United States Patent

Meriz

[15] **3,703,269**

[45] **Nov. 21, 1972**

[54] **ADJUSTABLE SUPPORT BEAM**

[72] Inventor: **Miquel Casas Meriz,** Calle Zaragoza, 11-4°D, Huesca, Spain

[22] Filed: **Sept. 16, 1970**

[21] Appl. No.: **72,654**

[30] **Foreign Application Priority Data**

Sept. 17, 1969 Spain 151849
Sept. 17, 1969 Spain 151850

[52] **U.S. Cl.** ..... **248/354 L**
[51] **Int. Cl.** **E04g 25/08**
[58] **Field of Search** ..... 248/354 C, 354 L, 410

[56] **References Cited**

FOREIGN PATENTS OR APPLICATIONS

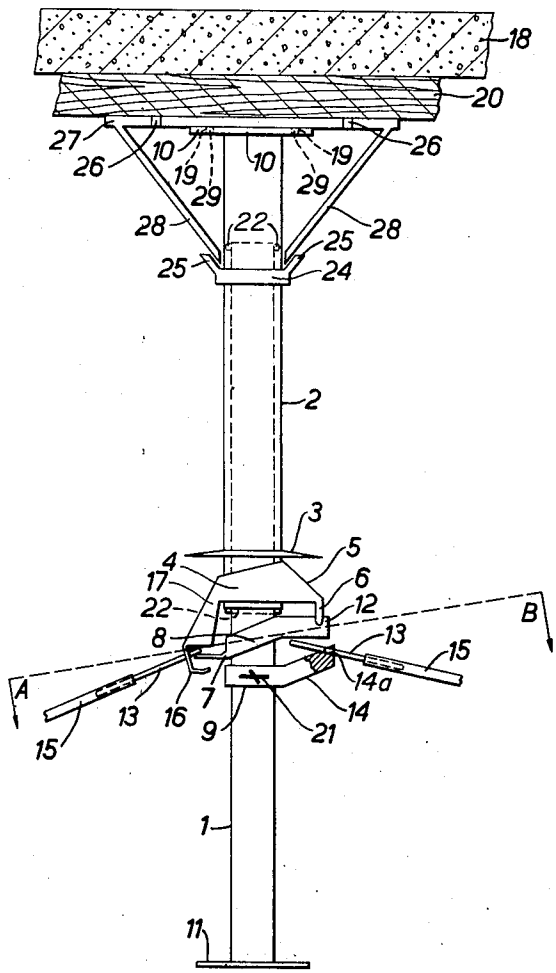
358,225 12/1961 Switzerland ..... 248/354 C

Primary Examiner—William H. Schultz
Attorney—John J. Dennemeyer

[57] **ABSTRACT**

A support beam consisting of two telescopically interfitting tubular rods provided with an adjusting and locking device wherein the outer rod carries a support collar with opposite lateral extensions and the inner rod carries two sleeves, the upper sleeve being inclined and having opposite horizontal extensions engaged on their outer end by the lateral extensions of the support collar to exert a pressure on this sleeve causing pivoting movement therein to bear against the inner rod in a locking manner, the second sleeve having conventional means to lock it in position on the inner rod.

