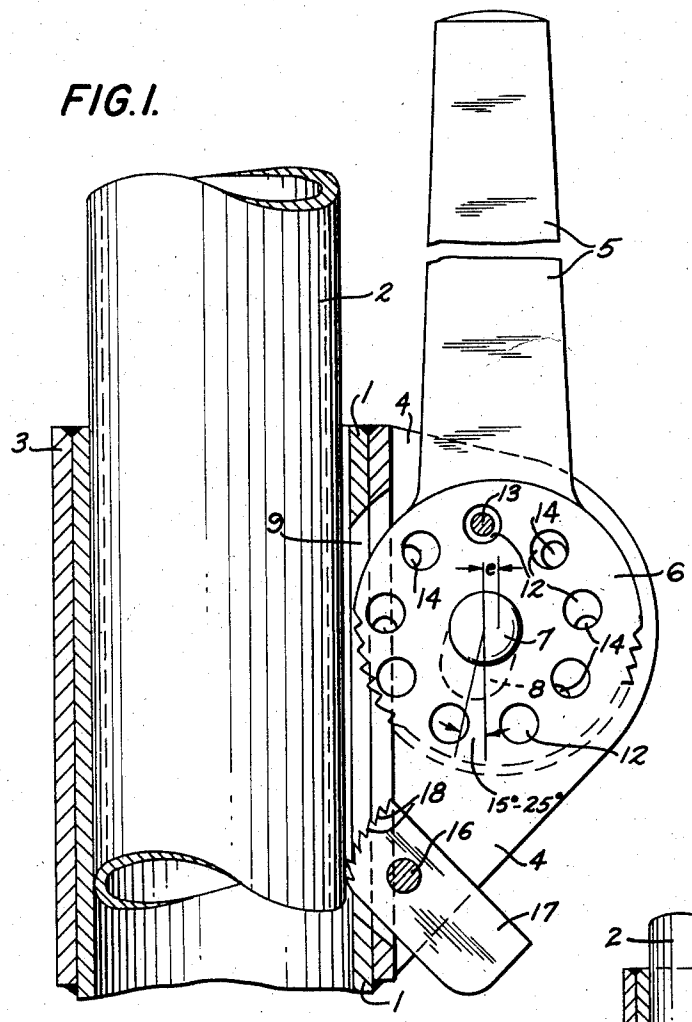
Dec. 22, 1959 A. HAHN 2,918,257

ADJUSTABLE SHORE

Filed March 4, 1955 3 Sheets-Sheet 1

FIG. 1.



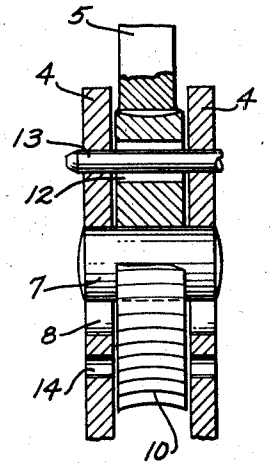


FIG. 3.

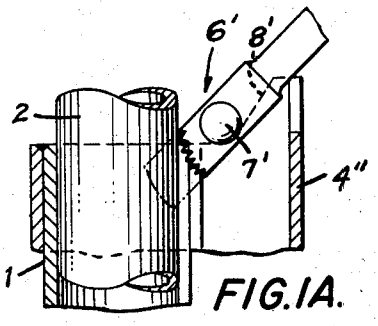
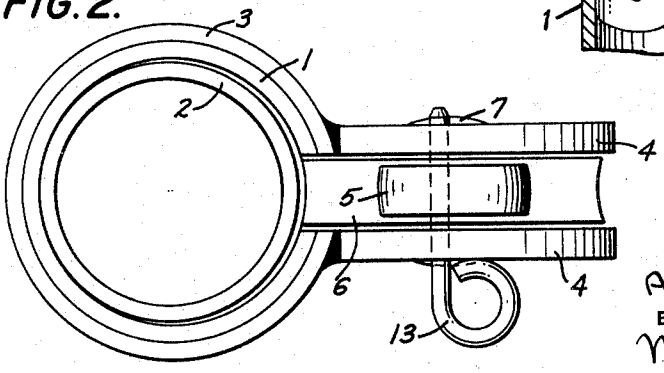


FIG. 1A.

