

May 3, 1927.

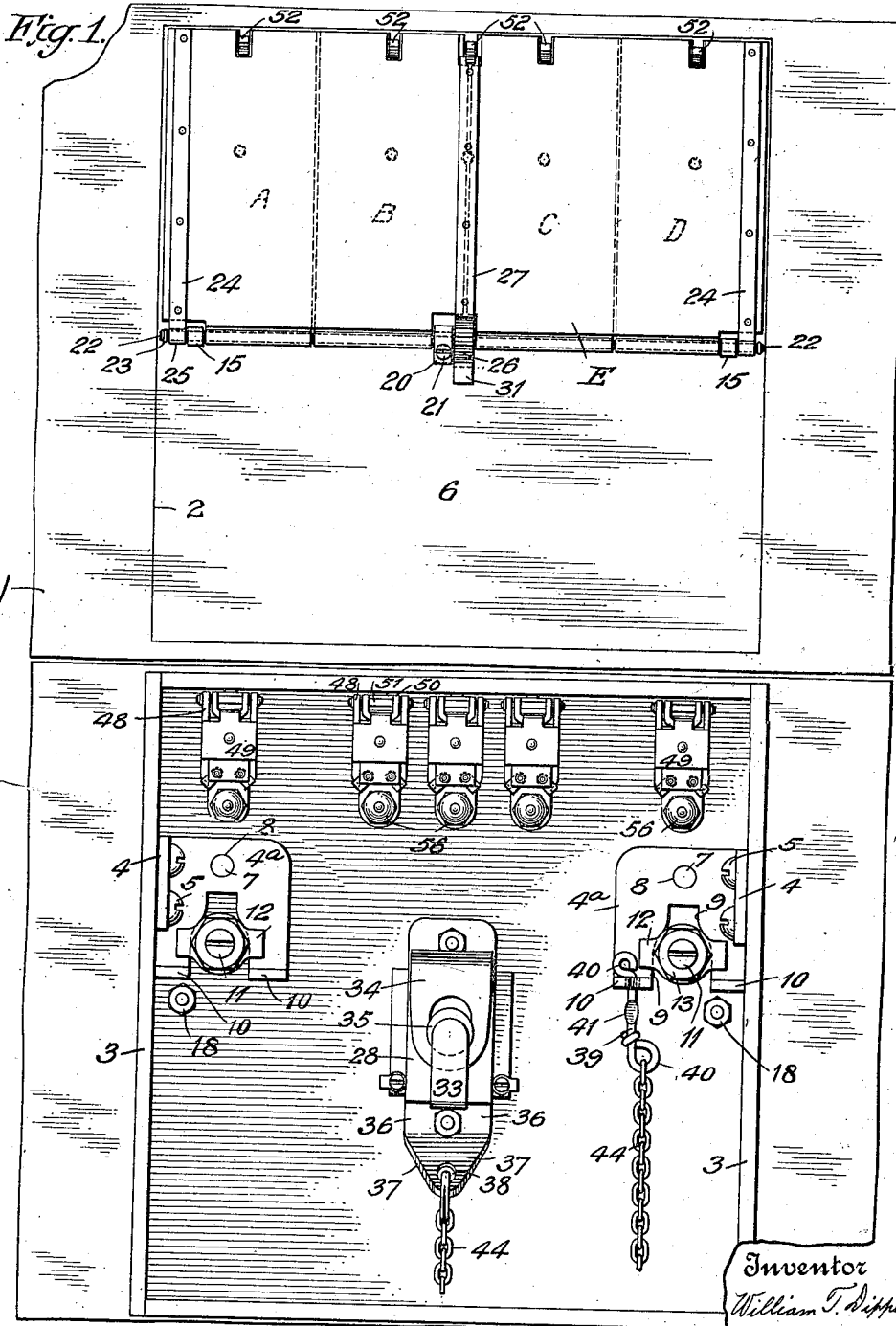
1,626,795

W. T. DIPPEL

VISUAL ANNUNCIATOR

Filed March 18, 1922

2 Sheets-Sheet 1



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VISUAL ANNUNCIATOR

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2 Sheets-Sheet 2

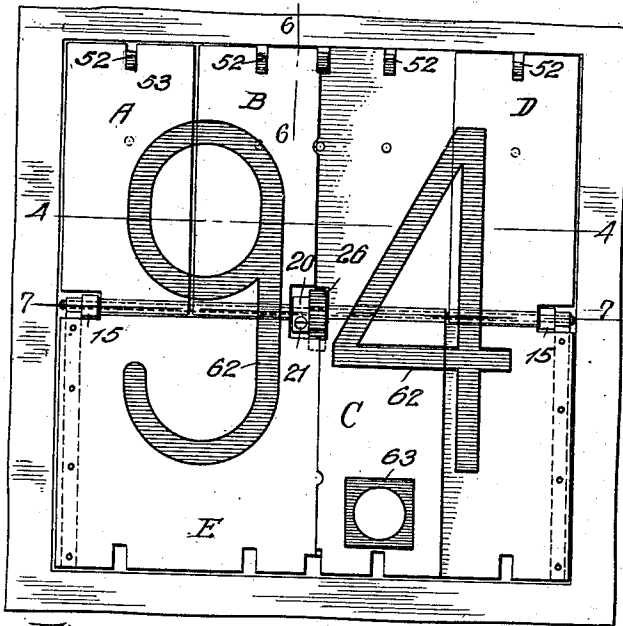
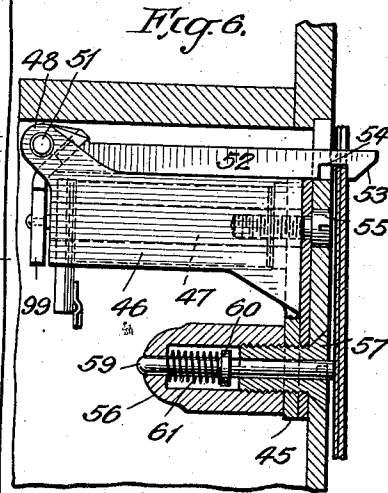


Fig. 3.

