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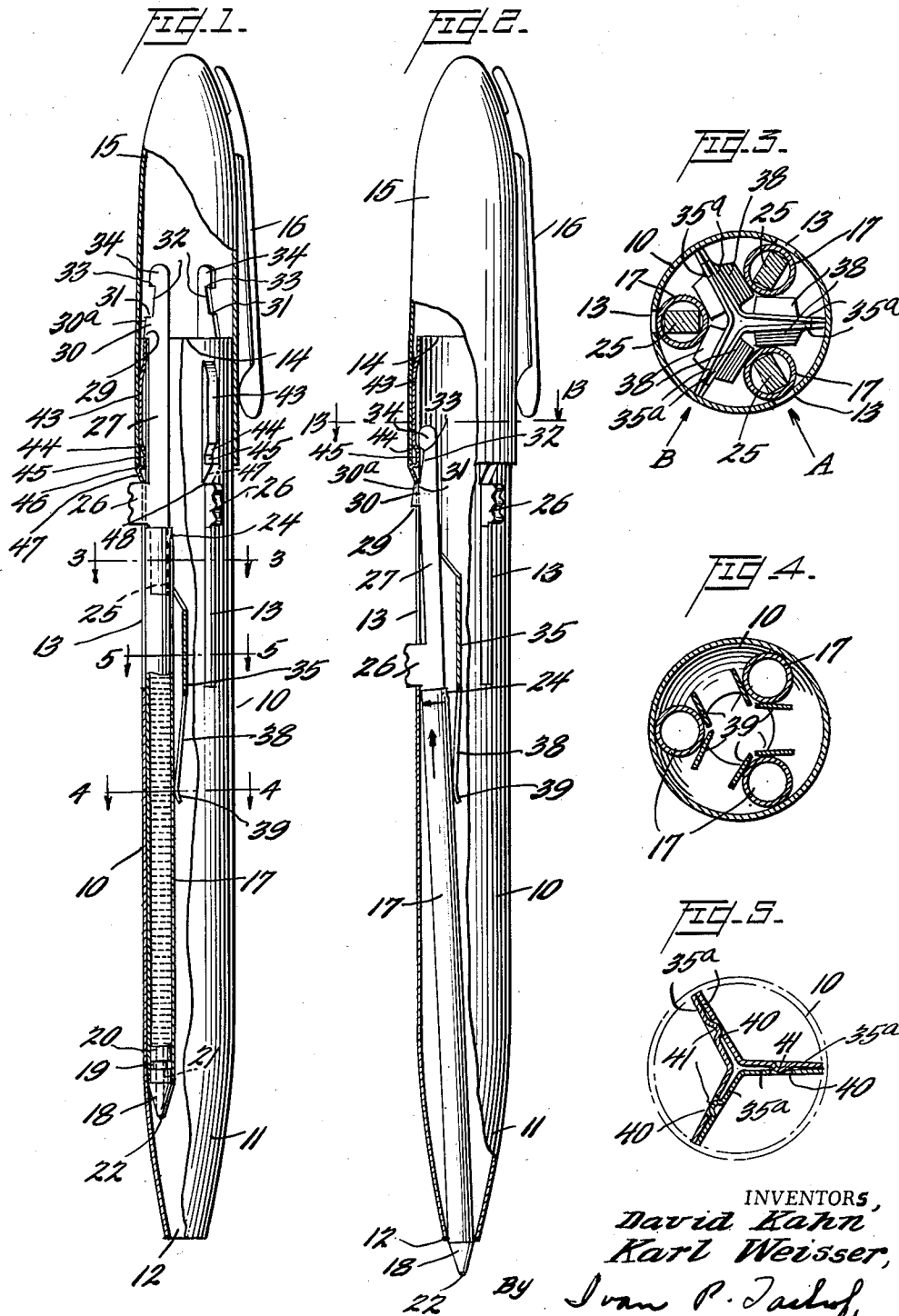
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2,624,315

