

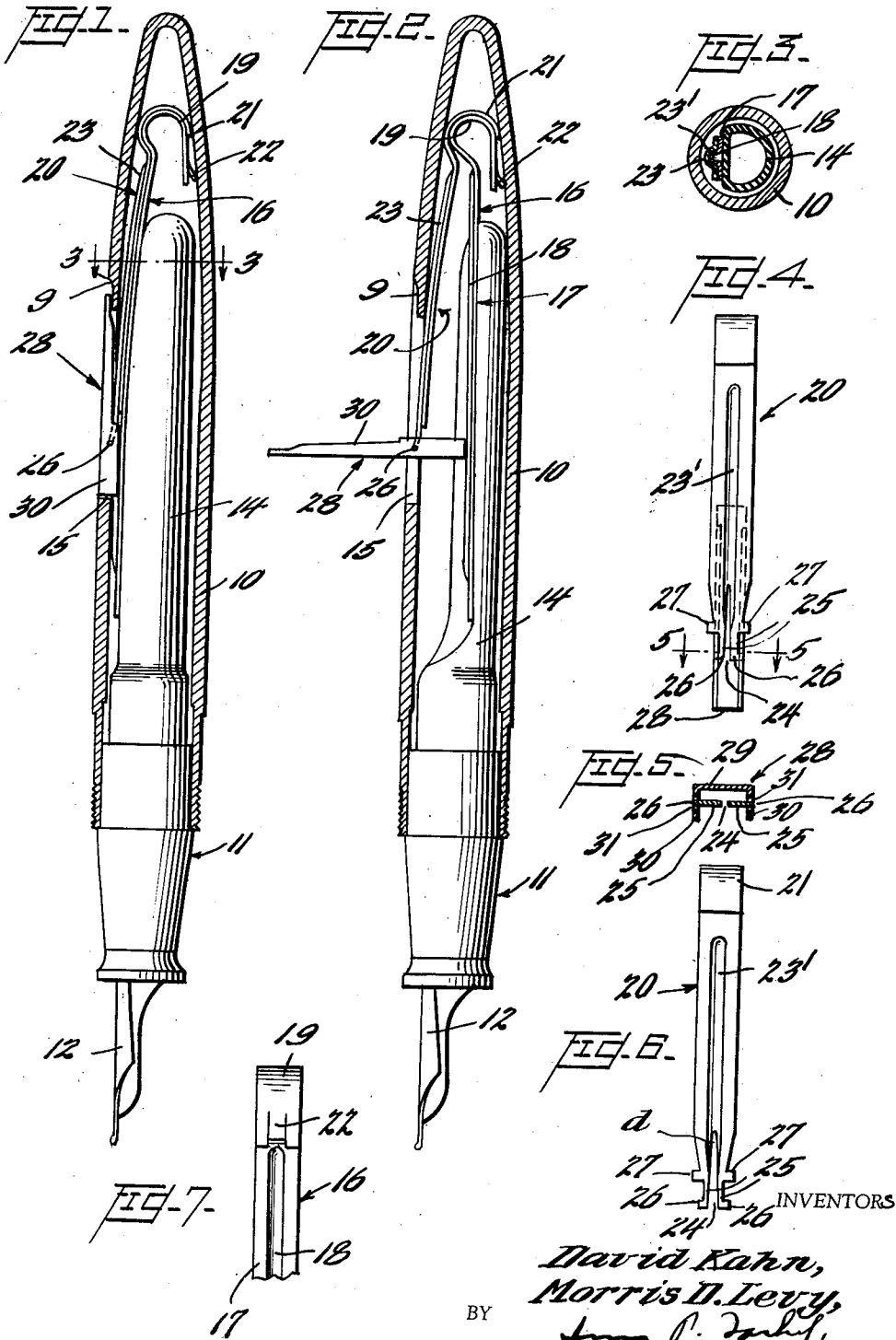
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D. KAHN ET AL
WRITING INSTRUMENTS