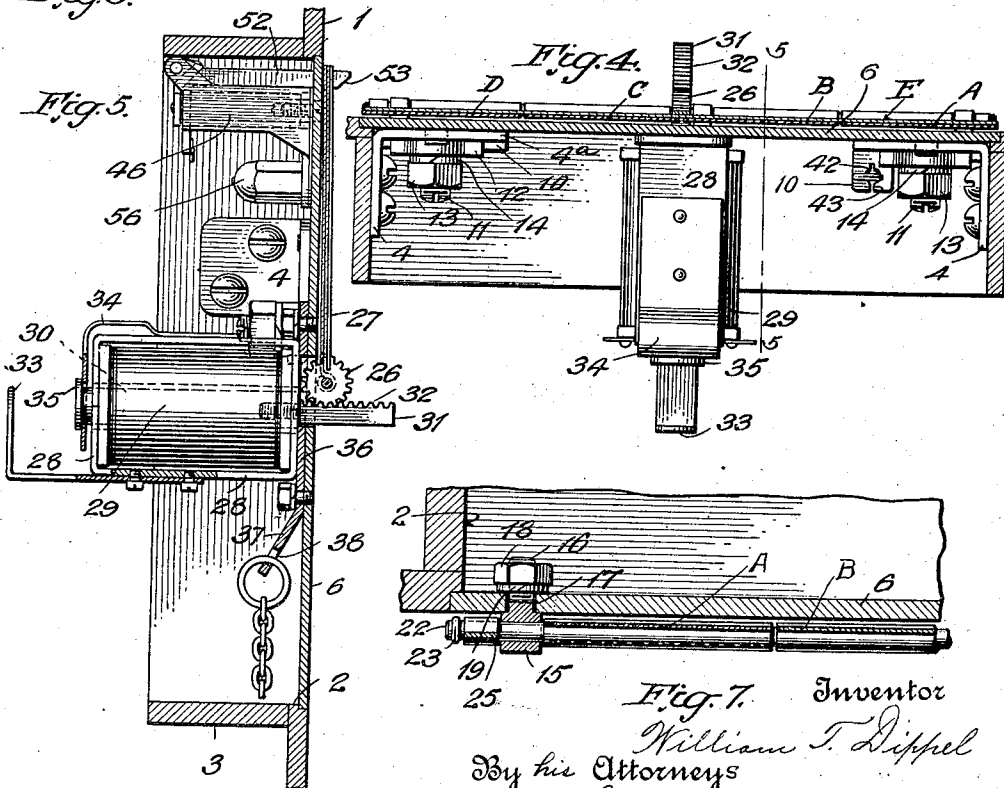


Fig. 4.

Fig. 5.

Fig. 6.

Fig. 7.

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UNITED STATES PATENT OFFICE.

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VISUAL ANNUNCIATOR.

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This invention relates to annunciators of the type in which visual selective and variable signals can be displayed at a point distant from the operator and in positions not always easily accessible. For example in stock exchanges or other organizations, the members may each represent a number of correspondents who may desire to call them frequently from the meeting without disturbing the others present, and for this purpose the present invention may be advantageously employed. These annunciators or signals devices are usually mounted on a wall above the heads of the persons present, and in case of trouble it is desirable that the annunciator or device be accessible for inspection and removal from the rear of the wall or support upon which it is mounted.

An object of the invention is to provide an improved annunciator or visual signal device with which members or persons may be visually notified that they are wanted and apprised of the identification of the calling party, which may be inspected or removed from the rear of its support, and which is effective and reliable in operation, and simple, compact, durable and inexpensive in construction.

Other objects and advantages will be apparent from the following description of an embodiment of the invention, and the novel features will be particularly pointed out in claims.

In the accompanying drawings:

Fig. 1 is a front elevation of an annunciator constructed in accordance with this invention;

Fig. 2 is a rear elevation of the same;

Fig. 3 is a front elevation of the same with the annunciator in one display condition;

Fig. 4 is a transverse horizontal section through the same the section being taken approximately along the line 4—4 of Fig. 3;

Fig. 5 is a vertical transverse elevation of the same the section being taken approximately along the line 5—5 of Fig. 4, but with the annunciator in non-display condition;

Fig. 6 is a fragmentary sectional elevation of a portion of the same with the section taken approximately along the line 6—6 of Fig. 3; and

