May 12, 1942. S. ADLER 2,282,843

CORRELATING DEVICE

Filed Aug. 29, 1939 3 Sheets-Sheet 1

Fig. 1

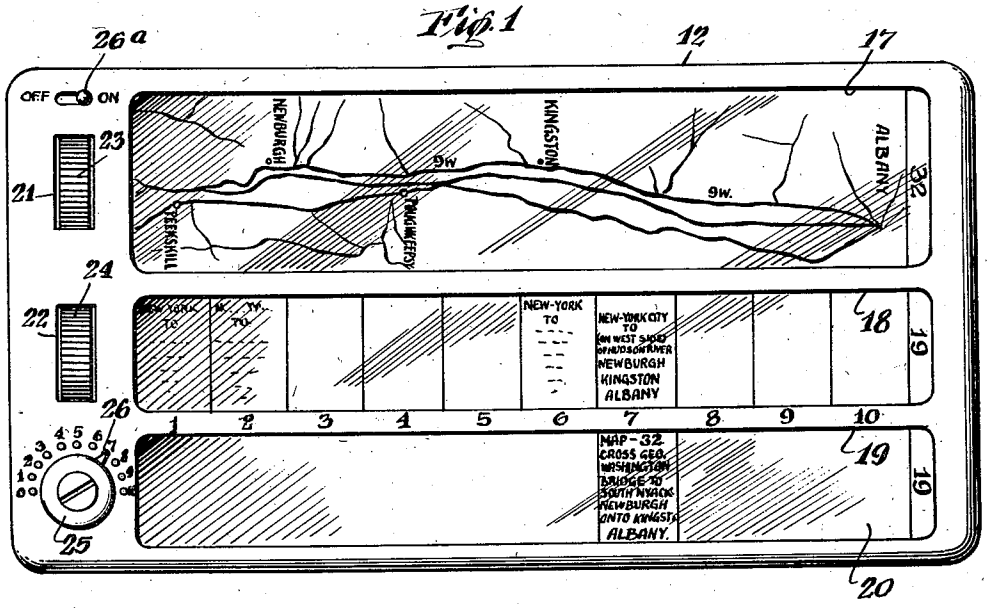
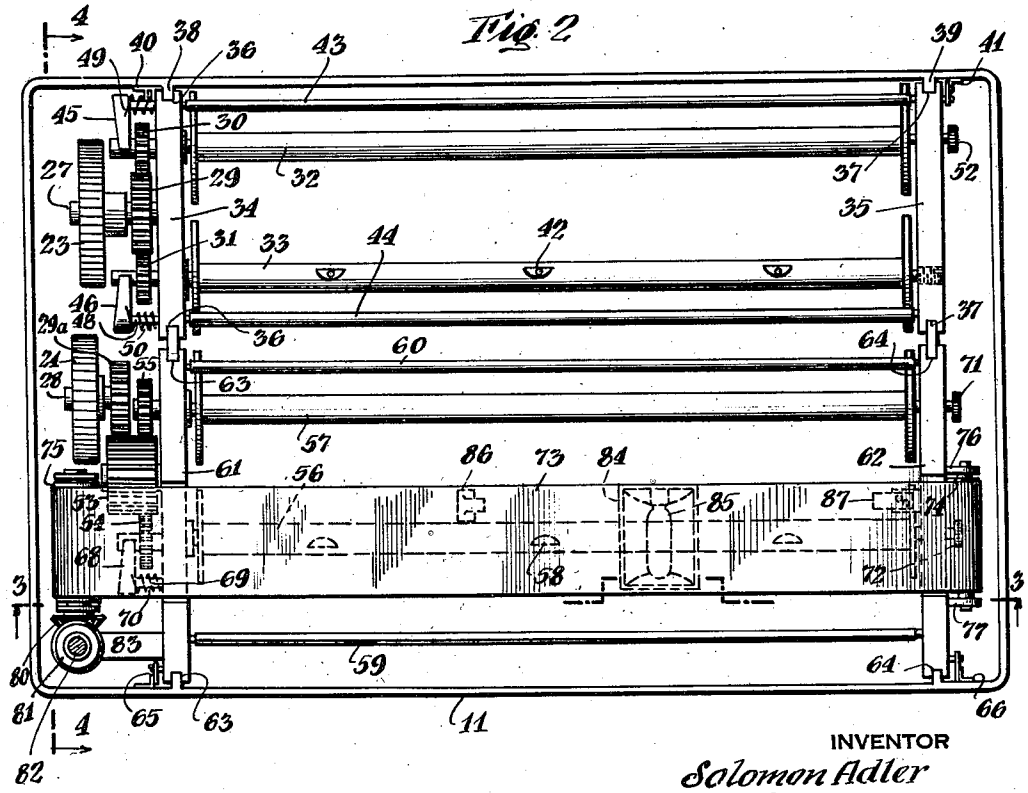