FIG. 2.



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ADJUSTABLE SHORE

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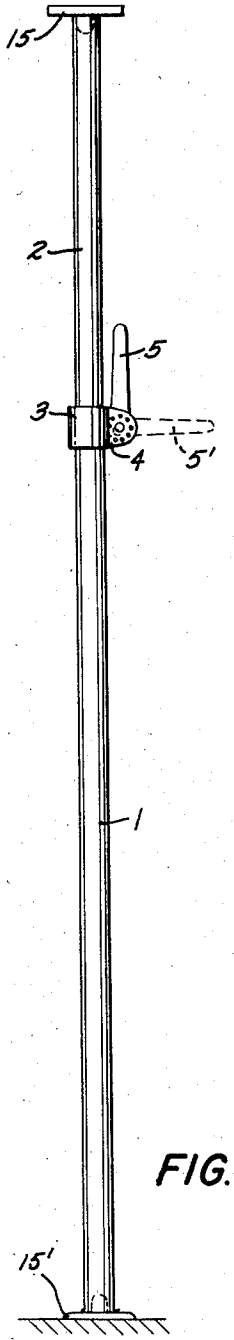


FIG.4.

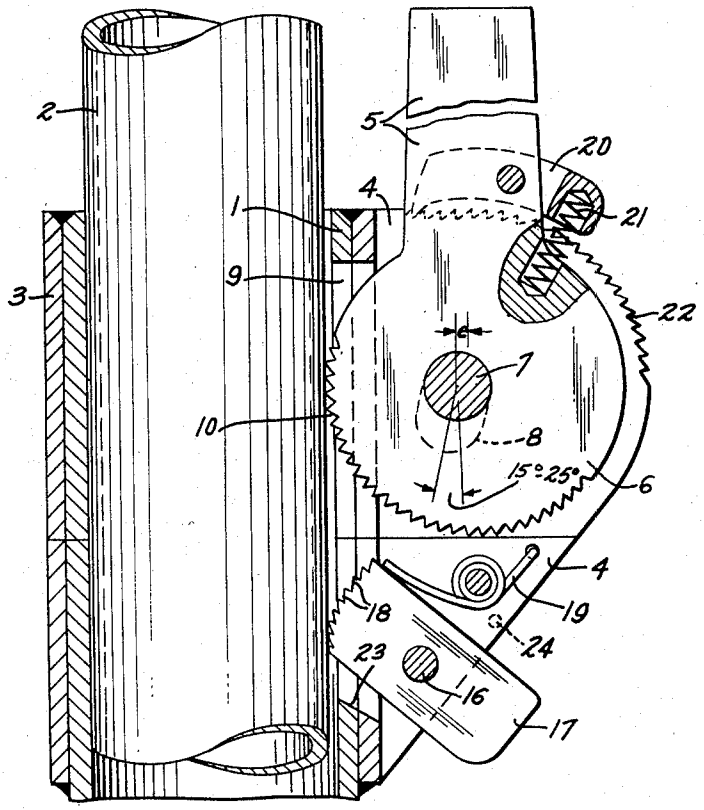


FIG.5.

