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(54) **File**

(57) There is disclosed a device for retaining a stack of hole-punched papers in a file, e.g. an arch lever mechanism for an arch lever file. The device comprises:

a base (10);

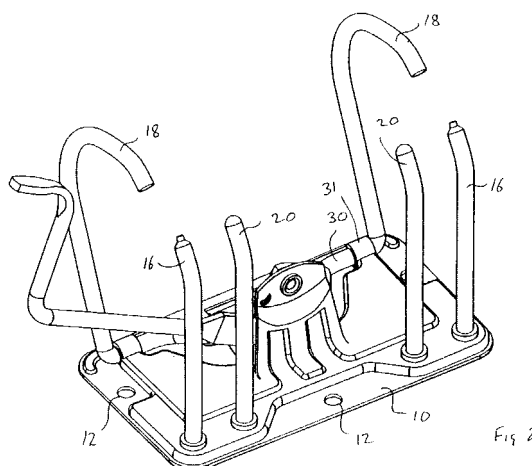
at least two rings (14) secured to and extending upwardly from the base for engaging the punched holes in the papers, each ring having a pin (16) for holding the papers when the file is closed and an arched section (18), whereby papers on the top of a stack can be slid over the first section and retained on the second section so that papers lower down the stack can be exposed; and

a mechanism for holding the first and second sec-

tions in a closed position in which the first and second sections form a closed ring and an open position (as shown) in which the pins and the arched sections are separated to allow papers to be added to, or removed from, the rings and

two additional pins (20) without corresponding arched sections,

the use of the additional pins which has the advantage that papers are held more securely on the pins (16, 20) than is the case with only two pins and yet the mechanism for opening and closing the rings is identical to the two ring device and is simpler than a device with four rings.



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Description

Field of Use

[0001] The present invention relates to a device for retaining a stack of papers in a file, for example a lever arch mechanism for a lever arch file.

Background

[0002] Lever arch files are well known for retaining a stack of papers in a file. They generally include a base, two rings secured to, and extending upwardly from, the base for engaging holes in the margin of the stack of paper. Each ring is composed of a first section for holding the papers when the file is closed and a second, arched section and a mechanism for holding the first and second sections in a closed position to form a closed loop, and an open position in which the first and second sections are separated to allow papers to be added to, or removed from, the rings. In the first position, papers on top of a stack of papers held in a file can be slid over the rings to allow papers further down the stack to be easily consulted.

[0003] If a file containing a stack of papers is roughly handled, there is a tendency for the paper around the holes in the margin of a sheet of paper to tear, causing the sheet to come loose; if the hole is completely ripped, the sheet can fall out of the file altogether. This problem is reduced significantly with the known arrangement in which four rings are provided instead of two but this makes the device more complex, expensive and heavy.

[0004] The present invention is based on the realisation that the greatest damage to the papers occurs when the rings are closed, e.g. when the file is closed and is dropped, and the extra robustness provided when there are four rings is not in practice required when the rings are open. This allows many of the disadvantages of the four ring device to be eliminated or at least reduced while still maintaining its most significant advantage.

Disclosure of the Invention

[0005] According to a first aspect of the present invention, there is provided a device for retaining a stack of papers that have holes in their margins in a file, which device comprises:

at least two rings secured to and extending upwardly from the base for engaging the marginal holes in the papers, each ring being composed of a pin and an arched section, the rings being arranged to engage holes in the margin of the papers and

a mechanism for keeping the pin and the arched section of each ring in either a closed position in which the pin and the arched section of each ring abut each other and form a closed loop and an open

position in which the pin and the arched section are separated to allow papers to be added to, or removed from, the rings;

wherein the device further includes at least one additional pin that is also arranged to engage a hole in the margin of each paper but the said additional pin does not include a corresponding arched section for forming a closed loop.

The term "ring" used in the present specification is intended to encompass both:

a) an arrangement in which the pins and the arched sections are each part-circular (e.g. so-called "ring binders"), and

b) an arrangement in which the pin and the arched sections together form elongated loops in which each pin is generally straight (although it can have a bend along its length) and the arched section has a generally part-circular upper portion (so-called "lever arch files").

