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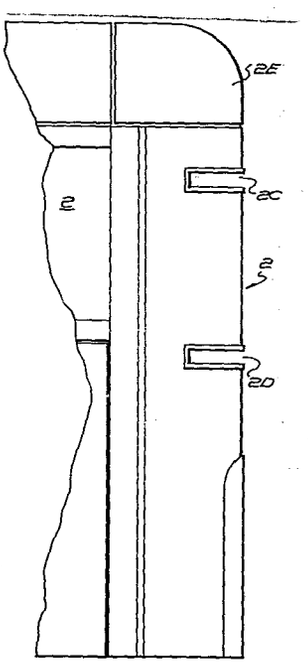
(54) Connecting screen panels.

(57) The invention provides a means for connecting screen panels edge to edge in upright disposition so that the interconnecting of the panels and the disconnecting of the panels are simplified.

The edges of the panels are provided with tie bars, and links extend between the panel edges and couple with the tie bars. Clamping of the tie bars to the links is achieved simply by manipulating the tie bars from a convenient height location, such as the top of the tie bars.



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Connecting Screen Panels.

This invention relates to the connecting of screen panels such as are used in office and other locations to sub-divide a room or area into individual work areas or the like.

Conventionally, screen panels are connected edge to edge in upright disposition by means of separate couplings located at the top and bottom of the adjacent screening panels, the couplings including screw or bolt fastening devices.

Whilst it is a simple enough operation to tighten up and loosen off the screws or bolts of the couplings located at a convenient height, it is often difficult to tighten and loosen the bolts or screws of the couplings located near the floor. The proximity of the couplings to the floor makes it very awkward to engage and turn the screw or bolt, and often necessitates the person making or loosening the coupling lying or at least kneeling on the floor.

The invention seeks to provide for the coupling edge to edge of screen panels in such a fashion that the panels can be more readily secured together and released from each other.

According to the present invention screen panels are connected together edge to edge in upright disposition by means including at least one upright, elongate tie bar which is displaceable between a locking position in which the bar locks the screen panels at at least two spaced coupling locations one of which is located at or near the bottom edges of the panels, and an unlocking position in which the screen panels are unlocked or said locations, by

manipulation of the bar by engaging same at a height above the coupling location at or near the bottom edge of the panels.

Preferably, each of the upright edges of adjacent and connected panel edges has a said tie bar, and locking links are locked to respective tie bars at said coupling locations of respective screen panels.

Preferably also, the links are of T-shape or cruxiform shape, and the ends of the arms of the links are locked to the respective tie bars of respective screen panels, connecting three of four of aid screen panels together at location from where the panels radiate.

Preferably, each tie bar is movable between the locking and unlocking positions by being raised and lowered by a feed screw at the top of the tie bar and the or each tie bar has means preventing the bar from rotating about its axis during turning of the screw so that the tie bar can move up and clamp the ends of said links at said locking coupling.

Preferably also, the tie bars have reduced cross section regions at the locking locations and the ends of the links have slots which receive said reduced cross section regions and when the tie bars are raised by the feed screws the links are clamped to fixed guide members in which the tie bars are located.

The tie bars are preferably interconnected and axially relatively adjustable parts so that the relative positions of the reduced setion regions one

to another along the length of the tie bar can be adjusted.

The invention also provides tie bars and links useable for connecting the screen panels as aforesaid.

An embodiment of the invention will now be described, by way of example only, with reference to the accompanying drawings, wherein:-

Figure 1 is a side view of a panel connectible to another panel of the same type, according to the invention;

Figure 2 is a plan view of a plurality of screening panels connected together by means according to the invention to form a screening assembly;

Figure 3 is an exploded perspective view of the edge the screen panel of Figure 1;

Figure 4 is a side view of a tie bar similar to that of Figure 3, but with modifications;

Figure 5 is a view similar to Figure 4, but shows an alternative form of the bar.

Figure 6 shows a variation to the top of the tie bars of Figures 3, 4 and 5;

Figure 7 is a plan view of a link for use in conjunction with the tie bars of Figures 3 to 6;

Figure 8 is an end elevation of the links in Figure 7; and

Figures 9 and 10 are views similar to Figures 7 and 8 and showing an alternative form of link.

