No. 888,082. PATENTED MAY 19, 1908.

S. GRIMSON.

LIGHTED SIGN.

APPLICATION FILED SEPT. 26, 1906.

6 SHEETS—SHEET 1.

Fig. 2.

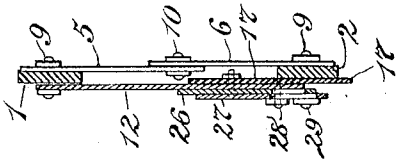


Fig. 4.

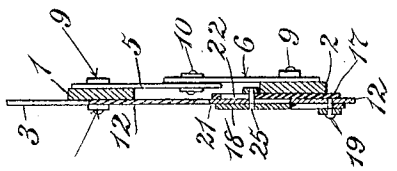


Fig. 1.

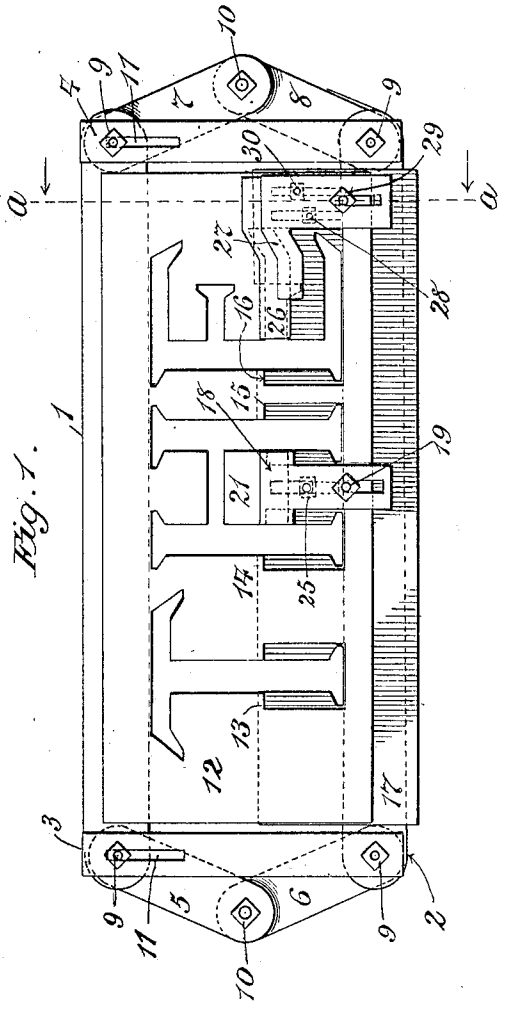
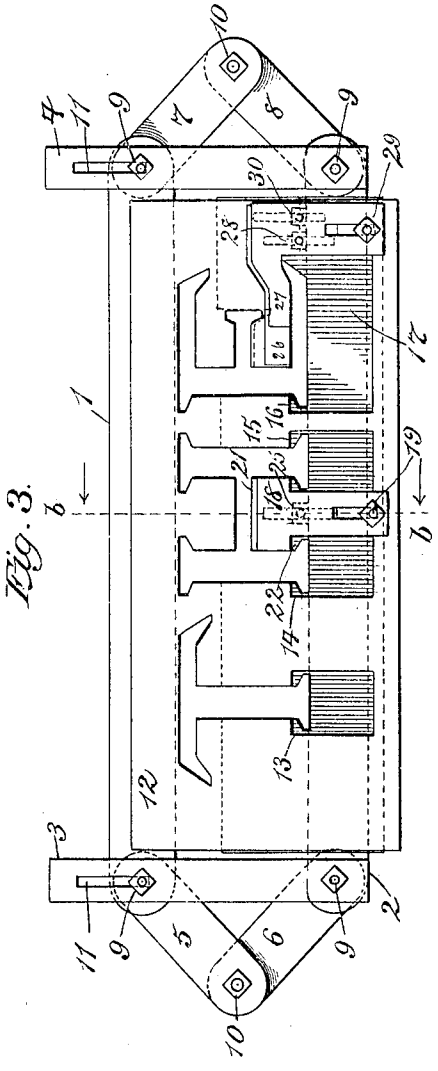


Fig. 3.



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6 SHEETS—SHEET 2.

Fig. 8.

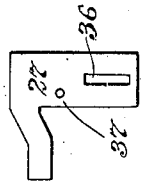


Fig. 9.

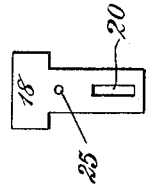


Fig. 7.

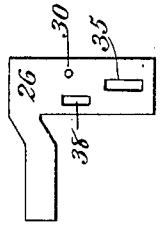


Fig. 5.

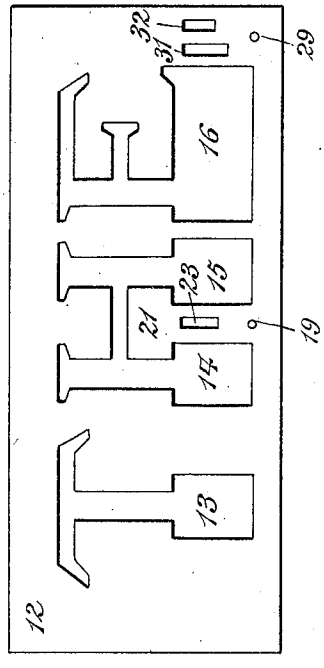
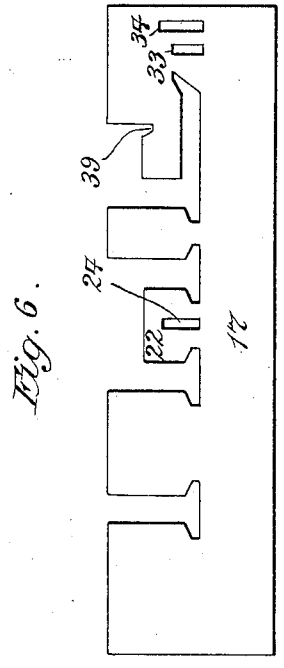


Fig. 6.



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6 SHEETS—SHEET 3.

Fig. 13.

