May 10, 1938. W. E. MacLAREN 2,117,186

MULTIIMAGE SIGN

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FIG. 1

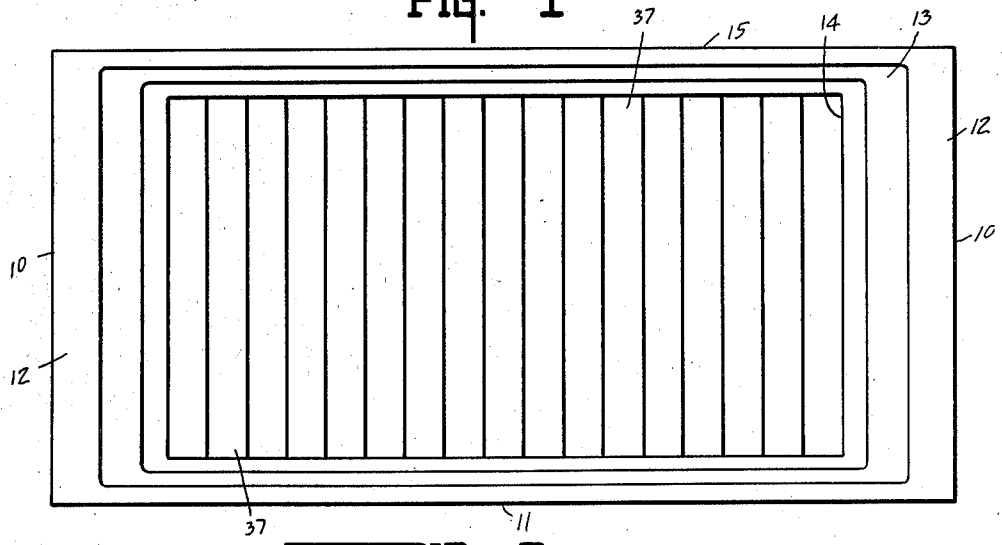


FIG. 2

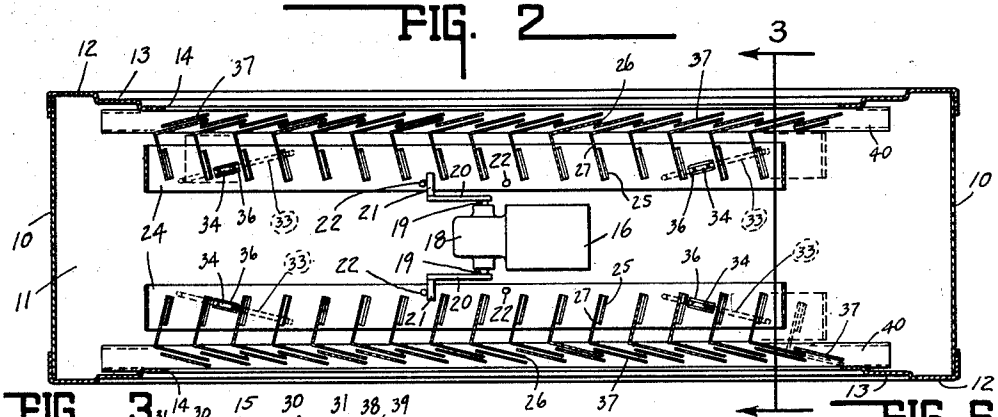


FIG. 3

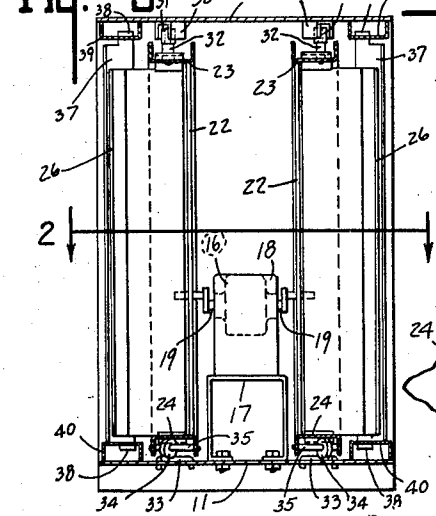


FIG. 4

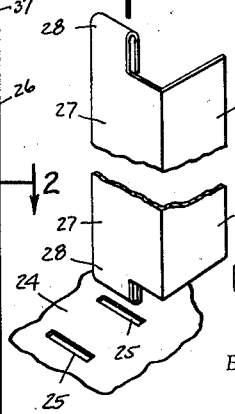


FIG. 5

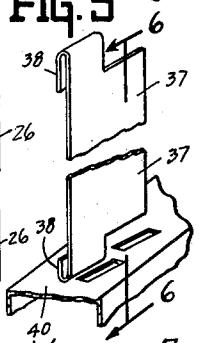
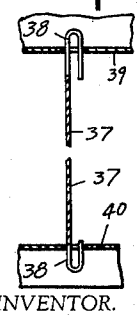


