

## [54] ADVERTISING BOARD

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[21] Appl. No.: 7,484

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Assistant Examiner—J. H. Wolff

## [30] Foreign Application Priority Data

Jan. 30, 1969 Germany .....P 79 04 533.1

[52] U.S. Cl. ....40/35, 40/77.7

[51] Int. Cl. ....G09f 11/02

[58] Field of Search .....40/35, 44, 68.4, 77.4-77.8

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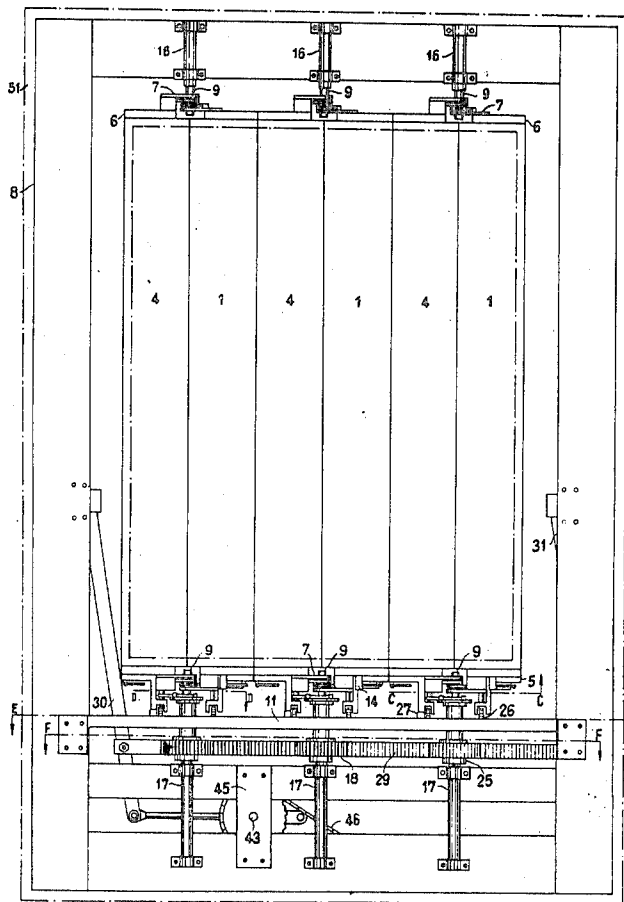
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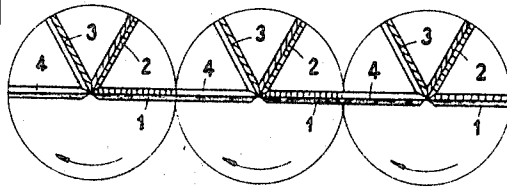
### ABSTRACT

An advertising board includes a plurality of groups of plates placed close by. In each group the plates are set up in a semicircle movable round the common axles. The plates standing on the straight edges of the semicircles, form together a good sight-surface of the advertising board. The number of plates in each group equals the number of different plate positionings and different sight-surfaces. The mechanism that changes position of the plates consists of a revolving and steering system.

