Sept. 8, 1959 M. F. D'HAVELOOSE 2,903,226

METALLIC PROPS

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Fig.2.

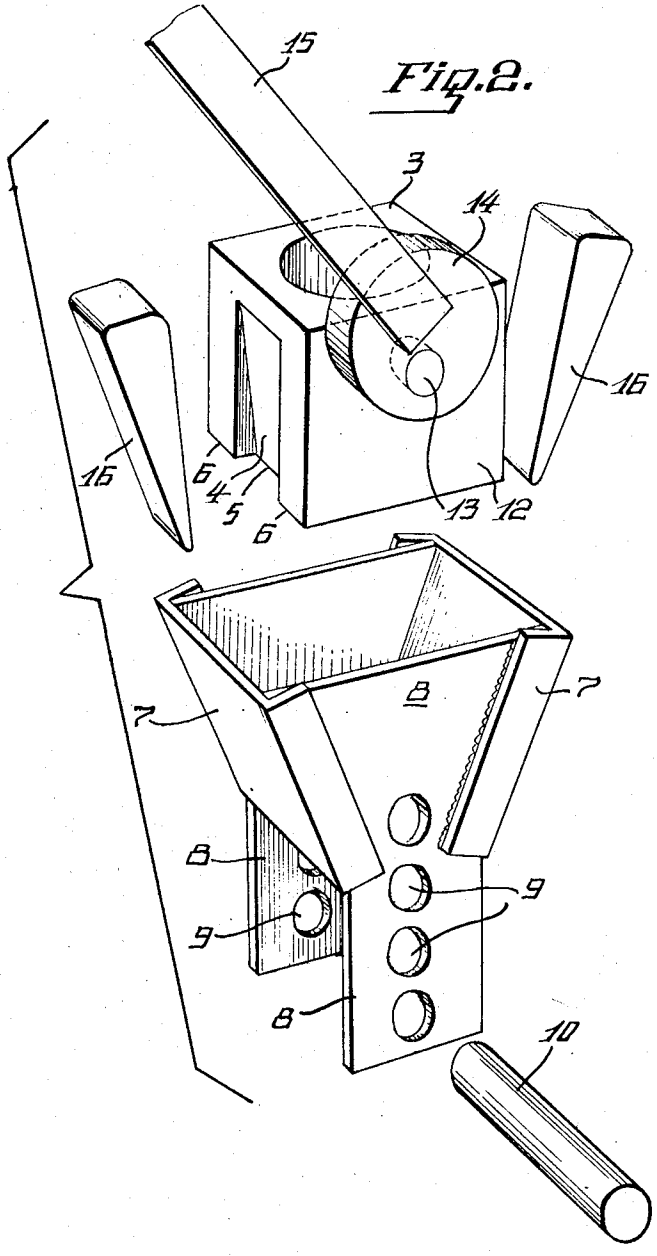
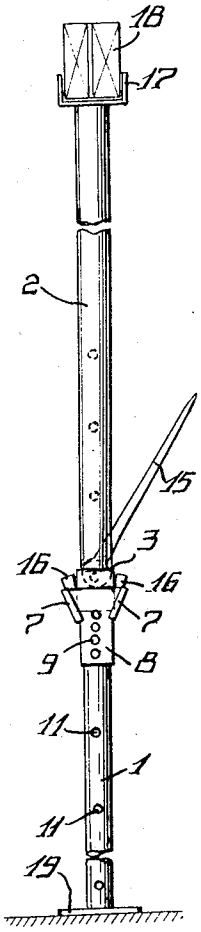


