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3,494,583

RETAINER CLIP

Filed March 14, 1968

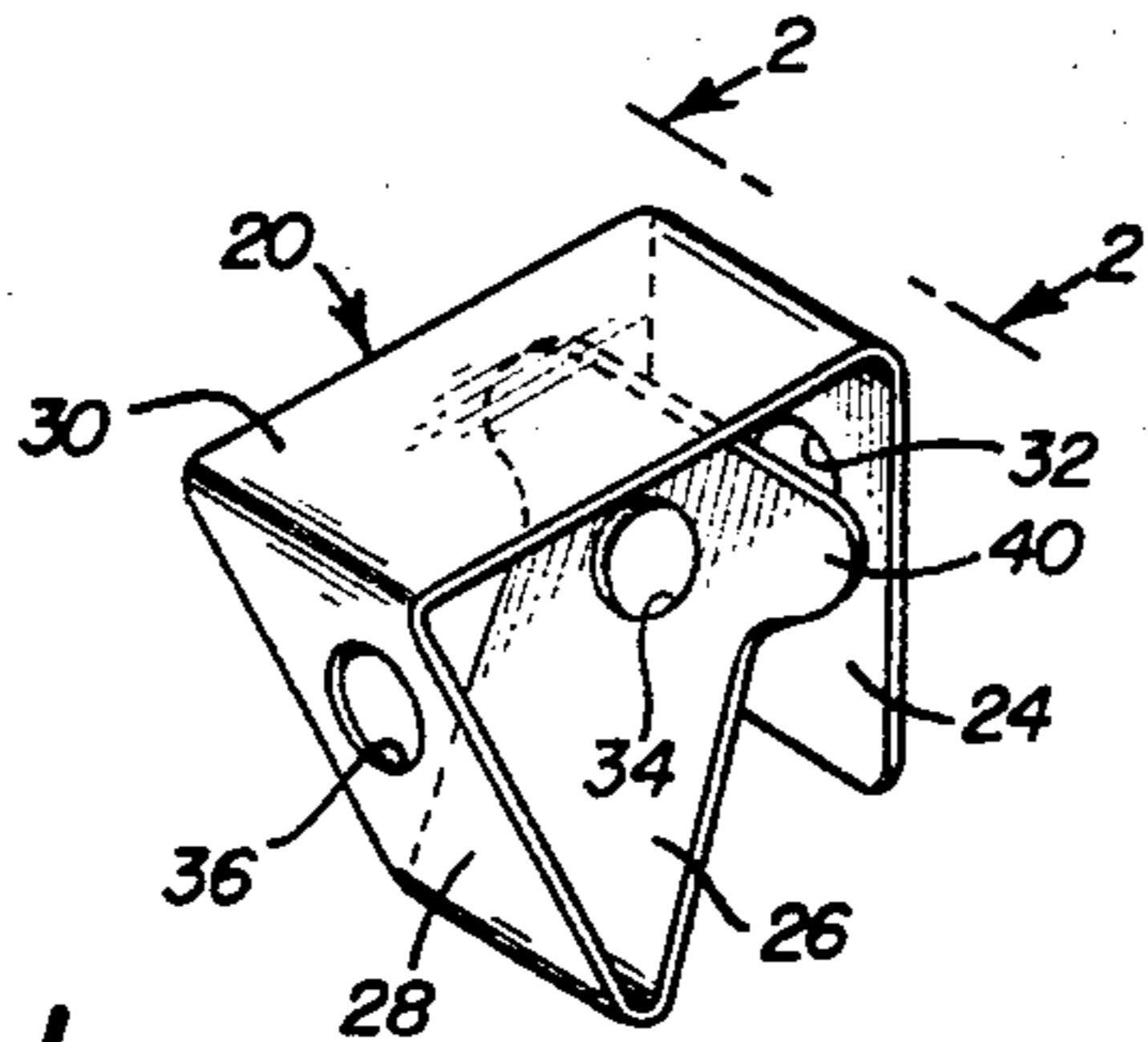


Fig. 1

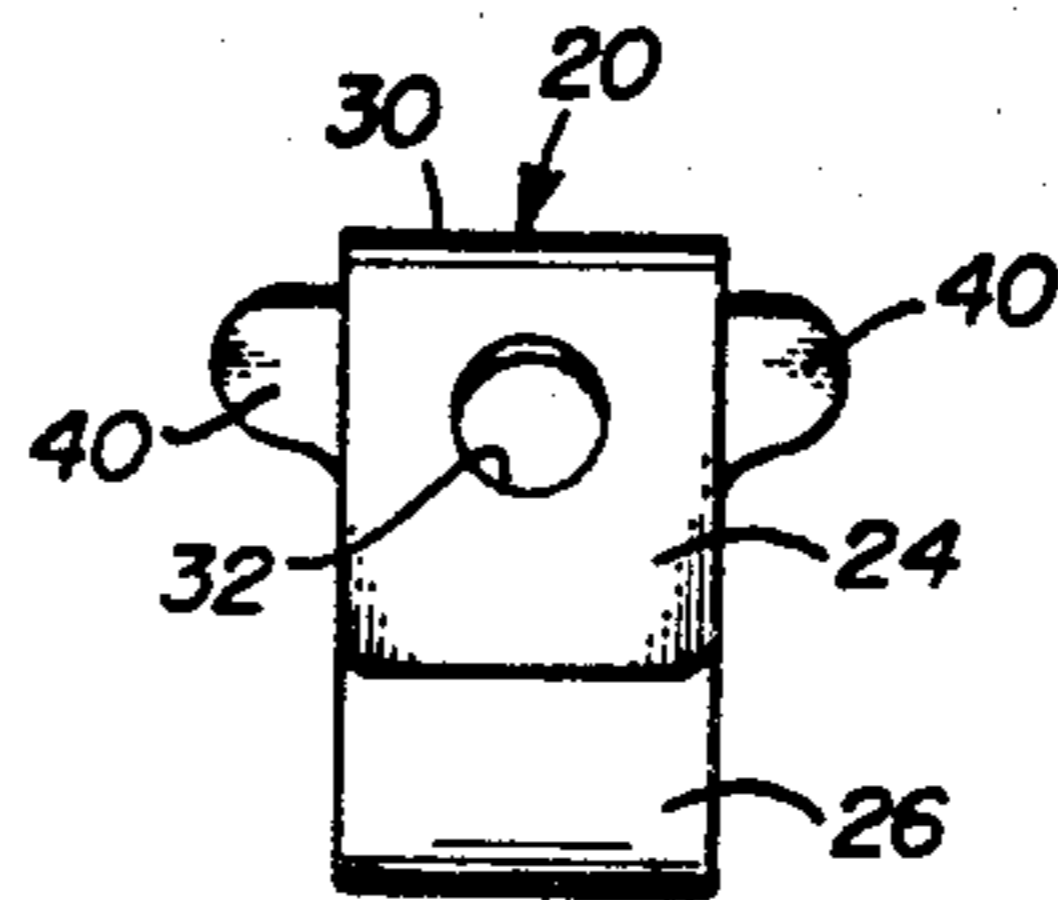


Fig. 2