Fig. 2



INVENTOR
Solomon Adler
BY
Duell, Kane and Smoot
ATTORNEYS

May 12, 1942. S. ADLER 2,282,843

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Filed Aug. 29, 1939 3 Sheets-Sheet 2

Fig. 3

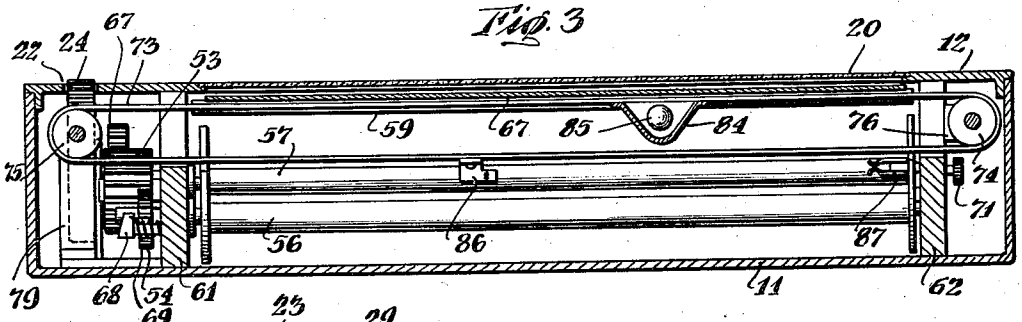


Fig. 4

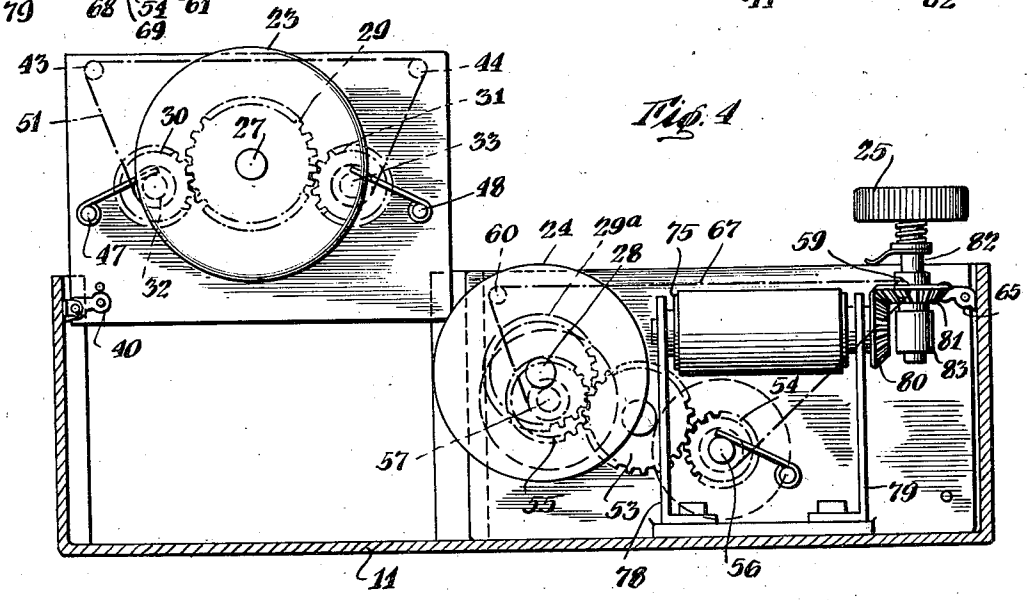
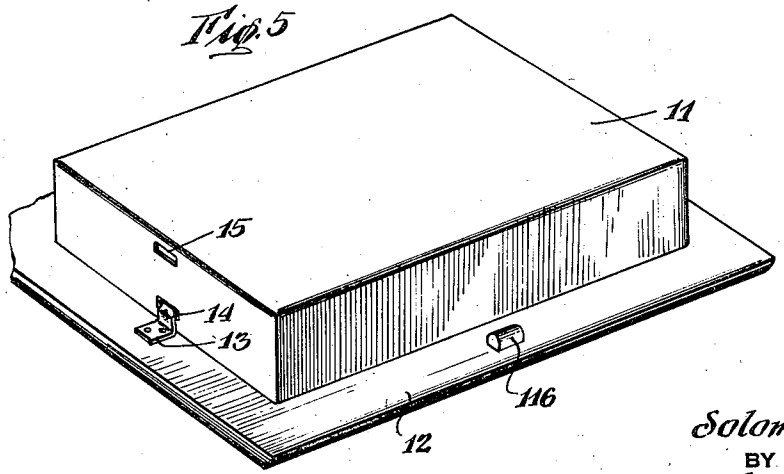