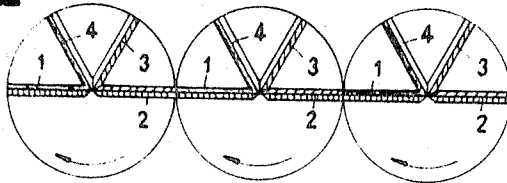
5 Claims, 20 Drawing Figures



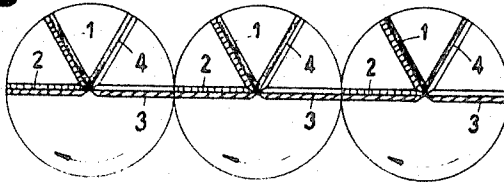
**Fig. 1**



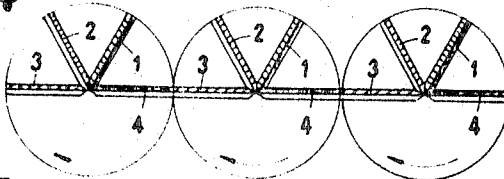
**Fig. 2**



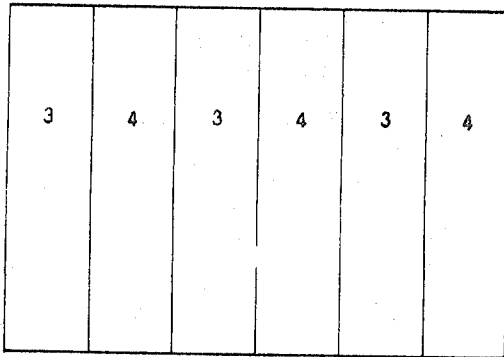
**Fig. 3**



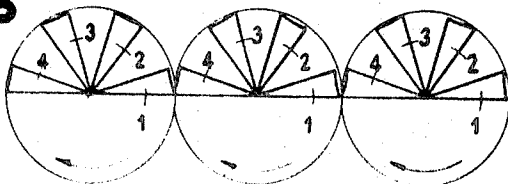
**Fig. 4**



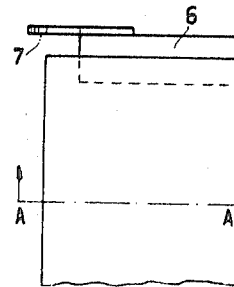
**Fig. 5**



**Fig. 6**



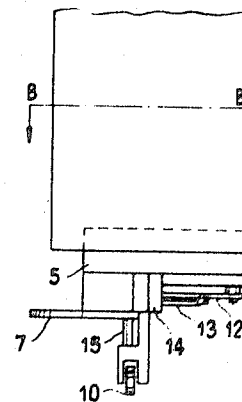
**Fig. 7**



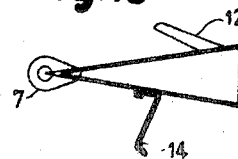
