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DEVICE FOR SIMULTANEOUSLY RULING A PLURALITY OF LINES

Filed June 15, 1961

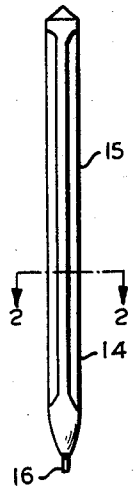


FIG.1

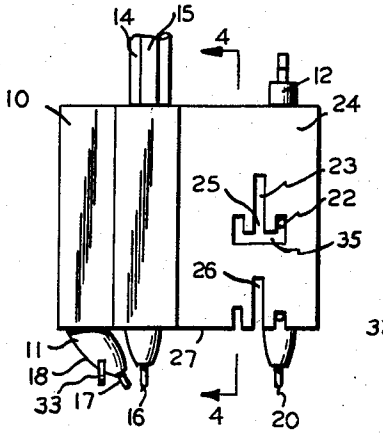


FIG.3

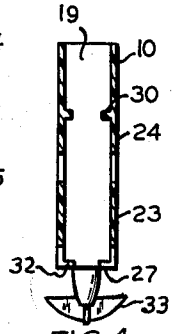


FIG.4



FIG.2

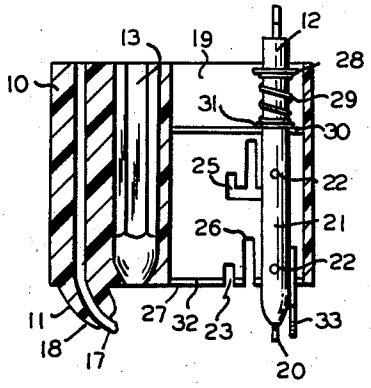


FIG.6

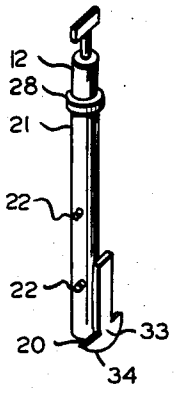


FIG.7

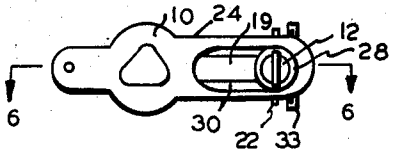


FIG. 5

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DEVICE FOR SIMULTANEOUSLY RULING A PLURALITY OF LINES

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This invention relates to a multiple point ruling pen, and more particularly to a pen which will draw with one stroke the double line and single line combination which bookkeepers, accountants and other individuals performing bookkeeping duties are generally required to frequently make in connection with summing various columns of figures.

It is an established and recognized accounting practice to periodically total various columns of figures in journals, ledgers and similar books of account and to clearly identify the sum by drawing one line beneath the column of figures and two lines beneath the sum. Therefore, a frequently required duty of accountants, bookkeepers, and others charged with the responsibility for keeping various books of account is the preparing of such books of account for the summation of columns of figures by drawing one line beneath each column of figures and two lines a predetermined distance below the one line. This required duty is often referred to as "ruling the books" and it is obvious that the duty becomes a rather tedious task to the individual who is responsible for keeping a large number of books of account.

In the past, numerous attempts have been made to facilitate the above described ruling operation by providing various special types of ruling pens. Some of these ruling pens have been comprised of a plurality of old-fashioned straight pens positioned within a single holder and of other similar arrangements. They have been impractical to use because of the inherent nature of straight pens and similar writing instruments to cause smears and blots when used alone, let alone when used in a multiple point arrangement. Moreover, none of these arrangements or the more recent devices employing the well known ball point make any provision for easily and conveniently keeping the pen points in proper orientation with respect to each other so that a uniform distance between the lines is maintained as the lines are drawn. In addition, these previous devices do not provide for fixed but variable adjustment of the distance between the pen points so as to accommodate ruling on sheets of paper having different distances between their lines. These limitations with respect to previous devices for drawing the three lines commonly required by bookkeepers, accountants and others with respect to column totals in books of account have limited the usefulness of such previous devices.

The invention described herein completely overcomes these limitations and provides a highly useful means for ruling books of account. One feature of the invention described herein is a guide means which maintains the multiple writing points of the ruling device in a perpendicular line with reference to the ruling edge being used as a guide during the ruling operation. Another feature of the invention described herein is that the single line writing point may be quickly and easily moved to either of two writing positions with reference to the double line or to a non-writing position and once in one of these three positions the single line writing point will be fixedly held in position while the ruling device is in use. Moreover, the device is readily adaptable for use with existing single-point ball point pens.