7 Claims, 6 Drawing Figures



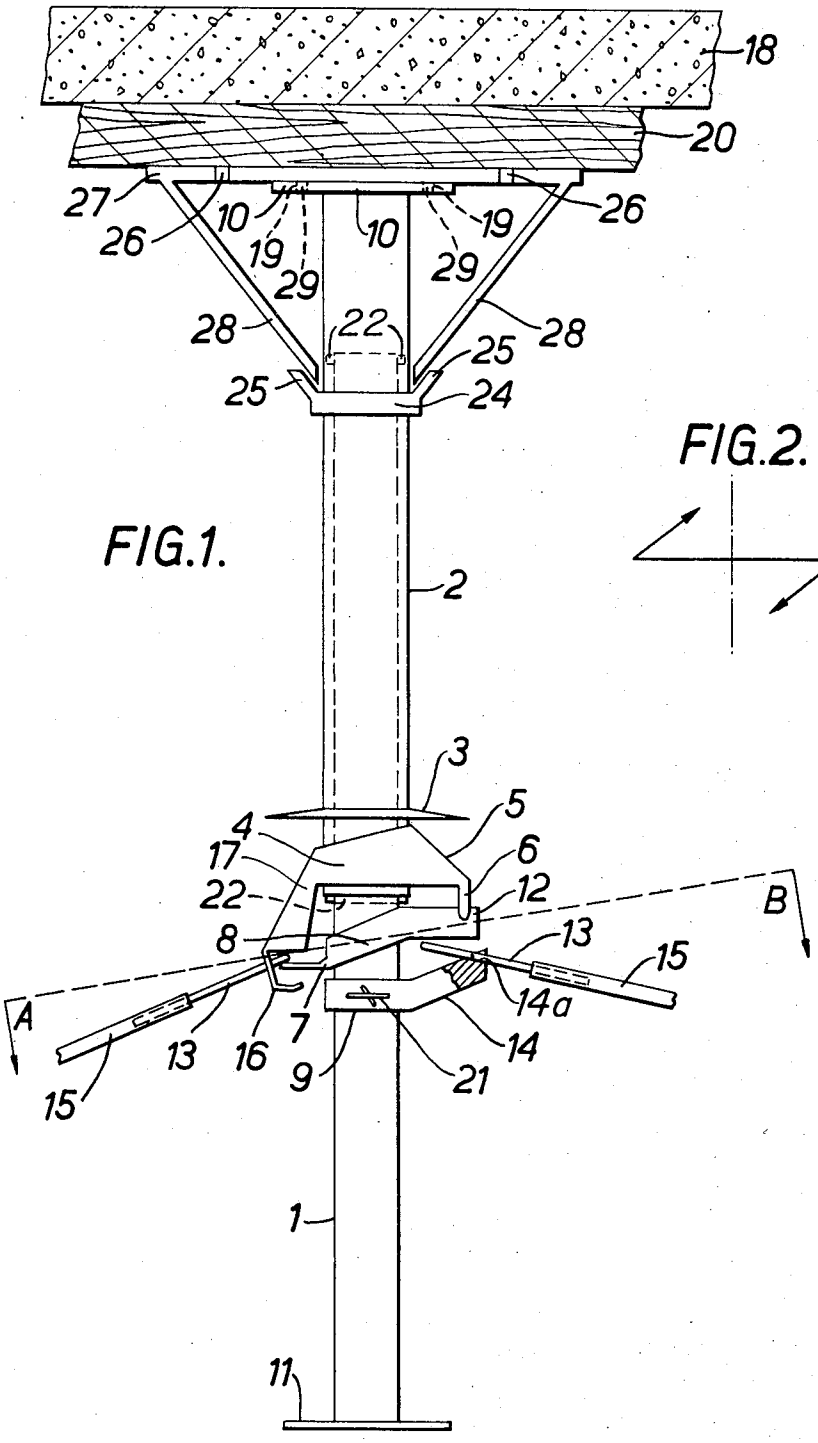

18
20
27
26
10
19
29
10
19
29
26
28
22
25
28
25
24
2
3
4
5
17
6
22
12
8
13
15
B
A
14a
7
14
13
16
9
21
15
1
11

FIG.1.

FIG.2.

FIG. 3.

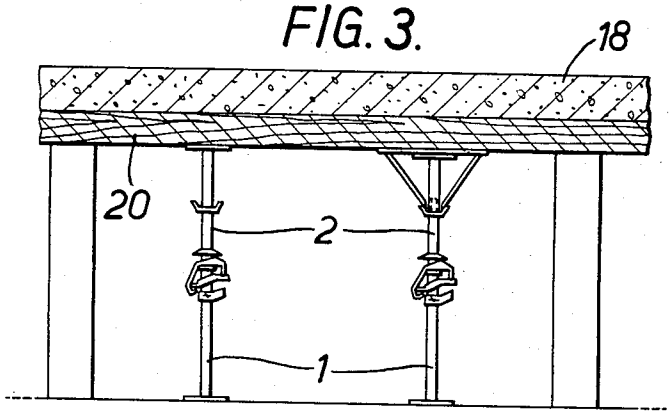


FIG. 4.