Referring to the drawings, and firstly to Figure 2, a plurality of screen panels 2, 4, 6 and 8 - panel 2 being shown in full lines in Figures 1 and 2 and the latter three being shown in phantom line - are shown connected together to form a screening assembly. As will be seen in Figure 2, the screen panels are interconnected by a means including links 10 - shown in phantom line - each of which consists of four limbs 10A, 10B, 10C and 10D, and is held in position relative to the screen panels so as to secure said screen panels together by tie bars of respective panels, one of which tie bars is indicated by reference numeral 20.

Each panel at each upright edge has a tie bar housed therein, and therefore only a simple tie bar will be described in detail, with reference to Figures 3 and 4.

In Figure 3 tie bar 20 is movable vertically in longitudinally spaced housings or saddles - one is indicated by reference numeral 40 - which are secured to the edge 2A of the panel 2 by screws, two of which are indicated by reference numerals 40A and 40B.

An end or edging cap 2B of the screen panel 2 - and similarly end or edging caps 4B, 6B and 8B of the screen panels 4, 6 and 8 - conceal the tie bars, the end or edging caps having slots 2C and 2D (Figure 2) therein through which the limbs of the links pass as will be more fully explained.

An alternative form of linkage means - shown in

phantom line and indicated by reference numeral 70 - is shown in Figure 1, and its purpose will be indicated hereinafter.

Referring now to Figures 3 and 4, the housing or saddle 40 is shown spaced longitudinally of a second housing or saddle 50 which is also secured to the end 2A of the screening panel 2 by means of screws 50A and 50B. As will be seen - and perhaps better seen in Figure 1 - the saddle 40 includes a channel portion 42, whose front face (in the drawing) is open as indicated by reference numeral 44. Similarly, housing or saddle 50 has a channel portion and the front face thereof has an open portion 54.

Engageable in the housings or saddles 40 and 50, extending therebetween and movable longitudinally relative to and within the housings or saddles 40 and 50 is the tie bar 20, the tie bar being so movable by means of an Allen head or other screw or bolt 56 engaging in a threaded bore 58 in the tie bar through the intermediary of a washer 60. It will be appreciated that as the screw or bolt 56 is threaded into the threaded bore 58, the presence of the washer 60 (in engagement with the top of saddle 40) will prevent the excessive downward movement of the screw or bolt 56 with the result that the tie bar 20 will be drawn upwardly relative to the housings or saddles as indicated by arrow 62 in Figures 3 and 4.

An alternative form of the tie bar is shown in Figure 5, where the tie bar has a threaded stud 64 engageable by a threaded nut 66.

The tie bar 20 has two longitudinally spaced recessed or waisted portions 22 and 24 which include portions 26 and 28 respectively of reduced cross-sectional

dimensions compared with the remainder of the tie bar. Each portion 26 and 28 (in the Figure 4 embodiment) communicates with the portions of the tie bar immediately below by means of chamfers 30and 32 whose included angle is preferably 90 and whose purpose will become apparent later.

Referring to Figure 6, in the arrangement shown the tie bar 100 is threaded at the top and bottom ends 102 and 104, and a block 106 is attached to the lower end 104 by means of a lock nut 108, or in the alternative by welding, whilst the block 110 threaded to the top end is turnable on the top end 102 provided it is displaced out of the housing 112 as shown in Figure 6. The block 110 is of square cross section so that when it fits in the housing 112, it cannot rotate relative to the rod portion of the bar.

Above block 110 is the screw block 114 and the recessed portion 116 is provided for receiving the links as described herein. The tapered shoulder 118 is also present.

At the bottom end, under block 106 is a further block 120 further recessed to the portion 122 and a tapered shoulder 124, similar to the tie bar illustrated in Figure 4. Block 120 slides in a housing 126, and a pin 128 fast with the block 120 locates in a slot 130 in a housing to prevent the tie bar from being completely extracted in the two housings 112 and 126. In Figure 6, the tie bar is shown in the raised position to enable relative adjustment of the block 110 relative to the rod 100, which is the effect of altering the distance between the recessed portions 116 and 122. By this means, the spacing between the recessed portions, which receive the respective links, can be finally

adjusted. After completing the adjustment the tie bar is lowered until the block 110 reaches the dotted line position as shown, under the housing 112 and the lock 114, which is also a square cross section locates in the housing 112 and the tie bar is therefore prevented from rotating. Screwing of the tie bar by means of the screw 132 is in the manner herein described.

