

March 23 , 1926.

1,577,609

R. N. CHUBB

CHANGEABLE SIGN

Filed April 30, 1924

2 Sheets-Sheet 1

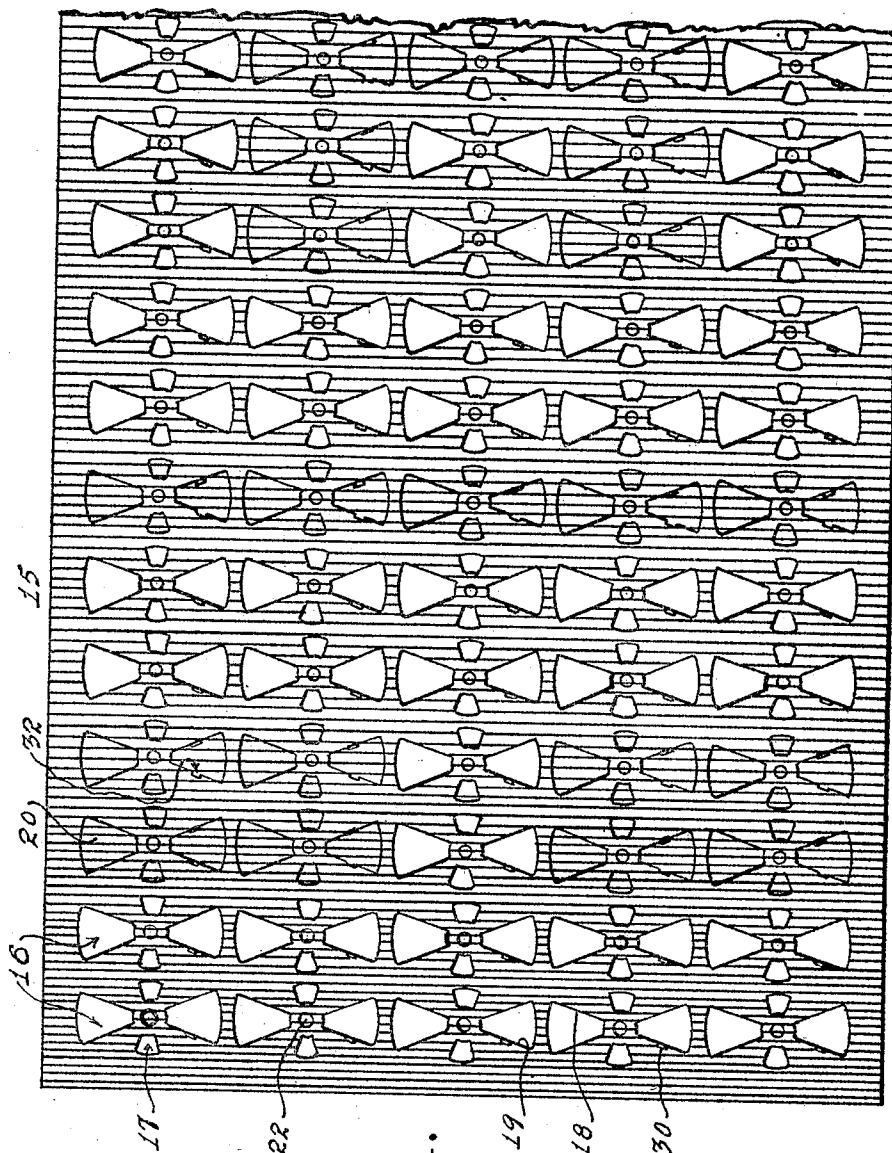


FIG. 1.

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2 Sheets-Sheet 2

Fig. 2.

Fig. 3.

Fig. 4.

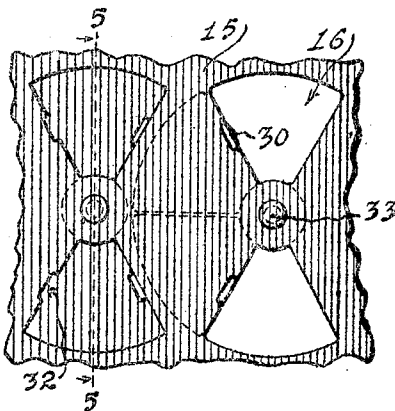
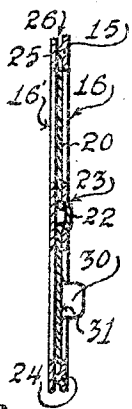
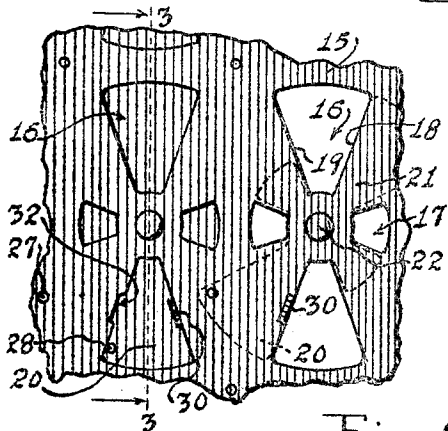


Fig. 6.

