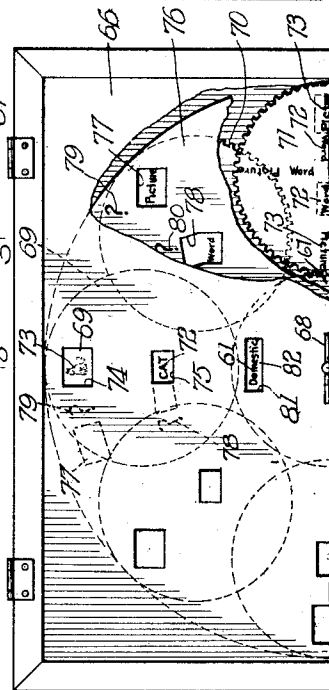
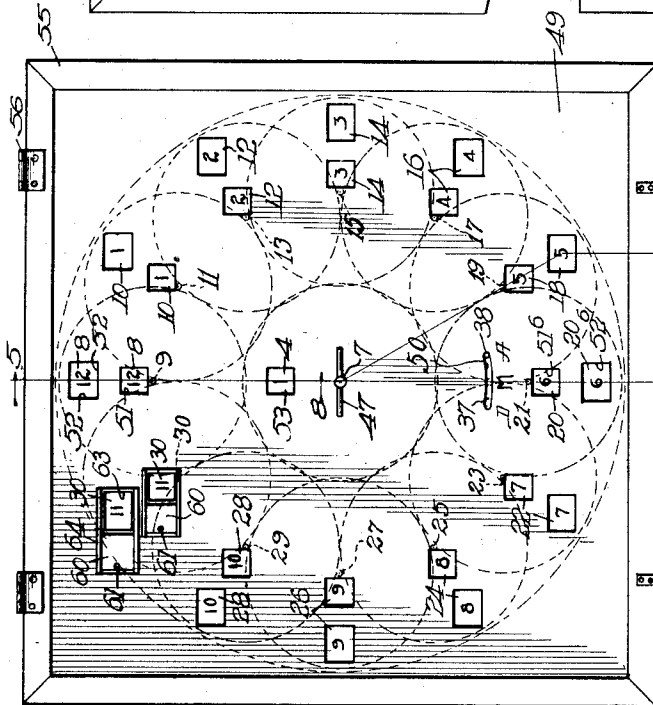
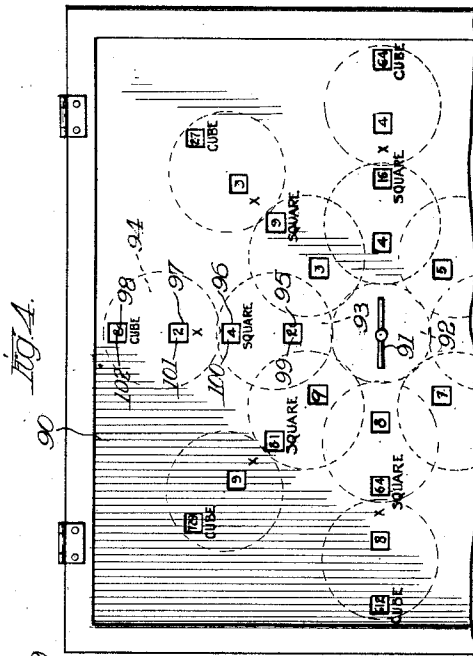
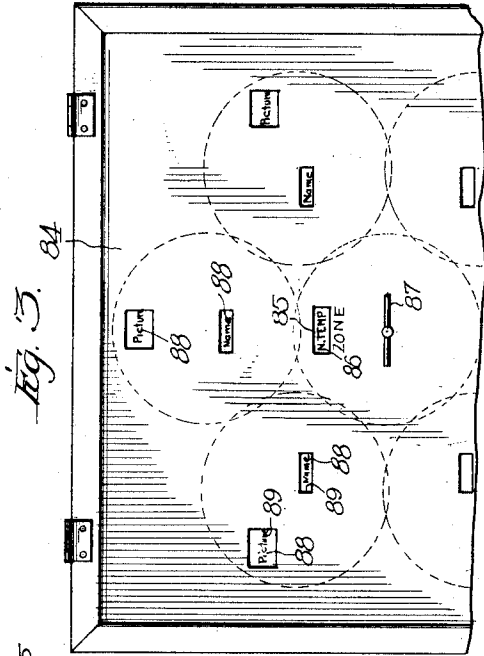


