Aug. 4, 1925. 1,548,019

S. M. BABSON ET AL

DATA DISPLAYING DEVICE

Filed April 2, 1925

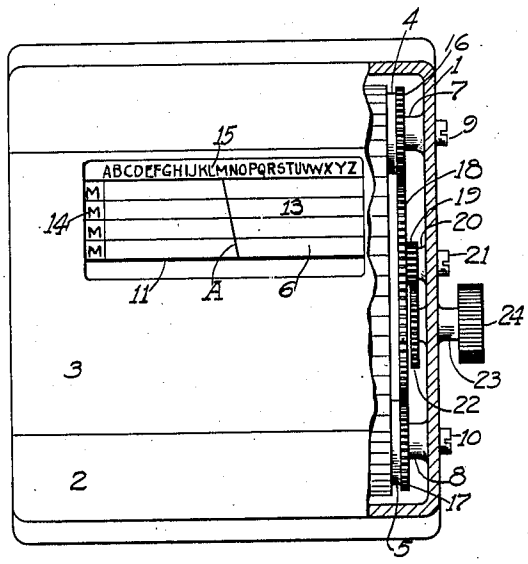


FIG. 1

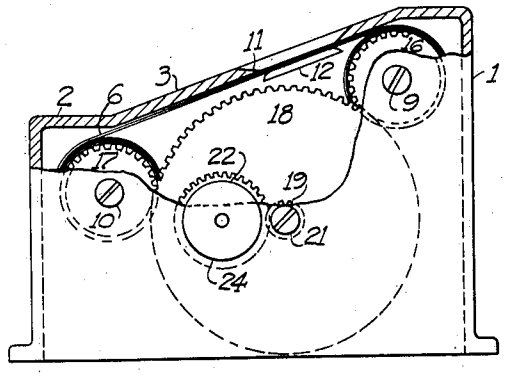


FIG. 2

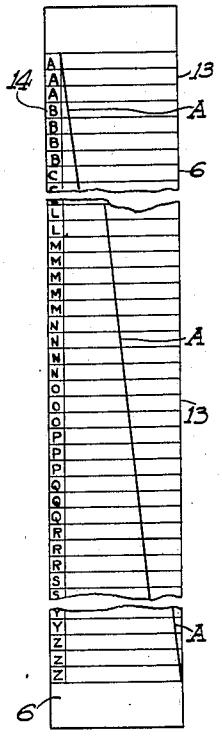


FIG. 3

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UNITED STATES PATENT OFFICE.

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DATA-DISPLAYING DEVICE.

Application filed April 2, 1925. Serial No. 20,041.

To all whom it may concern:

Be it known that we, STANLEY M. BABSON, a citizen of the United States, residing in the town of West Orange, in the county of Essex and State of New Jersey, and HERMAN HOLLERITH, Jr., a citizen of the United States, residing in Riverton, in the county of Burlington and State of New Jersey, have invented certain new and useful Improvements in Data-Displaying Devices, of which the following is a description.

Our invention relates to devices for displaying and rendering readily available recorded or inscribed data, and while not limited thereto is particularly directed to mechanical directories of the type employed for indexing and displaying the names of a large number of telephone subscribers and their telephone numbers.

A device of the type referred to comprises a data carrying member, preferably in the form of a flexible strip upon which the desired data may be inscribed or recorded and which is preferably of considerable length so as to be adapted to receive a large number of items, means preferably including accelerating mechanism for actuating said member so that the inscribed surface thereof may be moved very rapidly in either direction to enable any desired portion of said surface to be readily and quickly brought to a given exhibition or reading position, and means whereby the presentation of the desired portion of the inscribed surface of the data receiving member at said position or point is facilitated.

One of the objects of our invention is to provide in a device of this character an arrangement for facilitating the presentation of any desired portion of the data carrying member in reading or exhibiting position, including improved indicating means which is adapted to give to the operator or observer of the device, at any and all times, an effective indication of the particular section of the data carrying member in exhibiting position, regardless of the speed at which such member may be moved, and which is free from the inaccuracies of the indicating devices heretofore employed for this purpose.