Fig. 5

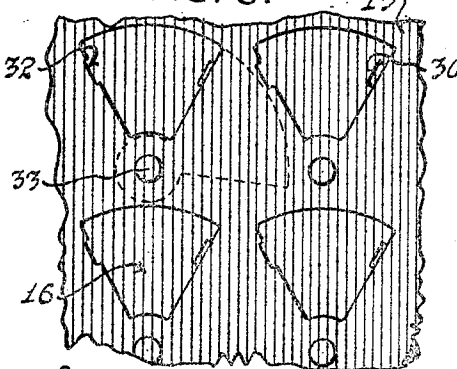
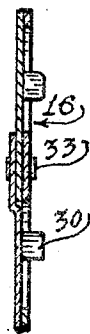


Fig. 8

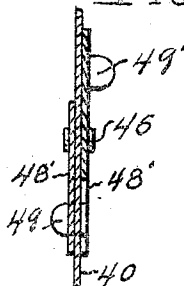


Fig. 7.

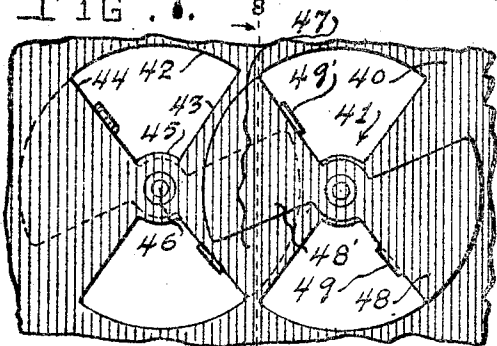


Fig. 9. Fig. 10.

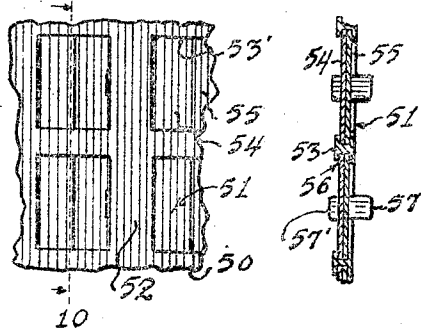


Fig. 11

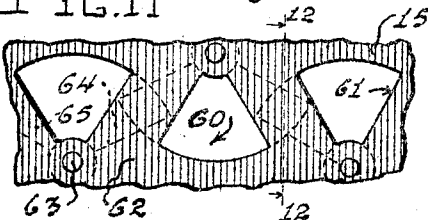
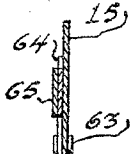


Fig. 12.



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UNITED STATES PATENT OFFICE.

ROWLAND N. CHUBB, OF LOS ANGELES, CALIFORNIA.

CHANGEABLE SIGN.

Application filed April 30, 1924. Serial No. 710,973.

To all whom it may concern:

Be it known that I, ROWLAND N. CHUBB, a subject of Great Britain, and a resident of Los Angeles, in the county of Los Angeles and State of California, have invented new and useful Improvements in Changeable Signs, of which the following is a specification.

My invention relates to changeable signs, and more particularly to that type of signs in which an opaque plate is provided with a plurality of openings and shutters controlling said openings, so that the selective opening of a plurality of shutters will produce an arrangement of apparent openings in the form of a letter or figure.

The principal object of this invention is the provision of a sign of the character described in which the letters may be formed, or a word may be set up with considerable speed.

My invention also relates to, and has for an object to improve upon, the sign set forth in Letters Patent granted to me on the 15th day of March, 1921, No. 1,371,470. In said sign it is necessary, to make a letter, to carefully rotate the correct shutters a partial revolution. Such partial revolution must be accomplished slowly and carefully in order that the shutter is not moved too far. The nature of the means provided for operating each shutter is not at all conducive to speed.

It is therefore another object of my invention to provide a sign of the character described in which an entire lineal formation of openings may be opened or closed by merely sweeping the finger over the face of the sign along the desired line.

