver and State of Colorado, have invented a new and useful Interchangeable-Letter Electric Sign, of which the following is a specification.

My invention relates to improvements in electric signs adapted to display interchangeable sign letters, and the objects of my invention are: to provide an interchangeable letter electric sign, comprising a supporting frame having conductors in circuit with a source of electric power, and independent removable letters made up of incandescent lamps suitably connected by circuit wires, which wires are also connected to metal clips which are adapted to engage the said conductors when the letters are placed upon the supporting frame, whereby a circuit may be established through the said lamps and source of electric power. Further, to provide a supporting frame having conductor bars adapted to be connected with a current supply of high voltage, and other conductor bars adapted to be engaged by metal terminal clips carried by independent blocks or frames, having letters outlined thereon by incandescent lamps, suitably connected by wires which are also connected to the said terminal clips, a suitable transformer being connected to the high voltage conductor bars and to the bars engaged by the terminal clips whereby the voltage may be lowered to the required lamp power, said letter blocks being removable and interchangeable, and being provided with latch devices for securing them to the supporting frame. I attain these objects by the mechanism illustrated in the accompanying drawings, in which:

Figure 1 is a front view of an advertising sign, constructed in accordance with my invention, letters being omitted to show the arrangement of the supporting frame. Fig. 2, is a rear view of one of the letter blocks, showing the manner of wiring the lamps which outline the letters and of connecting them with metal terminal clips. Fig. 3, is a front view, in perspective, of a letter block, the lamps being omitted. Fig. 4, is a rear view of a removable transformer. Fig. 5, is an enlarged transverse sectional view through the supporting frame and one of

the letter blocks, showing the manner of connecting the block with the conductor bars of the supporting frame. Fig. 6, is a diagrammatic view of the arrangement shown in Fig. 1.

Similar letters of reference refer to similar parts through the several views.

Referring to the drawings, the numeral 1 designates a letter supporting frame, which in its preferred form comprises upper and lower strips 2 of ornamental molding, which are connected at intervals by bars 3. These strips or moldings are preferably constructed of galvanized iron, and the bars 3 are preferably channel bars, as shown.

The upper and lower moldings are each formed to provide a back plate portion 4, that is adapted to be secured to the channel bars 3, and upon each of these plates are secured a plurality of blocks 5, of any suitable insulating material, preferably fiber. The blocks 5 are preferably positioned above the channel bars 3, and securing bolts 6 are passed through the blocks, the back plates, and the bars, and the heads of the bolts are housed in recesses in the blocks to prevent contact. Upon each set of the blocks 5 are secured by angle plates 7, pairs of conductor bars or strips 8 and 9, and these strips extend the entire length of the frame of the sign, which may be any required length and width, such signs being especially adapted to be placed on the tops of high buildings. The conductor strips are preferably copper and are arranged to lie edgewise at right angles to the faces of the blocks 5, and in parallel lines, the conductors 9 being of greater width than the conductors 8.

The angle plates 7 are also removably secured to the insulating blocks by suitable screw bolts 10, the heads of which are housed in recesses in the block to prevent contact. The strips or conductors 8 are connected by circuit wires 11 with a source of power. The current from the conductors 8 passes through a transformer 12, inclosed in a casing, which, as shown in Figs. 1 and 6, serves as a spacing block, which is adapted to be mounted upon the supporting frame between the groups of letters composing the words displayed upon the sign, as will be explained more fully hereinafter. The transformers, however, may be placed at either end of the sign, and blank blocks may be used to space the words composing the

sign, and the blank blocks are not connected with the conductors. Where a very long sign is employed, or one requiring a great number of lamps, as many transformers are installed as may be necessary, the number being one for about every one hundred lamps. Wires 13 and 14 extend from the transformer, which connect respectively with spring metal terminal clips 15 and 16, which are secured to non-conducting blocks 17, carried by the transformer casing, as shown in Fig. 4, and the clips 15 and 16 are adapted to engage the conductor bars 8 and 9 respectively. Thus a current of high voltage entering the transformer from the conductors 8, through the wires 13, passes into the conductors 9 through the wires 14, at the required voltage for lamps of a given candle power.

The electric current entering the transformer 12 may be, and usually is, that of a city's electric light system. It enters the conductors 8 at 110 volts, and the transformer lowers the voltage so that the current flows through the wires 14 into the conductors 9 at 10 volts. The 10-volt current of the conductors 9 is adapted to the use of electric lamps that are provided with tungsten filaments and the 110 volt current of the smaller wires and terminal strips are adapted to the use of lamps having carbon filaments.

The letter blocks 18 consist of flat top rectangular shaped blocks of any suitable material, preferably galvanized iron or tin having sides and ends and being preferably open underneath between its sides and ends.

