

Feb. 16, 1960

R. BACHI

2,924,895

STATISTICAL DEVICES AND METHODS OF PROVIDING SAME

Filed April 1, 1957

11 Sheets-Sheet 1

FIG. 1.

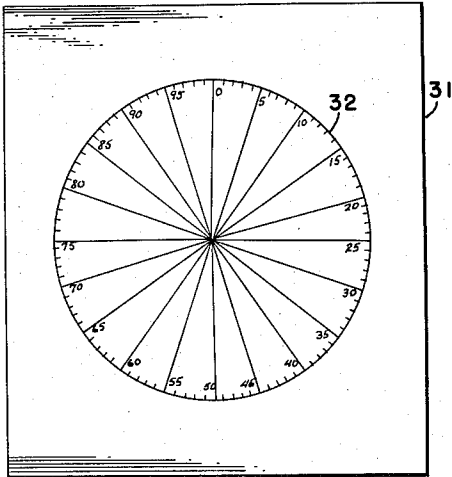


FIG. 7.

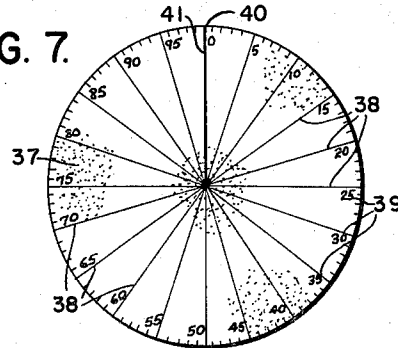


FIG. 3.

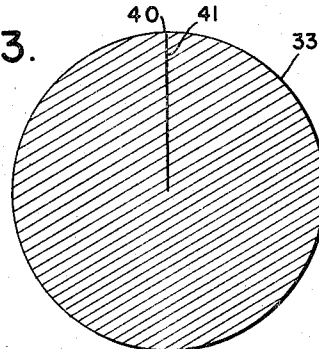


FIG. 2.

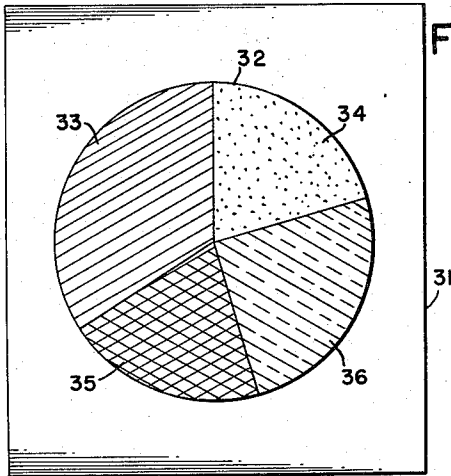


FIG. 4.

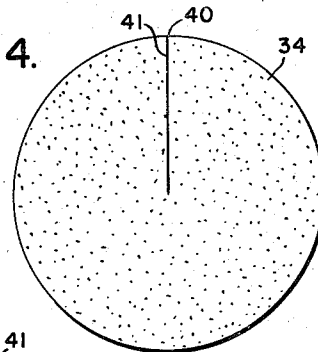


FIG. 5.

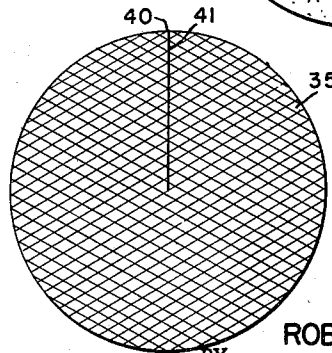
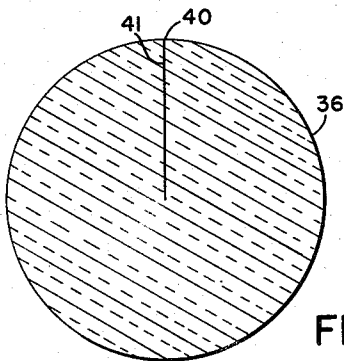


FIG. 6.



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FIG. 8.

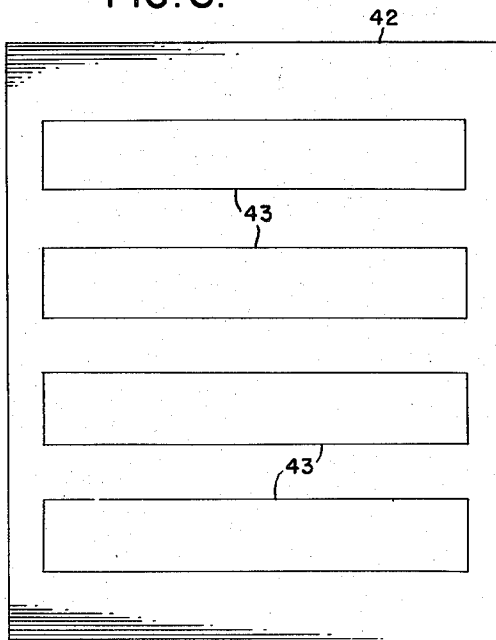


FIG. 14.

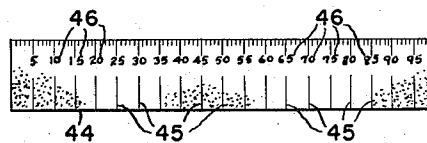


FIG. 10

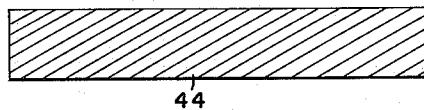


FIG. 11.

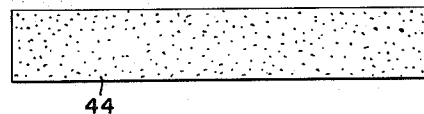


FIG. 9.

