

S. W. KOLK.
ILLUMINATED MOVING SIGN.
APPLICATION FILED APR. 29, 1921.

1,402,075.

Patented Jan. 3, 1922.
3 SHEETS—SHEET 1.

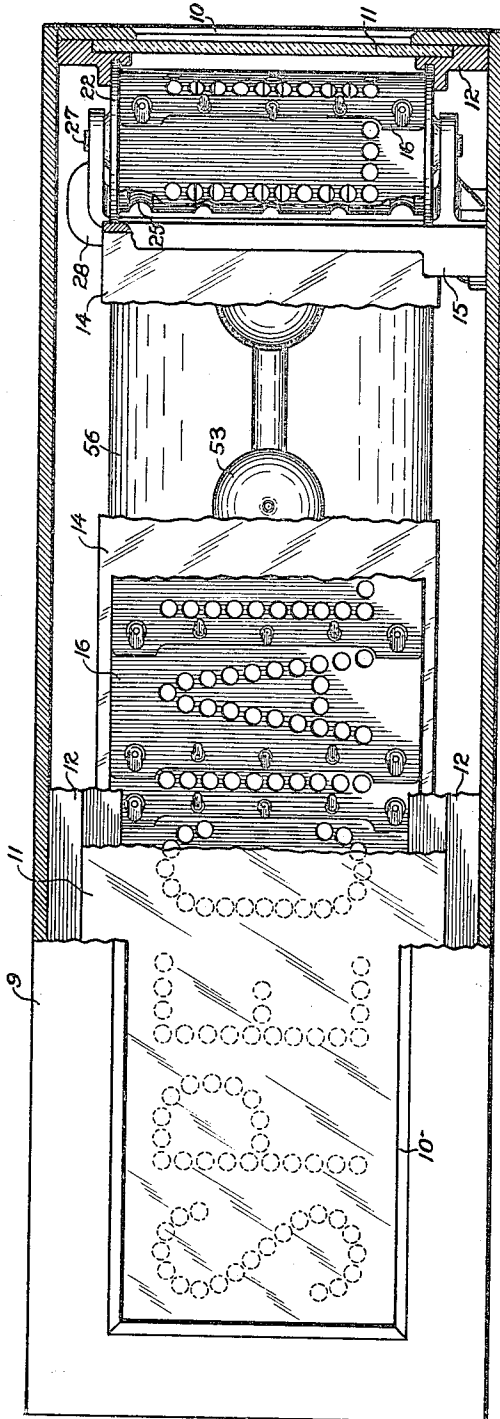


FIG. 1.

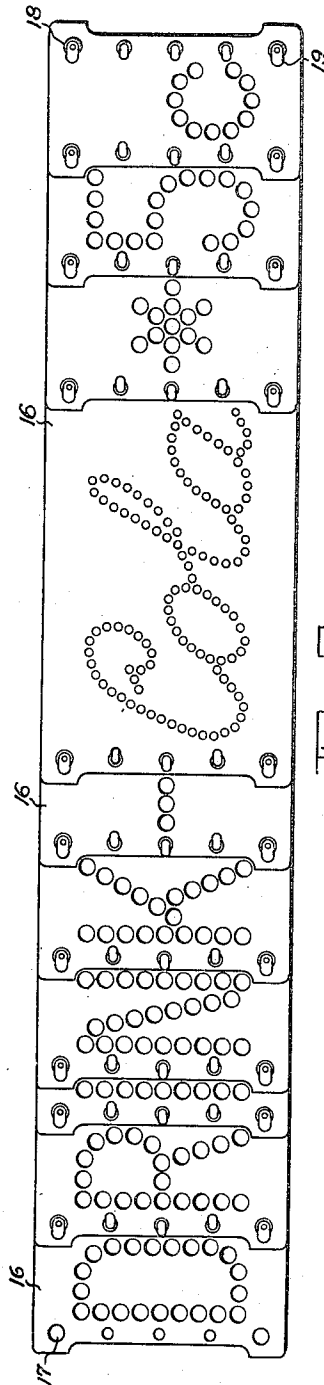


FIG. 2.