N. GÖTHBERG.
 MEANS FOR IMPARTING INSTRUCTION.
 APPLICATION FILED MAY 13, 1911.

1,024,195.

Patented Apr. 23, 1912.

3 SHEETS—SHEET 1.



Witnesses:
 Robert H. McIn
 Arthur Calan

Fig. 1.

Inventor
 Nathaniel Göthberg
 By N. Göthberg

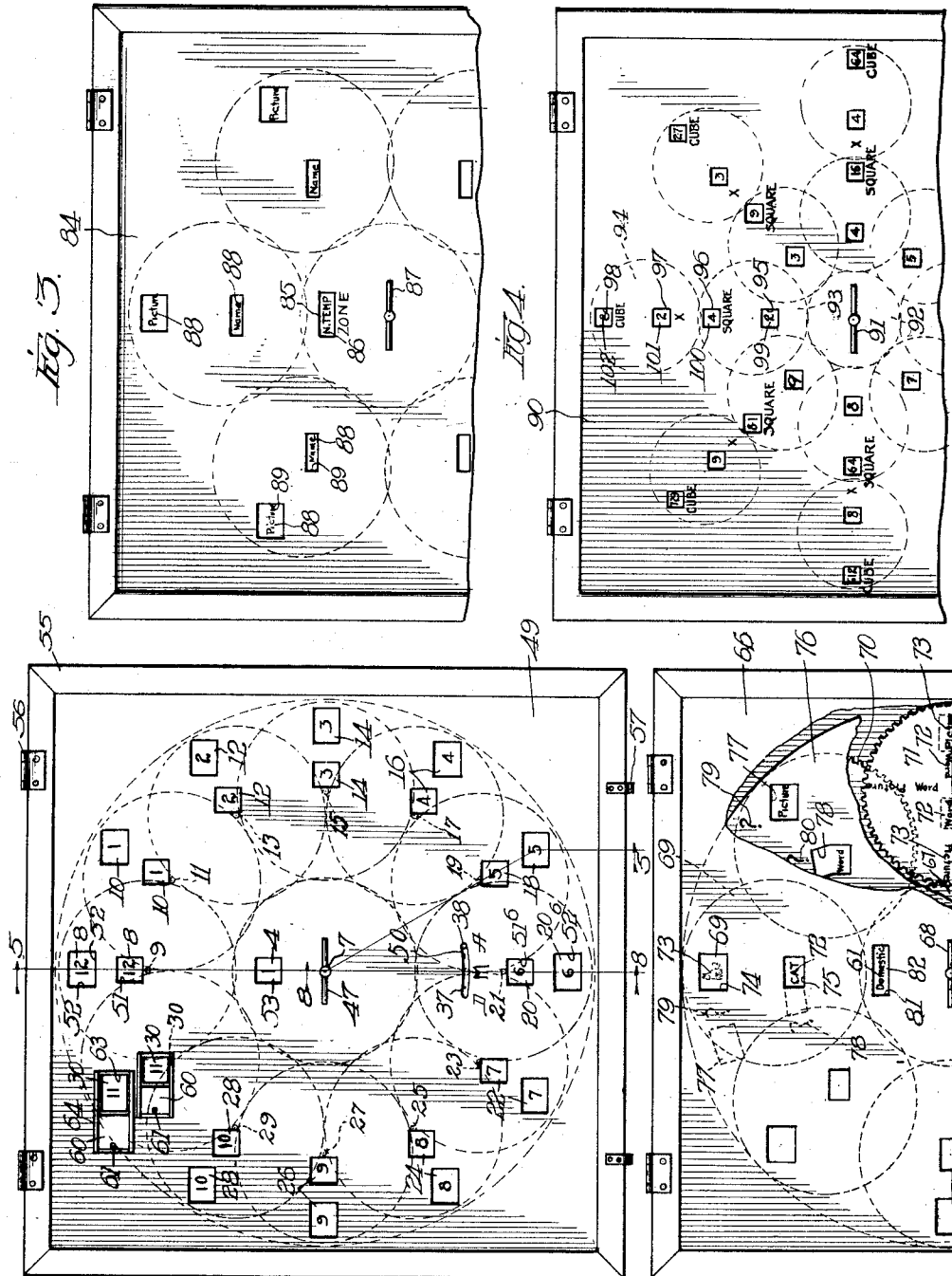
Fig. 2.