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ADJUSTABLE SHORE

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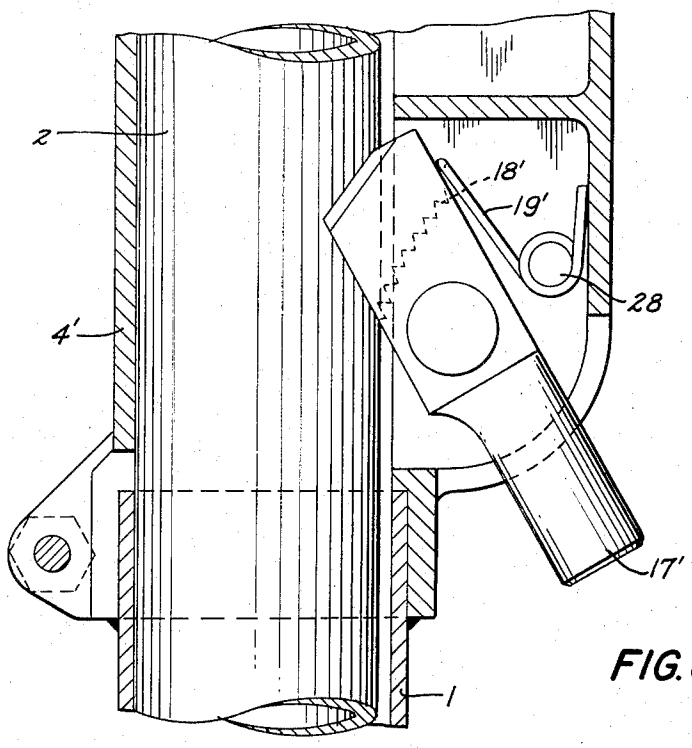


FIG. 6.

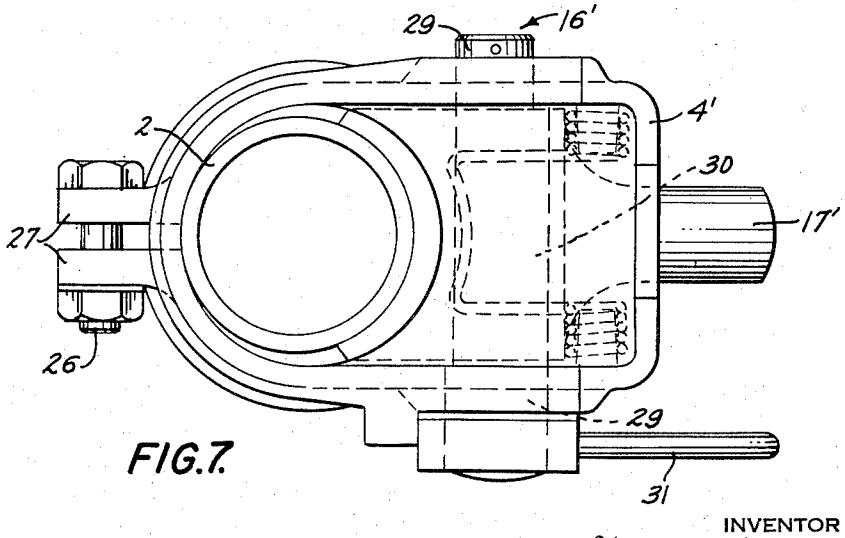


FIG. 7.

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2,918,257

ADJUSTABLE SHORE

Alexander Hahn, Laguna Beach, Calif.

Application March 4, 1955, Serial No. 492,289

Claims priority, application Germany May 15, 1952

10 Claims. (Cl. 254—105)

The present invention relates to an adjustable shore and more particularly to an adjustable shore which can be extended under load.

This application is a continuation-in-part of copending application Serial No. 354,807, filed on May 13, 1953, now abandoned, and entitled "Adjustable Shores for Planking, Framing and the Like."

One object of the present invention is to provide a shore which can be handled very easily and which can be adjusted under load in a very convenient manner.

A further object of the present invention is to secure the two parts of the shore in an extended position automatically and in a very reliable and safe manner.

An additional object of the invention is to make the stripping of the shore, if the same is to be removed, possible without damaging the shore.

Another object of the invention is to provide a shore which is very rugged in its construction and which can be manufactured at a relatively low cost.