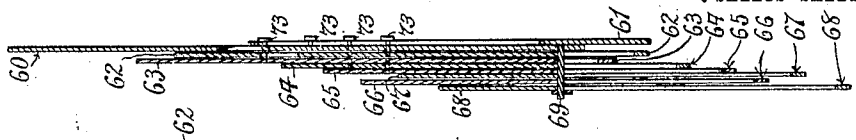


Fig. 12

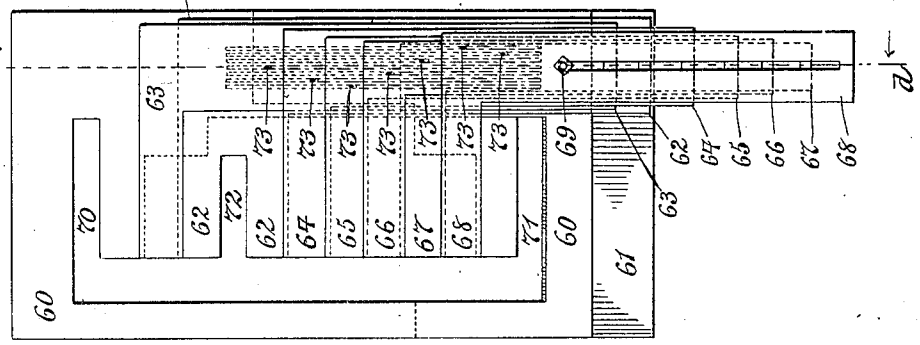


Fig. 11.

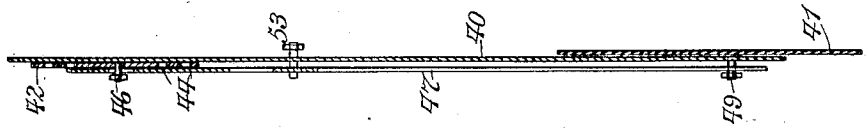
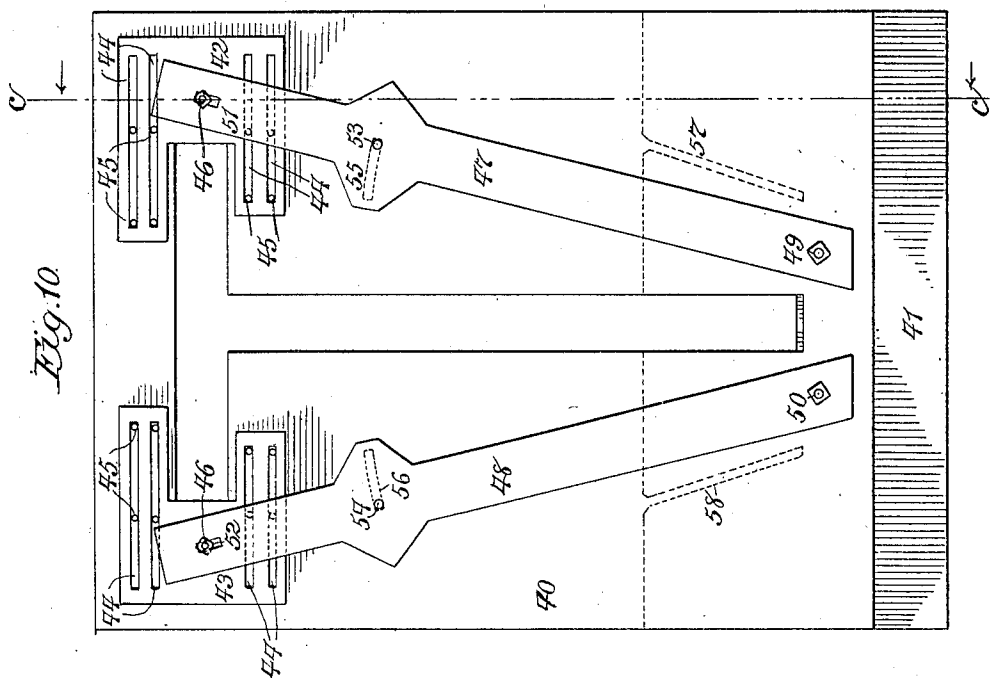


Fig. 10



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APPLICATION FILED SEPT. 26, 1906.

6 SHEETS—SHEET 4.

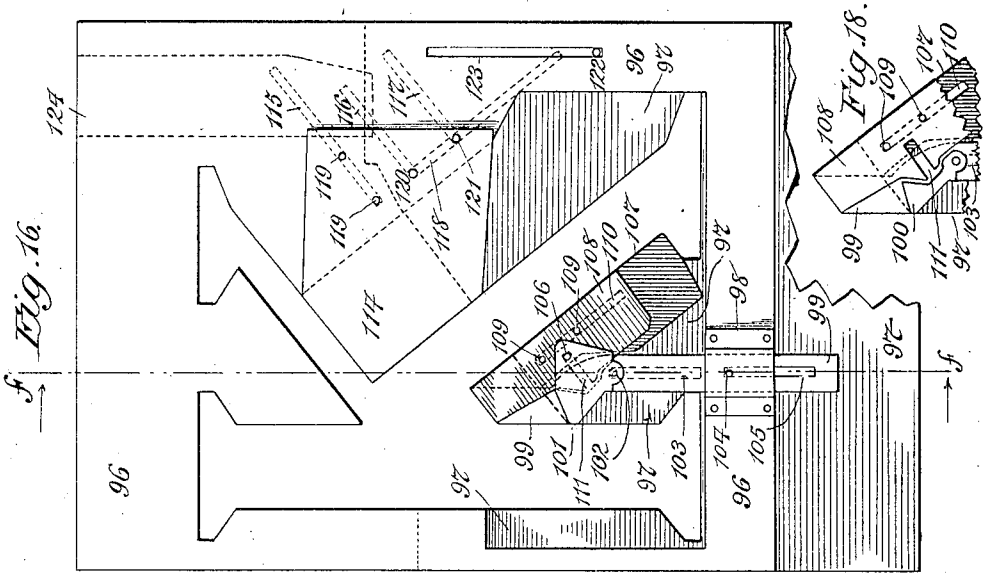


Fig. 16.

Fig. 18.

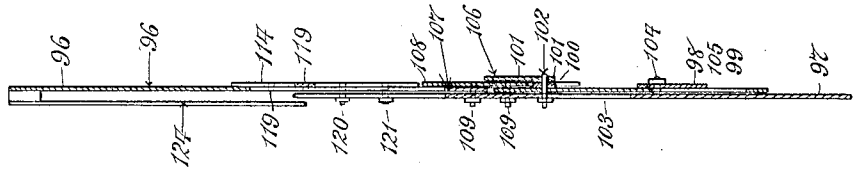


Fig. 17.