Another object of the invention is to provide a sign of the above described character in which the intermediate opaque areas, occurring between openings, may be of less area than the openings.

Another object of the invention is to provide improved designs for the openings whereby said openings will appear in closer and better balanced relationship.

Other objects of my invention include the provision of means for preventing accidental opening or closing of the shutters, simplicity of construction, and lower manufacturing costs.

Still other objects and advantages will appear hereinafter and will be better under-

stood by virtue of the order of their occurrence.

I have illustrated by the accompanying drawings a preferred embodiment of my invention and several modifications thereof.

In the said drawings,

Figure 1, is a face view of the preferred embodiment of my invention.

Figure 2, is a similar view of a fragmentary part of the sign shown in Fig. 1, on an enlarged scale.

Figure 3, is a detail view in section seen on a line 3—3 of Fig. 2.

Figure 4, is a face view of a fragmentary part of a slightly modified form of the sign shown in Fig. 1.

Figure 5, is a detail view in section thereof seen on a line 5—5 of Fig. 4.

Figure 6, is a face view of a fragmentary part of a still further modified form of the sign shown in Fig. 1.

Figure 7, is a face view of a fragmentary part of another form of my invention.

Figure 8, is a view in section thereof seen on a line 8—8 of Fig. 7.

Figure 9, is a face view of a fragmentary part of another embodiment of my invention.

Figure 10, is a view in section thereof seen on a line 10—10 of Fig. 9.

Figure 11, is a face view of a part of another embodiment of my invention.

Figure 12, is a view in section thereof seen on a line 12—12 of Fig. 11.

In carrying out my invention in all of the embodiments illustrated, I employ an opaque plate 15, provided with a plurality of apertures 16. It will be understood that behind this opaque plate there may be a light colored or white background for day reading, and a translucent plate to be suitably illuminated. Such features in changeable signs of this character are well understood and therefore are not shown or described herein.

The openings are arranged in line formations, and in the embodiment shown in Figs. 1 to 3 inclusive, the openings are arranged in a plurality of groups of four so that the group is as nearly rectangular as possible in general outline. In this particular embodiment the group resembles a Maltese cross which is contracted considerably on the transverse median line. Each of the openings are segmental and their side

margins 18 and 19 converge toward each other, and all converge toward a common central point.

Behind the opaque plate a plurality of shutters 20 are provided, and in said embodiment one shutter only is provided for each group of four openings. By means described hereinafter, each shutter is held so that it may be oscillated about the common center toward which all the side margins of the openings of a group converge. The shutter occupies only sufficient area that it may obscure the group of openings when disposed before it. Therefore each shutter in said embodiment also resembles a Maltese cross contracted upon the transverse median line. Generally speaking the rectangular area represented by a group is about twice as long as it is wide.

Between the openings which form a group, intermediate spaces 21 are provided. In arranging the segmental openings about their center, the openings and intermediate space are so proportioned that the maximum area of opening is provided, while a shutter capable of obscuring the opening may be disposed behind and obscured by the intermediate space.

Each front plate, at the point representing the center of each group of openings, is provided with an aperture 23. Each shutter is provided with a corresponding central extension 22, which is extended into the corresponding aperture 23. The extension will obviously ride on the margins of the aperture and provide for the shutter being oscillatable.

In the said embodiment a rear plate 25 is provided which is formed with openings, as in the case of the front plate. The rear plate is held spaced from the front plate by depressing the metal of the front plate inwardly at concentrated points, such as 15. The two plates may be permanently connected by spot welding the indented metal of the front plate to the corresponding metal of the rear plate, leaving space 26 well defined and practically unalterable while providing a rigid non-buckling unit. The space 26 existing between the spaced plates is only slightly greater than the thickness of a shutter. Each shutter is provided with a very slight depression 27, adapted to register with a corresponding depression 28 in the front plate, when the shutter is in open position. When the shutter is in closed position said depression therein aligns with another depression 29. Thus the shutter is held yieldably in either fully open position or fully closed position.

One of the more salient features of my invention resides in an outwardly extending member 30 carried by each shutter and adapted to be engaged by an object passing over the face of the plate. Preferably this

extension is simply a substantially rectangular integral extension of the blank of metal of which the shutter is formed. This extension is bent as at 31 at an angle to the blank. This extension is shown in all of the embodiments illustrated. In the form of the invention shown in Figs. 1 to 5 inclusive, and now being described, one such member, only, is needed for each shutter, and therefore a moving object engaging said member may act to open or close a group of four openings. One margin of one of the larger openings of a group is recessed slightly, as at 32, to receive the member 30 when the shutter is moved to open position.

