

Oct. 10, 1961

E. CHAN

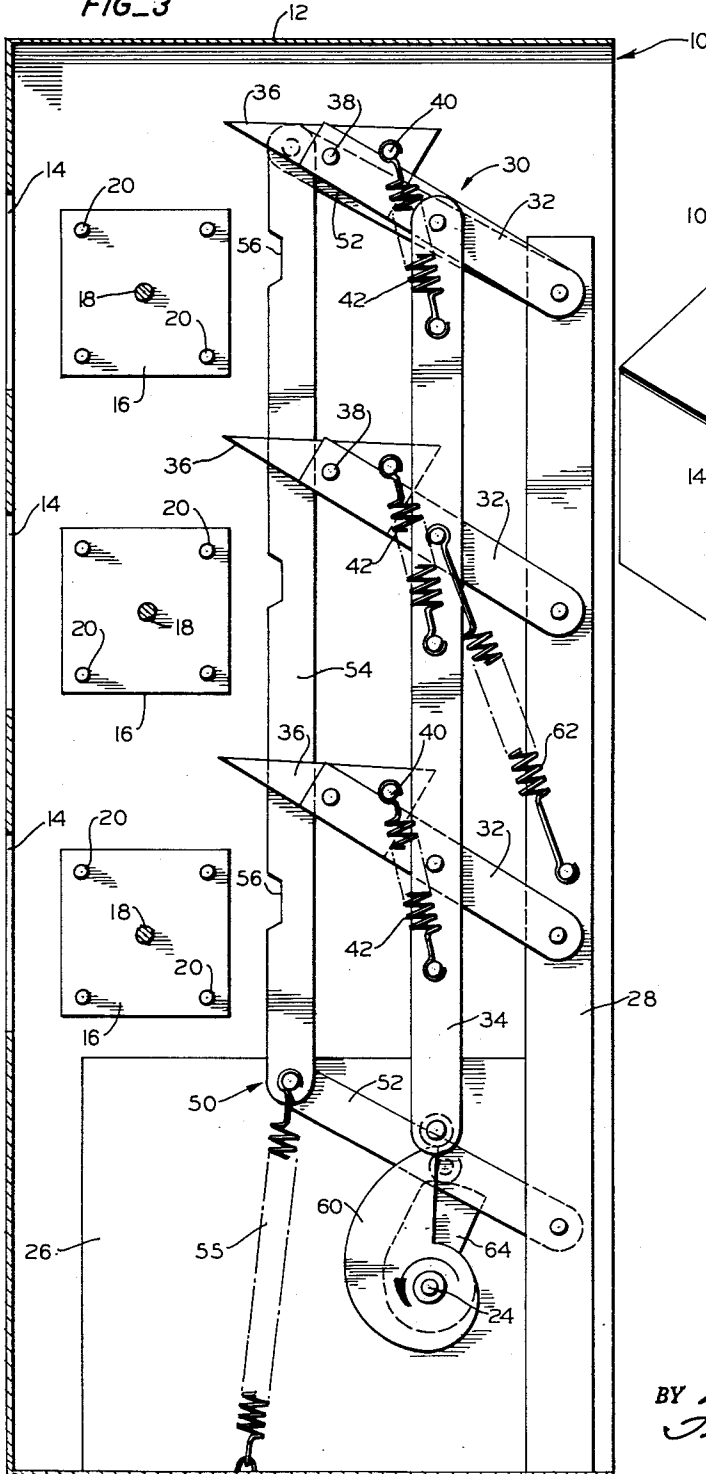
3,003,268

SIGN CONSTRUCTION

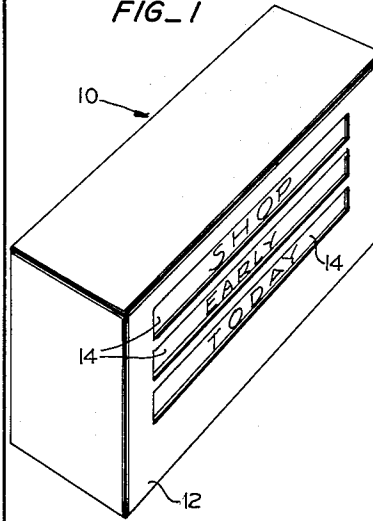
Filed June 18, 1959

2 Sheets-Sheet 1

FIG\_3



FIG\_1



