

Dec. 6, 1938.

S. M. BROWN

2,139,149

INTERCHANGING SIGN

Filed Sept. 28, 1937

2 Sheets-Sheet 1

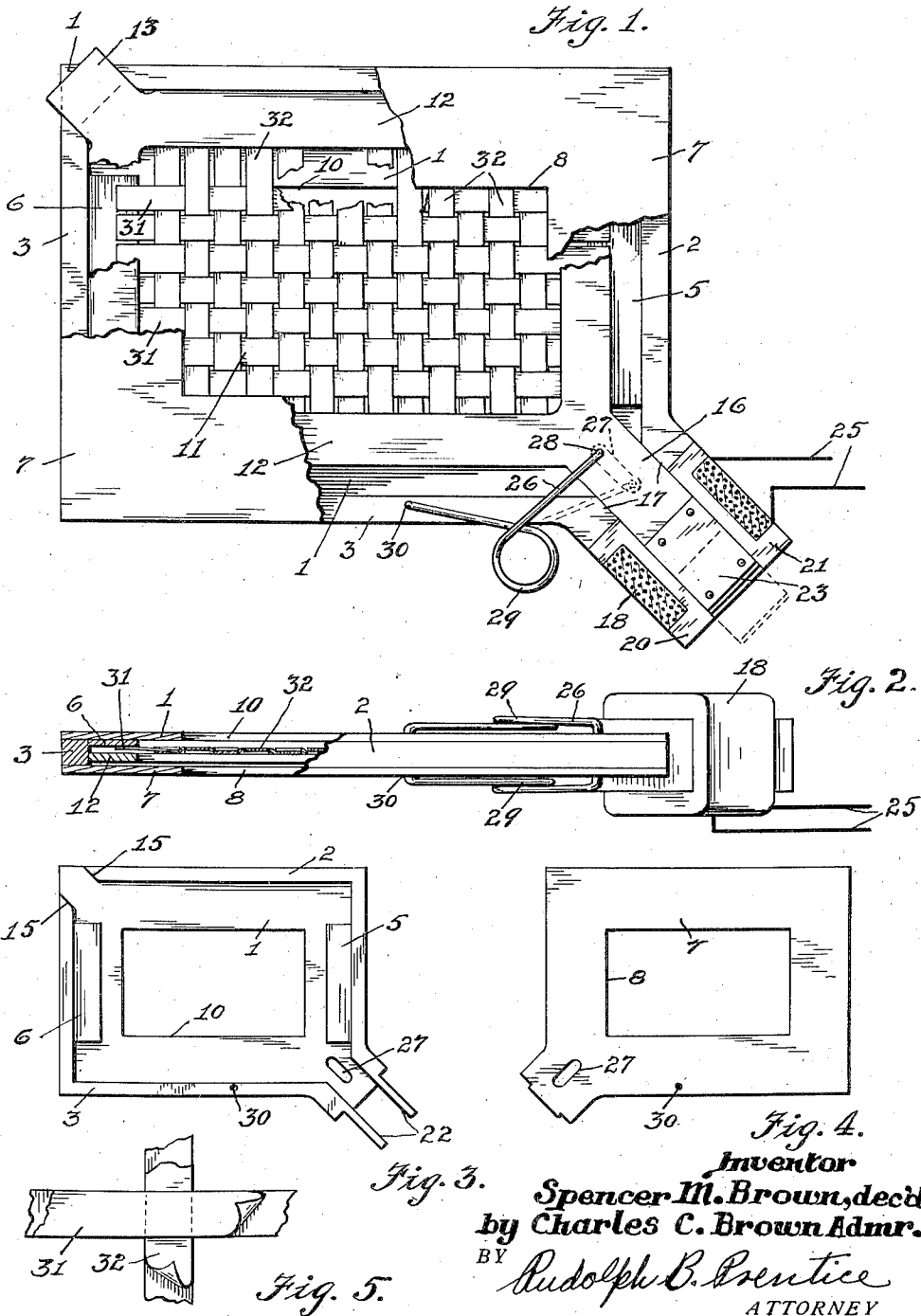


Fig. 1.
Fig. 2.
Fig. 3.
Fig. 4.
Fig. 5.