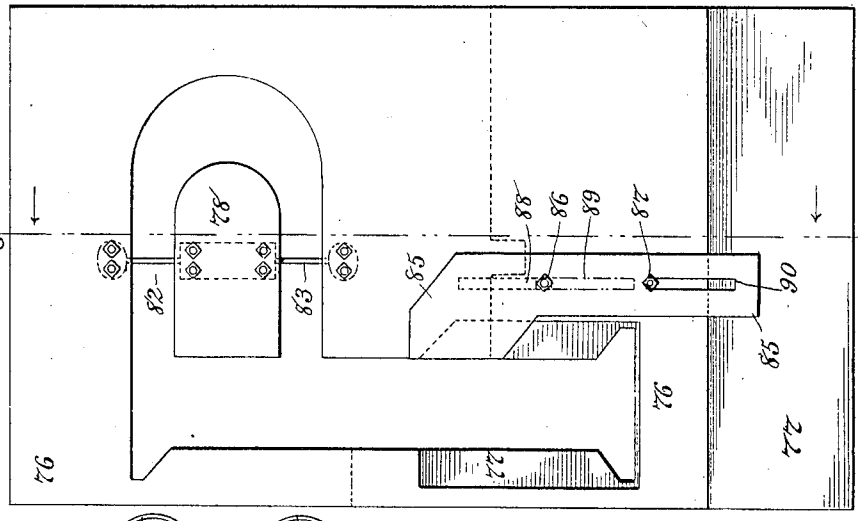


Fig. 14.

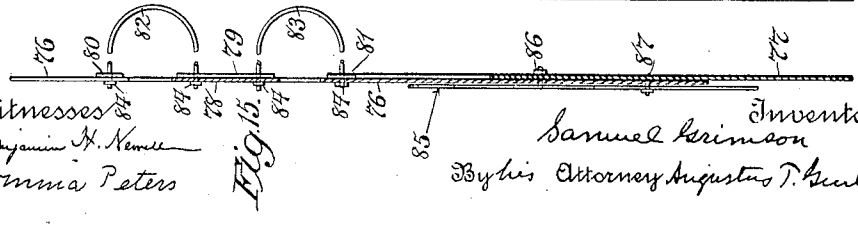


Fig. 15.

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No. 888,082. PATENTED MAY 19, 1908.

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APPLICATION FILED SEPT. 26, 1906.

6 SHEETS—SHEET 5.

Fig. 22.

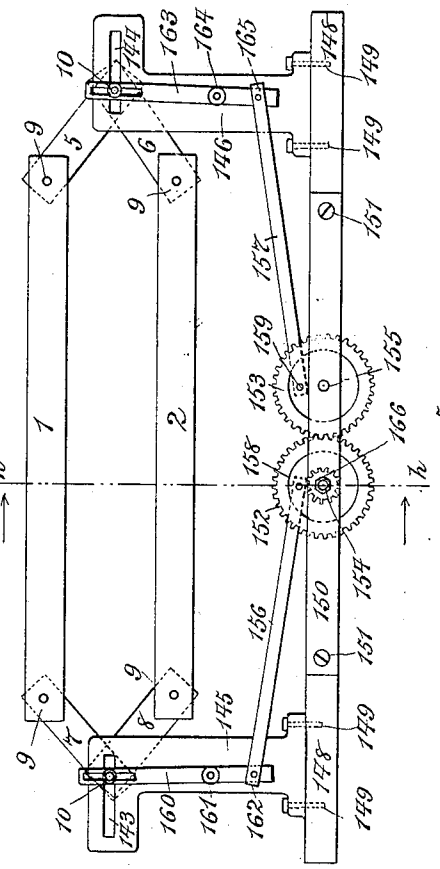


Fig. 23.

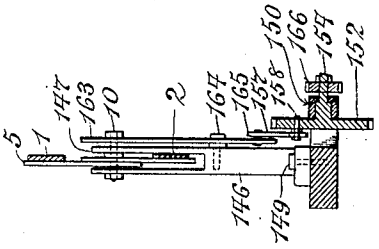


Fig. 19.

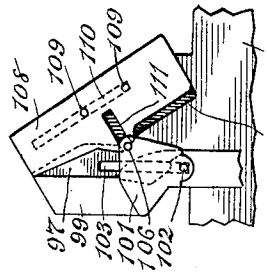


Fig. 21.

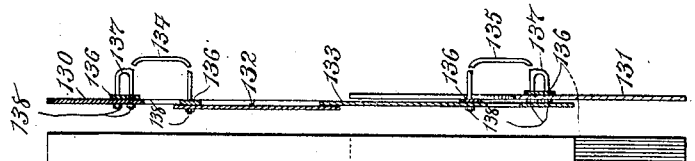
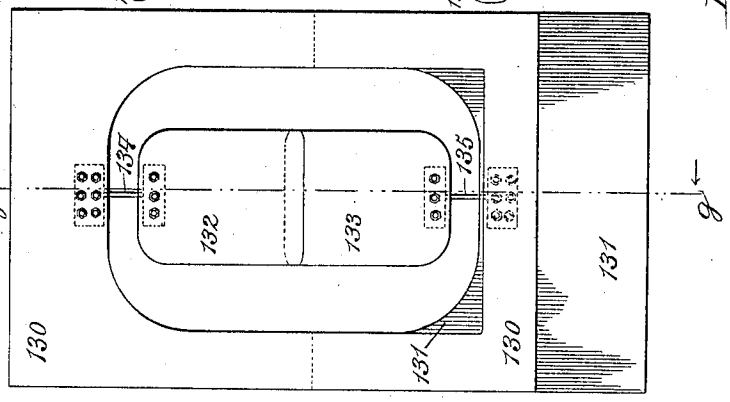


Fig. 20.



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No. 888,082. PATENTED MAY 19, 1908.

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APPLICATION FILED SEPT. 26, 1906.

6 SHEETS—SHEET 6.

Fig. 25.