FIG. 6



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FIG. 7

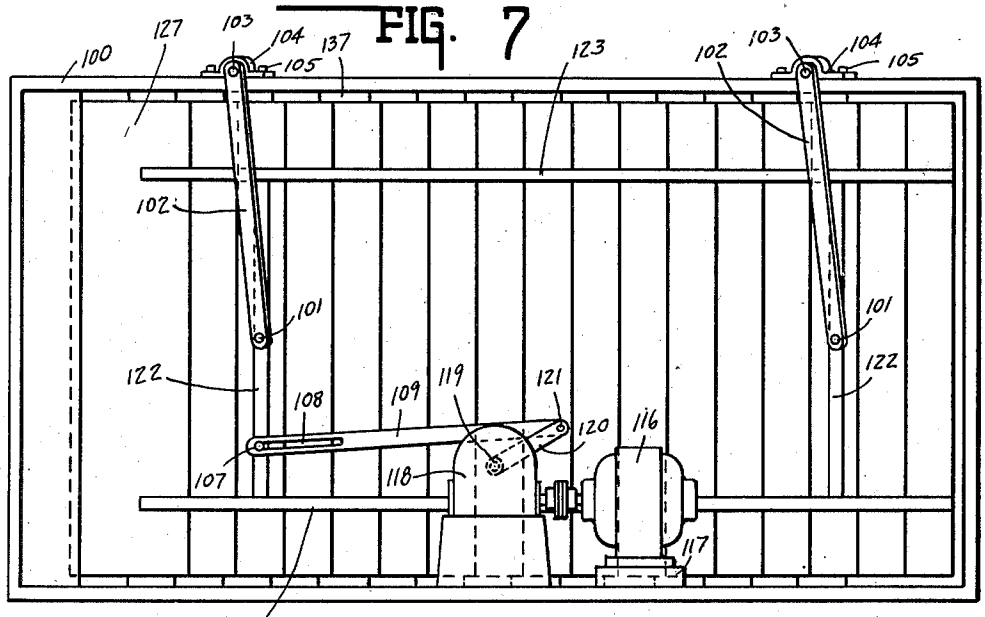
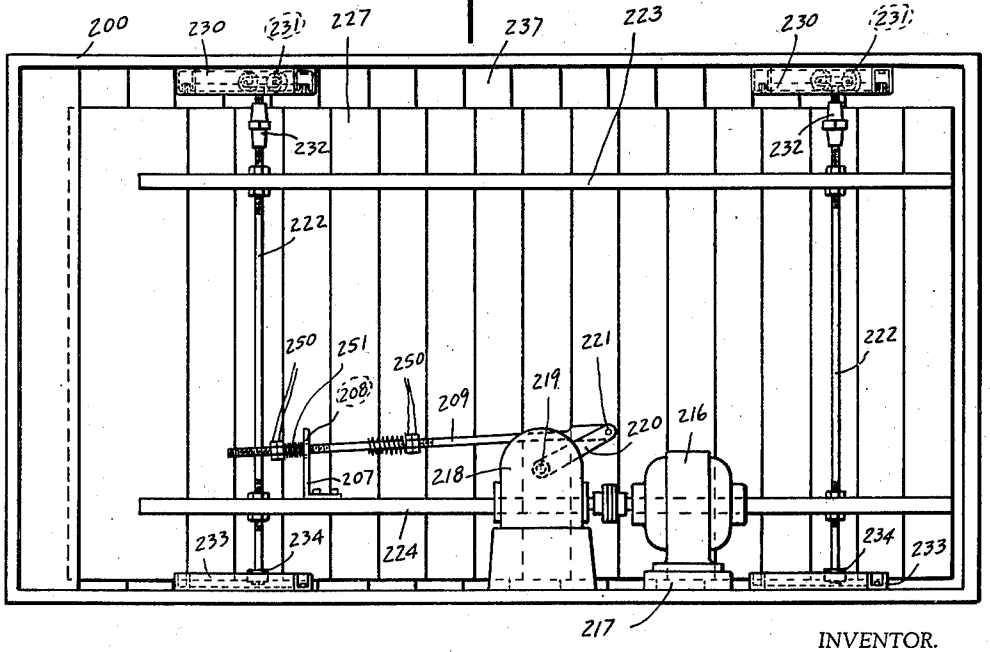


