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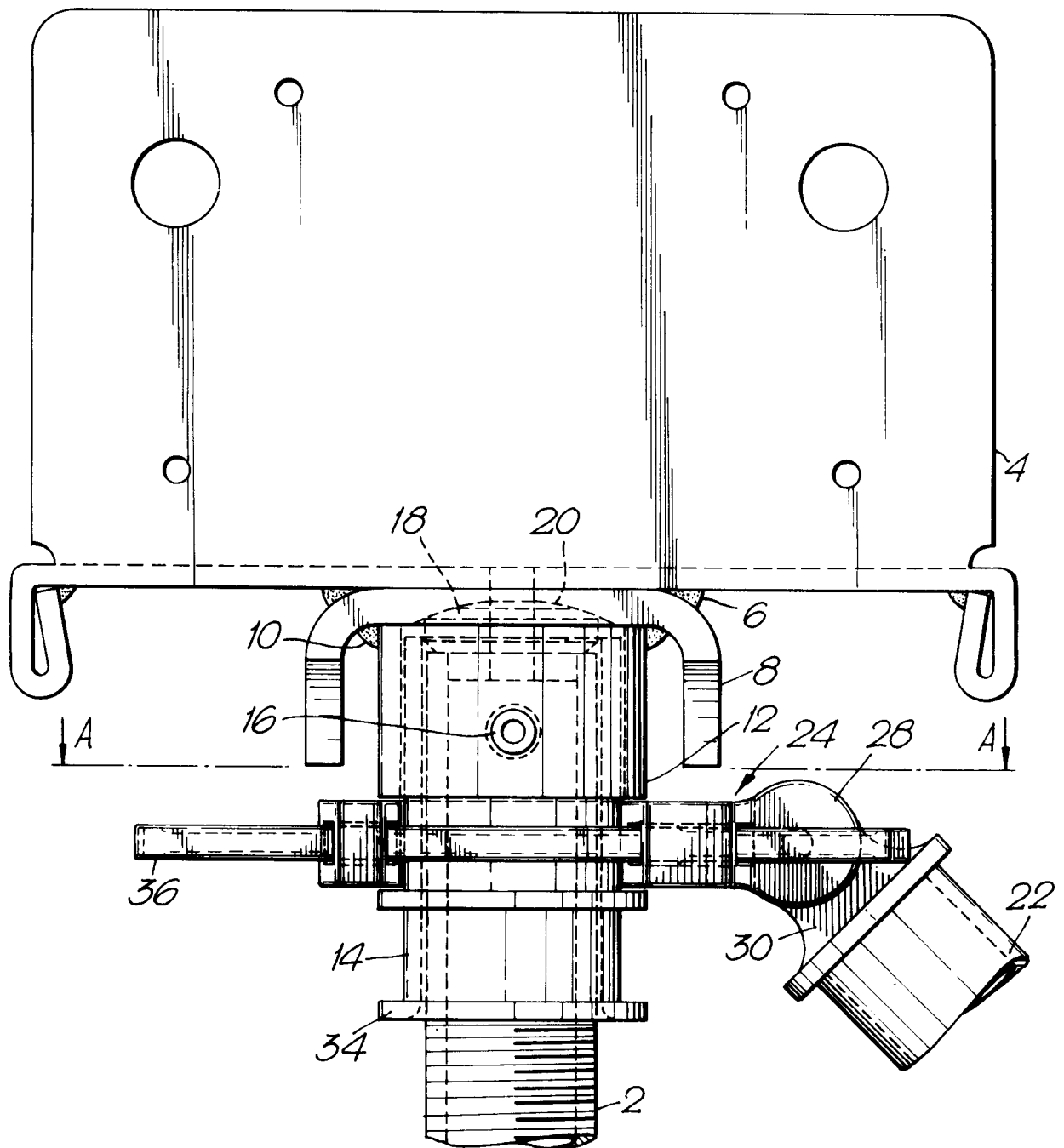
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(54) **Improvements in and relating to Scaffolding structures.**

(57) A scaffolding structure of the type comprising interconnected standards and ledges, at least some of the standards having a jack at the upper end or lower end thereof is described. Means for attaching an adjustable length brace (22) between a jack and an adjacent standard is provided. The attachment means (24) is connectable to the brace, preferable by a pivotal connection, and is in the form of a clamp (26) which is releasably securable around the jack. The need to provide a mount on the jack with suitable apertures or lugs therein for connection of a brace thereto is obviated.

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Fig.1.



This invention relates to scaffolding structures, in particular to scaffolding structures to be used as shoring.

Many scaffolding structures comprise a plurality of upright "standard" members, interconnected by generally horizontal cross "ledger" members. The rigidity of structures formed from such interconnected standards and ledgers is increased by the use of diagonally positioned bracing members which triangulate the rectangular framework constructed with the standards and ledgers. Such scaffolding structures will hereinafter be referred to as "a scaffolding structure of the type described". Scaffolding of this type is commonly used, amongst other things, as shoring to support formwork and concrete during construction of concrete structures. When the scaffolding is so used, adjustable jacks are often provided at the upper ends of the standards. The jacks carry support heads which in turn carry the formwork elements. The provision of the adjustable jacks allows the formwork elements to be adjusted to the required level. Adjustable jacks are often also provided at the lower ends of the standards, these jacks being connected to baseplates. The lower jacks permit maintenance of the rectangularity of the framework when it is erected on foundations of irregular levels.

When a scaffolding structure of the type described is to be employed as shoring and therefore adjustable jacks are to be provided at the ends of the standards, bracing is normally required for the adjustable jacks to maximise the strength of the structure by transmitting calculated and notional shear forces to supporting foundations or anchorages and to maintain its rigidity. The braces are secured at one end to a jack and at the other to an adjacent standard at a connection between that standard and one of the ledgers attached thereto. Generally it is not necessary to brace every jack and, for example, in a scaffold frame of several bays, one or more braces may be used to resist the aforementioned forces. The amount of bracing required is usually dependent upon the loading which the scaffolding structure is to support and in some situations where the loading is high a larger number of braces will be required overall and not only will all the jacks near to the corners of the structure need to be braced but also the jack at the corner, and perhaps those adjacent, may need to be braced to two standards.