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3 SHEETS—SHEET 1.



Witnesses:
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FIG. 1.

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Nathan Göthberg
By N. Göthberg

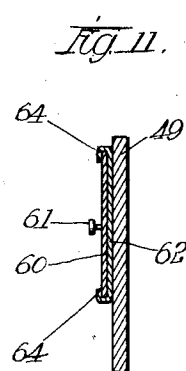
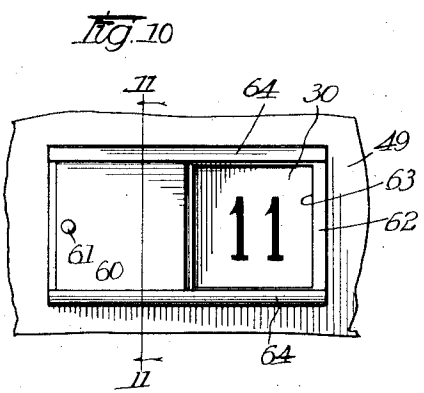
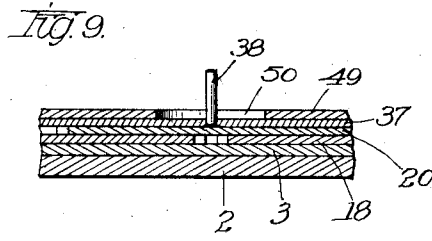
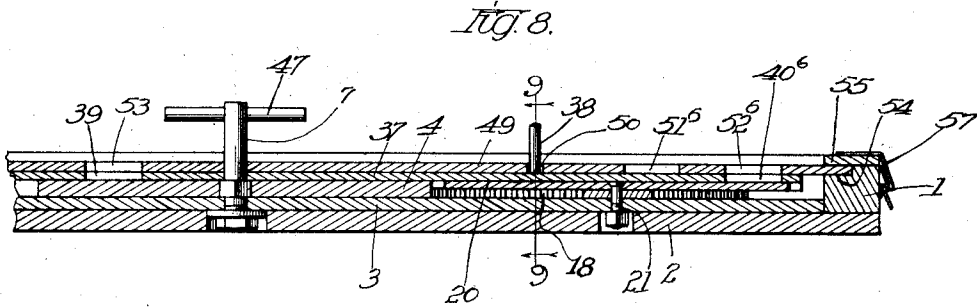
FIG. 2.

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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

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ELIZABETH GRILL, OF CHICAGO, ILLINOIS.

MEANS FOR IMPARTING INSTRUCTION.

1,024,195.

Specification of Letters Patent.

Patented Apr. 23, 1912.

Application filed May 13, 1911. Serial No. 626,988.

To all whom it may concern:

Be it known that I, NATHANAEL GÖTHBERG, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Means for Imparting Instruction, of which the following is a description.

My invention relates to a new and novel means for imparting instruction, and it particularly consists in combining together a plurality of associated charts, so arranged that the charts may be manipulated to vary the display of characters. In the device shown in the drawings, the charts are so arranged that the factor or factors leading to a final result may be disclosed with the final result undisclosed, and upon manipulating the charts, the final result be disclosed. The means may be employed in imparting instruction or information in mathematics, spelling, science, art, ancient and modern or natural history, geography, statistics, or any other desired subject.

