

June 28, 1960

W. G. HORTON

2,942,364

DISPLAY DEVICE

Filed Oct. 30, 1957

2 Sheets-Sheet 1

FIG. 1

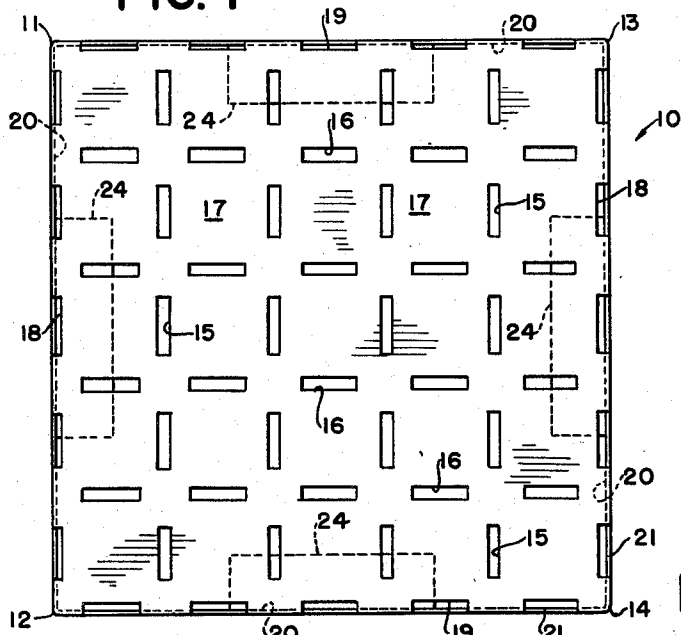


FIG. 2

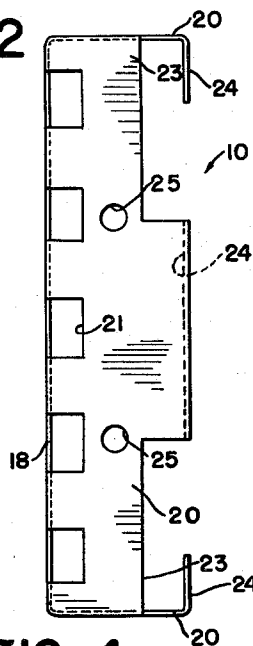


FIG. 3

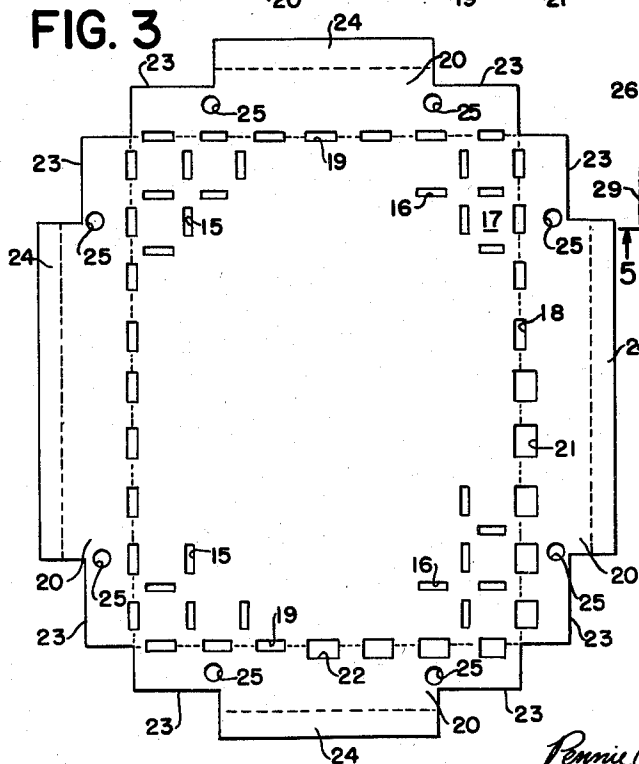


FIG. 4

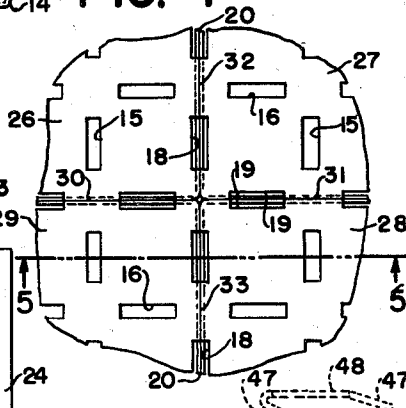
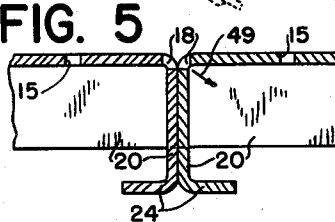