However the particular shape of the rings does not affect the principle underlying the present invention and can have any desired shape.

[0006] Preferably, the device is a so-called "lever arch file" in which the arched section of each ring is pivotally mounted and the mechanism includes means, for example, a lever, for urging the arched section into the closed position and a spring that urges the arched section into the open position when the lever is released. The pins may be straight or curved. The pins that form part of the rings and the additional pins are preferably all identically shaped.

[0007] The additional pins are preferably provided between the rings.

[0008] As will be appreciated, the present invention holds the papers on three or more pins and so it is harder for a sheet of paper to be torn out of the file by accident, e.g. on dropping the file, when the papers are engaged on all the pins and so provides the additional robustness of the known four-ring device described above. The present invention, at the same time, avoids the complexity of the opening and closing mechanism of the known four-ring device; for example in the arrangement of the present invention that is equivalent to the known four-ring device has two rings and two additional pins. The mechanism to open and close the rings only has to operate on two rings since the additional pins do not have corresponding arched sections whereas the mechanism of the known four-ring device has to operate on four rings. Thus the mechanism is simpler, lighter and cheaper in the present invention than in the corresponding known four-ring arrangement in which every pin forms a closed loop with a corresponding arched section.

Description of Drawings

[0009]

Figure 1 is a perspective view of a device for the present inventions, in the "closed" position;

Figure 2 is identical to Figure 1 but shows the device in an "open" position.

Figure 3 shows the device of Figure 1 holding a stack of papers

Figure 4 is an exploded view of the device shown in Figures 1 and 2

Figures 5 and 6 are, respectively, a front elevation and a side elevation of the mechanism shown in Figures 1 and 2.

Figure 7 is a plan view of the mechanism shown in Figures 1 and 2.

Figure 8 is a plan view of a compressor bar for holding papers shown in Figure 3.

Description of the Preferred Embodiments

[0010] Referring initially to Figure 1, there is shown a device for retaining a stack of papers in a file. The device includes a base 10 made from pressed steel and including 'holes 12 that accommodate rivets (not shown) for securing the device to a file. Two rings 14 extend from the base 10, each ring being composed of a pin 16 and an arched section 18. Additional pins 20 are secured to the base 10 between the rings 14. The pins 16 and 18 pass through holes 19 in the base 10 (see Figure 4) and are welded in place on the base 10.

[0011] The arched sections 18 of the two rings 14 are joined together by a central section 30, which is pivotally held on the base by two bent over tabs 31, which are pressed out from the base 10. Such an arrangement allows the arched sections 18 and the connecting part 30 to pivot about a horizontal axis extending between the two tabs 31.

[0012] The connecting section 30 includes a crank section 32. A leaf spring 34 is secured at one end (34') in a slot 36 in the base; the other end 34'' engages underneath the crank section 32 and tends to urge the crank section 32 upwardly, causing the arched sections 18 to pivot about the horizontal axis extending between the two tabs 31 to open the rings.

[0013] A generally upright wall 40 is also pressed out from the base 10. A lever 42 is secured to the wall 40 by means of a rivet 44 that passes through a hole 46 in the wall 40 and a hole 48 in the lever 42. The arrangement is such that the rivet 44 allows the lever 42 to pivot about the wall 40.

[0014] The lever 42 carries a roller 50 that is secured to it by a further rivet 52 whose end is secured in a hole 54 in the lever 42. The roller engages the top of the crank section 32 to control the opening and closing of the arched section 18 of the ring 14, as will be described later.

[0015] The tops of the pins 16 have a male profile 60 that mate with a corresponding female profile at the end 62 of the arched sections 18 (see Figure 4); this allows a positive engagement between the pin 16 and the arched section 18 of each ring 14 and assists the alignment between the pin 16 and the arched section 18 of each ring so that paper cannot snag on the join between them.