Referring now to Figures 7 and 8, these Figures show in more detail the links 10. The four limbs 10A, 10B, 10C and 10D are each slotted at their outer extremities, the slots being indicated by reference numerals 12A, 12B, 12C and 12D respectively. At the inboard end of each of the slots, the limbs are chamfered as shown at 14A, 14B, 14C and 14D, the included angle of each chamfer corresponding to that of the chamfers 30 and 32 of the tie bar 20.

The link 70 of Figures 9 and 10 comprises an elongate member whose opposing ends are provided with open slots 72 and 74 whose inboard ends are chamfered at 76 and 78 respectively, the included angle of these chamfers again corresponding to that of the chamfers 30 and 32 of the tie bar 20.

In use, and referring back to Figures 1 and 3, the screen panels 2, 4, 6 and 8 are arranged in the desired relationship - as shown for example in Figure 1 - with each screen panel carrying two housings or saddles 40 and 50 and associated tie bars 20. The screen panels will carry their end or edging caps 2B, 4B, 6B and 8B respectively having the slots (such as has been described), the limbs 10A, 10B, 10C and 10D of the linkage means 10 projecting through these slots, the slots 12A, 12B, 12C and 12D being positioned such that they engage the recessed or

waisted portions 22 and 24 of the tie bar 20. It will of course be appreciated that in the arrangement shown in Figure 1, there will be four tie bars, and that there will be two vertically spaced links.

With the components parts in the above-described positions (shown in Figure 1), screws or bolts 56 are applied to the upper ends of the tie bar 20, the washers 60 being interposed therebetween. Engagement of the screws or bolts 56 with the threaded bores 58 of the tie bars will, due to the engagement of the washers 60 against the upper ends of the housings or saddles 40, draw the tie bars 20 upwardly relative to the housings or saddles 40 and 50. Such movement of the tie bars will cause the chamfered portions 30 and 32 thereof to mate with the chamfered portions 14A, 14B, 14C, 14D of the linkage means 10, such that the linkage means will be moved upwardly to secure the linkage means in position, by bringing the links into engagement with the lower extremities of the housings or saddles 40 and 50. Thus, the links become "locked" to the tie bars and to the housings or saddles 40 and 50, so as to secure the screen panels 2, 4, 6, 8 together and render them immovable.

Corner covers - one is indicated by reference numeral 2E is indicated in Figure 2 - may then be applied to the panels so as to conceal the screws or bolts, the housings or saddles and associated components.

If only three screening panels are to be secured together, then the links 10 may be formed with only three limbs, and if only two screening panels are to be connected together links 70 may be used in place of the links 10. Where only two screening panels are

to be connected, they may of course be disposed at any desired relative angle before tightening up the screws or bolts 56.

It will be appreciated that more than four screen panels may be secured together by means in accordance with the invention, in which cases the links will be formed with limbs corresponding in number to the number of screen panels to be connected.

With means according to the invention, it is relatively simple and quick to secure a number of screen panels together to form a screening assembly - and to release said screen panels - since access is required only at the upper ends of the screening panels yet at the same time the connections are located at two locations in the heights of the screen panels so as to give rigidity to the finished screening assembly.

Many modifications of the invention may be made, and it is not necessary that the manipulation of the tie bars to effect the clamping and unclamping be by means of screw threading. Thus, a crank lever could be used for manipulating to tie bars between the locked and unlocked positions, and additionally, in moving between said locked and unlocked positions, the tie bars may be rotated as opposed to being moved axially, a novel feature of the invention residing in that the tie bar clamps at several unspaced locations one of which is towards the bottom of the coupled edges of the screen panels.

CLAIMS

1. Screen panels connected together edge to edge in upright disposition by means including at least one upright, elongate tie bar which is displaceable between a locking position in which the bar locks the screen panels at at least two spaced coupling locations one of which is located at or near the bottom edges of the panels, and an unlocking position in which the screen panels are unlocked or said locations, by manipulation of the bar by engaging same at a height above the coupling location at or near the bottom edge of the panels.

2. Screen panels according to Claim 1, wherein each of the upright edges of adjacent and connected panel edges has a said tie bar, and locking links are locked to respective tie bars at said coupling locations of respective screen panels.

3. Screen panels according to Claim 2, wherein the links are of T-shape or cruxiform shape, and the ends of the arms of the links are locked to the respective tie bars of respective screen panels, connecting three of four of aid screen panels together at location from where the panels radiate.

4. Screen panels according to Claim 2 or 3, wherein each tie bar is movable between the locking and unlocking positions by being raised and lowered by a feed screw at the top of the tie bar and the or each tie bar has means preventing the bar from rotating about its axis during turning of the screw so that the tie bar can move up and clamp the ends of said links at said locking coupling.