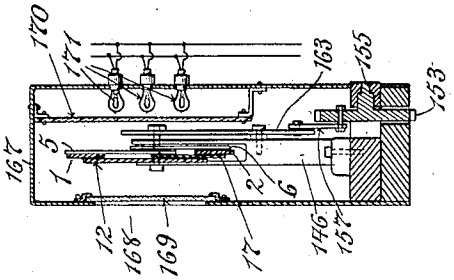
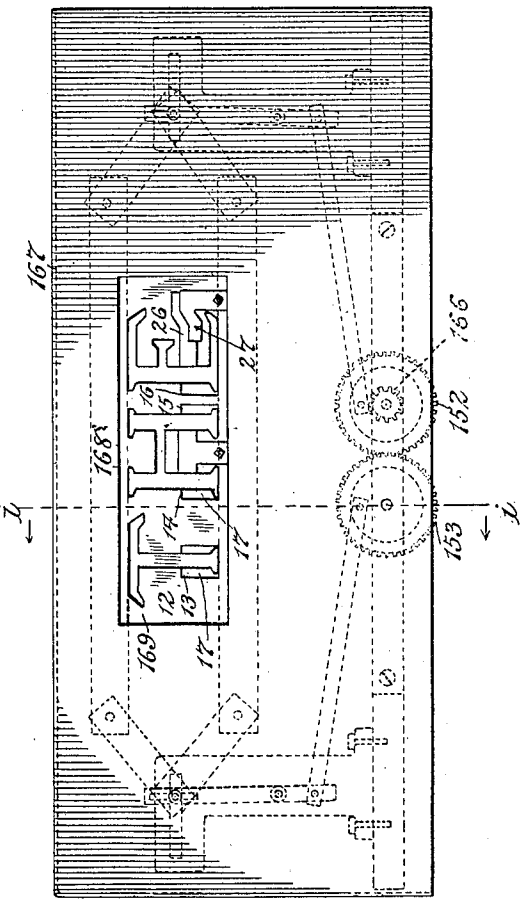


Fig. 24.



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UNITED STATES PATENT OFFICE

SAMUEL GRIMSON, OF NEW YORK, N. Y.

LIGHTED SIGN.

No. 888,062. Specification of Letters Patent. Patented May 19, 1908.

Application filed September 26, 1906. Serial No. 336,360.

To all whom it may concern:

Be it known that I, SAMUEL GRIMSON, a subject of the King of Great Britain, Emperor of India, residing in the city, county, and State of New York, have invented a new and useful Improvement in Lighted Signs, which improvement is fully set forth in the following specification and accompanying drawings.

My invention is intended to be used in a box or case having a suitable translucent front, constructed of ground glass or similar material, and it consists of an arrangement of plates forming the desired sign which are to be placed in position, with suitable means of illumination behind the plates, such plates being disposed so as to allow the light to shine through openings therein representing letters, figures, and other characters, and these plates are then to be operated by suitable devices so as to enlarge and reduce the size of the openings representing the letters, characters, etc., and thus attract the attention of passers-by.

In the drawings are shown examples of my invention applied to characters of various forms, showing the methods invented by me for enlarging and reducing openings to form various characters, not only those particularly shown in the drawings, but others which can be readily formed by applying an arrangement of slides or plates cut out and adjusted relatively to each other, to increase and decrease the openings therein which are designed to permit the passage of the light behind the plates, as will be explained.

In the drawings, Figure 1, is a front elevation of a sign, showing the letters T H E made according to my invention, and Fig. 2 is a cross-section thereof on the lines *a*, *a*, of Fig. 1; the letters as shown being of the larger size; Fig. 3 is a front elevation of the same sign, showing the letters reduced in size, and Fig. 4, is a cross section of Fig. 3, on the lines *b*, *b*, of Fig. 3; Fig. 5, is a separate plan of the part 12 shown in Figs. 1 and 2; Fig. 6, is a separate plan of part 17, shown in Figs. 1 and 2, and Figs. 7, 8, and 9 are separate views of parts 18, 26 and 27, all of which are shown also in position in Figs. 1 and 2. Fig. 10 is a plan view, showing my invention applied to another character adapted to be inserted in a sign constructed according to my invention, and Fig. 11 is a cross-section thereof on the line *c*, *c*, of Fig. 10. Fig. 12 is a plan view, showing my invention applied to still another character adapted to be inserted in a sign constructed according to my invention, and Fig. 13 is a cross-section thereof on the line *d*, *d*, of Fig. 12. Fig. 14 is a plan view, showing my invention applied to still another character adapted to be inserted in a sign constructed according to my invention, and Fig. 15 is a cross-section thereof on the line *e*, *e*, of Fig. 14. Fig. 16 is a plan view, showing my invention applied to still another character adapted to be inserted in a sign constructed according to my invention; Fig. 17 is a cross-section thereof on the line *f*, *f*, of Fig. 16; and Fig. 18, shows a detail of the device shown in Figs. 16 and 17, and Fig. 19, shows another detail. Fig. 20 is a plan view, showing my invention applied to still another character adapted to be inserted in a sign constructed according to my invention, and Fig. 21 is a cross-section thereof on the line *g*, *g*, of Fig. 19. Fig. 22 is a rear elevation, and Fig. 23 is a cross-section thereof on the line *h*, *h*, of Fig. 22, of one device, such as may be employed, with the addition of suitable motive power, to operate an example of my invention, when placed in a suitable box or case having lights. Fig. 24 is a front elevation, and Fig. 25 is a cross section on the line *i*, *i*, of Fig. 24, of a box or case showing light opening, method of lighting, and glass portions, such as may be employed in carrying out my invention.

Similar letters indicate like parts in all the drawings and the sectional views are seen looking in the direction of the arrows on the lines *a*, *b*, &c., of the plan views.

In carrying out my invention a suitable frame or support is provided, in the example of my invention shown in the drawings Figs. 1 to 9, such support consists of the horizontal cross pieces 1, 2, held together by the perpendicular parts 3, 4. To these crosspieces 1, 2, jointed arms 5, 6, on one end, and corresponding jointed arms, 7, 8, on the other end, are attached by suitable pins 9; these jointed arms 5, 6, and 7, 8, being also jointed to each other by suitable pins 10. The upright parts 3, 4, in this example of my invention, are rigidly secured at one end, their lower ends, in this example, to the cross piece 2, but in their upper portions they are provided with slots 11, 11, and are so disposed that they take in and move upon the upper pins 9, 9, of the cross piece 1. The operation of this frame is such that when the jointed

arms 5, 6, and 7, 8, are brought towards each other, they will push the horizontal bars 1, 2, away from each other, as shown in Fig. 1; and on the other hand, when the jointed arms 5, 6, and 7, 8, are pushed outward, and away from each other, they will draw the horizontal bars toward each other as shown in Fig. 3; and thus, when a suitable operating device is attached to the jointed arms 5, 6, and 7, 8, as by means of the pins 10, 10, and adjusted for reciprocating action to move these jointed arms towards and away from each other, they will correspondingly and alternately move the horizontal bar 1 towards the horizontal bar 2, and away therefrom.

