Dec. 27, 1927. 1,654,350

W. G. SHELTON

BLOCK LETTER SIGN

Filed Nov. 7, 1924 2 Sheets-Sheet 1

Fig. 1.

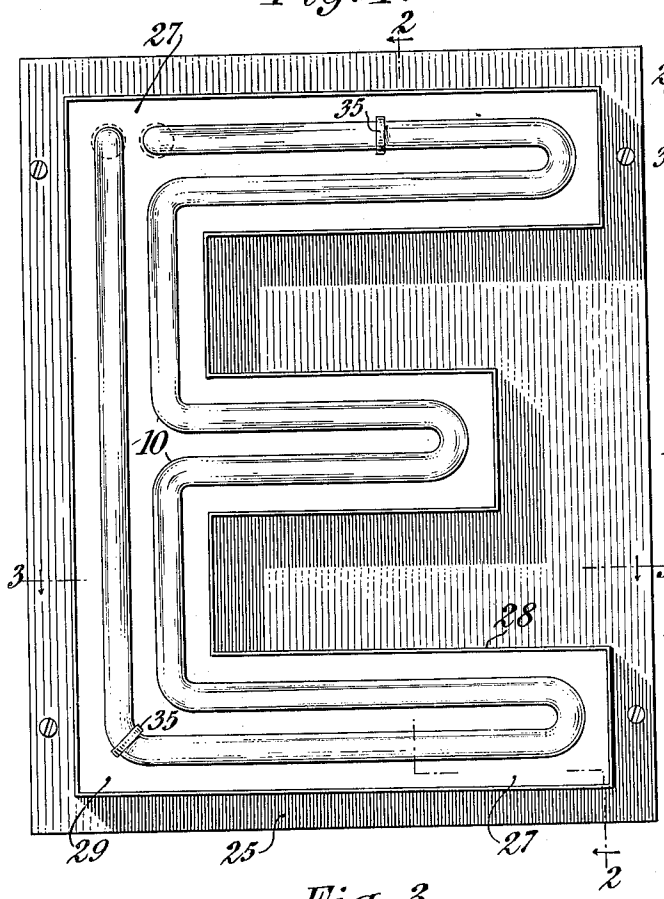


Fig. 2.

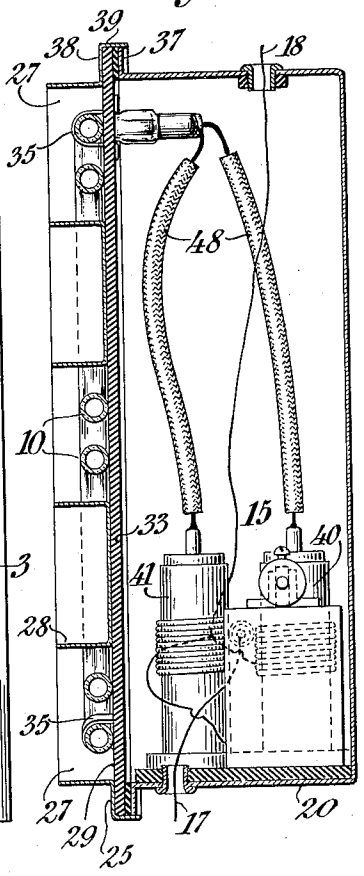
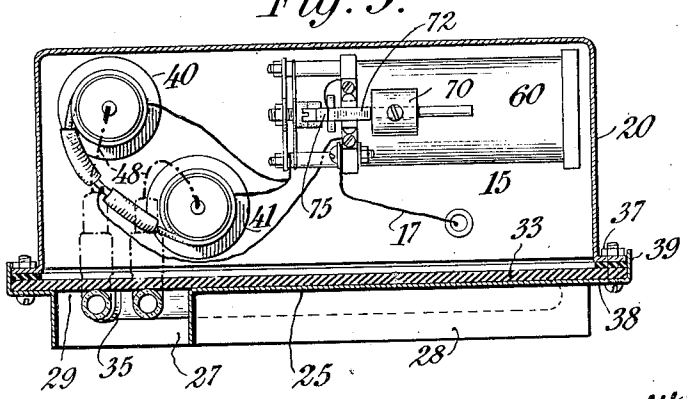


Fig. 3.