[0016] The lever 42 can be moved about rivet 44 between a horizontal position (shown in Figure 1) and an upwardly extending position shown in Figure 2. In the position shown in Figure 1, the roller 50 presses the crank section 32 down against the action of the spring 34 to keep the arched sections 18 of each ring in the locked position abutting against the corresponding pins 16 to form the closed rings shown in Figure 1. When the lever 42 is moved to the upwardly extended position shown in Figure 2, the roller 50 no longer presses down on the crank section 32 and this allows the crank section 32 to be moved upwardly by spring 34 into the open position shown in Figure 2. By pressing down on the lever 42, the crank section 32 can be moved by the roller 50 against the action of the spring 34 into the closed position shown in Figure 1.

[0017] A stack of papers 22 (shown in Figure 3) having holes (not shown) in their margins can be threaded onto the pins 16 and the additional pins 20 when the rings are in their "open" position (shown in Figure 2). Once the stack of papers has been threaded on to the pins 16 and 20, the lever 42 can be depressed to the position shown in Figure 1 to hold the stack of papers captive on the rings 14. The upper pages of the stack may be slid over the pins 16, 20 and retained on the arched sections 18 so that papers lower down the stack can be exposed for easy reading.

[0018] A document compressor bar 24 (see Figures 3 and 8) may also be threaded onto the pins 16 and 20 and includes openings 29, 31 through which the pins 16, 20 can pass. The bar includes rods 26 that grip the pins 16 when a button 28 is depressed and release the pins 16 when the button is raised. The bar thus holds the papers in place and prevents them sliding up and down the pins 16 and 20 when the button 28 is depressed (i. e. when the rods grip the pins 16) but the bar allows the papers to slide freely on the pins when the button is raised and the rods release their grip on the pins 16. The bar 24 differs from a conventional compressor bar in having the additional holes 29 to accommodate the additional pins 18; the pins 16 pass through the holes 31.

[0019] The use of four pins 16, 20 results in the papers being held in place more securely than would be the case with only two pins. On the other hand, the mecha-

nism for opening and closing the rings 14 is the same as that of a two pin device and is much simpler than that of a four pin device with four rings.

When reading the papers in the file, it is usual to slide a page that has just been read over the rings 14 so that it is held on the arched section 18 rather than the pins 16 and 20 and the underlying page is revealed. When closing the file, those pages held on arched section 18 must be slid back onto the pins 16 and 20. Because the pins 20 are exactly parallel with the pins 16, the central two marginal holes in the papers are directed onto the central additional pins 20 even though they have no corresponding arched sections 18 and accordingly the flipping of the papers back onto the pins 16, 20 is readily accomplished.