With the above objects in view, the present invention mainly consists in an adjustable shore, the length of which can be adjusted under load, comprising the following elements; an outer strut, an inner strut at least partly surrounded by the outer strut, lifting means mounted on one of these struts for lifting the other of these struts from a starting position to a final position, and holding means carried by one of these struts and engaging the other strut to prevent the latter from moving down, after being lifted by the lifting means, through the distance it has been lifted by the lifting means.

The novel features which are considered as characteristic for the invention are set forth in particular in the appended claims. The invention itself, however, both as to its construction and its method of operation, together with additional objects and advantages thereof, will be best understood from the following description of specific embodiments when read in connection with the accompanying drawings, in which:

Fig. 1 is a partial sectioned front view of part of the shore construction;

Fig. 1*a* is a partial sectioned front view of part of a modified form of the shore construction;

Fig. 2 is a top view of the shore construction;

Fig. 3 is a sectional side view of a part of the shore construction;

Fig. 4 is a schematic front view of the whole shore construction;

Fig. 5 is a partial sectioned front view of a modified shore construction;

Fig. 6 is a partial sectioned front view of another modification of this construction showing the elements in engaged position; and

Fig. 7 is a top view of this modification showing the elements in disengaged position.

Referring now to the figures, and more particularly to Fig. 4, the adjustable shore consists of an outer strut 1, an inner strut 2 surrounded by said outer strut and slidably arranged in the same, so that the total length

of the shore can be extended or shortened according to requirements. Both struts are preferably made from round steel tubes, but of course the invention is not limited to the preferred form of these struts and they may have any other cross section, such as square, oval or polygonal. Instead of a tube, a solid rod or bar may also be used for the inner strut. End plates 15 and 15' are respectively arranged at the extreme outer ends of the inner and the outer strut, and these plates are preferably hingedly connected to the respective strut members.

The strut is further provided, as illustrated in detail in Fig. 1, with a lifting mechanism and a locking mechanism, to be able to adjust the overall length of the shore by lifting the inner strut out of the outer strut from a starting position to a final position and to secure the relative position of the two strut members in its final position automatically. The lifting mechanism consists in a disc 6 turnably mounted on pin 7 which pin is eccentrically arranged on said disc so that when the disc is turned the peripheral face of the disc is moved toward or away from the outer surface of the inner strut 2, depending on the direction the disc is turned. The eccentricity "*e*" of the pin axis with relation to the disc axis, the position of this pin 7 and the diameter of the disc 6 is chosen in such a way that when the disc is moved in a clockwise direction as viewed in Fig. 1, the peripheral surface of the disc will engage the inner strut member 2 with increasing pressure. Part of this peripheral surface is provided with gripping teeth 10 which dig into the outer surface of the strut 2 when the disc 6 is turned in clockwise direction and lift upon further turning of the disc the strut 2 outwardly of strut 1. The journal pin 7 is preferably slidably mounted in elongated slots 8 inclined downwardly and inwardly towards the strut axis so that these slots include an angle of 15°–25° with the longitudinal axis of the struts. The turning of the disc 7 is started with the pin 7 at the bottom of these slots. After the teeth 10 have gripped the inner strut the pin 7 will, upon further turning of the disc, slide upwardly in these slots, as the distance between successive contacting points of the disc and the center point of the pin increases due to the eccentric mounting of the disc on the pin. The slots 8 are provided in two parallel bearing brackets 4 which in turn are fixedly connected, preferably by welding, to a sleeve 3 surrounding the upper end portion of the outer strut 1 and rigidly attached to the same, by welding or any other manner. The two brackets 4 can, if desired, also be welded directly to the outer strut 1, but the construction shown, having a separate sleeve 3 surrounding the upper end of strut 1, is preferred as being much stronger. The sleeve 3 and the upper portion of strut 1 surrounded by this sleeve are provided with a slot 9 between the two bearing brackets 4 so that the aforementioned disc 6 may reach through this slot to contact the inner strut member. A handle 5 is fixedly connected, preferably welded, to the disc 6, so that the disc can be turned easily.