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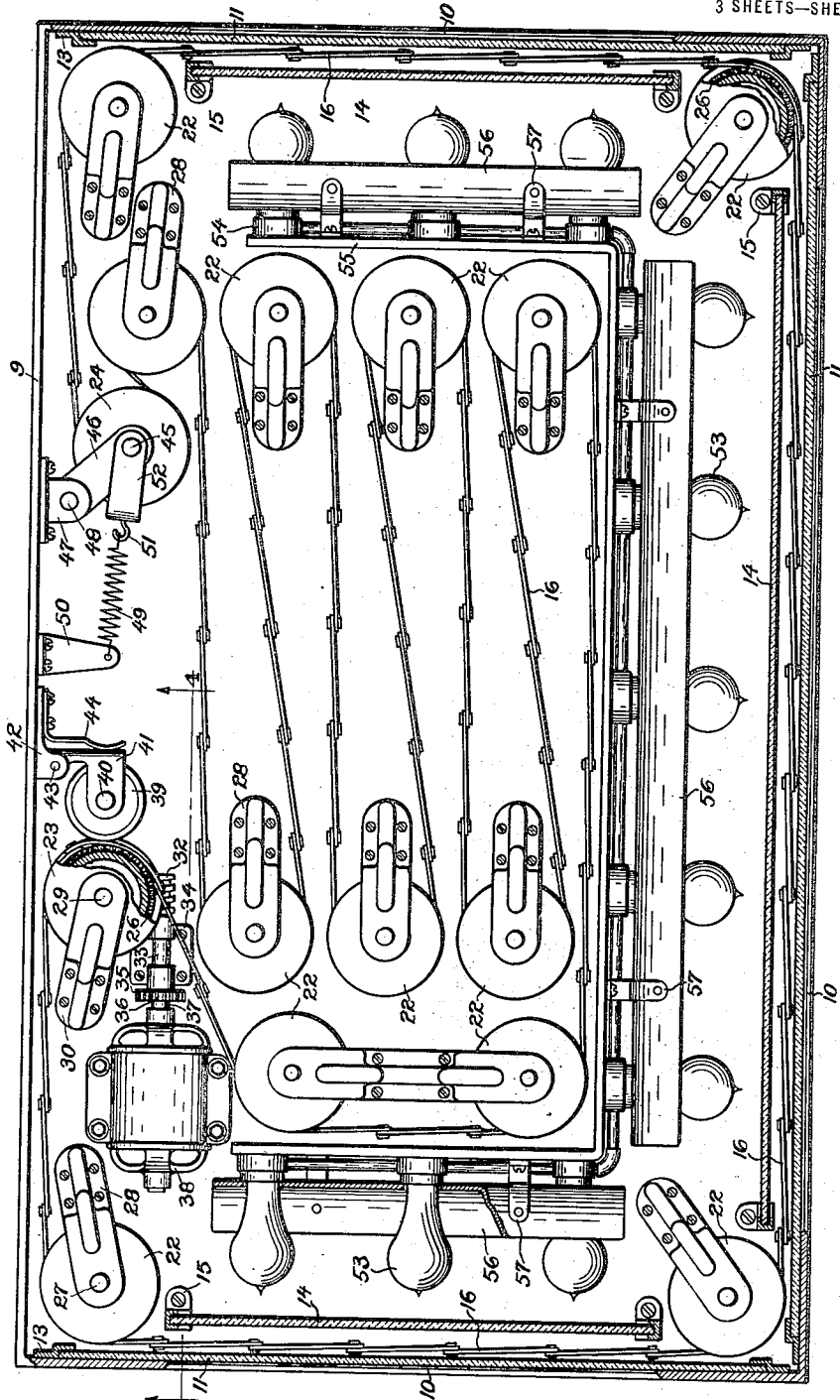


