

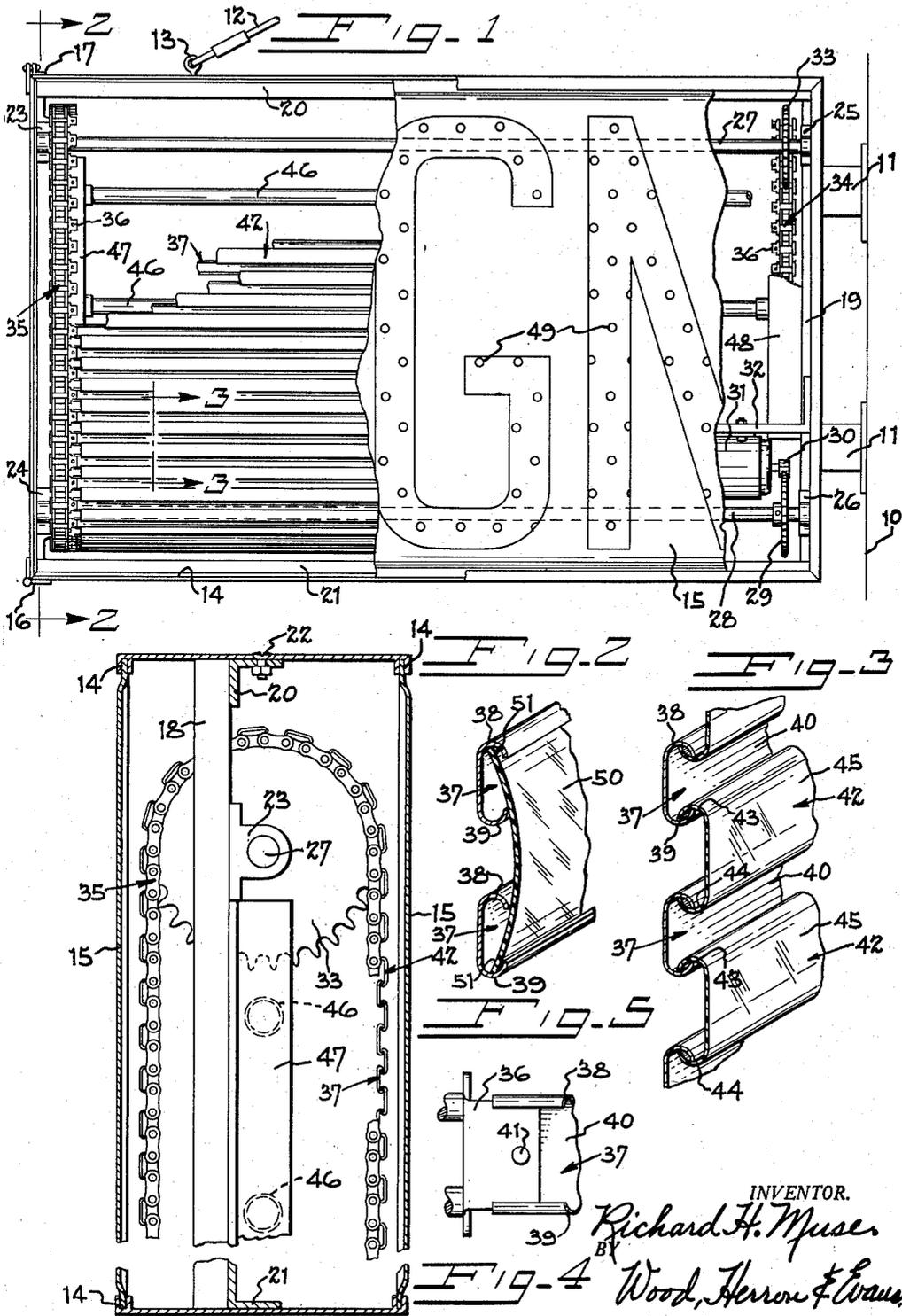
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ANIMATED SIGN

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ANIMATED SIGN

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This invention relates to signs and displays and it is directed in particular to an animated advertising sign and to an animator unit for such a sign.