INVENTOR.  
EDMUND CHAN

BY *Fluker & Swain*

ATTORNEYS

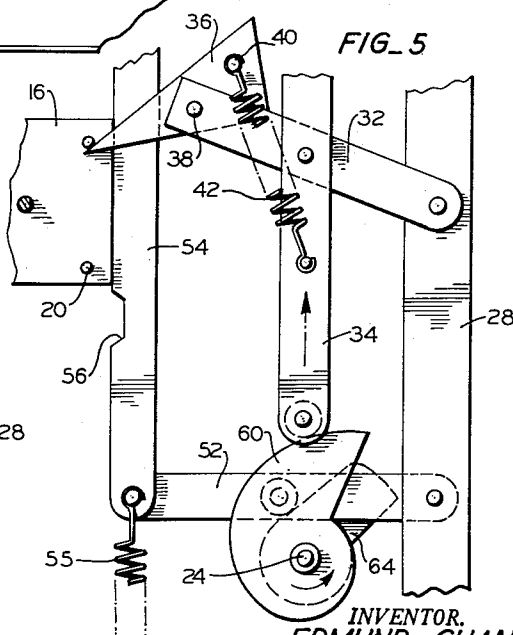
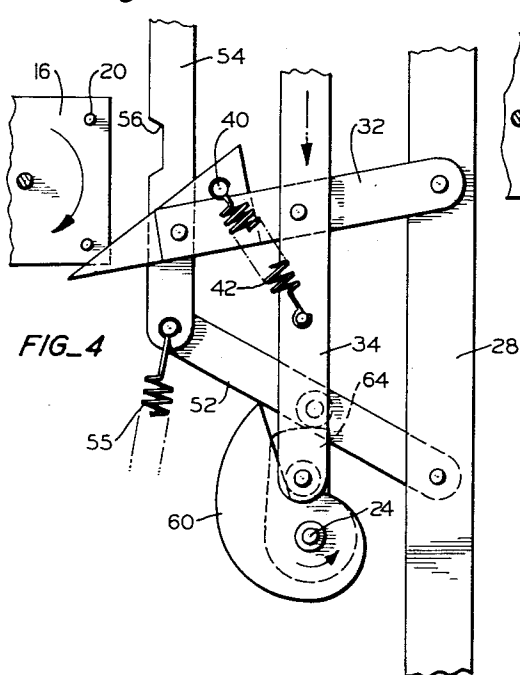
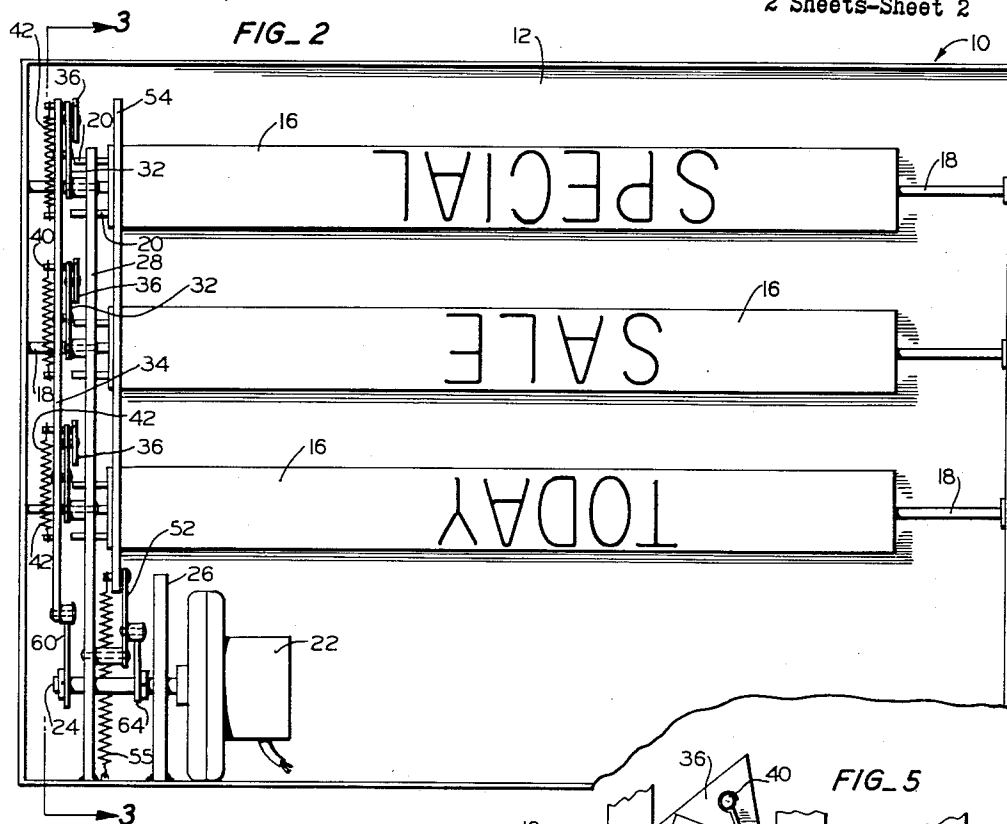
Oct. 10, 1961