Fig. 5



INVENTOR
Solomon Adler
BY
Duell, Kane and Smoot
ATTORNEYS

May 12, 1942. S. ADLER 2,282,843

CORRELATING DEVICE

Filed Aug. 29, 1939 3 Sheets-Sheet 3

Fig. 6

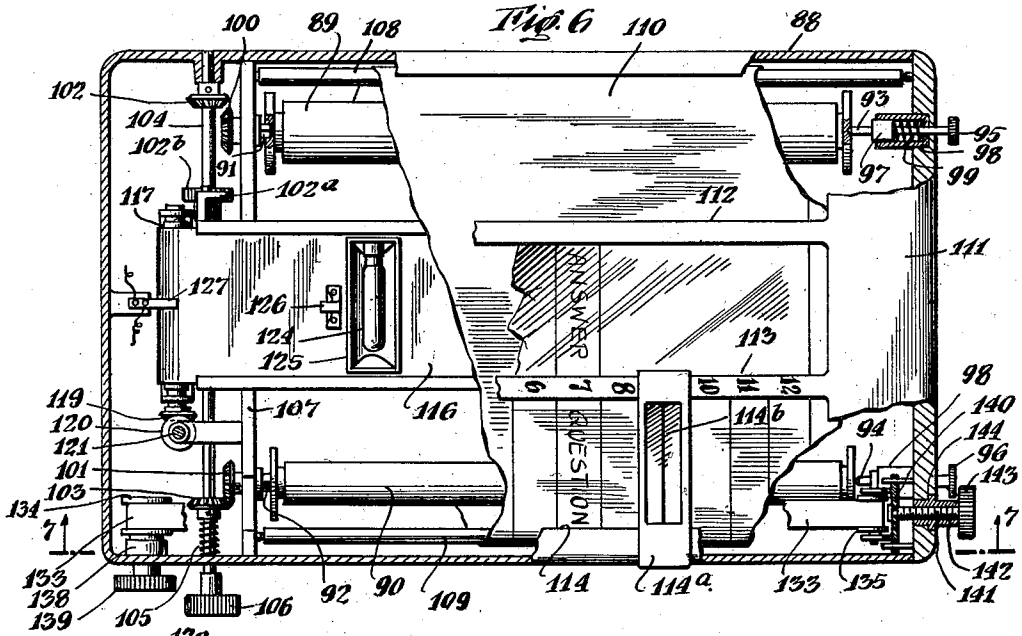


Fig. 7

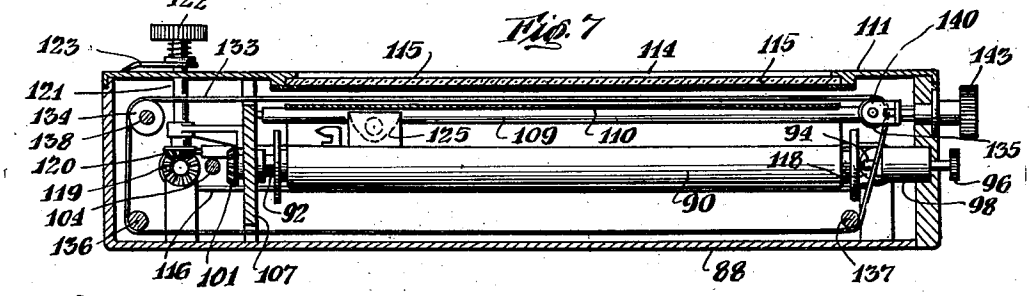


Fig. 8

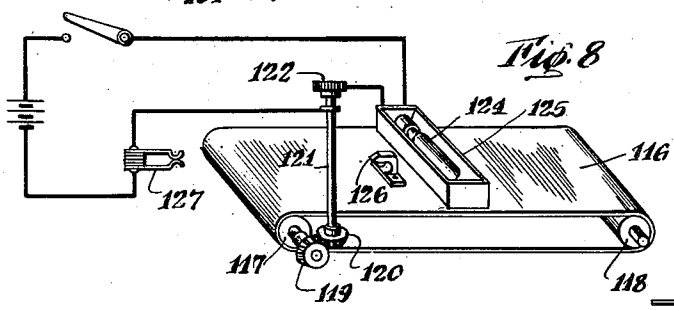


Fig. 9

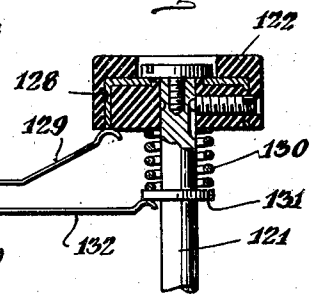
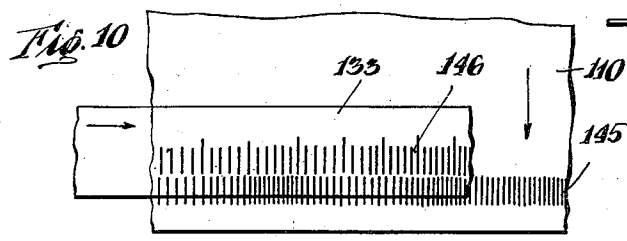


Fig. 10



INVENTOR
Solomon Adler
BY
Duell, Kane and Smoot
ATTORNEYS

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UNITED STATES PATENT OFFICE

2,282,843

CORRELATING DEVICE

Solomon Adler, Kew Gardens, N. Y.