The fundamental principles of animation which are utilized in this invention are well known. They have been used for a number of years in that general class of displays in which the illusion of movement is achieved in characters, letters, figures, objects etc. appearing upon the face of the display by means of an animator consisting of a moving belt, a revolving disk or a similar device having certain areas in it which transmit light to a greater extent than other areas. The moving belt or other device is located behind the face of the display where it is adapted to screen the rays emanating from a light source which is behind it and which are projected through it toward the face of the display. The illusion of movement created in a particular instance is dependent upon a number of factors including, among other things, the number, disposition, size and shape of the light transmitting areas in the animator, the color of the areas, the light transmitting qualities of the various parts of the characters etc. appearing upon the face of the display, and the speed at which the animator moves. A change in any one of these factors may change the appearance of the display, i. e., a screening device or an animator of a particular design may be used with different types of display faces to create different illusory effects. The present invention is concerned primarily with the animator, and although it is of a particular construction, it is possible to make changes in it which result in different illusory effects with a display face of one design. However, by using different display faces in combination with the animator of this invention and by making the changes which are possible in the animator, an infinite variety of animated effects may be obtained.

Animated displays and signs of the general character set forth have not been well suited for use out of doors, and they have, for the most part, taken the form of window displays and counter displays. This is believed to be primarily the result of the lack of an animator construction designed to withstand the rigors of the elements and particularly the wide variations in temperature and humidity encountered in an outdoor location. Hence, the primary objective of the present invention is to provide an animator for a sign or display of the general character set forth which is adapted to give years of trouble-free service in an outdoor location.

Another objective of the invention is to provide an animator for an outdoor sign which is of simple construction, economical to manufacture and easy to maintain.

A further objective of the invention is to provide an animator for outdoor signs having light transmitting areas which may be altered readily in order to achieve different illusory effects in signs of different design.

Another objective of the invention is to provide an animated sign in which it is possible to achieve animated effects over substantially the entire face of the sign.

Another objective of the invention is to provide an outdoor animated sign having a single animator unit therein by means of which both faces of a sign may be animated at the same time.

The invention will be explained by reference to a sign which is adapted to be suspended from a store front to

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overhang the sidewalk. Both sides of the sign are animated and the animation covers substantially the entire areas of both faces of the sign. In this embodiment, animation is achieved through the use of a continuous, moving, belt-like assembly which is made up of a series of light occlusion bars which are supported horizontally at their opposite ends upon two pitch chains. The pitch chains are engaged around a pair of sprocket wheels and these sprocket wheels are driven by means of an electric motor so that rays of light emanating from light tubes which are within the belt-like assembly pass out between the bars to both sides of the sign. In addition, the spaces between the light occlusion bars are covered by means of transparent or translucent strips which may be made of clear or colored plastic and which are engaged upon adjacent light occlusion bars. In this assembly, the strips are mounted upon and are supported by the bars in such a way that the built-up belt-like assembly may pass around the two turns at the top and the bottom of its run without binding and without appreciable wear. The assembly also has the advantage that the strips are easily installed and they may be changed if desired in order to achieve particular animated effects in different signs. The assembly has the further advantage that it is not affected by changes in temperature or humidity and that it can be operated continuously for a number of years without attention.

Other objects and features of the invention will be readily apparent to those skilled in the art from the following detailed description of the drawings in which:

Figure 1 is a side elevational view of an animated sign incorporating the principles of this invention in which certain of the parts are broken away to show construction details.

Figure 2 is a fragmentary cross sectional view taken on the line 2—2 in Figure 1.

Figure 3 is a fragmentary cross sectional view in perspective, indicated at 3—3 in Figure 1, showing the way in which the light transmitting strips are interlocked with and supported by the light occlusion bars of the animator unit.