FIG. 2-

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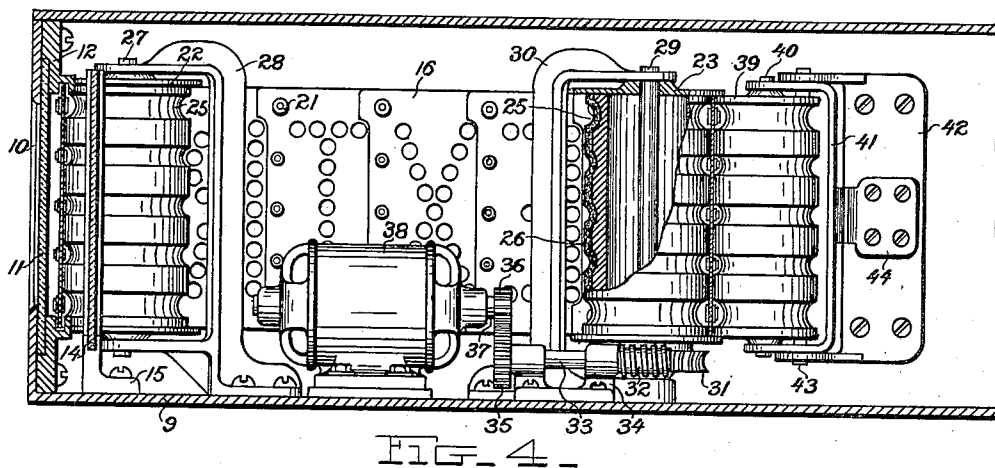
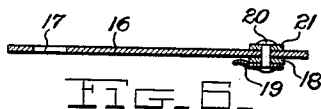
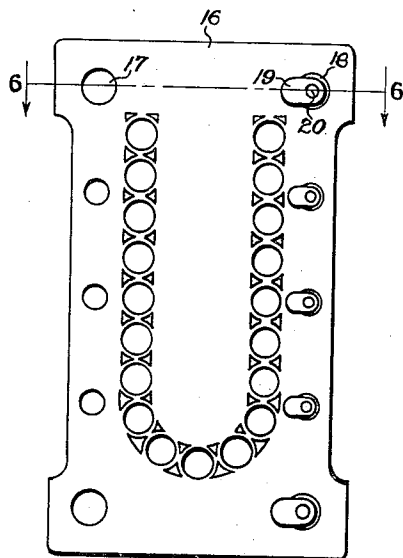
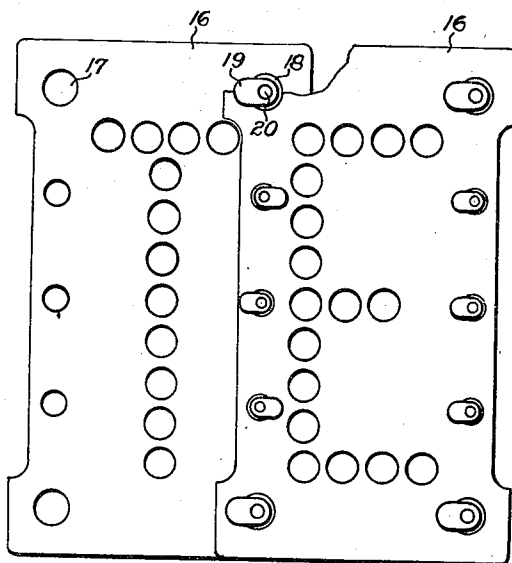
Stephen W. Folk

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UNITED STATES PATENT OFFICE.

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ILLUMINATED MOVING SIGN.

1,402,075.

Specification of Letters Patent.

Patented Jan. 3, 1922.

Application filed April 29, 1921. Serial No. 465,415.

To all whom it may concern:

Be it known that I, STEPHEN W. KOLK, a citizen of the Republic of Poland, (who has declared his intention of becoming a citizen of the United States,) and a resident of North Tonawanda, in the county of Niagara and the State of New York, have invented certain new and useful Improvements in Illuminated Moving Signs, of which the following is a specification.

My invention relates to signs having a display front illuminated from within a casing, its legend moving continually across the face of the display front in a horizontal direction.

One of the objects of my invention is to provide an illuminated sign for various purposes, which will offer a greater space for making announcements, advertising and the like, than its display front.

Another aim of my invention is to provide a moving illuminated sign, the legend of which can be set up from separate character plates and changed to a different one in a very short time, using the same character plates. In other words one of my aims is to equip each sign with a sufficient number of character plates which could be used to set up any desired legend, eliminating thus the necessity of making a special sign bearing band or belt for each different legend.

A further aim of my invention is to provide an illuminated moving sign with its legend traveling smoothly across its display front without the usual flickering of light, disagreeable to the spectator's eyes.

In the accompanying drawings:

Figure 1 represents a front elevation view, (parts of casing, display window and chain of character plates respectively, being removed to illustrate arrangement of different parts of display front.)

Figure 2 represents a front elevation view of a number of character plates connected together in a chain to form a certain advertisement.