Instead of the round disc a lever 6' being journaled on a pin 7', having on one side a contacting face similar to that of the disc and extending on the other side into a handle, can also be used. Instead of closed slots 8, upwardly extending faces 8' inclined in the same direction as those slots, may be provided at the upper portion of the brackets 4''. In this case the pin 7' will abut against these faces during the turning of the lever and the latter may be removed from the bracket when not in use. Such a modification is shown in Fig. 1*a*.

The bearing brackets 4 carry besides the aforementioned lifting members 6 a locking lever 17 which is turnably mounted on a pin 16 journaled in the brackets 4. This lever projects likewise through the slot 9 and has an

end face contacting the outer surface of the inner strut member **2**. This end face is provided with gripping teeth **18** and the position of the pin **16**, and the distance between pin and end face is arranged in such a way that the lever **17** is always held in a slightly upwardly extending position.

When the inner strut **2** is lifted by turning the disc **6** in a clockwise direction, as viewed in Fig. 1, the lever **17**, contacting the inner strut with its end face, is also slightly tilted in the same direction. As soon as the handle **5** is released and the inner strut slides slightly downwardly, the lever **17** contacting the outer surface of the strut **2** is turned in counterclockwise direction whereby the teeth **18** dig slightly into the outer surface of strut **2** and the strut is pressed as the contacting end of lever **17** moves during the tilting of the lever, further and further inwardly, with increasing force against the inner surface of the outer strut opposite lever **17** and the teeth **18** dig further into the strut **2**, so as to lock the two struts together. In the construction in Fig. 1, a stop provided at the lower end faces of slot **9** stops the turning movement of lever **17** and prevents lever **17** to reach or pass a horizontal position. It should be noted that the holding lever **17** acts completely automatically and independent from the lifting mechanism **6**. A further advantage of the construction described is that the clamping forces resulting from the turning of the lever are distributed over a large area. Instead of a single holding lever **17** a second similar lever could be provided in the same manner but diametrically opposite of the shown lever. In this case, of course, similar brackets and a similar slot would have to be provided on the opposite side of the sleeve **3**.

If desired, the lifting disc **6** can also be used as an additional locking means to hold the inner strut in its final position. In the construction shown in Fig. 1 this is accomplished by providing an arresting or locking mechanism to hold the disc **6** in its final position at the end of the lifting stroke. For this purpose, the disc is provided with a plurality of holes **12**, evenly spaced along a pitch circle adjacent to the peripheral face of the disc, and perpendicular to its end faces. The two bearing brackets **4** are likewise provided with a plurality of holes **14** having a slightly smaller diameter than holes **12** and being evenly arranged along a pitch circle having the same diameter and center as the aforementioned pitch circle, but the number of these holes is made smaller by one than the number of holes carried by the disc, to obtain a vernier arrangement, in which in practically any position of the disc one hole in the disc will be in alignment with a pair of holes in the bearing brackets. A pin **13** is then inserted through these aligned holes to fix the position of the disc in relation to the brackets. The disc therefore cannot turn back under the load of the inner strut and the teeth **10** of the disc support the action of the teeth **18** of the holding lever. To increase the pressure of the teeth **10** against the inner strut **2** further, the bearing brackets **4** are as explained before provided with elongated slots **8**. The disc pin **7** which is slidingly arranged in these slots will move from its upper position at the end of turning stroke downwardly whereby when the disc **6** is held in its arrested position the periphery of the disc **6** and the teeth **10** are pressed with increasing pressure against the outside surface of strut **2**, which action supports the action of the locking lever and results in a very secure locking of the strut member.