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2 Sheets-Sheet 2

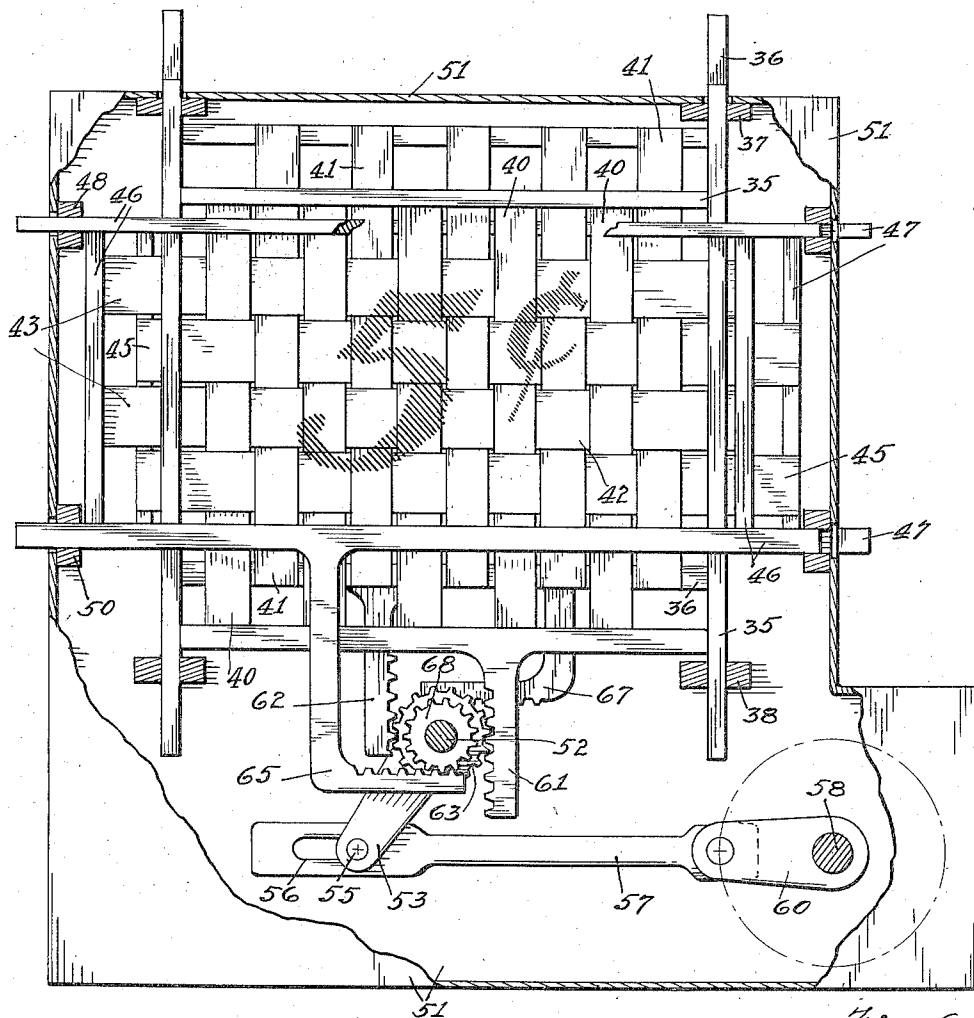


Fig. 6.

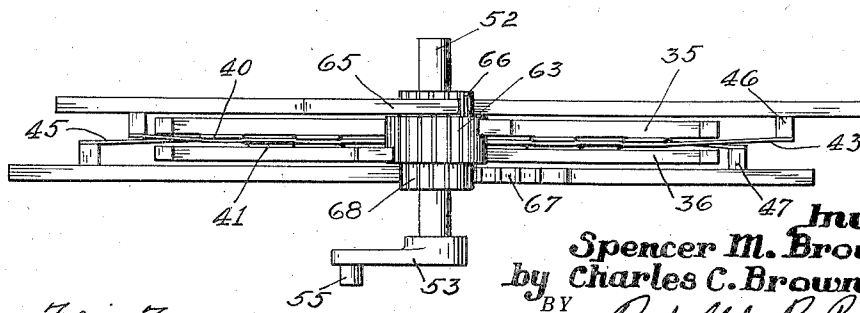


Fig. 7.

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2,139,149

INTERCHANGING SIGN

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Application September 28, 1937, Serial No. 166,108

3 Claims. (Cl. 40—65)

This invention relates to interchanging signs, or signals having interchanging exhibits displayed intermittently.

The principal object of the invention is to effect a vanishing and merging transition in the interchange of one sign display with another on the same background by altering the relative positions of elements of the display structure.

A second object is to provide for these effects on both sides of the same display structure.