**Fig. 8**



**Fig. 9**

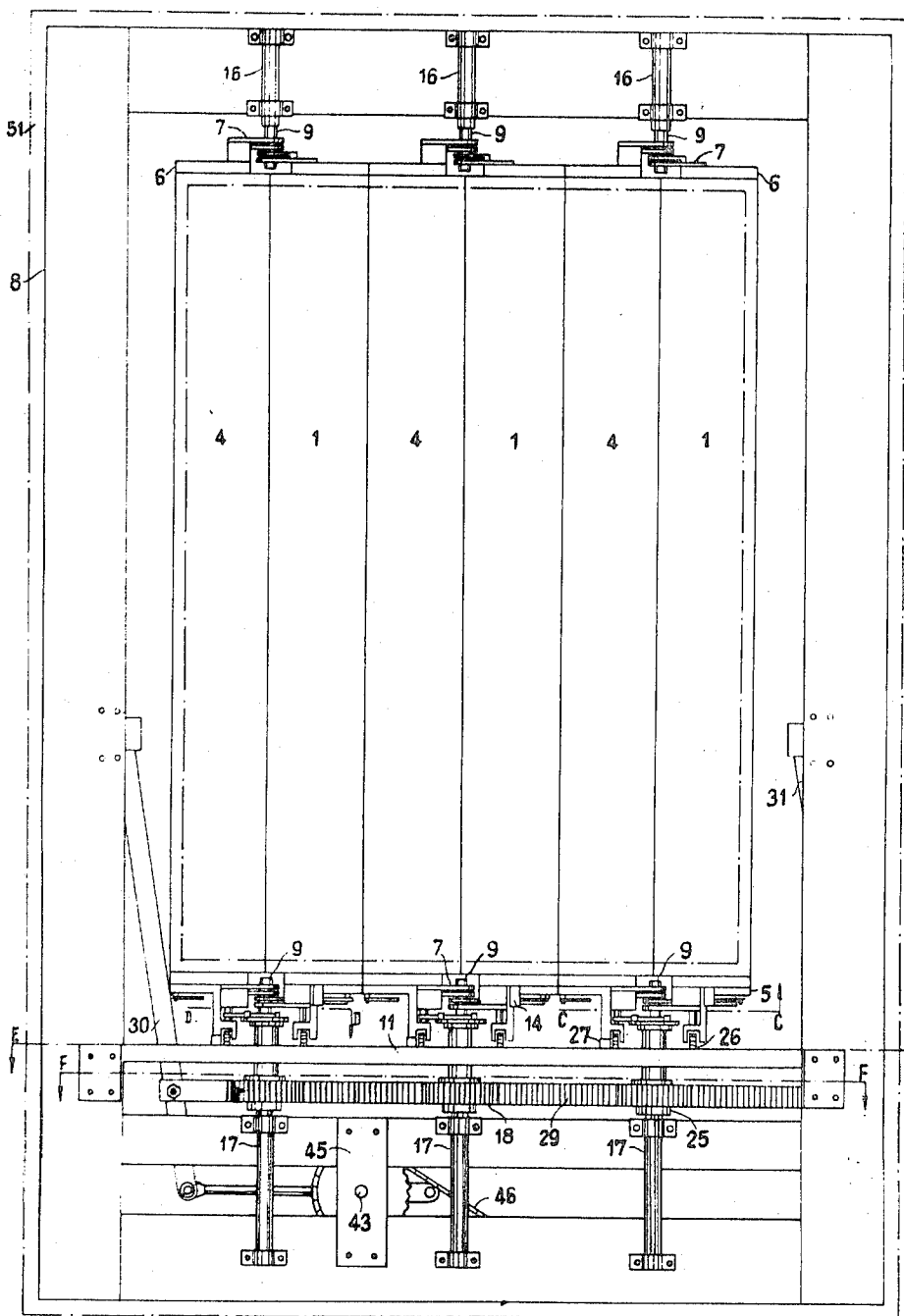


**Fig. 10**



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**Fig. 11**



*Applicant:  
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Fig.12

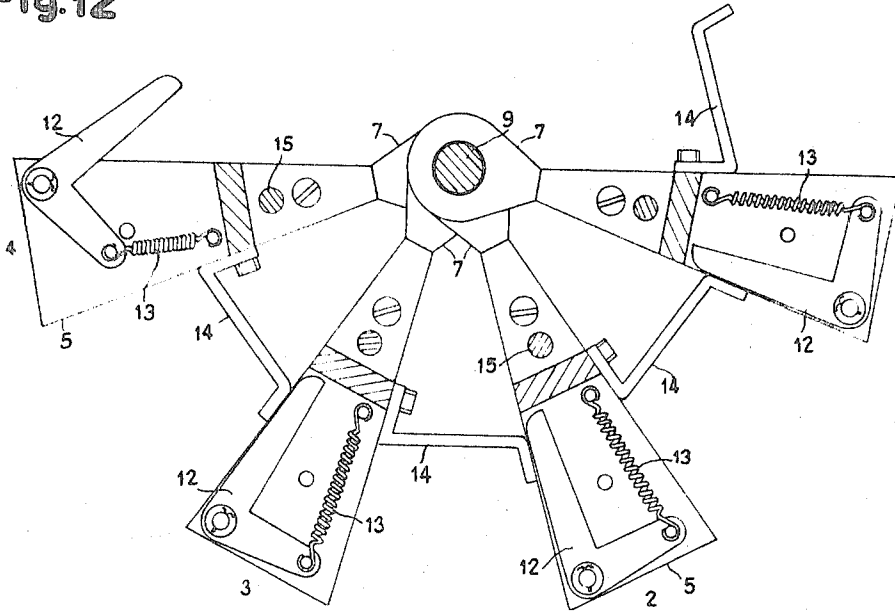


Fig.13

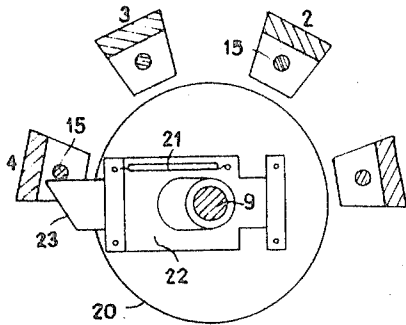


Fig.14

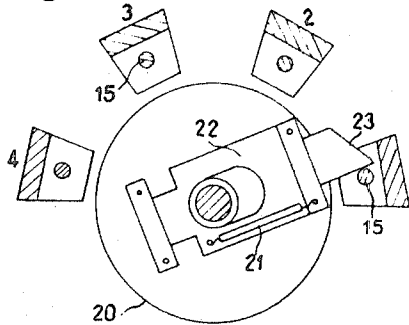
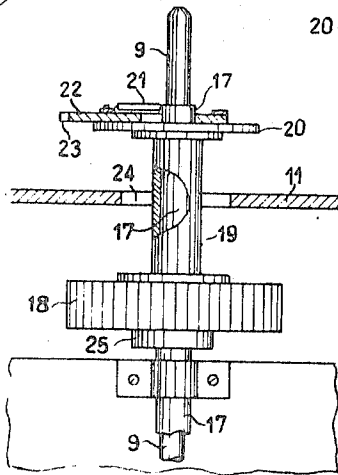