Application August 29, 1939, Serial No. 292,381

7 Claims. (Cl. 40—95)

This invention relates to a device primarily designed for the correlation of information or other data so as to render the same readily available to the user.

It is an object of the invention to provide a device of this character in which associated data or information is assembled for ready reference, and which may be correlated to produce the necessary answer to a problem, or any other information through a simple manipulation of the parts.

Another object is that of providing a device of this character which is relatively simple and rugged in construction, and which will function over long periods of time with freedom from mechanical difficulty.

A further object is that of providing a device of this character in which the data or information to be correlated may be readily removed and other information or data substituted therefor, with a minimum of effort and without danger of interruption in the smooth functioning of the device.

With these and other objects in mind, reference is had to the attached sheets of drawings in which:

Fig. 1 represents a plan view of one form of device embodied in my invention;

Fig. 2 is a further plan view of the device shown in Fig. 1, and with a cover member removed to disclose the interior construction;

Fig. 3 is a cross sectional view of the device shown in the previous figures and taken along the line 3—3 of Fig. 2, looking in the direction of the arrows;

Fig. 4 is a further cross section of the device shown in the preceding views taken along the line 4—4 of Fig. 2, looking in the direction of the arrows and in which one of the sections of the device has been partially removed;

Fig. 5 is a view in perspective of the device shown in the preceding views and taken from the rear;

Fig. 6 is a plan view partially fragmented to disclose the interior construction of a further form of device embodied in my invention;

Fig. 7 is a cross sectional view of the device shown in Fig. 6, and taken along the line 7—7 of that figure, looking in the direction of the arrows;

Fig. 8 is a schematic view of a portion of the mechanism of a device embodied in my invention and showing one form of electric circuit for use therewith;

Fig. 9 is a side elevation in cross section of a switching device for use in connection with a device embodied in my invention, and

Fig. 10 is a fragmentary plan view of data-bearing members for association, for example, with the device shown in Figs. 6 and 7.

Referring now primarily to Figs. 1 through 5, there is disclosed a device formed with a casing 11 which may be made of metal, wood, plastic, or any other suitable material. Associated therewith is a cover member 12 formed with securing lugs 13 which may be conveniently located so as to frictionally engage the side wall of the casing 11 and thus hold the cover in place.

In this connection, and referring especially to Fig. 5, it will be noted that recesses 14 and 15 are provided in the side wall of the body of the device for cooperation with the lugs 13, the recesses 14 serving to engage said lugs when the device is in normal assembled condition, while the recesses 15 are provided to hold the body of the device in inverted position, should the user wish access to the interior of said body. If desired, the device may be so proportioned that the cover member 12 may be substituted for the conventional door of the glove compartment, which is now standard equipment on the instrument panel of automobiles.

To this end, if desired, a latch member 16 may be included in said cover to maintain the same in closed position when so substituted for the cover of a glove compartment.

The cover 12 is also provided with three parallel openings 17, 18 and 19 which extend across the width of said cover member, one above the other, and as will be seen with reference to Fig. 1, substantially occupy the area of said cover. These openings may be left without protection or, as has been shown, may be provided with transparent windows 20. Additional openings 21 and 22 may be provided in said cover member and adjacent one end of the panels 17 and 18 for accommodating manipulating knob members 23 and 24. A further manipulating knob 25 engaging pointer 26 may be carried by said cover and positioned adjacent one end of panel 19.

Further, a snap type or other suitable switch 26a may be mounted on said cover for a purpose to be hereinafter brought out.

Manipulating knobs 23 and 24 are each mounted to a stub shaft shown at 27 and 28, respectively. These shafts in turn carry the gears 29 and 29a. The gear 29 engages pinion gears 30 and 31 positioned to either side of it and in turn mounted on the ends of shafts 32 and 33, which are journaled in bearing members 34 and 35, extending transversely of said body member 11. It will be noted that said bearing members are slotted at their ends, as is shown at 36 and 37, and

said slots engage trackways 38 and 39, formed on the side walls of said casing member. If desired, latch members 40 and 41 may be provided at these points for holding the bearing members and the mechanism carried thereby in, for example, the position shown in Fig. 4.

Said shafts 32 and 33 are provided with engaging means 42 for securing the end of a strip of paper, cloth or other suitable material, which bears information or other data. Adjacent the shafts 32 and 33 are idling rolls 43 and 44 which are also supported in the bearing members 34 and 35. The shafts 32 and 33 may in turn be frictionally held against free rotation by means of the strip-spring members 45 and 46, which engage the former at one end of the same.

It will be noted that the strip-spring members are in turn mounted on stub shafts 47 and 48 carried in the bearing member 34. As has been illustrated, coil springs 49 and 50 may encircle said stub shafts 47 and 48 and engage said spring members 45 and 46 to further urge the latter into bearing contact with the ends of shafts 32 and 33.