FIG. 8



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FIG. 9

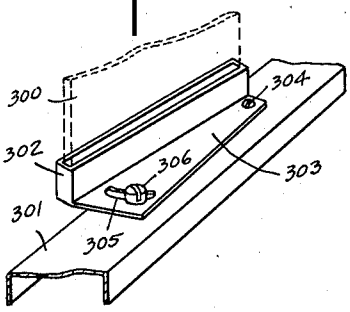


FIG. 10

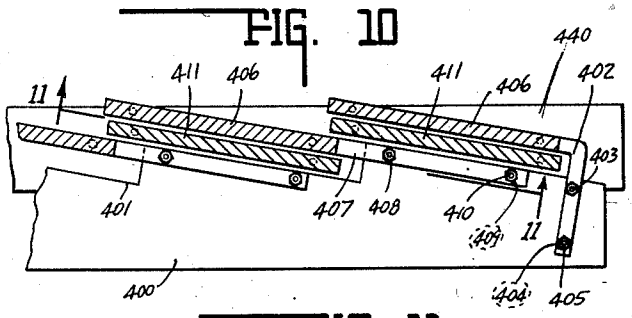


FIG. 11

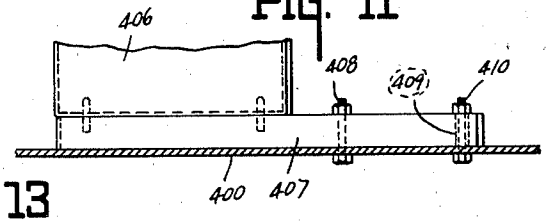


FIG. 12

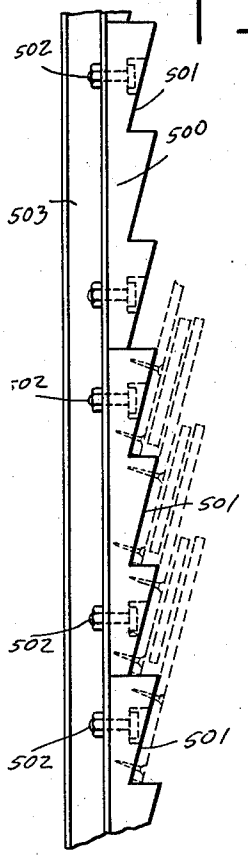
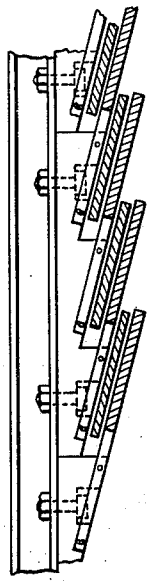


FIG. 13



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Patented May 10, 1938

2,117,186

UNITED STATES PATENT OFFICE

2,117,186

MULTIIMAGE SIGN

William E. MacLaren, Evansville, Ind.

Application December 19, 1934, Serial No. 758,153
Renewed November 22, 1937

20 Claims. (Cl. 40—62)

This invention relates to a sign structure which is capable of presenting at different times a plurality of different images.

The basic invention is disclosed as applied to a sign capable of producing two images for the same exposure.

The chief object of this invention is to provide an improved and simplified sign structure of the general character indicated and wherein the same is so constructed as to be capable of incorporation in relatively large sizes, particularly for outdoor use, wherein wind resistance is a material factor.

One feature of the invention consists in the provision of a power arrangement, whereby a continuous source of rotary power is utilized and translated into intermittent, reciprocatory power for securing sign section movement to secure the plurality of images from the sign construction.

Another feature of the invention consists in the specific form of mounting for the sign sections.

Another feature of the invention consists in the structural arrangement of the several parts associated with the movable sign sections, whereby the same are relatively frictionally mounted and guided for the purpose desired, and wherein the effective wind resistance is materially decreased.

Another feature of the invention consists in the adjustable and/or multiple group mounting of a detachable character for the sign sections.

Other features of the invention will be set forth more fully hereinafter.

The full nature of the invention will be understood from the accompanying drawings and the following specification and claims:—

In the drawings, Fig. 1 is a front elevational view of one form of sign structure embodying the invention.