In the example of my invention illustrated in Figs. 1, 2, I attach to the upper horizontal bar 1, a slide or plate 12, shown separately in Fig. 5, in which the upper portions of the letters are cut into regular form, being, in this example, the letters T H E, but parts of the lower portions of these letters are cut away, as shown at 13, 14, 15, and 16 in Figs. 1, 3, and 5. Adjoining this plate 12, and secured to the lower horizontal bar 2, a plate 17 Figs. 1, 3, and 6, is provided in which the lower portions of the letters are cut out, the parts containing the perpendicular stems of the letters in plates 12, 17, overlapping each other and corresponding to each other, so that when the two plates 12, 17, are drawn as far from each other as the arrangement of the horizontals 1, 2, permits, as shown in Fig. 1, the stems will be symmetrical, and when the plates 12, 17, are drawn towards each other, as shown in Fig. 3, the stems of the letters will also be symmetrical, but reduced in size. This will be easily understood in providing for the operation of my invention with such characters as I, J, L, T, U, Y, the stem portions of which need only to be extended in order to retain the identity of the characters. But for other characters or letters of the alphabet, or for figures, additional means for that purpose are to be provided.

In the examples of my invention shown in Figs. 1, 2, other means are shown and applied to the letters H, E. Thus in forming the letter H, the lower part, that is the part between the stems and below the cross piece of the letter, must be made in sections, in order to leave open the parts constituting the feet or lateral projections at the lower ends of the stems of the letter, at its varying sizes. For this purpose the lower obscuring part of that portion of the device which forms the letter H, in this example of my invention, is made in three parts. One part, 18, is movably mounted on the plate 12, by the pin 19, which is secured to the plate 12, and which engages the slot 20 in the piece 18; back of this part, 18, there is a corresponding portion, 21, forming part of the plate 12, and back of the plate 12, and of the part 21, there is a corresponding part 22 on the plate 17. The portions 21 and 22 of parts 12 and 17, are slotted as shown at 23 and 24 in Figs. 5 and 6. A pin 25 is fastened to the part 18 and passes through the slots 23 and 24, in parts 21 and 22, and is suitably headed to retain its position. The adjustment of these parts is such that, taking the device as shown in Fig. 3 as a starting point, in which the portions 18, 21 and 22 are shown back of each other, then as the slides or plates 12, 17, are drawn apart to enlarge the characters to the point shown in Fig. 1, and reach the point where the part 22 would leave an open space between its upper edge and the lower edges of the wide portion of part 21, the lower edge of the slot 23 engages the pin 25, and thereby, as the movement is continued, draws up the part 18 which covers what would otherwise be an opening between the lower part of the piece 21 and the upper part of the piece 22.

In reducing the character H to its smallest size the parts are operated as follows: When the plates 12 and 17 are moved towards each other and reach the point where the upper edge of the slot 23 in portion 21, engages the pin 25 which is attached to the part 18, a continued movement of the parts 12 and 17 towards each other will carry the part 18 down, until it reaches the position shown in Fig. 3. In forming the letter E as shown in this example of my invention, the open space 16 (Figs. 1, 3, and 5) is to be properly obscured in order to preserve the symmetrical form of the letter as the same is being enlarged, and when it reaches its enlargement. For this purpose I provide the parts 26 and 27 which are so shaped as to obscure that portion of the letter which would be left open as the plates or slides 12, 17, are drawn away from each other to the position indicated in Fig. 1. To the part 12, a pin 29 is secured, which passes through the slots 35 and 36 of the pieces 26, 27, and guides their up and down movement. A pin, 30, is secured to the part, 26, and passes through the slots 32, 34 in the plates 12 and 17, and a pin 37 is secured to the part 27, and passes through the slots 31, 33 of parts 12 and 17, and through the slot 38, in part 26. The relative adjustment of these parts is such that when, in the course of enlarging the letter E from its small size shown in Fig. 3, to the size indicated in Fig. 1, the open space 16, would allow the light to pass from behind, and destroy the symmetry of the letter, the parts, 26, 27, are carried by the pins, 30, 37, to the point where the open space, 39, (Fig. 6) would permit the light to pass. The further movement of the part 27 is arrested by impinging against the upper edge of slot 33, in part 17, in order to cover the space 39; as the movement of the plates 12, 17, continues, the movement of part 26, is arrested when the pin 30, impinges against the upper edges of slot 34, in part 17; the

parts then assuming the position shown in Fig. 1. In reducing the size of the character, the movement of the parts is reversed.

Figs. 10 and 11 illustrate an example of my invention adapted to be applied to form characters which are to be enlarged and decreased horizontally and also vertically. In this example the letter T is used as an illustration. In this instance, 40 is a plate adapted to be attached to a part corresponding to the cross piece 1, and 41 is a plate adapted to be attached to a part corresponding to the cross piece 2. Secured to the plate 40 are two plates 42, 43, provided with slots 44, movably held in place by pins 45 on plate 40, so that the plates 42, 43, may be moved laterally. To the plates 42, 43, pins, 46, are rigidly secured. On the plate 40, two arms, 47 and 48 are loosely pivoted by means of pins 49, 50, and these arms are provided with slots 51, 52, which take in the pins 46. To the arms 49, 50, furthermore, pins 53, 54, are rigidly secured, adapted to limit the movement of the arms, 49, 50, in the slots 55, 56, which are in the plate 40. The plate 41 is provided with inclined slots 57, 58. The operation of this example of my invention is as follows: In Fig. 10, the letter T is shown in its enlarged form. When its parts are adjusted to cross pieces as 1, 2, as stated, and the cross pieces 1, 2, are moved towards each other, as already explained, the plate 40 is moved downward, and the plate 41 is moved upward. The result of this movement is that the stem of the letter T is gradually obscured from the bottom. As the movement continues, the pins 53, 54, enter the slots, 57, 58, whereby the arms 47, 48, are drawn towards each other and draw towards each other the plates 42, 43, whereby the cross piece of the letter T is also gradually shortened from each side. Figs. 12 and 13 also show my invention applied to a letter or character having a perpendicular stem and parts extending at right angles therefrom, and is illustrated in the letter E. This has a perpendicular stem, and parts 70 and 71 extending laterally therefrom at the top and at the bottom, and intermediate a portion 72, also extending laterally therefrom. In this illustration of my invention, 60 is a plate containing the upper part of the stem and the upper extension 70 therefrom, and this part, 60, is to be attached to an operating device corresponding to the cross piece 1, by which it is to be moved up and down; this plate 60, may be of the full width of the parts forming the character, and extends to the bottom of it, thus forming the left side of the stem, its upper edge at the bottom coinciding with the lower edge of the part 61. A plate, 61, contains the lower part of the stem, and the lower extension, 71, therefrom, and this plate, 61, is to be attached to an operating device corresponding to the cross piece 2, by which it is to be moved up and down. This plate, 61, may be of the full width of the parts forming the character, and its lower part extends below the plate, 60, it forms, coincident with the stem part of the plate, 60, the left side of part of the perpendicular stem of the character, and a smaller part of its right side, and it also contains the lower lateral extension, 71, from the stem, the lower edge of its lateral extension, 71, being coincident with the upper edge of the lower lateral extension of the plate, 60, as clearly indicated in the drawings. Parts, resembling in shape a machinist's flat square are adjusted to the plates 60 and 61, and to each other, to operate with this illustration of my invention. As shown in the drawing the part, 62, in which the lateral extension, 72, is cut out, is disposed adjacent to the plate 60; 63 is disposed adjacent to the part, 62, and its lateral projection covers the open space in the plate, 60, above the part, 62, to obstruct the passage of light through such open space; the part, 64, is disposed adjacent to the part, 63, and its lateral extension covers a part of the open space in the plate, 60, and below the part, 62; the part, 65, is disposed adjacent to the part, 64, and its lateral extension covers a part of the open space in the plate, 60, and below the part, 64; the part, 67, is disposed adjacent to the part, 65, and its lateral extension covers a part of the open space in the plate, 60, and below the part, 65; the part, 66, is disposed adjacent to the part, 67, and its lateral extension covers a part of the open space in the plate, 60, and below the part, 65; the part, 68, is disposed adjacent to the part 66, and its lateral extension covers a part of the open space in the plate, 60, and below the part, 67. In order that these lateral parts may operate effectively to exclude the light, they are constructed so that their lateral extensions overlap each other, as shown in Fig. 12, and the left edge of the lateral extension of each of the parts 62 to 68 is coincident with the right edge of the perpendicular stem of the character, except the left edge of the part 62 forming the opening, 72.