Fixed-length braces have in recent years generally been provided at their ends with transverse pins whereby they are secured between adjacent ledgers and standards, the connectors for which are provided with holes for receiving the pins. Some sort of latching mechanism is provided, either on the brace or on the standard/ledger connector, to hold the transverse pins in the holes. This type of pin attachment fitting has also been employed with adjustable length braces and accordingly it has been necessary to provide

location holes for the pins on the jacks. One way of achieving this has been to provide a collar carried on the jack at the end thereof adjacent to the support head, or baseplate as appropriate, to which is welded four lugs 90° apart, the lugs each defining an aperture for receiving a brace pin. An arrangement of this type is described in GB Patent No. 1599646.

This known arrangement has a number of drawbacks. Firstly, the collar and lugs employed to allow connection of the adjustable length braces to the jacks is relatively heavy and increases significantly the weight of the jack which has to be manhandled during erection and dismantling of a structure. For this reason, if a particular jack does not need to be braced, no collar is provided for it. However, this means that the men erecting a particular scaffolding structure have to decide during erection which jacks require to be braced. Accordingly very good planning and supervision is required, the lack of which can lead to the structure being insufficiently braced. It is not possible to correct this without dismantling the structure and adding in jacks with collars attached thereto in the appropriate places. Furthermore, it is also not possible after erection of a structure to add further braces thereto if unexpected extra loading occurs without dismantling the structure.

Another disadvantage of this known arrangement is that once one jack has been connected to a collar the location on which another jack can be connected thereto is fixed. The use of transverse pins and lugs, whose apertures are parallel to the jack axis, means that the adjustable length braces can only be attached at one angular orientation to the vertical. This lack of freedom can cause the introduction of eccentricities and consequent secondary stresses into the system if the braces are not set at exactly the right length for a particular location. The secondary stresses arise on connecting a brace of incorrect length between a jack and an adjacent standard since it will either tend to pull the standard and jack together or force them apart.

It is important that the length of the adjustable braces be correctly set if the introduction of eccentricities into the structure and consequent secondary stresses is to be avoided.

One known type of adjustable brace described in GB Patent No. 1599646 comprises two tubes one of which is telescopically received in the other. A clamp-type arrangement is provided for securing the tubes together in the desired relative location. The clamp, which is a separate part, is tightened by use of a spanner. The arrangement does not allow for rapid and simple adjustment of the brace length, in particular if a brace length has been incorrectly set, it is necessary to release the clamp, readjust the length and tighten the clamp again. The arrangement relies on friction to prevent relative movement of the two tubes and this means that the loading must be less than that which

will cause slippage.

In a second known system the brace comprises two tubes connected by a turnbuckle. With this arrangement, turning the turnbuckle to move the tubes relative thereto a certain distance, results in an overall change in length of the brace of twice that distance. Therefore, with this arrangement it is again difficult to achieve fine, controlled adjustment of the length of the brace and it is very easy to reduce the length of the brace to too great an extent, pulling the standard and jack away from the vertical and introducing sheer forces on the structure.

It is an object of the invention to overcome one or more of the problems associated with known scaffolding systems outlined above.

In accordance with one aspect of the present invention, a scaffolding structure comprises interconnected standards and ledgers, at least some of the standards being provided at the upper end and/or the lower end thereof with a jack, and at least one adjustable length brace extending between a jack and an adjacent standard, the brace being provided with means for attaching it to the jack, characterised in that the attachment means is a clamp releasably securable around the jack to connect the brace thereto.

In accordance with another aspect of the invention an attachment means for use in a scaffolding structure which comprises interconnected standards and ledgers, at least some of the standards being provided at the upper end and/or the lower end thereof with a jack, the attachment means serving to attach a brace to one of the jacks characterised in that the attachment means comprises a clamp which is connectable to the brace and releasably securable around the jack.

The advantage of this is that by providing attachment means on the brace which attach the brace to the jack by being secured around the jack, the need for a member on the jack with apertures therein is avoided. The problems found with the known arrangements discussed above are therefore obviated. In particular, the requirement for very careful pre-planning as to where braces should be provided is dispensed with since a brace can be readily added to any jack without having to dismantle the structure. Once the structure is completed and in use, if the amount of bracing required has been under estimated and/or if the loading is greater than anticipated, further jacks can be simply provided.

By this arrangement, the constraint produced by the known use of fixed location lugs on possible brace locations is avoided.

Preferably the attachment means is pivotally connected to the brace. The pivotal connection allows the brace to take up the orientation relative to the vertical necessary to permit its connection to the adjacent standard, no matter at what height the jack is set and without introduction of secondary stresses into the

system even if the brace length is incorrectly set.

A support head or baseplate, as appropriate, is connected to the jack.

In a preferred embodiment, the attachment means comprises a generally C-shaped member dimensioned to fit around the jack, and means for preventing removal of the member from a position located around the jack. Very preferably means are also provided for preventing movement of the member longitudinally along the jack. Alternatively the attachment means and the jack can be arranged to be such a close fit that frictional forces will resist any movement of the attachment means along the jack.

In one form, the means for preventing removal of the C-shaped attachment member comprises a locking member securable between the ends of the C-shaped member. The ends of the C-shaped member are formed with slots dimensioned to form a friction fit with the locking member when it is inserted therein. The locking member may be captively retained on the C-shaped member. This can be achieved by forming ribs or ridges on the C-shaped member which protrude into the slots therein and locate in a recess on one or both faces of the locking member to prevent its removal from the C-shaped member.

The locking member provides a strong connection between the brace and the jack and is simple to use. Suitably it is wedge-shaped. Wedges are employed often in the interconnection of the standard and ledgers of known scaffolding systems and workmen are therefore familiar with such a type of locking member so making the brace attachment means "user-friendly".

The means for preventing the removal of the C-shaped member may alternatively comprise a latch which, in its latched position, extends into the space between the ends of the C-shaped member to prevent removal of the C-shaped member from the jack. The latch is suitably so mounted on the C-shaped member that it is automatically displaced from the latched position when the C-shaped member is being located around a jack and further automatically returns to that latched position once the location of the C-shaped member around a jack is complete. This is preferably achieved by forming the latch in a wedge shape and orientating it to the C-shaped member so that movement of that member towards the jack moves the latch away from the latched position against a spring bias to allow connection of the brace and the jack, the orientation further being such that once the jack and brace are connected, any movement of the jack towards the latch, without release of the latch, tends to increase resistance of the latch to movement away from the latched position. The latch is suitably manually releasable from the latched position.

The advantage of this form is that latching is automatic on movement of the C-shaped member into position around a jack and requires no further action

by the person erecting the scaffolding. Once latched any force on the brace or jack tending to bring the jack against the latch only increases the strength of the connection. Furthermore, vibrations on the system will not cause a loosening of the connection.