Fig. 5 shows a different arrangement for arresting the disc **6** in its final position. Instead of the hole and pin arrangement illustrated in Fig. 1, a ratchet arrangement is provided. For this purpose the upper faces of the brackets **4** are arcuately shaped and locking teeth **22** are provided in this arcuate top portions of the brackets. A pawl **20** tiltably mounted on the handle **5** cooperates with the locking teeth **22** to allow a rotation of disc **6** and handle **5** in clockwise direction, as viewed in Fig. 5, and to prevent such a rotation in counterclockwise direction. A spring **21**, one end of which is housed in a bore at the end of the locking pawl opposite its locking tooth, and the other end of which is housed in a corresponding bore in the disc in line with the bore in the pawl, keeps the tooth end of the locking pawl always in engagement with the teeth **22**. As can be clearly seen, the disc **6** can be turned to engage with increasing pressure the inner strut **2** and to lift the same upwardly, whereas the return stroke which would allow the inner strut to slide downwardly is prevented by this locking arrangement.

Fig 5 illustrates a further improvement over the construction shown in Fig. 1. As shown in Fig. 5 a spring **19** is provided. The middle part of this spring is wound around a pin held in the bearing brackets, one of its free ends is projecting into a hole in one of the bearing brackets to fix the position of the spring, whereas the other free end of the spring presses against the side face of the holding lever **17** so as to push the front face and the teeth **18** provided in this front face of the lever against the outer surface of strut **2**. The spring **19**, of course, does not provide the necessary pressure for a secure locking between lever end face and strut, which is provided, as described above, by the load of the inner strut and the particular dimensioning and positioning of the lever **17**, but the spring assures a continuous contact between the end face of the lever **17** and the strut **2** regardless of friction between pin **16** and lever **17** or tolerance deviations in the strut **2**. Instead of limiting the tilting movement by the end faces **23**, a pin **24** projecting from one of the inner end faces of brackets **4** into the path of the lever **17** or any other stop between the brackets can also be provided.

The gripping teeth on lever **17** may be cut with the upper face parallel to the longitudinal lever axis as shown in Figs. 1 and 5. To provide for more sturdy teeth and for an easy disengagement of the locking teeth **18'** from the indentations they make during clamping on the inner strut, these locking teeth have preferably a cross section in the form of isosceles triangles, the sides of which including an angle of 60° to 90°, as shown in Fig. 6. The teeth on lever **17'** are cut on a surface having a lower curved portion and an upper substantially straight portion substantially tangential to the curved portion, so that at the end of the turning movement of this lever, teeth on the straight portion may contact the inner strut and provide for a secure stop. The bearing bracket shown in Figs. 6 and 7 is also slightly different from the bearing bracket previously described. The bearing bracket shown, consists of a preferably cast sleeve **4'** securely clamped to the outer strut **1** by means of a screw **26** pressing the two flanges **27** of the slit casting **4'** together or welded or threaded to the outer strut. The spring **19'** is also slightly modified and consists of a two-arm spring, the free ends of which abut against a rear part of the casting, the two coils of which are located around cast bosses **28**, projecting inwardly from side faces of the sleeve, whereas the middle portion of the spring presses against the side face of the locking lever **17'**. The construction illustrated in Figs. 6 and 7 shows further means for an easy disengagement of the locking teeth **18'** on the lever **17'** from the inner strut **2**. The locking lever **17'** is turnably arranged around an eccentric pin **16'**. This pin has two outer journal portions **29** journaled in the bearing bracket **4'** and an eccentric middle portion **30**, whcih carries the locking lever **17'**. A handle **31** is fixedly attached to one of the end portions of this pin protruding beyond the bearing bracket **4'** to make an easy turning of the eccentric pin possible. As can be seen from the drawings, the front end of the lever **17'** can be moved towards and from the outer surface of the strut **2** it is contacting, by turning the pin **16'** by means of the handle **31**. The end face of the lever **17'** will thereby move in a direction substantially normal to the strut axis and the locking teeth on the end face and on the strut member can be disengaged in this manner very

easily, and without damaging any of the engaging parts, when such a disengagement is desired in order to collapse the extended shore.

The gripping teeth on the lever 17, 17' and/or on the disc member 6 or the lever 6' are preferably cut along a contour corresponding to the shape of the surface portion of the inner strut member 2 contacted by the same so that they engage this strut substantially along their whole surface and not only along a line.

