

May 9, 1933.

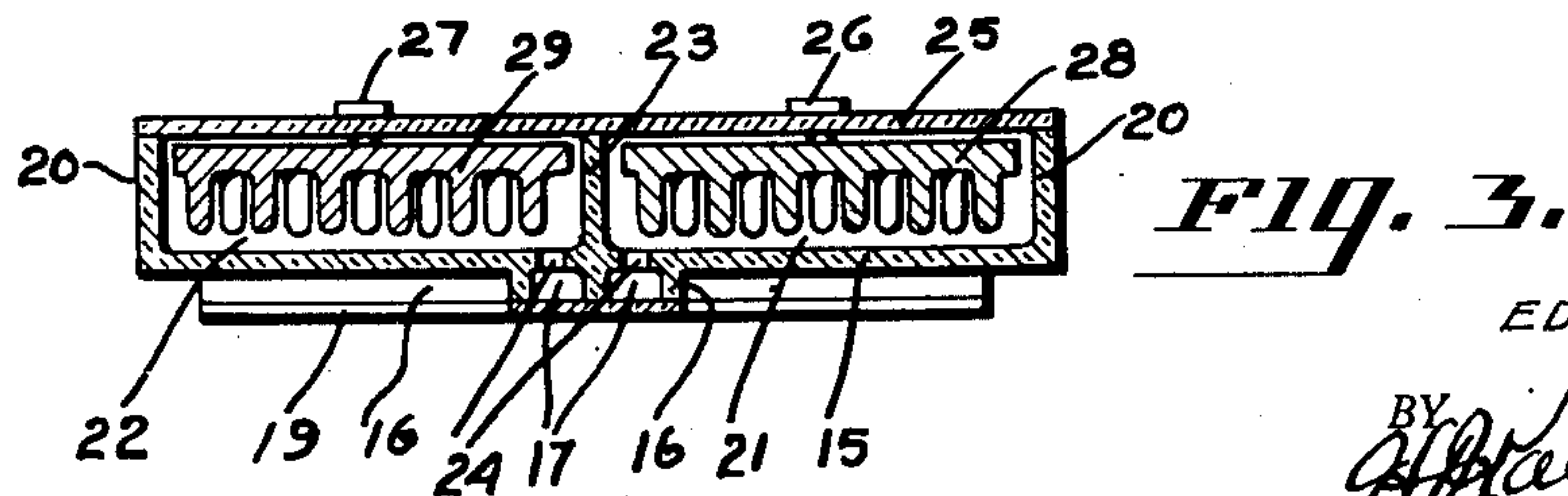