Preferably the brace comprises two tubular members, the first tubular member being hollow and having a nut mounted at one end and the second tubular member being formed with an external screw thread which mates with the nut threads, the second member being dimensioned so that it can be moved into and out of the first tubular member. The nut is suitably mounted by a rectangular hollow section secured to the end of the first tubular member, which captively retains the nut but which allows the nut to move therein to a limited extent.

The screw connection between the two brace members allows for very accurate adjustment of the length of the brace. Furthermore adjustment can be readily carried out with the brace in position. To adjust the length all that is necessary is to hold either the nut or the screwed stem and turn the other. This is a straightforward operation and therefore it is more likely that the brace length will be accurately set by the scaffold erector. The freedom of movement of the nut within the rectangular hollow section means that, if perchance the length is not exactly adjusted and the jack/standard is pulled out of the vertical, the nut can move slightly to bring these back to a vertical position and so prevent sheer forces on the scaffolding structure.

To prevent movement of the brace attachment means along the jack, the jack is provided with one or more flanges at the end adjacent the support head or baseplate. These flanges may be provided on a sleeve carried on the jack. It is possible to make the sleeve and flanges relatively light-weight, much less than the known collar and lugs, and accordingly their self-loading effect on the scaffolding structure is not significant. A sleeve can therefore be provided on every jack so that one or more braces can be connected to that jack as required either during erection or once erection is complete. Thus if the bracing is not sufficient, further braces can be added without dismantling the scaffolding structure. This means that firstly decisions regarding the bracing on initial construction of the scaffolding structure are not so crucial and secondly unforeseen changes of loading can be accommodated easily.

The support head, or baseplate, is preferably able to rotate relative to the jack on which it is carried around a horizontal axis. This can be achieved by making the contacting regions of the support head, or baseplate, and the jack in the form of mating correspondingly curved surfaces.

The invention will now be further described with reference to the accompanying drawings in which:

Figure 1 is a side-view of the upper end of a jack

and interconnected adjustable brace forming part of a scaffolding structure in accordance with the invention;

Figure 2 is an end view of the jack and brace of Figure 1;

Figure 3 is a section taken along the line A-A of the jack and brace of Figure 1;

Figure 4 is a similar view to Figure 3 but from the other side and with the jack omitted for clarity;

Figure 5 is a view from below of the brace and attachment means of Figure 4;

Figure 6 is a side view of an alternative form of brace attachment means;

Figure 7 is a plan view of the brace attachment means of Figure 6;

Figure 8 is a side-view of the brace of Figure 1, and,

Figure 9 is a top view of the brace of Figure 8.

Figure 1 shows the upper end of the screwed stem 2 of an adjustable jack connected to a standard of a scaffolding structure of the type described. Carried on the screwed stem 2 is a channel-shaped support head 4. The channel-shaped support head 4 may support shoring members, for example shuttering for use in forming concrete floors and the like. The channel-shaped support head 4 is connected by welding, see 6, to a second smaller inverted channel member 8. The second channel 8 is in turn welded, see 10, to a socket sleeve 12.

The upper end of the screwed stem 2 passes through a second sleeve 14 which is dimensioned so that its upper end is a loose fit in the socket sleeve 12. The socket sleeve 12, sleeve 14 and screwed stem 2 are connected together by a roll-pin 16 which passes through aligned apertures in all these parts. The apertures are so dimensioned such that the pin 16 is relatively loosely received therein. A plug 18 is welded into the extreme end of the screwed stem 2, the plug having a convex spherical upper surface. When the parts are connected this convex spherical surface mates with a correspondingly shaped concave surface provided in the channel member 8. Any force on the support head 4 will therefore cause it to rotate around the stem 2 because of the mating plug 18 and concave surface 20, the consequent movement of the socket sleeve 12 being accommodated by the loose pinning thereof to the stem 2. Thus irregularities in the configuration of the form work are automatically adjusted for without introduction of stresses on the stem 2 and hence the standard to which it is connected.

The stem 2 is connected to a brace 22 by attachment means 24 shown more clearly in Figure 3. The attachment means 24 comprises a C-shaped member 26 formed with two protruding lugs 28. The brace 22 has an end fitting 30 welded thereto, which end fitting 30 is formed with an aperture extending therethrough transversely to the axis of the brace 22. The brace 22

is secured to the attachment means 24 by passing a pin 32 through apertures in the lugs 28 and that in the end fitting 30. The brace 22 is therefore able to pivot relative to the attachment means 24.

The C-shaped member 26 is dimensioned to fit around the jack 2 and its concave surface is dimensioned to form a close fit with the lower portion of sleeve 14. Sleeve 14 is provided with flanges 34 and C-shaped member 26 is located around the sleeve 14 between a pair of these flanges 34. The flanges 34 serve to prevent movement of the C-shaped member 26 longitudinally along the stem 2.

Means are provided to prevent removal of the C-shaped member 26 from a position located around the sleeve 14 and stem 2.

In the embodiment of Figures 1-5, removal of the C-shaped member 26 is prevented by a locking member which comprises a shaped block, 36 or 38. The ends of the C-shaped member 26 are elongated and formed with appropriately dimensioned slots 40 such that the shaped block 36 or 38, can be inserted there-through and forced into a friction fit with the slot walls to retain the shaped block 36 or 38 in the slots 40.

The shaped block 36 or 38 is captively retained by the C-shaped member 26. This is achieved by forming one of the slots 40 with nibs or ridges 42 which locate in and slide along recesses 44 provided on the faces of the block 36 or 38.

The formation of the blocks 36 or 38 and the way in which they are attached to the C-shaped member 26 is illustrated in Figure 3. The block 36 or 38, is formed by casting an I cross-section suitably shaped member with cross-flanges 46 at one end of the same height as the main flanges and with cross-flanges 48 at the other end of a smaller height. The height of the cross-flanges 48 is arranged to be slightly less than the distance between the nibs or ridges 42. The casting process is arranged so that an ingate is provided at the cross-flanges 48 which results in a protruding piece of metal 50 remaining there after casting. The block 36 or 38 is then fettled but without removal of the protruding piece of metal 50 adjacent smaller cross-flanges 48. The block is then as illustrated in Figure 3. The smaller cross-flanges 48 are passed between the nibs or ridges 42 provided on the C-shaped member 26 and the protruding piece of metal 50 is then hammered upwards to increase the size of the flanges 48 until they are of approximately the same dimensions as the flanges 46. This final step makes it impossible to remove the block 36 or 38 from the C-shaped member 26.