Fig.15



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Fig. 16

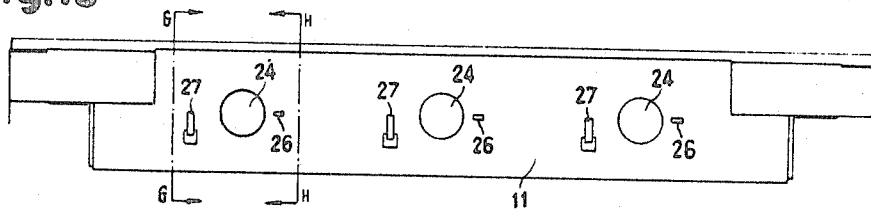


Fig. 17

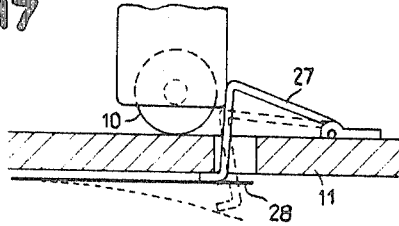


Fig. 18

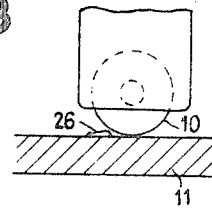


Fig. 19

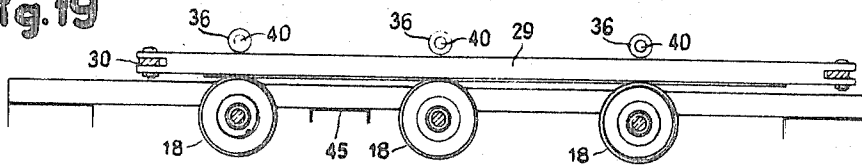
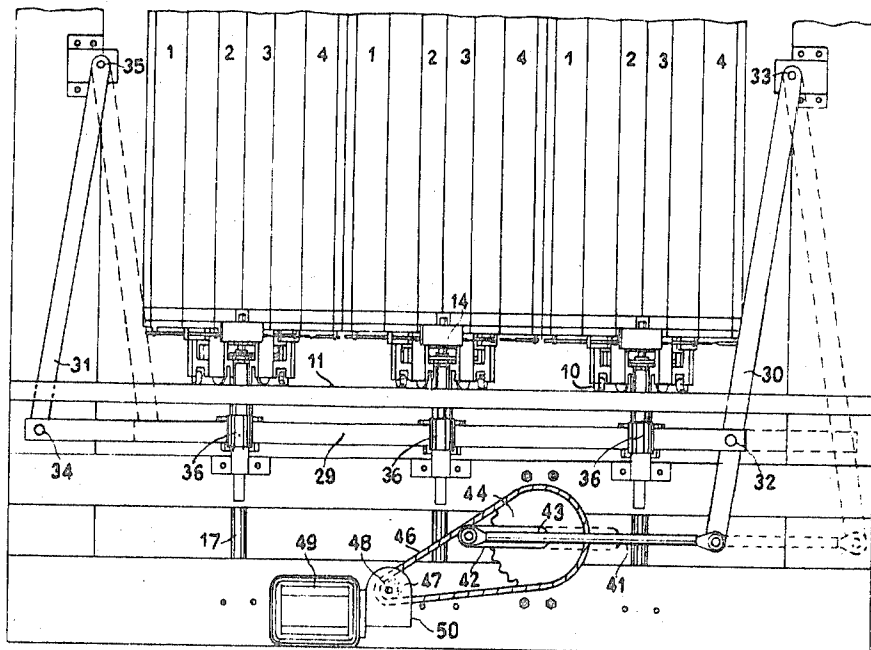


Fig. 20



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## ADVERTISING BOARD

## BACKGROUND OF INVENTION

## 1. Field of the Invention

The invention concerns an advertising board with a sight-surface e.g., in form of a picture on the front side of the sight-elements of the board which is formed by the interchangeable sight-elements set near by one another which form the sets of movable sight-elements of the board. These sight-elements in each of these sets are spaced equally and for rotation about a common axis extending substantially along one edge of said sight-elements. When by operation of suitable steering means, one sight-element in every set rotates by 180° it changes its position and covers the neighboring sight-element positioned behind it on the sight-element and opens to view that next sight-element, which rotating slowly takes place of the preceding sight-element on the sight-surface. In this way the sight and the picture are changed by other sight-elements and other faces of sight-elements.

