

Sept. 21, 1965

S. DUUS ETAL

3,206,873

INSTRUCTIONAL READING DEVICE OR THE LIKE

Filed Feb. 20, 1962

Fig. 1

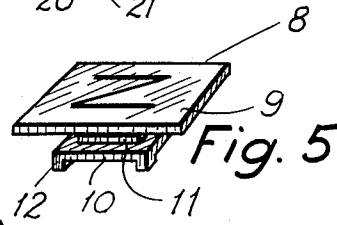
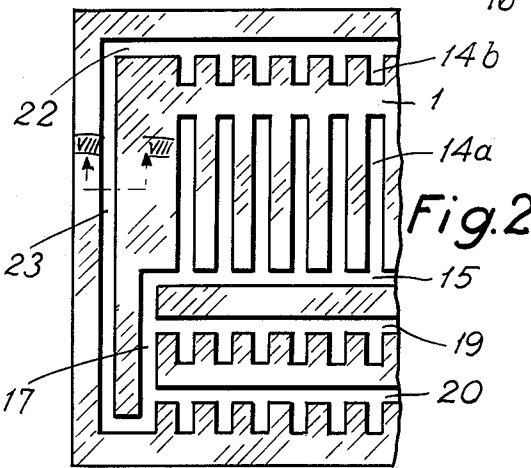
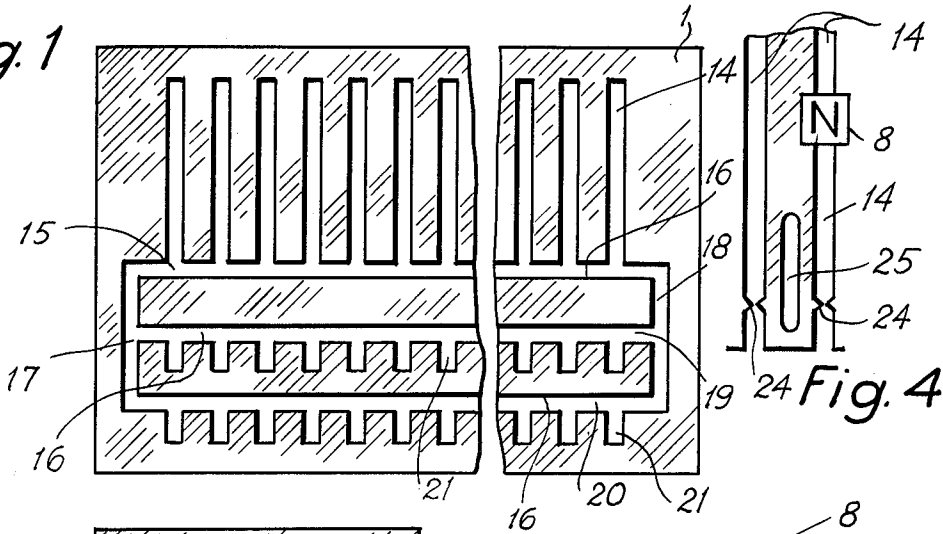


Fig. 6

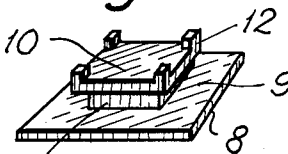


Fig. 3

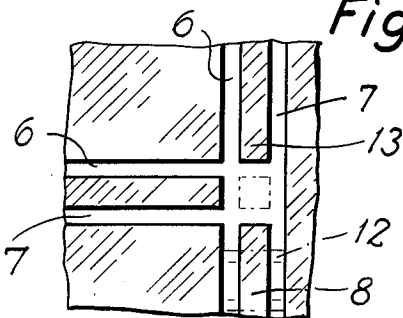
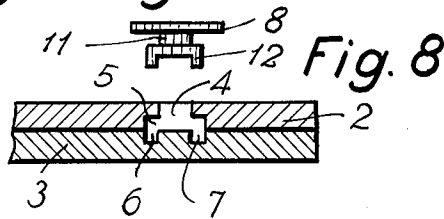


Fig. 7



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**INSTRUCTIONAL READING DEVICE
OR THE LIKE**

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Filed Feb. 20, 1962, Ser. No. 174,546

Claims priority, application Denmark, Feb. 21, 1961,
732/61

4 Claims. (Cl. 35—35)

The invention relates to an instructional reading device of the kind consisting of a board with a plurality of grooves in which there are slidable spelling members carrying letters or other symbols, some of the said grooves constituting magazine grooves each adapted to accommodate a plurality of spelling members with the same letter whereas one or more grooves constitute conveying grooves which communicate with the magazine grooves and into which a plurality of parallel, short arrangement grooves open into each of which there may be placed a spelling member passed from a magazine groove through one or more conveying grooves to form words and word combinations.