5. Screen panels according to Claim 4, wherein the tie bars have reduced cross section regions at the locking locations and the ends of the links have slots which receive said reduced cross section regions and when the tie bars are raised by the feed screws the links are clamped to fixed guide members in which the tie bars are located.

6. Screen panels according to Claim 5, whereinthe tie bars are interconnected and axially relatively adjustable parts so that the relative positions of the reduced setion regions one to another along the length of the tie bar can be adjusted.

7. For screen panels according to any preceding Claim, tie bars and coupling links.

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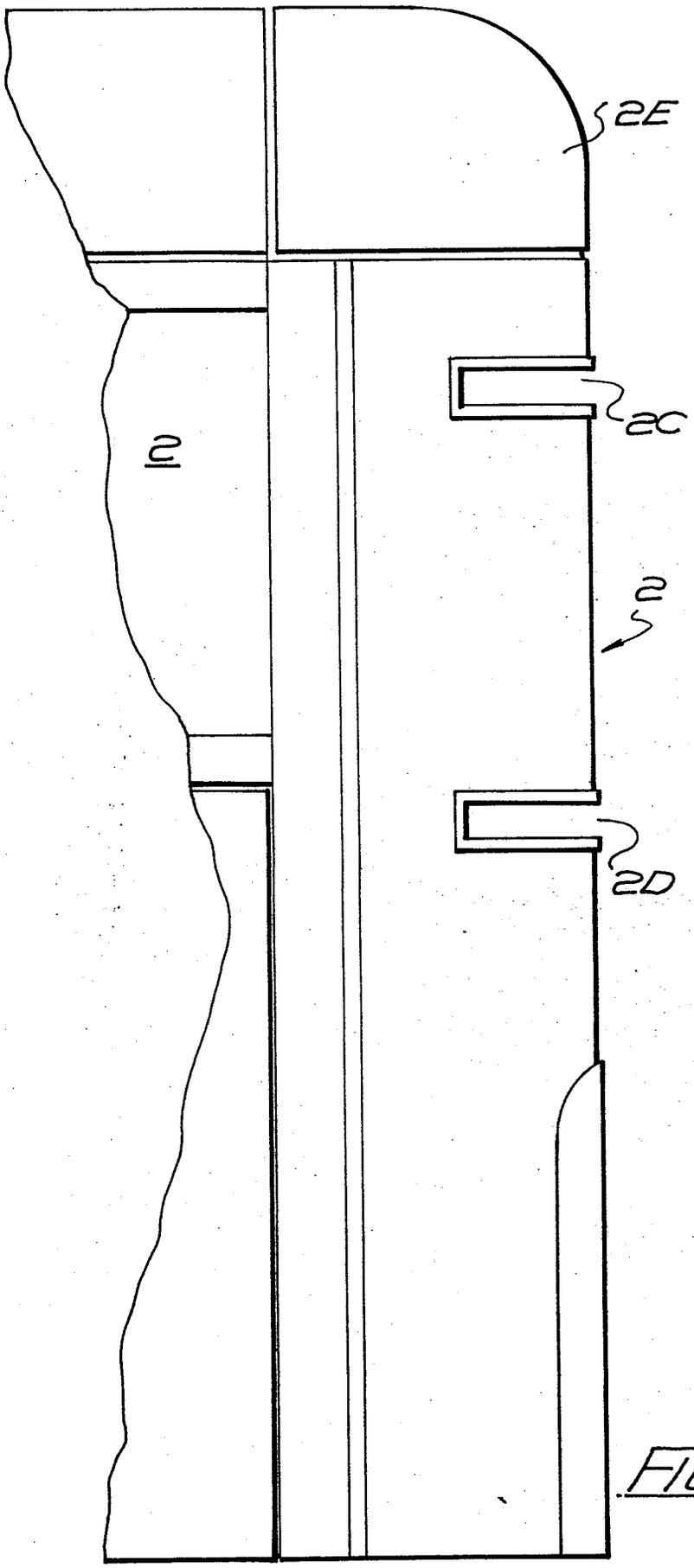