The device is particularly applicable for kindergartens, primary schools, high schools, colleges, or the like.

The invention has among its objects the production of a satisfactory means that is simple, convenient, efficient and accurate.

The preferred form of means or apparatus for carrying out the method shown in the drawings is simple, will not easily get out of order and may be manufactured at comparatively small cost.

To this end my invention consists in the novel construction, arrangement and combination of parts herein shown and described, and more particularly pointed out in the claims.

In the drawings, wherein like reference characters indicate like or corresponding parts, Figure 1 is a plan view of my device, arranged for imparting instruction in multiplication or division. Fig. 2 is a plan view of a portion of the device arranged for imparting instruction in spelling. Fig. 3 is a plan view of a portion of the device, arranged for imparting instruction in geography. Fig. 4 is a plan view of a portion of a device for imparting instruction in the squaring or cubing of numbers, or finding

the square or cube root of the same. Fig. 5 is a sectional view taken substantially on line 5, 5 of Fig. 1. Fig. 6 is a plan view of the device shown in Fig. 1 with the top plate removed. Fig. 7 is a plan view of the same device with the chart 37 removed. Fig. 8 is an enlarged sectional view taken substantially on line 8, 8 of Fig. 1. Fig. 9 is a sectional view taken substantially on line 9, 9 of Fig. 8. Fig. 10 is a front elevation of one of the slides illustrated in Fig. 1. Fig. 11 is a sectional view of the same taken substantially on line 11, 11 of Fig. 10.

Referring to the drawings, in which my preferred form of device for imparting instruction is shown, 1 represents a frame of suitable material and size, which may be provided with a bottom 2 if desired. Within the frame is arranged a base 3, which may be removable from the frame 1, as shown, if desired. Arranged on the base 3 is a movable chart or dial 4, which is preferably rotatable and provided with suitable characters, letters, words or the like, depending upon the particular instruction to be imparted. As shown in Figs. 1, 6 and 7, the device is arranged to impart instruction in mathematics, particularly multiplication or division. In this case the member 4 is provided with suitable numerals 5, as shown from 1 to 12 inclusive (see Fig. 7). The member 4, which may be termed a dial or movable part, is rotated by a shaft 7, or its equivalent, which is preferably made so that it can be removed, and which may be provided with a handle 47 to facilitate moving the dial. In the preferred constructions shown, the movable chart, or dial 4, in moving, moves other coöperating charts, or dials, which are substantially similar except they are provided with different characters or numerals. There may be any number of coöperative dials, as shown, twelve dials are provided for the purpose, to-wit, dials 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28 and 30 (see Figs. 1 and 7) each of which is pivotally maintained in position by screws or rivets, or their equivalents for the purpose. For the purpose I have shown, screws or bolts 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29 and 31, which engage the base 3 and main-

tain the dials in position. The main or driving dial 4 is preferably provided with teeth, which mesh with suitable teeth on the edges of the various dials, and for the purpose of compactness, the dials may be arranged substantially as shown in Fig. 7. The various dials may be constructed of any material suitable for the purpose, and may be of any desired size. Upon each of the dials, as before mentioned, are suitable characters similar to the characters 36 on the dial 8. Over the dials I preferably place a semi-rotatable large dial or chart 37, which is pivotally mounted upon the shaft 7. The chart 37 is preferably provided with a post 38, or its equivalent, by which the same may be partially rotated, as more fully explained in the operation of the device. The chart 37 is provided with a plurality of cut-outs, or openings 40 and 42, preferably arranged as shown, and with a cut-out 39 (see Figs. 6 and 8). For the purpose of illustration, it will be sufficient to say that the cut-outs 40 and 42 in the chart 37 are substantially similar for all the dials except that they are arranged in different positions so that they will register with cut-outs in an upper or face plate, as hereafter described. On chart 37 are arranged question marks 41, etc., and numerals 43 and 44, and an additional question mark 45, the same being preferably arranged as shown in Fig. 6, or in an equivalent manner. Above the chart 37 is a top or face plate 49 (see Figs. 1 and 8) which is preferably provided with cut-outs 53, 51 and 52, etc., there being a cut-out 51 and 52 for each dial, the same being arranged preferably substantially as shown in Fig. 1. For the purpose of clearness, I have used the exponents where similar parts or cut-outs are represented, it being understood that the same are substantially similar except as to position or arrangement. The plate or top 49 is provided with a slot 50, through which the post 38 for operating the chart 37 extends, the slot limiting the movement or rotation of the chart 37. The plate 49 may be secured in position in any desired way. As shown, it rests upon a shoulder 54 in the frame 1, and may be locked thereon by the top frame 55, which may be pivotally hinged to the frame 1 by hinges 56, or their equivalents. Catches 57 may be employed for locking the free edge of the frame 55 to the main frame.