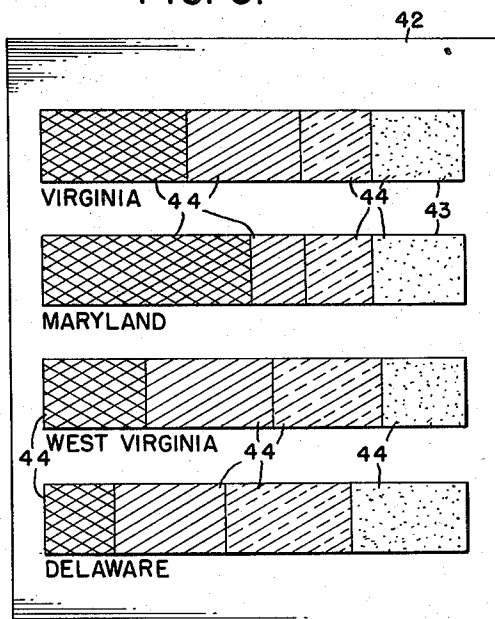


FIG. 12.

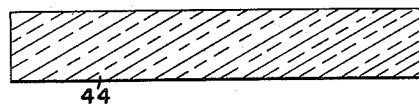
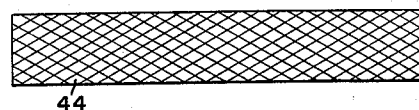


FIG. 13.



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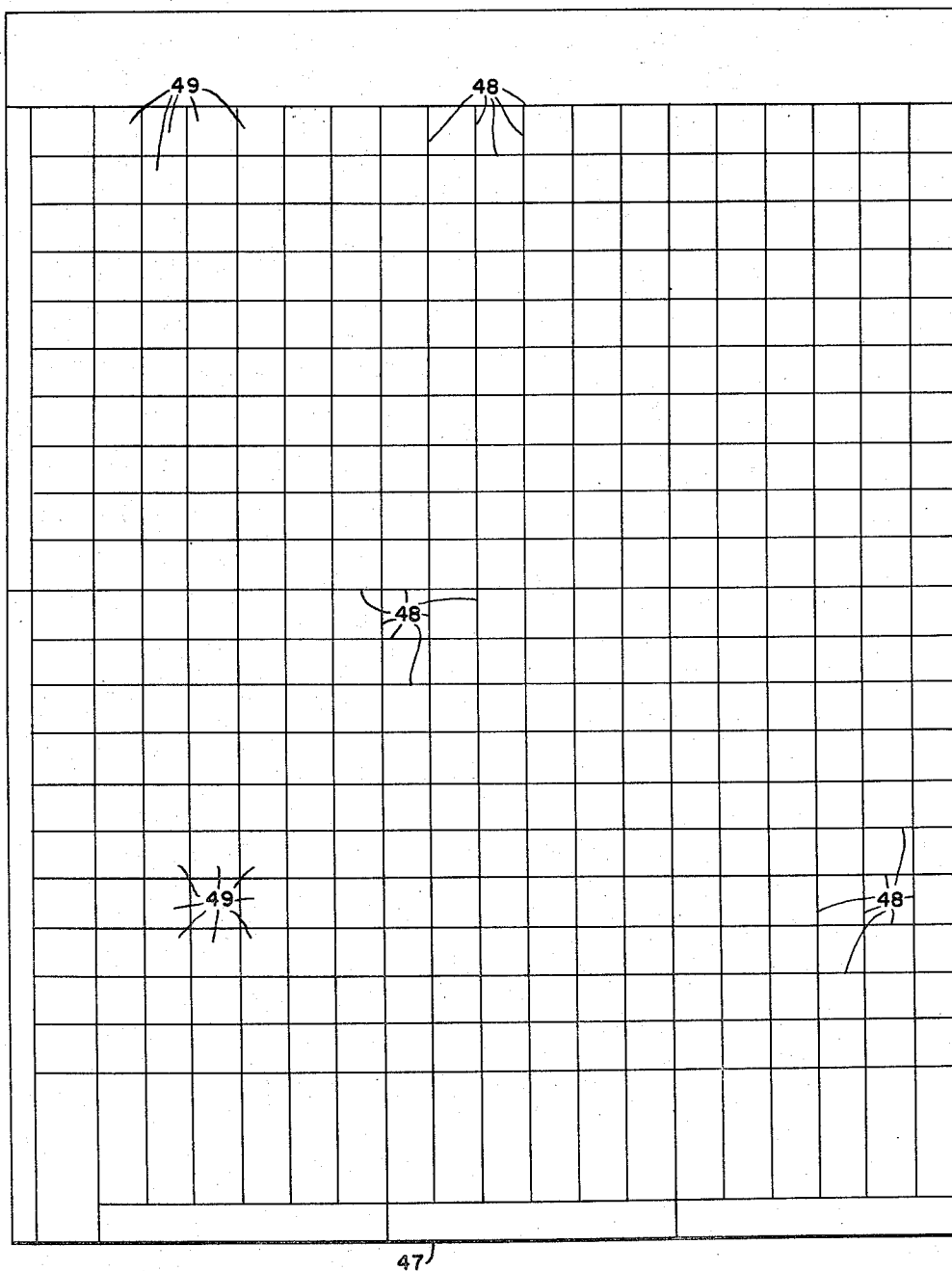


FIG. 15.