## 2. Description of the Prior Art

The boards of such construction show many faults. The plates that form generally the sight-surface of the board cannot be put sufficiently up in their groups one to another because of the individual thickness of every plate; in their common center there is not place enough and therefore they ought to be spaced properly one from the other and this forms too large slots in the sight-surface of the board. Besides, because of lack of place in the center of the semicircle as well as on the semicylindrical surface of each group, the plates must be thin, but then they bend and the surface of the board becomes deformed; when there are many plates in one group arises reciprocal pressure of the eyes, fixing the plates rotationally on the common axes, that causes too great friction rendering the turning round more difficult. Besides, the used revolving mechanism is not of simple construction and of dependable operation.

## SUMMARY OF THE INVENTION

According to the invention to render an adequate possible close spacing of the sight-elements in the center of the semicylindrical surface of each set and to avoid forming of too large slots in the sight-surface of the board, as well as to make possible an act positioning of the sight-elements in the sight-surface of the boards, the sight-elements are shaped in such a manner that in the transversal cross section each sight-element enlarge more and more, beginning from its edge along which it is rotationally mounted. In other words, said cross section is of triangular configuration. In this way the sight-elements are stiffened by making them thicker at their external edges. The sight-elements shaped in this way have the form of a prism of two opposite and equal faces, of rectangular shape and a more shorter third one placed at the periphery of the set. To avoid the reciprocal pressure between the sight-elements of a same set, in the area of their common rotational axis, the sight-elements are provided with rolls on their lower parts the intermediary of which they are supported on a bearing plate of the frame of the board and on which they may turn round said axis. Each set is provided with a driving member that rotates the sight-elements round their axes and is coupled with suitable power means and transmitting means which are common for all the set of sight-elements of the board.

## BRIEF DESCRIPTION OF DRAWINGS

FIG. 1 to 4 show schematically the cross section of the advertising board consisting of three sets of sight-elements, each of them of four sight-elements. In the drawing four different positions of said sight-elements are shown.

FIG. 5 shows the sight surface of the board formed by the sight-elements in their position visible in FIG. 4.

FIG. 6 shows schematically in a cross section the sight-elements of the board shaped in form of a prism.

FIG. 7 shows the upper part of a sight-element of a prism, and FIG. 8 the section along the line A—A of FIG. 7.

FIG. 9 shows the lower part of a sight-element of a prism, and FIG. 10 the section along the line B—B of FIG. 9.

FIG. 11 present the front view of the board and its sight-surface.

FIG. 12 shows the section along the line C—C, and FIGS. 13 and 14 the section along the line D—D of FIG. 11, but FIG. 14 shows the driving member of the sight-elements in a different position.

FIG. 15 shows the revolving means pertaining to a given set of sight-elements.

FIG. 16 shows the frame of the board according to section E—E of FIG. 11.

FIG. 17 shows a sectional view of said board on line G—G, of FIG. 16 and FIG. 18 a sectional view on line H—H of FIG. 16 with a part of the bearing plate with the roll.

FIG. 19 shows a sectional view along line F—F of FIG. 11 and FIG. 20 represents a schematic view of the lower part of the advertising board seen from the rear of the board, showing the steering means, i.e., the power and transmitting means which actuate the various driving members.

The advertising board shown schematically in FIGS. 1 to 5 consists of three set of sight-elements each of them having four sight-elements 1,2,3 and 4 which keep the same relative positions in all sets. On FIG. 1, the sight-elements 4 and 1 form together the sight-surface of the board. The result of the successive rotations of the plates is that their positions in the sets change; at the first single rotation of the driving member the sight-elements marked 1 take now places of the sight-elements 4, the sight-elements 4—the places of the sight-elements 3, the sight-elements 3—the places of the sight-elements 2, and the sight-elements 2—the places of the sight-elements 1 (FIG. 2). In this position the sight-surface of the advertising board will be formed by the sight-elements 1 and 2. Will that rotation be repeated, then the sight-elements 2 will turn round by 180° and the other sight-elements by 60°; the sight-surface of the board will be changed and it will be changed and it will be formed by the plates marked 2 and 3 (FIG. 3). After another single rotation of the sight-elements the sight-surface will be changed again and will be formed by the sight-elements 3 and 4 (FIG. 4 and 5). Will they be rotated in the same way for the fourth time, they will return to their initial positions, which they had occupied before the first change of their places and the sight-surface will be formed again by the sight-elements 4 and 1 (FIG. 1). Each side element, as it can be seen in the drawing, enters by turns, with each face to form the sight-surface of the board.