A third object is to provide for periodically disintegrating the sign displayed into heterogeneous fragments having no apparent relation, and again, to restore the relationship of the said fragments to present to view the original exhibit. Or, in like manner, to restore one display and to disintegrate another simultaneously; each display occupying a separate part of the sign area.

A fourth object is to provide for the employment of the simplest and most direct means of altering the relative positions of elements of the display structure.

A fifth object is the provision of balanced mechanical movements of elements of the display structure in order to both neutralize local strains and to more fully disintegrate a display.

Other objects and advantages of the invention will be apparent in the following discourse wherein the significance of the reference numerals in the accompanying drawings, details of construction and operation of a sign embodying the invention, and the particular advantages thereof are explained.

Figure 1 represents a view of the front of the sign partly in section and from which parts have been broken away to reveal interiorly disposed features.

Figure 2 represents a view of the top of the sign partly in section.

Figure 3 represents a view of the inner side of one of the face plates of the sign showing certain frame and spacing members attached thereto.

Figure 4 represents a view of the inner side of the opposite face plate.

Figure 5 is a diagram illustrative of the appearance of a modified form of elements of the exhibit area.

Figure 6 represents a view of the front of a modified form of the sign shown partly in section and with part of the casing broken away.

Figure 7 represents a view of the bottom of the essential mechanisms shown in Figure 6; the casing being removed.

Referring to the above figures in detail, and particularly to Figs. 1 to 5 inclusive, the numeral 1 indicates one of the face plates of the sign upon which are rigidly mounted marginal spacing members 2 and 3 and relatively thin spacing strips 5 and 6, one at each end within the marginal members. Another face plate 7 is formed to fit against and be secured to the members 2 and 3 and has a window opening 8 in apposition to a similar opening 10 in the face plate 1 through which a woven fabric 11 may be viewed from either side.

A frame 12, slidably mounted between the face plates 1 and 7, has a diagonally extending arm 13 integrally formed on one corner of the frame 12 and slidably held in guide shoulders 15 of the members 2 and 3. Similarly, a diagonally extending arm 16 integral with the frame 12 and extending from the opposite corner thereof, is slidably held in guide shoulders 17 formed in the marginal members 2 and 3.

The arm 16 extends through a solenoidal coil 18 wound on spool members 20 and 21 rigidly engaging legs 22 of the marginal members 2 and 3 shown in Figure 3. Iron plates 23 secured on the arm 16 near the end thereof form an armature within the coil 18 for actuating the arm 16 axially and the frame 12 diagonally with respect to the window opening 8. Terminals of the coil 18 are connected with lead wires 25 which complete a circuit through a source of electricity and a current interrupting apparatus not shown.

A wire spring 26, extending through slots 27 in the face plates 1 and 7 and a hole 28 in the arm 16, is formed into loops 29 and anchored under tension in holes 30 in the face plates and the member 3; the tension in the spring opposing the force of the energized solenoidal coil 18 in the motivation of the armature formed of the arm 16 and iron plates 23.

The fabric 11, above mentioned, is formed of a series of laterally opposed ribbons 31 rigidly secured at opposite ends thereof to spacing strips 5 and 6 respectively, and of another series of perpendicularly disposed laterally opposed ribbons 31 woven through the former and secured at opposite ends thereof to the top and bottom respectively of the frame 12 upon the inner face thereof.

It will be observed that diagonal motion of the frame through a distance equal to the diagonal dimension of the mesh formed by the weave of the fabric 11 will serve to expose to view once concealed areas of all of the ribbons of the fabric

11. At one extremity of motion of the frame 12, a composite area will be exposed to view comprising half of the total area of the combined surfaces of the said ribbons, and at the other extremity of motion of the frame 12 the remaining half of the total area of the combined surfaces of the ribbons will be exposed to view while the former is concealed. Thus, reciprocation of the frame 12 will provide for the exhibition of two separate and distinct complete portrayals or displays in the same space in alternate sequence as viewed from either side of the device.

It will be apparent that the device affords a new artists' material with which many effects may be achieved by means of the use of variably colored ribbons of opaque or transparent materials for trans-illumination, or combinations of these to provide for changes of color and mixtures of colors used as base-colors. For example, the colors of red and green may be displayed under control of electrical impulse for traffic regulation; separate pictures or legends, or other graphic or color effects may be employed.

The face plates may be made of generous size to bear a fixed legend or decoration compatible with the changing displays.