FOUNTAIN PEN

Filed Sept. 6, 1949

2 SHEETS—SHEET 1



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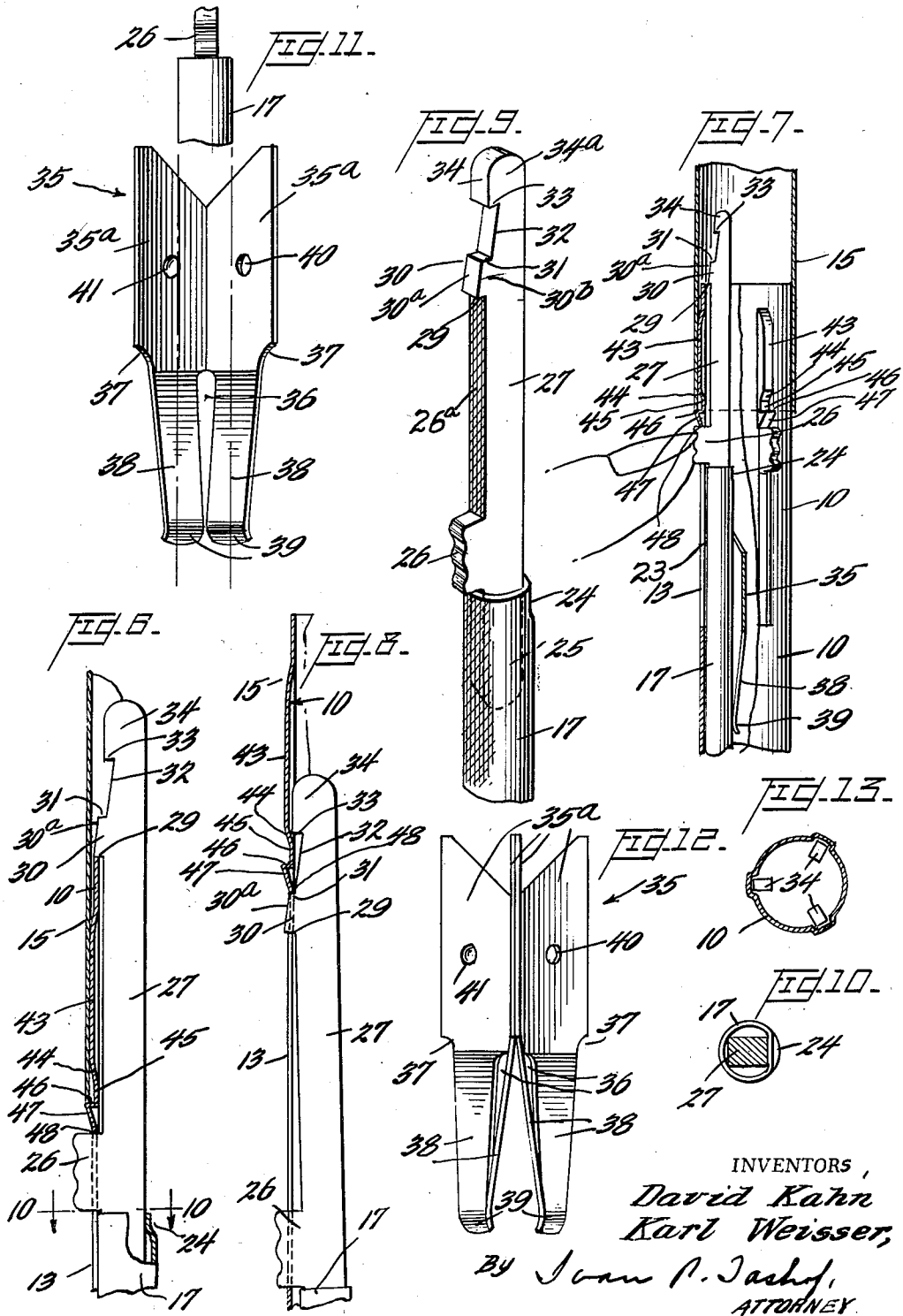
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FOUNTAIN PEN

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2 SHEETS—SHEET 2



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UNITED STATES PATENT OFFICE

2,624,315

FOUNTAIN PEN

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Application September 6, 1949, Serial No. 114,082

22 Claims. (Cl. 120—42.13)

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This invention relates to a writing instrument which is adapted to write selectively with one of several different color writing media. More particularly, the present invention relates to the provision of a multiple color writing instrument having a plurality of cartridges adapted to be moved selectively into writing position.

One of the principal objects of the present invention is to provide a multiple color writing instrument which is simple in structure, easy to operate, economical to manufacture, and in which the writing cartridge may be easily removed when the writing medium thereof has been expended, the latter being then replaced by a fresh cartridge.

A further object of the present invention is to provide a writing instrument having a plurality of writing cartridges adapted to be moved selectively into writing position, said cartridges cooperating with a central spacer assembly having resilient means for guiding the cartridges into the writing position.

Another object of the present invention is to provide a writing instrument having a plurality of cartridges adapted to be moved selectively into writing position, said cartridges cooperating with a novel means for holding each of the cartridges in non-writing position.

A further object of the present invention is to provide a writing instrument having a plurality of writing cartridges adapted to be moved selectively into writing position, said cartridges cooperating with a novel means for holding each of the cartridges selectively in the writing position.

Another object of the present invention is to provide a writing instrument spacer and spring section comprising opposed body members disposed from a center apex line at a dihedral angle, one with respect to the other, said spacer section being provided with resilient holding means extending downwardly from and at an angle to the lower portion of opposing body members, said holding means being adapted to engage the writing cartridge and hold the same against the inner wall of the writing instrument barrel when the cartridge is in a retracted non-writing position and when the writing cartridge is moved to a writing position to exert pressure against the cartridge to assist in preventing upward displacement of the cartridge by writing pressure.