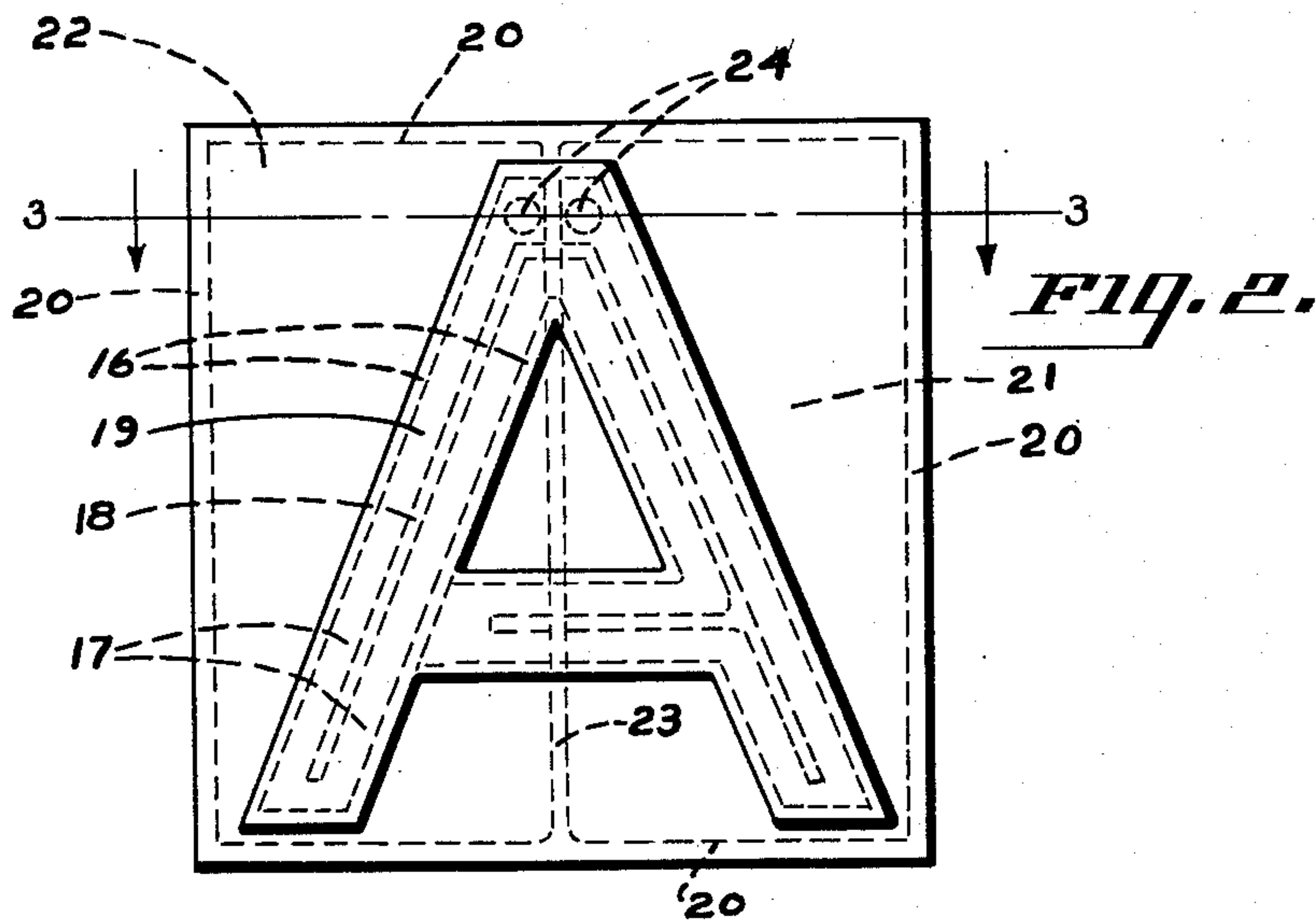
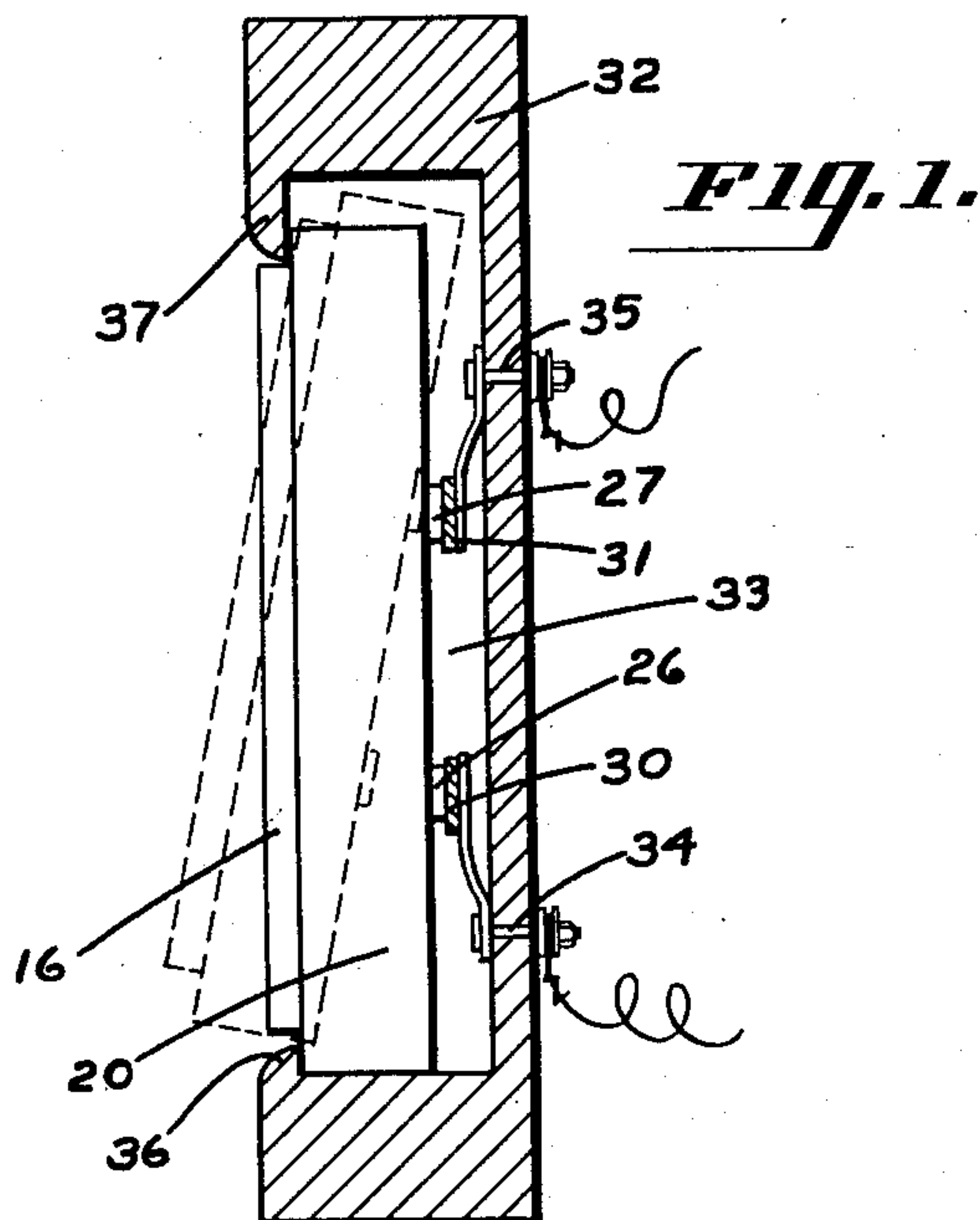
E. J. WINSHIP