Fig. 7 is a fragmentary horizontal trans-

verse section of a portion of the same with the section taken approximately along the line 7—7 of Fig. 3.

In the illustrated embodiment, a facing wall 1 is provided with an aperture 2 (Figs. 1, 5 and 7) for each annunciator and a rectangular open ended frame 3 is secured to the rear of the facing wall 1 in alignment with the aperture 2. A pair of angular bracket members 4 (Figs. 2, 4 and 5) are secured by screws 5 to opposite inside walls of the frame 3, each member having an arm 4^a which extends partially across the aperture 2. A plate 6 (Figs. 3 and 4) is adapted to fit across the aperture 2 and against the angular ends 4^a of the bracket members. Dowel pins 7 (Fig. 2) are carried by the rear face of the plate and fit into apertures 8 in the angular arms 4^a of the bracket members for supporting the plate 6 from the frame and also positioning the plate 6 properly with respect to the aperture 2. The angular arm 4^a of each bracket member is provided with a slot 9 extending upwardly from the lower edge, and the lower edge of each angular arm on each side of the slot is turned rearwardly to form lugs 10. Bolts or screws 11 extend rearwardly from the plate 6, one passing through each slot 9 of a bracket member and carrying upon its rear end an elongated washer 12 and a nut 13, with a split spring friction washer 14 (Fig. 4) between the nut and the washer 12. The washer 12 is of a size and shape such that in one rotative position upon the screw 11, for example the vertical position in the embodiment illustrated, (Figs. 2 and 4) it will pass through the slot 9 of the bracket member to permit placing of the plate across the aperture 2 or removing it therefrom. When the plate 6 is applied across the aperture 2 and the washer 12 passes through the slot 9, the washer 12 will lie to the rear of the angular arm of the bracket member and may be then rotated through a small angle upon the screw so as to bridge the slot by extending across the slot from side to side, as shown in Figure 2. If then the nut 13 is tightened, the washer 12 will be clamped against the rear face of the arm of the bracket member and will securely anchor the plate 6 thereto. The lugs 10 prevent rotation of the washer 12 after it is clamped against the bracket member so that there