These and other features of the invention will be more clearly understood from the following detailed description and the accompanying drawings in which like characters designate corresponding parts in all figures and in which:

FIGURE 1 is a side elevational view of a conventional ball point pen.

FIGURE 2 is a sectional view taken in line 2—2 in FIGURE 1 and shows the cross section of a conventional ball point pen having a generally triangular cross section.

FIGURE 3 is a side elevational view which shows an adapter unit with a conventional ball point pen such as that shown in FIGURES 1 and 2 inserted and with the guide attached to the fixed pen element.

FIGURE 4 is a sectional view of the adapter unit taken in line 4—4 in FIGURE 3 and shows the chamber of the adapter unit in cross section.

FIGURE 5 is a top plan view of the adapter unit and shows the movable pen element in its outermost position and the guide attached to the movable pen element.

FIGURE 6 is a sectional view taken in line 6—6 in FIGURE 5 and shows the adapter unit in cross section but with the movable pen element, guide and spring shown in side elevation.

FIGURE 7 is a prospective view of the movable pen element and shows the guide fixedly attached to the movable pen element.

These figures and the following detailed description disclose a preferred specific embodiment of the invention, but the invention is not limited to the details disclosed since it may be embodied in other equivalent forms.

More specifically, it should be emphasized that the embodiment of the invention described herein is adapted for use with a conventional ball point pen under conditions wherein the writing point of the conventional ball point pen serves as one point of the three writing point ruling device. However, it will be readily apparent as the ruling device is described that the device can be constructed by using a special pen element inserted into the space occupied by the conventional ball point pen and with the handle provided by the conventional ball point pen replaced by a handle attached at an appropriate point to the ruling device. Although this modification of the ruling device described herein sacrifices that feature of the device which makes it readily adaptable for use with a conventional single-point ball point pen, it will nevertheless retain the guide or line positioning feature and the adjustable but fixed setting of the distance between the double lines and the single line.

The specific embodiment of the ruling device described herein is comprised of an adapter unit **10** having one pen element **11** fixedly positioned therein and another pen element **12** movably positioned therein and having a channel **13** into which the barrel **14** of a conventional ball point pen **15** may be inserted to obtain the third pen element. The hollow interior of the channel **13** into which the conventional ball point pen **15** is inserted has a cross section which is identical to the cross section of the conventional ball point pen **15** in that portion of the ball point pen **15** length which is inserted into the channel **13** when the writing point **16** of the conventional ball point pen **15** extends below the adapter unit **10** the same distance as the writing point **17** of the fixed pen element **11**. Thus, if a conventional ball point pen **15** having a cross section which is triangular, square or any other similar configuration is inserted into the channel **13** of the adapter unit **10** it will fixedly but removably position itself in the adapter unit **10** by friction with respect to vertical movement in the adapter unit **10** and by its cross section configuration with respect to rotational movement. Therefore, the barrel **14** of the conventional ball point **15** serves as a convenient handle for gripping and using the ruling device and the position of the ruling device will be determined by the position of the barrel **14** in the hand of the user.

That pen element 11 which is fixedly positioned in the adapter unit 10 is located adjacent to the channel 13 into which the conventional ball point pen 15 is inserted and at its lower or writing end 18 curves toward the writing point 17 of the conventional ball point pen 15 so that its writing point 16 and the writing point 17 of the conventional ball point pen 15 are positioned substantially side by side in the same plane when the conventional ball point pen 15 is held perpendicular to the plane. Thus, the writing point 17 of the fixedly positioned pen element 11 and the writing point 16 of the conventional ball point pen 15 will draw two adjacent lines when the ruling device is drawn across a sheet of paper and will serve to draw the two lines generally drawn beneath the sum of a column of figures in various books of account.

The movable pen element 12 of the adapter unit 10 is positioned within a chamber 19 on the opposite side of the channel 13 in which the conventional ball point pen 15 is inserted from the fixed pen element 11 of the adapter unit 10. It is within this chamber 19 that the movable pen element 12 is fixedly but movably positioned to place its writing point 20 either a one-quarter inch or one-half inch away from the writing point 16 of a conventional ball point pen 15 inserted into the channel 13 of the adapter unit 10. These two fixed positions of the movable pen element 12 are used because most paper for accounting purposes requires lines which are either one-quarter inch or one-half inch apart. Therefore, if the point 20 of the movable pen element 12 is fixedly positioned either one-quarter inch or one-half inch away from the point 16 of the conventional ball point pen 15 when this pen 15 is inserted into the channel 13 of the adapter unit 10, the ruling device may be used with most accounting paper.