FIG. 5



INVENTOR.
WILLIAM GRAY HORTON

BY

Pennie, Edwards, Morton, Barrows & Mayo

ATTORNEYS

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2 Sheets-Sheet 2

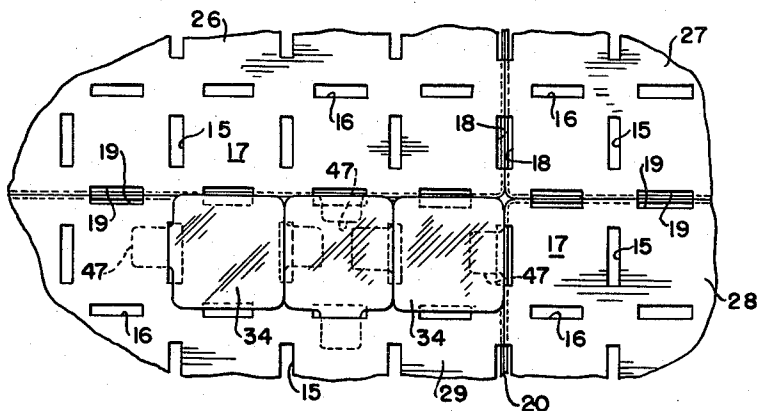


FIG. 6

FIG. 9

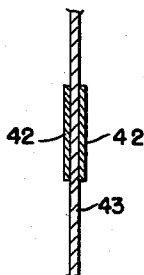


FIG. 7

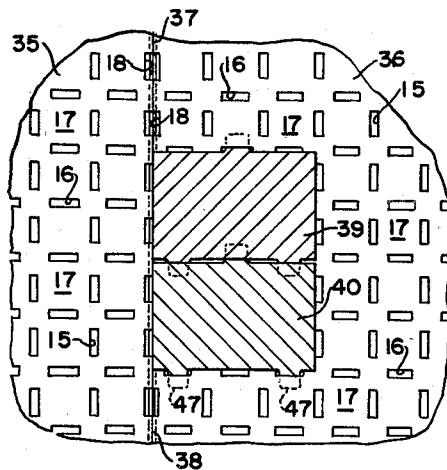
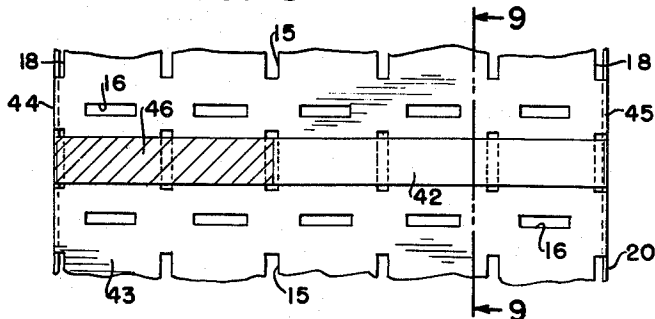


FIG. 8



INVENTOR.
WILLIAM GRAY HORTON

BY

Perma L. Edwards, Milton, Parsons & Thelous
ATTORNEYS

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2,942,364

DISPLAY DEVICE

William Gray Horton, % Gray Horton Products,
22 Bruton St., Northampton, England

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Claims priority, application Great Britain Nov. 6, 1956

10 Claims. (Cl. 40—63)

This invention relates to display and like devices of the type comprising perforated plates of metal or other suitable material adapted to receive and retain indicating means of various forms, and has for its object to improve the construction of such plates, whereby they are cheaper to produce, simpler to use and when joined to one another to form a large indicating surface they provide a more homogeneous field than has hitherto been possible.

With early forms of such devices the perforated plates were made to required sizes and the perforations stopped short of the bounding edges of the plates. However, with the experience of use, it became obvious that the needs of technicians and business men required perforated plates to be of larger size than the standard sizes manufactured. As a consequence, standard-sized perforated plates were arranged side by side and one above the other, but even then considerable inconvenience was caused by the inability to continue a line or block of indicators from one plate to another.

In an endeavour to overcome this inconvenience, the arrangement first shown in the specification of applicant's United States Patent 2,551,539, dated May 1, 1951 was adopted. In this the edges of the plates are arranged at the half positions of parallel perforations disposed at right angles to said edge so that when two plates are juxtaposed the edge of one comprising a plurality of such right-angled half perforations joins with a similar edge of the other, thus to complete the line of perforations and give continuity to the built-up perforated surface. When moulded from a plastic material, flanged plates according to this arrangement proved to be impractical due to the plates shrinking unevenly and to cracking and breaking which occurred mainly at the corners; moreover, the largest unit it was commercially possible to mould, was too small.