Figure 4 is a fragmentary elevational view showing a portion only of one of the links of the pitch chain and a portion only of one of the light occlusion bars of the animator unit.

Figure 5 is a fragmentary perspective view showing a modified arrangement of the light occlusion bars and light transmission strips.

The embodiment of the invention which is shown in Figure 1 is designed for use as an outside sign which is suspended from a store front to overhang the sidewalk. In this figure 10 indicates a wall surface, 11—11 indicates a pair of mounting brackets and 12 indicates one of a pair of supporting cables. The mounting brackets may be of conventional design which are secured to the wall by lag bolts or other known means. The supporting cables 12 preferably extend down from spaced points where they are secured to the building above the sign to an eye bolt such as the one designated 13 which is on the top of the sign. The two cables are angulated with respect to one another to stabilize the sign against wind loads.

The top, bottom and two ends of the sign are enclosed by means of four framing members which, as shown in Figure 2, are configured along their opposite side edges to provide channels 14—14 to receive the outer marginal edge of sign faces 15—15 which constitute the display areas of the sign. It is preferred that the framing members be made of aluminum extruded to the shape shown. The ends of the framing members, where they meet at the four corners of the sign, may be mitred as shown following conventional practice. In order to gain access into the interior of the sign of the outer end of one of the framing members may be fastened to the lower

framing member by means such as a hinge 16. The upper end of this outer framing member may be fastened in closed position to the outer end of the upper framing member by means such as a simple latch 17. As shown in Figure 2, it is preferred that the outer marginal edges of the display faces 15—15 be offset so that the planes of the display faces are bulged slightly which rigidifies the display faces and which also adds to their attractiveness.

The framing members with the display faces thus comprise a rectangular, box-like assembly and this box-like assembly is supported internally by means of a skeleton frame made of four structural members such as the angle bars shown in Figure 2. The latter bars consist of two uprights, the one at the outer end of the sign being designated 18 and the one at the inner end of the sign being designated 19. These two bars are joined by means of an upper horizontal angle bar 20 and a lower horizontal angle bar 21. It is preferred that these bars be welded to one another and that the vertical framing member at the inner end of the sign be bolted to upright 20. The upper and lower framing members may be fastened by means such as bolts of the type shown at 22 to the bars 20 and 21. The framing member which is hinged to the outer end of the sign is not fastened to upright 18 in the embodiment shown, however, metal screws may be employed to fasten it to bar 18 in place of the latch 17 if desired.

The respective upright angle bars 18 and 19 not only serve as skeleton framework for securing the extruded aluminum framing members, but they also serve as a means for supporting the parts of the animator for the sign. The upright angle bar 18 has a pair of pillow blocks 23 and 24 secured to it by means of welding or bolts. One pillow block is fastened to bar 18 adjacent to its upper end and one is fastened to the bar adjacent to its lower end. A similar pair of pillow blocks 25 and 26 are secured in a like manner to the upright angle bar 19 at the inner end of the sign. The upper ones of the respective pairs of pillow blocks 23 and 25 journal the opposite ends of a cross shaft 27 and the lower ones 24 and 26 of the pairs of pillow blocks journal a cross shaft 28. The latter shaft has a gear or sprocket wheel 29 pinned to it adjacent to its inner end. This gear is driven by means of a pinion 30, with which it is meshed and which is driven by means of an electric motor 31. This motor may be bolted to a bracket 32 which is in turn fastened by means such as welding to the upright angle bar 19. The motor which is employed preferably is of the type which includes speed reducing means so that sprocket wheel 29 is driven at only approximately 10 to 15 revolutions per minute. (This speed may be varied as will be explained below.) The opposite end of cross shaft 28 also has a gear or sprocket wheel pinned to it which is similar to the one shown at 29. In addition, the upper cross shaft 27 also has a pair of gears or sprocket wheels 33—33 pinned to it. The respective sprocket wheels 29 and 33 at the inner end of the sign have a modified pitch chain 34 engaged around them and the two sprocket wheels or gears at the outer end of the sign also have a similar pitch chain 35 engaged around them. It will be seen, therefore, that the motor in driving cross shaft 28 through the pinion 30 and gear or sprocket wheel 29 drives both pitch chains.