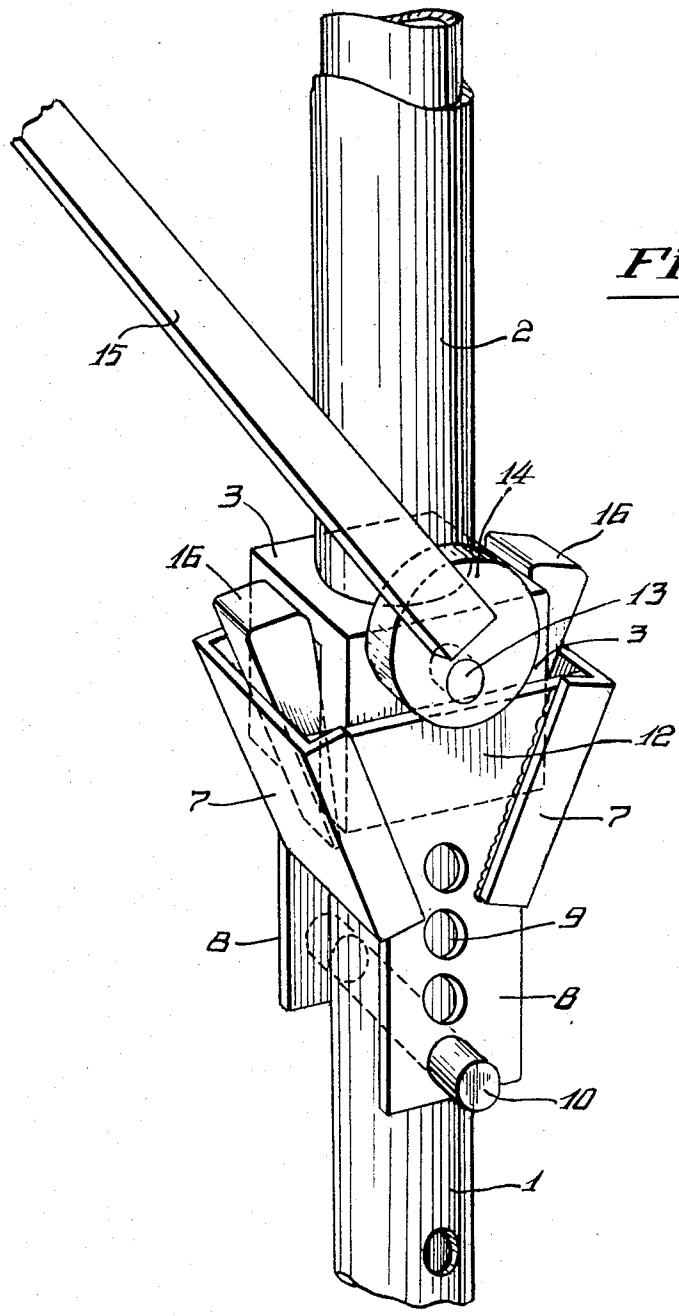
Fig.1.



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Fig. 3.



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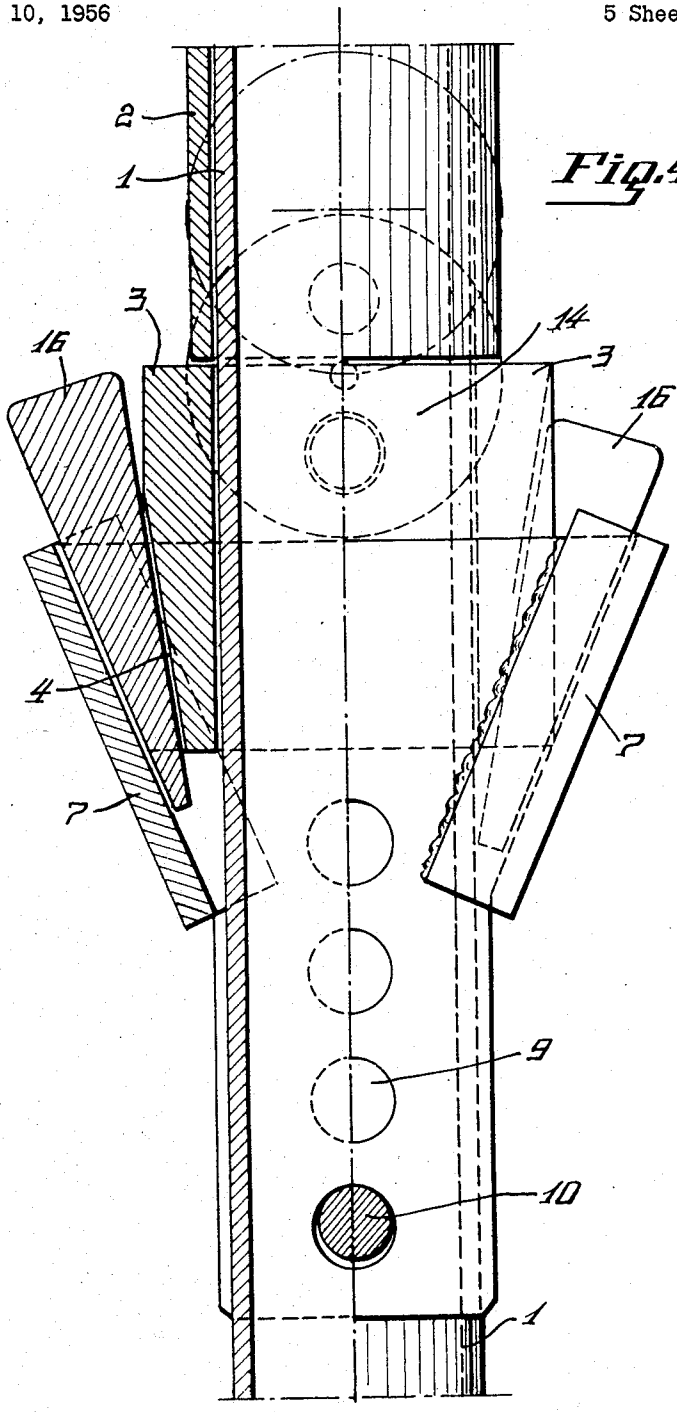