The sight-elements 1, 2, 3 and 4 forming the three sets of the advertising board shown in the drawings (FIG. 6 to 20) which can be made e.g., of a prism are at their lower ends provided with a bearing plate 5 and at the upper ends with a socket 6 (FIG. 7 and 9). These bearing plates and these sockets are provided with eyes 7 set on the axle 9, common for each set and are fixed at their upper and lower parts to cross-members of the frame 8 and held vertically in sets side by side one to the other (FIG. 11). The eyes 7 of every set of sight-elements are arranged in their bearing plates and sockets in this way, that the distances between them along the axle 9 are equal as it is shown in FIG. 11 and 12. The bearing plate of each sight-element is provided with a roll 10; it is fixed on the bearing plate by a fork holder. The sight-elements rest on their rolls on a supporting plate, which is a part of the frame 8, and the rolls turn on it round the axle (FIG. 9, 11, 20). To reduce the bumping force of the moving and the stationary sight-elements during the change of the sight-surface of the board and the bearing plates 5 are provided with shock absorbers comprising angle levers 12 and spiral springs 13. Besides there are provided bumpers 14 fixed at the bearing plates 5 to keep equal spacings between the sight-elements (FIG. 12). At each bearing plate 5, above the roll 10, a fixed spindle 15 is provided for cooperating with the driving member of the revolving means (FIG. 9). The upper and lower axes 9 are bedded in tubes 16 and 17 fastened to the crossbars of the frame 8. The tubes 17 at the bottom of the frame 8 have not only got to pro-

vide the bearing for the axle 9 but serve as well as axles of the driving members moving round the sight-elements of the sets. The revolving means of each set comprises a gear 18 fixed by the sleeve 19 with the disc 20 assembled together with it on the tube 17 (FIG. 15). The disc 20 is provided with a driving member consisting of a slider 22 which is maintained in its operative position shown on FIG. 13 and 14 by the spring 21; the oblique nose 23 of this slider protrudes beyond the disc and projects beyond the spindles 15 of the bearing plates 5 (FIG. 13 and 14). For each set of sight-elements there is a round hole 24 on the supporting plate 11 through which pass without touching it; the tube 17 with the axle 9, as well as the sleeve 19 joining the gear 18 with the disc 20 (FIG. 11, 15 and 16). The gear 18 rests on the ring 25 fixed to the tube 17, holding it at its proper level. With each revolving installation, cooperate two stop members: a sill 26 and a hinged element 27 cooperating with the flat spring 28 (FIG. 16 to 18). The steering means are connected to the gears 18 by the intermediary of the rack 29 meshing with said gears (FIG. 11). The rack 29 is connected by a knuckle 32 at one of its ends with the lever 30 by a knuckle 34 at its other end with the arm 31; the arms 30 and 31 are respectively articulated on the frame 8 at points 33 and 35 thereof, and the distances between knuckles 32 and 34 of the rack 29 and between the points 33 and 35 being equal, as well as the distances between point 33 and knuckle 32 and between point 34 and knuckle 35 (FIG. 20); therefore the rack keeps during the run an horizontal position. To secure the proper adherence of the rack 29 to the gears 18, rolls 36 are rotationally mounted about the stationary axles 40 which adhere to the smooth side of the rack 29 (FIG. 19). The lever 30 is connected at its lower end by a knuckle with one end of the rod 41 of the crank 42 fixed to the sprocket-wheel or gear 44 the axle 43 of which is rotationally mounted in the crossbar 45 of the frame 8 (FIG. 11 and 20). The sprocket-wheel 44 is coupled by a chain 46 with the pinion 47 set up stationary on the axle 48 of the gear box 50 driven by the electric motor 49. All the parts of the advertising board are covered externally except the sight-surface by a frame element 51 (marked in FIG. 11) which is a part of the frame 8.