Figure 3 represents a top plan view of the sign with the top cover removed, and the display fronts shown partly in section.

Figure 4 represents a fragmentary sectional elevation view of part of the casing, (indicated by lines 4—4 in Fig. 3) showing also details of carrier rollers and the electric motor drive arrangement.

Figure 5 represents a detail elevation view

of a character plate, showing a modified way of perforating.

Figure 6 represents a detail sectional top view of Fig. 5 indicated by lines 6—6.

Figure 7 represents a detail front elevation view of two character plates connected together, with part of one plate removed to illustrate the way of connecting.

Figure 8 represents a top view of Fig. 7 with part of one character plate shown in section.

The sign embodying the present invention includes a casing 9 (made preferably of sheet metal) having three display fronts, although I may use a casing having one or any desired number of display fronts. Each of said fronts has a display opening or a window 10, covered from the inside of the casing by a translucent panel 11, placed vertically and held to casing 9 at top and bottom by channel guides 12 and at sides by clamps 13. In rear of translucent panel 11, placed vertically and parallel to said panel, is a rear translucent panel 14, held by brackets 15, fastened to the bottom of casing 9. Said translucent panels are preferably of glass but I may use any other suitable material. Ample space is left between front translucent panel 11 and rear translucent panel 14, for a chain of character plates 16 to pass between said translucent panels in a horizontal direction.

The character plates 16 are made from thin, flexible, opaque material, preferably sheet metal, being perforated with round holes in single file, to represent different letters, characters, numbers or a plurality of letters, characters or numbers as shown on Fig. 2 in a character plate having a perforated word "Cola" where in order to reproduce a certain trade mark or any other special inscription, it is necessary to perforate the whole word or a number of words in one single plate. I may also use a different way of perforating character plates, one of which is shown in Fig. 5.

A number of holes 17 are provided in each character plate at one of its connecting sides, and an equal number of bosses 18 in line with said holes 17, are riveted at the other connecting side of each plate. Bosses 18 are slightly smaller in diameter than holes 17, being spaced in each character plate to engage said holes 17 of any other character plate.

An elongated spring clip 19 is fastened

at one of its ends on top of every boss 18 by means of rivet 20, the other outstanding end of said spring clip 19 is intended to keep together two connected character plates, with holes 17 of one plate seated on bosses 18 of another plate. By means of the same rivet 20, a spring clip 19 and boss 18 are fastened on the front face of each character plate and also a reinforcing washer 21 on the back face of said plate.

Extreme top and bottom enlarged spring clips 19 are fastened stationary each at one of its ends, to enlarged top and bottom bosses 18, having the outstanding ends pointed inward toward the opposite edge of character plate. All intermediate small springs clips 19, are fastened at one end, each on the top of the intermediate small bosses 18 in such way, that the other outstanding ends can be turned around in any horizontal direction to said bosses 18.

Before connecting one character plate 16 to another all intermediate small spring clips 19 are pointed toward vertical center line of said character plate 16, or in the same direction as the stationary enlarged top and bottom clips 19. To connect two character plates together all spring clips 19 of one plate, are pushed first through holes 17 of another plate, bosses 18 engaging said holes 17. It will be noted that outstanding ends of spring clips 19, have tips turned up slightly, to enable said spring clips 19 to pass easily through holes 17.

After said holes 17 of one character plate are seated on bosses 18 of another plate, outstanding ends of some of the small intermediate clips 19 are turned in the opposite direction, from the direction of the stationary enlarged top and bottom clips as shown on Fig. 7, thus preventing accidental disconnection of one character plate from another. All letter, character and number plates are connected in the same way. Figures 5, 6, 7 and 8 illustrate in detail the construction of character plates and the way of connecting said plates in a chain. Fig. 2 on the accompanying drawings shows a part of the said chain or belt with different letter, character and number plates connected together, to form a certain advertisement, in this case an inscription "Drink—Cola * 5c." It will be noted that I use any desired character plates as for instance a dash — or a star * as spacing between certain words, letters or numbers.

A desired number of character plates 16 are connected in an endless chain, which is carried in a horizontal direction, on carrier rollers 22, driving roller 23 and tension roller 24 in an endless path inside the casing 9, and between front and rear translucent panels 11 and 14 as shown in Fig. 3. Said chain of character plates is guided between said translucent panels in a horizontal direc-

tion by channel guides 12 as can be seen in Fig. 4.