FIG.1

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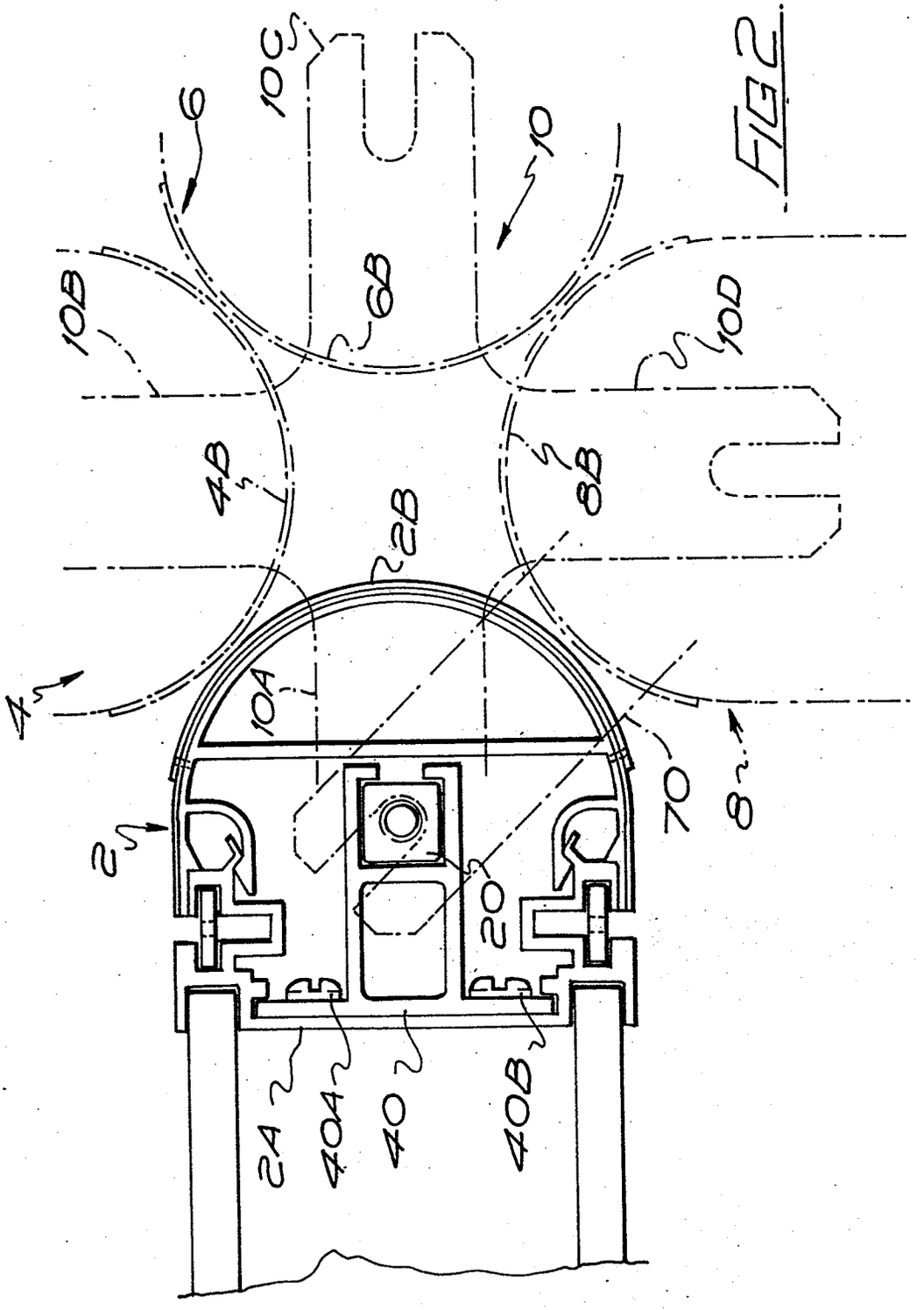