The operation of the device may be best explained by referring to Figs. 1, 6 and 7. It will be noted by referring to Fig. 1, that through the cut-outs 53, 51 and 52, numerals 1, 12 and 12, etc., are shown. Multiplication is thereby indicated by 1×12 equals 12, and so about the face of the device the different multiplications are expressed. If the handle 65 is operated to throw up for example the

numeral 12 on the chart 4 at the opening 53, (see Fig. 7) the several dials arranged about the main dial 4, are operated at the same time (assuming that the large dial 37 is not moved). Upon bringing up 12 before the opening 53, the same is seen through the opening 53 in the face plate and opening 39 in chart 37, and numeral 12 (indicated by the reference numeral 43 in Fig. 6) is seen through the face plate opening 51, and the numeral 144 on the chart 8 is seen through the opening 40 in dial 37, and opening 52 in plate 49, (the chart 8 having been moved as mentioned). This indicates that 12 shown through the opening 53 multiplied by 12, shown through the opening 51, equals 144, shown through the opening 52. In the same manner the several charts having been changed at the same time, the chart 4 was rotated, the several sums are multiplied and appear through the various openings 52 about the face plate 49. Assuming now that the charts 4 and 8 are as shown in Figs. 1, 6 and 7, if the post 38 is moved to its intermediate position indicated by M in Fig. 1, the chart 37 is rotated so that the question mark 41 shows through the opening 52 in the face plate, the numeral 12 indicated by the reference character 44 in Fig. 6 shows through the opening 51 in the face plate, and the opening 39 still permits the numeral 1 on the chart 4 to show through the opening 53 on the face plate. There is then displayed 1, 12 ?, the answer being covered and indicating that the question is asked as to the result of 1×12 . The same is true about the face plate for the other characters, and if the handle is turned, the different numbers set up will be changed. If now the post 38 is moved to the position D (see Fig. 1) the number on the chart 4 will still be displayed through the opening 53, but the question mark 45 will be displayed through the opening 51 in the face plate, and the number or numeral 12 on the chart 8 will be displayed through the opening or cut-out 42 in the chart 37, and through the cut-out or opening 52 in the face plate. In this way division is illustrated, the question visibly asked as to the result how many times 1 goes in 12. The same is true about the face plate, and at any time the answer may be readily given or indicated by moving the post 38 over to the position marked "A." It will be readily seen that the multiplication tables from 1 to 12 may be completely displayed, the tables changed and the answers covered or displayed, or instruction given in division in a very convenient and efficient way. It is well known that such instruction may be more easily and satisfactorily taught by visibly displaying the tables, and is more quickly fixed in the mind of the pupil by the visible instruction. If the device is constructed substantially as shown in the fig-

ures, the plate 49 may be removed and the dials be replaced by others, or the complete device, with the exception of the frame 1, base 2, top frame 55, may be removed in its entirety and other parts substituted.