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FEMALES	75+	1	1	1	1	1	0	3	6	6	8	6	4	12	9	9	7	9	12
	65-74	1	1	1	1	1	0	7	6	6	8	6	4	7	9	9	7	9	12
	55-64	1	1	1	1	1	0	10	10	10	13	10	9	5	5	5	2	4	7
	45-54	1	1	1	1	1	1	12	12	14	14	13	10	2	3	1	1	2	5
	35-44	1	1	1	1	1	1	14	13	14	15	14	12	1	2	1	1	1	3
	30-34	1	2	1	1	1	1	14	14	15	14	14	14	1	1	0	1	1	2
	24-29	2	2	1	1	2	2	14	14	15	14	14	13	1	1	0	1	0	1
	20-24	5	5	3	5	5	4	11	11	12	11	11	12	0	0	0	0	0	0
	14-19	14	14	14	14	14	13	2	2	2	2	2	2	0	0	0	0	0	0
	ALL AGES	3	3	3	3	3	3	11	10	11	11	11	10	2	3	2	2	2	3
MALES	75+	1	1	2	1	1	1	9	11	11	11	11	10	6	4	3	3	4	5
	65-74	1	1	2	1	1	1	12	11	11	11	11	10	3	4	3	3	4	5
	55-64	2	2	2	2	2	1	13	13	12	13	13	13	2	2	2	1	2	2
	45-54	1	1	2	2	2	1	14	14	14	13	14	14	1	1	1	1	1	1
	35-44	2	2	2	2	2	2	14	14	14	14	14	13	0	1	0	0	0	1
	30-34	2	3	2	3	2	2	14	13	14	13	14	14	0	0	0	0	0	0
	25-29	3	3	2	3	3	3	13	13	14	13	13	13	0	0	0	0	0	0
	20-24	8	7	8	9	8	7	8	8	8	7	8	9	0	0	0	0	0	0
	14-19	16	15	16	16	16	15	0	1	0	0	0	1	0	0	0	0	0	0
	ALL AGES	4	4	4	5	4	4	11	11	11	11	11	11	1	1	1	1	1	1
		TOTAL	URBAN	RURAL NON FARM	RURAL FARM	WHITE	NON WHITE	TOTAL	URBAN	RURAL NON FARM	RURAL FARM	WHITE	NON WHITE	TOTAL	URBAN	RURAL NON FARM	RURAL FARM	WHITE	NON WHITE
SINGLE								MARRIED						WIDOWED & DIVORCED					

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FIG. 16.

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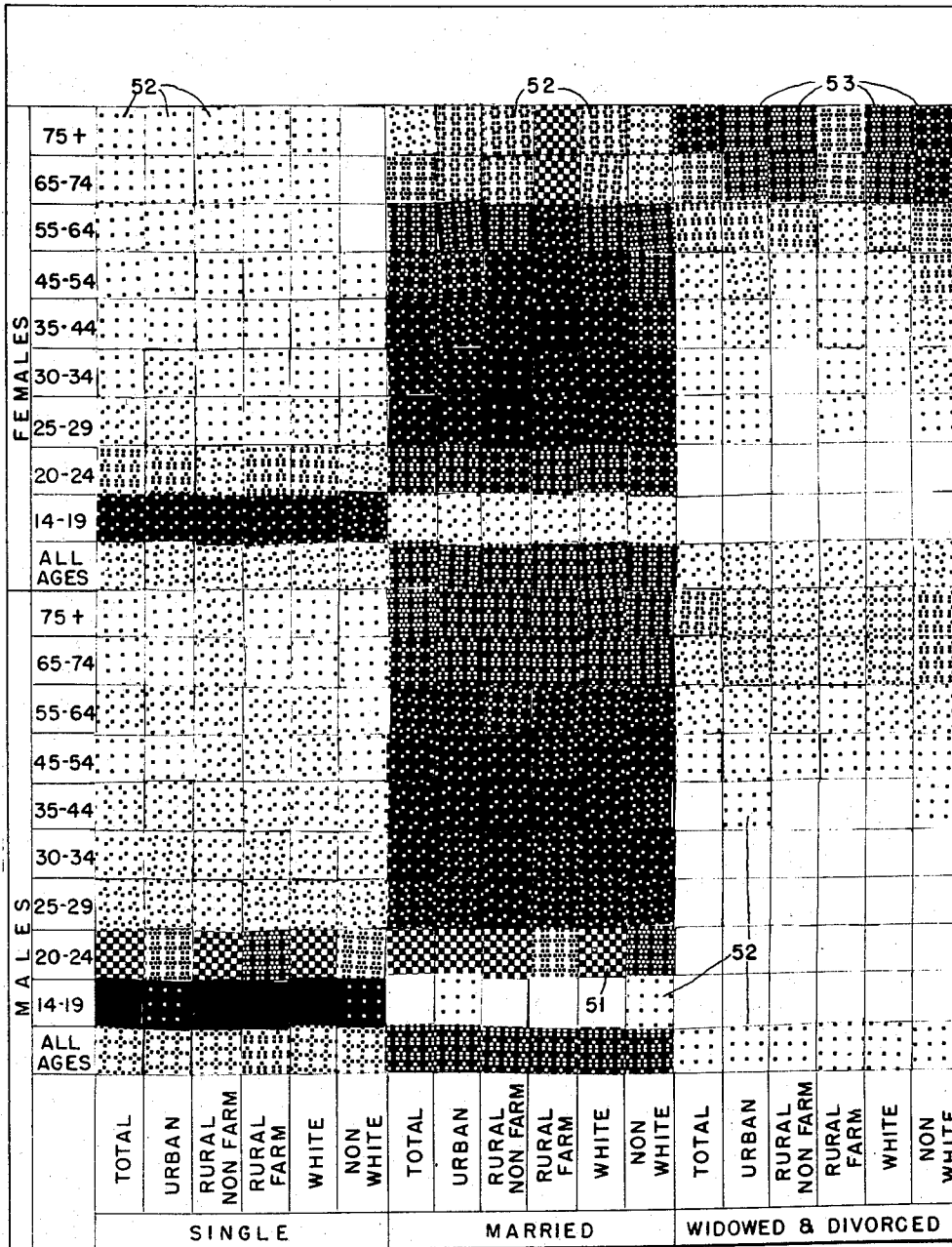


FIG. 17.