FIG 2

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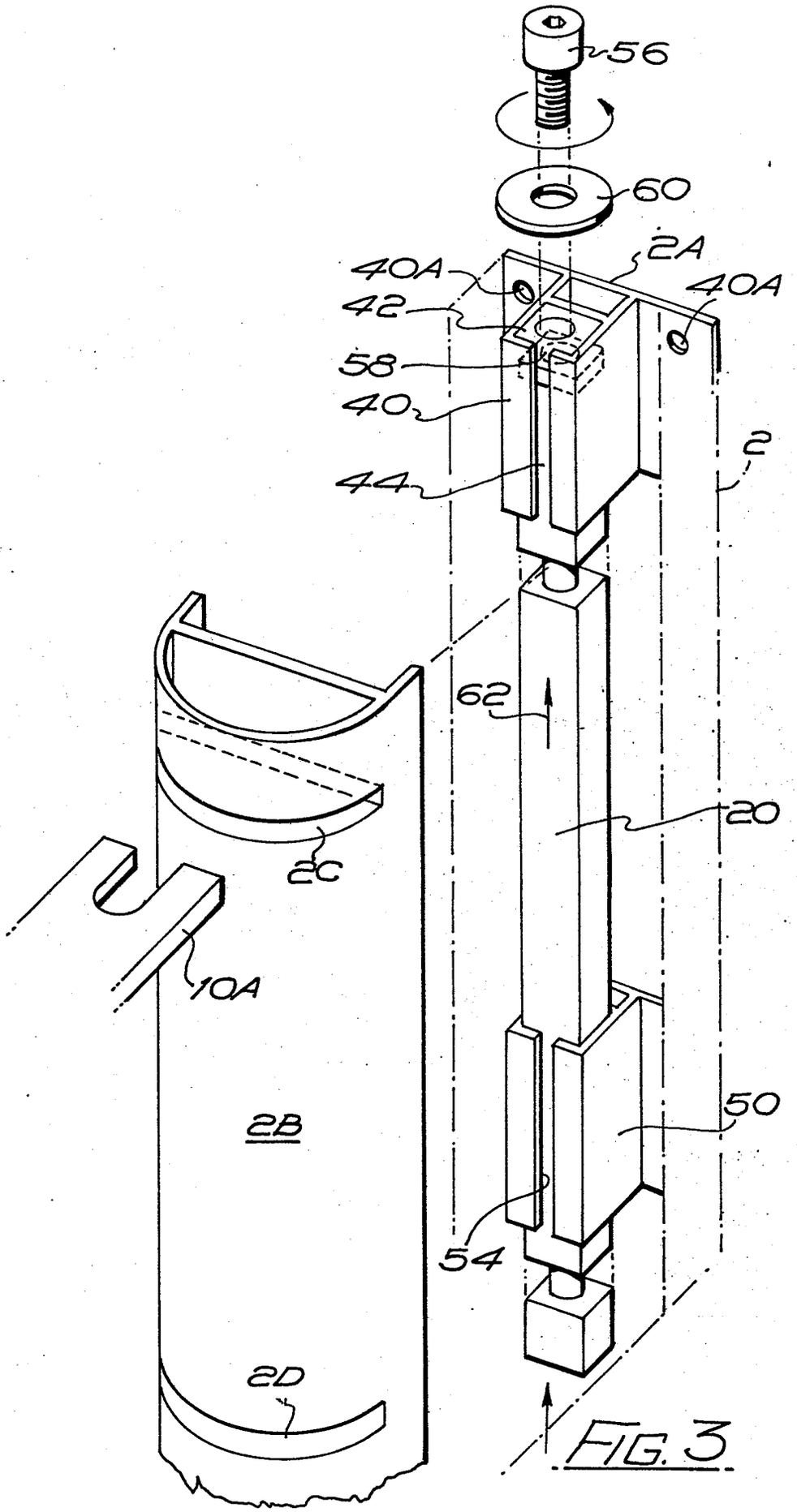

FIG. 3

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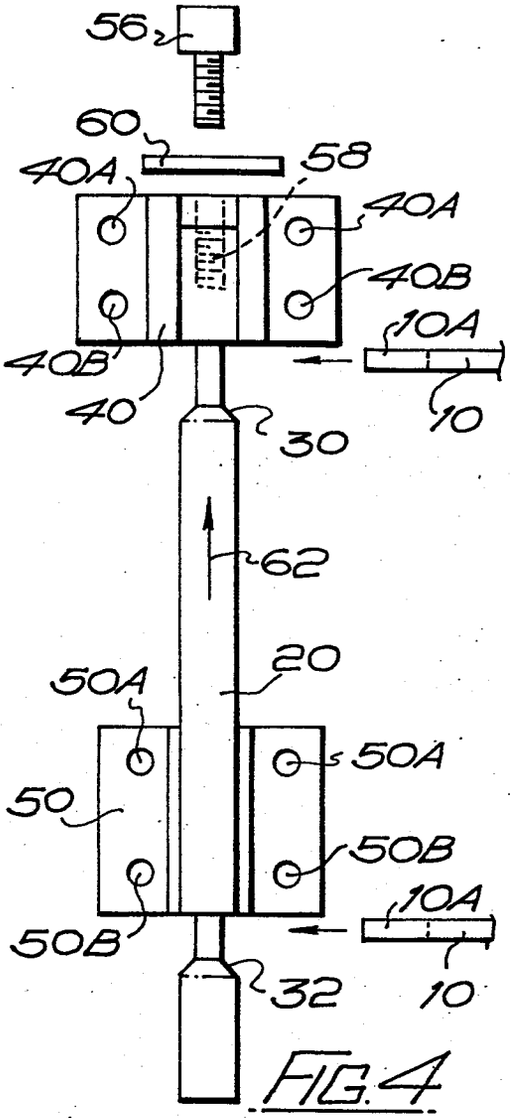