The two pitch chains are modified to the extent that each link has a tab 36 turned over at a right angle from the inner one of the two linkplates. The two chains are identical except that the tabs extend from opposite sides, the tabs on the inner chain being on the left side as shown and the tabs on the outer chain being on the right side as shown. Hence, the tabs occur in aligned pairs at the opposite ends of the sign. These paired tabs provide the means of securing to the respective pitch chains a plurality of light occlusion bars 37. It is preferred that the light occlusion bars be formed of 0.010 inch to 0.020 inch aluminum sheet metal. In each instance, the light

occlusion bar has its opposite edges rolled over so as to provide two rounded channels 38 and 39 which are open toward one another and which extend the full length of the occlusion bar. These channels serve to stiffen the bars and they also provide a means of attaching the ends of the bars to the tabs 36. The channels 38 and 39 of each bar are joined by a flat web 40 which is just wide enough so that the two channels may embrace the opposite side edges of a tab 36, as shown in Figure 4. As shown, a pin or rivet 41 may be used to anchor the end of the bar to the tab. In the assembly of the chains and light occlusion bars, the two chains are adjusted upon the sprocket wheels so that the tabs on one chain are opposite the tabs on the other chain. The opposite ends of each one of the light occlusion bars are then engaged upon aligned sets of tabs. In order to do this, the light occlusion bars are bent which is permitted because of the lightweight metal of which they are formed. The ends of the bars then may be fastened to the tabs by the pins 41 if desired. With all of the light occlusion bars in place they present a gridwork of alternating open and closed areas in a belt-like assembly which can pass freely around the sprocket wheels on the upper and lower cross shafts 27 and 28.

The light occlusion bars mount and hold in place a plurality of light transmission strips 42 which are similar in cross section to the light occlusion bars having upper and lower rounded channels designated 43 and 44 respectively which are joined by a flat web 45. In the instance shown, the light transmission strips are slightly wider than the light occlusion bars although it will be appreciated that this difference is a matter of choice. The light transmission bars preferably are formed of thin, flexible plastic material which is of a thickness approximating the thickness of the aluminum material used in the light occlusion bars. The light transmitting strips are engaged upon the light occlusion bars by interlocking the channels which extend along their respective upper and lower side edges to the channels of adjacent light occlusion bars as shown in Figure 3. This may be done by sliding the light transmission strips onto the belt-like assembly of light occlusion bars from one end of the assembly. Thus, with all of the light transmission strips in place the belt-like assembly consists of alternating light blocking and light transmitting bands which extend across the assembly.

The sign is lighted by a plurality of fluorescent tubes 46 which are engaged at their opposite ends in fixtures 47 and 48 which may be mounted upon the upright angle bars 18 and 19 at the respective outer and inner ends of the sign. The fixtures may also include the ballast required for the operation of fluorescent light tubes. The fixtures are mounted upon the uprights 18 and 19 directly below the cross shaft 27 where they are in the center plane of the sign so that light emanates from them toward faces of the sign. It may be seen from Figure 2 that the light tubes are accessible through the opening at the outer end of the sign provided by the hinged frame member.

As has been suggested above the animated effects obtained in a particular installation are dependent upon many factors including the width of the light occlusion bars, the type of light transmitting strips employed, the speed of the motor, and the size, shape and number of light transmitting areas which are on the opposite faces of the sign. In the present instance, and only for purposes of illustrating the broad principles of the invention, Figure 1 shows parts of the two letters "G" and "N" which may be distinguished from the background of the sign by being made of transparent paint with a background being of an opaque paint. In addition, there are a plurality of small circular areas only two of which are identified by the numeral 49 which may be transparent. Hence, with the belt-like assembly of light occlusion bars and light transmission strips moving between the light source, as provided by the light tubes 46, and the face of

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the sign, the translucent letters "G" and "N" will appear to move as the alternating dark and light bands pass behind them. In addition, the small transparent areas 49 will appear to flash off and on resulting in a scintillating effect.