will be no danger of a rotation of the washer into a position in which it would pass through the slot and release the plate 6, until after the nut 13 has been considerably loosened. If desired a spring (not shown), may be placed around the screw 11 between the washer 12 and the rear face of the plate 6 so as to yieldingly hold the washer 12 against the nut 13 and facilitate the passage of the washer through the slot when the plate is being mounted across the aperture 2.

A pair of bearing blocks 15 (Figs. 1, 3 and 7) are provided with threaded shanks 16 (Fig. 7) which pass through apertures 17 in the plate 6 at opposite sides of the plate. Nuts 18 and split washers 19 upon the ends of the threaded shank 16 abut against the rear face of the plate 6 and securely anchor the bearing blocks to the plate. A bearing block 20 is secured by a screw 21 to the plate 6 between and in alignment with the bearing blocks 15. A bearing rod 22 extends through the bearing blocks 15 and 20, being provided at its ends with small collars 23. A plurality of auxiliary or component vanes A, B, C, and D are hinged edge for edge upon the rod 22, between the blocks 15, each vane being individually and independently rotatable about the rod 22 from a position above the rod 22 and abutting the plate 6 to a similar position below the rod 22. A main vane E is provided along the opposite faces of each end edge with strips 24 (Fig. 1). Each pair of the strips extend beyond an edge of the vane and the abutting faces of the ends are cupped as at 25 to form split bearings which embrace the bearing rod 22 between the collars 23 and the blocks 15, and serve as hinges for the vane. The main vane is, therefore, pivoted for rotation upon the axis of the rod 22 independently of the component vanes. A pinion 26 is rotatably mounted upon the rod 22 between two of the sections such as B and C, and a strip 27 (Figs. 1 and 5) secured along a face of the main vane E extends into a radial slot in the pinion and is anchored therein, whereby the main vane and pinion will rotate together.

The frame 28 (Figs. 2 and 5) of a restoring solenoid 29 is secured to the rear face of the plate 6, and the core 30 of the solenoid which is mounted for sliding movement in the solenoid, is provided with an extension 31 (Fig. 5) which projects through an aperture in the plate 6. The extension 31 is provided with rack teeth 32 which mesh with the teeth of the pinion 26, so that as the vane rotates the core of the solenoid will partake of a corresponding but reciprocal movement and vice versa. Spring bumper strips 33 and 34 are carried by the frame 28 of the solenoid and have spaced resilient ends which act as resilient stops

for the core of the solenoid at the two extreme limits of its movement, the core passing through an aperture in the inner strip 34 and having a collar 35 which engages with the strip 34 at its inner limit of movement.

A plate 36 is secured between the solenoid frame 28 and the plate 6 and is provided with an extending tongue 37 having an aperture 38 therein. The terminals of a wire 39 (Fig. 2) are bent to form loops 40 and at an intermediate point the wire is flattened somewhat as at 41. One of the lugs 10 of the bracket member is provided with a slot 42 (Fig. 4) of a size to permit movement of the wire 39 endwise therein, but prevent passage therethrough of the terminals 40. A narrower slot 43 connects the slot 42 with an edge of the lug 10 and has a width substantially equal to the thickness of the flattened portion 41 of the wire so that when the wire is shifted endwise in the slot 42 to bring the flattened portion into the slot, the wire may be shifted through the slot 43 in order to free the same from the lug. A flexible cable or chain 44 (Fig. 2) is connected at one end to the angular tongue 37 through aperture 38, and at its other end is connected to the lower loop 40 of the wire 39. During disengagement of the plate 6 from its position across the aperture 2, the chain 44 attaching the plate 6 to the bracket member will prevent accidental dropping of the plate to the floor.