In the embodiment being described it will be apparent that all of members 30 are arranged in a plurality of lineal formations. In Fig. 2, one shutter is shown in open position and another in closed position; the latter being indicated by broken lines. In Fig. 1 I have illustrated only a portion of a complete sign, or sign plate; it being understood that the plate illustrated may be of any desired length so that one word, only, or an entire sentence may be written thereon. While I infer that words may be written on the sign, it will be apparent that the act of opening a plurality of shutters arranged in the formation of a letter is as simple as writing, and the act is quite similar. In Fig. 1, I have shown the letters H and E as appearing on the sign.

It will be apparent that to "write" a longitudinal bar on the sign, it is only necessary to move a finger or suitable object across the face of the plate to successively engage and move all the members 30 which are disposed along the line traversed by the finger or object. To write vertical lines, such as the first vertical bar of the H, two shutters are actuated at a time on a horizontal line, then the two shutters immediately under are opened, and so on until the vertical bar is written.

It will be apparent now that my improved changeable sign is conducive to speed in setting up a letter, word, or complete sentence. To obliterate or "erase" a letter, word, or all the words occurring on the sign, a few deft sweeping motions of the hand across the face of the sign will serve to move all shutters into closed position even more rapidly than a legend of the same proportions could be erased from a blackboard, for instance. Many changeable signs having movable closures or shutters are provided with circular, or substantially circular openings and a lineal formation of such openings does not give the required appearance. In my improved sign just described, each group of openings is substantially rectangular in outline and a lineal formation of groups lends the appearance of a substantially com-

plate bar; particularly when electric lamps (not shown) are suitably disposed behind the plates.

In the slightly modified construction shown in Figs. 4 and 5, a group of openings comprises only two segmental or substantially triangular openings having their major axis on a common vertical median line and having their side margins converging toward the central pivot member. In other words, this embodiment differs from the embodiment first described principally in that the two smaller openings of a group are omitted. A further difference is, that instead of employing one shutter for controlling several openings I employ one shutter of each opening. The construction permits of two shutters being disposed on a common pivot member. One advantage of the embodiments shown in Figs. 4 and 5, is that an opening coming at the extreme corner of a letter may remain closed, with the other openings of a set open, so that letters or corners of letters may appear less sharp.

In Fig. 6 the openings are not arranged in groups. I employ a plurality of openings all similarly disposed, and for each opening an individual shutter is provided, as well as an individual pivot member. Both of the signs shown in Figs. 4 and 5, as well as the sign shown in Fig. 6 may be set up with practically the same ease with which the first described embodiment is operated.

In the form of the invention shown in Figs. 7 and 8, I provide a single plate 40, provided with a plurality of groups of openings 41, arranged in groups of two. All openings in this embodiment are smaller and are substantially a frustrated segment in outline. Each of the pair of openings forming a group are diametrically opposed to each other on a common vertical median line. Each opening is bounded by an arcuate top margin 42, opposed converging side margins 43 and 44, and a short bottom margin 45. For each group of openings, a pivot pin 46 is provided, mounted at the common center toward which the side margins of a pair of openings converge. Said common center is also the point about which the arcuate top margins are described. Between each pair of openings, an intermediate space 47 remains imperforate. The maximum transverse or horizontal dimension of this space need not exceed, and should closely approximate, the maximum height of one opening. Thus a shutter 48, pivoted on the pivot pin, for obscuring said openings, may be moved so that a portion 48' is disposed behind the next intermediate space. One salient feature of this embodiment is, that alternate shutters are disposed forwardly of the plate, while intermediate shutters are disposed rearwardly of the plate. It will be apparent, therefore, that when two adjacent shutters

are moved to uncover two groups or pairs of openings, a portion of one shutter will be behind the plate, while a portion of the adjacent shutter will be in substantially the same position but will be in front of the plate. In other words, the openings may be more closely arranged than the previously described embodiments because a portion of one shutter may be moved into superimposed relationship to a portion of another shutter.