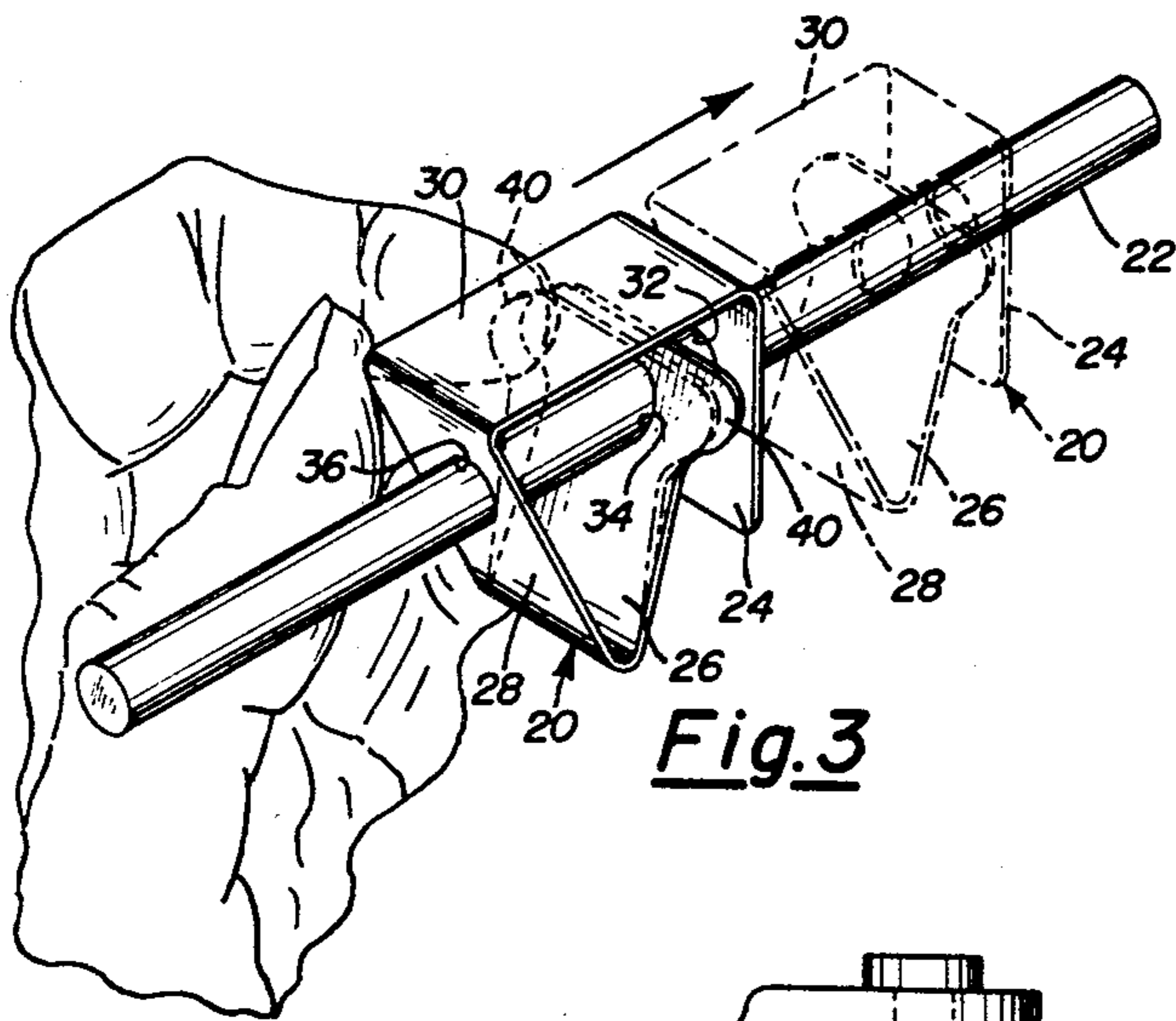


Fig. 3

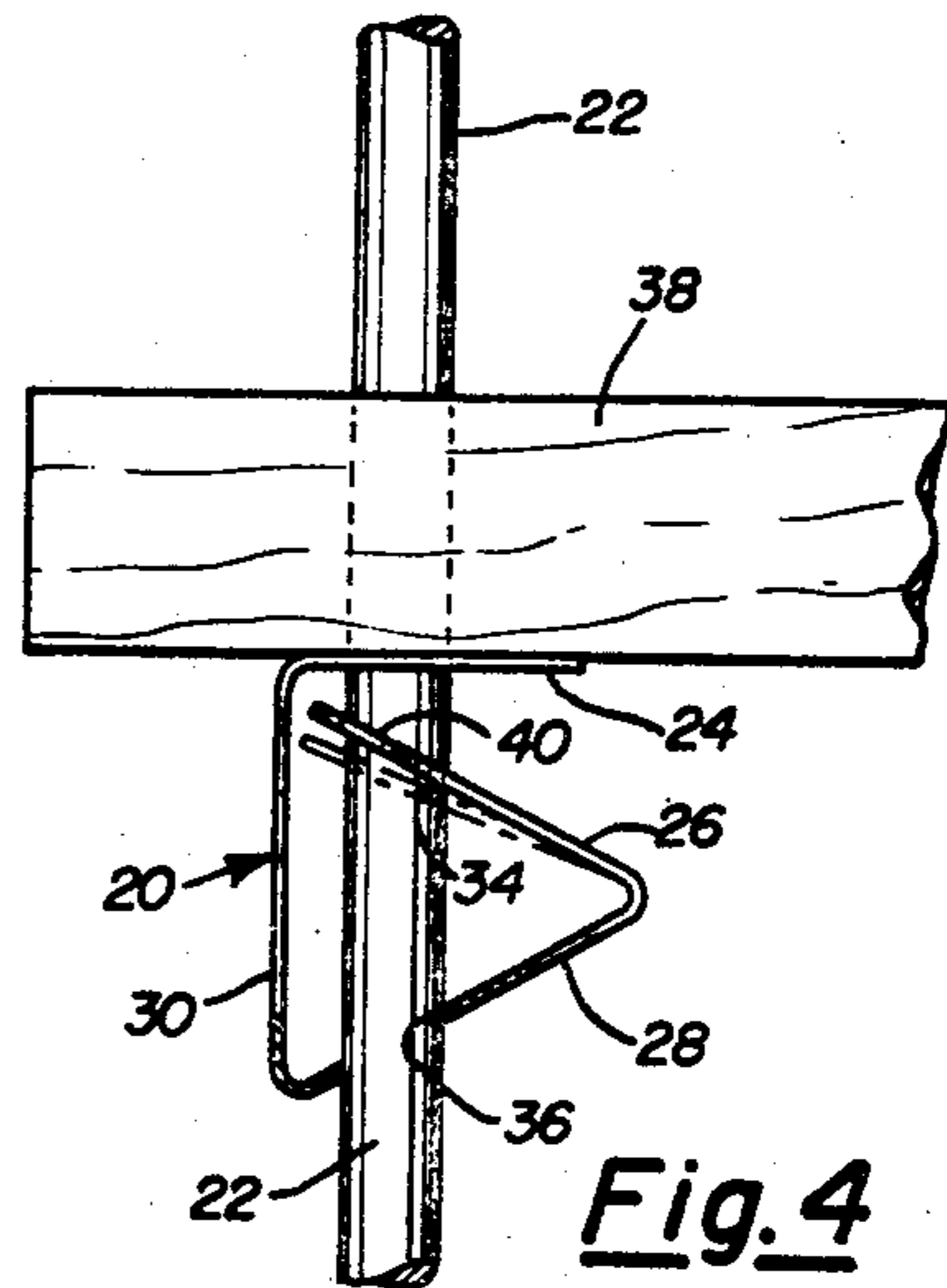


Fig. 4

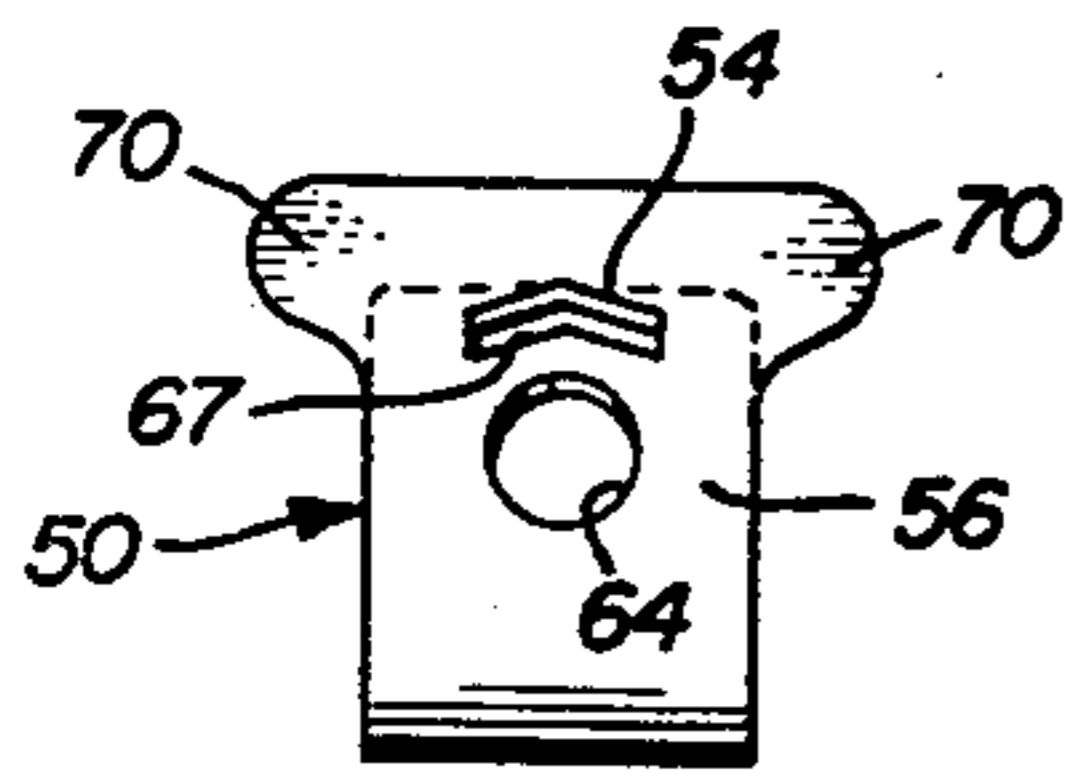


Fig. 6

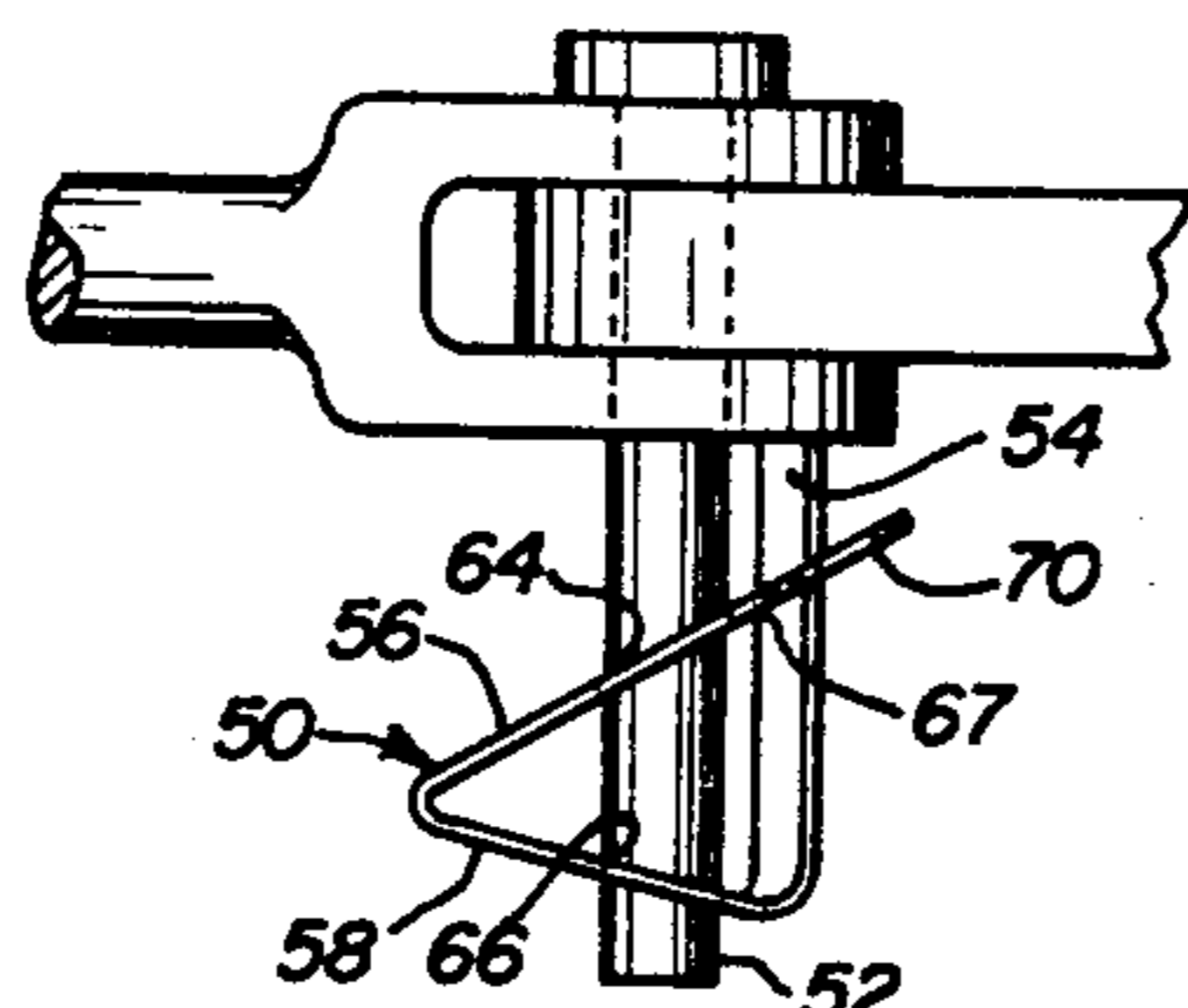


Fig. 7

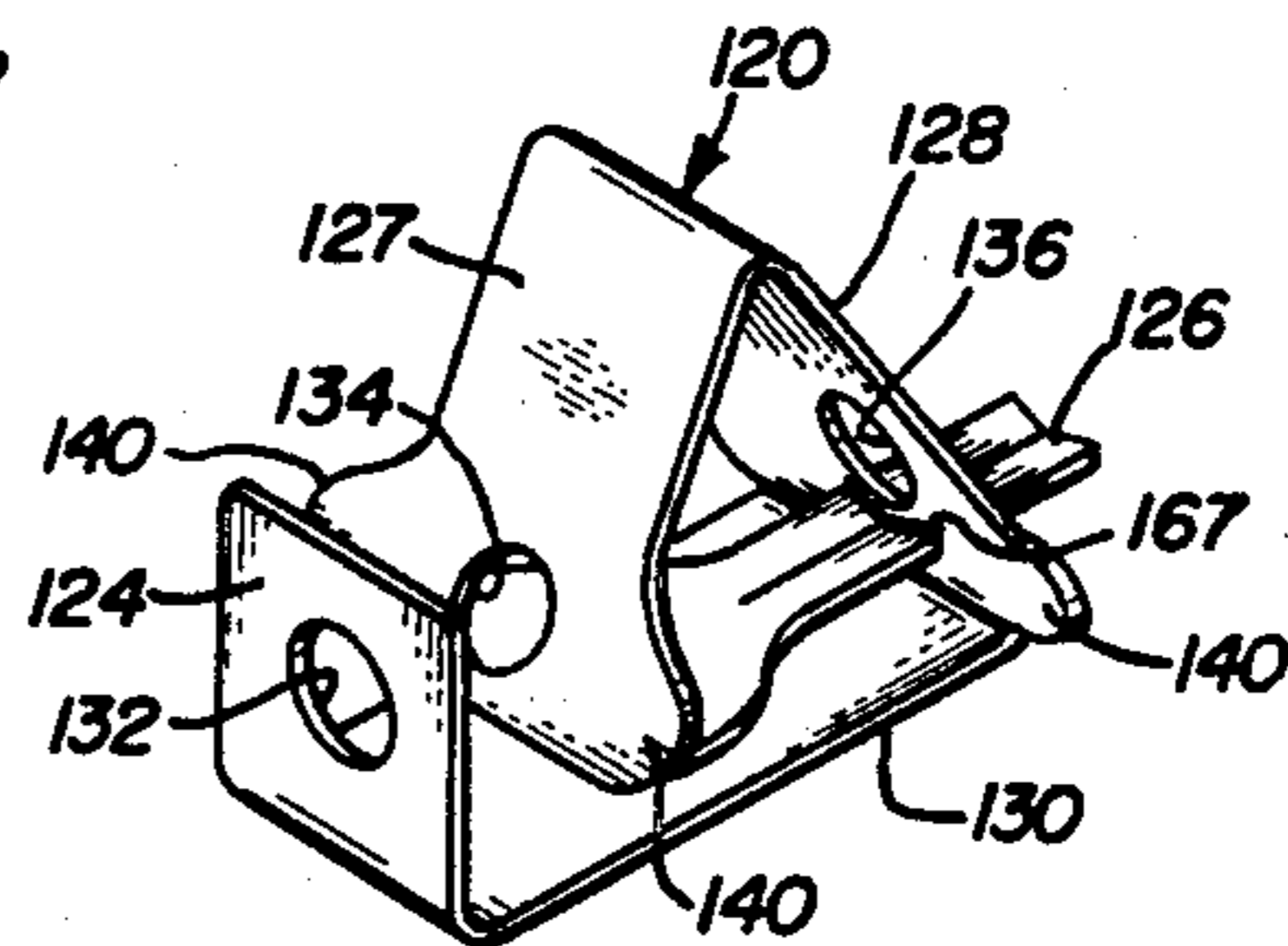