Another attempt to overcome the inconvenience was as set forth in the specification of applicant's United States Patent 2,769,553, dated November 6, 1956. Here the objects were the same as those set out in the specification of Patent 2,551,539 but as the plates were made from metal they were practical within certain limitations. These limitations became apparent after a few years' commercial working and include unduly high cost of manufacture especially in relation to the "tooling," number of operations to produce a plate, and high percentage of rejected plates. Again, with the two juxtaposed plates, frequently at the junction the indicator devices were disposed partly at the edge of one plate and partly at the edge of the adjacent plate. As a result, when, as frequently occurred, it became necessary to separate the two plates and interpolate an additional plate, it was necessary to remove these indicators to prevent their accidental displacement. Difficulties also occurred in mounting endless bands (forming indicators) on such plates as such endless bands could not extend to the actual edge of a plate and an obvious visual break of necessity occurred in using such indicator means when passing from one plate to the next adjacent. Further, owing to the fact

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that the edges of the plates finished at half-length perforations, calculations involving the available spaces for display were unduly complicated.

The present invention has for its primary object to overcome these and other drawbacks.

According to the present invention, a perforated plate, for a display and like device of the type set forth, is formed rectangular and has rows of uniformly spaced similar substantially rectilinear perforations therethrough which extend parallel to its edges to define and bound an exact number of unit square-shaped areas on the surface of the plate. Further, each of the four boundaries of the plate cuts through a row of aligned perforations to leave at each boundary of the plate open-sided notches having a depth substantially equal to half the width of a perforation.

In this manner when two such plates are mounted with their similar edges in contact, the notches in the edge of one plate associate themselves with the similar notches in the edge of the other plate to give absolute unbroken and unhindered continuity from one plate to the other.

Preferably, each plate has on and extending beyond its bounding edges, a rearwardly bent integral flange and consequently when the device comprising the plate and four integral flanges is blanked out and then perforated, it only remains to bend these flanges along the bounding lines of the plate, to leave the open-sided notches having a width of substantially half a perforation in all the bounding edges of the plate.

In this manner when one plate is mounted against a similar plate the contacting flanges can be bolted together to hold the parts in position and to leave a continuous perforated display surface. Again, in some cases, in place of bolting the plates together by their flanges these main flanges can have auxiliary hook-like flanges by which the plates are suspended by a wall rail or the like to bring them into the required adjacent positions and allow for ready sliding movement the one from the other.

As hitherto, the indicators for mounting on the perforated plate are generally shaped to cover a unit area of one square on the perforated plate or a multiple of said unit.

Now as the perforated plate has complete unit squares extending along all its four edges, it follows that indicators can be disposed along any one or all of these edges so that their boundaries coincide with the edge or edges. Consequently, as such disposition of indicators can be arranged on each of two adjacent plates, visual continuity of a row or bank of indicators is assured although some indicators are on one plate and some on the other.

The indicators mounted at the edge of a plate should have their attaching means to the plate so shaped and disposed that it engages only the plate on which the indicator is mounted and not the other plate also. Ready separation of the plates, with the indicators remaining in position, will then be possible.

In order that the invention may be better understood, it will now be described with reference to the accompanying drawings which are given by way of example only and in which:

Fig. 1 is a front elevation of one embodiment of a perforated plate constructed according to the invention.

Fig. 2 is a side elevation of Fig. 1.

Fig. 3 shows to a smaller scale a perforated blank to be bent up to form the flanged perforated plate shown in Figs. 1 and 2.

Fig. 4 shows a fragmentary elevation of the meeting corners of four juxtaposed perforated plates, to the same scale and as shown in Figs. 1 and 2.

Fig. 5 shows a cross section on the line 5—5, Fig. 4.

Fig. 6 shows a somewhat similar view to Fig. 4 but with a row of tabbed indicators in position.

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Fig. 7 shows a fragmentary elevation of two adjacent perforated plates as shown in Figs. 1 and 2 with indicators of card form in position.

Fig. 8 shows an elevation of a portion of a perforated plate as shown in Fig. 1, with an endless band indicator in position, and

Fig. 9 shows a vertical section through the plate and indicator of Fig. 8.