2,807,237

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2 Sheets-Sheet 1



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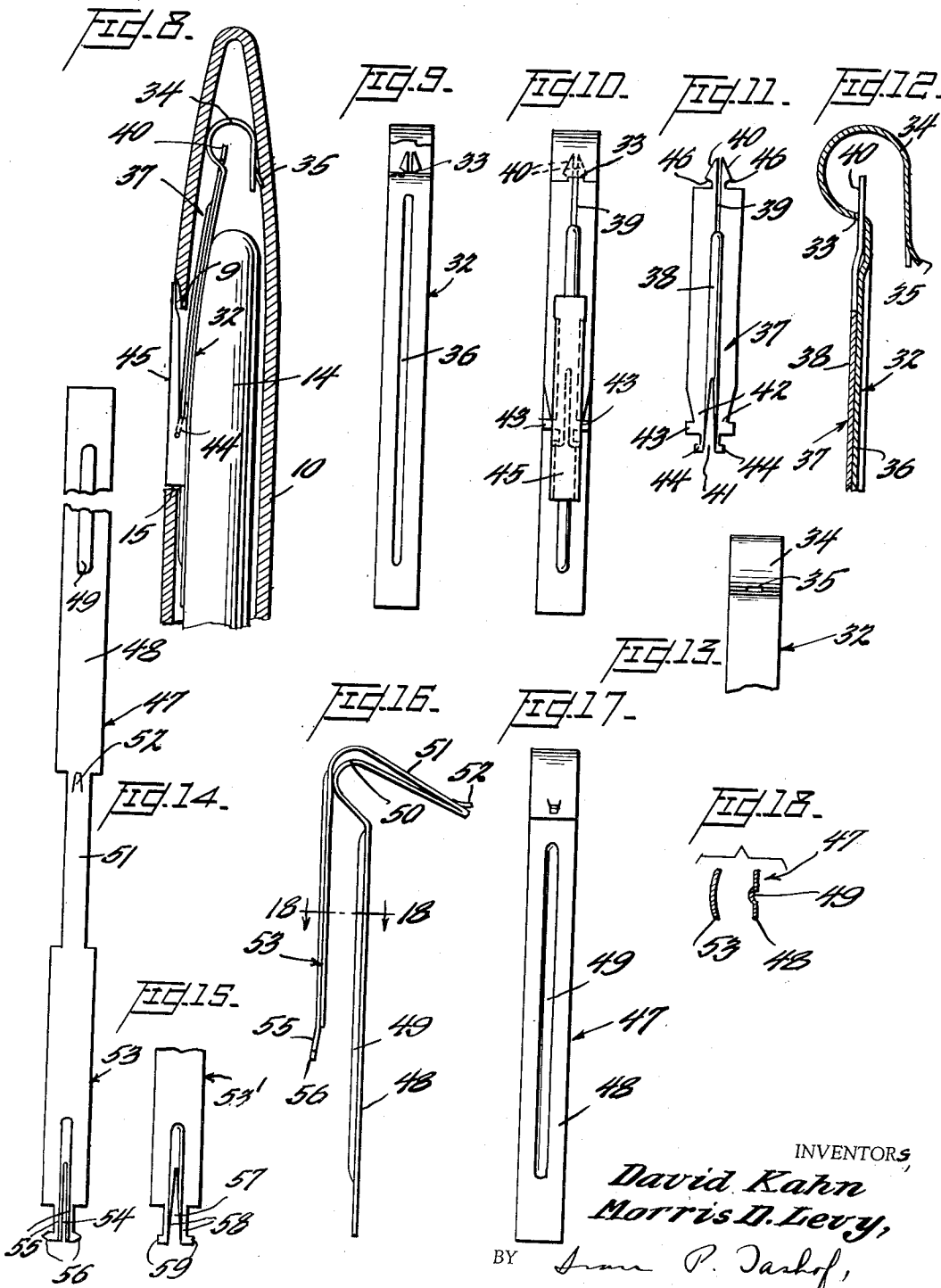
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1

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WRITING INSTRUMENTS

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This invention relates to a writing instrument, and more particularly to a fountain pen.