1,908,393

ILLUMINATED SIGN, CHARACTER, AND LETTER

Filed March 19, 1932

3 Sheets-Sheet 1



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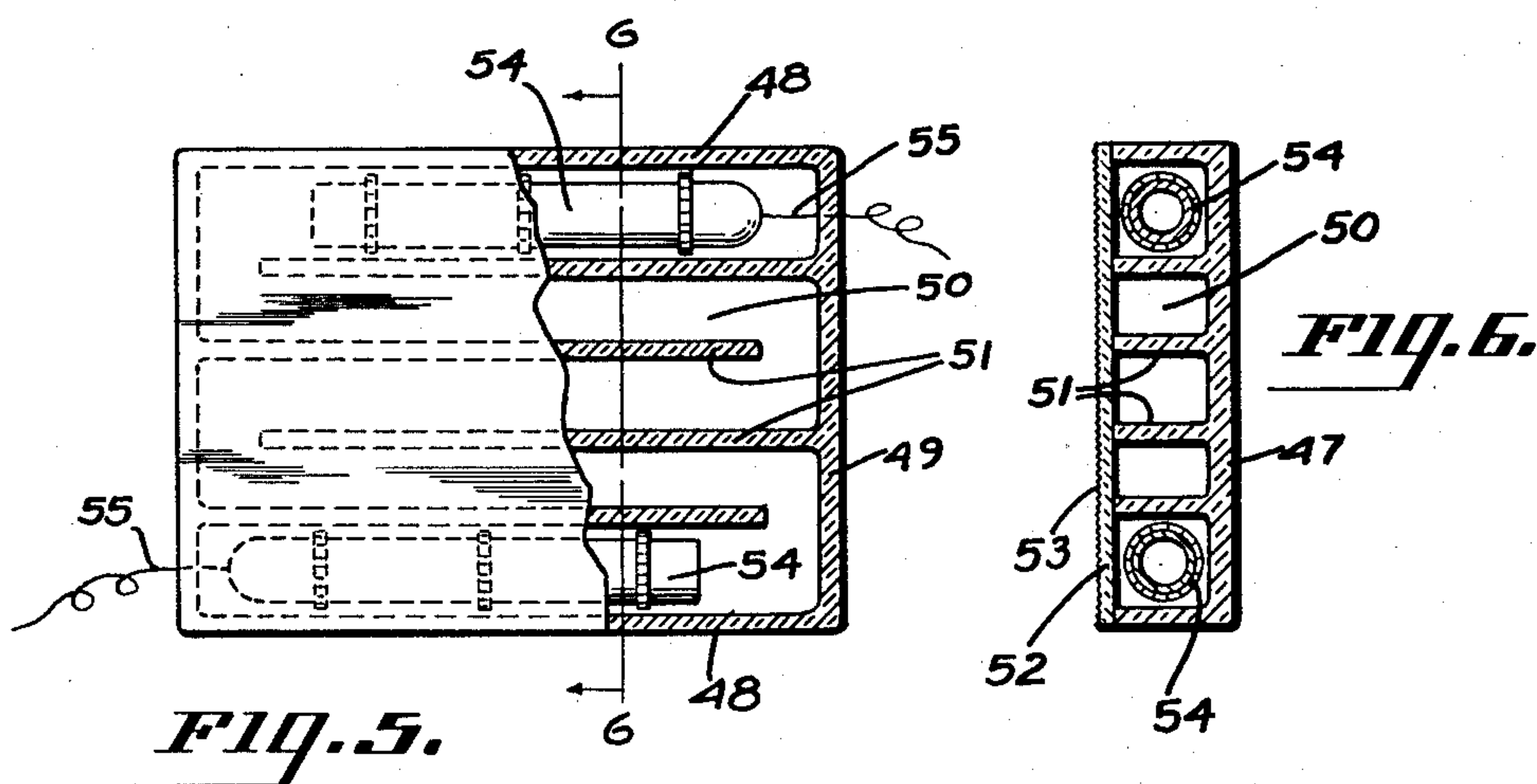
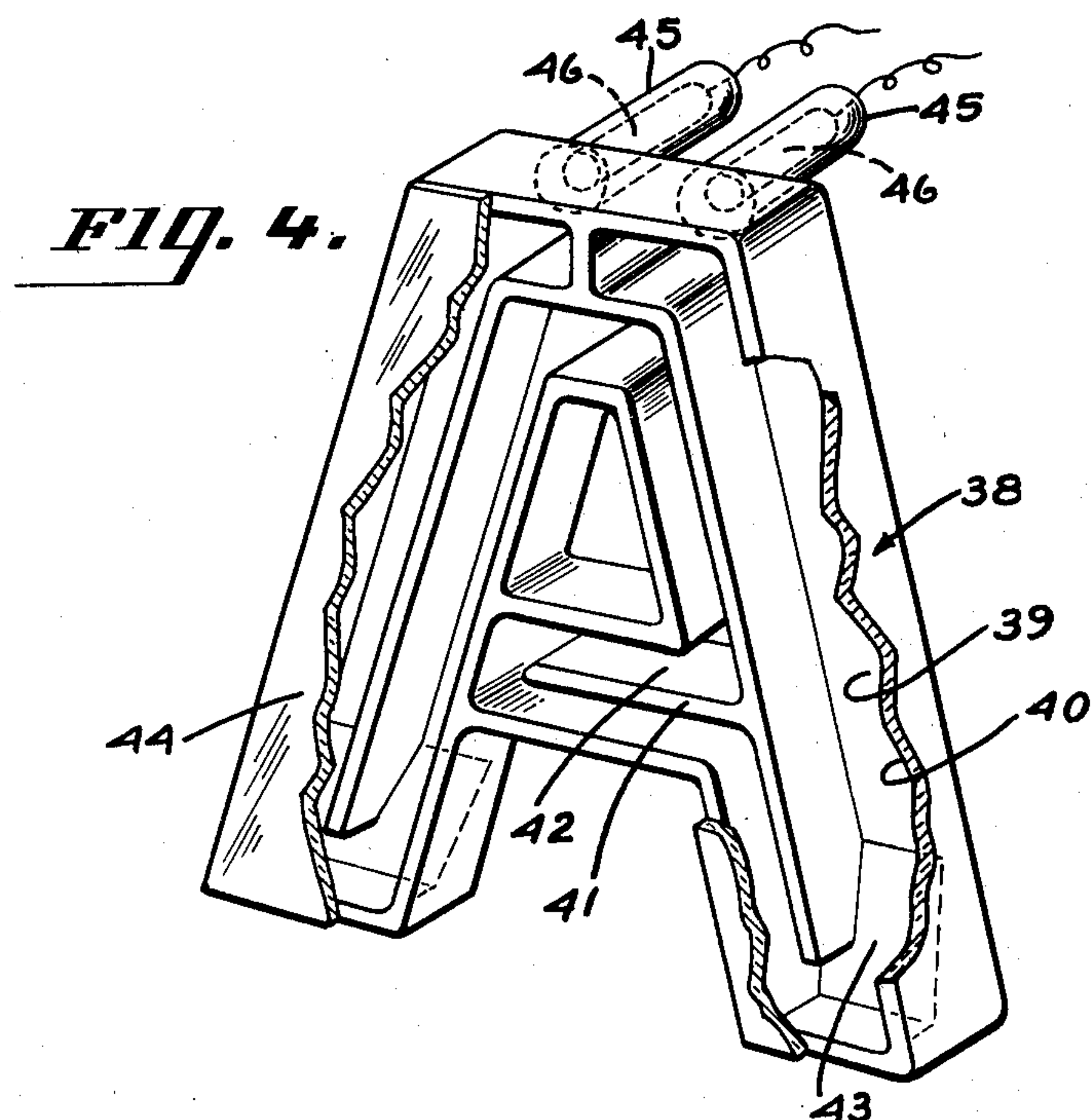
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ILLUMINATED SIGN, CHARACTER, AND LETTER