To the plate, 60, a pin, 69, is rigidly secured, and the lower part of each leg of the parts 62 to 68, is provided with a slot taking in this pin, 69, as clearly shown in Figs. 12 and 13. To the upper portions of each of the parts 62 to 88, a pin, 73, is rigidly secured; and the plate, 61, is slotted, as indicated by the dotted lines in Fig. 12, to permit these pins, 73, to move in such slots, and to guide and keep the parts in proper position. In the plate 60, also slots vertically coincident with those in the plate 61 are also provided, in which the pins, 73, move up and down.

The slots for the pins, 73, in the plates 60 and 61, are so cut out, that when the letter E is at its largest size the pins, 73, im-

pinge against the lower edges of the several slots in plate 60, and simultaneously against the upper edges of the slots in plate 61, and when by the operation of the device the letter is being reduced, and the parts 62 to 68 are moved upon each other, the upper edges of the slots in the plate, 60, impinge against the pins, 73, and thereby carry the parts 62 to 68 downward until the upper edges of the parts 62 and 63 are coincident with the lower edge of the lateral opening, 70; and the upper edges of the parts, 64 to 68 are coincident with the lower edge of the opening, 72. When the parts 64 to 68 reach that position the plate, 61, will have been moved up so far that the opening, 71, in the plate, 61, will be the same distance below the opening 72, as the opening 70 is above the opening, 72, and the symmetry of the character will have been preserved throughout the operation of the device. When the plates, 60 and 61, are again moved away from each other to enlarge the character to its largest size, the adjustment between the pins, 73, and the slots in which they move in the plates 60, and 61, is such that the lower edges of the slots in the plate 60 respectively impinge against the pins, 73, and move the parts, 62 to 68 until they return to the position shown in Figs. 12 and 13. The pin, 69, engaging the slots at the ends of the parts 62 to 68, keep these parts in proper alinement and also limit the scope of the movement of the parts 62 to 68, up and down, these slots being of the proper length and position to correspond in limiting the up and down motion of the parts, to the limitations of the slots in which the pins, 73, are respectively engaged.

In Figs. 14 and 15 my invention is shown as applied to letters or characters containing what I call "islands" that is, portions which are intended to obscure a part required to be entirely surrounded by a lighted portion, such as are found in the letters P, B, R, and similar characters. In constructing such a character the "island" portion may be held in position by wire supports extending from the "island" portion back to a point where the lighting device will not be obstructed so as to prevent a symmetrical outline of the character.

In Figs. 14 and 15, 76 is a plate out of which the upper part of the character is cut, and 77 is a plate out of which the lower part, the stem, of the same character is cut, the stem opening in 76 and 77 coinciding. 78 is the "island" in the upper part of the character P, and this "island" is held in place by the curved wires 82, 83, which extend back of the plates 76, 77, so as not to obstruct the passage of light through the open spaces on each side of the "island." Abutting parts, 79, 80 and 81, are attached to the wires 82 and 83, and their ends may be threaded to be held in place by nuts, 84, or they may be secured by any convenient device to hold the "island" 78, in place, the wire supports 82, and 83 having one of their ends secured to the plate 76, and the other of their ends to the "island" 78. An obscuring part, 85, for the edge of the stem is provided, the left upper side edge of which is coincident with the stem opening of the P, and its upper edge is horizontal. A pin, 86, is attached to this part 85, which pin passes through a slot, 88, in the plate 76, and a slot 89 in the plate 77. A pin 87 is attached to the plate 76, and engages in a slot 90 which is in the obscuring part 85, by which the obscuring part 85 is kept straight in its up and down movement. The operation of this application of my invention is as follows: The plate 76 is to be attached to the upper cross bar 1, of the operating part, and the plate 77 is to be attached to the lower cross bar 2 of the same. The character as shown in Figs. 14 and 15, is at its largest size, and as the bars 1 and 2 slide the plates 76, 77, towards each other, the stem of the letter P is gradually shortened at the bottom. When by the down movement of the plate 76, the upper edge of the slot 88, strikes the pin 86 fastened to the obscuring part 85, this obscuring part 85 is carried downward, the pin 86 moving through the slot 89, in the plate 77, and being steadied by the engagement of the pin 87 in the slot 90, the slots 88 and 89 being coincident in the plates 76, 77, respectively, and the parts being adjusted to keep the stem of the letter P and the projections at the bottom of such stem, symmetrical at all points of the movement. When the character has been reduced to its smallest size by the operating device, and that device operates to increase the size of the character again, the plates, 76, 77, are carried away from each other. When this operation commences the pin 86 will be in the slot 88, near its top edge, and against the bottom edge of the slot 89, and as the movement continues, when the lower edge of the slot 88 strikes the pin 86, the obscuring piece 85 will be drawn up until it reaches the position shown in Figs. 14 and 15. In cases in which it is desired to increase and reduce "islands" which correspond to 78 in Fig. 14 an arrangement by which that may be accomplished is shown in Figs. 20 and 21.