Fig. 4.

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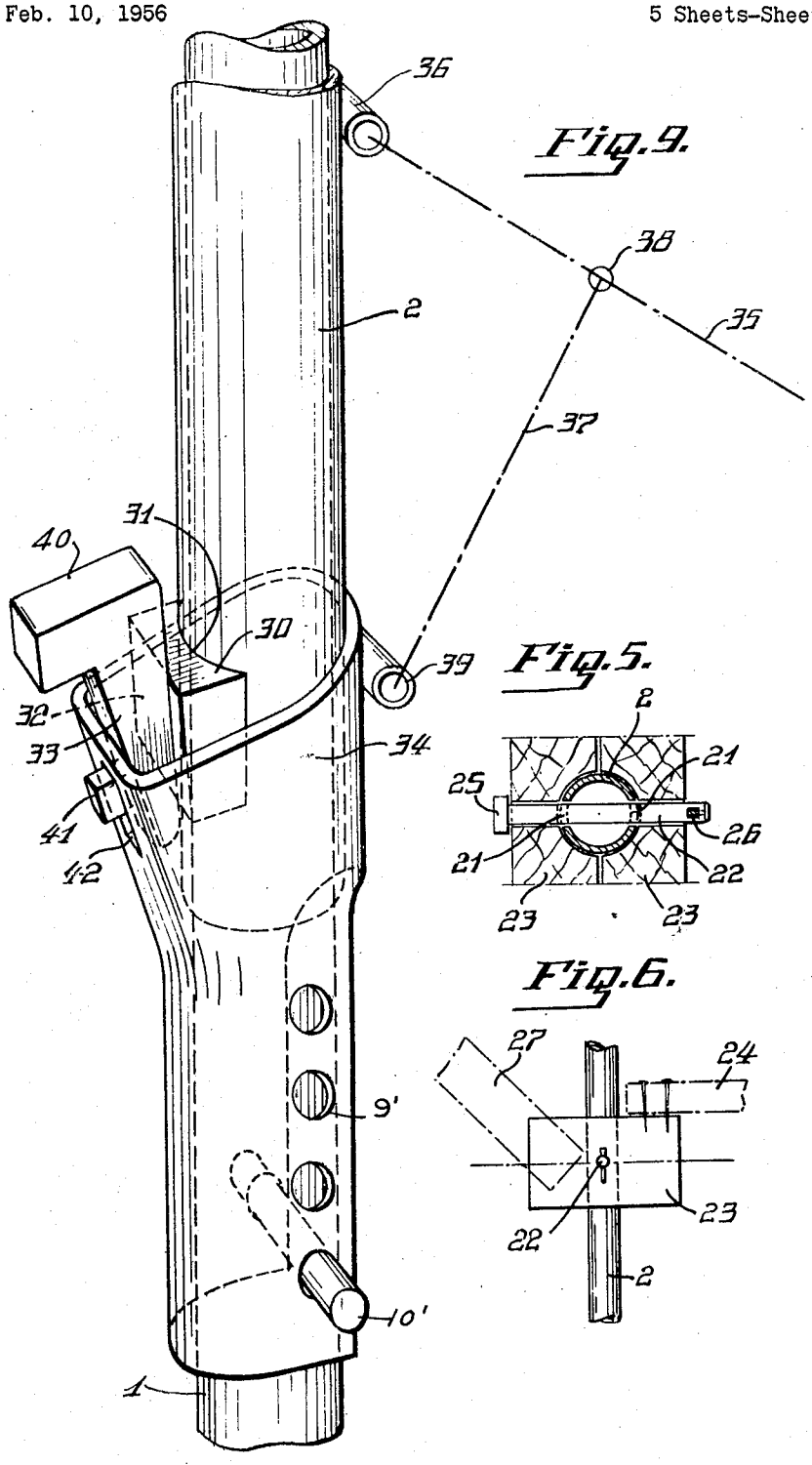


Fig. 9.