A plurality of bracket plates 45 (Fig. 6) are arranged along the rear face of the plate 6 for supporting the holding and releasing devices for the individual vanes. Each bracket plate is provided with rearwardly extending spaced parallel arms 46 (Figs. 5 and 6) which support an electromagnet 47, and terminate in bearing ears 48 for an armature 49. The bearing ears 50 of the armature are pivoted between the ears 48 of the bracket plate by means of a pin 51 which passes through the ears 48 and 50. Each armature is provided with a forwardly extending latch arm 52 which projects through an aperture in the plate 6 and carries at its forward end a bevelled cam nose 53 and immediately to the rear thereof a notch 54 which forms a latch 55 for a vane. An electromagnet and latch are provided for each vane, and when the armature is in its released position the weight of the latch arm 52 will carry it downwardly and shift the armature away from the electromagnet. If a vane is rotated to its upper position, its upper edge will engage against the nose 53 of its corresponding latch and cam the same upwardly, the vane moving into the notch 54 of the latch which permits the latch arm to fall and secure the vane in its upper position. If the electromagnet 47 controlling the latch is energized, the latch arm will be

elevated to carry the notch 54 free of the vane and permit the latter to move away from the plate 6 and rotate to its lower position under the influence of gravity.

A screw 55 passes through the plate 6 into the core of the electromagnet 47 and anchors the same to the plate 6. An open ended casing 56 (Fig. 6) is disposed endwise against the bracket plate 45 and a tubular screw 57 passes through the plate 6 and the bracket plate 45 and threads into the interior of the casing 56 so as to anchor the casing to the bracket plate and anchor the bracket plate to the rear of the plate 6. A kick-off plunger 59 is slidably mounted in the tubular screw and also in the opposite open end of the casing 56. The plunger is provided with a collar 60 which limits its movement outwardly through the tubular screw. A helical spring 61 surrounding the plunger 59 reacts between a wall of the casing 56 and the collar 60 of the plunger so as to normally press the plunger outwardly through the tubular screw and against the vane held by the corresponding latch 52. Thus, when a vane is released by its latch, the kick-off plunger will automatically impart thereto an initial rotary movement which will carry the vane beyond a vertical plane passing through the axis of the rod 22 and insure rotation of the vane about the rod 22 to a position below the rod 22, as shown in Figure 3, for example.

The rear face of the main vane E, (considered when in held position) and the forward faces of the component vanes together carry suitable symbols or representations 62 (Fig. 3) which are visible when the main vane has been released and rotated to its lower position. As illustrated, this symbol may comprise a number, by which a certain member of the assembly will be designated. Thus, when the main vane is released and a number is displayed, the member designated by that number will observe the display of the number and will know that he is being called, and when the call is answered, the main vane will be restored to its upper position in which case no symbol will be visible until a vane is again released. The rear faces of the component vanes (considered when in held position) are provided with component portions of the symbols appearing upon the opposite faces thereof, but so arranged that when the component vanes are released and rotate to their lower positions, the component portions of the symbols thereon will form a continuation or completion of the symbols upon the adjoining vanes and replace the portion of the symbols formerly supplied by the other face of the vane before its release. In addition, each of the component vanes carries upon its rear face an additional distinctive symbol or identification mark 63 which will be displayed when

that component vane is released and rotates to its lower position. A different symbol 63 will be placed upon the rear of each of the component vanes, each symbol 63 representing (in code) a particular person or party who may be calling the person or member designated by the major symbol 62. Thus, if the main vane is released, the major symbol only will be displayed, which indicates, for example, that the main office is calling that member. If, however, a component vane is also released, the major symbol will still be displayed and one or more additional symbols 63 will also be displayed which will indicate to the member being called that he is wanted by a particular party whom he will be able to identify by the character of the particular symbol 63 or combination of symbols which is displayed. Obviously, one or all of the component vanes may be released at the same time that the major vane is released, and the various possible combinations of additional symbols which may be displayed will provide a relatively large range of signals.