As is shown, particularly in Fig. 4, the strip of information or data-bearing material 51 is mounted in roll form on the shaft 32 and then brought across upwardly over the idling shaft 43 to the idling shaft 44, and back down to the shaft 33 where the end of the strip may be secured to the fastening means 42. Thereafter, a turning of the manipulating knob 23 will transmit motion through the gears 29, 30, and 31, causing a rotation of the shafts 32 and 33, with accompanying travel of the strip 51 in either direction, depending on the direction that the knob 23 is turned. It is also apparent that any information or data carried on the face of the roll 51 will be visible through the opening 17 in the cover member 12. The frictional spring members 45 and 46 will insure immediate stopping of the movement of the gear train and strip as soon as the manipulating knob stops moving and thus prevents any over riding on the part of the strip in its travel back and forth from one shaft to the other.

Should it be desired to change the strip 51 and substitute for it another strip having other data or information, it is simply necessary to wind said strip about the shaft 32 into roll form, lift the mechanism to the position shown in Fig. 4, and then pull out the knob 52 at the opposite end of the shaft 32, which will allow the entire shaft to be removed from the device, and a new shaft, having wound about it a further information or data-bearing roll, to be substituted therefor.

In like token, the manipulating knob 24 operating through a gear train 29*a* and 53 engages the gears 54 and 55, each associated with a shaft 56 and 57. Shaft 56 carries fastening means 58 and adjacent each of said shafts is positioned an idling roll, which are shown as 59 and 60. Bearing members 61 and 62 are provided at each end of said shaft assemblies for supporting the same, and said bearing members are slotted at 63 and 64 to engage the opposite sides of the trackway 36 and 37, as well as further trackway portion 63 and 64 carried by the other side of the casing member. Latch means 65 and 66 are also provided to support said assembly when in raised position, as has been shown in Fig. 4, in connection with said first described assembly.

Also, as has been heretofore described, a strip of material 67, bearing suitable information or data, and preferably correlated to the information or data carried by the strip 51 is assembled in roll form on the shaft 57 and threaded over the idling roll 60 across the top of the assembly to the idling roll 59, and thence outwardly to the shaft 56 where an end of the roll may again be secured to the attaching means 58. A friction spring member 68, supported by a stub shaft 69 secured to the bearing member 61, may also be provided into engaging the outer end of the shaft 56, and as has heretofore been described, the coil spring 70 may encircle said stub shaft 69 and engage said spring member 68 to further urge the latter into contact with said shaft end.

Also, a knob 71 may be positioned at the far end of the shaft 57 to release the latter so that a fresh shaft may be substituted therefor. A similar knob 72 may also be provided at the far end of the shaft 56 to release this shaft, should that be desired.

It will thus be apparent, and also in accordance with the description already given, that a manipulation of the knob 24 will result in a transmission of movement through the gear train 29*a*, 53, 54, and 55 to the shafts 56 and 57, and will thus cause a movement of the strip of material 67 back and forth, depending on the direction of the rotation of the knob 24.

It will also be apparent that the information or data contained on said web or strip 67 will be brought into registry with said openings 18 and 19. Underlying said web or strip of material 67, at its point of registry with the opening 19, is an endless belt 73. This belt is supported by rolls 74 and 75, at each end thereof, the roll 74 being journaled to the bearing member 62 by means of brackets 76 and 77. The roll 75 is journaled to the casing by means of members 78 and 79, and carries helical pinion gear 80 at its one end. Said gear in turn engages a second pinion gear 81 secured adjacent the lower end of a vertically extending shaft 82, to the top of which is secured the knob 25. Shaft 82 may, for example, be supported by means of an arm 83 secured to the bearing member 61.

From the structure just described, it will be apparent that the turn of the knob 25 from side to side will result in a movement of the belt 73 transversely of the web or strip 67. Secured to said belt 73 in its upper course is a recess 84 in which may be positioned, for example, an electric light 85. In addition, the inner surface of the recess 84 may be coated with a reflecting material to enhance the effectiveness of said light 85. Accordingly, and when said light is illuminated, a portion of the roll of material 67 immediately above said light will become illuminated and a turning of the knob 25, with the accompanying shifting of the belt and light, will cause the varying portions of the roll 67 to progressively become illuminated.

In operation and describing, for example, the particular embodiment of the invention illustrated in Figs. 1 through 5, there has been shown a device for correlating road direction information. The strip of material 51, may, for example, contain sectional road maps so proportioned that a single section of road embracing a given distance will be visible through the opening 17 in the cover 12 at one time. Marginal indicia, such as numerals, may appear at one end of said strip map for indexing purposes so that the operator wishing to follow a road, for example, from New York to Albany, will consult an index which may, for example, comprise the first panel of the strip 51, and learn that a portion of the road

he is interested in appears on panel member 32. He will thereupon turn the knob 23 until the proper panel appears in the opening 17, as shown in Fig. 1.