Another object of our invention is to provide a device such as described which is very simple in construction and inexpensive to manufacture and which at the same time is extremely efficient and accurate in operation.

Other objects and features of our invention will be hereinafter more fully described and claimed.

In order that our invention may be more clearly understood, attention is directed to the drawing accompanying and forming a part of this specification and in which:

Figure 1 is a plan view, partly broken away, of one form of data displaying device constructed in accordance with the present invention;

Figure 2 is a view in side elevation, partly broken away, of the device shown in Fig. 1; and

Figure 3 is a plan view, partly broken away, of the data carrying strip of the device shown in Figs. 1 and 2, when unrolled.

The invention as illustrated in the drawing is embodied in the form of a telephone directory and comprises a casing 1 which is generally rectangular in form and the top 2 of which has an intermediate inclined portion 3 provided with a rectangular sight opening 11. The data carrying member is preferably in the form of a long, flexible strip 6, and the ends of the strip are respectively suitably secured to a pair of spools or rollers 4 and 5 which are rotatably mounted within the casing 1 adjacent the top and ends of the latter so that as the strip is wound from either of the rollers onto the other the portion thereof extending between the rollers will be beneath and closely adjacent the inclined portion 3 of the top of the casing. Reference characters 7 and 8 represent lugs formed on one side of the casing 1, and 9 and 10 represent studs or pins respectively secured to the rollers 4 and 5 axially thereof and journaled in the lugs 7 and 8 respectively. It will be apparent that a portion or section of the strip 6 will always be exposed or exhibited at the sight opening 11. The strip 6 is preferably composed of linen or other suitable textile material and has a suitably prepared surface upon which the desired data may be inscribed. A backing plate 12 is mounted within the casing 1 beneath the strip 6 and

directly opposite the sight opening 11, and is preferably removably supported in this position by means not shown.

The surface of the strip 6 exposed at the opening 11 in the movement of the strip past the latter, is divided by substantially equi-spaced transverse lines into a longitudinally disposed series of spaces 13, each adapted to receive certain data such as a person's name and his telephone number. Adjacent one edge the strip is provided with a longitudinal line whereby the surface of the strip provided with the spaces 13, is formed with a longitudinally extending marginal portion in which are disposed opposite the several spaces 13 a series of large and prominent index characters 14 of a nature to identify the data inscribed or to be inscribed in the said spaces. Thus in the construction shown the characters 14 comprise letters of the alphabet corresponding to the initials of the names inscribed or to be inscribed in the adjacent spaces 13, the same letter appearing in most instances a plurality of times opposite successive spaces 13 and the several letters or groups of letters being alphabetically arranged longitudinally of the strip. The data receiving surface of the strip 6 also has applied thereto indicating means, preferably in the form of a very prominent line A extending longitudinally of the strip and across the spaces 13, preferably from a point adjacent one edge or side of the strip to a point adjacent the opposite edge or side thereof, as clearly shown in Fig. 3. A stationary index 15, in the present case an alphabetical index, extends transversely of the strip 6 and is applied to a bevelled surface formed on the casing 1 adjacent the upper edge of the opening 11, and the line A on strip 6 cooperates with this index 15 so as to give to the operator or other observer of the directory a correct and accurate indication at any time, of the particular surface portion or section of the data receiving surface of the strip 6 then presented at the opening 11. The number of spaces 13 of the strip designated by one or more of the letters of the alphabet may sometimes be different than the number of spaces designated by another letter or other letters. Where this is the case, as in the device illustrated, the letters of the alphabet constituting the index 15 are preferably spaced in conformity with the number or combined length of the spaces designated by the respective letters 14 of the alphabet in the longitudinally extending marginal portion of the strip 6 so that the indicating line A may be made perfectly straight and at the same time will cooperate with the index 15 to give at all times the desired indication. The letters of index 15 may, of course, be spaced uniformly and the indicating line A could, if necessary, be stepped or otherwise formed so as to obtain the desired result, but the arrangement shown is preferred because of its simplicity and also because of the greater ease with which an observer may follow the apparent transverse movement of the uninterrupted straight indicating line A with reference to the index 15 as the strip 6 is moved past the opening 11.