There are known apparatus of this kind having a number of grooves located beside each other and intersected by a transverse groove near the lower part of the first-mentioned grooves. As a result there is produced at the upper end of the board a plurality of parallel magazine grooves and at the lower end of the board a corresponding number of arrangement grooves, whereas the transverse groove constitutes a conveyor groove. Beneath the plate where the letter is provided the spelling members have a pin of circular cross-section, the said pin being received in the upper part of the groove, whereas a widened lower part of the pin is received in an undercut part of the groove. The known apparatus have several drawbacks which reduce their usefulness as pedagogical aids. In the first place, the spelling members may turn freely in the grooves so that the letters may happen to lie down or be arranged upside down, which is very disadvantageous when the device is to be used for beginners in spelling who find it difficult to identify the letters.

Another drawback is that the conveyance of the spelling members from the magazine grooves to the arrangement grooves is not free and unobstructed, but involves heavy difficulties. This is due to the fact that each crossing between a magazine groove and a conveying groove may constitute an obstruction to the spelling member during its conveyance, and any inaccurate movement of the spelling member during its conveyance may cause it to collide or stop it. Since there are at least twenty-eight magazine grooves movement of the spelling members past the great number of points of intersection will involve constant collisions or total stoppages, which will highly annoy and discourage the child using the apparatus and thus seriously impair its pedagogical usefulness.

An apparatus of the aforesaid kind has to meet the following requirements:

(1) It must be impossible to arrange the letters in a wrong position, that is, in lying or inverse position, regardless of the place where they are arranged on the board.

(2) It must be easy to correct any wrong letter compositions by substituting an individual letter of the composition by another one.

(3) It must be possible to move the letters from the magazine grooves to the arrangement grooves without difficulty, that is, they must be capable of sliding readily when the upper part of the spelling member is pushed, and the spelling members have to be guided in such efficient manner that there is a minimum of wear.

It is the object of the invention to provide an instructional reading device satisfying the said requirements.

Another object of this invention is to provide an instructional reading device having a plurality of intersecting grooves arranged in a predetermined pattern defining storing grooves, conveying grooves and assembly grooves, and a plurality of indicia bearing members slidable in such grooves wherein the indicia bearing members are prevented from rotating, and are maintained in a predetermined orientation at every point in the grooves, and particularly at the intersections or junctures of such grooves.

This is primarily accomplished thereby that the grooves and the spelling members have cooperating guide members formed in such manner that the spelling members are prevented from turning; thus, along their whole path through the grooves and from one groove to another they keep the same orientation in relation to the board.

To satisfy the third requirement the apparatus is designed in such manner that each conveying groove at least in one side has a guiding edge extending continuously throughout the length of the groove so that two grooves never open opposite each other in a conveying groove; thus, there will always be a guiding edge opposite the place where each groove opens into a conveying groove.

With the use of such a guiding edge in conveying grooves the spelling members may be conveyed at a slight pressure against the said guiding edge so that they may pass all points of intersection without the said points being in any way whatever felt as obstructions.

Another pre-requisite of easy and unobstructed movement of the spelling members through the conveying groove or grooves is that other spelling members do not unintentionally slide into a conveying groove so as to block it wholly or partly. To avoid this drawback resilient means may according to the invention be provided between two magazine grooves or arrangement grooves where these join a conveying groove, the said resilient means carrying stop members projecting into the grooves and adapted in such manner that they prevent a spelling member from sliding off the groove when the board is in an inclining position, but may be forced aside when the spelling member is passed out of the groove by hand.

Various embodiments of a device according to the invention are described in the following with reference to the drawing, in which

FIGURE 1 shows a board for the device, viewed from above,

FIGURE 2 is a top view of a part of a board for a modified embodiment,

FIGURE 3 shows a part of a board with a crossing between two grooves,

FIGURE 4 is a top view of a board on an enlarged scale,

FIGURE 5 is a top perspective view of a spelling member,

FIGURE 6 is a perspective view of an inverted spelling member,

FIGURE 7 is a side view of a spelling member on a reduced scale, and

FIGURE 8 is a section on the line VIII—VIII of FIGURE 2 on an enlarged scale.