The above described advertising board of plates operates as follows:

The sight-surface of this advertising board is formed, as shown in FIG. 1 and 11, by the sight-elements and 1 of the three sets. The revolving means including the steering system keep the final position, shown in FIG. 11 and 20, after the sight-surface of the board was changed. The angle levers 12 of the shock absorbers on the sight-elements 1, 2, 3 are pressed in by the bumpers 14 and their springs 13 stretched, and therefore the sight-elements 1, 2, 3 and 4 of each set repulse one another. But this does not cause the sight-elements to move because the sight-elements 4 are blocked by the hinged element 27, and the sight-elements 1 by the sills 26 (FIGS. 11, 12, 17 and 18). The nose 23 of the slider 22 of each revolving means is close to the spindle 15 of every sight-elements 4; and the arm of the lever 30 keeps a limit angular position corresponding to a first dead point the crank 42 (FIG. 11, 13 and 20). When the electric motor 49 is switched on, it rotates uniformly the sprocket wheel 44 by means of the pinion 47 46. Therefore the crank 42 executes a semirevolution and, moves the lever 30, by the intermediary of the rod to its other limit angular position and said lever 30 pulls the rack 29, which turns simultaneously round their axles 17, the gears 18.

The revolving movement of the gear 18 causes simultaneously the identical revolving movement, by the intermediary of the sleeve 19, the disc 20 and the slider 22. Thus, the nose 23 of said slider withdraws gradually in each set from the spindle 15 of the sight-element 4 (FIG. 13) and approaches the spindle 15 of the sight-element 1. At the end of the rotating movement in said circular direction the nose 23 rubs with its oblique side the spindle 15 of the sight-element 1 and is moved towards the axle 9 the spring 21 being thus compressed by the translation of the slider 22. Consequently, the nose 23 comes

behind the spindle 15 (FIG. 14). In consequence of owing to the action of the spring 21 on the slider 22 the nose comes again in its outward position and remains abutting on the spindle 15 of the sight-element 1 (FIG. 14).

After said semirevolution crank 42 of the sprocket wheel 44 is at its second dead point, and executes a second semirevolution up to the first dead point. The lever 30 returns to its initial position moving the rack 29 in a direction opposite to the direction followed in its previous movement. The gears 18 revolve together with the disc 20 in a direction opposite to the direction followed during their previous movement, while pulling the spindle 15 clasped by the nose 23 of the slider 22, as well as the sight-elements 1 to which belongs said spindle (FIG. 14). At the same time the roller 10 of the sight-element 1 pass over the sill 26. The angle levers 12 and the springs 13 stretched by them repulse reciprocally, the so that spacings between the sight-element increase and the sight-elements 2 take the places of the sight-element 1. After the sight-elements approached the sight-elements 4 their bumpers 14 press on the angle levers 12 of the shock absorbers of the sight-elements 4 and press them gradually, so that under the stretching force of their springs 13, the sight-elements 4 make a fraction of revolution on their axles and their places are taken by the sight-elements 1. Fork-shaped protrusions of the bearing plate 5 of the sight-elements 1 moving under the hinged elements 27 retract them, by pressing the springs 28, said hinged elements returning in their stop position, after passage of said protrusions, so that the sight-elements 1 are blocked against rotation in returning direction.

The sight-surface of the board is formed now by the sight-elements 1 and 2, as it is shown in FIG. 2 and remains unchanged when the crank executes another semirevolution. Then, after a further semirevolution of the crank the picture of the sight-surface changes in the above-mentioned manner previously described. Said picture is formed now by the sight-elements 2 and 3, as shown in FIG. 3. At each subsequent full revolution of the crank the picture of the sight-surface of the board is always changed since it includes, in each set, one of the sight-faces of a new sight-element as well as a new sight-face of the sight-element previously displayed (FIG. 1 to 4).

As it is known when the uniform rotational speed of the electric motor 49 is changed by the crank and the rod 41 into a reciprocating translatory movement so that the speed of the driving members or sliders 22 changes periodically with each semirevolution of the crank by increasing from 0 to a certain maximum and then decreasing to 0. The highest speed is at the middle period of the run. The acting power of such a crank changes also periodically but is inversely proportional to the speed changes so that the highest power acts at the lowest speed.

Moreover, the pressing in of the sight-elements into their new positions against the resistance of the bumpers goes on with continually decreasing speed. Consequently said revolving means enable a quiet, shockless and reliable operation of the sets of sight-elements.