In Figs. 1 and 2, 10 is a rectangular metal plate having boundaries 11—12, 11—13, 12—14 and 13—14. This has passing therethrough rows of regularly spaced aligned similar rectilinear perforations 15 which are parallel to the boundaries 11—12 and 13—14, and other similar and similarly arranged rectilinear perforations 16 which are parallel to the boundaries 11—13 and 12—14. The perforations 15 and 16 are so relatively disposed that they bound and define a number of unit square-shaped areas 17 on the surface of the plate 10. Additionally, the boundaries 11—12 and 13—14 cut through rows of perforations 15 to leave regularly spaced open-sided notches 18 having a depth equal to substantially half the width of the rectilinear perforations 15 or 16. Similarly, the boundaries 11—13 and 12—14 cut through rows of perforations 16 to leave regularly spaced open-sided notches 19 having a depth equal to substantially half the width of the rectilinear perforations 15 or 16.

Each bounding edge has a rearwardly bent integral flange 20 bent along the bounding line and the right-hand lower part of Fig. 3 and the lower part of Fig. 2 show how, in some cases, the half-perforation-width notches 18 extend into rectangular apertures 21 which pass through the parallel flanges 20, and the other half-perforation-width notches 19 extend into similar rectangular apertures 22 which pass through the other two parallel flanges 20. These rectangular apertures 21 are not necessary, however, and are not included in Fig. 5.

The rear of the flanges 20 is partly cut away at the four corners at 23 and the intermediate portions of the flanges 20 at the rear are extended and bent inwardly to form integral hook-like auxiliary flanges 24, by any one of which the perforated plate can be suspended from a flanged wall rail or the like. The flanges 20 also have bolt holes 25 in similar positions, to provide for adjacent plates to be bolted together when required.

As will be appreciated from an inspection of Fig. 3, the boundaries of the perforated plate pass through the boundary rows of perforations 15 and 16 in order to form and leave the open-sided notches 18 or 19 when the flanges 20 are bent along the boundary lines, in the manner indicated in Fig. 5. This Fig. 5 also shows how one of the ordinary lugs 47 of an indicator 48 is bent under the indicator before it is inserted into one only of two associated notches at the junction between two plates, by moving it after insertion through the notch of one plate in the direction of the arrow 49. By this means the bent lug 47 is located under the plate which carries the indicator and does not engage the adjacent plate in any way whatever. This permits ready separation of the plates, if and when required, without removing any of the indicators.

In Fig. 4, the four corners of four perforated plates 26, 27, 28 and 29 have junction lines 30—31 and 32—33 between them and it will be appreciated from the figure how the notches 18 and 19 at these junction lines coincide to permit continuity of display.

Fig. 6 illustrates the manner in which a row of lugged indicators 34 can be disposed at the edge of one of the plates of a group such as shown in Fig. 4. In Fig. 6 it will be seen that the right-hand indicator 34 has a bent-back lug such as 47 (Fig. 5) at its right-hand side, and that a similar lug is disposed at the upper edge of the indicator 34 which is located in the intermediate position. The indicator at the left-hand side has two normally projecting lugs. It will be appreciated that this method of mounting the indicators 34 on the plate 29,

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whereby they engage with edge notches or perforations on this plate only, permits this plate to be withdrawn from the plates 26, 27 and 28 when desired, without having to remove any indicators. However, if it is necessary to continue the row of indicators on to the plate 28, this readily can be done without any visual break but these indicators will have lugs which engage only with the notches or perforations of the plate 28. Similarly, other indicators can be disposed at the lower edge of the plate 26, to bank with those on the plate 29 to give visual continuity to the bank and not to require removing when the plates are separated.

In Fig. 7 two perforated plates 35 and 36 have a junction line 37—38 between them. A lugged indicator card 39 of the kind set forth in the specification of applicant's United States patent application Serial No. 438,560, filed June 22, 1954, now Patent No. 2,814,894, is shown on the plate 36 covering an area of six unit squares and with one edge flush with the junction line and it will be appreciated that its lugs engage only perforations in the plate 36. Another similar indicator card 40 is shown immediately below the card 39, also with an edge flush with the junction line, the disposition of the lugs on the cards readily permitting this. If it is desired the longer edges of these cards should come flush with the junction line, then the lug or lugs at this longer edge must be bent back into hook-like form to engage the notch or notches in the edge of the plate on which the card is to be disposed.