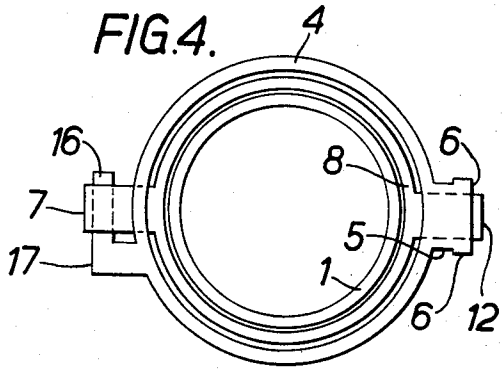


FIG. 6.

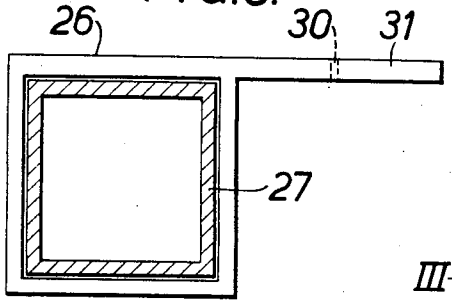
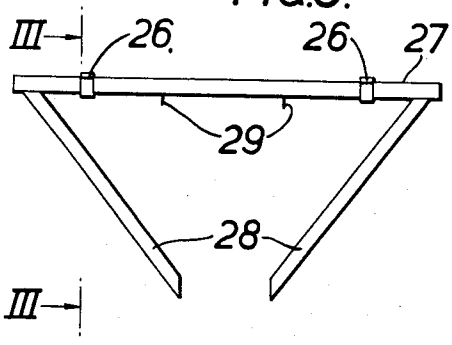


FIG. 5.



ADJUSTABLE SUPPORT BEAM

The present invention relates to an adjustable support beam or prop for supporting ceiling, wall and frame structures of the type generally used in the construction of buildings.

The support beam according to the invention comprises two tubular telescopically interfitting rods wherein the inner rod is slidably received in the outer rod and a device for adjusting and maintaining the position of the rods relative to each other in setting the desired height of the beam. This device consists basically of a collar welded to the outer rod and of two sleeves which are slideably mounted over the inner rod.

It has been the practice to use generally wooden beams to support the frame work in pouring concrete floors or shoring up ceilings or walls, and their height was adjusted by placing blocks or the like under the beam or one used telescopically arranged iron or steel beams in which the desired height was adjusted by means of adjustable screw devices or pins which were inserted through holes in the inner rod or corresponding holes in both rods.

The known beams in which the height is adjusted and maintained in the manner described above by means of pins inserted through holes in the rods permit only a fixed step-wise height adjustment wherein the selected height often does not correspond with the desired height or level so that in addition wooden blocks or other auxiliary means must be used.

The known beams provided with screw devices for adjusting the height of the beam permit a gradual adjustment of the height but they have the disadvantage that they tend to accumulate rust so that the screw can be turned frequently only by applying considerable force and expending an excessive amount of time.

The present invention concerns a device which provides a gradual or stepless adjustment of the height without the need of a screw arrangement. The structural simplicity and working precision of the beams according to the invention permit a saving of maintenance and time. The handling and operation of the new beams is extremely simple and requires no trained workers.

The novel features and advantages of the invention will further appear from the following description made in reference to the accompanying drawing and showing an embodiment of the present invention in combination with a triangular top support fixed to the vertical support beam of the present invention. It will be understand that the triangular top support is an auxiliary means which may be used in combination with the vertical beam support. In the drawing:

FIG. 1 is a side view of the vertical support beam according to the invention in combination with the auxiliary triangular top support.