Fig. 2 is a horizontal sectional view of the invention shown in Fig. 1 and illustrates the same to be of a dual exposure character.

Fig. 3 is a vertical sectional view taken on line 3—3 of Fig. 2 and in the direction of the arrows.

Fig. 4 is a perspective view of a portion of one of the movable sign section support members with one of the movable sign sections positioned adjacent thereto preliminary to securing the same together in operative relation.

Fig. 5 is a similar view of the stationary support for the stationary sign sections and a stationary sign section in juxtaposition thereto preliminary to final positioning.

Fig. 6 is a sectional view taken on line 6—6 of Fig. 5 and in the direction of the arrows and illustrates the stationary sign section associated with the upper and lower stationary sign section support members.

Fig. 7 is an elevational view of the rear of a sectional sign embodying the invention and illustrating a modified form of mounting and power connection for the movable sign sections.

Fig. 8 is a view similar to Fig. 7 and of a still further modified form of the invention.

Fig. 9 is a perspective view of a sign support section member and a sign section with an adjustable bracket support interposed therebetween, whereby the angle of inclination of the sign section to the plane of the sign opening can be adjusted.

Fig. 10 is a combination horizontal section and top plan view of a modified form of the sign section support arrangement.

Fig. 11 is a vertical sectional view taken on line 11—11 of Fig. 10 and in the direction of the arrows.

Fig. 12 is a combination horizontal section and top plan view of a detachable and multiple base or support member for supporting sign sections in group arrangement, permitting group replacement.

Fig. 13 is a view similar to Figs. 10 and 12 and of a modified form of invention.

In Fig. 2 of the drawings, 10 indicates two side walls, 11 a bottom wall, 12 two exposed walls having the border arrangement 13 defining an exposure or opening 14. A top 15—see Fig. 3—is also provided.

Herein associated with each aperture or exposure 14, is a sign structure and the two structures—see Fig. 2—are substantially identical, although reversed in positioning, since there is utilized but a single power unit.

Herein a motor 16 is suitably supported on a bracket 17 mounted upon the base 11 and is directly connected to a speed reduction device 18, which includes a shaft having oppositely projecting ends 19. Each end 19 mounts a crank 20, the offset arm 21 of which is positioned so as to alternately engage a pair of rods 22 that extend from an upper sign support member 23 to a lower sign section supporting member 24.

As shown clearly in Fig. 3, the members 23 and 24 are of channel shape and as shown clearly in Fig. 4, the web of the channel 24 is slotted or perforated as at 25.

Herein each sign section 26 includes an angular extension 27 and the angularity therebetween is substantially 90°. Each extension 27 includes a U-shaped extension or tongue 28 nestable in the

registering slots 25 in the upper and lower support members 23—24. This type of construction insures a fixed anchorage for the sign section in predetermined position, since the U-shaped tongue extension 28 is normally constrained to a greater spread between the arms thereof than is provided for by the width of the slot 25.

As shown clearly in Figs. 2 and 4, each support member 23 or 24 has its slots positioned in spaced relation and in biased relation—that is, in spaced relation to each other and in biased relation to the plane of the exposure, so that each of the sign sections 26 will lie substantially parallel in offset partially overlapped and parallel relation.

Suitably secured to the top 15 is a plurality of spaced and parallel track ways, herein shown in the form of channels 30. A roller 31 carried by post 32 suitably secured to the top channel 23, rides in the channel 30 and said channel 30 is biased with respect to the plane of the opening 14 and substantially in the direction indicated by the rail 33 (dotted in Fig. 2) carried by the bottom plate 11 and upon which rides a grooved roller 34, carried by shaft 35 secured to the arms or flanges of the bottom member 24. The grooved roller 34 may, if desired, project through the slot 36 in said member 24. In this manner the entire movable sign section structure may be reciprocated to and fro, as well as towards and away from the opening and the direction of movement is substantially parallel to the biasing of the sign sections 26.

The stationary sign sections are indicated by the numeral 37 in Fig. 2. They are spaced apart a sufficient distance to permit the passage of the sections 26 therebetween. The sign sections 37 are suitably secured at the top and bottom by means of the U-shaped extension 38 to the top and bottom support members 39 and 40, in turn suitably secured to the top 15 and bottom 11, respectively. The members 39 and 40 are shown as inverted channels and the same are positioned at a greater distance apart than the channels 23 and 24 and are also shown positioned forwardly thereof with respect to the aperture 14. All of the sign sections are arranged in parallel and spaced relation and each, as viewed through the opening, partially overlaps the rearward edge of the adjacent section.