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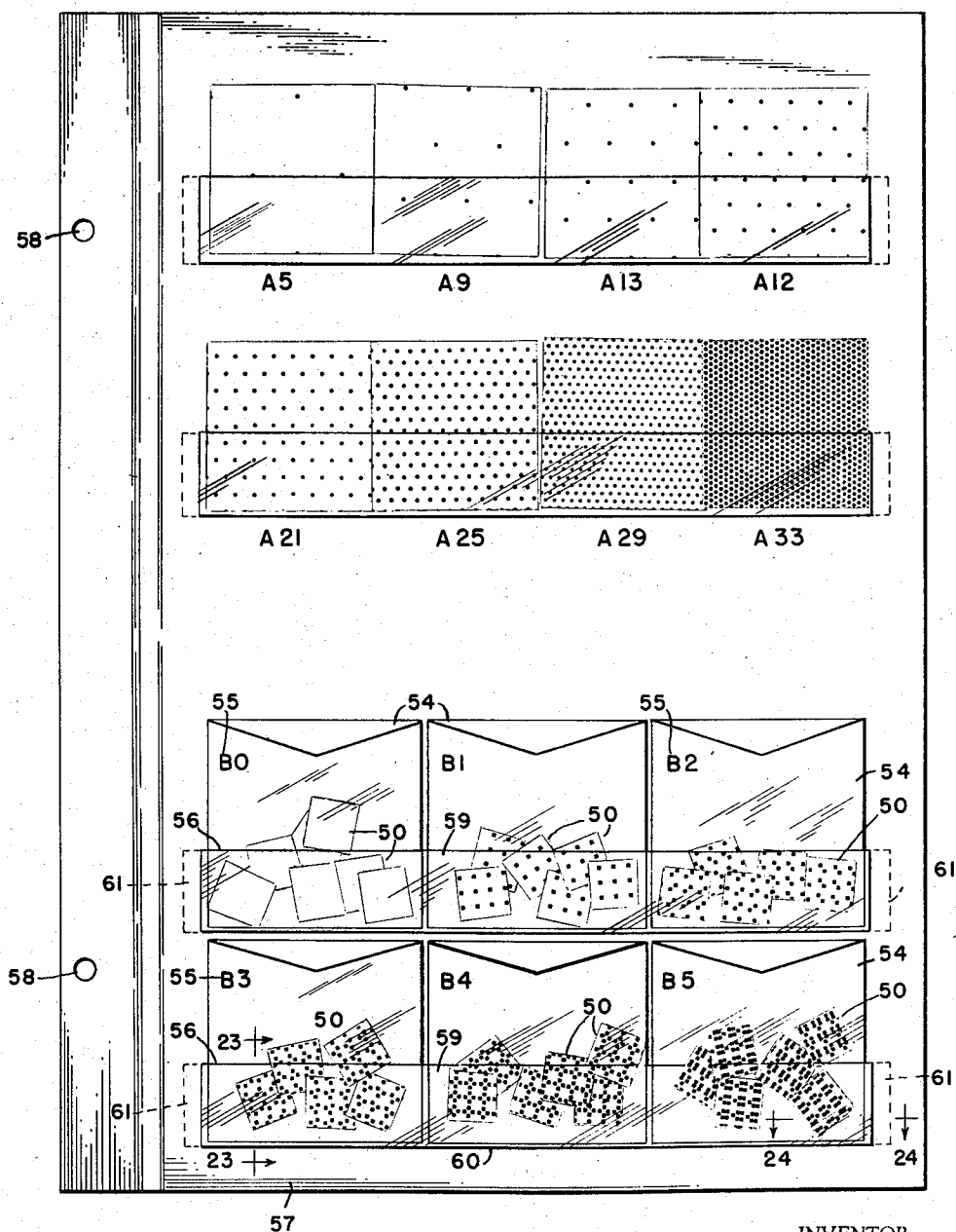
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FIG. 18



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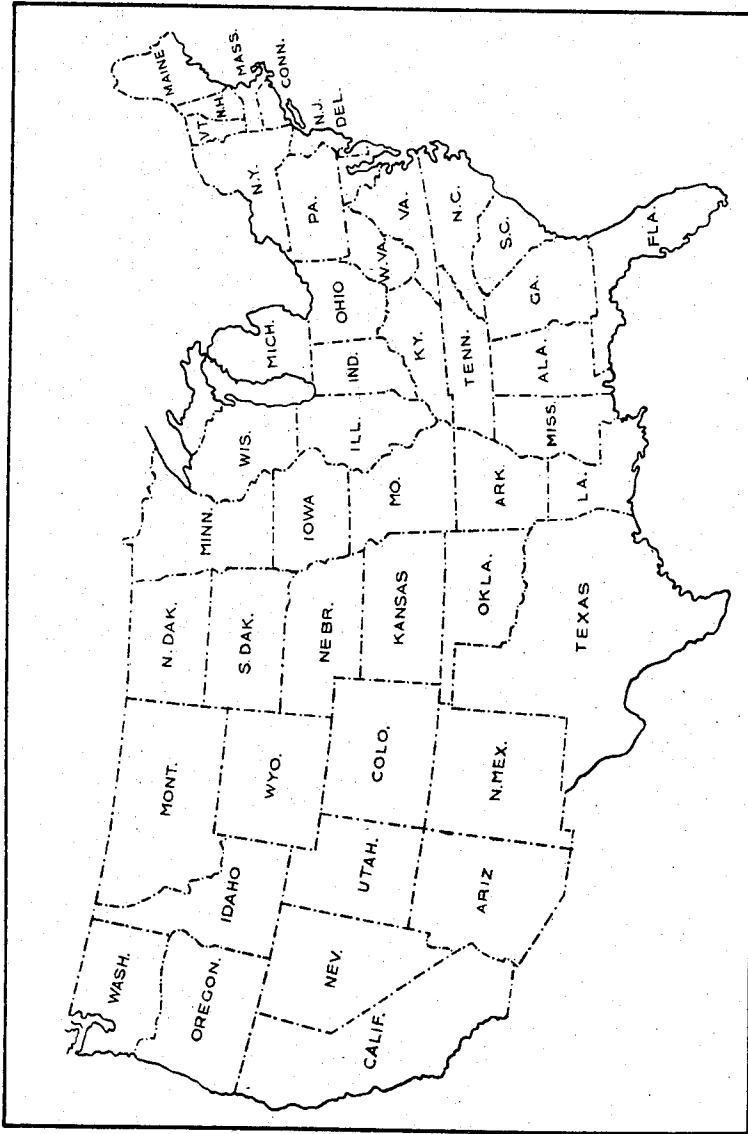


FIG. 19.