Another object of the present invention is to provide a writing instrument spacer and spring section in which each body member thereof has a spring lobe extending downwardly from and at an angle with respect to the lower portion of the

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body member, the spring lobes of opposing body members converging toward one another from their upper ends to their lower ends.

Another object is to provide a writing instrument spacer and spring section in which one of the body members is provided with means for interengagement with an adjacently disposed companion section.

Another object of the present invention is to provide a writing instrument locking bar adapted to be assembled with the writing cartridge of a writing instrument and to form with said cartridge a unit for insertion into the barrel of a writing instrument, said locking bar having a lower shank portion and an upper shank portion, each of said portions being provided with a front wall and side walls, said lower shank portion having a laterally extending projection adapted to be finger operated, said upper shank portion having a second laterally extending projection, the latter being provided with an upper wall having a cam surface and inclined from the bottom wall portion to the top wall portion, said locking bar upper portion extending beyond said second lateral projection and being provided with gripping means facilitating the insertion of the writing unit into and the withdrawal thereof from the writing instrument barrel.

Other objects, advantages and improvements inherent in the present invention will become apparent as the description proceeds, reference now being had to the accompanying drawing in which:

Fig. 1 is a vertical sectional view, with certain parts broken away, of a writing instrument, showing one of the ink cartridges in the retracted or non-writing position;

Fig. 2 is a view similar to Fig. 1 but showing the same ink cartridge in its projected or writing position;

Fig. 3 is a sectional view on line 3—3 of Fig. 1 showing in detail the central spacer assembly for holding the ink cartridges in their relatively spaced positions;

Fig. 4 is a similar sectional view on line 4—4 of Fig. 1 showing in detail the springs on the central spacer assembly for holding the ink cartridges against the inner wall of the barrel of the pen;

Fig. 5 is a detail view on line 5—5 of Fig. 1 showing the mating relationship of the parts of the central spacer assembly, the ink cartridges being here omitted;

Fig. 6 is a detail view, partly in section, showing one of the locking bars engaged with the up-

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per rim of the barrel to hold the ink cartridge in the retracted or non-writing position;

Fig. 7 is a view similar to Fig. 6 showing how the locking bar is released by manual pressure;

Fig. 8 is a detail view, partly in section, showing the locking bar engaged with the upper edge of an elongated slot in the pen barrel for holding the ink cartridge in the projected or writing position;

Fig. 9 is a perspective view of one of the locking bars and the upper portion of an ink cartridge;

Fig. 10 is a cross-sectional view on line 10—10 of Fig. 6 showing one means for holding the locking bar securely to the ink cartridge;

Fig. 11 is an elevational view of one of the component springs of the central assembly for holding the ink cartridges in their relatively spaced positions and for guiding same into the writing position, this view being taken along a vertical plane through the arrow A of Fig. 3;

Fig. 12 is an elevational view of two of the component springs of the central assembly, this view being taken along a vertical plane through the arrow B of Fig. 3; and

Fig. 13 is a sectional view taken on line 13—13 of Fig. 2.

Referring to Figs. 1 and 2 of the drawing, the fountain pen comprises a hollow cylindrical barrel 10 provided with a continuous frusto-conical end 11 having an axial aperture 12 therein. A cap 15 having a spring clip 16 thereon is preferably provided for closing the upper end 14 of the barrel 10. Three longitudinally spaced slots 13 are provided in the wall of the barrel, these being equally spaced circumferentially of the barrel and extending upwardly from slightly above the mid-section for about one-quarter of the barrel length. Aligned with the elongated slots 13 and intermediate the upper ends of these slots and the end of the barrel there are formed in the barrel three aligned elongated outstruck or fluted sections 43. At their lower ends these fluted sections 43 are each sloped inwardly and downwardly at 47 to merge with the respective slots 13 in abrupt ends 48 of the latter. The fluted sections 43 serve as tracks for the cap 15 and the shoulders 46 as stops for the latter, an additional function of these fluted sections, as well as the functions of the axially parallel portions 45 and abrupt ends 48, being hereinafter described.

One of the three identical ink cartridges is shown in detail in Figs. 1 and 2. It will be understood that, while these devices are herein termed "ink cartridges," they are, in reality, miniature fountain pens.

Each cartridge comprises principally a cylindrical tube member 17 which forms the ink reservoir, the lower end of the cylindrical tube member 17 being closed by a writing head 18 of conical shape having a concentric cylindrical stem 20 which is force-fitted within the tube member. The stem 20 has a sealing groove 19 therearound and an axial bore 21 is formed through the stem and the conical head 18 for feeding the writing fluid or ink. Mounted in the bore 21 of the conical writing head or tip 18 in a substantially spherical cavity (not shown) there is a writing ball 22. This ball, while closely fitting to form an end closure for the bore 21, is free to rotate therein and in so doing receives ink from the reservoir which passes over the spherical surface and is applied to the surface to be written upon.