Filed March 19, 1932

3 Sheets-Sheet 2



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ILLUMINATED SIGN, CHARACTER, AND LETTER

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3 Sheets-Sheet 3

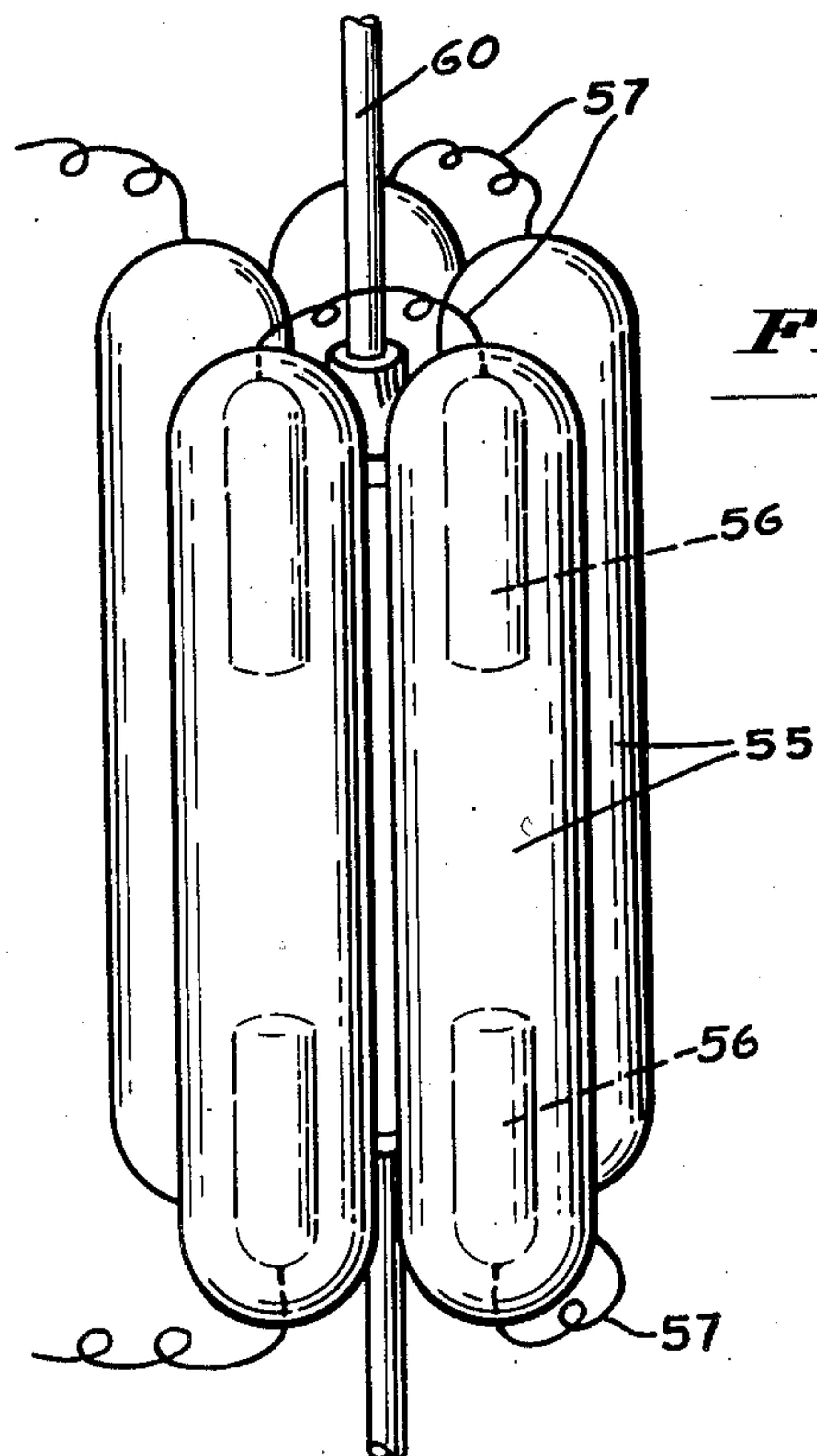


FIG. 7.

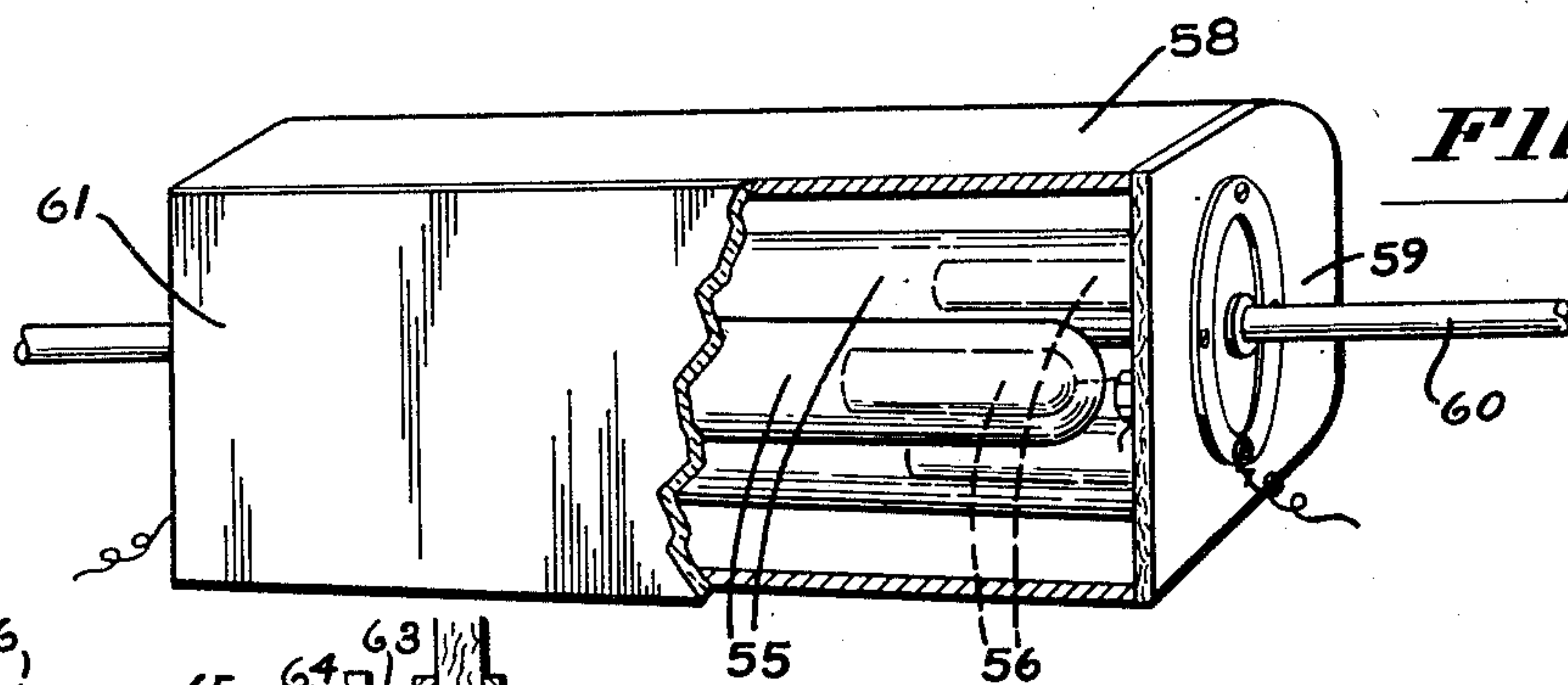


FIG. 8.