In order that the movable pen element 12 may be movably but fixedly positioned in either of the two positions described above, it is constructed in the form of a cylinder 21 having four pins 22 extending through slots 23 in opposite sides 24 of the chamber 13. The slots 23 in each side 24 of the chamber 13 are identical and each set of slots is comprised of an upper 25 and lower 26 group of three vertical slots 23 extending parallel to the center line of the movable pen element 12. The bottoms of the upper groups 25 of vertical slots 23 are joined by a transverse slot 35 and the lower group 26 of slots 23 extend to the edge 27 of the adapter unit 10. One of the four pins 22 is associated with each group 25 or 26 of slots 23 and in such a manner that when the movable pen element 12 is in a particular fixed position, all pins 22 are in the same slot 23 position.

The middle slot in each group 25 or 26 or vertical slots 23 is of sufficient length so that when the pins 22 of the movable pen element 12 are at the uppermost end of these slots 23, the writing point 20 of the movable pen element 12 will be withdrawn toward the adapter unit 10 and will not engage the writing surface engaged by the point 16 of the conventional ball point pen 15 and the point 17 of the fixed pen element 11 of the adapter unit 10. The two slots 23 on opposite sides of the middle slot 23 are shorter than the middle slot and of such length that when the pins 22 associated with the movable pen element 12 are uppermost in either of these slots 23, the writing point 20 of the movable pen element 12 will engage the writing surface that is being engaged by the writing point 16 of the conventional ball point pen 15 and the writing point 17 of the fixed pen element 11 of the adapter unit 10. However, the location of the short slots 23 most remote from the conventional ball point pen 15 is such that when the pins 22 of the movable pen element 12 are in position within these slots 23, the writing point 20 of the movable pen element 12 is exactly one-half inch from the writing point 16 of the conventional ball point pen 15.

Similarly, the distance of the innermost short slots in each group 25 or 26 from the conventional ball point pen 15 is such that when the pins 22 of the movable pen element 12 are in position within them, the writing point 20 of the movable pen element 12 is exactly one-quarter of an inch from the writing point 16 of the conventional ball point pen 15. Thus, the three vertical slots 23 in each group 25 and 26 of slots 23 in the sides 24 of the chamber 19 of the adapter unit 10 permit the movable pen element 12 to be movably, but fixedly, positioned in three positions. Specifically, these positions are the position in which the writing point 20 of the movable pen element 12 will be one-quarter inch from the writing point 16 of the conventional ball point pen 15, the position in which the writing point 20 of the movable pen element 12 will be one-half inch from the writing point 16 of the conventional ball point pen 15, and the position in which the writing point 20 of the movable pen element 12 will not engage the writing surface being engaged by the writing point 16 of the conventional ball point pen 15 and the writing point 17 of the fixed pen element 11 of the adapter unit 10. The transverse slot 35 joining the three vertical slots 23 in the upper groups 25 of slots and the extension of the lower groups 26 of vertical slots 23 to the edge 27 of the unit 10 provide a convenient means for moving the movable pen element 12 from one of these three positions to another.

In order to maintain the movable pen element 12 with its pins 22 properly positioned in the vertical slots 23, the movable pen element 12 is provided with an integral positioning flange 28 from which a spring 29 surrounding the movable pen element 12 extends to engage an upper shoulder 30 on both sides of the chamber 19. Engagement of the upper shoulders 30 is improved by placing a ring 31 around the movable pen element 12 between the spring 29 and the upper shoulders 30. The action of the spring between the positioning flange 28 of the movable pen element 12 and the upper shoulders 30 of the chamber 19 forces the movable pen element 12 upward so that the pins 22 associated with the movable pen element 12 are forced to the upper end of the slots 23 in which the pins 22 are positioned, but the spring 29 will permit the movable pen element 12 to be pushed downward so that the pins 22 on the movable pen element 12 may be moved to other vertical slots 23 in the manner already described. Thus, the slots 23, pins 22 and the spring 29 cooperate to permit the movable pen element 12 to be easily moved between any three fixed positions and will hold the movable pen element 12 in this position until downward pressure is applied to the movable pen element 12. It should be noted that the pressure applied to the movable pen element 12 in use is exactly opposite to the downward pressure needed to move the movable pen element 12. Therefore, there will be no tendency for the movable pen element 12 to shift in position while the ruling device is in use.