Into the upper end of each cylindrical cartridge member 17 there is preferably force-fitted

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the lower end 25 of a locking bar 27, the cartridge member being crimped at 24 adjacent its upper end to increase the strength of the joint with the locking bar. Above the upper end of the cartridge member 17 the locking bar 27 is provided with an outwardly extending serrated projection 26 which projects through one of the elongated slots 13 in the pen barrel for engagement by a finger of the user to project the ink cartridge 17 and the spherical ball 22 carried thereby to writing position or to retract the cartridge therefrom. Adjacent its upper end the locking bar 27 is provided with a detent shoulder 30 and a finger lug 34. The serrated projection 26, detent shoulder 30, and the lug 34 are all aligned longitudinally along one edge of the locking bar. The detent shoulder 30 has its surface 30a inwardly and rearwardly inclined and has an under edge 29 and a top edge or face 31, both preferably at right angles to the locking bar 27. To insure that the detent shoulder 30 will not catch on the inclined portion 47 of the barrel above the end of the respective slot 13, the length of this detent shoulder is made greater than that of the portion 47. The lug 34 likewise has an under edge 33 at right angles to the locking bar. Intermediate the detent shoulder 30 and the lug 34 the surface 32 of the locking bar is again sloped inwardly and rearwardly. The under edge or face 29 of the detent shoulder 30 engages the upper rim 14 of the barrel to hold the ink cartridge member 17 in the retracted or non-writing position, as shown in Figs. 1, 6 and 7. Similarly, the upper edge or face 31 of the detent shoulder engages the upper edge of the elongated slot 13 when the ink cartridge member is in writing position and, in the same position, the lug 34 engages the inner wall of the barrel 10. The detent shoulder 30 in its travel between these two positions is guided for substantially the full length of such travel by the outstruck or fluted portion 43 of the barrel in which it travels.

The surface of each locking bar 27 between the outwardly extending projection 26 and the detent shoulder 30 is colored as at 26a to correspond to the color of the writing fluid in its attached ink cartridge member 17, and the surface of the ink cartridge member 17, itself, in alignment therewith is likewise similarly colored over a length at least equal to the length of the elongated slot 13 in the barrel. There may be, for example, three cartridges which are so colored. The outer surface of one ink cartridge member 17 carrying red ink, may be colored red and the respective locking bar may have the portion 26a colored red. Similarly, another ink cartridge member 17 carrying green ink may be colored green and the respective locking bar may have the portion 26a colored green. Likewise, another ink cartridge member 17 carrying blue ink may be colored blue and the respective locking bar may have the portion 26a colored blue.

Referring now to Figs. 3, 4, 5, 11, and 12, there is shown the resilient central spacer assembly for holding the ink cartridge members 17 in their relatively spaced positions and for constraining same in their sliding movement to project through the axial aperture 12 in the frusto-conical end 11 of the barrel. This central spacer assembly comprises three substantially identical spring members 35 each having a main body portion 35a formed in two halves at a respective dihedral angle of slightly greater than 120°. The two halves are separated from approximately their mid-section downwardly along a cut line at 36 which is

coincident with the apex line of the dihedral angle. These separated portions are also cut away along their outer edges at 37 to form two downwardly extending relatively convergent spring lobes 38—38. The tips of these spring lobes are bent outwardly at 39 to form fingers for engaging the ink cartridge members 17. One half of each spring element has a hole 40 at approximately its center and the other half has a symmetrically positioned protuberance 41. The three spring elements 35, when positioned with a half of one abutting a half of another at their outer edges and the protuberance 41 on one half positioned in the hole 40 on a half of another element, as shown in Fig. 5, form a nested assembly, the apices of the main body portions 35a being spaced apart as the corners of an equilateral triangle symmetrically positioned with respect to the axis of the pen due to the greater than 120° divergence of the two halves of each spring member. This construction provides for greater flexibility in assembly and use than a close nested assemblage. This nested assemblage is force-fitted within the hollow pen barrel 10 and preferably positioned somewhat below the mid-sections of the longitudinal slots 13 therein. In such position the finger tips 39—39 on the pair of spring lobes 38—38 of each spring element contact an ink cartridge member 17 to hold same firmly against the inner wall of the barrel 10 of the pen, as shown in Figs. 1, 4 and 7.

It will be noted that, while the invention has been described with respect to three ink cartridges, which could, for instance, contain red, blue and green ink, it is also within the contemplation of the invention to use a greater or lesser number, as for example, four or two. In either case corresponding changes would be made in the number of longitudinal slots 13 and fluted portions 43 in the barrel 10 and the spring elements 35 would be greater or fewer in number and the dihedral angle between the halves of the latter would be correspondingly changed.