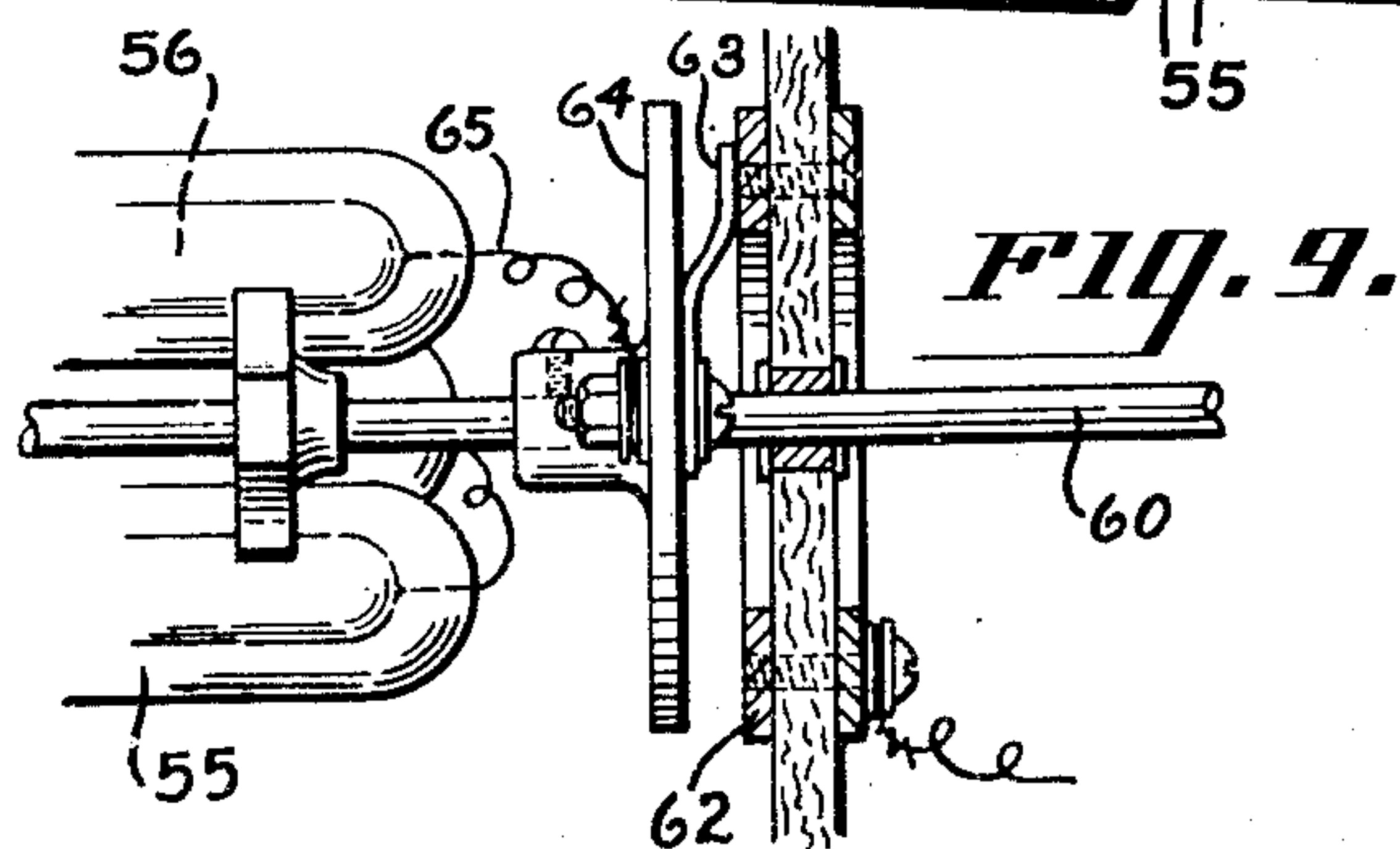


FIG. 9.

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UNITED STATES PATENT OFFICE

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ILLUMINATED SIGN, CHARACTER AND LETTER

Application filed March 19, 1932. Serial No. 599,878.

This invention relates to illuminated signs, letters and characters and more particularly to those of the gaseous discharge type which employ gases of the noble gas group such as neon and argon.

Heretofore in the manufacture of illuminated signs, letters and characters of the type referred to, it has been customary to first produce glass tubing which by heating, bending and expert manipulation by lamp-workers is finally fashioned into the desired sign, character or letter. Such manipulations are all accomplished by skilled hand labor and, as a consequence, entail great expense in the production of illuminated signs of the type referred to. Moreover, owing to the limitations as to the shape of the tubing, it is impossible to produce letters and characters of all styles and shapes in spite of the fact that many lamp-workers have become very highly skilled in their trade. Frequently, in the manufacture, of large pieces, it becomes necessary to join several lengths of tubing together and by reason of the strains set up in the glass by local heating at the bends and joints, the finished article must be very carefully annealed or a crack or break will occur and the completed article then becomes useless. In addition to the danger of breakage through improper or insufficient annealing, great care must be exercised in handling the finished product to avoid mechanical breakage and particularly in the handling of large pieces is it necessary to avoid straining the fragile tubing such as by supporting it at only one place.