Claims

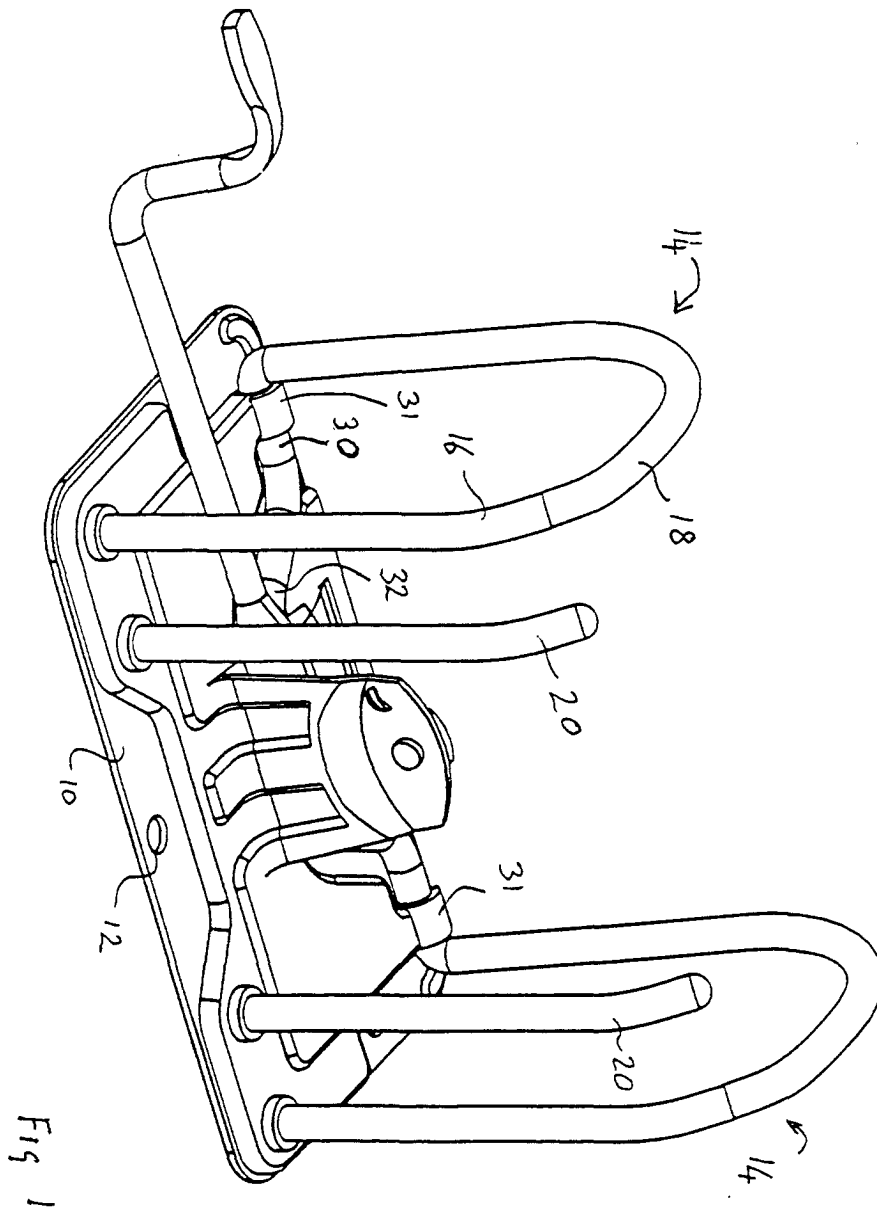
1. A device for retaining in a file a stack of papers that have holes in their margins, which device comprises:

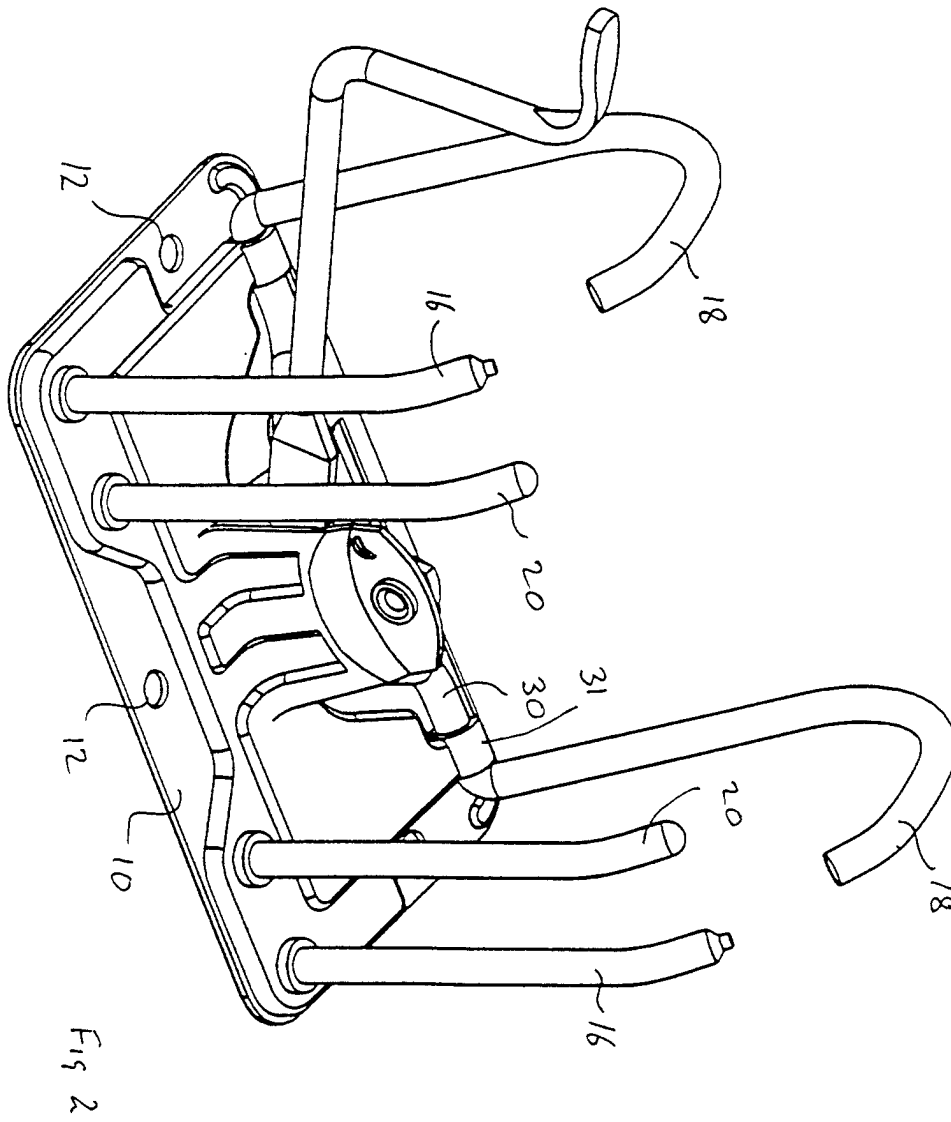
at least two rings secured to and extending upwardly from the base for engaging the marginal holes in the papers, each ring being composed of a pin and an arched section, the rings being arranged to engage holes in the margin of the papers and

a mechanism for keeping the pin and the arched section of each ring in either a closed position in which the pin and the arched section of each ring abut each other and form a closed loop and an open position in which the pin and the arched section are separated to allow papers to be added to, or removed from, the rings;

characterised in that the device further includes at least one additional pin that is also arranged to engage a hole in the margin of each paper but the said additional pin does not include a corresponding arched section for forming a closed loop.

2. A device as claimed in claim 1, wherein the arched section of each ring is pivotally mounted and the mechanism includes means for urging the arched sections of the rings into the closed position and a spring that urges the arched sections into the open position when the lever is released.
3. A device as claimed in claim 1, wherein the additional pins are located between the rings.
4. A device as claimed in claim 1, wherein the additional pins are parallel with the pins of the rings.