INVENTOR :

William Gentry Shelton

By Attorneys,

Fraser Myers & Manley.

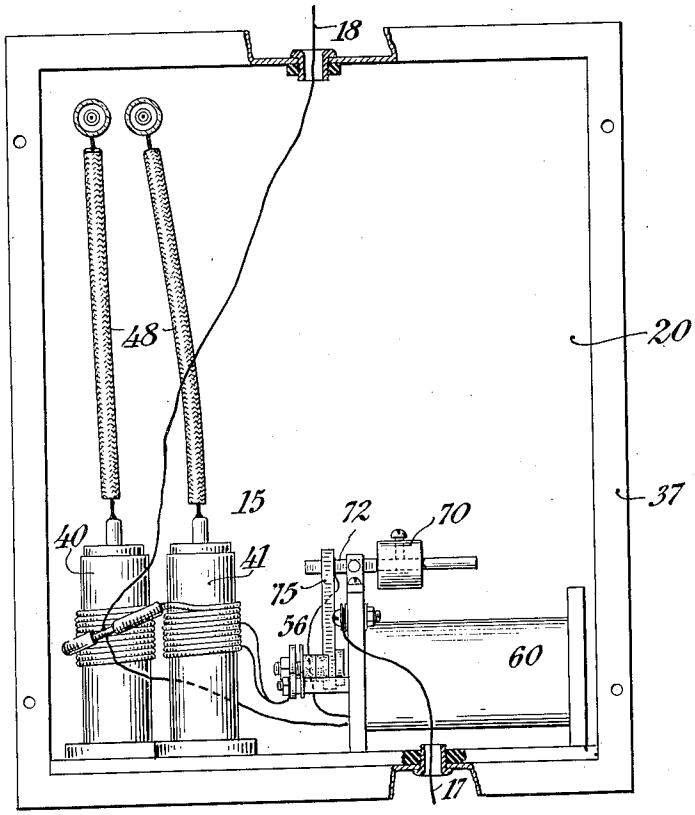
Dec. 27, 1927. 1,654,350

W. G. SHELTON

BLOCK LETTER SIGN

Filed Nov. 7, 1924 2 Sheets-Sheet 2

Fig. 4.



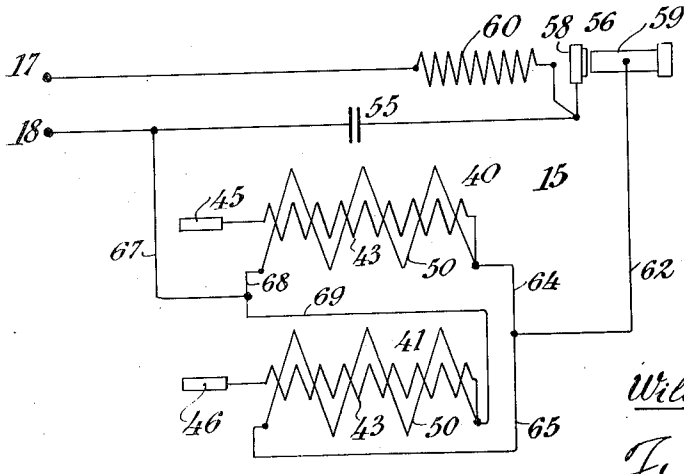


Fig. 5.

INVENTOR :

William Gentry Shelton,

By Attorneys.

Fraser Myers & Manley

Patented Dec. 27, 1927. 1,654,350

UNITED STATES PATENT OFFICE.

WILLIAM GENTRY SHELTON, OF NEW YORK, N. Y., ASSIGNOR TO HALLIWELL-SHELTON ELECTRIC CORPORATION, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

BLOCK-LETTER SIGN.

Application filed November 7, 1924. Serial No. 748,356.

This invention relates to improvements in illuminated signs of the block-letter type, and aims to provide improvements therein.