The object of my invention is to simplify and cheapen the manufacture of signs, letters and characters of the type above referred to.

Another object is to reduce the hazards which accompany the annealing and handling of such signs, letters and characters.

A further object is to enable the letters and characters of a sign of the gaseous discharge type to be interchanged so that the wording of the sign may be altered from time to time and as frequently as desired.

A still further object is to broaden the field of utility of such signs by increasing the num-

ber of styles of letters and characters that may be employed.

The above and other objects may be accomplished by employing my invention which embodies among its features a plate of non-conducting material, preferably glass, having formed in one face a recess or recesses conforming to the shape and style of letter or character desired, a transparent cover plate also of non-conducting material, preferably of glass, which is sealed over the open sides of the recess or recesses to form an air tight receptacle, a partition wall dividing each recess into two or more passages which communicate with each other at one or the other of their ends and a diffusing surface on one side of the cover plate for spreading and diffusing the light emitted by the sign, letter or character.

Other features include the elimination of fragile protrusions from the signs, letters or characters by forming the back of each plate in which the recesses are formed with a pair of separate chambers for the reception of the electrodes, the sealing of a cover plate over these chambers after the electrodes have been secured therein and the securing of contacts on the cover plate for conducting electric current to the electrodes and hence, producing a self-contained sign, letter or character which may be easily mounted in or demounted from a holder or support, provided for that purpose.

In the drawings:

Fig. 1 is a vertical sectional view through a holder showing one of my improved sign characters in position therein, the dotted lines indicating the manner of its removal;

Fig. 2 is a front view of the sign character shown in Fig. 1;

Fig. 3 is a horizontal sectional view taken on the line 3—3 of Fig. 2;

Fig. 4 is a perspective view of a modified form of sign character;

Fig. 5 is a front view partly in section of an illuminated panel;

Fig. 6 is a sectional view taken on the line 6—6 of Fig. 5;

Fig. 7 is a perspective view of an illuminated panel of a modified form;

Fig. 8 is a perspective view partly in section of one form of mounting for the panel shown in Fig. 7; and

Fig. 9 is an enlarged fragmentary sectional view through one end of Fig. 8.

In carrying my invention into practice, I employ a plate 15 of non-conducting material such as glass on one side of which I form outstanding walls 16 which are shaped to form a sign, letter or of any other desired configuration. Alternately, the plate may be formed with recesses instead of the walls 16 so long as passages 17 are provided. Each of these passages is divided into two separate compartments by a partition wall 18 which extends outwardly from the bottom of each passage and terminates in a plane with the outer edges of the side walls of the passages. Secured to the outer edges of the walls 16 and 18 in such a way as to form an air tight joint is a cover plate 19 which in the present instance is cut to conform to the shape of the sign, letter or character, though it is to be understood that in instances where the letter is formed by a recess in the plate 15 the cover plate 19 will conform to the size and shape of the plate 15.

Extending rearwardly from the plate 15 near or adjacent its top, bottom and side edges are top, bottom and side walls 20 forming a hollow box-like structure which is divided into two separate chambers 21 and 22 by a partition wall 23. These chambers communicate through openings 24 with the compartments formed in the passages 17, and secured to the rear edges of the walls 20 and 23 in such a manner as to form an air tight joint is a cover plate 25 into which contacts 26 and 27 are sealed. The inner ends of these contacts are electrically connected with electrodes 28 and 29 respectively and their outer ends are headed to engage spring-pressed buss bars 30 and 31 which are carried by the sign support to be hereinafter described.

The sign support above referred to comprises a body 32 having a recess 33, the back wall of which carries contact members 34 and 35 to which the buss bars 30 and 31 are electrically connected. Extending upwardly from the bottom wall of the recess 33 adjacent its open side is a flange 36 and depending from the top wall of the recess adjacent its open side is a flange 37 which is about twice the width of the flange 36. As shown in Fig. 1, these flanges serve to retain the sign letter or character in place in the support 32 and yet enable it to be readily removed.

In the modification shown in Fig. 4, the sign, letter or character is composed of a pressed body 38 consisting of a bottom 39 and side walls 40 which form a trough-like structure in which the luminous gas is received. The trough is divided in two by a partition wall 41 to form a sinuous passage

42 and formed in the trough at the points where the passage bends are constrictions 43 by which the cross-section of the passage is reduced for the purpose of causing the luminosity to spread and fill the additional area of the letter and character. Secured to walls 40 and 41 in such a manner as to form an air tight joint is a cover plate 44 and extending through the bottom wall 39 are openings which communicate with cylindrical extensions 45 in which the electrodes 46 are sealed. This type of letter or character is primarily adapted for permanent mounting and is not interchangeable as is that previously described. Its primary advantage, however, is that the connections to the source of current supply may be placed adjacent one another as shown and thus the necessity of making the connections at widely separated points is eliminated.