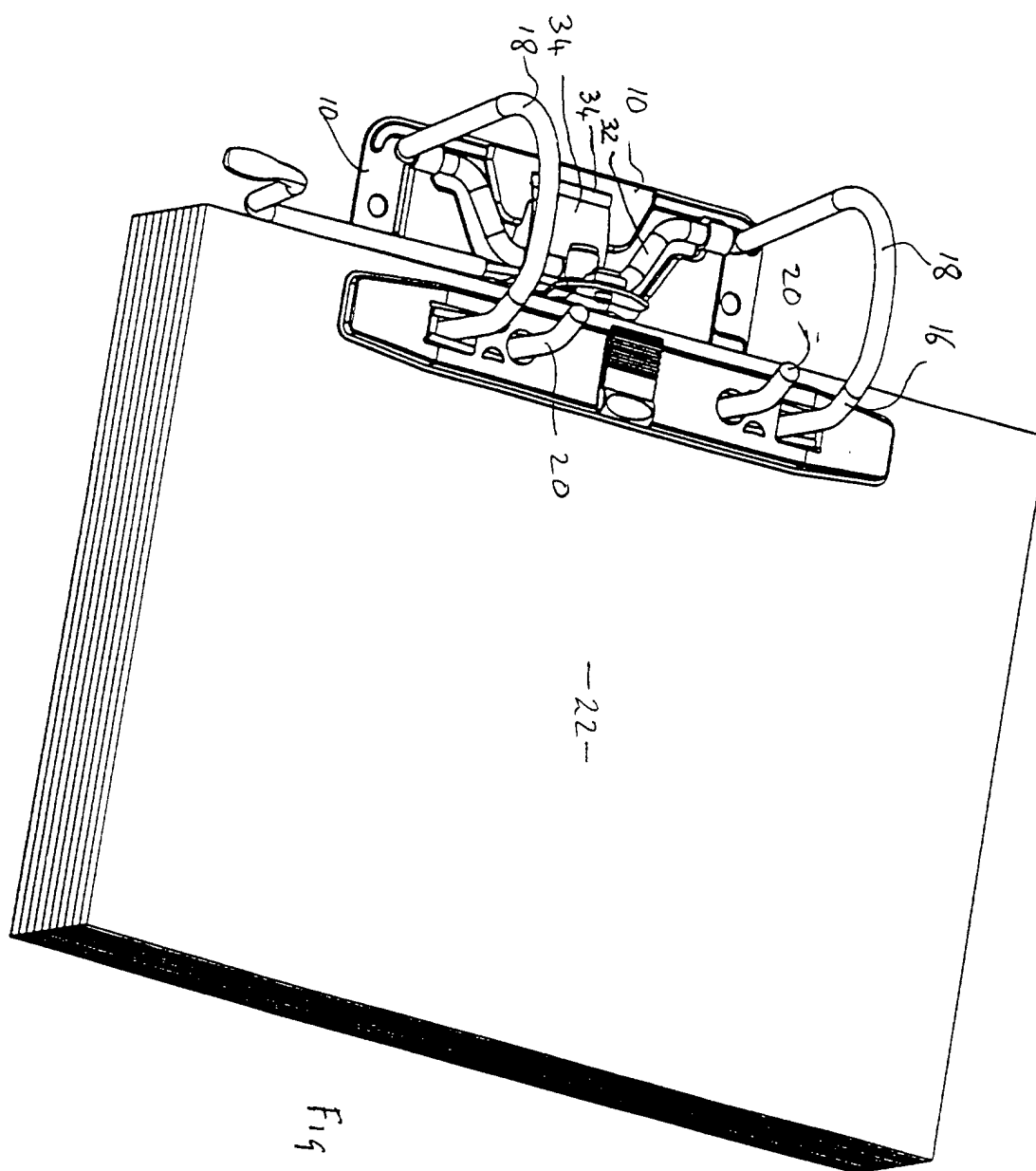
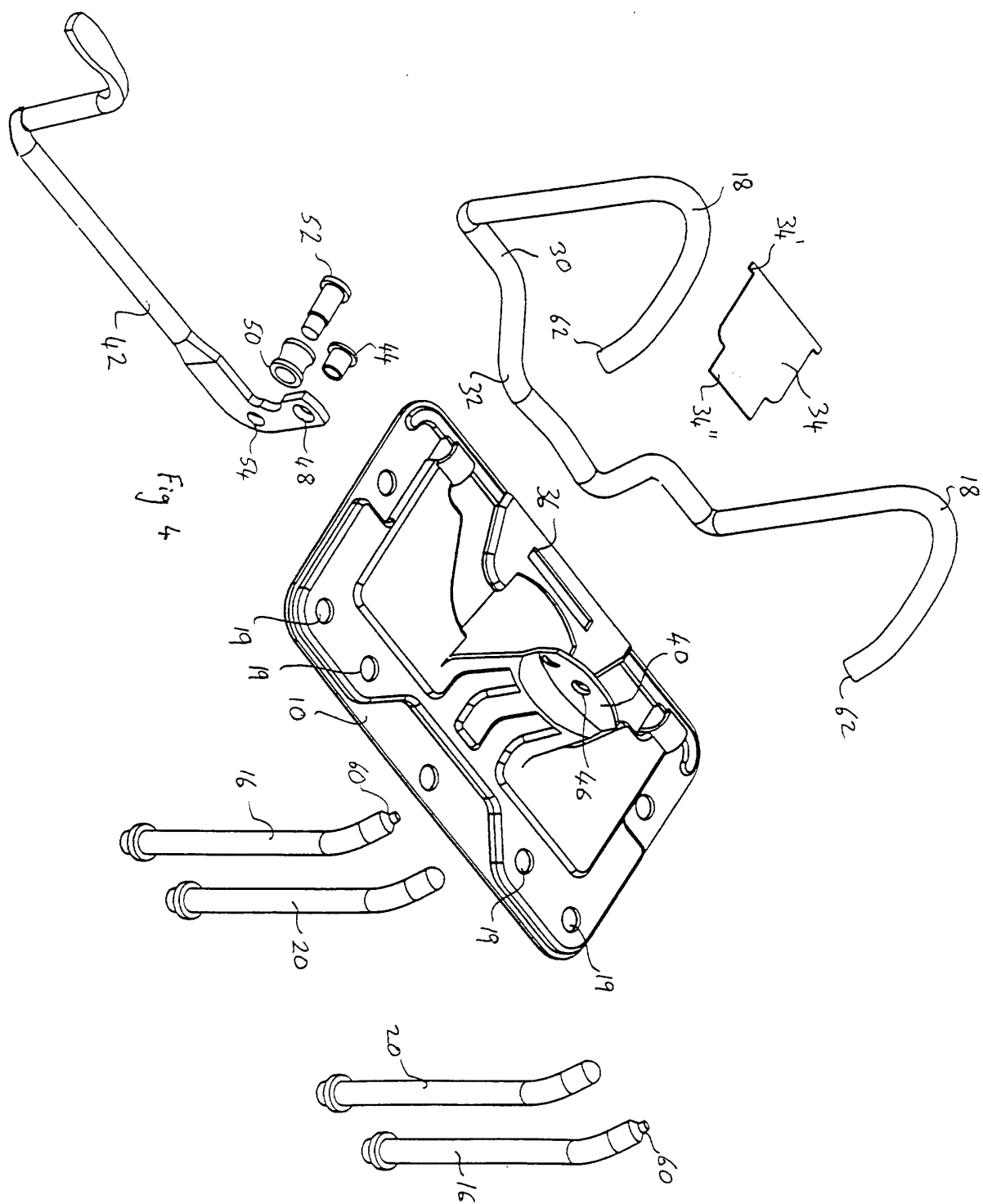
