

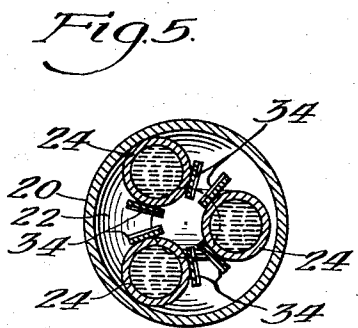
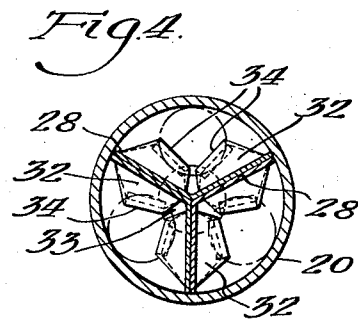
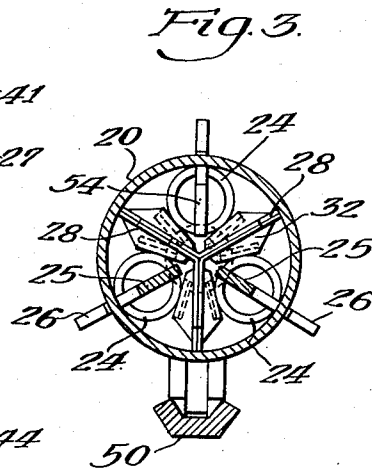
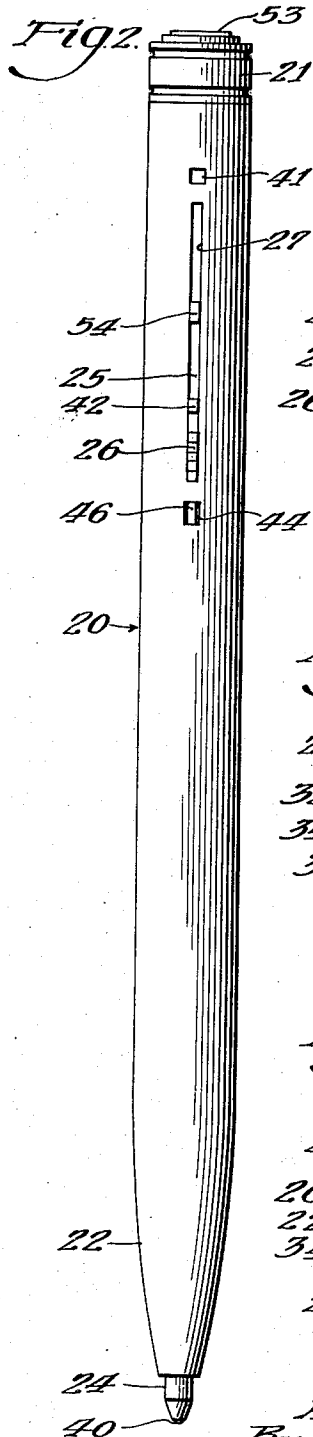
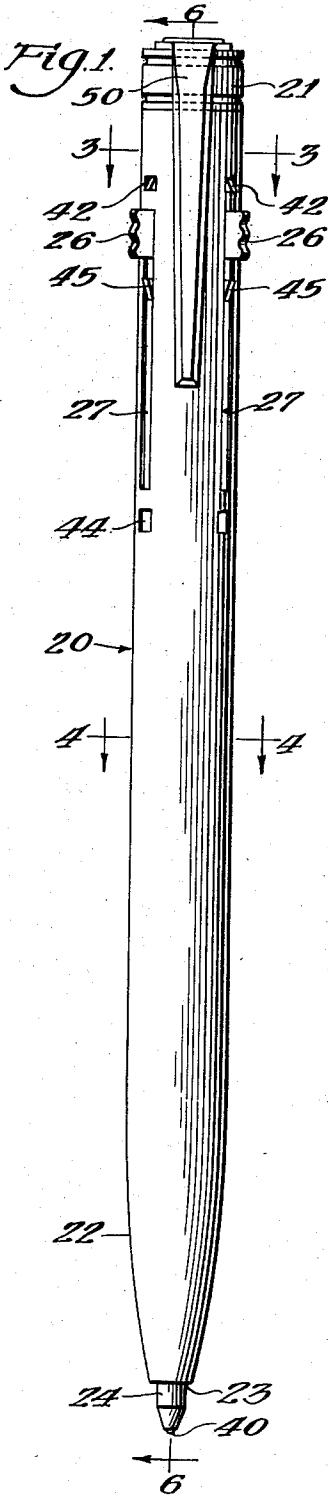
April 27, 1954