Since each sign structure for each of the openings 14 is substantially similar, except for the reverse arrangement previously noted, no further description of the other sign structure is believed necessary.

In operation, the crank arm 19 engages one of the rods 22 and moves the movable sign sections in the direction toward said rod—that is, as shown in Fig. 2, the movable sign sections have been moved from the exposed position, wherein they overlap the exposed portions of the stationary sections to the nested position where they lie behind the exposed portion of the stationary sign sections, so as to expose the image on stationary sign sections. When projected into exposed position by the crank arm 20 engaging the right hand rod 22, the movable sign sections will overlap the exposed portions of the stationary sign sections and will produce the second image.

It is quite apparent also that if desired, the space between any two stationary sign sections may be sufficient to provide for a third or fourth movable sign section to be nested therein. It will, of course, be understood that when so arranged, the second and third group of movable sign sections will be suitably supported and moved in timed relation relative to the other movable group of sign sections.

Herein the two movable groups for the two signs, are shown simultaneously movable. When a different arrangement is desired, the relative positions of the two crank arms may be modified so that any other different time cycle may be obtained with respect to the four images to be produced. The spacing of the two rods between the upper and lower support members for the movable sign sections naturally is such that with reference to the diametrical throw of the crank, the desired action is obtained. Thus, the relative spacing between the two rods may also determine the time phase relationship of the respective multiple images for each sign unit.

In Fig. 7, there is illustrated a modified form of the invention and briefly, in this form, 137 indicates the stationary spaced sign sections and 127 the movably spaced sign sections, which have their forward ends nested between the spaced stationary sections. The frame is indicated by the numeral 100. The support for the movable sections and to which all of them are secured, consists of a pair of horizontally directed members 123 and 124 connected by the vertical portions 122.

Midway between this supporting frame work for the movable sign sections and pivoted at 101, is a link 102, in turn carried by a pivot or rock shaft 103, supported in a bearing 104 suitably secured to the frame 100, as at 105. Two of these structures are illustrated and the axes of said bearings are parallel to each other and are biased relative to the vertical plane of the sign, so that, the desired nesting and exposing of the movable sign sections with reference to the stationary sign sections will be obtained.

This form of the invention also includes a modified form of power arrangement. It will, of course, be understood that a duplicate sign structure can be provided similar to that specifically illustrated in Fig. 7 and faced back to back therewith and operated from the single source of power, as illustrated in Fig. 2.

Herein said single source of power includes the electric motor 116, suitably supported as at 117 and driving a speed reducer mechanism 118, the shaft 119 of which supports a crank arm 120 which rotates and the crank pin 121 is connected to the connecting rod or link 109, having the elongated slot 108 therein, in which rides a pin 107 carried by one of the members 122. In this form of the invention, the provision of the slot 108 has the function of permitting the sign section to remain in its extreme positions during a certain period of rotation, either in the nested position or in the exposed position. Within the range of the throw of the crank, the length of the slot 108 may be such as to obtain desired time phase relationships between the two images.

In Fig. 8 a still further modified form of the invention is illustrated, the numeral 200 indicating the frame, 237 the stationary sign sections, 227 the movable sign sections suitably secured to the frame comprising the horizontal members 223—224, and the vertical members 222. Each vertical member 222 is provided at its upper end with an adjustable extension, adjustable as at 232 and the same terminates in a trolley structure 231 that rides in a guide 230 carried by the top of the frame 200. The bottom of each member 222 herein is shown terminating in a roller 234 that rides in a channel guide 233 secured to

the bottom of the frame 200. The guides 233 and 230 are parallel. The pairs of these guides at the top and bottom are not only parallel but are also biased with respect to the plane of the opening in the sign.

In this form of the invention, the continuous source of power 216 is supported at 217 on the base of the sign and drives a speed reduction device 218 including the shaft 219 having the crank arm 220 terminating in the crank pin 221 which reciprocates to and fro the connecting rod 209 that extends through a slot 208 in a bracket 207 carried by the lower frame member 224.

Adjustably mounted on said rod is a pair of spaced stops each in the form of a pair of nuts 250 and said adjustable stops are positioned on opposite sides of the bracket or slotted plate 207. Interposed between said stops and said plate and concentric with the rod and upon each side of the plate is a coiled cushion spring 251. The purpose of said cushion springs is to cushion the shock so that relatively quick action or guide movement is obtained in the movement of the movable sign sections as a group from the exposed to the nested positions and vice versa.