Fig. 8

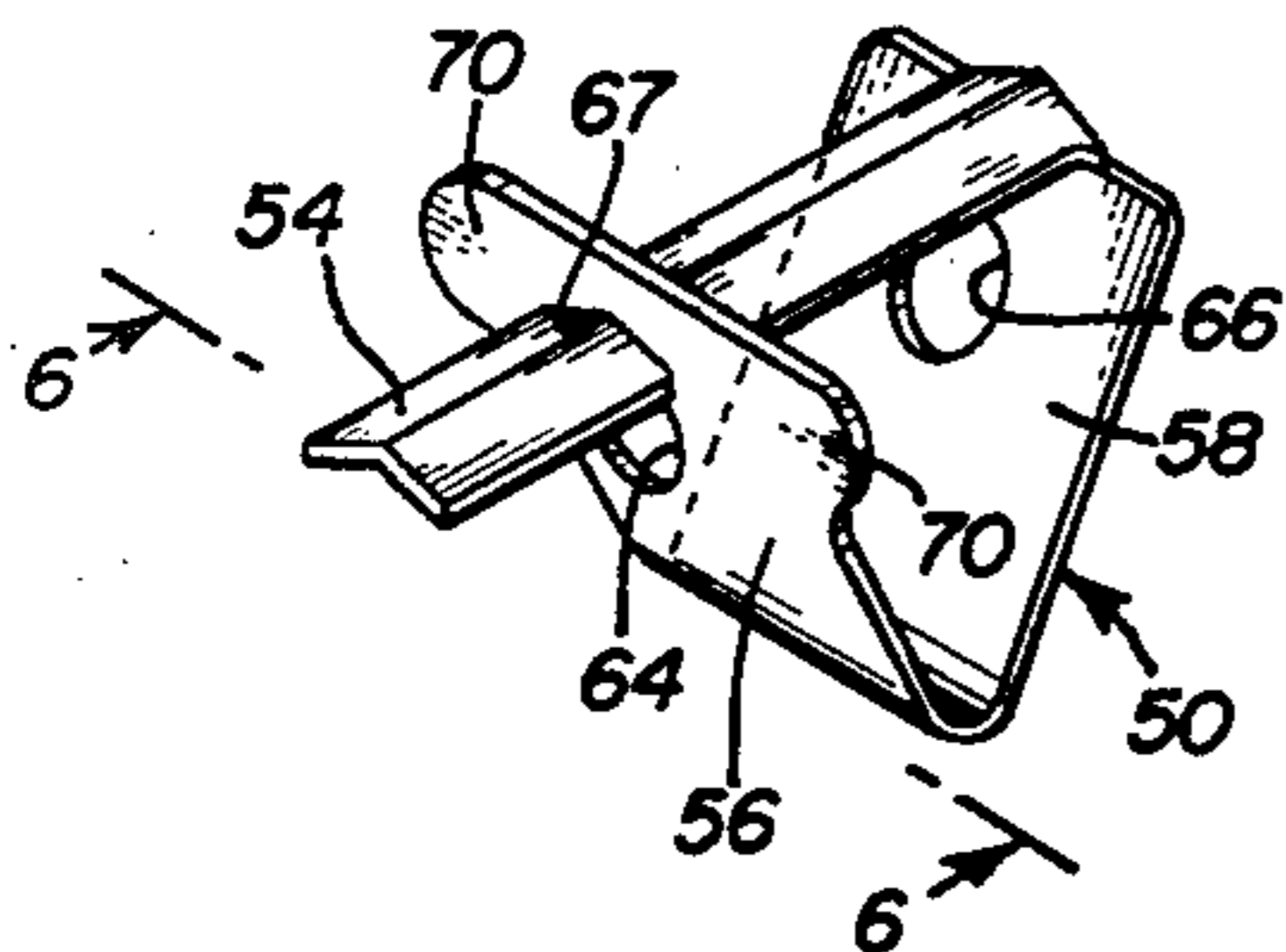


Fig. 5

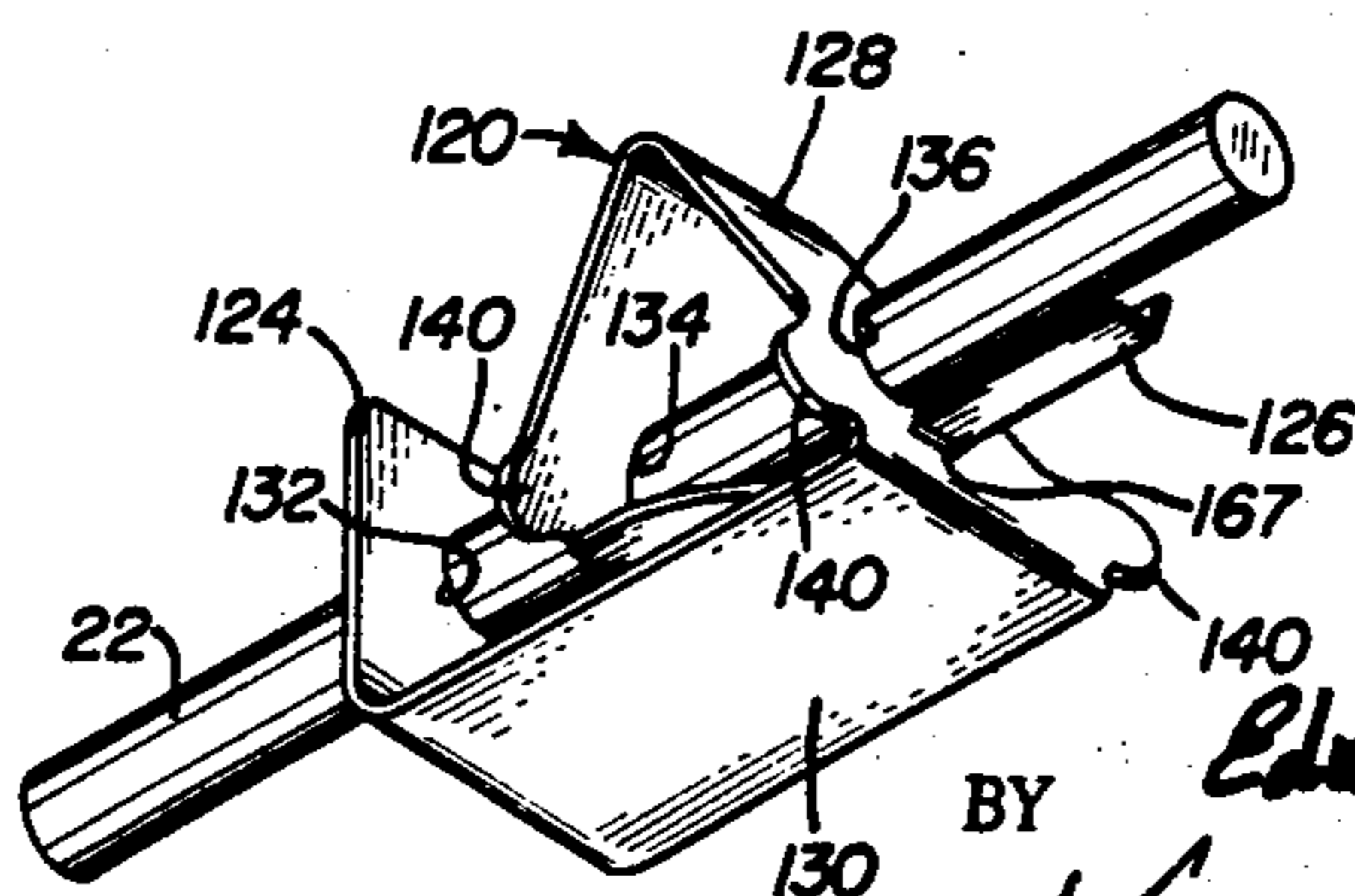


Fig. 9

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RETAINER CLIP

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7 Claims

ABSTRACT OF THE DISCLOSURE

A flexible and inherently resilient retainer which can be frictionally bound to a rod, a pin, etc., through the flexibility and the inherent resiliency of the retainer whereby a section of the retainer functions as a stop or support, or opposite sections function as stops or supports, the retainer including several sections having alignable holes for receiving the rod, the pin, etc., the arrangement of the sections being such, that when pressure is applied, on an end section, toward another section, binding relationship is established between the walls forming the openings and the rod.