It should also be noted that the upper shoulders 30 of the chamber 19 are so arranged that they will permit the motion of the movable pen element 12 to and from the position of the conventional ball point pen 15 but by engaging the side of the movable pen element 12 will restrict motion of the movable pen element 12 in any other direction. Further control of the motion of the movable pen element 12 is achieved by providing similar shoulders 32 at the lower end of the chamber 19. These lower shoulders 32 in combination with the upper shoulders 30 already described will prevent any motion of the movable pen element 12 except in that direction which is toward or away from a conventional ball point pen 15 inserted in the channel 13 of the adapter unit 10. Thus, the pins 22 of the movable pen element 12, the four groups of slots 23, and the upper 30 and lower 32 shoulders cooperate to position the movable pen element 12 in any one of its three positions with its center line exactly parallel to the center line of a conventional ball point pen 15 inserted into the channel 13 of the adapter unit 10.

If three writing points fixedly positioned with respect to each other are drawn over a writing surface in a specific direction, the distance between the writing points will vary in accordance with the angle to the line of motion made by a line extending between all three writing points. For example, when a straight line extending between all three writing points is perpendicular to the line of motion, the distances between the lines made by the three writing points will be exactly the same as the distances between the three writing points along the line joining the writing points. On the other hand, when the line joining the three writing points is at an angle to the line of motion, the distance between the lines on the writing surface will be the distance along one leg of a right triangle having the line joining the writing points as the hypotenuse. Therefore, to prevent the distances between writing points and lines from varying as the ruling device is used, the ruling device is provided with a guide 33 to insure that the line extending through the three writing points 16, 17 and 20 is always perpendicular to the line of motion of the writing points 16, 17 and 20 as they are drawn along a surface.

This guide 33 is a cresent integrally associated with the movable pen element 12 as shown in FIGURES 6 and 7 or with the fixed pen element 12 as shown in FIGURES 3 and 4 and it is shaped so that its circular edge 34 is always just sufficiently far from the writing surface to insure that it will not engage the writing surface, but will engage a ruler or other structure being used to guide the motion of the ruling device. It should be noted that the circular shape of the edge 34 of the guide 33 insures that a substantial length of the guide 33 will always be in contact with a ruler in any normal position to which the ruling device might be tilted about an axis extending perpendicular to the line of motion of the ruling device. Thus, the guide 33 maintains the line extending through the three writing points 16, 17 and 20 of the ruling device perpendicular to the ruler, while at the same time permitting the ruling device to be rotated about this line into the most comfortable position for use.

It should also be noted that by attaching the guide 33 to the movable pen element 12, the movable pen element 12 is always the same distance from the ruler when the guide 33 is in contact with a ruler held above the lines to be drawn and that when the guide is attached to the fixed pen element the proper relationship to a ruler held below these lines is maintained. Therefore, the proper position of a ruler for drawing lines above or below the ruler is easily learned regardless of whether the ruling device is being used to draw sets of lines wherein the distance between the double lines and the single line is one-quarter inch or wherein this distance is one-half inch.

At this point it should be noted that two writing points can be used in the movable pen element 12 in combination with a single conventional ball point pen 15 inserted into the channel 13 and no fixed pen element 11 or with a fixed pen element 11 and no conventional ball point pen 15. In this arrangement, the guide 33 is most conventionally placed on the movable pen element 12 since it permits a ruler to be used under the two point movable pen element 12. However, it should also be noted that this arrangement sacrifices the ability of the device to draw only two double lines.

From the foregoing, it is readily apparent that the ruling device described herein provides an adapter unit 10 which may be conveniently and quickly associated with a conventional ball point pen 15 to provide a device for drawing the three lines commonly required for books of account. It should also be apparent that the device permits two closely spaced lines to be drawn without the third line by simply moving the writing point 20 to an inoperative position. Moreover, it should be apparent that the construction of the device not only permits the distance between the double lines and the single line to be conveniently and quickly changed from one fixed distance to another, but that the construction also insures that the distance between the lines will remain constant as the ruling device is drawn along the edge of a ruler.

What is claimed is:

1. A writing device comprising, in combination, an adapter unit having a fixed writing element with a writing point, an elongated chamber with an upper shoulder and a lower shoulder on each elongated side and slots in each elongated side, and a channel between said fixed writing element and said elongated chamber; a writing instrument inserted into the channel and having its single writing point adjacent to the writing point of the fixed writing element; a movable writing element positioned within the chamber in slidable contact with the upper shoulder and lower shoulder on each elongated side of the chamber and having pins extending through the slots in each elongated side of the chamber, said movable writing element having a flange and being fixedly but movably positionable with its writing point at either of two specific distances from the writing point of the writing instrument in the plane engaged by both the writing point of the writing instrument and the writing point of the fixed writing element or with its writing point above said plane; a spring surrounding a portion of the movable writing element and extending from the flange of the movable writing element to the upper shoulder on each elongated side of the chamber; and a guide integrally attached to the movable writing element and having a surface which is perpendicular to a straight line extending through the writing points of the fixed writing element, the writing instrument, and the movable writing element.