The operation of the writing instrument is as follows: Normally the three ink cartridge members 17 are held in the retracted or non-writing position, as shown in Figs. 1 and 7. It will be noted that in this position the rearwardly and inwardly inclined surfaces of the detent shoulders 30 on the locking bars 27 facilitate the placement of the cap 15 on the barrel 10. In the described position the under edges or faces 29 on the detent shoulders 30 rest on the upper rim 14 of the barrel, the serrated projections 26 abut the upper ends of the respective elongated slots 13 in the barrel, and the finger tips 39—39 on the spring lobes 38—38 force the ink cartridge members 17 against the inner wall of the barrel of the pen. The user now selects the color of the writing fluid he desires to use by inspecting the colored portions 23 of the ink cartridge members 17 through the respective elongated slots 13 in the pen barrel. Thereafter, by exerting finger pressure first in an inward direction and secondly in a downward direction on the serrated projection 26, as shown in Fig. 7, the under edge or face 29 of the detent shoulder 30 is disengaged from the upper rim 14 of the barrel 10, and the selected ink cartridge member 17 is moved downwardly, and the detent shoulder 30 rides in the under side of the fluted portion 43, to project the conical writing tip 18 and ball 22 carried thereby through the aperture 12 in the frusto-conical end 11 of the barrel, the finger tips 39—39 on the spring lobes 38—38 firmly pressing the ink cartridge member

against the inner wall of the barrel 10. The downward movement of the selected ink cartridge member is stopped with the conical writing tip 18 and ball 22 carried thereby in the writing position, as shown in Fig. 2, at which position the serrated projection 26 abuts the lower edge or face of the elongated slot 13 in the barrel, the upper edge 31 of the detent shoulder 30 engages under the upper end of the elongated slot 13, and the lug 34 abuts the inner wall of the barrel 10. The flat portion 45 of the barrel is received within the notch 32 of the locking bar 27, thus allowing the bar to be inclined outwardly at a greater angle to the central axis of the pen and assuring a firmer engagement of the edge or face 31 of the shoulder 30 on the locking bar with the abrupt end 48 of the elongated slot 13. The user may now write with the color of writing fluid that he has selected. During the writing operation the finger tips 39—39 on the spring lobes 38—38 continue to press the selected ink cartridge member 17 against the inner wall of the barrel 10, as shown by the horizontal arrow in Fig. 2, and this force, combined with the upward thrust on the ink cartridge member 17 and the locking bar 27, as shown by the vertical arrow in Fig. 2, is taken up by the upper end 48 of the detent shoulder 30 abutting the upper edge of the elongated slot 13.

When finished writing, or when the user desires to change from the color of writing fluid that has been used to a different color, the user exerts inward and then upward pressure on the serrated projection 26. Only a very slight inward movement of the latter is required, since the inwardly and rearwardly inclined surface 30a of the detent shoulder will operate as a cam against the inner wall of the barrel 10 and the ink cartridge member 17 can be returned to the retracted or non-writing position by upward or longitudinal pressure on the serrated projection 26.

It will be understood that, while the operation of the pen has been described with respect to the operation of only one ink cartridge member, the operation will be identical with respect to the others.

The term "cartridge" used in the claims is intended broadly to cover a holder member having a fluid reservoir therein or a holder member for a crayon or pencil, it being understood that the structure herein set forth can be used in connection with a solid writing medium or a fluid writing medium.

There has been provided in accordance with the broad aspect of the present invention a writing instrument comprising a barrel having a plurality of spaced writing cartridges selectively slidable through the open upper end of the barrel into writing position. Means are provided for selectively moving each of the writing cartridges into writing and non-writing positions. Secured within the barrel are a plurality of spring sections for spacing the writing cartridges and holding each of the cartridges under spring pressure when in writing and non-writing positions. Each spring section is provided with resilient holding means engaged in holding its respective cartridge against the inner wall of the barrel when the cartridge is in a retracted non-writing position, and when the cartridge is moved to a writing position exerting pressure against the cartridge to assist in preventing upward displacement of the cartridge by writing pressure. Means are also provided to selectively lock each writing unit against movement when in either a

retracted non-writing position or in a protracted writing position. When it is stated that the spring sections are secured within the barrel, it is not intended to mean that the spring sections cannot be removed from the barrel. These spring sections are force-fitted within the barrel and are capable of removal if the same becomes necessary.

The detent shoulder of the locking bar is provided with a rearwardly and inwardly inclined cam surface 30a to facilitate the return of the writing member to a retracted non-writing position. The locking bar is provided with a lug 34 engaging the inner wall of the barrel when the cartridge is in the projected writing position. It is to be noted that the surface of the locking bar between the detent shoulder 30 and the lug 34 is rearwardly and inwardly inclined to approximately the same extent as the inclined cam surface 30a of the detent shoulder 30. The width of face 34a of the lug 34 is less than the width 30b of the detent shoulder so that when the detent shoulder 30 is in the position shown in Fig. 2 the lug 34 abuts directly against the inner wall of the barrel 10. In this way, and through cooperation of the axially parallel portion 45 of the barrel and the notch 32 in the locking bar 27, the locking bar accommodates itself to an inclined position, as shown in Fig. 2.