H. J. FAHRINGER
WRITING INSTRUMENT

2,676,570

Filed Aug. 1, 1949

3 Sheets-Sheet 1



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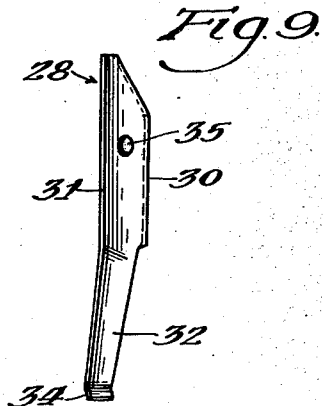
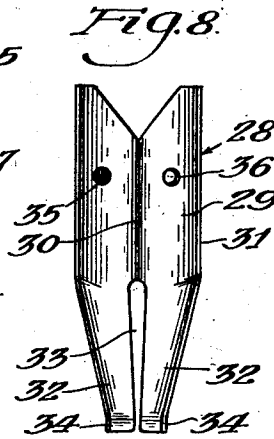
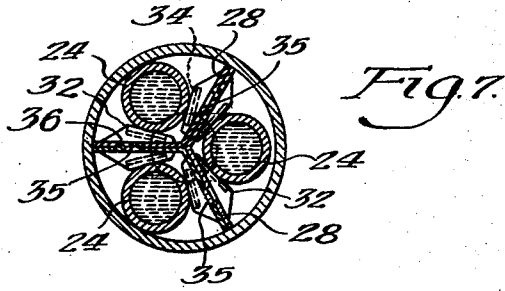
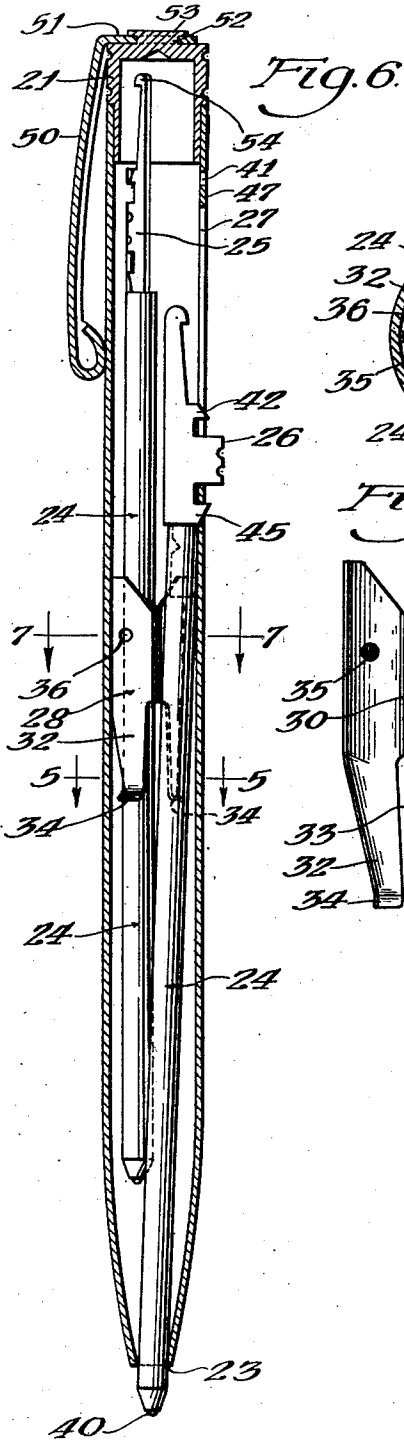
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H. J. FAHRINGER
WRITING INSTRUMENT

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3 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

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WRITING INSTRUMENT

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2 Claims. (Cl. 120—42.13)

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This invention relates to writing instruments of the retractable point type. In particular, it relates to an instrument having a plurality of points which are adapted for alternative operation; that is, the operator can select any one of several points by causing that particular point to be projected below the end of the barrel. The point itself may be either a pencil or a ballpoint pen, and this arrangement is frequently used in multi-color pencils or pens.

It is an object of my invention to provide an instrument of this type having improved means for locking a point, hereinafter referred to as a cartridge, in either its retracted or projected position.

A further object is to provide in an instrument of this type, an improved cartridge which includes a button bar which is secured thereto merely by simple crimping operation.

Still another object is to provide an improved writing instrument of the type described which is characterized by the provision of an improved divider and spring which is so located in the barrel that it permits the use of a simplified type of button bar.

Further objects are to provide a writing instrument embodying an improved type of divider, an improved type of spring, and which is characterized by low manufacturing costs.