In the use of this device, such as, for example, in stock exchanges, a battery of these annunciator units will be mounted along one of the walls of the exchange in a position to be readily observed by the members upon the floor of the exchange. The electromagnets 47 and 29 will be controlled from a suitable switchboard at a distant point and in charge of an operator. Suppose, for example, that a call for member 94 comes in from one of his correspondents who may be designated by the square and circle symbol illustrated by the reference character 63 in Figure 3. The operator will close a circuit leading to the electromagnet 47 which controls the latch for the main vane. The energization of this electromagnet will operate its armature to raise its latch and release the main vane which will be kicked off by the plunger 59 which has been pressing against the same. The main vane will then rotate to its lower position and display the large symbol 94 which will indicate to the member upon the floor who is identified by that number, that a call for him has been received.

If a particular correspondent is calling this number the operator will also close a circuit leading to one of the other electromagnets 47 of the same unit which controls the component vane having upon its rear face the auxiliary signal 63 which identifies the particular correspondent. The energization of this electromagnet will operate its armature and latch to release that component vane. This component vane will then be kicked off by the plunger 59 which has been pressing against the same and will rotate into its lower position so as to display the auxiliary signal 63 and also to

maintain the display of the major signal, which in this case is the number 94. The member identified by the number 94, observing the display of this number and the auxiliary signal 63 will know he is wanted by a certain correspondent and accordingly he will, as soon as possible, appear at the operator's desk and answer the call. The operator will then close a circuit leading to the electromagnet 29 which, when energized, will operate the core 30 to the right in Figure 5, and by its connection through its rack 31 to the pinion 26 will rotate the main vane E to its upper position. The main vane will also carry with it such component vanes as have been released and all will be restored to their upper position and automatically latched in that position by the corresponding latches 52. In the same manner any other component vane or group of component vanes may be released when calls are received from other correspondents for that member.

The operative parts of the annunciator unit will be accessible from the rear of the frame 3 for inspection and ordinary repairs, but in case of difficulty which necessitates the removal of the unit, the nuts 13 will be loosened so as to permit the washer 12 to be pulled rearwardly beyond the rear edges of one of the lugs 10 and then rotated into a vertical position so as to be able to pass through the slot 9. The plate will then be shifted forwardly to carry the washer and nut through the slot 9 and carry the plate from its position across the aperture 2. The plate is then shifted into a position diagonally of the aperture 2 and frame 3 and brought rearwardly and edgewise through the frame 3. If the plate 6 should be accidentally dropped after it has been released from the frame, but before having been withdrawn therefrom, it can only drop a limited distance before its descent will be stopped by the chain 44. After the unit has been withdrawn through the frame 3, the wire 39 may be shifted upwardly to bring the flattened portion 41 into the slot 42, so as to permit the wire to be withdrawn through the narrower slot 43, which completely releases the plate 6 from the frame. The unit is reapplied across the aperture 2 by a reverse order of steps.

It will be obvious that various changes in the details and arrangements of parts herein described and illustrated for the purpose of explaining the nature of the invention may be made by those skilled in the art within the principle and scope of the invention.