FIG. 4

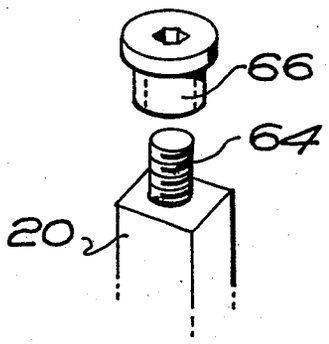

FIG. 5

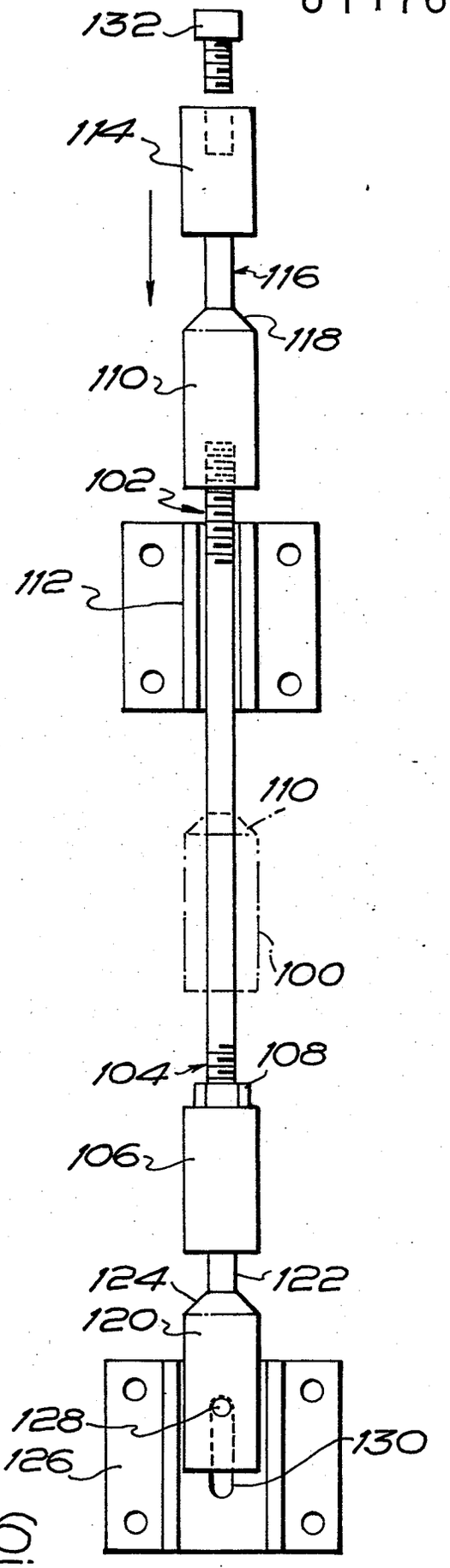

FIG. 6

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