The present invention provides a block-letter sign, adapted for use as a unit of a composite illuminated sign, in which the brilliant lighting effect of gas-conducting tubes (Geissler tubes or the like) may be had by the use of apparatus which, (while making use of high voltages for producing a high potential difference on the electrodes of the tube or tubes) will not produce harmful or objectionable effects on the human system, and which will not violate laws and regulations generally established concerning ordinary lighting circuits (20—110—220 volts for example) and apparatus used therewith.

The invention further provides a device in which the efficiency is high, and a good lighting effect obtained with an expenditure of a relatively small amount of energy, better illumination being obtained with small high frequency currents than can be obtained with currents of lower frequencies, such as those of induction coils and alternating current generators.

The invention further provides a block-letter sign having advantageous features as regards the use and manufacture thereof.

An embodiment of the invention is illustrated in the accompanying drawings, in which

Fig. 1 is a face view thereof;

Fig. 2 is a vertical section on line 2—2, Fig. 1;

Fig. 3 is a horizontal section on the line 3—3, Fig. 1;

Fig. 4 is a front view with the face or cover of the sign removed;

Fig. 5 is a diagram of the electrical parts and connections.

Referring to said drawings, numeral 10 designates a rarefied gas-conducting illuminating tube (such as a Geissler tube) and 15 a means for generating high frequency current for illuminating said tube, a separate high frequency current generating means 15 being provided for each letter (or tube 10 in the shape of a letter), the current for each letter sign or tube thereby being small and notwithstanding the high voltages of such a generating means, having no objectionable or dangerous effect on the human system when a part thereof is brought into contact with the high voltage part of the device. These signs, similarly to the block-letter signs now in use having incandescent lamps, are used with others to form a composite sign, such as a word or phrase. Current from an ordinary lighting circuit (110 or 220 volts) for energizing the high frequency current generating means 15, is taken through suitable leads 17, 18, and as the current used is much less than that used for block-letter signs of the same size and lighting effect using filament lamps, and as the high frequency high voltage current is not dangerous, the letter sign does not violate civil regulations relating to ordinary lighting circuits and attachments thereto.

The block-letter sign preferably comprises a box or casing 20, in which the high-frequency current generating means 15 is housed. The casing preferably has a cover 25 which closes the box or casing 20, and which also preferably serves for supporting the illuminating tube 10. For protecting the tube 10 and for concentrating the light from said tube, a channel 27 is preferably formed on said cover 25. This channel has the outline of a letter of the alphabet corresponding to the shape of the illuminating tube 10, and is conveniently formed by a flange 28, standing up from the face of said cover. The cover is preferably cut out at the bottom of said channel, as indicated at 29. A plate of insulating material 33 (such as sheet asbestos) is preferably arranged behind the face of said cover 25 and the illuminating tube 10 is conveniently fastened thereto, as by means of straps 35. The plate 33 is conveniently held between flanges 37, 38 on the box and cover, one of which has a down turned portion 39 to close the joint between said flanges.

The tube 10 is bent to the shape of a letter of the alphabet, and as stated above, fits in the correspondingly shaped channel 27, and to the end that an equal illumination of all parts of the letter may be obtained in a convenient manner, the tube is bent into a double outline of the letter. Thus a continuous tube from end to end, equally occupying all parts of the letter, and not crossing itself at any part, is attained. The tube

consequently is able to lie flat against the plate 33, or other part of the cover, and hence may be well protected when in a channel such as 27 formed by the flanges 28. The tube also occupies little space in a direction perpendicular to the face of the letter, in contrast to the space occupied by filament lamps.