On the other hand, the strip of material 67 will have appearing on it information or data relating to route numbers, towns, mileage, etc., and will be prepared in double panels, i. e., the openings 18 and 19 will each have a panel in registry at the same time but each panel will relate to different correlated information. For example, the panel visible through the opening 18 may be designated as the index panel and may be divided into ten vertically extending columns, positioned one alongside of the other, with a number or other index-keying symbol at the far end of the entire panel. The information or data appearing on the strip 67 and visible through the opening 18 is preferably printed on the top surface of said strip, as are the map panels which are printed on the strip 51. However, the information or data on the strip 67, which is in registry with the opening 19 of the cover, and which is correlated to the information visible through the opening 18, is preferably printed on the reverse or inside of the strip 67 so as to not normally be visible when the opening 19 is viewed.

The user of the device looks through the opening 18 until he finds the starting and destination towns of the trip he is contemplating taking. In the present illustration, these towns appear in column 7. He thereafter turns the knob 25 until the pointer 26 appears next to the numeral 7, representing column No. 7, which in turn causes light 85 to move with the belt to a point beneath column 7 in opening 19. A release of the knob 25 at column 7 effects an illumination of the light 85, which causes the material printed on the bottom side of the strip 67 at this point to become visible through the opening 19. This illustrated information or data contains information as to the routes, mileage, etc., between the towns of Peekskill and Albany, and is a condensed, simplified solution to the problem confronting the motorist at that particular moment. The switch 26a may control an electric light (not shown) for additionally illuminating the openings 17 and 18 for night use of the device.

In addition, it will be noted that if the knob 25 is turned so that the pointer 26 is at zero on the scale that the plug 86 carried by the bottom surface of the belt 73 will engage the jack 87 opening the electric circuit of the light 85 and preventing the latter from becoming illuminated. Thus, the device can be set at rest position without the inconvenience and waste of an illuminated section.

Turning now to Figs. 6, 7, and 8, there is shown a further modification of my invention wherein the casing member 88 is provided, and in which rolls 89 and 90 are supported transversely of said casing, by means of square ended shafts 91 and 92, which are secured at one end in square openings in said rolls. The opposite ends of said rolls are supported by spring-pressed pins 93 and 94, which carry manipulating portions 95 and 96 at their outer ends. These pins have enlarged portions, the enlarged portion of pin 93 being shown at 97. The latter rides in a cup-like socket 98, in which is also positioned a coil spring 99. The latter acts between the base of the cup member and the portion 97 to urge the pin in the direction of the roll 89. It is only necessary to pull outwardly on the manipulating member 95 against the pressure of the spring to free the pin from the roller and remove the lock.

Associated with the shafts 91 and 92 are bevel gears 100 and 101, which cooperate in turn alternately with bevel gears 102 and 103 carried by the shaft 104, positioned at right angles with the shafts 91 and 92.

It will be noted that the shaft 104 is mounted in the casing of the device for sliding movement in the direction of its length and that a spring 105 encircles said shaft between the gear 103 and the side wall of the casing member, thus normally urging the gear 103 into meshing contact with the gear 101. A pawl 102a and a ratchet 102b are associated with the shaft 104 to permit it to turn only in one direction. Likewise, a manipulating knob 106 is carried by the shaft 104 adjacent the end of said shaft which carries the spring 105. In the position shown in Fig. 6, rotation of the shaft 104, by manipulation of the knob 106, will cause the roll 90 to rotate through motion transmitted by the gears 100 and 101.

It will be noted that at the same time gears 102 and 100 are in non-meshing relationship so that no motion is transmitted to the roll 89. However, should the shaft 104 be moved downwardly by pulling the knob 106 against the pressure of the spring 105, it will likewise be observed that gears 100 and 101 will become separated, and that gears 100 and 102 will be brought into meshing relationship. Thereafter, a rotation of the knob 106 will transmit motion to the roll 89 while the roll 90 will remain idle.

It will also be observed from the relative placing of the gears 100 and 102 with respect to the gears 101 and 100 that a rotation of the shaft 104 in a constant direction will cause rolls 90 and 89 to alternately turn in opposite directions. A bearing member 107 is provided within the body of the device and extending from top to bottom thereof, adjacent to shaft 104, and provides support for the shafts 91 and 92. The bearing member likewise supports the idling rolls 108 and 109, which are located above and adjacent to the rolls 89 and 90. A roll of paper or other suitable material carrying indicia, as shown at 110, is fastened at its end to the rolls 89 and 90, first passing over the idling rolls 108 and 109, as illustrated. The roll of material can, accordingly, be wound or unwound on either the roll 89 or 90, at the will of the operator, by simply turning the knob 106 with the gears 100 and 101 in mesh, or with the gears 100 and 102 in mesh.

The casing of the device is provided with a cover plate 111, having three openings 112, 113, and 114, positioned one adjacent the other, and extending across the top of the device, as shown in Fig. 6. These openings may be unprotected or may, as is shown in Fig. 7, have a transparent covering 115.