The above-described advertising board is not limited to three sets of plates each consisting of four sight-elements. The number of sets, as well as the number of sight-elements in every set is not arbitrary. If the advertising board consists of more than three sets then the number of individual revolving means is suitably greater, but if the sets consist of more than four sight-elements then the spacings between them must be smaller and therefore the bumpers suitably shorter.

Depending on the function of the elements of the board they can be made of different materials e.g., wood, metal, plastics etc. The advertisements and announcements can be painted directly on the sight-faces of the sight-elements of the board or placards and advertisements glued on said sight-elements. They may be of course suitably cut before or after fixing.

I claim:

1. In an advertising board exhibiting a plane sight-surface and comprising a plurality of sets of interchangeable sight-ele-

ments having two opposite rectangular sight-faces liable to constitute said sight-surface and having the same dimensions at least on a same set, the sight-elements of each set being rotatably mounted on a frame along one of the longitudinal side of said rectangular faces around a common axis located in a plane determining a sight-side corresponding to said sight-surface and a non-sight-side, the axes of said sets running parallel with one another, and the distance between the axes of two consecutive sets being equal to the sum of the common width of the rectangular faces of the elements of one of the said two sets and of the common width of the rectangular faces of the elements of the other of said two sets, revolving means for revolving each set of sight-elements, each said revolving means being of a type communicating a reciprocating rotary movement of a constant angular value to a driving member rotatably mounted around the common axis of each set of sight-elements, retractable connecting means for each set of sight-elements, each said retractable connecting means rigidly and successively connecting the consecutive sight-elements of each set and said driving member for rotation therewith during the rotary movements of said driving member in only one circular direction, spacers between any group of two consecutive sight-elements of each set, stop means mounted on said frame along said plane, said stop means comprising a first stop member and a second retractable stop member for each set of sight-elements, adapted to be engaged by said sight-elements and located at diametrically opposite places with respect to said axis for maintaining all the sight-elements of the corresponding set between said two stop members, on the non-sight-side of said plane with two consecutive sight-element abutting respectively on said two stop members and all said sight-elements abutting on one another, by the intermediary of said spacers, on said non-sight-side said stop members being adapted to be inactive only when said driving member revolves in the above circular direction so that at each single rotation in said direction, the sight-element abutting on said first stop member may pass beyond said stop member at the beginning of said rotation in said rotation in said direction and beyond said second stop member at the end of said rotation in said direction, the improvement according to which said axes and sets of sight-elements are vertically placed, each said sight-element is constituted by a prism of triangular horizontal cross section having an edge substantially placed along the axis of the corresponding set of sight-elements, the two faces of said prism which intersect along said

edge being radially disposed, with respect to said axis, to constitute said two opposite rectangular sight-faces, said sight-element being provided with at least one roller at its lower side, said roller having its rotational axis parallel to said lower side and permanently resting on said frame to support said sight-element and being allowed to roll thereon during the rotary movement of said sight-element.

2. Advertising board according to claim 1, wherein each said spacer is rigidly connected, at one of its ends, to one of the sight-elements of said group, the other one of said sight-elements carrying shock-absorbing means liable to be depressed by said spacer for absorbing shocks between said sight-elements, and said revolving means comprise steering means communicating to said driving members an increasing speed at the beginning of said single rotation in said direction and a decreasing speed at the end of said single rotation in said direction.

3. Advertising board according to claim 2, wherein said steering means are common for all said driving members and comprise a gear-crank-rod system the gear of which is rotated by a constant speed motor, transmitting means connected to the end of said rod opposite to said crank on the one hand and to a rack of a rack and gears system on the other hand, to reciprocate said rack, said rack being substantially perpendicular to said axes and parallel to said plane and the gears of said system, in meshing engagement with said rack, being each rigidly connected to a corresponding one of said driving members for rotation therewith.

4. Advertising board according to claim 1, wherein said first stop member consists of a sill engageable by said roller and having an height sufficient to block the sight-element supported by said roller against free rotation of said sight-element but insufficient to prevent the passage of said roller over it when said sight-element is rigidly connected to and actuated by said driving member.

5. Advertising board according to claim 1, wherein said second retractable stop member consists of an hinged element having a retractable position and a stop position, and comprising a substantially vertical face engageable by said roller in said stop position, and of resilient means urging said hinged element in said stop position, the retractable strength of said resilient means being such as to allow the passage of said roller over said stop member, by depressing it, when said sight-element is rigidly connected to and actuated by said driving member.

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