In Figs. 5 and 6 I have illustrated the use of partition walls in producing illuminated panels. In this construction a plate 47 of non-conducting material such as glass is formed adjacent its edges with side and end walls 48 and 49 and the recess thus defined is divided into a continuous sinuous passage 50 by a plurality of partition walls 51, alternate ends of which are spaced from the end walls 49 as shown in Fig. 5. A transparent cover plate 52 is secured in such a manner as to form an air tight seal to the edges of the walls 48, 49 and 51 and this plate is preferably formed on its outer surface with a light diffusing media such as prisms 53. Contained in and adjacent opposite ends of the passage 50 are electrodes 54 to which leads 55 are attached, it being understood that these leads extend through the walls 49 to a suitable source of power supply.

It is obvious that in the constructions shown in Figs. 4 to 6 inclusive, the plates 39 and 47 may be formed with rearwardly extending flanges which define chambers in which the electrodes may be contained, hereinbefore illustrated and described.

In carrying my invention further, particularly that embodying the location of the passages adjacent one another as shown in Figs. 5 and 6, I have disclosed in Figs. 7 to 9 inclusive a construction in which it is possible to produce either totally white light or blended color. In this type of device, I provide a panel shown in Figs. 5 and 6 with a series of independent gas receiving chambers or as shown in Figs. 7 to 9 inclusive, I provide a plurality of independent tubes 55, each of which contains electrodes 56 which are alternately connected at opposite ends with the electrode in the next adjacent tube by suitable leads 57. In this type of apparatus each tube contains a gas which will produce a color of light which contrasts with that produced by the gas in the tube next adjacent it and by properly mounting the tubes thus ar-

ranged, I am enabled to blend together all colors to produce pure white light. Moreover, by properly selecting the tubes, I can produce an infinite number of colors or shades thereof. In Fig. 8, I have disclosed one manner of mounting the device shown in Fig. 7. The mounting consists of a curved trough-shaped reflecting element 58 which is closed at opposite ends by walls 59 and rotatably supported in bearings in the walls 59 is a shaft 60 upon which the tubes 55 are mounted. A transparent cover plate 61 is supported in position to close the open side of the trough formed by the reflecting element 58 and may or may not be provided with a light diffusing surface. Secured to each end wall 59 is a ring-shaped contact 62 for engagement by a resilient contacting finger 63 which is carried by an insulating supporting disk 64 which is secured to the shaft 60, one lead 65 which is connected with one of the terminal electrodes 56 is connected to each finger 63 and it will thus be seen that in spite of the rotation of the shaft 60, the gaseous discharge tubes will remain connected to the source of power supply. By thus mounting the tubes 55, I am enabled to insure the best possible adjustment of the luminescent tubes for producing the desired result. Moreover, by eliminating the reflecting surface, I can produce a sign wherein the colors may be readily changed and such change can be affected with a blending effect. It is of course to be understood that after fabrication, the sign, character or letter is exhausted and cleared of residual gases in the usual manner and the interior is then filled with one or more of the rarer gases such as are commonly employed in gaseous discharge tubes.

While in the foregoing, there has been shown and described a preferred embodiment of my invention, it is to be understood that minor changes in the details of construction, combination and arrangement of parts may be resorted to without departing from the spirit and scope of the invention as claimed.

What is claimed is:

1. In a device of the class described, a plate of non-conducting material having outstanding walls defining a passage, a partition wall dividing the passage into compartments which communicate with one another, a cover plate closing the open side of the compartments, walls projecting rearwardly from the plate, said walls defining electrode chambers which open into the compartments opposite the point of communication, and a plate closing the open side of the electrode chambers.

2. In a device of the class described, a plate of non-conducting material having outstanding walls defining a passage, a partition wall dividing the passage into compartments which communicate with one another, a cover plate closing the open side of the compartments, wall projecting rearwardly from the

plate, said walls defining electrode chambers which open into the compartments opposite the point of communication, a plate closing the open side of the electrode chambers, electrodes in said electrode chambers, and contacts carried by the electrodes and extending through the last-named plate.

3. In a device of the class described, a plate of non-conducting material having a passage in one face, said plate having electrode chambers in its opposite face and being provided with openings establishing communication between opposite ends of the passage and the electrode chambers, a transparent cover plate closing the open side of the passage and a cover plate closing the open sides of the electrode chambers.

4. In a device of the class described, a plate of non-conducting material having a passage in one face, said plate having electrode chambers in its opposite face and being provided with openings establishing communication between opposite ends of the passage and the electrode chambers, a transparent cover plate closing the open side of the passage and a cover plate closing the open sides of the electrode chambers, electrodes within the electrode chambers and contacts carried by the electrodes and extending through the last-named cover plate.

5. The combination with a sign character including a plate of non-conducting material having a luminous discharge passage defined on its front face, and having electrode chambers on its rear face, said electrode chambers communicating with opposite ends of the passage, electrodes in the electrode chambers, a cover plate closing the open sides of the electrode chambers, and contacts carried by the electrodes and extending through the cover plate, of a mounting for said sign character including a trough-shaped body, for receiving the sign character, flanges overhanging the open side of the trough for removably retaining the sign character therein, and contacts carried by the trough-shaped body for engaging the contacts carried by the electrodes.

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