BACKGROUND OF THE INVENTION

Field of the invention

The invention is directed to a retainer of the flexible and inherently resilient type for rods, pins, etc.

DESCRIPTION OF THE PRIOR ART

In such structures as is shown in the following patents: Hartman, No. 2,566,886 issued Sept. 4, 1951, Flora, No. 2,697,862 issued Dec. 28, 1954, Bender et al., No. 2,732,761 issued Jan. 31, 1956, Havener, No. 3,154,276 issued Oct. 27, 1964, Wallshein, No. 3,052,004 issued Sept. 4, 1962, and Schneider et al. No. 3,295,812 issued Jan. 3, 1967, when pressure is applied by and of the section toward another, binding relationship between the sections and the rod is rendered ineffective. For example, if leg or section 1 of Schneider et al. is pressed toward leg or section 2, the rod 13 is released. Therefore, leg 1 cannot support a load.

In one embodiment of applicant's invention when pressure is applied, one one end section of the retainer, toward another section, binding relationship is enhanced between the retainer and the rod, and, in another embodiment, when pressure is applied to either end section toward another section, binding relationship is enhanced between the retainer and rod.

SUMMARY OF THE INVENTION

The integral retainer of the present invention is formed from elongated strip of flexible and inherently resilient material and includes two end sections and at least one intermediate section, two of the sections being provided with alignable holes for receiving the rod. These cooperate with one another to provide binding relationship between the rod and the walls forming the holes. The rod is freely movable relative to the retainer when the binding relationship, created by the said two sections is rendered ineffective.

Other features and the advantages of the present invention will be apparent from the following description, reference being had to the accompanying drawings, wherein preferred embodiments of the invention are illustrated.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of one embodiment of the retainer;

FIG. 2 is a view of the retainer shown in FIG. 1 looking in the direction of arrows 2 in FIG. 1;

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FIG. 3 is a perspective view of the retainer shown in FIGS. 1 and 2, together with a rod which is received by the retainer, further showing how pressure can be applied to the retainer by a thumb and forefinger of one hand for moving the retainer and rod relative to one another, and further showing, in dot and dash lines a second position of the retainer relative to the rod;

FIG. 4 is a side view of the retainer it being resiliently attached to a rod and functions as a support for an article such as a shelf; part of the retainer is shown in section to show a receiving hole in one of the sections;

FIG. 5 is a perspective view of another embodiment of the invention;

FIG. 6 is a view of the retainer shown in FIG. 5, looking in the direction of arrows 6 of FIG. 5;

FIG. 7 is a view showing the embodiment of FIGS. 5 and 6 applied to a coupling pin;

FIG. 8 is a perspective view of still another embodiment of the invention; and

FIG. 9 is another perspective view of the embodiment shown in FIG. 8, but at a different angle, the view also showing the combination of the retainer and a rod.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring first to the embodiment shown in FIGS. 1 to 4, the integral retainer is shown at 20 and a rod is shown at 22. The retainer is formed of a strip of flexible and inherently resilient material such as spring metal or flexible and resilient plastic. It is folded to include two end sections 24 and 26 and two intermediate sections 28 and 30. The end of section 24 extends longitudinally beyond sections 26 and 28. While not necessary, but for illustrative purpose, the end section 24 is disposed at right angles with intermediate section 30. The intermediate section 28 is bent back toward end section 24 at an obtuse angle and end section 26 is bent toward end section 24 at an acute angle with section 28. The outer end of end section 26 is spaced from the confronting side of end section 24.

Sections 24, 26 and 28 are provided with axially alignable holes 32, 34 and 36, respectively, for receiving rod 22, as shown in FIGS. 3 and 4. The diameter of the holes 34 and 36 are slightly larger than the diameter of the rod 22, and the hole 32 may be slightly larger in diameter than the holes 34 and 36.

By applying bending pressure on end section 26 toward intermediate section 28, the holes 34 in section 26 are axially aligned with holes 32 and 36 in end section 24 and intermediate section 28 and can receive the rod 22. Upon releasing the bending pressure, due to the resiliency of the retainer, binding and holding relationship is established between the rod and the walls forming the openings 34 in end section 26 and intermediate section 28.

If pressure is applied on end section 24 toward intermediate section 28, the angular relationship between section 28 and the rod is increased, thus enhancing the binding relationship between the retainer and the rod. Thus, the end section 24 can function as a stop or as a support. The retainer is shown as a support in FIG. 4; it supports an object such as a shelf section 38. Obviously the retainer can be used for many other purposes, for example, as a stop on a rod or pin.

The binding relationship can be rendered ineffective readily by merely moving section 26 toward section 28 to axially align holes 34 and 36. Ears 40 are provided on section 26 for the ready manipulation of that section. As shown in FIG 3, a forefinger pushing on an ear with a thumb steadying the corner 42, between sections 26 and 28, releases the binding relationship.

Referring now to the embodiment shown in FIGS. 5, 6 and 7, the integral retainer 50 includes an end section 54, end section 56 and only one intermediate section 58. End section 54 and intermediate section 58 are disposed at an obtuse angle with one another, and end section 56 and intermediate section 58 are at an acute angle. The end and intermediate sections 56 and 58 are provided, respectively, with holes 64 and 66, for receiving the rod 22, or as shown in FIG. 7, for receiving a coupling pin 52. The diameter of the holes is slightly larger than the diameter of the rod or pin received thereby.