Fig. 5.

Fig. 6.

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Fig. 8.

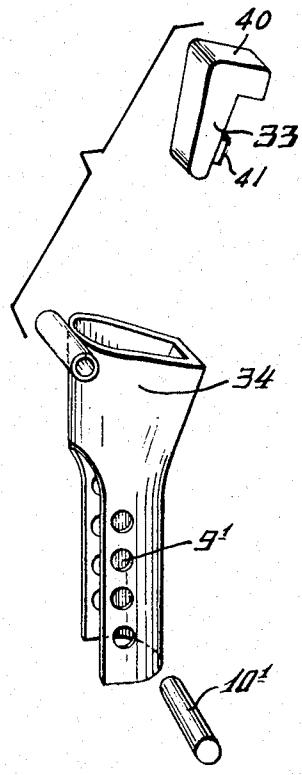
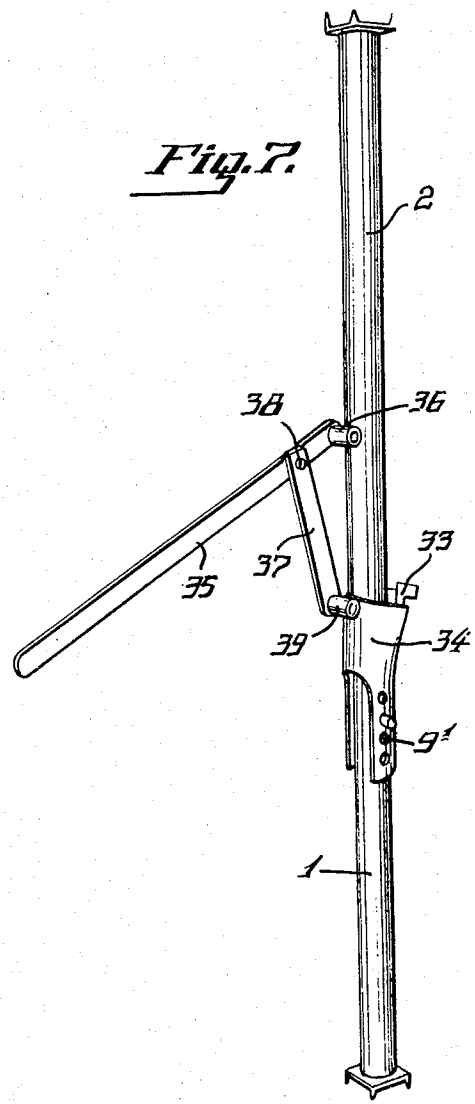


Fig. 7.



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METALLIC PROPS

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Application February 10, 1956, Serial No. 564,806

Claims priority, application Belgium February 14, 1955

6 Claims. (Cl. 248—354)

This invention relates to adjustable props such as pit-props with telescopic tubes and its object is to provide a prop of very great strength and simple construction and which is very economical and requires practically no maintenance.

The props under consideration are of the "light" type which prevent sliding with friction braking and which support loads permanently.

A prop in accordance with the invention is distinguished essentially by the fact that a lower tube is slidingly engaged inside an upper tube and by the feature that there is mounted, on the lower tube, a locking device which secures an approximate lift (coarse adjustment), while the fine adjustment under load is obtained by the action of a removable device with an eccentric head and, on the other, with the pusher member.

In order to facilitate an understanding of the invention, two embodiments thereof will next be described with the aid of the accompanying drawings, in which:

Figure 1 is an elevational view of a pit-prop according to the first embodiment;

Figure 2 is an exploded view, showing various members of the pit-prop of Fig. 1;

Figure 3 is a perspective view representing the locking device in the position of use;

Figure 4 is a vertical section showing the locking device;

Figures 5 and 6 show a modification for utilization with the structure in Figs. 1–4;

Figures 7, 8 and 9 show a second embodiment of the invention;

Figure 7 showing the whole of the pit-prop according to the second embodiment;

Figure 8 being an exploded view showing the various members thereof; and

Figure 9 being a perspective view showing the locking device in the position of use.