The form of the invention shown in Fig. 8 may be duplicated, if desired, and the other movable sign sections similar to the arrangement shown in Fig. 2, may be driven from the same single source of power such that the movable sign sections may be operated simultaneously or at different intervals, as before set forth.

It has been found that the angle of inclination of the several sign sections of the sign structures shown in Figs. 1 to 8, inclusive, is preferably somewhere between 12° to 16° with the variation approximately 13° to 15°. This inclination is sufficient to permit the wind, and the like, to readily pass through the sign so as to reduce the effectiveness of any wind force to a minimum. It is also a sufficient inclination to approximate the highly desirable parallel positioning to obtain the desired ultimate visual effect of a complete image.

In Fig. 9 there is illustrated a modified form of construction which can be applied to either the removable or stationary sign sections. Herein, the numeral 300 indicates the sign section, 301 the main support therefor, similar to the lower plate 24 or the lower plate 40 or both. Each sign section is adjustably associated with its support, as well as detachably associated therewith.

The bracket includes a socket 302 that includes a flange 303 pivotally mounted at 304 upon the support 301. An arcuate slot 305 concentric with the pivot 304 receives a guide and retaining pin in the form of a headed screw 306, positioned in longitudinal alignment with respect to the support 301 and the pivot 304. The angularity of the sign section relative to the longitudinal axis of the support 301 can thus be adjusted. It, of course, is understood, if desired, the upper end of the sign section may be similarly mounted.

In Fig. 10 and Fig. 11, a further modified form is illustrated, in which material is economized. In this form, 400 indicates the base with angular notches 401 in its forward face. An angle member 402 is pivoted at 403 upon the base 400 and the member 402 includes an arcuate slot or elongated hole 404 that receives a clamping and adjusting bolt 405 carried by the plate 400. In this form of the invention, this angle strap serves as a support for the sign section 406 which is of movable or stationary character, as desired, depending upon whether member 400 is movable or stationary.

Another similar sign section 406 immediately to the left thereof, is similarly secured to the base 400 by means of the straight bar 407 pivoted as at 408 and the bar includes the arcuate slot 409 and the clamping bolt 410 carried by the plate 400 adjusts the angularity of the second sign section with respect to the first sign section, so that the two sign sections are in partially offset relation and in spaced and parallel relation and partially overlapped. In the space between the two sign sections, there is room for an intermediate sign section 411 which may be similarly mounted upon another plate 440 of similar character and positioned beneath plate 400. Either one of these two plates may be the movable plate.

In Fig. 12 a modified form of the invention is illustrated and in this form of the invention it may be considered as an extension of the form of the invention shown in Figs. 10 and 11, to wit, the plate 500 has the regular notches 501 and the plate 500 is detachably secured as by the bolt and nut constructions 502 to a support member 503. Each section 500 is adapted to accommodate a plurality of sign sections. The sign may be readily changed at the desired intervals by merely removing the bolt and nut constructions 502, the auxiliary plates 500 together with the several sign sections, carried thereby. Each plate 500 may carry the adjustable sign section support structures illustrated in Figs. 10 and 11 such as the angle bar 402 and the straight bars 407, together with the pivotal supports and arcuate slots, etc.

Stationary and movable sign section groups may be thus provided with rapidly interchangeable auxiliary bases to permit rapid interchanging of designs or images when the contract period expires and the new sign image is to be exposed. The adjustments provided in the structure shown in Figs. 10 and 11, when incorporated in the structure in Fig. 12, insure the rapid adjusting of the biased inclination of the several sign sections to insure positive clearance between the sign sections of the different groups. Such a composite structure is illustrated in Fig. 13.

The invention claimed is:—

1. In a multi-image sign, the combination with a frame having an image exposing opening therein, a sign group including a plurality of stationarily mounted sign sections arranged in parallel, spaced and partially overlapping relation and but slightly biased to the plane of the opening, another sign group including a plurality of similarly arranged sign sections, each nestable between the adjacent pairs of stationary sections, spaced means connecting the second group sections for group movement, the rearward edges of the second group sections terminating rearwardly of the first group sections, and means for reciprocating the second group to expose the image thereon when overlapping the exposed and image portion of the first group, said reciprocating means including a continuously rotating source of power, and a rotary to reciprocatory transformation connection including a lost motion arrangement for relatively quick projection and retraction movements of the second group sections.