Heretofore, in devices of this type the cartridges have been urged against the dividers by spring means which form a part of the button bar so as to frictionally hold the cartridge in position and to prevent rattling thereof. In the present arrangement, the cartridges are urged against the wall of the barrel, thereby dispensing with the necessity of providing a continuous partition, and permitting a greater latitude of movement for the cartridge.

Other objects, features and advantages will become apparent as the description proceeds.

With reference now to the drawings in which like reference numerals designate like parts:

Fig. 1 is a front elevation of a preferred embodiment of my invention;

Fig. 2 is a rear elevation thereof;

Fig. 3 is a section taken along line 3—3 of Fig. 1, but showing all the cartridges in retracted position;

Fig. 4 is a section taken along line 4—4 of Fig. 1, but showing the instrument with the cartridges removed;

Fig. 5 is a section taken along line 5—5 of Fig. 6;

Fig. 6 is a sectional elevation taken along line 6—6 of Fig. 1;

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Fig. 7 is a section taken along line 7—7 of Fig. 6;

Fig. 8 is an elevation of one of the divider elements;

5 Fig. 9 is a side view thereof;

Fig. 10 is a bottom view thereof;

Fig. 11 is a view similar to Fig. 6, but showing the position of a cartridge during insertion or removal;

10 Fig. 12 is a view similar to Fig. 11, but showing the cartridge in its retracted position;

Fig. 13 is an enlarged section showing the relationship of the button bar with the barrel, and

15 Fig. 14 is an elevation taken from the right-hand side of Fig. 13.

The instrument comprises a barrel 20, the open upper end of which is closed by a cap 21. The lower end of the barrel is tapered as indicated by the reference numeral 22 and is provided with an opening 23 through which any one of a plurality of cartridges 24 may be selectively projected.

20 The cartridges may constitute lead holders, a ball point pen, or any other suitable type of writing device. In the present embodiment, the 25 cartridges are of the ball point pen type and comprise an ink tube 39 and a button bar 25 which projects from the upper end of the ink tube. The lower end of the ink tube includes a ball point 40. The button bar 25 is provided with a laterally projecting lug or button 26 which is adapted to extend through a slot 27 formed in the wall of the barrel 20.

30 The barrel is divided into three compartments by a plurality of dividers 28 which when assembled in the manner shown in Figs. 3, 4 and 7, 35 provide a plurality of radially disposed walls. In the present embodiment, three dividers are used which provide three compartments, but it is obvious that a greater or lesser number of compartments may be provided.

40 As shown in Figs. 8, 9 and 10, each divider comprises a body portion 28 which is bent along a fold line 30 so as to provide two wall portions which are disposed at substantially 120 degrees 45 to each other. When three of these dividers are assembled, the edges 31 engage the wall of the barrel 20. In practice, the angle at the fold line may be somewhat greater than 120 degrees so that the edges 31 may be resiliently urged against the wall of the barrel, thus serving to frictionally maintain the longitudinal position of the dividers in the barrel. They may be inserted from the upper end and pushed down to an approximately 50 midway position. One of the halves of each body 55 portion is provided with a lug in the form of an

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extrusion 35 which interlocks with an aperture 36 formed in the opposite half of the adjacent divider. Thus, the three dividers are interlocked with each other.

The divider also includes two spring portions 32 which constitute extensions of the body portion and which are separated from each other by a slot 33. The lower ends of the spring portions are bent backwardly to provide a resiliently mounted bearing point 34 which engages a cartridge to urge it against the wall of the barrel. Since the bearing point 34 is disposed approximately midway of the barrel, it engages the cartridge at an intermediate point which will permit tilting of the cartridge in either direction: that is, where the upper end of the cartridge is displaced inwardly as shown in Fig. 11, or where the lower end of the cartridge is displaced inwardly as shown in Fig. 6.

The button bar is provided with a shank 37 which is notched as shown in Fig. 13 and received within the upper end of the ink tube 39. The ink tube is crimped into the notch as indicated by the reference numeral 38 so that the button bar and ink tube may be associated with each other.

Disposed above the slot 27 is an upper locking slot 41 which is adapted to receive a locking lug 42 having a cam surface 43. Similarly, a lower locking slot 44 is formed beneath the slot 27 which is adapted to receive a locking lug 45 provided with a cam surface 46. The locking lugs 42 and 45 are spaced from the button 26 by a distance which corresponds to the widths of wall portions 47 and 48 which separate the locking slots 41 and 44 respectively from the main slot 27.