It is obvious that actuation of the rollers 4 and 5 in one direction or the other will cause a corresponding feed or travel of the strip 6 beneath the inclined portion 3 of the top of the casing and past the sight opening 11 therein. Very simple and effective means is provided whereby a single manipulation will suffice to effect movement or travel of the whole of a strip having a considerable length, for example, 6 to 8 feet, past the opening 11 in either direction. This means consists of a pair of spur gears 16 and 17 respectively secured to the spools or rollers 4 and 5 at one end, a large gear 18 meshing with both of the gears 16 and 17, a small gear 19 secured to the gear 18 axially thereof and a gear 22 meshing with the small gear 19 and secured to a stud or short shaft extending through the side of casing 1 and provided with a knurled head 24 at its outer end. The gears 18 and 19 are journaled in a lug or bearing 20 formed on the adjacent side of the casing 1 as by means of a stud 21, and the stud or shaft to which the gear 22 and knurled head 24 are secured is journaled in a bearing 23 formed on the same side of the casing. The gears 22, 19, 18, 17 and 16 constitute speed accelerating mechanism and act when the knurled head or knob 24 is turned, to effect a very rapid rotation of the spools 4 and 5 and consequently a rapid travel of the strip 6 past the opening 11. As a matter of fact, by giving the knurled head 24 a quick turn with the fingers, the strip 6 may be caused to travel past the window 11 at such a high speed as to render the large prominent index characters 14 in the marginal portion of the strip illegible. During such movement of the strip, however, and regardless of how rapidly the strip may be caused to travel by manipulation of the knob 24, the portion of the indicating line A visible through the sight opening 11 will appear to travel at a comparatively slow rate transversely of the opening and the index 15, enabling the operator to very readily observe and follow the registry of this line with the index 15 at all times. The gears of the accelerating mechanism are formed so as to fit nicely without any binding action, and the inertia of the gears and of the rollers 4 and 5 and the length of strip 6 are such, that when the knob 24 is given a quick turn with the fingers and then released, the momentum of the gears and rollers is sufficient to cause the

entire strip to be unwound from one roller and wound onto the other roller and thus effect movement of substantially the entire length of the strip past the opening 11.

The operation of the mechanical telephone directory described herein is believed to be apparent from the foregoing, but may be briefly described as follows: The names and telephone numbers of such persons as the operator of the directory has occasion to call from time to time are inscribed in the appropriate spaces 13 on the strip 6 opposite the proper index characters or initial letters 14. When it is desired to bring a given name to exhibiting position at the opening 11, the knob 24 is given a quick turn with the fingers in one direction or the other, depending upon the relative position of said name on the strip with respect to the section of the strip at that time presented at the opening 11, and then released. This as explained above, causes the strip to travel very rapidly, and at the same time results in an apparent relatively slow movement of the indicating line A transversely with respect to the stationary alphabetical index 15. The operator by following the apparent transverse movement of the line A with respect to the index 15, will note when this line registers with the letter of such index corresponding to the first letter of the desired name and may thus determine when the desired portion of the strip is approaching the sight opening 11. Thereupon the travel of the strip 6 may be checked by grasping the knob 24 in order to permit clear observation of the passing index characters 14, which during the rapid movement of the strip are rendered illegible, and the strip may then be readily brought to and stopped at the proper position. It is thus apparent that any portion of the strip, and consequently any name or other data thereon, may be brought to exhibiting or reading position at the sight opening 11, with a minimum expenditure of time and effort. Moreover, by reason of the arrangement of the indicating means disclosed herein, our device is rendered very accurate. In this connection it is to be noted that the indicating means, consisting in the form of the invention shown, of the line A, is directly controlled by and, in fact, is directly actuated by, the data carrying member 6, that this line, being applied to the strip 6, bears a constant fixed relation to the spaces 13 and the index characters 14, and that it also is incapable of any movement with respect to the index 15 independently of the strip 6.

While the particular construction described and shown herein comprises a preferred embodiment, it is to be understood that our invention may be embodied in various other forms and is subject to many changes and modifications without departure from the spirit and scope thereof as defined in the appended claims.