In Figs. 2, 3 and 4, I have illustrated the device as arranged for imparting instruction in spelling, geography, and in squaring and cubing numbers, or the square or cube root of numbers. Referring particularly to Fig. 2, in which a device is shown as applicable for spelling, 66 represents the top plate in a frame similar to that described. In this case the charts are provided with words, pictures, etc. Referring to the figure mentioned, 69, 70 and 71 represent three of the charts similar to the charts heretofore described, 67 being the main or controlling chart. The face plate 66 is substantially similar to the face plate 49 heretofore described, except that the openings are arranged a little different. In this figure I show a chart 76, similar to the chart 37 heretofore described. In the face plate are provided cut-outs 74, 75, and in the chart 76, cut-outs 66^a, 77 and 78. In this case I arrange pictures 73 (see chart 71), words 72, the word being represented or illustrated by the picture, question marks 79 and 80, similar to those previously described, are provided, and 82 represents descriptive matter on the chart 67, which is shown through the cut-out 81. The device illustrated in this figure is substantially similar to the other device except the picture and word are both shown on one of the small charts. The operation is substantially the same. It should be understood that the characters, etc., may be arranged differently than those shown, which are given only for illustration. Fig. 3 illustrates the use of the same in teaching geography, in which the face plate 84 is provided with cut-outs 85 and 89, through which words and pictures may be shown, as for example in this form, the device is arranged for teaching the zones and instruction relative thereto, as for example pictures of the animals and their names, flowers or products, etc. Other geographical matter may be illustrated in the same manner, and it may be noted that this device also teaches spelling, similar to the device shown in Fig. 2. In Fig. 4 is illustrated a device adapted for giving instruction in mathematics, in which 90 represents the face plate, and 92, 93 and 94 a plurality of charts or dials. The dial 92 is arranged to be operated by the handle 91, and operates the dial 93, which also operates the dial 94. Through the cut-outs 95, 96, 97 and 98 are disclosed the factor 2, indicated by 99, its square 4 indicated by character 100, the factor 2 indicated by 101, and its cube 8 indicated by 102. A dial similar to the dials 47 or 76 may be provided for covering any of the dials desired, so that the

cube or square of a number, etc., may be disclosed and the number or factor be covered, or vice versa.

In Figs. 10 and 11, I show a slide 60, which may be arranged to cover any of the openings in the various face plates shown. For the purpose of illustrating its use, I have shown it as applied to one of the openings M' in the face plate 49 and arranged to cover the chart 30 and the chart 37. Referring to Figs. 1, 9 and 10, 60 is a plate provided for convenience with a knob 61, or its equivalent, the plate or slide being supported and maintained in position on a plate 62 by the extended edges or flanges 64, the plate being provided with a hole or opening 63, corresponding with the openings in the plate 49. By applying these slides to the face plate 49, any desired pictures, answers or the like, may be covered independently of the chart 37. This device may be applied to any of the openings on any of the devices shown.

It is obvious that with the device shown, instruction may be imparted in any of the subjects mentioned heretofore, as for example, mathematics, spelling, science, art, history, geography, famous characters, or other desired subjects, and that the same may be made applicable for primary or advanced school instruction. If the device is constructed substantially as shown, or in an equivalent manner, the parts are all interchangeable and the device is compact and simple, and will not easily get out of order.

Having thus described my invention, it is obvious that various immaterial modifications may be made in the same without departing from the spirit of my invention, hence I do not wish to be understood as limiting myself to the exact form, construction, arrangement or combination of parts herein shown and described, or uses mentioned.

What I claim as new and desire to secure by Letters Patent is:—

1. A means for imparting instruction including a center disk, a surrounding annular series of disks, the center disk having a direct operative drive connection with each of the annular series of disks, and each of the disks having upon one face thereof indicating data.

2. A means for imparting instruction including a center disk, a surrounding annular series of disks, the center disk having a direct operative drive connection with each of the annular series of disks, and each of the disks having upon one face thereof indicating data and a chart overlying all of said disks and having openings adapted to register with said indicating data.

3. A means for imparting instruction including a center disk, a surrounding annular series of disks, the center disk having

a direct operative drive connection with each of the annular series of disks, and each of the disks having upon one face thereof indicating data, a chart overlying all of
 5 said disks and having openings adapted to register with said indicating data, and a face plate overlying said chart and being slotted for the purpose described.