In the form shown in Figures 1 to 3 the block is in the shape of a wedge 36. In a second form, shown in Figures 4 and 5, the block is triangular. In either case, as is illustrated in the Figures, when the shaped block 36 or 38 is inserted into the slots 40 an edge thereof abuts the sleeve 14 so that a strong connection is produced between the C-shaped member 26 and the

sleeve 14 which prevents rotation of the C-shaped member 26 relative to sleeve 14.

In most scaffolding systems shaped blocks are employed to connect the standards and ledgers in particular wedge shaped blocks, and therefore workmen are familiar with them. Accordingly this makes the above described arrangement "user-friendly" and very likely to be operated properly in practice. The shaped block is very strong as is the connection produced by its use.

In the embodiment of Figures 6 and 7 removal of the C-shaped member 26 from a jack 2 is prevented by a latch 52. The C-shaped member 26 in this case has only one end thereof extended namely that adjacent the lugs 28. The latch 48 is carried between the extended end and a cover 54 welded thereto by a pivot pin 56 mounted between the end and cover 54. The latch 52 is biased by a spring 58 into the position shown in Figure 6. In this position an angled section 60 of the latch 48 extends across the mouth of the C-shaped member 26. When the C-shaped member 26 is positioned around the sleeve 14 and stem 2 of a jack, the sleeve 14 rides up the face 62 of the angled section 60 of the latch 52 and pushes the latch 52 sideways against the bias of the spring 58 until the sleeve 14 passes the extremity of the angled face 62. The spring 58 then causes the latch 52 to move back into the position shown in Figure 6 in which the angled section 60 will abut against the sleeve 14 and stem 2 so preventing its removal from the C-shaped member 26. Any attempt to pull the sleeve 14 and stem 2 out of the C-shaped member 26 will tend to pull the angled section 60 against the spring bias.

To remove a stem 2 from the C-shaped member 26 in the embodiment of Figures 6 and 7, manual pressure is applied against a pusher plate 64 provided on the latch 52 on the opposite side thereof from the angled section 60. This causes the latch 52 to pivot around pin 56 opening the mouth of the C-shaped member 26.

The C-shaped member 26 of the embodiment of Figures 6 and 7 may be formed by forging. The extended end is suitably hollowed out and the latch 52 and pin 56 affixed thereto prior to welding the cover 54 which has a U cross-section in place. Loading from the pin 32 is therefore transferred to the hook portion of the C-shaped member 26 by way of a solid metal section integral therewith.

The advantage of the form of locking member shown in Figures 6 and 7 is that locking of the C-shaped member 26 to a jack 2 is automatically effected by locating the C-shaped member 26 around the sleeve 14 at the head of the jack. A further advantage of this form is that there is no danger of the connection releasing due to vibration. Moreover any attempt to pull the jack 2 out of the C-shaped member 26 without manually releasing it, only serves to increase the latching force.

It will be appreciated that, by the use of either embodiment of the C-shaped attachment means 26, a brace 20 can be attached to any jack in a scaffolding structure without the need for the collar and lugs of the known systmes so that bracing can be provided as and when required. Moreover, as noted above, the pivot connection between the C-shaped member 26 and a brace 20 allows the brace to be positioned at any orientation relative to the jack dictated by the jack length.

The sleeve 14 is shown in the Figures as having two flanges 34. The two flanges 34 together with the socket sleeve 12 provide two locations for the attachment means 22. Further locations can readily be provided by extending the sleeve 14 and forming further flanges 34 thereon. However, generally it will necessary only to attach at most two braces 20 to a particular jack. The sleeve 14 therefore can be relatively light. As a result of this, each jack in the scaffolding structure can be readily provided with the sleeve 14.

A preferred form for the brace 20 is shown in Figures 8 and 9. At one end the brace 20 is provided with end fitting 28 which allows connection of the brace 20 to a C-shaped member 26. At its other end the brace 20 is provided with a pin end fitting 64. This pin end fitting 64 comprises basically a transverse pin 66 carried on a mounting 68 and having therein a sprung loaded latch member 70. The end fitting 64 is arranged so that the pin 66 can be inserted through a hole provided in a ledger end fitting, insertion causing the latch member 70 to be pushed back into the pin 66. Once the pin 66 is completely inserted the latch member 70 is free to protrude from the pin 66 and hold it in position in the hole in the ledger end fitting. This type of end fitting 64, which ensures that the gravity line of the brace is in the same plane as those of the standards and ledgers and is simple and reliable, is described more particularly in GB Patent Application No. 8924624.3. Any suitable type of pin end fitting could be employed but that briefly described above is particularly suitable.

The brace 20 comprises two sections 72 and 74. The first section 72 consists of a hollow tube. The second section 74 consists of a smaller tube, the external surface of which is formed with a screw thread 76. A rectangular hollow section 78 is welded, 80, to the first section 72 of the brace 20.

To assemble the brace a nut 82 is positioned in the rectangular hollow section 78. The nut 82 is formed with internal threads which mate with the external threads 76 of the second section 74 of the brace 20. The second section 74 of the brace 20 is passed through the nut 82 until small holes 84 therein align with larger holes 86 provided in the first section 72 of the brace 20. A roll-pin 88 is passed through holes 86 in the first section 72 and holes 84 in the second section 74 to a position in which it extends across the second section 74 and protrudes slightly therefrom. This

roll-pin 88 prevents removal of the second section 74 from the nut 82 and hence also prevents removal of the nut 82 from the rectangular hollow section 78.

Adjustment of the length of the brace 20 is achieved by holding either the nut 82 or the second section 74 of the brace 20 and turning the other. Suitably the nut 82 can be formed with a knurled surface so that it can be gripped by a spanner whilst the second section 74 of the brace 20 is turned. A suitable way of achieving the correct length is to roughly adjust the length of the brace as described above and then connect it to a jack. The nut 82 is then held and the stem 74 turned to give an exact adjustment, before attaching the brace to the appropriate standard via the connection thereof to a ledger.

It will be appreciated that because of the nature of the connection between the two sections 72 and 74 of the brace 20 by way of mating screw threads a very fine and accurate adjustment of the length of the brace 20 can be achieved. Furthermore, there are no loose parts which have to be tightened up when a desired length is achieved as in known arrangements so it is more likely that a workmen will accurately set the length of the brace 20. The loads which can be supported are much greater than the known arrangement which relies on frictional forces. However, even if the brace length is not exactly set and for example the jack and adjacent standards are pulled towards each other out of the vertical, the nut 82 is free to move within the hollow rectangular section 76 to an extent and will do so to try and restore the jack and adjacent standard to a vertical position and hence avoid stress on the scaffolding structure.