2. An adapter unit for use with a conventional ball point pen having a single writing point to obtain a three writing point device comprising, in combination, a fixed pen portion having a fixed pen element with a writing point; a movable pen portion having a chamber elongated toward the fixed pen portion and with an upper shoulder and a lower shoulder on each elongated side and slots in each elongated side; a middle portion joining the fixed pen portion and the movable pen portion and having a channel with a cross section which permits the conventional ball point pen to be slidably inserted therein only until its writing point is adjacent to the writing point of the fixed pen element; a movable pen element positioned within the chamber of the movable pen portion in slidable contact with the upper shoulder and lower shoulder on each elongated side of the chamber and having pins extending through the slots in each elongated side of the chamber, said movable pen element having a flange and being fixedly, but movably positionable with its writing point at either of two specific distances from the writing point of the fixed pen element in the plane engaged by both the writing point of the fixed pen element and the writing point of the conventional ball point pen when fully inserted into the channel or with its writing point above said plane; a spring surrounding a portion of the movable pen element and extending from the flange of the movable pen element to the upper shoulder on each elongated side of the chamber; and a guide integrally attached to the movable pen element and having a surface which is perpendicular to a straight line extending through the writing points of the fixed pen element, the ball point pen, and the movable pen element.

3. An adapter unit for use with a conventional single point ball pen to obtain a multipoint marking device, comprising, in combination, a first structural portion having a fixed pen element with a writing point; a second structural portion having a channel which permits said conventional ball pen to be slidably inserted therein only until its writing point is adjacent to and on the same plane with the writing point of the fixed pen element; a third structural portion having a chamber elongated toward the channel of the second portion; and a movable

pen element with a writing point, said movable pen element being selectively positioned within the chamber of the third portion at one of two specific distances from the writing point of the fixed pen element in the same plane with both the writing point of the fixed pen element and the writing point of the conventional ball pen when positioned in said channel or with its writing point positioned above said plane.

4. An adapter unit for use with a conventional single point ball pen to obtain a multipoint marking device comprising, in combination, a first structural portion having a fixed pen element with a writing point; a second structural portion having a channel which permits said conventional ball pen to be slidably inserted therein only until its writing point is adjacent to and on the same plane with the writing point of the fixed pen element; a movable pen element with a writing point; and a third structural portion having means for selectively positioning the movable pen element with its writing point at one of two specific distances from the writing point of the fixed pen element in the same plane with both the writing point of the fixed pen element and the writing point of the conventional ball point pen when positioned in said channel or with its writing point positioned above said plane.

5. An adapter unit for use with a conventional ball point pen having a single writing point to obtain a three writing point device comprising, in combination, a fixed pen portion having a fixed pen element with a writing point; a movable pen portion having a chamber elongated toward the fixed pen portion and with an upper shoulder and a lower shoulder on each elongated side and slots in each elongated side; a middle portion joining the fixed pen portion and the movable pen portion and having a channel with a cross section which permits the conventional ball point pen to be slidably inserted therein only until its writing point is adjacent to the writing point of the fixed pen element; a movable pen element positioned within the chamber of the movable pen portion in slidable contact with the upper shoulder and lower shoulder on each elongated side of the chamber and having pins extending through the slots in each elongated side of the chamber, said movable pen element having a flange and being fixedly, but movably positionable with its writing point at either of two specific distances from the writing point of the fixed pen element in the plane engaged by both the writing point of the fixed pen element and the writing point of the conventional ball point pen when fully inserted into the channel or with its writing point above said plane; and a spring surrounding a portion of the movable pen element and extending from the flange of the movable pen element to the upper shoulder on each elongated side of the chamber.

6. An adapter unit for use with a conventional ball point pen having a single writing point to obtain a three writing point device comprising, in combination, a fixed pen portion having a fixed pen element with a writing point; a movable pen portion having a chamber elongated toward the fixed pen portion and with an upper shoulder and a lower shoulder on each elongated side and slots in each elongated side; a middle portion joining the fixed pen portion and the movable pen portion and having a channel with a cross section which permits the conventional ball point pen to be slidably inserted therein only until its writing point is adjacent to the writing point of the fixed pen element; a movable pen element positioned within the chamber of the movable pen portion in slidable contact with the upper shoulder and lower shoulder of each elongated side of the chamber and having pins extending through the slots in each elongated side of the chamber, said movable pen element having a writing point which is positionable to engage the plane engaged by both the writing point of the fixed pen element and the writing point of the conventional ball point pen.

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