The object of the invention is to provide a fountain pen which includes a novel mechanism for compressing the collapsible ink sac so that ink can be dispensed from or withdrawn into the ink sac.

Another object of the invention is to provide a fountain pen of the self-filling type, which is provided with an improved lever actuated presser bar for compressing the ink sac or reservoir to fill or discharge the ink sac, the presser bar being actuated by a manually operated lever that may be made of one piece of material.

Another object of the invention is to provide a presser mechanism that is operable by a manually operated lever so that the ink sac can be compressed and wherein the operating parts, including the lever, may be assembled or connected together exteriorly of the pen barrel and mounted within the pen barrel as a unit.

A still further object of the invention is to provide a presser mechanism for a fountain pen which is constructed so that it will assume its normal position as a result of the inherent resiliency of the mechanism when manual pressure on the operating lever is released, the present construction simplifying the assembling of the lever on its supporting bar so that the fountain pen can be manufactured with ease and economy.

A still further object of the invention is to provide a fountain pen presser mechanism wherein there will be no accidental moving or slipping between the parts when the presser mechanism is placed within the fountain pen barrel, the present construction permitting the fountain pen to be assembled without the necessity of using complicated tools or skilled personnel.

Other objects and advantages will be apparent during the course of the following description.

In the accompanying drawing, forming a part of this application, and in which like numerals are used to designate like parts throughout the same.

Fig. 1 is a longitudinal sectional view taken through the fountain pen constructed according to the present invention;

Fig. 2 is a sectional view similar to Fig. 1, but showing the ink sac compressed;

Fig. 3 is a sectional view taken on the line 3-3 of Fig. 1;

Fig. 4 is an elevational view of the support member connected to the operating lever;

Fig. 5 is a sectional view taken on the line 5-5 of Fig. 4;

Fig. 6 is an elevational view of the support member per se;

Fig. 7 is a fragmentary view of the pressure bar;

Fig. 8 is a fragmentary longitudinal view of a fountain pen, showing a modified form of the ink feeding mechanism;

Fig. 9 is a view taken at right angles to the view shown in Fig. 8 and showing the pressure bar with parts broken away and in section;

2

Fig. 10 is a view showing the assembled unit for the pen of Fig. 8;

Fig. 11 is an elevational view of the support member per se for use in the assembly of Fig. 8;

Fig. 12 is a fragmentary longitudinal sectional view taken through the assembly of Fig. 8, removed from the pen;

Fig. 13 is a fragmentary elevational view of a portion of the assembly shown in Fig. 12;

Fig. 14 is a plan view of another modified form of the invention wherein the pressure bar and support member are made in one piece;

Fig. 15 is a fragmentary plan view of another modification wherein a V-shaped slot instead of a straight slot is provided in the support member;

Fig. 16 is an elevational view showing the presser bar and support member of Fig. 14 in folded operative position;

Fig. 17 is a view taken at right angles to the view shown in Fig. 16; and

Fig. 18 is a sectional view taken on the line 18-18 of Fig. 16.

Referring in detail to Figs. 1 through 6 of the drawings, the numeral 10 designates a barrel which may be fabricated of any suitable material, such as plastic, and the barrel 10 has one end closed and the other end open, Figs. 1 and 2.

Extending from an end of the barrel 10 and secured therein is the usual pen section 11 which has a pen point 12 extending therefrom. A collapsible ink sac 14 is connected to the section 11 and is positioned within the barrel 10. The barrel 10 is further provided with a slot or cutout 15 therein.

The present invention is directed to a presser mechanism for collapsing the ink sac 14 so that the sac 14 can be filled with ink and wherein ink can be dispensed from the sac 14 to the point 12. This presser mechanism includes a presser bar 16 having a body portion 17 provided with a longitudinally extending rib 18, as shown in Figs. 2 and 3. Extending from the inner end of the presser bar 17 is a curved finger 19.