In an alternative form the rectangular hollow section is dispensed with and the nut 82 is simply welded to the end of the first section of the brace 20. This arrangement does not have the facility to self-adjust if the length has been slightly incorrectly set but it is simpler to produce and will give satisfactory results in, particular, it will allow fine adjustment of the brace length.

It will be appreciated that the terms "standard" and "ledger" employed herein do not necessarily connote respectively vertical and horizontal tubular members, the invention being equally applicable to other forms of vertical and horizontal members including horizontal frames consisting of two spaced, parallel beams connected by diagonal bracing.

Claims

1. A scaffolding structure comprises interconnected standards and ledgers, at least some of the standards being provided at the upper end and/or the lower end thereof with a jack, and at least one adjustable length brace extending between a jack and an adjacent standard, the brace being pro-

vided with means for attaching it to the jack, characterised in that the attachment means is a clamp releasably securable around the jack to connect the brace thereto.

2. A scaffolding structure as claimed in Claim 1 wherein the attachment means is pivotally connected to the brace.

3. A scaffolding structure as claimed in Claim 1 or Claim 2 wherein the brace comprises two tubular members, the first of which has a screwed nut mounted at one end thereof and the second of which is dimensioned so that it can be moved into and out of the first tubular member and has an external screw thread which mates with the nut threads.

4. A scaffolding structure as claimed in any preceding claim wherein the jack carries a support head or a baseplate at one end thereof, the jack being provided with at least one flange at the end thereof adjacent to the support head or baseplate.

5. A scaffolding structure as claimed in Claim 4 wherein a sleeve surrounds the jack, the flange(s) being carried on the sleeve.

6. A scaffolding structure as claimed in Claim 4 or Claim 5 wherein the support head or baseplate can rotate relative to the jack around a horizontal axis.

7. Attachment means for use in a scaffolding structure which comprises interconnected standards and ledgers, at least some of the standards being provided at the upper end and/or the lower end thereof with a jack, the attachment means serving to attach a brace to one of the jacks characterised in that the attachment means comprises a clamp which is connectable to the brace and releasably securable around the jack.

8. Attachment means as claimed in Claim 7 wherein the clamp is pivotally connectable to the brace.

9. A scaffolding structure as claimed in any one of claims 1 to 6 or attachment means as claimed in either Claim 7 or Claim 8 wherein the attachment means comprises a generally C-shaped member dimensioned to fit around the jack and means for preventing the removal of the C-shaped member from a position located around the jack.

10. A scaffolding structure or attachment means as claimed in Claim 9 wherein the means for preventing the removal of the C-shaped member

comprises a locking member securable between the ends of the C-shaped member.

11. A scaffolding structure or attachment means as claimed in Claim 10 wherein the ends of the C-shaped member are formed with a slot dimensioned to form a friction fit with the locking member when it is inserted thereto.

12. A scaffolding structure or attachment means as claimed in Claim 9 wherein the means for preventing removal of the C-shaped member comprises a latch carried thereon which, in its latched position, extends into the space between the ends of the C-shaped member a distance sufficient to prevent removal thereof from a jack.

13. A scaffolding structure or attachment means as claimed in Claim 12 wherein the latch is so dimensioned and arranged that it is automatically displaced from the latched position when the C-shaped member is located around a jack and automatically returns to the latched position once location of the C-shaped member around the jack is complete.

14. A scaffolding structure or attachment means as claimed in Claim 12 or 13 wherein the latch is manually releasable from the latched position.

15. A scaffolding structure or attachment means as claimed in any one of Claim 12 to 14 wherein the latch comprises a plate pivotally mounted to the C-shaped member and biased by a spring into a position in which an angled portion thereof extends into the space between the ends of the C-shaped member.

Fig.1.