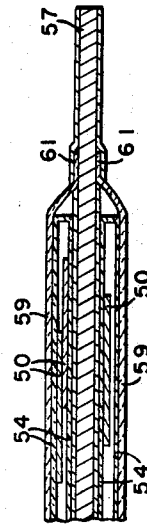


FIG. 24

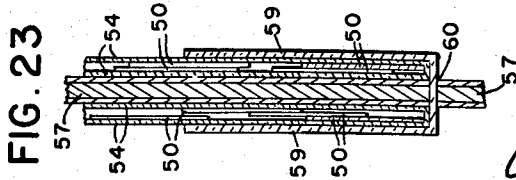


FIG. 23

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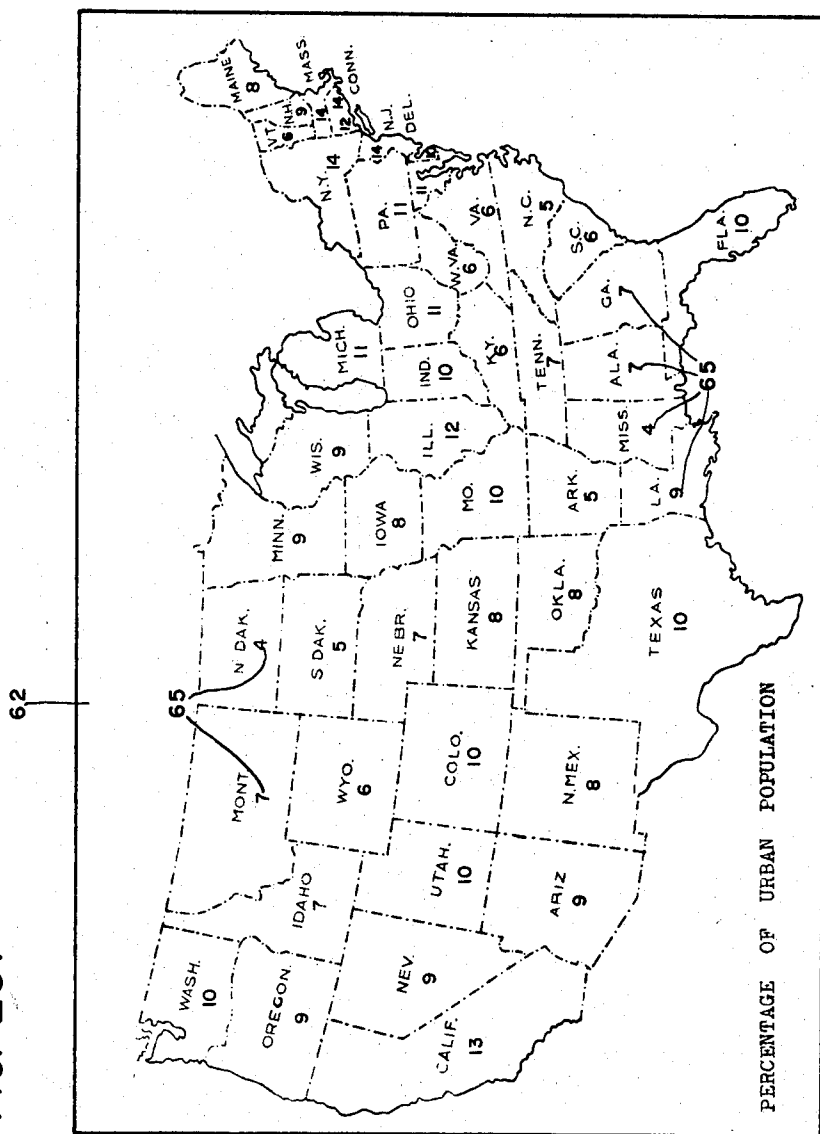
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FIG. 20.



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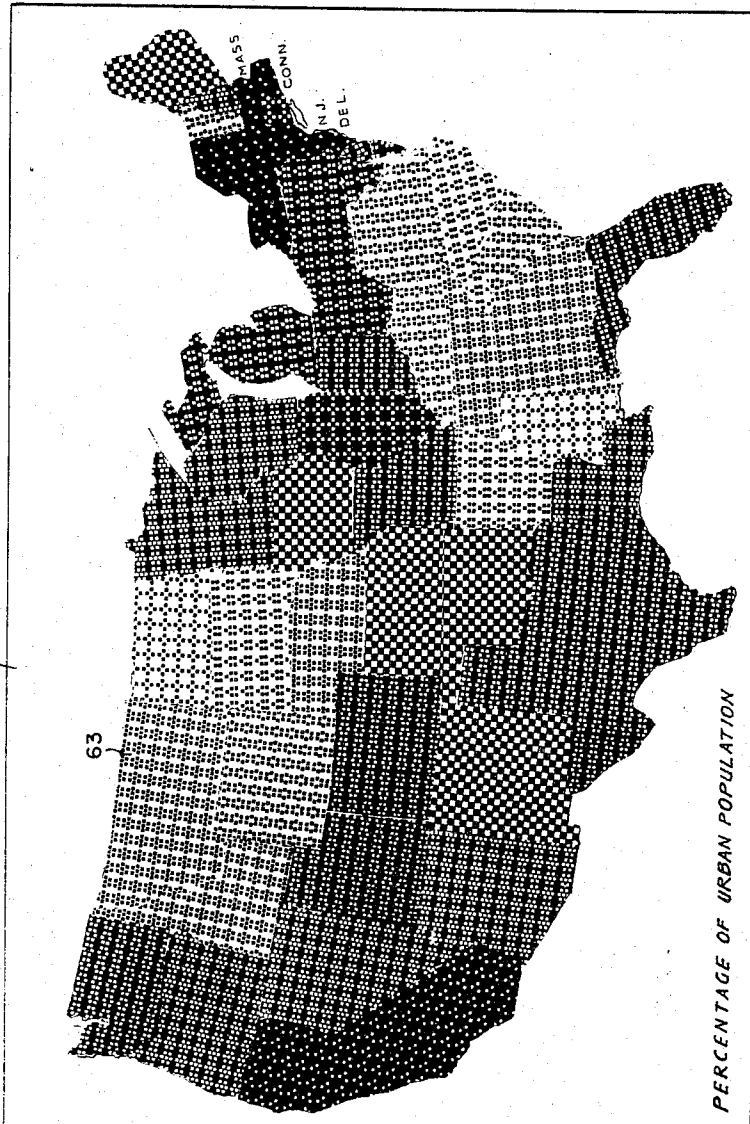
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FIG. 21