Positioned within the device and beneath the roll 110 at a point where it is in registry with the opening 113, is a transversely extending endless belt 116. This belt may be of any suitable material and is carried by rolls 117 and 118, which in turn are supported by brackets from the casing of the device. A bevel gear 119 is secured to the end of the roll 117 and meshes in turn the further bevel gear 120 secured to the vertically extending shaft 121, which extends upwardly through cover plate 111. A manipulating knob 122 and a pointer 123 are also associated with said shaft at a point above the said cover member. Carried on said belt is a light source 124

positioned within a reflector 125. Also, an electric plug 126 is located adjacent said light source and cooperates with a jack 127 secured to the body of the device adjacent the roll 117.

Movement of the knob 122 is transmitted through gears 119 and 120 to the belt 116, causing the latter to move said body member and back again at the will of the operator, carrying with it the light source and reflecting members 124 and 125.

It will also be apparent that when the belt is moved to the left in the view shown in Fig. 6 to a sufficient distance, the plug 126 will engage the jack 127, thus breaking the electrical circuit at that point and extinguishing the light.

The knob 122 may, as has been shown in detail in Fig. 9, be provided with a contact member 128 in the form of an annular ring, embodied in said knob. Contact member 129 may be provided to frictionally engage said ring by contact therewith at the underside of said knob. The knob in turn may be slidably mounted on the shaft 121 against pressure of a spring 130, which in turn rests against a shoulder 131 carried by the shaft.

A further contact member 132 may engage said shoulder portion and form electrical connection therewith.

While the parts are in position shown in Fig. 9, current introduced through the contact member 132 will be transferred to the shaft 121 and thence to the ring 128 and out through the contact member 129. Should the knob 122 be pressed downwardly, however, the contact member 129 will be cammed inwardly as a result of its contact with the under surface of the knob 122, and thus brought out of electrical connection with the ring 128. This will, of course, result in a breaking of the electric circuit. It will thus be possible, through the utilization of a strip of this type, to effect a lateral shifting of the light source 124 through a manipulation of the knob 122 by bearing downwardly, as well as rotating the latter. The light source can thus be manipulated without being illuminated, but will be re-illuminated automatically upon release of the knob 122 by the operator. In operation, the strip or web 110 is so prepared that it has three correlated columns of information or data which appear simultaneously in the openings 112, 113, and 114, the material appearing in the latter opening, for example, being devoted to questions arranged in vertical columns, side by side, to correspond to the numerals appearing in the space between the openings 113 and 114. The answers to the questions may then appear on that portion of the strip or web underlying the opening 113, and, as has been heretofore described, may be printed on the under surface of the strip or web so as to be rendered visible only when the light source is placed directly underneath.

The portion of the strip or web which appears in registry with the opening 112 may be printed with illustrations or other correlated information of general bearing to the questions and answers occurring in the preceding columns. Accordingly, in order to determine the answer to any specific question, it will simply be necessary to turn the manipulating knob 122 to the proper position so that the light source 124 is beneath the answer, as appearing in opening 113. A release of the knob 122 will thereupon cause the light source to become illuminated and reveal the answer to the question.

Should it be desired to present new subject matter on a strip or web to the windows 112, 113, and 114, the knob 106 is turned either in its position, as shown in Fig. 6, or after pulling it downwardly to cause a reversal in the direction of travel of the web.

In addition to the foregoing, it will be noted that the device shown in Figs. 6 and 7 includes a transparent endless belt 133, which is mounted within the casing so that the top portion of the belt overlies the web 110, where the latter is in registry with the cover opening 114. This belt is supported by rolls 134 and 135, located near the top of the casing, and idling rolls 136 and 137 near the bottom thereof. Roll 134 is carried on a shaft 138 extending through the casing and having a manipulating knob 139 at its outer end. The roll 135 is carried by a U-shaped bracket member 140, which has a screw threaded shank 141 extending outwardly therefrom. Engaging said shank is an internally threaded bushing 142, which carries a manipulating knob 143. Said bushing is mounted in the wall of said casing member by means of a flange 144.

From this assembly, it will be apparent that a turning of the knob 143 will cause the shank 141 to move inwardly and outwardly, with respect to the bushing 142. This will cause travel of the roll 135 longitudinally of the belt 133, tightening and loosening the latter with respect to the rolls over which it passes. Normally, the knob 143 is turned so that the shank 141 is moved outwardly with respect to said bushing, thus slackening the belt 133 on the rolls. In such condition, a turning of the knob 139 merely results in a slippage of the roll 134. Further, should the knob 143 be turned in the other direction, bringing the shank 141 into the bushing 142, the belt 133 will be tightened on its rolls and in such position movement of the knob 139 will cause a rotation of the belt.