The cartridge is moved into its retracted position, as shown in Fig. 12 by pushing the button 26 upwardly. The cam surface 43 engages the wall portion 47 and cams the cartridge inwardly to permit the locking lug 42 to drop into the upper locking slot 41. The same action takes place with respect to the lower locking lug 45 when the button 26 is pushed downwardly, thereby locking the cartridge in its projected position.

As shown in Fig. 14, there may be a slight clearance 49 between each side of the button 26 and the edges of the main slot 27. However, this clearance should be comparatively small with respect to the thickness of the wall of the barrel in order to prevent rolling of the cartridge, that is, rotation about its vertical axis, which would cause the button to be withdrawn into the barrel. For instance, where the barrel is .0125 inch thick, it has been found that a clearance of .001 inch or less will prevent rolling.

The cap 21 is provided with a clip 50 which has an apertured bent-over end 51. The latter fits over the projection 52 which is formed on the upper surface of the cap and the projection is upset as shown at 53 to secure the clip to the cap. This construction avoids the use of a rivet.

In operation, the three dividers 28 are interlocked with each other and wedged into place in the barrel as described above. A cartridge 24 is then inserted into one of the compartments formed by the dividers. As shown in Fig. 11 the cartridge is tilted so that the button 26 clears the barrel. This tilting takes place against the action of the spring portions 32. The rear end of the button bar terminates in a hooked projection 54 which facilitates manipulation of the cartridge and permits it to be brought into the locked retracted position as shown in Fig. 12. The other cartridges are then inserted in a similar manner.

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When it is desired to bring one of the cartridges into projected position for writing, the button 26 is pushed inwardly until the upper locking lug 42 clears the upper locking slot 41. Then the button 26 may be pushed downwardly until the lower locking lug 45 cams under the wall portion 48 and into the lower locking slot 44. Then the instrument is ready for writing. This position of the cartridge is shown in Fig. 6 in which the cartridge is tilted, against the bias of the spring portions 32, in a direction which is opposite to that shown in Fig. 11. In other words, by disposing the spring portions at about the middle of the barrel, they react against the cartridge in both directions of tilting.

The provision of the locking lugs 42 and 45 necessitate the provision of a button of considerable depth, which in turn requires a substantial tilting during insertion or removal, as shown in Fig. 11. This latitude of movement is permitted by the use of dividers which are relatively short in length as compared with the dividers of the prior art which extend throughout a substantial portion of the length of the barrel.

The button bar is of simplified construction compared with those of the prior art, and may be secured to the ink tube by a simple crimping operation.

The dividers and spring portions are preferably formed from heat treatable non-ferrous metal.

It will be observed that the position of the cartridge in the barrel is stabilized by means providing a three point contact, two of said points being the resiliently mounted bearing points 34, and the third point being the wall of the barrel. Thus the intermediate portion of the barrel is maintained in alignment with the upper portion, the lateral position of which is determined by the cooperation of the button 26 and the slot 27. The latter elements also prevent twisting of the cartridge, especially when the sum of the side clearances is less than the thickness of the barrel wall.

I claim:

1. A writing instrument button bar adapted to be assembled with the writing tube of a writing instrument to form with said tube a unit for insertion into the barrel of a writing instrument, comprising a shank, a first lug projecting laterally from said shank, an upper locking lug extending laterally from said shank and arranged in spaced relation with respect to one side of said first lug, and a lower locking lug extending laterally from said shank and arranged on the opposite side of said first lug, said shank being provided with a notch, a portion of the tube adapted to be crimped into engagement with said notch, said locking lugs each being provided with an inclined cam surface, the inclined cam surface on the lower locking lug having its upper end positioned further away from the shank than its lower end, the inclined cam surface on the upper locking lug having its lower end positioned further away from the shank than its upper end.

2. A writing instrument comprising a barrel provided with an upper open end, a cap for closing the open end of said barrel, the lower end of said barrel being provided with an opening for the selective projection therethrough of one of a plurality of cartridges, each of said cartridges including a tube and a button bar projecting from the upper end of said tube, said button bar comprising a shank, a first lug projecting laterally from said shank, there being a slot in said barrel for receiving said first lug, an upper locking

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lug extending from said button bar and arranged in spaced relation with respect to one side of said first lug, said upper locking lug having an outwardly extended inclined cam surface, there being an upper locking slot in said barrel for receiving said locking lug, and a lower locking lug extending from said shank and arranged on the opposite side of said first lug, there being a lower slot in said barrel for receiving said lower locking lug, said lower locking lug being provided with an inwardly extending inclined cam surface, said inclined surfaces extending in opposite directions with respect to each other, the rear end of each of said button bars terminating in a hook projection for facilitating the manipulation of the cartridge.

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