The device consists of a board 1 which may be formed of one or more plates of plastic material such as polystyrene and provided with a number of undercut grooves communicating with each other. FIGURE 8 shows a board consisting of two plates 2 and 3 which are glued to each other and in the upper plate is cut a groove formed of an upper narrow part 4 and a lower widened part 5. The bottom of the lower part 5 is constituted by the upper side of the plate 3 and in the plate 3 are

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formed two longitudinal tracks 6 and 7 which are flush with the outer edges of the bottom part 5.

Spelling members denoted as a whole by 8 and shown in FIGURES 5, 6 and 7 are provided for arrangement in the grooves. The said spelling members may likewise be of plastic material such as polystyrene. Each spelling member has a plate 9 which is provided with a letter or other symbol and which is connected with another plate 10 by means of a pin 11 of square cross-section. The said pin 11 is of a width corresponding substantially to the width of the groove section 4. The plate 10 is likewise of square shape and has a width corresponding to the groove section 5. At the four corners of the plate 10 are provided guide pins 12 adapted to engage the tracks 7.

FIGURE 3 gives a top view of the plate 3, and it will be seen here how the material 13 between the tracks 7 has been removed at a crossing between two grooves. However, there would be nothing preventing this material from remaining in the crossing as indicated by stippled lines. Stippled lines also indicate the lower part of a spelling member 8 with the four pins 12 shown by shading lines, and as will be distinctly seen the spelling member may be passed to the crossing and hence be moved at right angles to the vertical groove into the horizontal groove so that the spelling member is always safely guided and fully prevented from turning.

FIGURE 1 shows a number of vertical parallel magazine grooves 14 all of which have their lower ends opening into a longitudinal conveying groove 15, one side of which is constituted by a continuous guiding edge 16 and the two ends of which communicate through vertical grooves 17 and 18 with two conveying grooves 19 and 20 which are parallel with the groove 15. The conveying grooves 19 and 20 are connected with a number of arrangement grooves 21 and have a continuous guiding edge 16 in the other side similarly as the conveying groove 15. The arrangement grooves 21 are flush with the magazine grooves 14.

With the use of the apparatus according to FIGURE 1 a number of uniform spelling members 8 are arranged in each of the magazine grooves 14, in the first groove, for example, a number of spelling members each carrying the letter *a*, and in the next groove a number of spelling members each carrying the letter *b*. etc. The said spelling members may thereafter be passed one by one into the conveying groove 15 and through the said groove to one of the grooves 17 and 18, from where the spelling members may be passed into a conveying groove 19 or 20 to be finally placed in an arrangement groove 21 to compose words or word combinations. The words spelt will thus appear in two lines below the conveying grooves 19 and 20 and in case of wrong spelling the mistake can easily be corrected by removing the incorrectly arranged letter either temporarily to a conveying groove or to a magazine groove, another letter being subsequently passed into the empty space.

The conveyance takes place without difficulty since all the grooves have a continuous guiding edge in one side so that there will be no resistance to the conveyance if the spelling member is guided with a slight pressure against the guiding edge as the child will quickly learn.

As explained with reference to FIGURE 3 the spelling members cannot turn, neither in the grooves nor at the points of intersection of the grooves, and they may easily be passed from one groove to another groove at right angles thereto, the pins 12 being guided in the tracks 6 and 7.

FIGURE 2 shows another arrangement of the grooves, the magazine grooves being divided into two parts, that is, a lower part 14a and an upper part 14b communicating through a conveying groove 22 which is connected with another groove 23 which, again, is connected to the groove 17 at the lower part of same as indicated in the figure.

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In the embodiment according to FIGURE 2 spelling members with capital letters may be arranged in the grooves 14b and spelling members with small letters in the grooves 14a, and in that case the spelling members with capital letters have to be passed the indirect way via the grooves 22 and 23, whereas the small letters similarly as in the embodiment according to FIGURE 1 are passed to the conveying groove 19 or 20 through the groove 17.

The grooves may be arranged in various other manners, but for practical purposes there has to be a number of magazine grooves and a number of arrangement grooves which have to be connected with suitable conveying grooves, and a prerequisite of satisfactory operation is that the conveying grooves have everywhere in one side a guiding edge 16 or, for example, like the conveying groove 23 guiding edges in both sides. If so, the two grooves will never open into a conveying groove opposite each other, and there will always be a guiding edge opposite the place where each groove opens into a conveying groove.