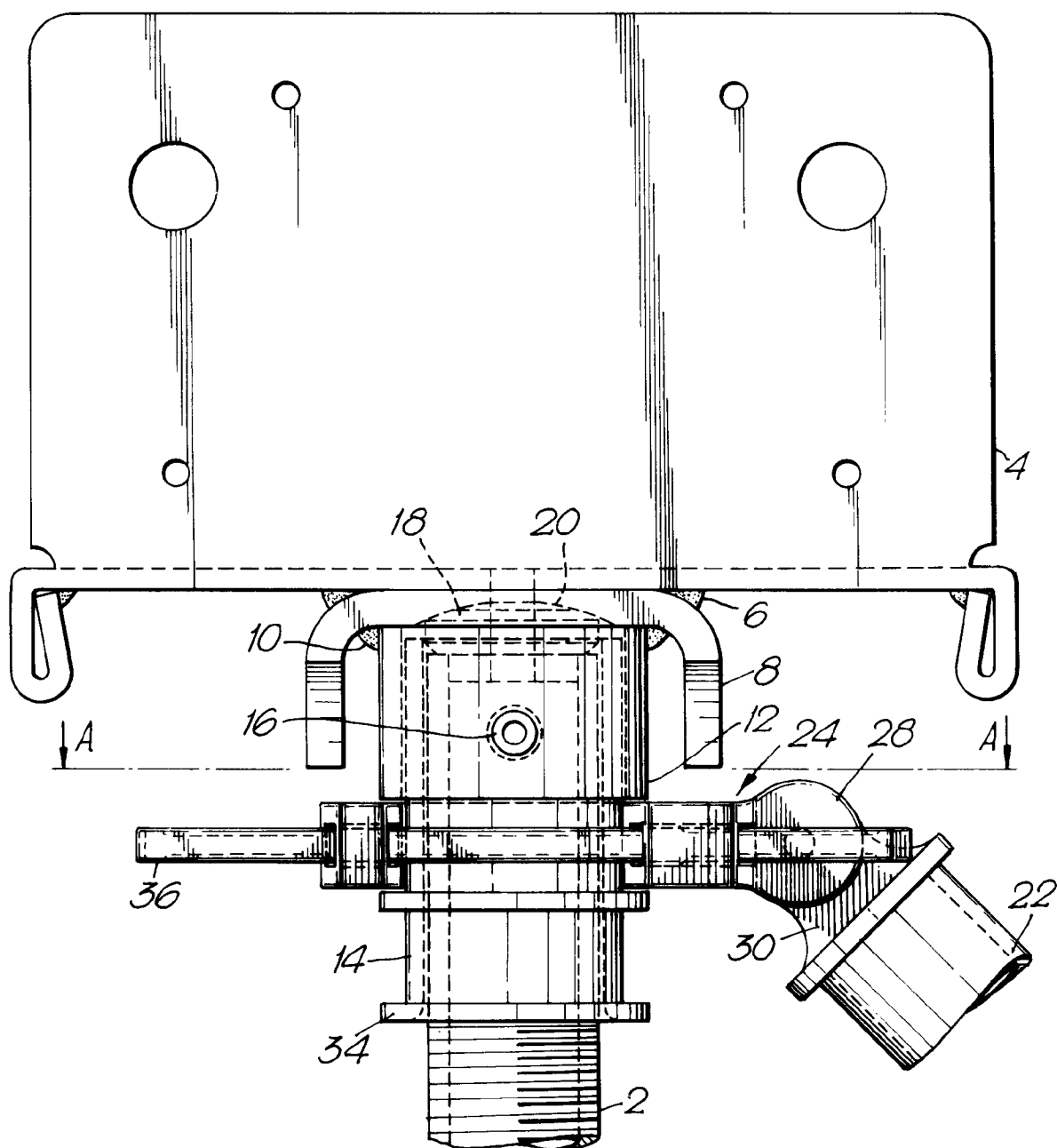
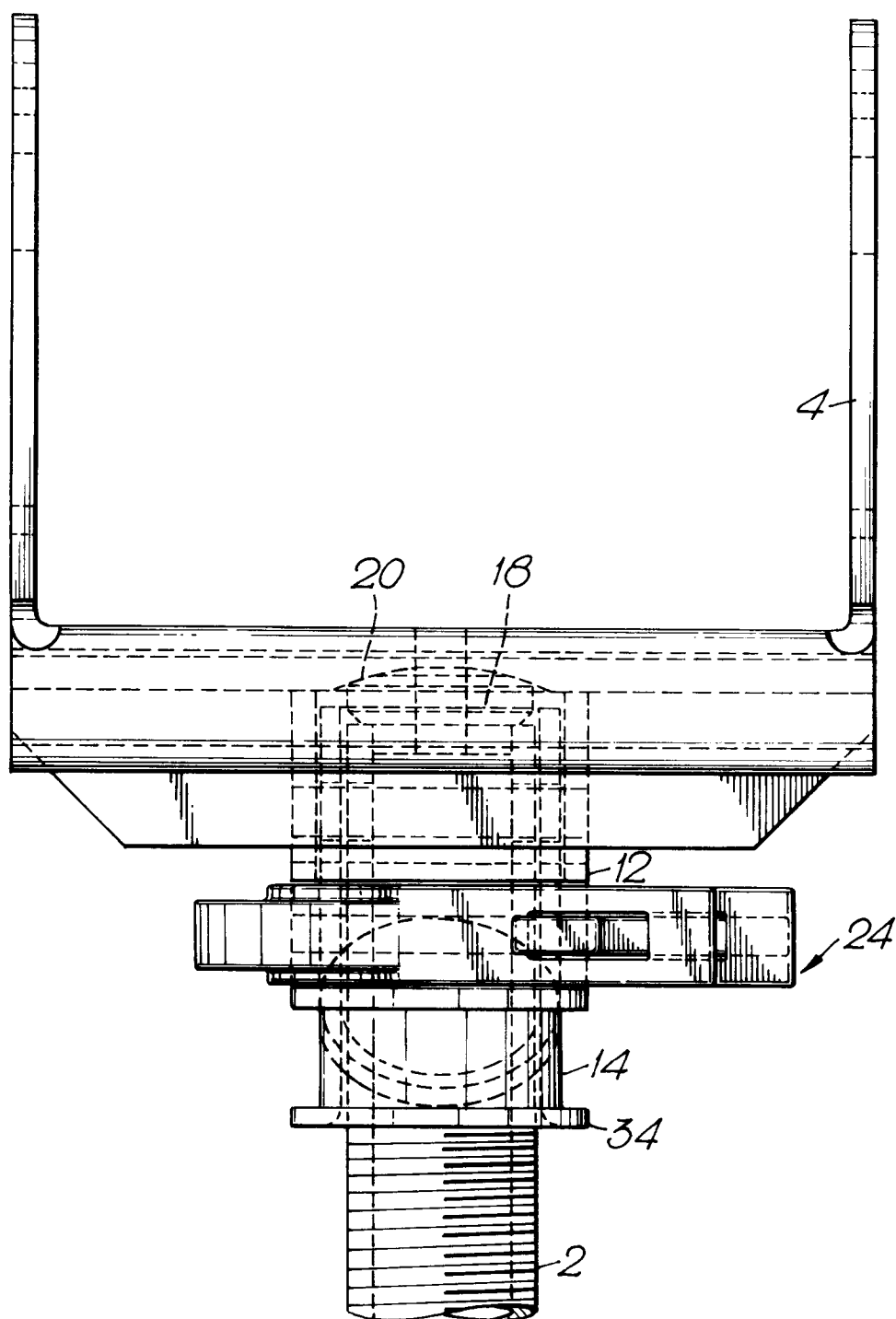


Fig.2.