As shown in Figures 1, 2 and 3, the prop comprises a base tube 1 engaged and sliding telescopically in an upper tube 2 which is carried by a pusher ring 3 forming part of the locking device.

This pusher ring is an element of cubical shape having, on two opposite sides, planar faces 4 which are inclined downwardly and towards the inside of the element in such a manner that the bottom end of the pusher member comprises a receding edge 5 between two end edges 6.

The four bottom edges 6 bear on ramps formed by channel irons 7 arranged in opposing relationship in inclined positions and welded respectively to cheeks 8 forming a part of the locking device and defining holes 9 adapted for accommodating a peg 10. The peg 10 acts as a stay for the whole locking device and is inserted through diametrically opposite holes 11 provided in the tube 1.

The distances between the axes of the holes 9 are equal to half the distance between the axes of the holes 11 made in the tube 1.

The cheeks 8 partially cover the two entirely flat opposite faces 12 of the pusher-ring 3.

The pusher-ring 3 is provided with a stud 13 which is intended to support an eccentric 14 which is operated by a lever 15.

The distance between the axes of the holes 9 also corresponds substantially to the distance of the lift produced by the eccentric 14; in reality, this lift is made very much greater so as to make up for clearance tolerances intentionally used in the manufacture of the device.

When the locking device has been brought to the chosen height and has been fixed by the peg 10 (with a choice of pegging positions determined by the holes 9), the fine and accurate adjustment are effected with the lever 15 which is removable and common to all of the pit-props.

Manual operation of the eccentric 14, which then rests on the previously pegged part of the locking device, urges the pusher-ring 3 against the upper tube 2 and the required micrometric locking is effected by the lowering of two wedges 16, the faces of which come into contact with the inclined faces 4 on the pusher-ring and with the ramps 7.

The relative positions of the wedges 16 and the inclined faces effect a locking without any possible variation in the height of the pit-prop.

It is to be understood that the load or any increase in load on the pit-prop has the effect only of creating greater pressures between the wedges and the ramps without any possible variation in the relative positions thereof. It is even superfluous, once the required height is obtained, that the heads of the wedges be struck even lightly.

The unlocking of the pit-prop after use is effected either by the lever 15, which displaces the relative positions of the wedges and ramps to a very small extent, or by removing the peg 10.

The view of the whole of the pit-prop shown in Figure 1 indicates clearly the arrangement of the telescoping tubes and of the locking device. It is observed that the upper tube 2 is only of the length necessary in accordance with the requirements of the pit-prop and needs no particular machining. It carries, on its upper extremity, either a U-shaped fork 17, which is intended for receiving a load such as one or two planks 18 or a single square plate of thick sheet steel. The base 19, which is placed at the bottom of the lower tube 1, is, in general, a square or circular plate of thick sheet steel.

It is to be understood that, at the maximum height which can be reached by the pit-prop, the lower tube 1 preferably remains engaged, to a reasonable extent, in the upper tube 2.

For exceptional heights, the use of wooden stays between the pit-props may be necessary in order to compensate for inherent displacements and to avoid buckling; the simplest method of achieving this is through connection by wooden battens or other members hereinafter called tie-beams or braces.

The invention comprises a simple and efficacious means for producing these connections between pit-props.

As shown in Figures 5 and 6, the upper tube 2 may be provided at the middle of its length with diametrically opposite holes 21 to receive a peg 22. Peg 22 passes through two symmetrical pieces of wood 23, all the sides of which have nailing surfaces 23 accommodating nails for braces 24 which provide connection between the pit-props.

The peg 22 is fixed in position by a shoulder 25 and by a pin 26. The connection may also be effected with planking by means of butts 27 (Fig. 6).

Figures 7, 8 and 9 show a simplified form of a locking device in which the pit-prop comprises a lower tube 1 and an upper tube 2 which carries, welded thereto direct-

ly, an element **30**. The element **30** has the shape of a parallelepiped with a concave face **31** which is welded to the tube **2**. There is applied to the opposite flat face **32**, a single wedge **33**, the opposite face of which is in contact with the slightly inclined side of the back of an element **34** which forms the body of the locking device. The element **34** is constituted by thick sheet steel. Element **34** has a portion concentric with the tube **2** and which comes into contact with tube **2** opposite to where it is in contact with the wedge **33**. This element **34** is extended downwardly in a U-shaped part having the holes **9'** for a peg **10'**.