The retainer 50 can receive the rod by pushing end section 56 toward intermediate section 58, or vice versa, to axially align holes 64 and 66. After receiving the rod, upon releasing the pushing action, binding relationship is established between the retainer and the rod. In this embodiment, a second hole 67 is provided in end section 56 and end section 54 extends through that hole longitudinally beyond sections 56 and 58. Hole 67 may be considerably larger than the cross section of end section 54. The end of end section 54 provides a support similar to end section 24 in the embodiment shown in FIG. 4; it also can be used as a stop for many purposes, one such purpose being shown in FIG. 7. In that figure, the retainer is used as a stop for a coupling pin 52. A clevis 69 receives a bar 71. The clevis and bar are provided with aligned hole for receiving the pin 52. Should pressure be exerted on the end of end section 54, the intermediate section 58 would be pushed downwardly and thereby enhance the binding relationship between the walls forming openings 64 and 66 and the pin.

Binding relationship can be released readily by merely pushing end section 56 toward intermediate section 58, or vice versa. Ears 70 are provided for the ready manipulating of section 56.

Referring now to the embodiment shown in FIGS. 8 and 9 which is a modification and includes the characteristics of both previously described embodiments. The retainer 120 includes an end section 124, an end section 126 and three intermediate sections 127, 128 and 130. Sections 124, 127, 128 and 130 are like sections 24, 26, 28 and 30, respectively, of embodiment shown in FIGS. 1 to 4, except that section 128 is provided with a hole 167, like the hole 67 in section 56 of the embodiment shown in FIGS. 5, 6 and 7, and also the end section 126 is a continuation of intermediate section 127 and that end section extends through the hole 167. The sections 124, 127 and 128 are provided with axially alignable holes 132, 134 and 136, respectively, for receiving an element such as a pin or rod.

The holes 134 and 136 in intermediate sections are slightly larger in diameter than the diameter of the element to be received thereby. The hole 132 in end section 124 can be larger in diameter than the diameter of holes 134 and 136. End section 124 extends longitudinally beyond sections 127 and 128, and end section 126 extends longitudinally beyond sections 128 and 127.

When it is desirable to fasten the retainer 120 onto, for example, a rod 22, intermediate section 127 is pushed toward intermediate section 128 to axially align hole 134 in section 127 with the holes 132 and 136 in sections 124 and 128. The element (rod or pin) is then inserted through holes 132, 134 and 136. Upon releasing of the compressing action, due to the inherent resiliency of the retainer, binding relationship is established between the walls forming the holes 134 and 136 and the rod or pin. Ears 140 are provided on intermediate section 127 for the ready manipulation of the section.

When it is desirable to remove the rod or shift it relative to the retainer 120, intermediate section 127 is pushed toward intermediate section 128, to axially align the former hole with the latter. Then the retainer is moved relative to the rod, or vice versa.

In the embodiment shown in FIGS. 8 and 9, either end section forms a stop or support of both end section form stops or supports. Pressure imparted on end section 124 toward intermediate section 128 enhances binding relationship between the wall forming hole 136 and the rod. Pressure imparted on the end of end section 126 toward intermediate section 127 enhances binding relationship between the wall forming opening 134 and the rod.

Thus, from the foregoing it is apparent that retainers have been provided which provide stops on elements such as rods, pins, bolts, wire, etc., or as supports. The construction is such that when pressure is applied, on a stop or support section of the retainer, toward another section of the retainer, binding relationship is enhanced between the retainer and the received element.

Moreover, the retainer is simple in construction, inexpensive and readily operable.

While the forms of embodiment herein shown and described constitute preferred forms, it is to be understood that other forms may be adopted.

I claim:

1. A combination comprising:

(A) an elongated element such as a rod;

(B) an integral retainer mounted for slidable movement and for non-slidable movement on the element, said retainer being formed from an elongated strip of flexible and resilient material, said strip being folded into sections providing a first end section 24, a second end section 26 and a third section 28 interconnecting the end sections, said second mentioned end section being interposed between the third mentioned section 28 and the first mentioned end section, said second mentioned end section and the third mentioned section having holes and being movable under compression toward one another to a position in which the holes are axially alignable for receiving the element and are resiliently urged away from one another into binding relationship between the walls forming the holes and the element, the first mentioned end section 24 being disposed with respect to the said second mentioned end section and the third mentioned section 28 for increasing the binding relationship between said walls when pressure is applied on the first mentioned end section in a direction toward the third mentioned section.

2. A combination as defined in claim 1, characterized in that the first mentioned end section is provided with a hole for receiving the rod.

3. A combination as defined in claim 1, characterized in that the intermediate section is provided with a second hole and that the first mentioned end section extends through the second mentioned hole in the intermediate section.

4. A combination as defined in claim 1, characterized in that said strip includes a second section interposed intermediate the first mentioned intermediate section and the second mentioned end section, said second mentioned intermediate section having a hole alignable with the holes in the first mentioned intermediate section and the second mentioned end section and having a second hole, said first mentioned end section being connected with the first mentioned intermediate section and extending through the second mentioned hole in the second mentioned intermediate section.

5. A combination as defined in claim 1, characterized in that the first mentioned section provides a support.

6. A combination as defined in claim 1, characterized in that the first mentioned section extends horizontally and the upper side thereof forms a support.

7. A combination as defined in claim 1, characterized in that the first mentioned section extends vertically and the upper end thereof forms a support.

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