The presser mechanism further includes a support member bar 20, shown in detail in Fig. 6, comprising a curved tongue 21 which surrounds the curved finger 19. The curved finger 19 preferably is provided with a prong 22 which engages the inner portion of the barrel 10 to help anchor the pressure mechanism within the barrel and prevent longitudinal movement of the pressure bar mechanism within the barrel.

The support member 20 is provided on its upper face with a longitudinally extending rib 23 which forms a channel on the reverse face of the support member, serving to reinforce the support member. The channel 23' also receives the rib 18 on the pressure bar 17 when the parts are in the position shown in Figs. 1 and 3.

The support member 20 is provided with a slit 24 which may have a V-shape, Fig. 6, and the slit 24 defines in the support member 20 a pair of spaced apart legs 25. Extending outwardly or transversely from each of the legs 25 is a lug 26 which is pivotally connected to the operating lever 28, as hereinafter described. An ear 27 also extends transversely from each of the legs 25, and the ears 27 engage portions of the barrel 10 and provide additional bearing areas for the support with respect to the barrel.

The operating lever 28 which is manually actuated includes a flat section 29 provided with a pair of side sections 30 extending therefrom, the side sections 30 being arranged in spaced parallel relation with respect to each other.

The lever 28 extends through the slot 15 in the barrel

10. Each of the side sections 30 is provided with an aperture or opening 31 and the apertures 31 are arranged in registry with each other for pivotally receiving therein the lugs 26 on the support members 20.

Referring to Figs. 8 through 13 of the drawings, there is shown a modified form of the invention wherein the numeral 10 again designates the barrel of the pen and the barrel is provided with the cutout 15. A finger-engaging recess 9 may be arranged contiguous to the cutout 15 so as to facilitate the engagement of the finger or fingernail with the operating lever 45. The operating lever 45 has the same construction as the previously described operating lever 28, so that by manually moving the operating lever 45 the ink sac 14 can be compressed when the fountain pen and the sac thereof is to be filled with ink, or when ink is to be dispensed or discharged to the pen point.

In the form of the invention shown in Figs. 8 through 13, the pressure bar 32 is provided with an opening 33, as shown in Fig. 12, for a purpose later described. Formed integrally with the pressure bar 32 and extending therefrom is a curved finger 34 which terminates in a prong 35 for engagement with the inner surface of the pen barrel 10, so as to prevent accidental shifting or movement of the parts within the barrel after the ink-filled mechanism has been assembled in the barrel. The pressure bar 32 is provided with a longitudinally extending external rib 36 which helps to reinforce or strengthen the pressure bar. There is further provided in the form of the invention shown in Figs. 8 through 13 a support member 37 which includes a longitudinally extending upwardly protruding exterior rib 38 extruded from the support 37 and forming on the reverse face of the support 37, a channel that registers with or receives the rib 36 on the pressure bar 32. The rib 38 also provides a guiding means for the operating lever 45, as the operating lever 45 is manually pivoted in order to prevent the operating lever 45 from shifting from side to side during actuation of the parts. The support member 37, Fig. 11, is provided at its rear end portion with a slit 39, and arranged contiguous to the slit 39 is a pair of locking teeth 40 which may have outer tapered edges so that the outer ends of the members 40 terminate in a point. The teeth 40 are adapted to be inserted through the opening 33 in the pressure bar 32, and the shape of the teeth 40 is such that once the teeth 40 have been inserted in the opening 33 they will not accidentally work loose therefrom. The slit 39 provides sufficient clearance to permit the teeth 40 to be compressed slightly so that the teeth can be inserted into the opening 33, and shoulders 46 on the inner ends of the teeth 40 prevent the support member 37 from accidentally working loose from the presser bar 32. The other forward end of the support member 37 is provided with a V-shaped cutout or slit 41 which defines a pair of spaced apart legs 42. Extending outwardly or transversely from each of the legs 42 is a lug 44 and an ear 43. The lugs 44 are pivotally engaged in suitable apertures or openings in the operating lever 45, and the ears 43 provide bearing members for pivotally engaging the inner surface of the barrel 10. The slit or cutout 41 permits the legs 42 to be compressed slightly when the parts are being assembled.