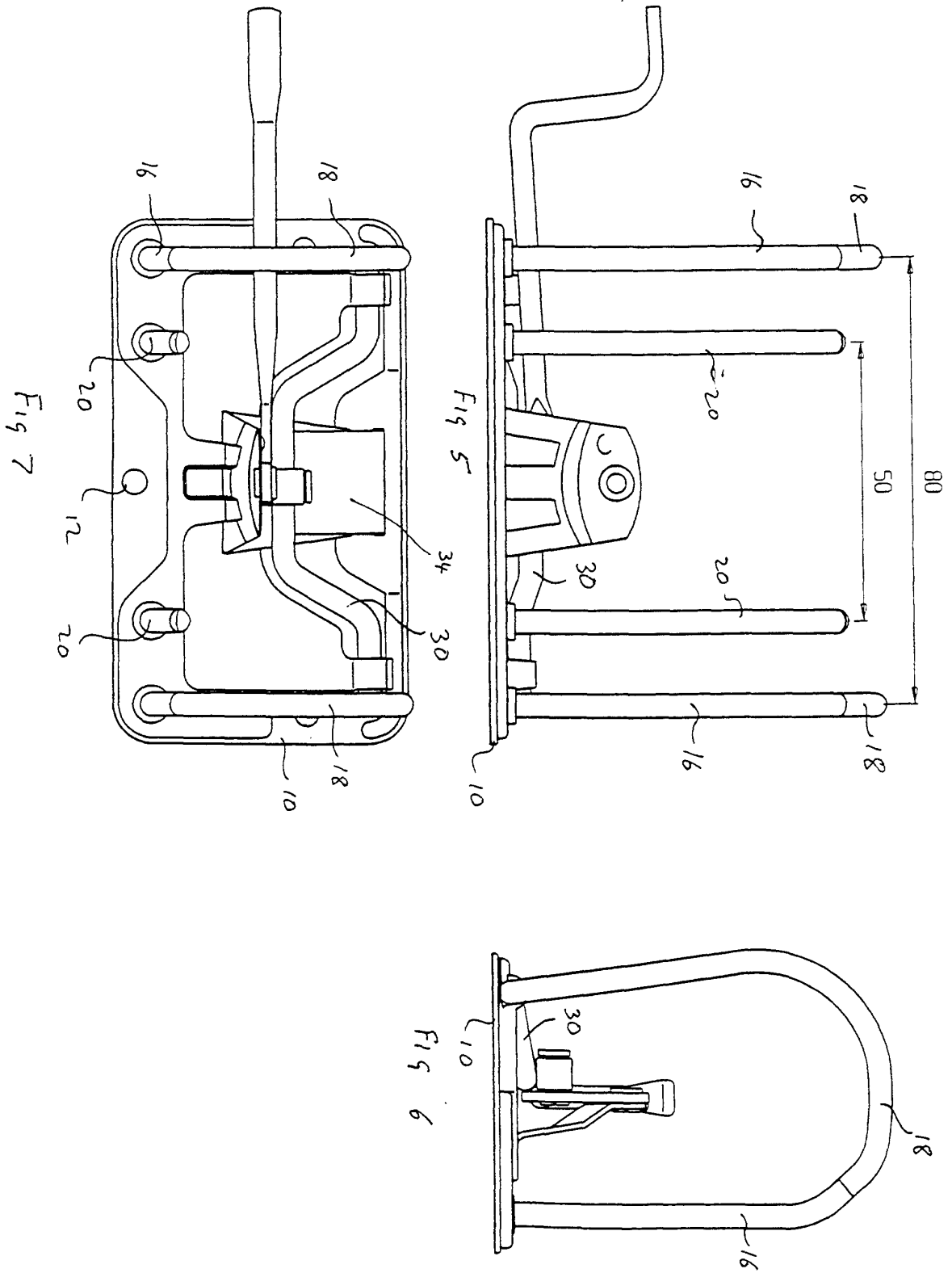