The link **35**, which gives the proper height and tensioning to all of the pit-props, is pivoted, at its end, in a sleeve **36** fixed to the upper tube **2**. Lever **37**, which is hinged at pivot **38** to the link **35**, is pivoted in a sleeve **39** that is welded to the locking element **34**.

The wedge **33** has an upper portion **40** which is intended to receive the blows of a hammer or the like; on the face which comes into contact with the locking device **34** there is, in addition, a stud **41** positioned in a groove **42** in the element **34**. For operation, peg **10'** is positioned in a given hole **9'** and lever **35** properly operated to adjust elements **1** and **2**; wedge **40** may then be lodged between elements **30** and **34** to give the structure the fixed desired height.

It is to be pointed out that, in the pit-prop so obtained, the strength of the structure as a whole under service loads is practically unaffected by the locking device.

In Figures 7, 8 and 9, a first means of dismantling is the extraction of the wedge **33** with a light hammer; this is safe by reason of the fact that the pit prop descends only through a distance which is very small. The second means of dismantling of the latter pit-prop consists of removing the peg **10'** simply with a hammer.

What is claimed is:

1. A prop comprising upper and lower telescopically engaging tubes arranged about a substantially vertical axis, a first element for slidably engaging said lower tube, locking means for fixing the position of said first element on said lower tube, a second element on said upper tube to receive forces to elevate the latter, said first element including at least one inclined planar portion for supporting the second element whereby, when said first element is caused to slide upwards on said lower tube, said second element and said upper tube are raised, the inclined planar portion of said first element cooperating with a portion of said second element to form a wedge-like receptacle, fine adjusting means on one of said elements for adjusting the relative positions of said first and second elements and a wedge for engaging in said receptacle for maintaining the relative positioning of said elements obtained with said adjusting means.

2. A prop comprising upper and lower telescopically engaging tubes arranged about a substantially vertical axis, a first element for slidably engaging the lower tube, locking means for fixing the position of said first element on said lower tube, a second element engaged with said upper tube to receive forces to elevate the latter, inclined portions on said elements cooperatively defining a wedge-like receptacle, a fine adjusting means at least in part on one of said elements for adjusting the relative positions of said first and second elements, and a wedge for engaging in said receptacle for maintaining the relative positioning of said elements obtained with said adjusting means.

3. A prop as claimed in claim 2, wherein said lower tube is provided with diametrically opposed holes, said first element defining a series of spaced pairs of holes each pair of which is adapted to correspond with said diametrically opposed holes, comprising a peg for insertion through said diametrically opposed and the holes in the first element corresponding therewith.

4. A prop comprising upper and lower telescopically engaging tubes arranged about a substantially vertical axis; a first element for slidably engaging the lower tube and including inclined planar surfaces, locking means for fixing the position of said first element on said lower tube, a second element engaged with said upper tube to receive forces for elevating the latter, said second element being of substantially cubic shape and having inclined recesses in two opposite vertical faces of the cube, the inclined recesses cooperating with said inclined planar faces of said first element to form a wedge-like receptacle, fine adjustment means on one of said elements for adjusting the relative positions of said first and second elements, and a wedge for engaging in said receptacle for maintaining the relative positioning of said elements obtained with said adjusting means.

5. A prop as claimed in claim 4; said first element comprising an upper portion of U-shaped cross-section, the rounded section of the U engaging said upper tube and the upper portion defining a vertically inclined face with an aperture therein, and a lower U-shaped portion connected to said upper portion, the rounded portion of the latter U engaging said lower tube and the sides thereof defining a series of corresponding holes for accommodating said peg; said second element being a parallelepiped block with a concave face fixed to said upper tube and having an inclined face defining the wedge-like receptacle with said vertically inclined face; said wedge comprising a protruding portion for engaging the aperture in said vertically inclined face.

6. A prop comprising upper and lower telescopically engaging tubes arranged about a substantially vertical axis, an element on the upper tube and having the shape of a parallelepiped with a concave face and a flat face, a second element arranged for slidable engagement with the lower tube, said second element having an inclined face, locking means for fixing the position of said second element on the lower tube, a wedge adapted to come into contact with the flat face of said parallelepiped and said inclined face of said second element, and fine adjusting means on one of said elements for adjusting the relative positions of said first and second elements.

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