2. In a multi-image sign, the combination with a frame having an image exposing opening therein, a sign group including a plurality of stationarily mounted sign sections arranged in parallel, spaced and partially overlapping relation and but slightly biased to the plane of the opening, another sign group including a plurality of

similarly arranged sign sections, each nestable between the adjacent pairs of stationary sections, spaced means connecting the second group sections for group movement, the rearward edges of the second group sections terminating rearwardly of the first group sections, and means for reciprocating the second group to expose the image thereon when overlapping the exposed and image portion of the first group, said reciprocating means including a continuously rotating source of power, and a rotary to reciprocatory transformation connection, including a lost motion arrangement for relatively quick projection and retraction of the second group sections, the lost motion arrangement comprising a crank arm, a slotted connecting rod, and a pin in the slot.

3. In a multi-image sign, the combination with a frame having an image exposing opening therein, a sign group including a plurality of stationarily mounted sign sections arranged in parallel, spaced and partially overlapping relation and but slightly biased to the plane of the opening, another sign group including a plurality of similarly arranged sign sections, each nestable between the adjacent pairs of stationary sections, spaced means connecting the second group sections for group movement, the rearward edges of the second group sections terminating rearwardly of the first group sections, and means for reciprocating the second group to expose the image thereon when overlapping the exposed and image portion of the first group, said reciprocating means including a continuously rotating source of power, and a rotary to reciprocatory transformation connection, including a lost motion arrangement for relatively quick projection and retraction of the second group sections, the lost motion arrangement comprising a crank arm, a slotted support, a connecting rod slidable in the support slot, and stop means upon the rod upon opposite sides of the support.

4. In a multi-image sign, the combination with a frame having an image exposing opening therein, a sign group including a plurality of stationarily mounted sign sections arranged in parallel, spaced and partially overlapping relation and but slightly biased to the plane of the opening, another sign group including a plurality of similarly arranged sign sections, each nestable between the adjacent pairs of stationary sections, spaced means connecting the second group sections for group movement, the rearward edges of the second group sections terminating rearwardly of the first group sections, and means for reciprocating the second group to expose the image thereon when overlapping the exposed and image portion of the first group, said reciprocating means including a continuously rotating source of power, and a rotary to reciprocatory transformation connection, including a lost motion arrangement for relatively quick projection and retraction of the second group sections, the lost motion arrangement comprising a crank arm, a slotted support, a connecting rod slidable in the support slot, and adjustable stop means upon the rod upon opposite sides of the support.

5. In a multi-image sign, the combination with a frame having an image exposing opening therein, a sign group including a plurality of stationarily mounted sign sections arranged in parallel, spaced and partially overlapping relation and but slightly biased to the plane of the opening, another sign group including a plurality of similarly arranged sign sections, each nestable between the adjacent pairs of stationary sections, spaced means connecting the second group sections for group movement, the rearward edges of the second group sections terminating rearwardly of the first group sections, and means for reciprocating the second group to expose the image thereon when overlapping the exposed and image portion of the first group, said reciprocating means including a continuously rotating source of power, and a rotary to reciprocatory transformation connection, including a lost motion arrangement for relatively quick projection and retraction movements of the second group sections, the lost motion arrangement comprising a crank arm, a slotted support, a connecting rod slidable in the support slot, adjustable stop means upon the rod upon opposite sides of the support, and yielding means carried by the rod upon each side of the support and operatively associated with the stop means.

6. In a multiple image sign, the combination of a group comprising a plurality of parallel and spaced sign sections arranged in partially overlapping relation and biased to a forward plane, another group comprising a plurality of similarly arranged sign sections, the latter being nestable between the first mentioned sections, and exposable when covering the first mentioned sections for second image effect, a second pair of similar groups, a common spacing means connection for each group of nestable sections, a single motive means for positively moving both nestable groups into exposed and nested positions, and means pivotally associated with the spacing means for the second group providing substantially frictionless support and guidance in the biased direction.

7. In a sign of the character described, the combination of a sign section support member, a plurality of sign sections secured thereto in parallel and spaced relation and biased relative to the longitudinal axis of the support, and means detachably as well as individually securing each of said sections to said member, said means adjustably mounting the sign sections relative to the degree of biasing, said member including a plurality of successive notches in its forward face.

8. In a sign of the character described, the combination of a support section support member, a plurality of auxiliary support members, means detachably and individually securing each of the same to the support member, and a plurality of sign sections, each detachably and individually secured to each of said auxiliary support members in spaced, parallel and partially offset relation.