The raised outlines of a letter or a letter in relief is secured on each block and these raised letters 18^a are provided with apertures for the reception of electric incandescent lamps. Each block contains preferably but one letter, but, if desired, blocks may be made large enough to receive two or more letters or symbols. The letter blocks are removably secured to the edges of their supporting frame in the following manner: The upper and lower ends of each block form flanges 19, which project beyond the end of the block proper, and are adapted to rest against the top opposing inner edges 20 of the top and bottom moldings of the frame; and the blocks are held and secured against these edges by any suitable means, but preferably by turn-buttons 21, that are mounted in the block upon stems 22, close to the end flanges of the blocks. These stems are rotatably mounted in the blocks in any suitable manner, and the ends of the stems above the top surface of the blocks are provided with thumb pieces 23 to enable an operator to grasp them and turn the stems and turn-buttons, the thumb pieces being arranged to stand on the stems parallel to the turn-buttons. Slots 23^a are cut through the ends of

the blocks to permit the turn-button pins to be swung around through them to engage the under sides of the edges 20 of the moldings of the frame, by which the blocks are locked to the supporting frame. The transformer blocks are also equipped with similar turn-buttons.

The letter carrying blocks are electrically connected to the conductor bars 9, and my invention contemplates in this respect any operative terminal contacting device mounted on the letter carrying blocks by means of which a circuit may be formed through the lamps, and while a number of different contacting terminals for accomplishing this object can be attached to the letter carrying blocks, I preferably carry out this feature of my invention in the following manner: In two opposite corners of the under side of each letter block, are secured in any suitable manner, preferably by bolts, insulating blocks 25, to each of which I detachably secure a yoke-shaped form of spring clip 26, the two blades of which are made of resilient conductive metal. The two blades of these terminal clips are formed with outwardly curved ends to enable them to straddle the edges of the conductor rails or bars 9 of the frame, and they are formed close enough together to leave a narrower passage-way between them than the thickness of the conductor bars, so that when they are down over the free edges of the said bars they will spring apart and clamp their opposite sides with a resilient frictional clamping tension that will make an electric current connection between them and the said conductor bars. These terminal contact clips project from the blocks far enough to straddle the free edges of the conductor bars 9 in cases where tungsten filament lamps are to be used, but where carbon filament lamps are used, the clips are spaced to engage the conductors 8. Thus, if tungsten filament lamps are to be used, these yoke-shaped contact terminals are arranged in direct alinement with the center of each of the free edges of the larger conductor strips 9, which receive a ten volt current from the transformer, and when the letter carrying blocks are in their locked positions in the frame their contact terminals are in operative circuit engagement with the strip 9, as shown in Figs. 5 and 6. If, however, it is desired to use carbon filament lamps, a 110 volt current should be used and the insulating blocks and their clips are secured to the letter carrying blocks in positions to permit the yoke terminals to engage the free edges of the narrower conductor strips 8 of the frame, as will be understood.

The contact clips are connected by suitable circuit wires 27 and 28 to two fuse plug sockets 29 and 30 respectively, from which circuit wires extend to the plurality of elec-

5 tric lamp sockets 31, that form outlines of
 the sign letter or symbol on the under side
 of the top surface of each block, the sockets
 being secured to the under side of the top
 10 surface of each letter carrying block by any
 suitable means but preferably by screws 32.
 These sockets extend through apertures in
 the top of the block into the center of the
 width of the limbs of the letter to be illu-
 15 minated which is formed on the top or outer
 surface of each block in any suitable manner
 or of any suitable material. I preferably,
 however, form in relief on the blocks hollow
 letters, of any suitable material, and secure
 20 them by any suitable means to the outer
 surface of the block, and these letters are
 provided with apertures that register with
 the sockets and which are adapted to re-
 ceive the threaded plug end of the lamps
 25 which extend loosely through them and
 screw into the sockets.

The letters are painted or formed to give
 a distinct outline from the surface of the
 block on which they are placed. The words
 30 are spaced by spacing blocks, one or more
 of which may be transformers, according to
 the number of words in the sign, and which
 are provided with the locking turn-buttons
 and are otherwise arranged to fit the sign
 35 frame.

My invention is adapted to display elec-
 trically illuminated and outlined inter-
 changeable word signs for advertising pur-
 40 poses for different subjects. The changing
 of the letters to form a new word or com-
 bination of words, is easily and quickly ac-

45 accomplished, and that without the inconven-
 ience incident to the disconnecting of wires
 or contact terminals, and while I have illus-
 trated and described the preferred construc-
 tion and arrangement of advertising sign,
 I do not wish to be limited to the construc-
 tion and arrangement shown, as many
 changes might be made without departing
 from the spirit of my invention.

Having described my invention, what I
 claim as new and desire to secure by Letters
 Patent, is:

In an electric sign as specified, a frame
 comprising longitudinal parallel side mem-
 50 bers and transverse connecting bars, rectan-
 gular lamp receiving blocks and rectangular
 spacing blocks supported between the said
 side members, a transformer supported by
 one of said spacing blocks, pairs of parallel
 55 conductor bars connected to the frame and
 insulated therefrom, one bar in each pair
 being connected with a current supply, fric-
 tion clips on the block having the trans-
 former, which engage the conductor bars
 60 and wires connecting said clips with the
 transformer, friction clips on the lamp
 blocks engaging the conductors not con-
 nected with the current supply, and lamp
 sockets in the lamp blocks in circuit with
 65 the said clips.

In testimony whereof I affix my signature
 in presence of two witnesses.

JAMES W. ELLIS.

Witnesses:

G. SARGENT ELLIOTT,
 ADELLA M. FOWLE.