The form of the device just described is purely elective or optional; other means of providing the reciprocations of the frame 12, or more exactly, providing for the proper relative motions of the ribbons are easily devised. For example, the diagonal motion of one set of ribbons as just described may be supplanted by rectangular movements of both series of ribbons.

Referring to Figures 6 and 7 illustrative of one of these modified forms of the device, frames indicated generally by the numerals 35 and 36 are mounted in bearings 37 and 38 for reciprocation in opposite directions vertically. Ribbons 40, attached to the frame 35, and alternate ribbons 41 attached to the frame 36, provide the vertically disposed elements of a woven fabric 42, while relatively wider ribbons 43 and 45 thereof provide the horizontal elements secured in alternate sequence to the frames 46 and 47 respectively, mounted for reciprocation in opposite directions horizontally in the bearings 48 and 50.

A casing 51 for the sign has apertures or windows, not shown, in both faces thereof in registry with the displays on the fabric 42; one display being represented in Figure 6 by the shaded characters "5¢".

A transverse shaft 52 is mounted to rock in suitable bearings in the casing below both frames, and has a crank-arm 53 operatively engaging through a pin 55 with a slot 56 formed in a pitman rod 57 driven by a rotative shaft 58 carrying the crank 60, whereby the shaft 52 is caused to rock in opposite directions with intervening intervals of pause.

Racks 61 and 62 rigidly depending from the frames 35 and 36 respectively, mesh with opposite sides of a pinion 63 rigidly mounted on the shaft 52, while a rack 65 rigidly depending from the frame 46 engages the lower face of a pinion 66, and, similarly, a rack 67 depending from the frame 47 meshes with the top of a pinion 68.

Both of the pinions 66 and 68 are rigidly mounted on the shaft 52 and are of equal, but smaller diameter than that of the pinion 63, so that with a suitable degree of throw of the arm 53 and with suitable diameters of the pinions 63, 66, and 68, the frames 35 and 36 will

be reciprocated in opposite directions vertically a distance equal to the width of the horizontal ribbons, while at the same time and in like manner, the frames 46 and 47 will reciprocate horizontally a distance equal to the width of the ribbons 40 and 41.

This embodiment of the invention is suitable for relatively large and exposed signs wherein the weight and strength of materials is a factor. The contrary movements of the elements of the display structure also renders the disintegration of a display more complete.

From the foregoing description, it will be seen, that the woven fabrics, either 11 or 42, not only provide a suitable background upon which to portray a sign, or changing signal for traffic control, but that the background fabric, by virtue of its overlapping formation of the elements has both an exposed and a concealed combination of surface spaces on the ribbons, as viewed from either face of the sign, and that by sliding the woven ribbons lengthwise, or one set in a diagonal direction, the other set being fixed, an interchange is effected between the concealed and the exposed spaces of adjacent overlapping surfaces throughout the woven display area.

This transition is accompanied by a fragmentation and re-integration of the displays. Where one of the composite areas is blank, the transition will cause a display to appear to break up and vanish. Again, where transparent ribbons are used the display becomes fragmentary in one position of reciprocation and complete in the other. Or, similarly, on the same fabric bearing separate displays, one may disintegrate at the same time that the other is being restored.

It will also be obvious that the ribbons may be double so that different materials may be displayed on opposite sides; the same being interlaced to form a single fabric.

Having described the invention, what is claimed is:

1. A sign having a display area formed of two series of ribbons woven at right angles forming sets of alternately exposed and concealed spaces on each ribbon, and means for sliding one said series of ribbons diagonally to shift the relative positions of the ribbons in a manner to interchange said exposed and concealed spaces.

2. In a sign, a display area formed of woven ribbons interlaced at right angles, two pairs of frames mounted to reciprocate at right angles, the frames in each said pair being reciprocable in opposite directions and engaging alternate parallel ribbons for slidably actuating said ribbons longitudinally in opposite directions, and means for reciprocating each of said frames; said means including a gear rack rigidly fixed to and extending from each frame in line with the travel thereof, the racks of said frames in each pair being apposed and meshing with opposite faces of driving pinions, said pinions being rigidly mounted on a transverse shaft rockably actuated by motive power intermittently applied to rock said shaft.

3. In a sign, a display surface formed of ribbons interlaced alternately at right angles, parallel ribbons having equal widths and rigidly mounted in frames, said frames having relative movement and positions of rest.

CHARLES C. BROWN,
Administrator for the Estate of Spencer C. Brown,
Deceased.