As has been heretofore described, said belt is transparent and throughout the major portion of its length has no indicia of any kind appearing on it. In the normal functioning of the device shown in Figs. 6 and 7, the belt 133 is so positioned that nothing but a clear, transparent surface presents itself in the opening 114 and overlying the web 110. However, the web may be provided at any suitable place with, for example, the "A" scale of a slide rule, as shown, for example, in Fig. 10 at 145. In addition, the belt 133 may be provided, for a portion of its length, with the "B" scale of a slide rule, as shown in Fig. 10 at 146. In such a contingency, and should the operator wish to consult a slide rule, the web 110 is manipulated until the scale "A" is in registry with the opening 114 and then the belt 133 is rotated until scale "B" appearing thereon is projected within scale "A" on web 110 and is available for use. In this connection a friction slide 114*a* having a "hair line" 114*b* extending across a central aperture therein may be used to frictionally engage the opposite side walls of the opening 114, and can be slid back and forth across the "A" and "B" scales in accordance with the usual practice. This member may also be removed from the device with the slide rule if not being utilized.

It is, of course, apparent that numerous changes might be resorted to in connection with the above-described device, both as to the proportioning and arranging of the parts and the use to which the device might be put without in the slightest departing from the scope of my invention.

It is also apparent that, for example, motor-

driven controls for the rolls might be substituted for the manipulating means here shown and described, and if desired, a magnifying lens may be positioned in the body apertures for the purpose of enlarging the indicia carried by the rolls without in the least departing from the spirit of my invention. Motor controls of the type suitable for use herewith would operate similar to those now in common usage in connection with motor-tuned radio receiving sets, and the like.

I claim:

1. An article of the character described comprising a casing formed with a plurality of apertures, rollers mounted within said casing, means associated therewith for rotating said rollers, a web mounted on said rollers and bearing indicia whereby a rotation of said rollers will progressively render a portion of said indicia visible through one or more of said apertures, a portion of the indicia on said web being on its upper surface and a correlated portion thereof on its under surface, the indicia on said upper surface visible through one aperture and the correlated indicia on said under surface visible through another aperture when said latter aperture is illuminated, a movable belt mounted within said casing for transverse movement with respect to the movement of said web, and illuminating means carried by said belt for illuminating a selected portion of said latter aperture, thereby rendering the indicia on the under surface of said web visible.

2. An article of the character described comprising a casing formed with a plurality of apertures, rollers mounted within said casing, manipulating means associated with said rollers and projecting through said casing for rotating said rollers, a web mounted on said rollers and bearing indicia, whereby a rotation of said rollers will progressively render said indicia visible through one of said apertures, further indicia on said web correlated to said first indicia and normally invisible through one of said apertures when said first indicia is visible through the other of said apertures, and a transverse, movable illuminating means for rendering portions of said normally invisible indicia visible.

3. An article of the character described comprising a casing formed with a plurality of apertures, rollers mounted within said casing, manipulating means associated with said rollers and projecting through said casing for rotating said rollers, a web mounted on said rollers and bearing indicia, whereby a rotation of said rollers will progressively render said indicia visible through one of said apertures, further indicia on said web correlated to said first indicia and normally invisible through one of said apertures when said first indicia is visible through the other of said apertures, a belt mounted within said casing for transverse movement with respect to the movement of said web, and manipulating means for rotating said belt and illuminating a portion of said web, thereby rendering a portion of said normally invisible indicia visible.

4. An article of the character described comprising a casing formed with a plurality of apertures, rollers mounted within said casing, manipulating means associated with said rollers and projecting through said casing for rotating said rollers, a web mounted on said rollers and bearing indicia, whereby a rotation of said rollers will progressively render said indicia visible through one of said apertures, further indicia on said web correlated to said first indicia and normally invisible through one of said apertures when said first indicia is visible through the other of said apertures, a belt mounted within said casing for transverse movement with respect to the movement of said web, illuminating means carried by said belt for illuminating a selected portion of said aperture thereby rendering indicia on the under surface of said web visible, and means associated with said belt for rendering said illuminating means operable or inoperable.

5. An article of the character described, comprising a casing portion formed with apertures, rollers mounted within said casing, manipulating means carried by said rollers and projecting through said casing, indicia-bearing web mounted on said rollers so as to be progressively visible through one of said apertures as said rollers are rotated, a belt mounted within said casing for transverse movement across said indicia-bearing web adjacent one aperture, and means carried by said belt for selectively emphasizing certain of the indicia carried on said web.

6. An article of the character described, comprising a casing formed with a plurality of apertures, rollers mounted within said casing, means associated therewith for rotating said rollers, a web of material mounted on said rollers and bearing indicia whereby a rotation of said rollers will progressively render said indicia visible through a plurality of said apertures, and means for selectively emphasizing certain indicia on said web as the same is presented to view in one of said apertures whereby said emphasized indicia is related to indicia visible through another of said apertures.

7. An article of the character described, comprising a casing formed with a plurality of apertures, rollers mounted within said casing, means associated therewith for rotating said rollers, a web mounted on said rollers and bearing indicia whereby a rotation of said rollers will progressively render said indicia visible through a plurality of said apertures, a belt mounted within said casing for transverse movement with respect to the movement of said web, and means carried by said belt for selectively emphasizing indicia on said web as the latter appears in one of said apertures.

SOLOMON ADLER.