E. CHAN  
SIGN CONSTRUCTION

3,003,268

Filed June 18, 1959

2 Sheets-Sheet 2



INVENTOR.  
EDMUND CHAN  
BY *Fleker & Swain*  
ATTORNEYS

1

3,003,268  
SIGN CONSTRUCTION  
Edmund Chan, 1917 Broderick St.,  
San Francisco 15, Calif.  
Filed June 18, 1959, Ser. No. 821,202  
10 Claims. (Cl. 40—33)

This invention relates generally to a sign construction for use in advertising or display activities, for example, in self-service markets, department stores and the like.

In general, it is an object of the invention to improve upon the construction of such devices, particularly with respect to means making possible a wide variety of word combinations for display.

It is another object of the invention to provide a sign construction having a plurality of rotatable sign elements, each having a plurality of sides bearing word-forming indicia, by which a plurality of successive substantially nonrepetitive word combinations can be made available for display.

Additional objects and advantages of the invention will appear from the following description and from the drawings in which:

FIGURE 1 is a view in perspective of a sign construction embodying the invention;

FIGURE 2 is a view in rear elevation of the sign construction of FIGURE 1;

FIGURE 3 is a view in vertical section on an enlarged scale, along the line 3—3 of FIGURE 2; and

FIGURES 4 and 5 are detail views, like FIGURE 3, showing different stages in the operation of the device.

Generally stated, a sign construction of the present invention comprises a plurality of rotatably mounted sign elements by which a wide variety of word combinations can be continuously made available for display. Preferably the sign elements are arranged in parallelism and mounted for rotation about horizontal axes. The elements each have a plurality of sides bearing word-forming indicia which are most conveniently provided on a sign element of regular polygonal cross section. An actuating mechanism which may include a plurality of pivotally mounted strikers operates to rotate the sign elements in unison, to initiate the formation of a new word combination. Arrester means then operate to simultaneously engage and stop the rotation of the elements, and to permit display of a particular word combination. Synchronizing means are also provided to insure a desired successive operation of the actuator means and arrester means, preferably in a continuous cycle.

In a typical sign construction, for example, as illustrated, three sign elements of substantially square cross sectional configuration are employed. Each of the four sides of a sign element is provided with a different word or words, compatible in phonetic relationship with the words of the other sign elements. The words of the sign element are chosen so that any combination of three sides presented by the three elements forms a sentence. As will be understood by one skilled in this art, the number of possible word combinations is a geometric progression according to the following formula

$$S^n = W$$

where S is the number of sides of a sign element, n is the total number of sign elements in the device, and W is the

2

number of word combinations possible. By way of illustration, the illustrated device employing three sign elements each having four sides will provide sixty-four possible word combinations for display.

Referring to the drawings in detail, 10 indicates generally a sign construction including an external housing 12. The housing can be self-supporting and have an open back and a plurality of display openings 14 in a front face. Supported for rotation within the housing are a plurality of sign elements 16. These sign elements are supported on spindles 18 which preferably are arranged in substantial parallelism. At their operating ends, the sign elements are provided with projecting rods 20. As will appear, these rods are adapted to engage with the actuating means causing rotation of the elements.

Any suitable source of power such as the electric motor 22 can be employed to operate the sign. In the illustrated apparatus, the motor has a drive shaft 24 journaled in the upstanding supports 26 and 28, the latter also forming the means of support for the actuator and arrester mechanisms.