Obviously, the light transmitting strips may be made of different colors of plastic material, the relative sizes of the light occlusion bars and the light transmitting strips may be changed, and the light transmitting strips may have bands or areas painted or otherwise provided upon them to occlude light. In addition, the light transmitting strips may be processed so that they have angulated light transmitting strips. It will be appreciated by those skilled in the art that many other variations in these elements are possible to achieve other animated effects. One such variation of these elements is shown in Figure 5. In this instance, the light occlusion bars are the same as those shown in the other figures. However, in place of the formed light transmitting strips 42, a straight band of plastic material 50 is employed. The flexible nature of the plastic sheet material permits it to be bent into the form shown in Figure 2 so that the respective opposite side edges 51—51 are engaged into the channels 38 and 39 respectively of two adjacent light occlusion bars. The plastic strip thus straddles the space between the two light occlusion bars and gives the same effect insofar as this space is concerned that one of the strips 42 gives. In an animator employing this type of mount for the light transmission strips every other space between the light occlusion bars may remain open. It is found that this type of strip travels around the arcs at the top and bottom of the unit without binding and without unduly flexing.

From the above, it will be seen that I have provided an animated unit which may be used to animate both sides of an outdoor sign with the animating areas extending over substantially all of the faces at both sides of the sign. Furthermore, the belt-like assembly which I provide in the animator unit is subject to no appreciable wear during operation of the sign. The interlinked, rounded channels of the light occlusion bars and the light transmission strips permit the assembly to pass freely over the two pairs of sprocket wheels without binding and without a substantial amount of relative shifting movement of the bars and strips with respect to one another. The pitch chains in an assembly of this type should last indefinitely, because of the very light loads which they carry and because of the unusually slow speed at which they travel. Self lubricating, sealed motor units to drive the assembly are available which should last for three or more years without attention. The light occlusion bars carry very little weight and should also last indefinitely. The plastic light transmitting strips are subjected to no stresses and should also give years of trouble-free service in the sign. The only parts of the sign which might need replacing from time to time are the fluorescent tubes which are readily accessible through the hinged end of the sign and which may be checked periodically.

Although the invention has been disclosed by reference to an over-the-sidewalk type of sign, it will be appreciated that the animator unit may be employed as part of a large outdoor billboard type of sign and others. It is found that the animator can be made to cover a considerable area. In very large animators, the light occlusion strips may be made of heavier metal and support guides may be employed at the top and bottom of the unit to prevent the bars from sagging.

Having described my invention I claim:

1. An animator unit for an outdoor advertising sign, said animator comprising, rotatable members, an endless belt-like assembly having extended, spaced parallel runs at the front and back and being engaged around said rotatable members at the respective ends of said runs, said belt-like assembly including a pair of pitch chains at the opposite sides thereof, the respective pitch chains having

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mating attachment elements thereon, a plurality of elongated, substantially narrow light occlusion bars, said bars being engaged with mating attachment elements at their opposite ends upon the respective pitch chains in spaced parallel relationship, a plurality of elongated light transmitting strips, said light transmitting strips disposed parallel to the light occlusion bars, and the light transmitting strips and light occlusion bars configured to interengage at their side edges with the light transmitting strips attached to and supported by the light occlusion bars independently of any attachment to the pitch chains.

2. An animator unit for an outdoor advertising sign, said animator comprising, rotatable members, an endless belt-like assembly having extended, spaced parallel runs at the front and back and being engaged around said rotatable members at the respective ends of said runs, said belt-like assembly including a pair of non-stretchable, readily flexible carriers at the opposite sides thereof, the respective carriers having mating attachment elements thereon, a plurality of light occlusion bars, said bars being engaged with mating attachment elements upon said carriers at their opposite ends in spaced parallel relationship, a plurality of light transmitting strips, said light transmitting strips disposed parallel to said light occlusion bars, and the light transmitting strips and light occlusion bars configured to interengage along their side edges with the light transmitting strips attached to and supported by the light occlusion bars independently of any attachment to said carriers.