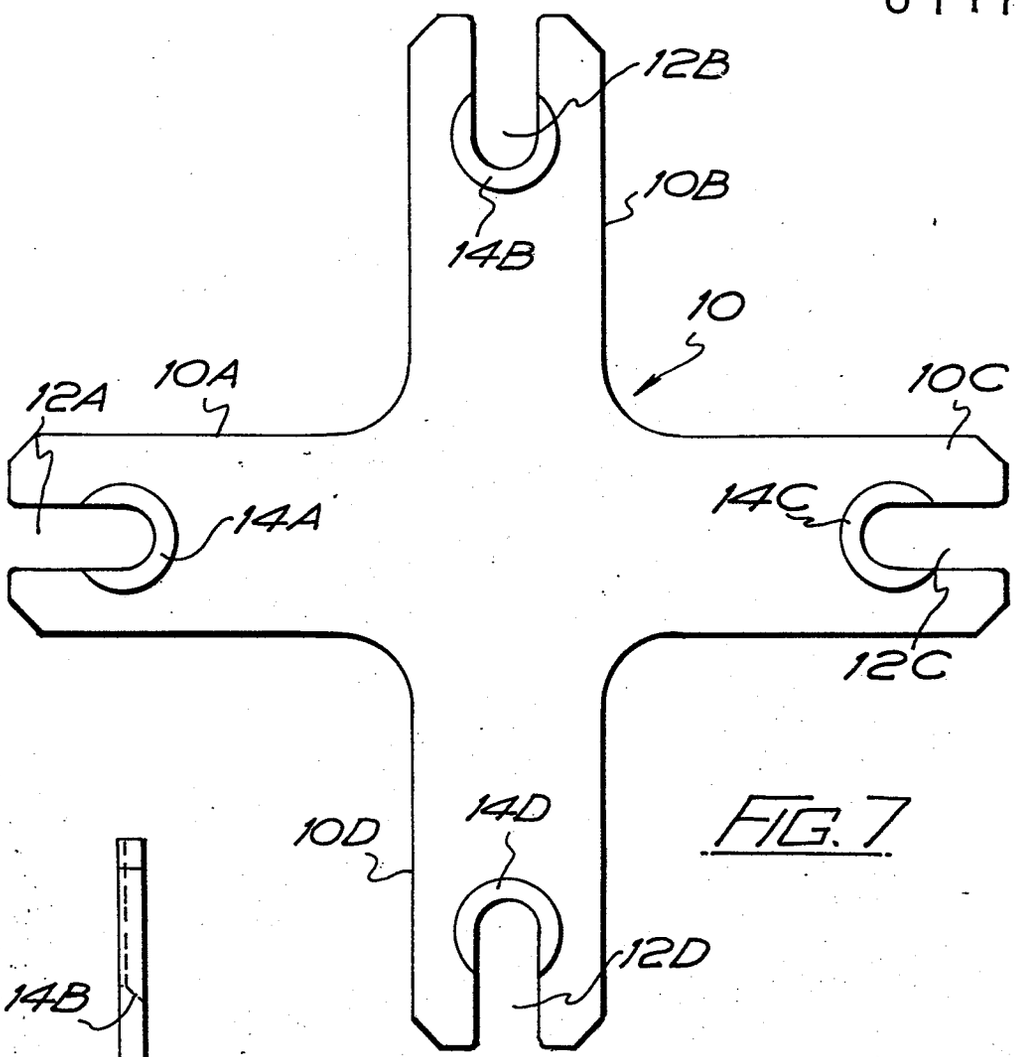

FIG. 7

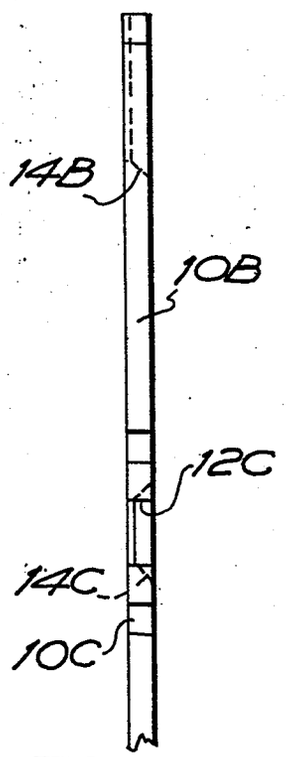

FIG. 8

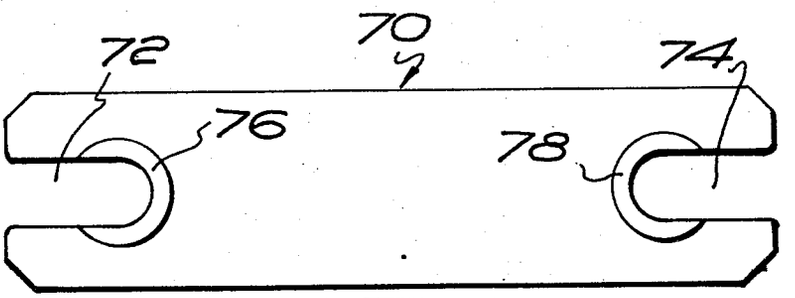

FIG. 9

FIG. 10