Referring to FIGURE 3, the actuator mechanism 30 is shown to comprise a plurality of actuator arms 32 mounted for pivotal movement relative to the support 28. The arms 32 are adapted to operate in unison by means of a vertical actuator bar 34 pivoted to the arms at their midpoint. Each arm also supports a striker 36 for pivotal movements about a pivot point 38. These strikers preferably have enlarged rear portions each provided with a stop 40. The latter are connected to the actuator bar 34 by means of springs 42 which bias the strikers into a striking position. The strikers function on downward pivotal movement of the actuator bar 34 to engage the projecting rods 20 of the sign elements and to rotate the latter sharply in a clockwise direction. During this movement, the stops 40 lock the strikers against pivotal movement relative to the arms 32. On upward or reverse movement of the actuator bar, the strikers function as pawls and pivot against the pressure of the springs 42 about the pivot points 38. When the strikers have passed the rods 20 of the sign elements, they are returned by the springs to the striking position (FIGURE 3).

Assuming rotation of the sign elements (as a result of actuation by the means 30) the arrester mechanism 50 functions to simultaneously engage and stop the rotation of the sign elements. The result is a random selection of a word combination to appear through the windows 14 of the housing.

The illustrated arrester mechanism includes the arms 52, likewise pivoted on the support 28. These arms carry the vertically extending arrester bar 54 at their outer ends. As will be understood, downward pivotal movement of the arrester mechanism causes the bar 54 to move laterally into a position of engagement with the sign elements 16 as particularly illustrated in FIGURE 5. Preferably the bar 54 is notched, as at 56, to permit passage of the rotating corners of the sign elements, just prior to engagement for display. This insures perpendicular alignment of the outer display faces of the sign elements, in the arrested display position.

It is a feature of the invention that the striking or spinning action of the mechanism 30 and the arresting action of the mechanism 50 are synchronized to successive portions of a continuous cycle. This is accomplished in the

3

illustrated apparatus by means of the phase relationship of the rotating cams 60, 64, carried by the drive shaft 24. Rotation of the actuator cam 60 causes actuating mechanism 30 to be raised gradually into a striking position against the pressure of the spring 62. This function is shown in FIGURES 3, 4 and 5, which illustrate the sequence of movement of the actuating mechanism downward through the striking or sign spinning stroke, during which the strikers are in locked position, and its gradual return movement to the striking position, during which the strikers pivot downward to permit passage of the rods 20. Rotation of the arrester cam 64 causes the arrester mechanism 50 to be sharply lifted against the pressure of the spring 55 to an upper disengaged position (FIGURES 3 and 4) and to be quickly returned to a lower arresting or sign engaging position (FIGURE 5). By a positioning of the cams in an out of phase relationship relative to the drive shaft, say 15 to 40° out of phase, the cams are enabled to operate in succession to first cause a striking or spinning of the sign elements, and a successive engaging or stopping of the elements to produce a random word combination. Moreover, the cycle can be repeated to make similar random selections with each rotation of the drive shaft.

I have found that satisfactory operation of my device is obtained when the shaft 24 is rotated at a speed between about 0.5 and 4 r.p.m. Such operation will act to produce a new word combination every 15-120 seconds, depending upon the particular speed of rotation. Of course, slower or faster speeds of rotation are possible without appreciable variation in the principle of operation.

The operation of my new sign construction can be summarized as follows:

Assuming a positioning of the parts as in FIGURE 3, the arresting bar 54 has just been raised and disengaged from the rear faces of the sign element, a position it will retain for about 15 to 40° rotation of the shaft 24 depending on the particular design of the cam 64. The actuating mechanism 30 has simultaneously been raised to an uppermost position ready for the striking operation. Upon further rotation of the shaft 24 to the position of FIGURE 4 (counterclockwise in the drawing), the arrester bar will momentarily remain disengaged. However, the spring 62 causes the actuator bar 34 to pivot sharply downward, and the strikers 36 to engage the projecting rods 20 of the sign elements. During this striking movement, the strikers are held in locked position by the stops 40 so that a rapid spinning movement is imparted to the sign elements 16, about their axes 18. Upon continued rotation of the drive shaft, the arresting mechanism is pivoted downward, causing the bar 54 to engage the rear faces of the sign elements, thereby stopping their rotation. This movement is caused by the downward pull of the spring 55. It will be noted that the construction is such that the strikers remain in the down position until the arrester bar 54 has engaged and stopped the sign elements in the display position, which comprises the major part of the cycle. Thereafter, the actuating mechanism is first returned to the raised position of FIGURE 3, the arrester bar remaining in the sign engaging position. During this movement, illustrated in FIGURE 5, the striker elements rock about their pivots 38 so as to pass the rods 20. When the strikers have reached an uppermost position, the arrester cam 64 functions to again raise the bar 54 to release the sign elements for spinning during the subsequent downward or actuating stroke of the strikers. In this way, successive spinning and display portions of the cycle of the sign are made possible in a fully automatic continuous operation.