I claim:

1. In an annunciator, a plurality of auxiliary display vanes arranged side by side and hinged for independent rotation upon a common axis, a main display vane also hinged for rotation about said axis, re-

leasable means normally holding all of said vanes together and at one side of the axis and operable to release the vanes one at a time to permit them to rotate to a display position, said vanes having on their display faces suitable display information, the display matter of each auxiliary vane being substantially identical in character and location with the portion upon the main display vane which is covered thereby and also having other display symbols, whereby when the main vane is released a symbol will be displayed and when one or more of the auxiliary vanes is released the same symbol will be displayed and in addition another symbol may be displayed for each released auxiliary vane.

2. In an annunciator, a plurality of auxiliary display members arranged side by side and hinged for independent rotation upon a common axis, a main display member also hinged for rotation about said axis and overlapping said auxiliary members when all are on one side of the axis, and releasable means for normally holding all of said members together and at one side of the axis and operable to release the members, one or more at a time, to permit them to rotate to display positions, said display members carrying indicating symbols, those upon the auxiliary members supplementing those exhibited upon release of the main display member.

3. In an annunciator, a plurality of auxiliary display members arranged side by side and hinged for independent rotation upon a common axis, a main display member also hinged for rotation about said axis and overlapping said auxiliary members when all are on one side of the axis, a latch for holding each auxiliary member at one side of the axis and independently of the other members, and a latch for holding said main member also at said one side of the axis, said display members carrying indicating symbols, those upon the auxiliary members supplementing those exhibited upon release of the main display member.

4. In an annunciator, a plurality of auxiliary display members arranged side by side and hinged for independent rotation upon a common axis, a main display member also hinged for rotation about said axis and overlapping said auxiliary members when all are on one side of the axis, and releasable means for normally holding all of said members together and at one side of the axis and operable to release the members, one or more at a time, to permit them to rotate to display positions, said display members carrying indicating symbols, those upon the auxiliary members supplementing those exhibited upon release of the main display member.

5. In an annunciator, a plurality of component display vanes arranged side by side

and hinged for independent rotation upon a common axis, a main vane overlapping the component vanes and hinged for rotation about said common axis, and releasable means normally holding said vanes together and operable to release the vanes one at a time for rotation to other positions, said vanes carrying indicating symbols, those upon the component vanes supplementing those exhibited upon release of the main vane.

6. In an annunciator, component display vanes arranged side by side and hinged for independent rotation to different positions, a main vane overlapping the component vanes and hinged for movement to a position to uncover the component vanes, and releasable holding means for said vanes operable to release the vanes one at a time, all of said vanes carrying display symbols which form different display combinations when released in different combinations.

7. In an annunciator, component display vanes arranged side by side and hinged for independent rotation to different positions, a main vane overlapping the component vanes and hinged for movement to a position to uncover the component vanes, releasable holding means for said vanes operable to release the vanes one at a time, said vanes having related symbols on their abutting faces which form a common symbol when the main vane uncovers the other vanes, the rear faces of the component vanes having symbols, which, when any component vane is released and rotates to another position, will be displayed as a counterpart of the symbol upon the then non-visible face and

in addition have another distinguished symbol.

8. In an annunciator, a plate, a display member hinged for rotation toward and from the front face of the plate, means for releasably holding the member against the plate, an open ended casing abutting endwise against the rear face of the plate, a tubular screw passing through the plate from the front face and threaded into the abutting end of the casing to anchor the casing to the plate, a plunger slidable in said tubular screw, and a spring in said casing acting upon the plunger to press the same forwardly against the member and impart thereto when released an initial movement away from the plate.

9. In an annunciator, a plate, a display member hinged for rotation toward and from the front face of the plate, means for releasably holding the member against the plate, an open ended casing abutting endwise against the rear face of the plate, a tubular screw passing through the plate from the front face and threaded into the abutting end of the casing to anchor the casing to the plate, a plunger slidable in said tubular screw, and having a collar engaging with the screws to limit its forward movement, and a spring in said casing acting upon the plunger to press the same forwardly against the held member and impart thereto when released an initial movement away from the plate.

In witness whereof, I hereunto subscribe my signature.

WILLIAM T. DIPPEL.