Referring to Figs. 14 through 18 of the drawings, there is shown further modifications wherein the compressor bar and support member are made of a single piece material which may be stamped out or otherwise formed. The one-piece pressure bar and support member is indicated generally by the numeral 47, and includes a pressure bar 48 which is provided with an external reinforcing rib 49 that serves the same purpose as the previously described rib 36. In Fig. 14, the member is shown in its extended position before it is folded, and in Fig. 16 is shown in its folded or operative position. It will be seen that when the member 47 of Fig. 14 is folded, as in Fig. 16, there is provided a curved finger 50 which extends from an end of the presser bar 48, and the finger 50 terminates in a curved

tongue 51 which is provided with an offset prong 52 adapted to engage the inner surface of the barrel 10 to prevent accidental shifting of the parts. Extending from the tongue 51 is a support member 53, provided preferably with a straight slot 54, which defines a pair of spaced parallel legs 55. Extending transversely from each end of the legs 55 is a pointed lug 56 which is adapted to be pivotally connected to the operating lever 45, or the operating lever 28.

Referring to Fig. 15 of the drawings, there is shown a portion of a slightly modified support member which is indicated generally by the numeral 53'. The support member 53' differs from the support member 53 in that the support member 53' is provided with a V-shaped cutout or slot 57 instead of the straight slot 54. The V-shaped slot 57 defines a pair of spaced apart legs 58, each of which has transversely extending lugs 59 for pivotally engaging the operating lever. It will be noted that the lugs 59 are not pointed as are the lugs 56. The support member 53 is curved, as shown in Fig. 18, so as to insure that the support member conforms in configuration to the rounded or curved barrel member 10.

From the foregoing, it is apparent that a novel presser mechanism has been provided for compressing the ink sac 14. The presser mechanism can be completely assembled exteriorly of the barrel 10, and positioned or inserted in the barrel as a complete unit. Further, the presser mechanism returns to its normal position as a result of the inherent resiliency of the spring metal parts, so that the sac 14 is not required to return the parts to their normal position. The curved support member 53, shown in Figs. 14 through 18, provides stiffness and rigidity to this part and also insures that the support member will conform to the curved inside of the barrel.

In using the presser mechanism shown in Figs. 1 through 7 for the filling of the pen, the end of the lever 28 positioned in the cutout 9 is engaged by the fingernail and swung outwardly from the position of Fig. 1 to the position in Fig. 2. The lever 28 rotates on the ears 27 and the inner end of the lever 28 rides on the ridge 18 of the presser bar 17 to force the presser bar 17 against the elastic sac 14 to compress the sac. During this movement, the support member 20 provides a pivotal connection for the lever 28, and the prong 22 prevents accidental shifting of the parts in the barrel. The lugs 26 also help to anchor the parts in the barrel by securely engaging the inner surface of the barrel wall. It will be seen that the construction of these parts insures that the stresses are uniformly distributed throughout the parts so that the possibility of damage to the members resulting from uneven distribution of stresses will be minimized.

In the form of the invention shown in Figs. 8 through 13, the operation is substantially the same as for the form of the invention shown in Figs. 1 through 7. Thus, the fingernail is engaged in the recess 9 to pivot the operating lever 45 so that its nose-end rides on the rib 36 of the pressure bar 32. The pivotal movement of the operating lever 45 causes the presser bar 32 to move inwardly against the elastic sac to thereby collapse the sac. The lugs 44 provide a means for anchoring the support member 37 in the barrel 10, and the prong 35 also helps to secure the parts within the barrel. The teeth 40 of the support member 37 are adapted to be inserted in the opening 33 so as to maintain the support member 37 and presser bar 32 connected together in their proper assembled relation.