The ball point and the setting therefor do not specifically form any part of the present invention. The ball point and its setting may be constructed in accordance with the prior art as, for example, in U. S. Patents Nos. 2,390,636, 2,397,229, 2,400,679 and 2,416,896 to Laszlo J. Biro. The cartridge may also be constructed in accordance with the prior art, including the above set forth patents to Biro.

While a preferred embodiment of the invention has been illustrated and described, it is to be understood that various changes in the sizes, shapes, and relative arrangement of the different parts may be made without departing from the spirit of the invention as defined by the following claims.

Having thus described the invention, what is claimed as new and desired to be secured by Letters Patent is:

1. A writing instrument spacer and spring section for use in a writing instrument having a barrel member and a writing cartridge, said spacer section comprising opposed body members disposed from a center apex line at a dihedral angle, one with respect to the other, each body member being provided with a spring lobe extending downwardly from and at an inward angle with respect to the lower portion of the body member adjacent the lower end of the apex line, the spring lobes of opposing body members converging towards one another from their upper ends to their lower ends, said spring lobes being adapted to engage a cartridge and hold the same against the inner wall of a barrel.

2. The spacer and spring section defined in claim 1 in which the lower end of each spring lobe is provided with a finger disposed outwardly at an angle with respect to the plane of the spring lobe.

3. The spacer and spring section defined in claim 1 in which the upper end of each of said body members extends upwardly and outwardly from the upper end of said apex line to thereby provide a spacer notch, and the lower end of each spring lobe is provided with a finger disposed outwardly at an angle with respect to the

plane of the spring lobe and at least one of said body members being provided with means for interengagement with a body member of an adjacently disposed spacer section.

4. A writing instrument spacer and spring section for use in a writing instrument having a barrel member and a writing cartridge, said spacer section comprising opposed body members disposed from a center apex line at a dihedral angle, one with respect to the other, said spacer section being provided with resilient holding means extending downwardly from and at an angle to the lower portion of opposing body members, said holding means being adapted to engage the cartridge and hold the same against the inner wall of the barrel when the cartridge is in a retracted non-writing position, and when the cartridge is moved to writing position to exert pressure against the cartridge to assist in preventing upward displacement of the cartridge by writing pressure.

5. The spacer and spring section defined in claim 4 in which at least one of said body members is provided with means for interengagement with a companion section adapted to be disposed adjacent to said first-mentioned spacer and spring section.

6. The spacer and spring section defined in claim 4 in which the upper end of each of said body members extends upwardly and outwardly from the upper end of said apex line to provide a spacer notch.

7. The spacer and spring section defined in claim 4 in which at least one of said body members is provided with means for interengagement with a companion section, said means comprising an aperture disposed in one body member and a protuberance on the other body member, said protuberance being adapted to interengage a symmetrically positioned aperture in a body member of an adjacently disposed spacer section.

8. A writing instrument locking bar adapted to be assembled with the writing cartridge of a writing instrument and to form with said cartridge a unit for insertion into the barrel of a writing instrument, said locking bar having a lower shank portion and an upper portion, each of said portions being provided with a front wall and side walls, a laterally extending projection on said lower shank portion adapted to be finger operated, a second laterally extending projection on said upper portion, said second projection being provided with a front wall having a cam surface substantially uniformly inclined from the bottom portion of the front wall to the top portion thereof, said locking bar upper portion extending upwardly beyond said second lateral projection and being provided with gripping means facilitating the insertion of the unit and the withdrawal thereof from the barrel member, the width of the side walls of the locking bar above said second lateral projection being less than the width of the side walls of the locking bar at the said second lateral projection.

9. The locking bar defined in claim 8 in which the gripping means on the upper portion of the locking bar is a finger notch.

10. The unitary combination of a writing cartridge and a locking bar connected thereto for insertion into the barrel of a writing instrument, said locking bar having a lower shank portion and an upper portion, each of said portions being provided with a front wall and side walls, a laterally extending projection on said lower

shank portion adapted to be finger operated, a second laterally extending projection on said upper portion, said second projection being provided with a front wall having a cam surface substantially uniformly inclined from the bottom portion of the front wall to the top portion thereof, said locking bar upper portion extending upwardly beyond said second lateral projection and being provided with gripping means facilitating the insertion of the unit and the withdrawal thereof from the barrel member, the width of the side walls of the locking bar above said second lateral projection being less than the width of the side walls of the locking bar at the said second lateral projection.