3. An animator unit for an outdoor advertising sign, said animator comprising an endless belt-like assembly having extended, spaced parallel runs at the front and back thereof, upper and lower pairs of sprocket wheels, said belt-like assembly including a pair of pitch chains at the opposite sides thereof engaged around said sprocket wheels at the ends of said runs, the respective pitch chains having mating attachment elements thereon, a plurality of light-weight metal bars fastened to the attachment elements upon the respective pitch chains at their opposite ends in spaced parallel relationship, a plurality of light-weight plastic light transmitting strips, and said light transmitting strips being attached to and supported by the light occlusion bars independently of any attachment to the pitch chains whereby the strips and bars may travel around the sprocket wheels with the chains without binding.

4. An animator unit for an outdoor advertising sign comprising a belt-like assembly having extended parallel runs at the front and back thereof and being engaged around pairs of sprocket wheels at the ends of said runs, said belt-like assembly including a pair of pitch chains having mating sets of attachment elements thereon, a plurality of light-weight metal bars, each metal bar being configured to provide a pair of inwardly turned channels along its opposite side edges, the opposite ends of said bars being engaged respectively with mating attachment elements on the chains in spaced parallel relationship, a plurality of light transmitting strips, each strip having inwardly turned channels similar in configuration to the channels on the metal bars and each strip having its channels thereon interlocked with the channels of adjacent metal bars, whereby the light transmitting strips are attached to the metal bars and supported thereby independently of any connection between the light transmitting strips and said attachment elements.

5. An animator unit for an outdoor advertising sign comprising a belt-like assembly having extended parallel runs at the front and back thereof and being engaged around rotatable members at the opposite ends of said runs, said belt-like assembly including a pair of spaced non-stretchable, flexible carriers having matching sets of attachment elements thereon, a plurality of light occlusion bars, each bar being configured to provide a pair of inwardly turned channels along its opposite side edges, the opposite ends of each light occlusion bar being en-

gaged with a matching set of attachment elements on the carriers, a plurality of colored, plastic light transmitting strips each strip having inwardly turned channels similar in configuration to the channels on the light occlusion bars and each strip having the channels thereon interlocked with the channels of adjacent light occlusion bars, whereby the light transmitting strips are attached to the light occlusion bars and supported thereby independently of any connection between the light transmission strips and the attachment elements.

6. An animator unit for an outdoor advertising sign comprising a rigid frame having upper and lower cross shafts rotatably journaled therein in spaced relationship, sprocket wheels mounted at the ends of the cross shafts, an endless belt-like assembly enclosing said frame, said belt-like assembly including a pair of pitch chains which are at the two sides of the assembly and which are engaged around the sprocket wheels, a plurality of mating sets of attachment elements on the respective pitch chains, a plurality of light occlusion bars each of which is fastened at its opposite ends to a set of mating attachment elements, a plurality of light transmitting strips, the light occlusion bars and light transmitting strips being configured to interengage with one another whereby the bars support the strips independently of any attachment of the bars to the chains, said bars and strips being arranged around the belt-like assembly alternately, a light source supported by the frame inside of said belt-like assembly whereby rays of light emanating from said source may pass outwardly through the light transmitting strip at both sides of the assembly, and means to drive the assembly whereby animating movement is imparted thereto.