Referring to Figs. 14 through 18, there is shown further modifications of the fountain pen wherein the presser bar and support member are fabricated of a single piece of material. The unit is shown in its extended position in Fig. 14, and in folded, operative position in Fig. 16. The lugs 56 or the legs 55 are adapted to be pivotally connected to a suitable operating lever whereby upon manual pivotal movement of the operating lever the pressure bar 48 will be forced inwardly to collapse the ink

5

sac. This mechanism can be manufactured with economy and ease since the complete assembly of the mechanism can be accomplished outside of the pen barrel and whereby the complete assembly can be mounted in the barrel as a unit. The nose-end of the operating lever 28, or 45, rides on the raised ridge of the presser bar and prevents the lever from sliding off of the bar to either side thereof. The radius of the operating lever is the same as the contour on the raised ridge on the bar. To assemble the pressure mechanism, the legs having the lugs thereon are compressed so that these lugs can be inserted in the apertures in the operating lever. The support member is then placed on top of the presser bar and connected thereto. If the parts are not of one-piece construction then the unit which is now assembled is set and forced into the barrel by a hand fixture. As the lever leaves the slot 15 in the barrel 10 the lever jumps into position and then the rubber sac 14 can be readily compressed by manually raising the lever.

By making the compressor bar and support member in one-piece, as shown in Figs. 14 through 18, there will be effected a further economy in the manufacture thereof, since this unit can be made in a progressive die to thus eliminate the necessity of several independent operations. The rib on the presser bar is positioned centrally of the operating lever so that when the lever is in its normal position, as shown in Fig. 1 or Fig. 8, the rib tends to centralize the lever, the flanges or side portions 30 of the lever receiving the rib centrally therebetween.

The tail-piece, or legs 25, 42, or 55, are caused to bend upwardly by the pressure of the bar against the operating lever; however, additional bearing surfaces can be provided so that the tendency for the tail-piece or legs to turn upwardly can be substantially eliminated or greatly reduced.

By means of the present invention, the fountain pen can be economically manufactured or produced since several expensive hand operations are eliminated, such as ringing the barrel, assembling the ring and lever and then placing these members in the barrel. The presser mechanism previously described can be easily assembled and inserted into the barrel of the fountain pen to thereby eliminate the ring and the groove in the barrel.

What is claimed is:

1. In a fountain pen, a hollow barrel, an ink sac positioned in said barrel, said barrel being provided with a longitudinal slot extending therethrough and positioned intermediate the ends thereof, a resilient presser bar extending longitudinally through a portion of said barrel and including a curved finger seated in said barrel, a support member connected to said presser bar at the

6

curved finger thereof and overlying the central portion of said presser bar and an actuating lever connected to the free end of said support member for pivotal movement about said free end through said slot, said actuating lever including a flat section and opposed spaced parallel side sections depending from said flat section, said side sections being provided with registering apertures, the free end of said support member being longitudinally slit to define a pair of spaced-apart legs, said lugs extending outwardly from each of said legs, said lugs extending through the apertures in said side sections.

2. In a fountain pen, a hollow barrel, an ink sac positioned in said barrel, said barrel being provided with a longitudinal slot extending therethrough and positioned intermediate the ends thereof, a resilient presser bar extending longitudinally through a portion of said barrel and including a curved finger seated in said barrel, said bar being provided with a transverse aperture therein, a support member having a tongue extending through said aperture and connecting one end of said support to said presser bar and an actuating lever mounted upon said support member for pivotal movement through said slot, said tongue being slit to form a pair of locking teeth, said locking teeth being formed with outer tapered edges with said tongue terminating in a point to facilitate insertion of said teeth in the slot in said presser bar, the rear of said teeth being formed with shoulders to prevent said support member from being accidentally rocked loose from said presser bar.

3. The combination recited in claim 2 in which said actuating lever is directly connected to the free end of said support member for pivotal movement thereabout.

4. The combination recited in claim 2 in which said transverse aperture is positioned on said presser bar at substantially the point of connection between said presser bar and the curved finger portion thereof.

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