Carrier rollers 22, driving roller 23, and tension roller 24, made preferably of metal, are cylindrical in shape, having a number of parallel, horizontal grooves 25 around their body; said grooves form clearance for bosses 18 and spring clips 19 of character plates 16, being spaced accordingly to receive said bosses and clips, while the chain of character plates 16 is passing on said rollers.

A rubber shell 26 is tightly fitted over the roller body and in grooves 25, to prevent slipping of chain of character plates and to improve the smooth running of said chain of plates on said rollers. Guiding flanges are provided at the top and bottom of each roller, to guide and keep said chain of character plates 16 on said rollers.

All carrier rollers 22 revolve freely on vertical shafts 27 held at top and bottom by brackets 28 which are fastened to the bottom of casing 9. A driving roller 23 having a worm gear 31 fastened to its bottom, revolves on shaft 29 held at top and bottom by a bracket 30. Enmeshed with the worm gear 31 is a worm 32 mounted on the end of a shaft 33 running in a bearing 34. On the opposite end of the shaft 33 a gear 35 is mounted, which is driven by a pinion 36 set on the shaft 37 of an electric motor 38.

Although at present this driving mechanism as shown on the accompanying drawings is contemplated, I may use a different arrangement of gearing or a different motor, such as an air or a spring motor or any other suitable source of power.

To keep the chain of character plates firmly on the driving roller 23, a pressure roller 39 is used which is smaller in diameter than the carrier rollers 22, but otherwise constructed in the same way, revolving freely on the shaft 40, held at the top and bottom by a hinge housing 41, hinged by means of pin 43 to housing 42 mounted on the wall of the casing 9. A flat spring 44 fastened at one end to housing 42, exerts a steady pressure on the hinge housing 41 and thus on the pressure roller 39 pressing it steadily against the chain of character plates 16 passing on said driving roller 39, preventing slipping of said chain of plates while in motion. A rubber shell is also fitted over body of pressure roller 39, but it has no guiding flanges at top or bottom.

A spring tension roller 24 designed to take up play and keep the chain of character plates 16 moving on carrier rollers 22 at a proper tension, is running freely on shaft 45 set in two arms 46, which are hinged by means of shaft 48 to a housing 47, mounted on the wall of the casing 9. A coil spring 49 hooked at one end to bracket 50, mounted on the wall of the casing 9 and at the other

end, to a hook 51 of fork housing 52, exerts a steady pull on spring tension roller 24, both ends of its shaft 45 being held in said fork housing 52.

5 In back of rear translucent panel 14 inside of the casing 9, a number of electric lights 53 are mounted on receptacles 54, which are fastened to panels 55. A sheet metal reflector 56 fastened also to panels 55 by means
10 of brackets 57, is designed to reflect the rays of said electric lights on rear translucent panel 14.

Eleven electric lights are shown on the accompanying drawings of the present embodiment of my invention, but I reserve the right
15 to use any desired number of lights, different arrangements of the same, or a different source of light.

To set the sign in operation first a desired
20 legend is set up by connecting together proper character plates 16 in a chain or belt which is wound on carrier rollers 22, driving roller 23 and tension roller 24 and the ends of said chain are connected together,
25 thus making it endless as shown on Fig. 3.

An electric motor 38 is then started, which by means of above described gearing, transmits a rotary motion to the driving roller 23, thus pulling said chain of character
30 plates between said driving roller 23 and pressure roller 39, on carrier rollers 22 in an endless path and between said front and rear translucent panels 11 and 14. Lights 53 are turned on illuminating rear translucent
35 panel 14. Rays of light passing through said rear translucent panel 14 are distributed evenly passing through perforations in said character plates 16 and finally are reflected on front translucent panel 11.

40 As the chain of character plates 16 is moving between said translucent panels in a horizontal direction, the reflected legend of the said chain is also traveling across the face of the said front translucent panel in an
45 endless procession. It will be noted that character plates 16 are not visible from outside the casing 9, being covered from sight by a translucent panel 11, which permits only a luminous image of the legend to pass
50 through.

While I have described herein one embodiment of my invention and have described different ways in which the same may be
55 used, it will be understood that the same may be further modified without departing from the spirit of present invention and I desire it understood that I reserve the right to make necessary changes or modifications within the scope of the invention as expressed in claims.