Having now described our invention, what we claim as new and desire to protect by Letters Patent, is as follows:

1. A device of the character described comprising an index and a member having a data receiving surface movable past said index, said member being provided with means co-operating with said index to indicate at any time the particular section of the data receiving surface of said member then adjacent the index.

2. A device of the character described comprising an index and a member having a data receiving surface movable past said index, said surface having an indicating line applied thereto and cooperating with said index to indicate at any time the particular section of the data receiving surface of said member then adjacent the index.

3. A device of the character described comprising an index and a member having a data receiving surface movable past said index, said surface having a straight indicating line applied thereto and cooperating with said index to indicate at any time the particular section of the data receiving surface of said member then adjacent the index, said line being inclined to the direction of movement of said surface and extending substantially the whole length of said data receiving surface from a point adjacent one edge of such surface to a point adjacent the opposite edge thereof.

4. A device of the character described comprising a data carrying member, means for moving said member and means including an indicator applied directly to said member for clearly indicating to an observer at any time the position of said member with respect to a given point regardless of the speed at which the member is moved.

5. A device of the character described comprising a data carrying member, means for moving said member and means including an indicator directly movable by said member for clearly indicating to an observer at any time the position of said member with respect to a given point regardless of the speed at which the member is moved.

6. A device of the character described comprising a data carrying strip, means for moving said strip past a given reading point, and means including an indicator applied to said strip for clearly indicating at any time the longitudinal section of said strip then adjacent said reading point regardless of the speed at which the latter is moved.

7. A device of the character described comprising a casing provided with a sight opening, an index adjacent said opening, a data carrying member within said casing, means for actuating said member to move

the data carrying surface thereof past said sight opening and means applied to said member and cooperating with said index to indicate the position of said member with respect to said opening.

8. A device of the character described comprising a casing provided with a sight opening, an index adjacent said opening, a data carrying member within said casing, and means for actuating said member to move the data carrying surface thereof past said sight opening, said member having an indicating line applied to its said surface and cooperating with said index to indicate the position of said member with respect to said opening.

9. A device of the character described comprising a data carrying member, means for moving said member rapidly past an exhibiting point, said data carrying member being provided with prominent index characters visible at said point as said member is moved past the latter, and means including an indicator applied to said member for indicating the position of said member with respect to said point even when such member is moved at a speed rendering said index characters illegible.

10. A device of the character described comprising a casing having a sight opening, a data carrying member within said casing, actuating means including accelerating mechanism for moving said member rapidly past said sight opening, said data carrying member being provided with prominent index characters visible through said opening as said member is moved past the latter, and means including an indicator movable directly by said member for indicating the position of the latter with respect to said sight opening even when such member is moved at a speed rendering said index characters illegible.

11. A device of the character described comprising a casing having a sight opening, a data carrying member having on its surface a longitudinal series of groups of spaces for the inscription of data, said groups of spaces varying in length, means for moving said member to cause its said surface to travel in the direction of its length past said sight opening, an index adjacent said sight opening extending transversely of the data carrying member and the index characters of which are adapted to identify the data inscribed in the said groups of spaces respectively, said characters being spaced apart in conformity with the variation in the lengths of said groups respectively, the data receiving surface of said member having thereon a straight indicating line extending longitudinally thereof and cooperating with said index to indicate at any time the particular space of said member then adjacent said sight opening.

12. A device of the character described comprising a casing having a sight opening, a data carrying strip mounted within said casing and provided with a longitudinally extending series of groups of spaces varying in length and adapted to be inscribed with suitable data, means for moving said strip past said sight opening, an index adjacent said opening extending transversely of the strip and the index characters of which are adapted to identify the data inscribed in the said groups of spaces respectively, said characters being spaced apart in conformity with the variation in the lengths of said groups respectively, said strip having a straight indicating line applied thereto and extending longitudinally thereof, said line cooperating with said index so as to indicate at any time the particular data receiving space of said member then adjacent the sight opening.

This specification signed this 18th day of March, 1925.

STANLEY M. BABSON.
HERMAN HOLLERITH, JR.