62

63



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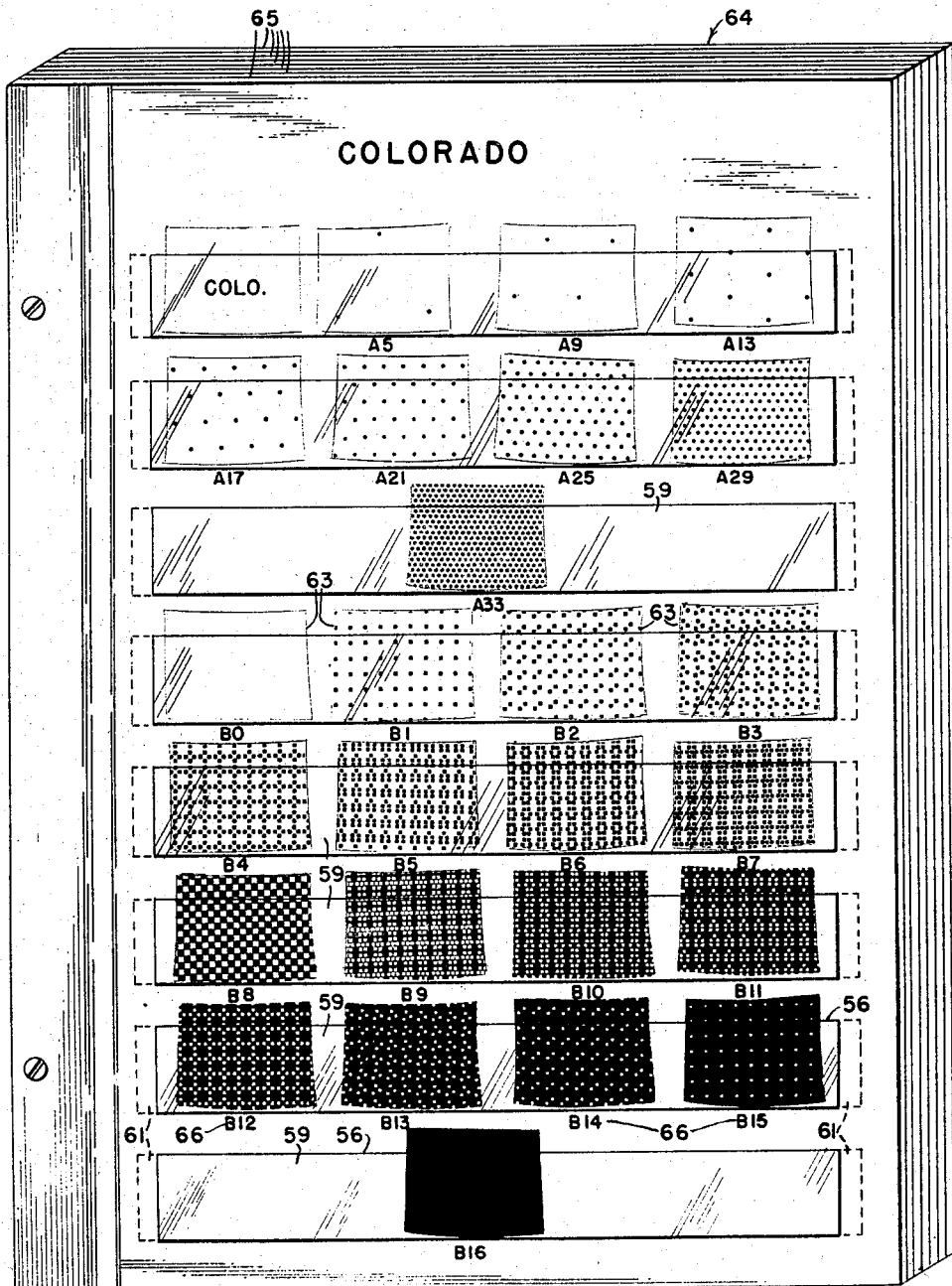


FIG. 22.

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FIG. 25.