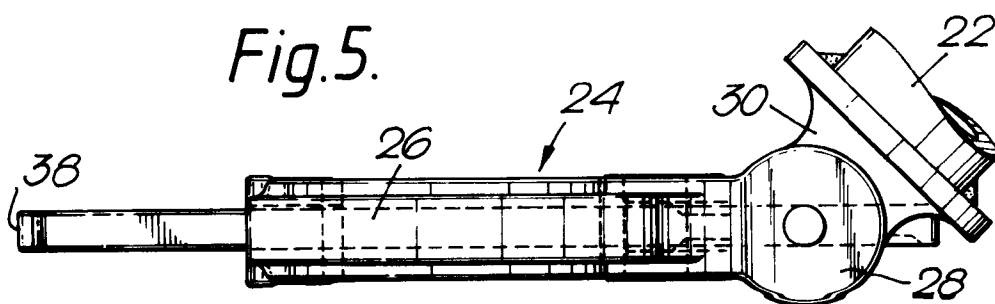
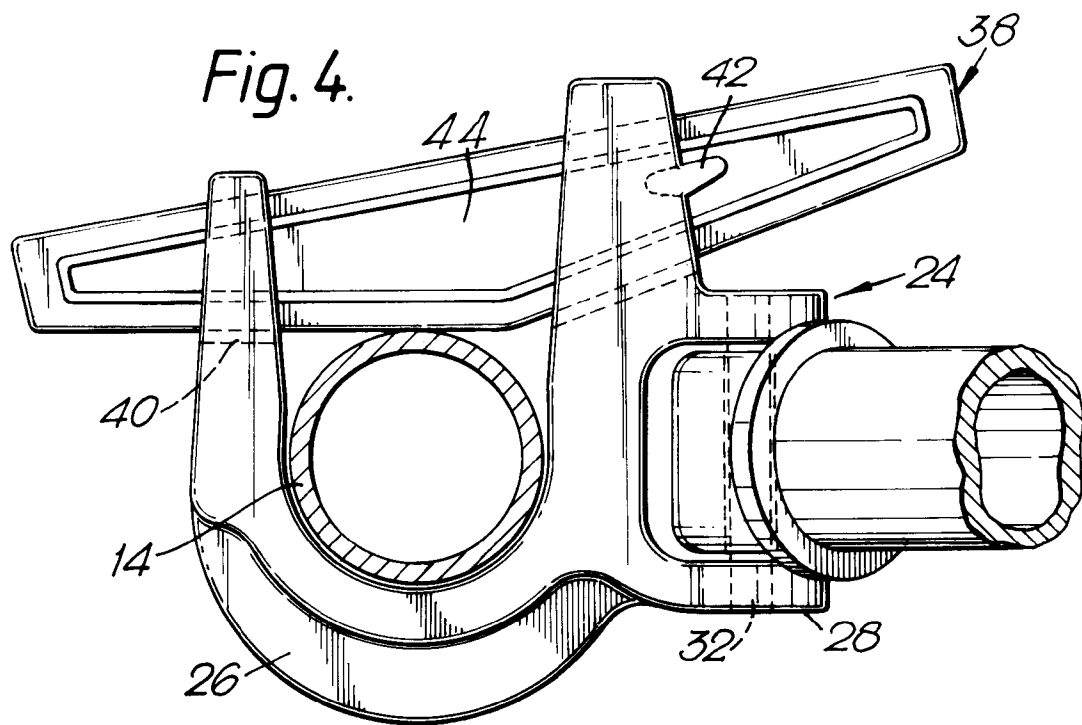
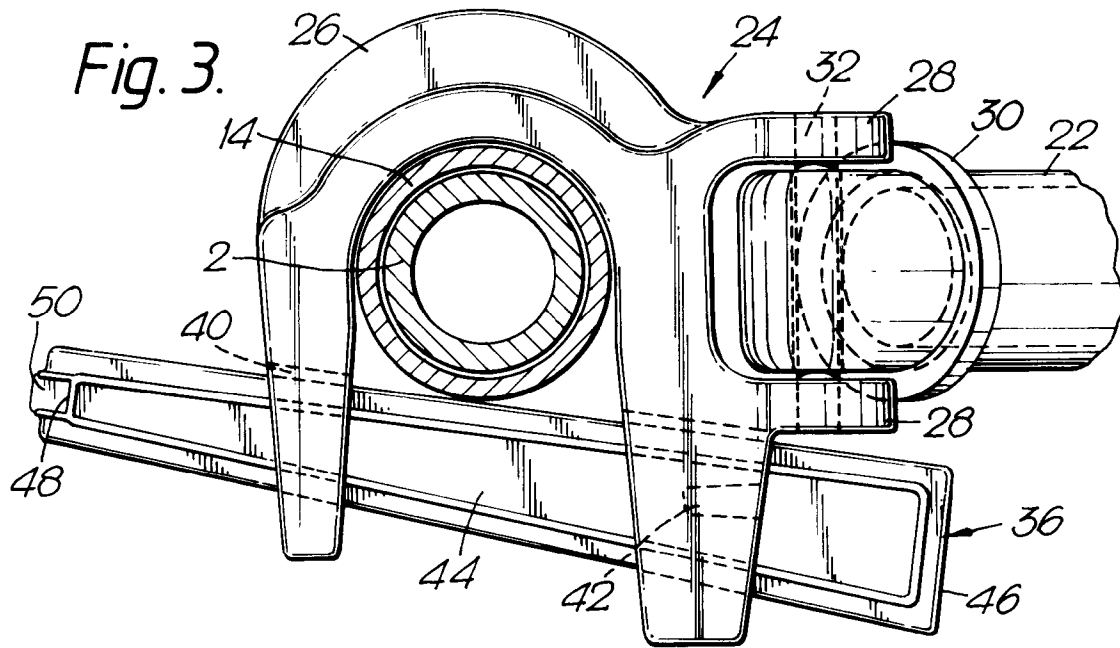


Fig. 6.