In Figs. 16, 17, 18 and 19, my invention is shown as applied to letters or characters in which parts of acute angles also are to be reduced and enlarged. In this example the letter K is used for illustrating that feature of my invention. In this illustration 96 is a plate containing the upper part of the letter K, and 97, is a plate containing the lower part thereof, the two plates having the parts cut out coincident with each other where they overlap, as in the other examples of my invention, and the plate, 96, is similiarly designed to be attached to the upper cross

piece of the operating device, while the plate, 97, is to be attached to the lower cross piece of the operating device, and as shown in the drawings the character is at its largest size. The upright stem of the K is lengthened and shortened similarly to the stems of such letters as P, T, &c. by moving the two plates 96, 97, towards and away from each other, and my invention, as explained, in this example relates more particularly to the means of enlarging and decreasing the parts which are at an acute angle to the perpendicular stem of the character. In arranging devices for shortening and lengthening the angular portion such as is found in the letter K, a stem part, 99, may be movably interposed in a cut out section of the lower cross piece of the plate 96, having a plate 98 secured to the ends of the cut out portion in order to form a channel for the stem part 99, in the plane of the plate 96. In constructing this example of my invention, it has been convenient to thicken the members with parts of equal thickness, when it is designed to have different parts move in different planes, but of course the parts may be cast or cut out of suitable material thickened up in any other manner. The upper corner of the plate, 97, is thickened up by a part, 107, which is rigidly secured thereto, the object of which is to place the sliding plate 108, out of the way of the part 99, when the parts are being operated. To the upper end of the stem, 99, a thickening part, 100 (shown separately in Fig. 18,) is rigidly secured in order to thicken up that part below the part 101, which is also rigidly secured to both the parts 99 and 100, on a plane next to the plane of the part 108. To part 101, a pin 106, is rigidly secured, which engages and moves in the slot 111, which slot is in the part 108, as clearly shown in Figs. 18, and 19. To the part, 99, a pin, 102, is rigidly secured, and this pin engages in the perpendicular slot, 103, in the plate, 97. To the part 98, a pin, 104, is rigidly secured, which moves in the vertical slot, 105, in part 99.

When the plates 96 and 97 are farthest apart as shown in the drawing Fig. 16 the pin 104 engages the upper end of the slot 105 in part 99; and when the plates 96 and 97 are moved towards each other, the downward movement of the pin 104 will at a certain point of its movement, engage the lower edge of the slot 105, and as the movement is continued, will move down part 99 and its attachments. The pin 102 is attached to the part 99, 100, and 101, and moves in the slot 103 of the part 97, and its function is to guide and steady the part 99 as the same is operated. The portion, 107, is cut away to allow to the upper right side of the part, 99, free movement in its plane as indicated by the dotted lines in Figs. 16 and 18 and 19. An inclined slot, 110, is cut through the parts 97 and 107, and in this slot, 110, move the pins 109, 109, which are rigidly secured to the part 108. The parts 100 and 101, are rigidly secured to the part 99, and in describing the operation only the part 99 need be mentioned. When the plates, 96 and 97, are drawn towards each other, the pin 104, in part 98, moves through the slot 105, until it impinges against the lower edge of that slot; then, as the movement is continued, the part 99, will be drawn down, and draws down with it the part, 108, by means of the pin, 106, which engages in the slot, 111, in part 108. The movement of the part 108, is guided by the slot 110, and thereby its right edge is kept coincident with the right edge of the part 107; and the right edge of the part 107, is coincident with the right edge of the corresponding part cut out of the plate 97. By this movement the parts, 99, 107, and 108, are brought into the relative position shown in Fig. 19, when the letter is at its smallest size. In order to increase and decrease the letter K, a plate 114, is also provided, which is movably secured to the plates 96 and 97 by the pins, 120, and 121, which are rigidly secured to the plate 114, and pass through slots, 116 and 117, respectively, which are in plate 96, and these pins continue through the slot, 118, in plate 97. As the plates 96 and 97 are drawn towards each other in operating the device the slot 118, will move upwards, and the pins 120 and 121, which are engaged therein, will by such movement be pushed upwards and along the slots 116 and 117 whereby the plate 114, will be drawn upwards and sidewise, preserving the outline of the letter as the parts are being operated. The pins, 119, 119, are firmly fixed in the plate 114, engage in the slot 115, cut in the plate 96, parallel to the slots 116 and 117, and assist in preserving the proper position of the plate, 114. It is to be observed that the slots 115, 116 and 117 are cut at right angles to the slot 118, which in turn is parallel to the right hand edge of the leg of the letter K, which in turn is at right angles to the arm of the letter K. A slot, 123 is cut in the plate 96, and engages a pin 122, secured to plate, 97, which assists in keeping the parts in proper alinement during their movement. A plate, 124, is attached to the plate, 96, the function of which is to obscure the open right hand ends of the slots, 115, 116, when the letter is at its largest size.

In Figs. 20 and 21 my invention is shown as applied to letters or characters which contain "islands" made as has already been referred to, for example such letters as D, O, &c. in which it is necessary to enlarge and decrease the "island" portions in order to preserve the symmetry of the characters. In constructing such a feature the "island" portion, as already explained, is to be kept in its proper position by means which will not

interfere with the light, passing through the openings constituting the character, in order to preserve its symmetrical outline.

In Figs. 20 and 21, 130 is a plate out of which the upper part of the character is cut, in this illustration the letter O, and 131, is a plate out of which the lower part of the character is cut, and the intermediate portions, being 132 and 133, constituting the "island" in this illustration of my invention; the plate 130, being designed to be attached to the upper cross piece, 1, of the operating part of my invention, and the plate, 131, being designed to be attached to the lower cross piece, 2, of such operating part. The outer sides of the character O, coincide in the plates, 130, 131, and the outer edges of the "island", 132, 133, also coincide, so that the parts may be moved upon each other and preserve the symmetry of the character. To the plate, 130, a wire support, 134, is attached, which, for the purpose of adding strength and rigidity thereto, may be provided with a doubled portion, 137; the lower end of this wire is attached to the upper "island" part, 132. A corresponding wire portion, 135 is provided for the lower "island" portion, 133, which also has a doubled up portion, 137, which is to be rigidly secured to the plate, 131. Abutting portions, 136, are secured near the ends of the wires 134, 135, 137, and the ends may be threaded and secured in position by nuts, 138. When this example of my invention is operated, the plates 130 and 131 are moved up and down towards each other, and when so moved, the island portions 132 and 133, as well as the plate portions 130 and 131, and the outer edge of the character, as well as the size of the "island" part, are correspondingly reduced vertically.