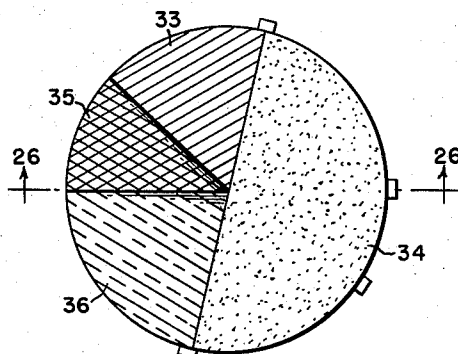


FIG. 26

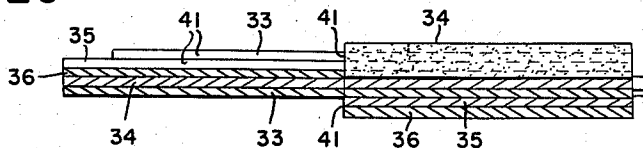


FIG. 27

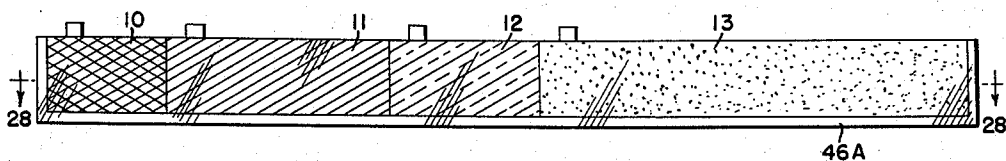
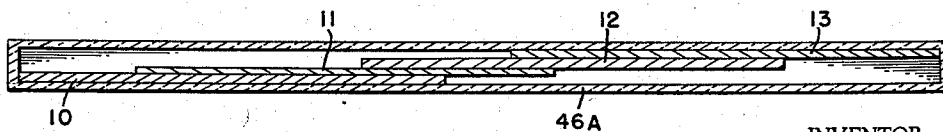


FIG. 28



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STATISTICAL DEVICES AND METHODS OF PROVIDING SAME

Roberto Bachi, Jerusalem, Israel

Application April 1, 1957, Serial No. 650,036

3 Claims. (Cl. 35—24)

This invention relates to statistical devices and it is more particularly concerned with the graphical presentation of statistical information, such as in the forms of maps, grids, bar and pie diagrams, and also to methods of preparing such maps, grids and diagrams and to devices for use in such preparation.

One of the objects of this invention is the provision of a method of preparing statistical maps and diagrams which is simple and rapid in comparison to the prior art methods.

Another object of this invention is the provision of combinations of devices in kit form that can be used to provide such maps and diagrams in accordance with the method of this invention.

A further object of this invention is the provision of a kit of the type mentioned in which its included elements are completely comprehensive for the production of any given type of statistical map or diagram.

A still further object of the invention is the provision of such means and method which is simple and economical to use, and which does not require the services of highly skilled persons in the actual fabrication of the maps and diagrams and which can, in fact, be accomplished by relatively unskilled persons.

These and other objects, advantages and features of the invention will appear more fully hereinafter in conjunction with the accompanying drawing wherein various representative embodiments of the invention are shown.

In the drawing:

Fig. 1 is a front face view of a blank sheet containing a delineated area for use in accordance with one embodiment of the invention in making the so-called pie diagrams.

Fig. 2 is a completed pie diagram made in accordance with this invention.

Figs. 3, 4, 5 and 6 are top face views of contrasting disc members used in the preparation of the pie diagrams.

Fig. 7 is a bottom view of one of the disc members.

Fig. 8 is a front face view of a blank sheet containing delineated areas in accordance with a second embodiment of this invention of the so-called "bar" graph type.

Fig. 9 is a completed bar graph constructed in accordance with this invention.

Figs. 10, 11, 12 and 13 are top face views of rectangular strips used in the preparation of the bar diagrams.

Fig. 14 is a bottom view of one of the strips.

Fig. 15 is a front face view of a blank sheet containing delineated areas in accordance with a third embodiment of this invention for fabricating grid charts.

Fig. 16 is the same as Fig. 15 with the application of code numbers to the delineated areas.

Fig. 17 is the same as Fig. 15 with the application thereto of design squares according to the respective code numbers of Fig. 16.

Fig. 18 is a front face view of a device for holding in classified relation design squares used in making the grid graph of Fig. 17.

Fig. 19 is a front view of a sheet containing lines de-

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lineating a typical geographical area in accordance with a fourth embodiment of the invention for making the so-called geographical statistical charts.

Fig. 20 is the same as Fig. 19 with the application of code numbers to sectional areas.

Fig. 21 is the same as Figs. 19 and 20 with the application thereto of design members according to the respective code numbers of Fig. 20.

Fig. 22 is a perspective view of a kit book containing a classified set of gummed labels for use in making the geographical statistical chart of Fig. 21.

Fig. 23 is a section along the line 23—23 of Fig. 18 on an enlarged scale.

Fig. 24 is a section along the line 24—24 of Fig. 18 on an enlarged scale.

Fig. 25 is a top plan view of a modification of the first embodiment of Figs. 1 to 7.

Fig. 26 is a cross sectional view along the line 26—26 of Fig. 25.

Fig. 27 is a top plan view of a modification of the second embodiment of Figs. 8 to 14.

Fig. 28 is a cross sectional view along the line 28—28 of Fig. 27.

Referring with more particularity to the drawing, the embodiment of Figs. 1 to 7, relates to the fabrication of pie diagrams in which statistical information is represented by sectors of a circle or "pie." In accordance with this embodiment, there is provided a stock of blanks in the form of sheets of paper 31 each having one or more circles 32 thereon of a standard size. In conjunction with these sheets, there is also provided a plurality of circular discs of paper, of the same size as the circles 32 such as the discs 33, 34, 35 and 36, each having a gummed surface 37 on the back and a color, design, shading or other indicia on the front contrasting to those of the others.

The back or undersurface of each label is also provided with a series of radial lines 38 which are spaced circumferentially to subdivide the space into desired units, such as tenths, hundredths, degrees, radians, or any other units desired. Each line is provided with a numeral or other designation 39 to indicate its position in the desired terms of reference relative to a point of origin 40.

To fabricate the pie diagram, the statistical information is translated into units of the terms of reference used and a sector is cut out of each disc for each separate statistic to be represented on the pie diagram, using the radial lines 38 as guides in making the cuts. The line 41 at the point of origin may be precut on all the discs, so that only one cut need be made per disc to obtain the section desired.

The severed sections are then attached to the blank circle diagram 32 by means of the gummed portions on the back to complete the process resulting in a pie diagram as shown in Fig. 2.