7. An animator unit for an outdoor advertising sign comprising a rigid internal frame having rotatable means at its respective upper and lower ends, a belt-like assembly enclosing said rigid frame, said belt-like assembly including non-stretchable, flexible carriers which are at the two sides of the assembly and which are engaged around said rotatable means, a plurality of mating sets of attachment elements on the respective carriers, a plurality of light occlusion bars each of which is fastened at its opposite ends to a set of mating attachment elements whereby the bars are supported by the carriers, a plurality of light transmitting strips, the light occlusion bars and light transmitting strips being configured to interengage with one another, whereby the strips are supported by the bars independently of the carriers, said bars and strips being arranged around the belt-like assembly alternately, a light source attached to the frame inside of said belt-like assembly whereby rays of light emanating from said source may pass outwardly through the light transmitting strip at both sides of the assembly, and means to drive the assembly whereby animating movement is imparted thereto.

8. An animator unit for an outdoor advertising sign comprising a rigid frame, an endless belt-like assembly passing around and enclosing said rigid frame to provide two flat runs at the sides of the frame, means carried by the frame to support the assembly at the ends of said flat runs above and below said frame, a non-stretchable, flexible carrier at each side edge of the assembly, a plurality of mating sets of attachment elements on the respective carriers, a plurality of light occlusion bars each of which is fastened at its opposite ends to a set of mating attachment elements, a plurality of light transmitting strips, the light occlusion bars and light transmitting strips being configured to interengage with one another whereby the strips are supported on the bars independently of the carriers, a light source inside of said belt-like assembly, whereby rays of light emanating from said source may pass outwardly through the light transmitting strip at the two sides of the assembly, and means to drive the assembly whereby animating movement is imparted thereto.

9. In an animated advertising sign having display faces at the opposite sides thereof, an animator unit comprising a rigid frame disposed inside of the sign between the two display faces, an endless belt-like assembly running around the frame and having two flat parts in the run which are adjacent to the inner sides of the display faces, a light source mounted on the frame within the belt-like assembly, said belt-like assembly including non-stretchable, flexible carriers at the two ends thereof, a plurality of attachment elements on the carriers which are arranged in pairs opposite one another, a plurality of light occlusion bars, each bar having a pair of inwardly turned channels extending along its two sides, each light occlusion bar mounted upon a set of attachment elements, a plurality of light transmitting strips which are similar in configuration to the light occlusion bars, the channels at the two sides of a light transmitting strip being interlocked with the channels along the side edges of the two light occlusion bars which are adjacent to it, whereby the light occlusion bars support the strips and permit the belt-like assembly to travel around the turns at the top and bottom of the frame without binding.

10. An animator unit for an outdoor advertising sign comprising a rigid frame, a belt-like assembly enclosing said frame having extended runs at the front and back sides of the frame which are parallel with one another, rotatable means carried by the frame to support the assembly at the two ends of the parallel runs thereof, said belt-like assembly including non-stretchable, flexible carriers at the opposite side edges thereof, attachment elements on the carriers which are disposed in pairs across from one another, a plurality of light occlusion bars, each bar being engaged with a set of attachment elements on the carrier, a light source within said belt-like assembly disposed so that rays emanating therefrom may pass through the spaces between bars, means to drive the belt-like assembly in order to achieve animating movement, and a plurality of light-weight, colored plastic light transmitting strips, and each strip being attached to a pair of adjacent light occlusion bars to close the space therebetween.

11. An animator unit for an outdoor advertising sign comprising an endless belt-like assembly having a pair of pitch chains at the opposite side edges thereof, four sprocket wheels arranged in aligned upper and lower pairs, the chains engaged around said wheels and having fasteners thereon disposed in aligned pairs, a plurality of elongated, substantially narrow, light occlusion bars, the opposite ends of each bar being secured to an aligned pair of fasteners on the pitch chains, the opposite side edges of each bar being of rounded channel-like configuration with the channel-like configurations opening toward each other, a plurality of light-weight plastic light transmitting strips, each light transmitting strip having rounded channel-like configurations on its respective opposite side edges engaging with the channel-like configurations on the side edges of adjacent light occlusion bars, and said light transmitting strips being coextensive with the light occlusion bars over substantially the full lengths of the bars, but terminating at the ends short of the fasteners, whereby the light transmitting strips are supported by the light occlusion bars independently of any attachment to the pitch chains.

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