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

1. In a moving illuminated sign, an endless legend bearing belt comprising a plu-
65 rality of independent, flexible, interchange-

able, opaque sections connected to each other at ends, each of said sections having a plurality of openings arranged to resemble a single character, or trademark, means for
70 connecting said opaque sections to each other at ends to form an endless belt, said means also providing for quick detaching of one section from another when desired.

2. In a moving illuminated sign a combination with the casing having one or more
75 display fronts, each front having a display window, an endless belt comprising a plurality of independent, flexible, opaque sheets, connected to each other at vertical side edges, each of said sheets having a plurality of
80 openings arranged to form a single character, means for connecting said opaque sheets to each other at vertical side edges, said means also providing for quick detaching of any of
85 said opaque sheets from another when desired; a plurality of rollers adapted to carry and move said belt in horizontal direction across said display window and in endless path in the inside of said casing.

3. In a moving illuminated sign a combination with a casing having one or more
90 fronts, each front having a display window of two translucent panels placed vertically one in back of the other, and parallel to each other, a space between said translucent pan-
95 els and an opening at each side, an endless belt passing between said front and rear translucent panels in horizontal direction, said belt being formed by connecting together a plurality of separate, opaque, flexi-
100 ble and interchangeable sections, each section being perforated to represent a character, means for connecting ends of said sections together, said means providing for connection of any of said sections to any other of
105 said sections, said means providing also for holding firmly together ends of said sections while connected, and further, said means providing also for quick detaching of one section from another when desired, a plu-
110 rality of rubber covered carrier rollers of cylindrical shape having guiding flanges at the top and bottom, adapted to carry said belt between said front and rear translucent
115 panels of display window in a horizontal direction and in an endless path inside said casing; a rubber covered cylindrical driving roller rotated by means of a suitable source of power and a suitable gearing moving said
120 belt on said carrier rollers in horizontal direction, a rubber covered cylindrical pressure roller adapted to press said belt against said driving roller while said belt is passing on said driving roller, means for keeping
125 said belt on said rollers at suitable tension, a source of light inside said casing in back of rear translucent panel of said display window.

4. In a moving illuminated sign a combination with the casing having one or more
130

display fronts each front having a display window comprising two translucent panels parallel to each other and to said display front, with a narrow space between said translucent panels, a plurality of flexible opaque sheets, connected together at vertical side edges in an endless belt passing in said narrow space between said translucent panels in horizontal direction, each of said opaque sheets having a plurality of openings arranged to resemble a single character, or trademark, means for connecting said opaque sheets to each other at vertical side edges, said means also providing for quick detaching of any of said opaque sheets from another when desired, a plurality of rubber covered rollers adapted to carry and move said belt of said opaque sheets in horizontal direction in said narrow space between said translucent panels and in endless path inside of said casing, a source of light in the inside of said casing in back of said translucent panels of said display window.

5. In a moving illuminated sign a combination with a casing having one or more display fronts, each front having a window of two translucent panels placed vertically at said window one in back of the other and parallel to each other, a space between said panels, a plurality of flexible, opaque character plates passing in said space between said translucent panels in a horizontal direction, said character plates being connected together in an endless chain by means of plurality of bosses near vertical side edge of each character plate and a corresponding plurality of holes near opposite side edge of each character plate, said holes of each plate

adapted to seat on said bosses of any other character plate, a plurality of suitable spring clips one seated on top of each of said bosses, said spring clips being adapted to keep together connected character plates firmly with said holes of one character plate seated on bosses of another character plate, each of said character plates being perforated to represent either a letter, number or character, or a plurality of letters, numbers or characters, a plurality of cylindrical rollers to carry said chain of character plates in a horizontal direction between said translucent panels of said display window and in endless path inside said casing, said rollers having guiding flanges at top and bottom and a tightly fitted rubber shell around their bodies, a plurality of suitable horizontal grooves around the body of each of said rollers and in said rubber shell, said grooves being adapted to receive said bosses and spring clips of said character plates, means for moving said chain of character plates on said rollers between said translucent panels and in endless path inside said casing, means for keeping said chain of character plates stretched on said rollers at proper tension, a source of light inside said casing in back of said translucent panels of said display window.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

STEPHEN W. KOLK.

Witnesses:

FERNAND E. BELUCHE,
WALTER R. MALACH.