9. In a multiple image sign, the combination of a group comprising a plurality of parallel and spaced sign sections, arranged in partially overlapping relation and biased to a forward plane, another group comprising a plurality of similarly arranged sign sections, the latter being nestable between the first mentioned sections and exposable when covering the first mentioned section for second image effect, means connecting all of said second mentioned sections together for simultaneous movement, support means for the first mentioned sections, power operated motive means operatively connected to the second mentioned sections for alternately and positively moving same into exposed and nested position, and movable parallelogram support means for movably supporting the second mentioned sections upon the support means.

10. A device as defined by claim 9, characterized by said motive means including a rotary to

intermittent reciprocatory motion transforming arrangement.

11. A device as defined by claim 9, characterized by said motive means including a rotary to intermittent reciprocatory motion transforming arrangement, said arrangement including a lost motion connection for relative quick movement of the second mentioned sections from one position to the other.

12. In a multiple image sign, the combination of a group comprising a plurality of parallel and spaced sign sections, arranged in partially overlapping relation and biased to a forward plane, another group comprising a plurality of similarly arranged sign sections, the latter being nestable between the first mentioned sections, and exposable when covering the first mentioned sections for second image effect, a second pair of similar groups, a common spacing means connection for each group of nestable sections, a single motive means for positively moving both nestable groups into exposed and nested positions, and means pivotally associated with the spacing means for the second group providing substantially frictionless support and guidance in the biased direction, including a plurality of spaced tracks at the top and bottom of the sign and guide rollers confined thereby and carried by the spacing means.

13. In a multiple image sign, the combination of a group comprising a plurality of parallel and spaced sign sections, arranged in partially overlapping relation and biased to a forward plane, another group comprising a plurality of similarly arranged sign sections, the latter being nestable between the first mentioned sections, and exposable when covering the first mentioned sections for second image effect, a second pair of similar groups, a common spacing means connection for each group of nestable sections, a single motive means for positively moving both nestable groups into exposed and nested positions, and means pivotally associated with the spacing means for the second group providing substantially frictionless support and guidance in the biased direction, including a plurality of spaced tracks at two opposite sides of the sign, and guide rollers confined thereby and carried by the spacing means.

14. In a sign of the character described, the combination of a sign section support member, a plurality of sign sections secured thereto in parallel and spaced relation and biased relative to the longitudinal axis of the support, and means detachably and rigidly securing said sections to said member and detachably mounting said sections relative to the degree of biasing.

15. In a sign of the character described, the combination of a sign section support member, a plurality of sign sections secured thereto in parallel and spaced relation and biased relative to the longitudinal axis of the support, and means detachably and rigidly securing said sections to said member and detachably mounting said sections relative to the degree of biasing, said member including a plurality of successive notches in its forward face.

16. In a sign of the character described, the combination of a sign section support member, a plurality of sign sections secured thereto in parallel and spaced relation and biased relative to the longitudinal axis of the support, and means detachably and rigidly securing said sections to said member and detachably mounting said sections relative to the degree of biasing, said member including a plurality of successive notches in its forward face, and a common support member to which a plurality of notched members are detachably secured.

17. In a sign of the character described, the combination of a support section support member, a plurality of auxiliary support members, means detachably securing the same to the support member, a plurality of sign sections secured to each of said auxiliary support members in spaced, parallel and partially offset relation, and angle adjusting means interposed between the auxiliary support and each of the sign sections supported thereby.

18. In a multiple legend sign construction, the combination with a frame having a legend exposing opening therein, of a movable group of sign sections, a frame structure for said group supporting the sign sections thereof in parallel and spaced relation and biased to the plane of the opening, another and adjacent group of sign sections similarly spaced and biased and relatively stationary with respect to the opening, sign sections of adjacent groups having an interfitting nesting relation therebetween, a pair of parallel links each pivotally connected at one end to the frame structure and at the opposite end to the frame, said links, frame and frame structure constituting a parallel motion support for the movable group of sign sections, and power means operatively connected to the movable group for moving the movable sections into exposed relation.

19. A device as defined by claim 18, characterized by said power means including a rotary to intermittent reciprocatory motion transforming arrangement whereby the movable group is positively and alternately moved into exposed and nested positions.

20. A device as defined by claim 18, characterized by said power means including a rotary to intermittent reciprocatory motion transforming arrangement whereby the movable group is positively and alternately moved into exposed and nested positions, said arrangement including a lost motion connection for relatively quick movement of the movable sections from one position to the other.

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