FIG. 2 represents the direction of the active force in the upper sleeve during the supporting action of the beam or during transporting of the beam.

FIG. 3 shows an example of an application of the novel beam with and without the triangular top support.

FIG. 4 is a diagrammatic view of a cross-section through the novel beam along the line A–B in FIG. 1.

FIG. 5 shows the triangular top support.

FIG. 6 shows on a larger scale a cross-section along line III—III of FIG. 5.

With reference to FIG. 1 of the drawing the support beam according to the invention consists of an inner rod or base element 1 which is received in the outer rod 2 of larger diameter in a telescopic manner. A circular flange or protective hood 3 is attached to the lower part of rod 2 as by welding in order to prevent a soiling of the adjusting device by dust particles, cement, mortar or the like.

This adjusting device consists of a collar 4 which is preferably welded to the lower end of the rod 2 and which presents at one side a support extension 5 which is provided with two spaced downwardly directed guide extensions 6. Opposite these extensions 5 and 6 an additional support extension 17 is provided which terminates into a downwardly and inwardly directed extension 16.

Two sleeves 8 and 9 are slidably mounted around the inner rod 1. The sleeve 8 is inclined and presents two oppositely disposed horizontal extensions 7 and 12. The extension 12 serves to lock the beam in the working position by means of the guides 6 on the collar 4 which receive the extension 12 so that the sleeve is at all times in the correct position and permits the effect of one of the two directional forces shown in FIG. 2.

During lifting or transporting of the beam the extension 16 of collar 4 bears against the extension 7 of sleeve 8 to exert a force which is opposite to the force described above and causes a locking of the two rods. The extension 7 also assists in setting the correct position of the guides 6 and prevents a release or sliding of the extension 12 out of the guides 6 of the collar 2. The lower sleeve 9 has a lateral grooved extension 14 directed slightly upwardly under the extension 12 of sleeve 8. This sleeve has at one side a threaded hole with a setting screw 21. The beam has at its lower end a base plate 11 and at its upper end a bearing support 10. The rods 1 and 2 have at their opposite ends inner and outer side collars 22 which avoid an excessive amount of play and confer the required rigidity to the beam. They also facilitate the sliding action when the contact surface between the rods 1 and 2 becomes smaller and prevent a separation of the two rods 1 and 2 upon pulling them apart. The lever 13 placed on the extension 7 of the sleeve 8 may also be extended by means of a tubular extension piece 15. Holes 19 are provided in the bearing support 10 for securing the beam by means of pins or the like to the frame work to be carried by the beam. The upper rod 2 is provided also under the plate 10 at a suitable distance with a welded sleeve 24 which has upwardly inclined extensions 25 for anchoring the beam in combination with the outwardly inclined stays 28 of the triangular support. This support consists of the two lateral stays 28 and the horizontal bar 27 which constitutes a bearing surface. The free ends of the lateral stays 28 project into the extensions 25 of the sleeve 24 around rod 2 and thus impart strength to the unit. The horizontal bar 27 is provided with pins 29 which fit into the holes 19.

On each side of the pins 29 a slide bushing 26 is provided which presents on the upper side an extension 31 which has one or more holes 30 in order to attach the bar to the frame work and thus prevents a falling of the beam. The beam is generally used as shown in FIG. 3.

In the supporting position of the beam the weight of the rod 2 bears fully on the extension 5 of support col-

lar 4 which thus communicates its pressure effect on the extension 12 of the sleeve 8. Due to this effect the sleeve 8 is tilted relative to its perpendicular axis and is wedged by this tilting effect and pressure against the rod 1. To adjust the level of the beam a force must be exerted with the fingers or some other means at the underside of the extension 12 of the sleeve 8 in an upward direction. By this force the sleeve 8 is moved into a vertical position and slides along the rod 1 to the desired height. As soon as the upward force on the underside of extension 12 of sleeve 8 stops the weight is again transferred over the collar 4 on the extension 12 of sleeve 8 and anchors the beam again in the manner described above.