It will be convenient to have means to prevent the spelling members from sliding unintentionally from the magazine grooves into the conveying groove 15, and as shown in FIGURE 4 the plate section between two grooves 14 may have some projections 24 serving as stop members to prevent the spelling members from sliding off the grooves 14. However, the stop member has to be adapted in such manner that the spelling members can be forced past it when they are withdrawn from the groove by hand. If the material itself is of insufficient elasticity there may, as shown in FIGURE 4, be a slit 25 in the material between the grooves 14 which are not connected with the underlying plate 13 opposite the slit, wherefore they may rather easily be moved to the side owing to the resilience when spelling members are withdrawn from the grooves 14. Corresponding stop members may, if desired, be placed in the arrangement grooves 21.

What we claim and desire to secure by Letters Patent is:

1. An instructional reading device comprising a support member having a plane surface, a plurality of interconnecting grooves in said plane surface disposed in a predetermined pattern defining storing grooves, conveying grooves and assembly grooves, said grooves adjoining at right angles, a plurality of indicia bearing members slidable in said grooves, each of said grooves having an orientation maintaining groove disposed offset relative to the longitudinal centerline of each of the first mentioned grooves, projecting in a direction normal to the plane surface of said support member, said orientation maintaining grooves extending through the intersections of said interconnecting grooves and being engageable and coacting with surfaces on said indicia bearing members for maintaining said indicia bearing members in a predetermined orientation and said interconnecting grooves having similar cross-sectional configurations.

2. An instructional reading device comprising a support member having a plane surface, a plurality of indicia bearing members, said plane surface having a first set of spaced guide grooves arranged parallel to a first reference axis for storing said members, a second set of spaced guide grooves arranged parallel to a second reference axis perpendicular to said first reference axis for conveyance of said members along axes parallel to a predetermined line of indicia to be formed, interconnecting grooves between said first and second sets of grooves for accommodating and guiding movement of said indicia bearing members between any of said first set and said second set of grooves, and at least one third set of mutually parallel grooves arranged perpendicular to said second reference axis communicating with one of the grooves of said second set of grooves at points spaced longitudinally of the latter and terminating at stop surfaces spaced equidistant therefrom forming as-

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assembly grooves for receiving said indicia bearing members from said second set of grooves and locating the same in alignment with said line of indicia to be formed, each of said grooves having an orientation maintaining groove disposed offset relative to the longitudinal centerline of each groove and projecting in a direction normal to the plane surface of said support surface, said orientation maintaining grooves being engageable and coacting with surfaces on said indicia bearing members for maintaining said indicia bearing member in a predetermined orientation and said interconnecting grooves having similar cross-sectional configurations.

3. An instructional reading device comprising a base member having a plane surface, said plane surface having a plurality of interconnecting grooves disposed in a predetermined pattern defining storing grooves, conveying grooves and assembly grooves, the segments of said grooves adjoining at right angles, the bottom surfaces of said grooves having tracks with guide surfaces disposed along the lengths thereof, a plurality of indicia bearing members slidable in said grooves, said indicia bearing members each having a square shape guide plate portion slidable within and having a width equal to the width of said grooves, said guide plate portion having depending leg portions receivable in said tracks in the bottom surfaces of said recesses, said leg portions each having sets of parallel guide surfaces cooperating with said guide surfaces of said tracks and said sets being mutually perpendicular whereby said indicia bearing members are prevented from rotating about an axis normal to said plane surface of said base member and each of said storing grooves having yieldable stop means adjacent the juncture thereof and a conveying groove which prevent the free fall of said indicia bearing members when said plane surface is in an inclined or vertical position.

4. An instructional reading device comprising a base member having a plane surface with a plurality of interconnecting grooves disposed in a predetermined pattern defining storing grooves, conveying grooves and assembly grooves, the segments of said conveying grooves adjoining at right angles, said storing and assembly grooves

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adjoining said conveying grooves at right angles, each segment of said conveying grooves having tracks in the bottom surface disposed along the length thereof and extending to the side walls of adjoining segments of said conveying grooves, each of said storing and assembly grooves having similar tracks at the bottom surface disposed along the length thereof and extending to the side walls of adjoining segments of said conveying grooves, a plurality of indicia bearing members slidable in said grooves, said indicia bearing members each having a square shaped guide plate portion slidable within and having a width equal to the width of said grooves, said guide plate portion having leg portions depending from the corners thereof and received in said set of tracks whereby said indicia bearing members are prevented from rotating about an axis normal to said plane surface of said base member and each storing groove having yieldable stop means disposed adjacent the juncture thereof and a communicating conveying groove which prevents the free fall of said indicia bearing members when said plane surface is in an inclined or vertical position.

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