In Figs. 9 and 10, I have shown another embodiment in which portions or sections of shutter may be moved into superimposed relationship to other portions or sections of the same or other shutters. In the embodiment shown in Figs. 9 and 10, I provide an opaque plate 50, having a plurality of rectangular openings 51, closely spaced. In fact, the intermediate imperforate space 52, existing between adjacent openings is of less width than the openings themselves. At the rear of the plate I provide channel members paralleling the top and bottom margins 53 of the openings. For each opening I provide a plurality of shutter sections, such as 54 and 55. The space 56 provided by the channel is greater than the combined thickness of the shutter sections, and the sections are adapted to slide in the channels. It will be apparent that an opening may be opened by moving the forward section of a shutter rearwardly. The projecting member will subsequently engage the forward edge 57 of the rear section of the shutter and thus both will be moved into superimposed relationship to each other behind an intermediate imperforate space.

In the form of the invention shown in Figs. 11 and 12, the openings 60, are substantially frustra-segmental in form; the two side margins 61 converging towards a common center. A salient feature of this form of the invention is, that alternate openings of a lineal formation are arranged with the frustrated end uppermost, while the other alternate openings are arranged with their frustrated ends lowermost. Such arrangement brings each side margin of each opening parallel with the adjacent side margin of the next opening. The space 62, which exists between openings is therefore a parallelogram. At the point at which the side margins converge, I provide the usual pivot member 63, upon which I mount two shutters, 64 and 65, capable of being moved into superimposed relationship to each other; which shutters are also so arranged that one shutter of one opening may be moved into superimposed relationship to one of the shutters of another opening. Fig. 11 shows two adjacent openings opened. Shutter 64 of one opening is shown superimposed over shutter 65 of the next opening.

Considering the two shutters of one

opening it will be noted that one shutter is to be moved to the right, while the other is to be moved to the left, to uncover an opening. To provide for speedy opening of the two shutters of an opening, I provide shutters 64 with a projection which is considerably higher than the projection of shutters 65. The act of sweeping a finger over a line formation to the right will open all shutters 64 in that line. A return sweep of the hand will open all of shutters 65. The arrangement which the shutters occupy in the intermediate areas, when in open position is apparent from the drawing. One very salient feature of this form of the invention is, that a lineal formation of openings employed is substantially solid and balanced, and in fact a lineal formation of such openings gives the effect of a complete rectangular elongated bar interrupted only by narrow well spaced oblique bars.

It will be apparent now that my invention provides for an improved sign which is quickly operated, plainly read, and in which the openings are grouped, or arranged, to give an increased percentage of openings over the intermediate spaces, and while I have shown and described specific embodiments of my invention, I do not limit myself to any specific construction or arrangement of parts, and may alter the construction and arrangement of parts as I desire, or as occasion requires without enlarging the scope of my invention, within the appended claims.

I claim,

1. In a sign, a plate provided with a plurality of openings arranged in line formations, the openings being spaced apart and the width of each opening being greater than the width of the intervening spaces, and a sectional shutter for each opening having its sections adapted to be moved into superimposed relationship to each other into an adjacent intervening space to uncover said opening.

2. In a sign of the character described, a front plate provided with a plurality of openings arranged in line formations, a back plate provided with openings aligned with the openings in the front plate, means for holding said plates in fixed spaced relation to each other, shutters intermediate of said plates for controlling said openings,

annular projections struck out of one of said plates providing pivot pins for said shutters; the latter being oscillatable on said pivot points to be movable to open and closed position.

3. In a sign of the character described, a plate provided with closely spaced openings separated by intermediate spaces, shutters for controlling said openings movable to open or closed positions; said shutters so arranged that a portion of one shutter may be moved into superimposed relationship to a portion of another adjacent shutter.

4. In a sign of the character described, a plate provided with closely spaced openings separated by intermediate spaces, shutters for controlling said openings movable to open and closed positions; said shutters so arranged that a portion of one shutter may be moved into superimposed relationship to a portion of another adjacent shutter, and stops for limiting the advance and retrograde movement of said shutters.

5. In a sign of the character described, a plate provided with closely spaced openings separated by intermediate spaces, shutters for controlling said openings movable to open and closed positions; said shutters so arranged that a portion of one shutter may be moved into superimposed relationship to a portion of another adjacent shutter, and stops for limiting the advance and retrograde movement of said shutters; alternate shutters being disposed forwardly of the plate and intermediate shutters being disposed rearwardly of the plate.

6. In a sign, a plate provided with segmental openings arranged in lineal formations with alternate openings inverted with regard to intermediate openings whereby each side margin of an opening is parallel with the other side margin of the adjacent opening and whereby the intervening spaces between openings are parallelograms: the two side margins of each opening converging toward a common center, a pivot member at substantially the point toward which the side margins converge, and two shutters pivoted to said member adapted to jointly coact to obscure the opening, and each further adapted to be moved into superimposed relationship to one of the shutters of another opening.

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