In order to securely set the beam the sleeve 9 is moved against the underside of sleeve 8. Thereupon the lever 13 is applied into the groove 14*a* of the extensions 14 of the sleeve 9 in order to exert a force through lever 13 on the underside of extension 12 of sleeve 8. Due to the effect of this lever this force is much higher than the force exerted previously by means of the fingers. With this action the sleeve 9 is moved from the vertical position and is wedged against the rod 1 and after the lever is removed or released the sleeve 9 moves again into the vertical position and may slide along the rod 1 in either direction.

As soon as the beam is securely set in place the safety screw 21 is screwed strongly against the rod 1. In this manner the device is locked and the sleeve 9 serves as holding safety. In order to collapse the beam the safety screw 21 is released so that the sleeve 9 may slide downwardly. By a force on the lever 13 between the extension 7 of sleeve 8 and the extension 17 of the collar 4 the sleeve 8 assumes again its vertical position and slides downwardly.

For transporting the beams one takes hold of the rod 2 and the extension 16 of the collar 4 acts on the extension 7 of the sleeve 8 whereby the sleeve is locked this time to the rod 1 by a force which is opposite to that described above.

The triangular support is secured to the beam by placing it on the rod 2 and sliding it downward until the free ends 28 wedge between the rod 2 and the extensions 25 of the collar 24. The pins 29 are simultaneously inserted into the holes 19 of the plate 10 and bushings 26 are moved until they correspond with the holes provided in the structure to be supported so that this structure may be secured to the beam.

What is claimed is:

1. An adjustable support beam comprising two telescopically arranged tubular rods wherein an inner rod (1) is received telescopically in an outer rod (2) in sliding relationship, and an adjusting and locking device for fixing the rods in position relative to each other, said device consisting of a support collar (4) secured to said other rod (2), and of an upper sleeve (8) and a lower sleeve (9) mounted for sliding movement along said inner rod (1), said support collar (4) having opposite extensions (5,17), said upper sleeve (8) having an inclined configuration with opposite extensions (7,12) said lower sleeve (9) having means to lock it on said inner rod whereby said extension (5) of said support collar bears in the supporting position of said adjustable beam on the outer extremity of said extension (12) on said upper sleeve to generate a pivoting action to lock said upper sleeve on said inner rod, said extension (17) on said support collar (4) having a portion (16) projecting inwardly under said extension (7) on said upper sleeve (8), said portion (16) engaging said extension (7) during lifting of said beam to pivot said sleeve (8) and lock it against said inner rod (1).

2. An adjustable support according to claim 1 wherein said lower sleeve (9) has an extension (14) directed upwardly toward said extension (12) on said upper sleeve (8), said extension (14) having a groove in its upper face for lodging a lever means to bear against said extension (12) for pivoting said lower sleeve to lock against said inner rod.

3. An adjustable support according to claim 2 wherein said extension (5) consists of two spaced downwardly directed fingers (6) for receiving therebetween said extension (12) of said upper sleeve (8) to prevent rotational movement of said upper sleeve.

4. An adjustable support according to claim 3 wherein a circular hood is fixed to said outer rod (2) above said collar (4) to prevent soiling of said adjusting and locking device by dirt particles dropping along said beam.

5. An adjustable support according to claim 4 wherein a ring member is fixed to the outer end of said inner rod (1) and to the inner end of said outer rod (2) to prevent separation of said rods.

6. An adjustable support according to claim 5 comprising a collar (24) fixed to the upper end of said outer rod provided with upwardly and outwardly directed extensions (25) and a triangular support consisting of a horizontal top bar connected at each extremity to two downwardly and inwardly directed stays, the free ends of said stays engaging behind said extensions (25) on said collar (24).

7. An adjustable support beam according to claim 6 wherein slide bushings (26) having a laterally extending flange (31) are mounted on said horizontal bar (27), said flange having means for securing it to the frame work supported by said beam.

* * * * *