The above description has related specifically to a sign construction employing three sign elements 16, each having four sides. It will be evident to those skilled in this art, however, that many variations in this construc-

4

tion as well as other differing embodiments and applications are possible without a departure from the spirit and scope of the invention. For example, it is contemplated that the sign elements may have any number of sides; likewise the number of sign elements may be substantially different. Thus signs employing as many as five elements each having five or more sides are contemplated. Such variation would, of course, greatly increase the number of possible word combinations so that the use is limited only by the imagination and ingenuity of the user in conceiving slogans or sentences for display. Accordingly, it should be understood that the disclosures and description herein are purely illustrative and not intended to be in any sense limiting.

I claim:

1. In a fully automatic sign construction, movable means providing a wide variety of random word combinations for display, said means comprising a plurality of sign elements arranged in parallelism and mounted for rotation about their axes, said elements each having at least three sides bearing word-forming indicia, striking means adapted to impart free rotation to said sign elements, arrester means adapted to engage and stop the free rotation of said elements, and means synchronizing the operation of said striking and arrester means to successive portions of a continuous cycle, whereby different random combinations of word-forming indicia are continuously and cyclically produced by said sign construction.

2. A sign construction as in claim 1 wherein the cross sectional configuration of a sign element is a regular polygon.

3. A sign construction as in claim 1 wherein said striking means includes reciprocally mounted strikers.

4. A sign construction as in claim 1 wherein said arrester means includes a vertically and laterally movable arrester bar adapted to simultaneously engage a side of each of said sign elements.

5. A sign construction as in claim 1 wherein said synchronizing means includes a pair of rotatable cams locked to a drive shaft, one controlling operation of the striking means and the other the operation of the arrester means.

6. In a sign construction, movable means providing a wide variety of random word combinations for display, said means comprising a plurality of sign elements arranged in parallelism and mounted for rotation about their axes, said elements each having at least three sides bearing word-forming indicia, pivotally mounted striking means adapted on operation to strike and impart free rotation to said sign elements, a pivotally mounted arrester bar adapted to engage and stop the free rotation of said sign elements, and cam means synchronizing the pivotal operation of said striking means and said arrester means to successive portions of a continuous cycle, whereby different random combinations of words are continuously and cyclically produced by said sign construction.

7. A sign construction as in claim 6 wherein said striking means includes a plurality of pivotally mounted actuator arms carrying pivotally mounted strikers at their outer free ends, said strikers being adapted to operate in unison to rotate said sign elements.

8. A sign construction as in claim 7 wherein said strikers are mounted as pawls to permit pivotal movements of the strikers in one direction and to prevent such movements in a reverse direction.

9. In a sign construction, means providing a wide variety of random word combinations for display, said means comprising: a plurality of sign elements arranged in parallelism and mounted for free rotation about their axes, said sign elements being of regular polygonal cross section so as to present a plurality of sides bearing word-forming indicia; actuator means operable to strike and cause free rotation of said sign elements about their axes;

5

said actuator means including a plurality of pivotally mounted actuator arms, an actuator bar carried by said arms, pivotally mounted strikers carried by the free ends of said arms, and resilient means biasing said strikers into a striking position; pivotally mounted arrester means adapted to simultaneously engage and thereby stop the free rotation of said sign elements, said arrester means including a plurality of pivotally mounted arrester arms and an arrester bar carried by the free ends of said arms; and means synchronizing the operation of said actuator means and said arrester means, said synchronizing means including a continuously operating shaft and a pair of cams, one of said cams being engageable to shift said actuator means and the other being engageable to shift said arrester means.

15

6

10. A sign construction as in claim 8 wherein said arrester bar is notched to avoid interference with rotating corners of the sign elements, just before contact of the bar with rear sides of said sign elements.

#### References Cited in the file of this patent

##### UNITED STATES PATENTS

|           |                      |               |
|-----------|----------------------|---------------|
| 1,058,698 | Goldstein            | Apr. 8, 1913  |
| 1,077,885 | La Pearl             | Nov. 4, 1913  |
| 1,362,542 | Rogers               | Dec. 14, 1920 |
| 1,806,722 | Von der Lippe-Lipski | May 26, 1931  |
| 2,839,855 | Palmer et al.        | June 24, 1958 |
| 2,887,085 | Aiken                | May 19, 1959  |