4. In a device of the kind described and
 10 in combination, a center rotatable chart, an annular series of rotatable charts arranged about the center chart, each of said charts having characters thereon, the said annular series of charts overlying one another,
 15 and a gear connection between the various charts.

5. Means for imparting instruction, comprising a plurality of associated cooperating charts, provided with factors thereon, a
 20 movable overlying chart having openings to register with said factors and the overlying chart having factors thereon, and means for manipulating said charts to vary the factors disclosed.

25 6. Means for imparting instruction, comprising a plurality of cooperating movable associated charts provided with the desired associated characters thereon, a movable overlying chart having openings to register
 30 with said factors and the overlying chart having factors thereon, means for manipulating said charts to vary the disclosed characters as desired, and a plate overlying said overlying chart and having openings
 35 therein for the purpose described.

7. In a device of the kind described, a movable chart provided with a plurality of characters thereon, a cooperating chart provided with characters thereon, and means
 40 for varying the disclosed characters on said first chart, and simultaneously varying the disclosed characters on said second chart to correspond therewith, and an overlying movable chart having factors thereon and
 45 openings therein to register with the factors on the other charts.

8. In a device of the kind described and in combination, a plurality of disk shaped cooperating charts provided with characters
 50 thereon, means for operating said charts, and an overlying movable chart having factors thereon and openings therein adapted to register with the characters on the other charts.

55 9. In a device of the character described and in combination, a central rotatable chart a plurality of rotatable cooperating charts arranged about the central chart, said charts being provided with characters
 60 thereon, and means for simultaneously operating said charts.

10. In a device of the kind described and in combination, a plurality of cooperating charts provided with suitable characters
 65 thereon, a face plate provided with open-

ings therethrough, means for operating said charts to vary the display of characters through said openings, and a movable chart interposed between the face plate and the first mentioned chart and having openings
 70 therein.

11. In a device of the kind described and in combination, a plurality of cooperating rotatable charts provided with suitable characters thereon, a face plate provided
 75 with openings therethrough, means for operating said charts to vary the display of characters through said openings, and a movable chart interposed between the face plate and the first mentioned chart and having
 80 openings therein.

12. In a device of the kind described and in combination, a plurality of cooperating charts provided with characters thereon, a chart overlying all of first mentioned charts
 85 and provided with openings therethrough whereby a portion of said characters are displayed through said openings, a face plate arranged over said charts and provided with openings therethrough, said
 90 openings registering with the openings in said common chart, and means for moving said charts to vary the display of characters through the openings in said face plate.

13. In a device of the kind described and
 95 in combination, a plurality of cooperating charts provided with characters thereon, a chart overlying all of first mentioned charts and provided with openings therethrough whereby a portion of said characters are
 100 displayed through said openings, a face plate arranged over said charts and provided with openings therethrough, said openings registering with the openings in said overlying chart, and means for moving
 105 said charts to vary the display of characters through the openings in said face plate and said overlying chart.

14. In a device of the kind described and in combination, a plurality of cooperating
 110 movable charts provided with suitable characters thereon, a movable chart overlying all of first mentioned charts provided with characters thereon and with openings therethrough whereby a portion of the characters
 115 on said first mentioned charts are displayed, a face plate superimposed on said charts and provided with a plurality of openings therethrough, whereby the characters on said charts may be displayed as desired, and means for moving the said charts.

15. In a device of the kind described and in combination, a plurality of rotatable
 120 dials provided with characters thereon, means for operating said dials consisting of a rotatable dial provided with characters thereon and operatively connected with said first mentioned dials, a partially rotatable dial superimposed on said rotatable dials, said last mentioned dial provided with
 125 130

openings therethrough, and with characters thereon, a face plate superimposed on all of said dials and provided with a plurality of openings therethrough, and means for operating said dials to vary the display of characters at the openings in said face plate.

In testimony whereof, I have hereunto signed my name in the presence of two subscribing witnesses.

NATHANAEL GÖTHBERG.

Witnesses:

ROY W. HILL,
CHARLES I. COBB.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."