A modification of this embodiment as illustrated in Figs. 25 and 26 comprises omitting the sheets 31 and forming the pie diagram directly by interlocking in overlapped and concentric relation a group of the discs 33, 34, 35 and 36 by means of the cut lines 41. The amount of overlap can be readily changed by simply rotating the discs relative to each other about their centers. The thus adjusted pie diagram may be photographed or otherwise reproduced, or it may be used per se as a demonstration or teaching device.

The embodiment illustrated in Figs. 8 to 14 is similar to that of Figs. 1 to 7, except that the blank sheets 42 are each delineated with a plurality of parallel bars 43 of equal size and shape. Instead of discs, strips 44 are provided in the form of elongated rectangles or bars, each of the same size and shape, but having a distinctive

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color, design, shading or other indicia. The strips 44 are gummed on the back, like a postage stamp, and each of them carries transverse lines 45 on the back which subdivides it longitudinally into units of any desired scale, such as tenths, hundreds, etc., these lines being marked with scale numbers 46.

To prepare a bar graph in accordance with this embodiment, the statistical information is translated into units of the scale on the back of the strips. The strip in each case is then severed at the corresponding line 45 and applied by means of the gummed substance to the bar outlines 43 on the sheet blank 42.

A modification of this embodiment, as illustrated in Figs. 27 and 28 comprises placing a group of the strips, in overlapped relation and adjusting the degrees of overlap in accordance with the statistic to be represented. The resulting composite may be photographed or otherwise reproduced or it may be used directly as a demonstration or teaching device. The group of strips may be held in their overlapped positions by means of a transparent trough or sheath 46A.

The third embodiment of Figs. 15 to 18 is for preparing grid charts. In this case, the sheet blank 47 is provided with crossed lines 48 forming squares 49 of a grid, all the squares being of uniform size. The gummed pieces 50 are also of the same uniform size. In this embodiment it is preferred that the distinctive indicia on the face of these pieces bear a relation to each other in accordance with some system of values to indicate graphically degrees of difference of the statistical information being represented thereby. One such system involves the use of different degrees or tones of shading; another, a system of dots or other elements variously spaced to give a heavier or lighter appearance in accordance with a predetermined reference; still another method involves the use of a set of patterns of black and white of variable degrees of black to white. A particularly effective scheme under the two latter systems, involves the use of a series of such patterns to represent intervals or ranges of statistical values, such as percentages, the pattern being identified with a code number or by any other desired means for use in preparing the final charts. These intervals or ranges are so selected that when used to represent statistics within the range, the deviation between the represented statistic and the proportion of one color to the other or the density of dots is within a desired or acceptable tolerance. A grid chart fabricated with such a system of representation gives the observer a comprehensive view of the information represented thereby, not otherwise obtainable, as will be seen in Fig. 17. This system of representation may be used in any of the embodiments of this invention.

The precut gummed pieces 50, are preferably stored in transparent envelopes 54 of a kit, each envelope containing labels of a single design and bearing a code number or designation 55. These envelopes may conveniently be held in pockets 56 on laminated paperboard sheets 57 provided with marginal holes 58 enabling it to be readily bound in the form of a booklet with other similar sheets. The pockets are each formed by a strip 59 of transparent sheet material, such as cellophane, passing through a slot 60 of the laminated sheet 57, the ends of the strip being disposed upwardly on both the front and back of the book and having tab extensions 61 secured by any suitable means, to the sheet 57, such as by being disposed within and glued to interior laminations of the paperboard sheet. (See Figs. 23 and 24). The code numbers or designations 55 are applied adjacent the position in each pocket for the corresponding envelope 54.

By the use of these code numbers, the statistician has merely to apply the proper code numbers to the appropriate squares of a blank grid (see Fig. 16) and turn it over to a relatively unskilled person for the physical

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application of the corresponding gummed pieces 50 to these squares to complete the diagram as shown in Fig. 17.

An extension of this principle is illustrated in the fourth embodiment of Figs. 19 to 24 wherein geographical areas are involved and in which the subdivisions, such as of States, counties, precincts, wards, etc., are usually of irregular shape. Taking the territory of the United States as an example, the 48 States thereof are of different sizes and shapes. Thus a sheet 62 is provided having an outline of the United States and of the 48 States. For each State, there is provided a series of gummed labels 63 of a size and shape to fit its area on the map. Thus each State has its own set of precut or preformed labels. These labels are classified, arranged and stored in any convenient manner for easy access and ready use. A suitable device for this purpose comprises a booklet 64 having a plurality of laminated paperboard sheets 65, one sheet for each of the geographical subdivisions delineated on the blank map. Pockets 56, similar to those shown in Fig. 18 and made in the same way by transparent strips of sheet material 59, are provided in each sheet 65 to carry the gummed labels 63.

In using this system, the statistician has only to write in the subdivided areas of the blank map the code numbers 66 corresponding to the information desired to be represented thereon (see Fig. 20) and then enlist the services of a relatively unskilled person to apply the corresponding labels to these areas to form the complete map shown in Fig. 21.

One means of utilizing this invention is by providing a series of rolls of adhesive tape containing each distinctive patterns, shadings, colors, designs or other distinguishing indicia, sections of which can be used contiguously in the fabrication of charts that present the statistical data in lineal form, such as data in connection with traffic movements.

Having thus described my invention, I claim:

1. A kit for use in preparing a statistical graph comprising blank sheets containing delineated areas for the application of statistical information, preformed members conforming in size and shape to said areas, said members having indicia on one of their faces each distinct from the others, and having on the opposite faces a graduated scale subdividing the area of the members into sections according to a scale of statistical information.

2. A kit as defined by claim 1 in which the members are in the shape of circles subdivided circumferentially by a series of radial lines.

3. A kit as defined by claim 1 in which the members are in the shape of rectangles and the subdivisions are longitudinal of the rectangles.

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