In Figs. 22 and 23, an illustration of one form of device adapted to be used to operate my invention is shown, the view being from the back of the device, Fig. 22. In this, as in Figs. 1 and 2, the cross bars which are to be moved away and towards each other, are 1, and 2; these bars are provided with jointed arms 5 and 6 at one end, and similar jointed arms, 7 and 8, at the other end, these jointed arms being operatively attached at one end to the cross pieces 1, 2, by the pins, 9, 9; and in this instance of my invention these jointed arms are operatively secured at their other ends by the pins, 10, 10, which pass through slots 143, 144, in the standards, 145, 146, which standards are also provided with suitable recesses, 147, as clearly shown in Fig. 23, in which move the outer ends of the arms, 5, 6, 7, 8. A base, 148, supports the standards, 145, 146, and a recess portion is cut out of this base in which cog wheels, 152, 153, which engage with each other are operatively disposed, and inclosed by a plate, 150, which may be secured in place by screws, 151, passing into the base 148. The cog wheels 152, 153, are operatively supported in the plate 150, or on the base, 148 by journals, 154, 155. A lateral arm, 156, is operatively attached at one end to the cog wheel 152, by the journal, 158; and a corresponding lateral arm 157, is operatively attached at one end to the cog wheel, 153, by the journal, 159. To the standard, 145, a vertical arm, 160, is operatively attached by the journal, 161, and to the lower end of the arm, 160, the outer end of the arm 156, is operatively attached by the journal 162. To the standard, 146, a vertical arm, 163, is operatively attached by the journal, 164, and to the lower end of the arm 163, the outer end of the lateral arm, 157, is operatively attached by the journal, 165. The upper slotted ends of the arms, 160 and 163, are operatively attached to the outer ends of the arms, 5, 6, and to the outer ends of the arms, 7, 8, respectively, by the pins or journals, 10, 10. A cog, or other suitable driving wheel, 166 is secured to the journal, 154, of the cog wheel 152, and to this the motive power is to be applied in operating the device.

The adjustment of the parts shown in Figs. 22 and 23, is such, that when the cog wheel, 152, is operated, it operates the cog wheel 153, by means of which the lateral arms, 156, 157, are simultaneously pushed outward and drawn inward. When the outer ends of these arms, 156, 157, are drawn inward the upper ends of the vertical arms, 160, 161, are pushed outward, and thereby the horizontal cross bars, 1, 2, are drawn towards each other in such manner of adjustment that at the extremity of the movement the parts attached thereto, will gradually reach the position at which the character plates will reduce the characters to their smallest size, and as the cog wheels, 152, 153, continue in movement, the outer ends of the lateral arms, 156, 157, are pushed outward, by which movement the upper ends of the vertical arms, 160, 163, are pushed inward and towards each other in such manner of adjustment that the horizontal bars, 1, 2, are carried away from each other to the point where they will reach the distance from each at which the character plates will enlarge the characters to their largest size. This operating device is designed to be placed within a suitable box or case having a ground glass or other suitable front so arranged that the light or lights which are to be placed behind the character plates will throw the figure of the characters on such front. The cog or drive wheel 166, may be disposed outside of the box or case, if desired.

Fig. 24 is a front view of a form of box or case, 167, adapted to be employed in carrying out my invention. This case 167, has in its front an opening, 168, through

which the sign is shown, and, if desired, a glass front, 169, may be secured across the opening, 168, as clearly shown in section in Fig. 25. Back of the sign portion in the case, a ground or similar glass part, 170, (Fig. 25) may be suitably secured. Lights, as 171, are disposed back of the glass part, 170. In this arrangement of my invention the observer sees the plates in motion, and if desired, the plates could be of different colors, and thereby attract the attention. When such an arrangement of the device, is placed within a show window or other place protected from the weather, it would not be necessary to have a glass front to the box or case containing it. The standards 145, 146, may be secured to the base 148, by screws, 149, 149, or in any other suitable manner.

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

1. As a new article of manufacture a lighted sign having openings for the passage of light, and provided with movable obscuring parts, and means whereby the said parts may be moved, to enlarge and decrease gradually the size of the characters forming the same, substantially as described and shown.

2. In a lighted sign having openings for the passage of light, the combination, with a frame adapted to carry movable obscuring parts and means whereby the said parts may be moved to enlarge and decrease gradually the characters forming the sign, of a suitable device to operate the frame, substantially as described and shown.

3. In a lighted sign, a part containing an opening forming a light passage of a designated character, another part or parts corresponding thereto forming the light passage completing such character, in combination with suitable operating devices adapted to move such parts towards and away from each other gradually, and thereby increase and decrease the light passage and designated character, substantially as described and shown.

4. In a lighted sign, a series of plates adapted to leave openings in the form of designated characters, for the passage of light, said openings being arranged in such plates to correspond to each other, and such plates being arranged to slide over each other, and thereby gradually to increase and decrease such openings and at the same time preserve the configuration of the designated character, substantially as described and shown.

5. In a lighted sign, a movable plate or plates provided with openings adapted to permit the passage of light to form part of a character, in combination with a movable plate or plates provided with openings adapted to permit the passage of light to form another part or other parts of such character, and a series of movable obscuring parts adapted to close and unclose openings in such sign to preserve the symmetry of the characters as the same are enlarged and decreased, substantially as described and shown.

6. In a lighted sign a movable plate or plates provided with suitable parts to permit the passage of light to form part of a character, a movable plate or plates adapted to form similarly other parts of the same character, in combination with another plate or plates supported independently within an opening of the character, and adapted to be operated in connection with the other plates, to form distinct portions of the same character, substantially as described and shown.

7. In a lighted sign, a suitable arrangement of lights to illumine the same, a front of translucent material disposed near such lights, and in front of such translucent material a series of plates adapted to permit the passage of light displaying the characters forming the sign, in combination with suitable means to operate such plates gradually to increase and decrease the size of the characters forming the sign, substantially as described and shown.

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