11. The unitary combination of a writing cartridge and a locking bar defined in claim 10 in which the gripping means on the upper portion of the locking bar is a finger notch.

12. In a writing instrument, a barrel having an open upper end and a lower end and provided with a plurality of spaced writing cartridges selectively slidable through the lower end of the barrel into writing position, means for selectively moving each of said cartridges into writing and non-writing positions, a spacer assembly secured within the barrel, said spacer assembly comprising a plurality of spring sections for spacing said cartridges and holding each of said cartridges under spring pressure when in non-writing and writing positions, each spring spacer section having opposed body members positioned at a dihedral angle, one with respect to the other, each spacer section being provided with resilient holding means extending downwardly from and at an angle to the lower portion of opposing body members and engaging a cartridge and holding the same against the inner wall of the barrel when the cartridge is in a retracted non-writing position, and when the cartridge is moved to a writing position exerting pressure against the cartridge to assist in preventing upward displacement of the cartridge by writing pressure, and means to positively selectively lock each writing cartridge against movement when in either a retracted non-writing position or in a protracted writing position.

13. The multiple-color writing instrument defined in claim 12 in which the barrel is provided with a plurality of spaced longitudinally extending slots, and the means to positively and selectively lock each writing cartridge includes a locking bar connected to each cartridge and slidable therewith, each of said locking bars being provided with a detent shoulder member engaging the open upper end of the barrel and locking the writing cartridge in a retracted non-writing position, and after movement of the cartridge into writing position engaging the upper end wall of its cooperating slot and locking the cartridge in writing position.

14. The multiple-color writing instrument defined in claim 12 in which the barrel is provided with a plurality of spaced longitudinally extending slots, and the means to positively and selectively lock each writing cartridge, includes a locking bar connected to each cartridge and slidable therewith, each of said locking bars being provided with a detent shoulder member engaging the open upper end of the barrel and locking the writing cartridge when the latter is in a retracted non-writing position, and after movement of the cartridge into writing position engaging the upper end wall of its cooperating slot and assisting in locking the cartridge in

writing position, the front wall of the detent shoulder member having a cam surface inclined rearwardly from the lower part to the upper part of said wall, said cam surface facilitating the return of the writing cartridge to a retracted non-writing position.

15. The multiple-color writing instrument defined in claim 12 in which the barrel is provided with a plurality of spaced longitudinally extending slots, and the means to positively and selectively lock each writing cartridge includes a locking bar connected to each cartridge and slidable therewith, each of said locking bars being provided with a detent shoulder member engaging the open upper end of the barrel and locking the writing cartridge when the latter is in a retracted non-writing position, and after movement of the cartridge into writing position engaging the upper end wall of its cooperating slot and assisting in locking the cartridge in writing position, the front wall of the detent shoulder member having a cam surface inclined rearwardly from the lower part to the upper part of said wall, said cam surface facilitating the return of the writing cartridge to a retracted non-writing position, and recessed gripping means disposed above said detent shoulder to facilitate the insertion of the writing cartridge into and the withdrawal therefrom from the barrel.

16. The multiple-color writing instrument defined in claim 12 in which the barrel is provided with a plurality of spaced longitudinally extending slots, and the means to positively and selectively lock each writing cartridge includes a locking bar connected to each cartridge and slidable therewith, each of said locking bars being provided with a detent shoulder member engaging the open upper end of the barrel and locking the writing cartridge when the latter is in a retracted non-writing position, and after movement of the cartridge into writing position engaging the upper end wall of its cooperating slot and assisting in locking the cartridge in writing position, the front wall of the detent shoulder member having a cam surface inclined rearwardly from the lower part to the upper part of said wall, said cam surface facilitating the return of the writing cartridge to a retracted non-writing position, said locking bar being provided with gripping means for facilitating the insertion of the writing cartridge into and the withdrawal thereof from the barrel, the lateral width of the locking bar above said detent shoulder member being less than the lateral width of the locking bar at said detent shoulder portion.

17. The multiple-color writing instrument defined in claim 12 in which the barrel is provided with a plurality of transversely spaced longitudinally extending slots, and the means to positively and selectively lock each writing cartridge includes a locking bar connected to each cartridge and slidable therewith, each of said locking bars being provided with a detent shoulder member engaging the open end of the barrel and locking the writing cartridge when the latter is in a retracted non-writing position, and after movement of the cartridge into writing position engaging the upper end wall of its cooperating slot and assisting in locking the cartridge in writing position, said barrel being provided with a plurality of guide means for guiding the detent shoulder member of each locking bar as the latter moves upwardly and downwardly in said bar-

rel, each of said guide means being in alignment with its cooperating slot.