The notches 18 or 19 in the boundaries of the perforated plates permit the satisfactory use of endless band indicators. One of these, 42, is shown in position on the perforated plate 43 in Fig. 8. This plate 43 has at its two edges 44 and 45, notches 18 as before described, and into and around these notches the endless band can pass from side edge to side edge of the plate. This gives continuity as, should the indication have to be extended to the next succeeding plate, another similarly disposed endless band is mounted on said plate. As will be appreciated, as the bands fill the notches 18 there is no visible break at the display surface.

Of course, the endless band need not commence or end at an edge of the perforated plate but may extend between any two parallel rectilinear perforations coming at the same level of the plate.

Preferably, the endless band indicators employed are for half of their length of one colour and half another colour, which may match the colour of the display surface of the plate. By this means a desired length of the contrasting colour, indicated by shading lines at 46, Fig. 8, can be brought to the display position, according to the information being displayed.

The invention is not limited to the precise forms or details of construction herein described, as these may be varied to suit particular requirements.

I claim:

1. A perforated plate, for a display or like device, formed rectangular and having therethrough rows of uniformly spaced similar substantially rectilinear perforations extending parallel to its edges, each of the four edges of the plate cutting through a said row of aligned substantially rectilinear perforations to leave at each edge of the plate open-sided notches having a depth substantially equal to half the width of a substantially rectilinear perforation, the open sided notches and the perforations being so constructed and arranged as to define and bound an exact number of unit square-shaped areas on the surface of the plate, said plate also having on and extending beyond each of its edges a rearwardly bent integral flange, the lines of bending coinciding with rows of aligned rectilinear perforations to leave the open-sided notches at the edges of the plate.

2. A perforated plate according to claim 1, in which the open-sided notches at the edges of the plate extend into rectangular apertures through the flanges.

3. A display or like device comprising a rectangular plate having a plurality of uniformly spaced substantially rectilinear similar perforations extending therethrough, said perforations being arranged in horizontal and vertical rows extending parallel to the edges of the plate, each of the edges of the plate being coaxial with the axis of a longitudinally aligned row of perforations to form in each edge of the plate open-sided notches having a depth substantially equal to half the width of a perforation, the open-sided notches and the perforations being so constructed and arranged as to define and bound an exact number of unit square-shaped areas on the surface of the plate, said display or like device also including an integral flange extending rearwardly from each of the edges of the plate, the remainder of each perforation in the row from which said notches are formed extending through a flange.

4. A display or like device comprising a plurality of rectangular plates according to claim 3 arranged side by side with the adjacent flanges of the plates secured together and the notches along adjacent edges aligned.

5. A perforated plate for a display or like device, formed rectangular and having therethrough rows of uniformly spaced similar perforations the centers of each perforation in a row forming an axis, said axis extending parallel to the edges of said plate, at least one edge of said plate cutting through a said axis to form in said edge open-sided notches having a depth substantially equal to half the width of a perforation, the open-sided notches and the perforations being so constructed and arranged as to define and bound an exact number of unit areas on the surface of said plate, said display and like device also including an integral flange extending rearwardly from at least one of the edges of the plate, the remainder of each perforation in the row of which said notches are formed extending through a flange.

6. A display or like device comprising a plurality of rectangular plates according to claim 5 arranged side by side with the adjacent flanges of the plates secured together and the notches along adjacent edges aligned.

7. A perforated plate for a display or like device, formed rectangular having therethrough rows of uniformly spaced similar substantially rectilinear perfora-

tions extending parallel to its edges, at least one edge of said plate cutting through a said row of aligned perforations to form in said edge open-sided notches having a depth substantially equal to half the width of a perforation, the open-sided notches and the perforations being so constructed and arranged as to define and bound an exact number of unit square-shaped areas on the surface of said plate, said display or like device also including an integral flange extending rearwardly from at least one of the edges of the plate, the remainder of each perforation in the row from which said notches are formed extending through a flange.

8. A display or like device comprising a plurality of rectangular plates according to claim 7 arranged side by side with the adjacent flanges of the plates secured together and the notches along adjacent edges aligned.

9. In combination, a display or like device as set forth in claim 6 and a series of marking indicators secured thereto by means of the perforations in said plates, the parts being so constructed and arranged that a continuous pattern of said marking indicators may be arranged on said display device which will be uninterrupted by the joining lines between plates and which may be arranged in such a manner that a plate may be removed without disturbing indicators secured to an adjacent plate.

10. In combination, a display or like device as set forth in claim 8 and a series of marking indicators secured thereto by means of the perforations in said plates, the parts being so constructed and arranged that a continuous pattern of said marking indicators may be arranged on said display device which will be uninterrupted by the joining lines between plates and which may be arranged in such a manner that a plate may be removed without disturbing indicators secured to an adjacent plate.

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