Fig 3





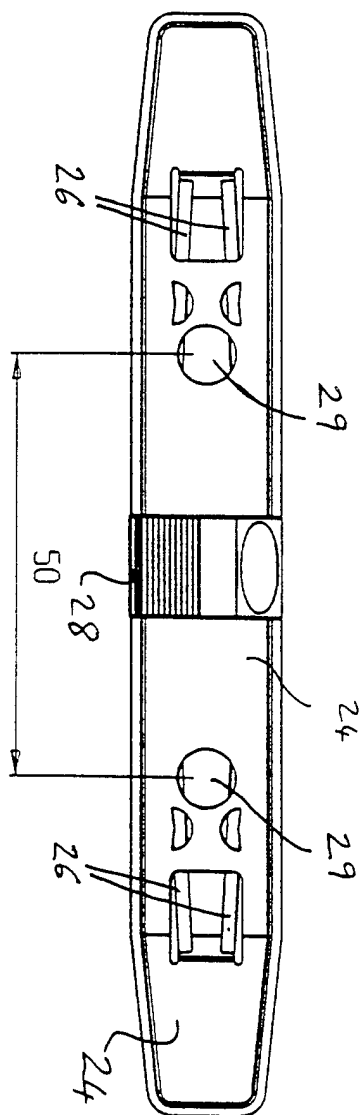


Fig 8