18. The multiple-color writing instrument defined in claim 12 in which the barrel is provided with a plurality of transversely spaced longitudinally extending slots, and the means to positively and selectively lock each writing cartridge includes a locking bar connected to each cartridge and slidable therewith, each of said locking bars being provided with a detent shoulder member engaging the open end of the barrel and locking the writing cartridge when the latter is in a retracted non-writing position, and after movement of the cartridge into writing position engaging the upper end wall of its cooperating slot and assisting in locking the cartridge in writing position, said barrel being provided with a plurality of guide means for guiding the detent shoulder member of each locking bar as the latter moves upwardly and downwardly in said barrel, each of said guide means being in alignment with its cooperating slot and having means limiting the downward travel of the cap upon its insertion on the top end of the barrel.

19. The multiple-color writing instrument defined in claim 12 in which the barrel is provided with a plurality of transversely spaced longitudinally extending slots, and the means to positively and selectively lock each writing cartridge includes a locking bar connected to its writing cartridge and slidable therewith, each of said locking bars being provided with a detent shoulder member engaging the open upper end of the barrel and locking the cartridge when the latter is in a retracted non-writing position, and after movement of the writing cartridge into writing position engaging the upper end wall of its cooperating slot and assisting in locking the cartridge in writing position, said barrel having fluted portions, each thereof extending downwardly from adjacent the upper end of the barrel and being above and aligned with its cooperating longitudinally extending slot and forming a guide for said detent shoulder member.

20. The multiple-color writing instrument defined in claim 12 in which the barrel is provided with a plurality of transversely spaced longitudinally extending slots, and the means to positively and selectively lock each writing cartridge includes a locking bar connected to its writing cartridge and slidable therewith, each of said locking bars being provided with a detent shoulder member engaging the open upper end of the barrel and locking the cartridge when the writing cartridge is in a retracted non-writing position, and after movement of the writing cartridge into writing position engaging the upper end wall of its cooperating slot and assisting in locking the cartridge in writing position, said barrel having fluted portions, each thereof extending downwardly from adjacent the upper end of the barrel and being above and aligned with its cooperating longitudinally extending slot and forming a guide for said detent shoulder member, each flute at its lower end sloping inwardly and downwardly and merging with the barrel, each flute being provided with an outwardly projecting shoulder serving as a stop abutment for the cap when the latter is inserted on the upper end of the barrel.

21. A multiple-color writing instrument comprising a barrel having an upper open end, a lower writing end portion, and a plurality of spaced longitudinally extending slots, a plural-

ity of writing members including writing cartridges spacedly disposed in said barrel and each selectively operable along the path of its respective slot, means for centering each of said writing members with respect to its cooperating slot, said centering means being provided with resilient means to selectively assist in holding each of said writing cartridges in a retracted non-writing position and in releasing each writing cartridge upon operation of finger operated means for moving each cartridge into writing position, and means to reciprocate each writing cartridge and to positively and selectively lock each writing cartridge against movement when in a retracted non-writing position or in a protracted writing position, said means including a locking bar connected to each cartridge, each of said locking bars having a lower shank portion and an upper shank portion, each of said portions being provided with a front wall and side walls, a laterally extending projection on said lower shank portion mounted in its cooperating slot and on being finger operated slidable in said slot to reciprocate the writing cartridge and its connected locking bar, a laterally extending detent shoulder member on said upper locking bar portion, the latter and the laterally extending projection when the writing cartridge is in a protracted position respectively engaging the upper end wall of its cooperating slot and the lower end wall of said slot, said lateral projection and detent shoulder when the cartridge is in a retracted position respectively engaging the upper end wall of the cooperating cartridge slot and the open end of the barrel.

22. A multiple-color writing instrument comprising a barrel having an upper open end, a lower writing end portion, and a plurality of spaced longitudinally extending slots, a plurality of writing members including writing cartridges spacedly disposed in said barrel and each selectively operable along the path of its respective slot, means for centering each of said writing members with respect to its cooperating slot, said centering means being provided with resilient means to selectively assist in holding each of said writing cartridges in a retracted non-writing position and in releasing each writing cartridge upon operation of finger operated means for moving each cartridge into writing position, and means to reciprocate each writing cartridge and to positively and selectively lock each writing cartridge against movement when in a retracted non-writing position or in a protracted writing position, said means including a locking bar connected to each cartridge, said locking bar having a lower shank portion and an upper shank portion, each of said portions being provided with a front wall and side walls, a laterally extending projection on said lower shank portion mounted in its cooperating slot and on being finger operated slidable in said slot to reciprocate the writing cartridge and its connected locking bar, a second laterally extending projection on said upper portion, said second projection being provided with a front wall having a cam surface substantially uniformly inclined from the lower portion of the front wall to the top portion thereof, said locking bar upper portion extending beyond said second lateral projection and being provided with gripping means facilitating the insertion of the unit and the withdrawal thereof from the barrel member, the width of the side walls of the locking bar above said second lateral projection being less

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than the width of the side walls of the locking bar at the said second lateral projection.

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DAVID KAHN.

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