Any suitable high frequency current generating means 15 may be used. The simple form here illustrated and adapted for use with a lighting circuit having either alternating or direct current, comprises one or two transformers 40, 41, to the secondary or secondaries 43 of which a terminal 45, or the terminals 45, 46 of the illuminating tube 10 are connected (as by means of wires 48, Figs. 2–4). The primary or primaries 50 of the transformer 40 or transformers 40, 41 are in an oscillating circuit comprising a condenser 55, and spark-gap 56 having terminals 58, 59. The condenser is charged through the leads 17, 18 to a lighting circuit and in one of these leads a kick coil 60 is placed. One of the terminals of the spark-gap 56, as 58 is movable to make and break a circuit through lead 17, kick coil 60, terminals 58, 59 (when in contact) conductor 62, branch conductors 64, 65 the primary (or primaries) 50 of transformer 40, (or transformers 40, 41) and conductor 67 and branches 68, 69 thereof to the other lead 18 connected to the lighting circuit. This movable terminal 58 of the spark gap is in the magnetic influence of the kick coil 60, and breaks the circuit at the spark gap 56 as soon as current begins to flow in the circuit. The inductive kick of the coil 60 resulting from the breaking of the circuit, charges the condenser 55 with current at a relatively high voltage which when the sparking potential of the gap 56 is exceeded, results in a disruptive discharge across said spark gap 56, setting up high frequency oscillations from said condenser 55, through the primary (or primaries) 50 of the transformer 40 (or transformers 40, 41). The secondary (or secondaries) 43 respond with similar high frequency currents which are forced to flow through the illuminating tube 10, and thereby illuminate the same. When the movable terminal 58 of the spark gap, again makes contact with the terminal 59, a similar action to that just described takes place, and another chain of high frequency condenser oscillations takes place.

The removable terminal 58 is conveniently normally pressed against the terminal 59 by means of an adjustable weight 70 and a pivoted lever 72 having an arm 75 on which the terminal 58 is carried.

Where two transformers 40, 41 are used they are connected so that current flows through the primaries thereof in opposite directions. It will be seen that the branch wires 64, 65 connected to the conductor 62, are connected to opposite sides of the primaries 50. By this arrangement the two transformers 40, 41 act so as to assist one another in forcing a current through the tube 10.

The watts consumed in a block letter sign of the present construction is about one twentieth of those consumed in an equivalent filament lamp block letter sign. As heretofore explained the sign is safe to handle, is simple in construction, may be economically manufactured, and is well adapted to stand the usage to which these signs are subjected.

The inventive ideas herein set forth may receive a variety of structural embodiments, and are not limited to the embodiment herein specifically shown and described.

What I claim is:

1. An illuminated letter unit of a composite illuminated sign, each unit comprising a casing, a channel in the shape of a letter attached to said casing, an illuminating tube bent to the shape of a letter within said channel, means in said casing for generating a high frequency current for illuminating said tube, said high frequency current being of a kind which does not shock the human system, and leads to a lighting circuit for supplying current to said high frequency current generator, said casing comprising a box and a cover, said box and cover constituting a weather-tight enclosure for said high frequency generator, and said illuminating tube being mounted on said cover.

2. An illuminated letter unit of a composite illuminated sign, each unit comprising a casing, a channel in the shape of a letter attached to said casing, an illuminating tube bent to the shape of a letter within said channel, means in said casing for generating a high frequency current for illuminating said tube, said high frequency current being of a kind which does not shock the human system, and leads to a lighting circuit for supplying current to said high frequency current generator, said casing comprising a flanged box, and a flanged cover, said flanges over-lapping to exclude weather, and said box and cover constituting a weather-tight enclosure for said high frequency generator, and said illuminating tube being mounted on said cover.

3. An illuminated letter unit of a composite illuminated sign, each unit comprising a casing, a channel in the shape of a letter attached to said casing, an illuminating tube bent to the shape of a letter within said channel, means in said casing for generating a high frequency current for illuminating said tube, said high frequency current being of a kind which does not shock the human system, and leads to a light-circuit for supplying current to said high fre-

quency current generator, said casing comprising a flanged box and a flanged cover, said flanges over-lapping to exclude weather and said box and cover constituting a weather-tight enclosure for said high frequency generator, and said illuminating tube being mounted on said cover, said cover comprising a channeled part and a flat plate behind said channeled part, adapted to be held between said channeled part and box.

In witness whereof, I have hereunto signed my name.

WILLIAM GENTRY SHELTON.