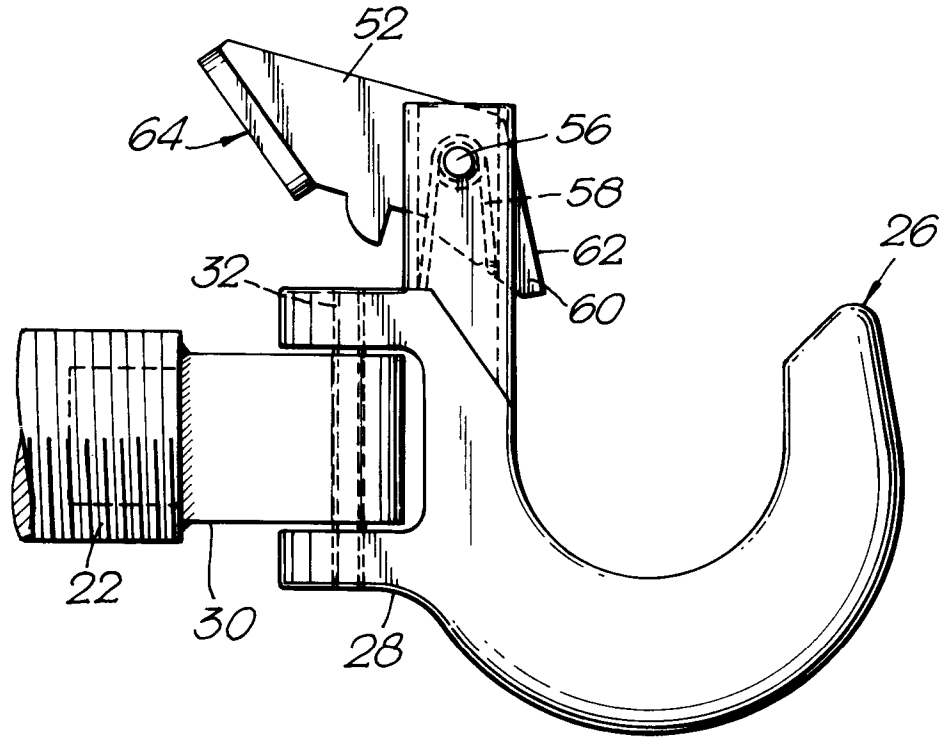
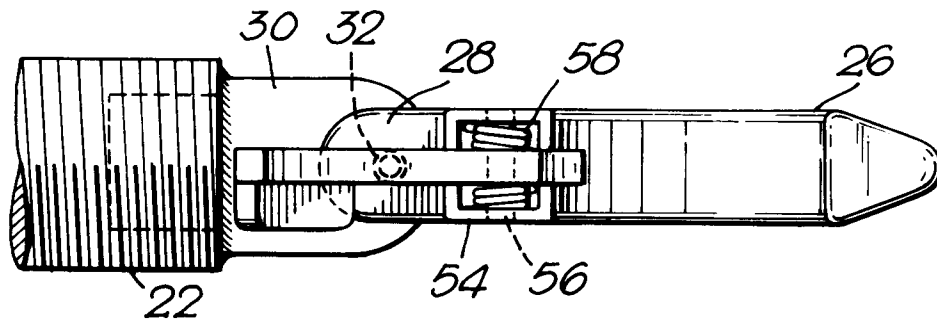
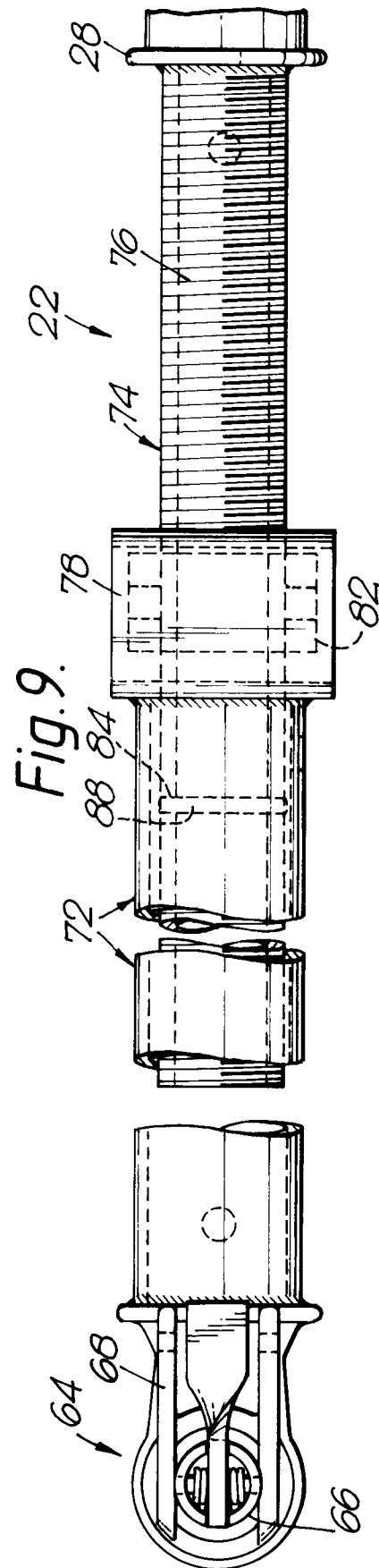
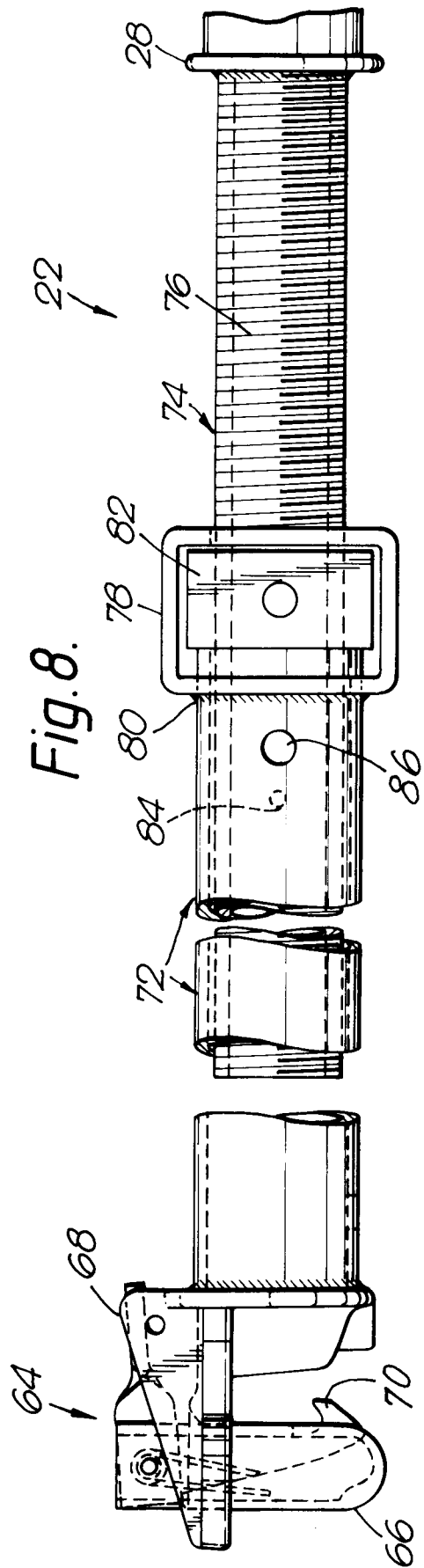


Fig. 7.







European Patent
Office

EUROPEAN SEARCH REPORT

Application Number

EP 91 30 7826

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
X	GB-A-1 535 326 (GKN MILLS BUILDING SERVICES) * page 2, line 130 - page 3, line 55; figures 1-5 *	1,2,7,8	E04G11/48 E04G1/16
A	GB-A-864 729 (R. D. WERNER CY) * page 2, line 41 - page 3, line 100; figures 1-10 *	3	
A	GB-A-2 143 272 (SCAFFOLDING (G.B.) LIMITED (U.K.)) * the whole document *	4,6	
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The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 28 NOVEMBER 1991	Examiner VIJVERMAN W.C.
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document I : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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