Instead of constructing the disc 6 or the lever 6' as an eccentric, its peripheral face in which the teeth are cut may be formed along an evolvent, a hyperbolic or any other cam curve, which will upon turning of the disc in one direction create increasing pressure on the inner strut. The teeth on levers 17, 17', respectively, are also cut along similar curves.

It will be understood that each of the elements described above, or two or more together, may also find a useful application in other types of adjustable shores differing from the types described above.

While the invention has been illustrated and described as embodied in adjustable shore, it is not intended to be limited to the details shown, since various modifications and structural changes may be made without departing in any way from the spirit of the present invention.

What is claimed as new and desired to be secured by Letters Patent is:

1. An adjustable shore the length of which can be adjusted under load, comprising, in combination, a tubular outer strut; an elongated inner strut having a substantially smooth outer surface and being located at least partly within said outer strut for movement therealong; support means carried by said outer strut and having at least one bearing surface inclined toward the strut axis so as to include an acute angle with the same; a disc supported on said bearing surface of said support means for sliding movement and for turning movement about an axis substantially perpendicular to that of said struts and spaced from the axis of said disc so that a peripheral surface portion of the latter moves toward an outer surface portion of said inner strut during turning of said disc in one direction on said support means and away from said outer surface portion upon turning of said disc in opposite direction, said surface portions of said disc and inner strut being in engagement with each other; means carried by at least one of said surface portions for reducing the slip between the same to a minimum; a lever turnably carried by said support means for movement about an axis substantially parallel to the turning axis of said disc and said lever extending upwardly from its turning axis toward said inner strut and having a length between said strut and said latter turning axis greater than the distance from said inner strut to said latter turning axis, said inner strut having a second surface portion engaging an end surface portion of said lever; and means on at least one of said latter two surface portions for reducing the slip between said lever and inner strut to a minimum.

2. An adjustable shore the length of which can be adjusted under load, comprising, in combination, a tubular outer strut; an elongated inner strut having a substantially smooth outer surface and being located at least partly within said outer strut for movement therealong; support means carried by said outer strut and having at least one bearing surface inclined toward the strut axis so as to include an acute angle with the same; a disc supported on said bearing surface of said support means for sliding movement and for turning movement about an axis substantially perpendicular to that of said struts and spaced from the axis of said disc so that a peripheral surface portion of the latter moves toward an outer surface portion of said inner strut during turning of said disc in one direction on said support means and away from said outer surface portion upon turning of said disc in opposite direction, said surface portions

of said disc and inner strut being in engagement with each other; gripping teeth provided on said surface portion of said disc for grippingly engaging said outer surface portion of said inner strut; a handle fixedly attached to said disc and extending from the same for facilitating the turning movement of said disc; a lever turnably carried by said support means for movement about an axis substantially parallel to the turning axis of said disc and said lever extending upwardly from its turning axis toward said inner strut and having a length between said strut and said latter turning axis greater than the distance from said inner strut to said latter turning axis, said inner strut having a second surface portion engaging an end surface portion of said lever; and gripping teeth provided on said end surface portion of said lever for grippingly engaging said second surface portion of said inner strut.

3. An adjustable shore the length of which can be adjusted under load, comprising, in combination, a tubular outer strut; an elongated inner strut having a substantially smooth outer surface and being located at least partly within said outer strut for movement therealong; bearing brackets carried by said outer strut, each being provided with an elongated slot having closed ends and converging toward the strut axis so as to include an acute angle with the same; a disc supported in said slots for a sliding movement and for a turning movement about an axis substantially perpendicular to that of said struts and spaced from the axis of said disc so that a peripheral surface portion of the latter moves toward an outer surface portion of said inner strut during turning of said disc in one direction on said support means and away from said outer surface portion upon turning of said disc in opposite direction, said surface portions of said disc and inner strut being in engagement with each other; gripping teeth provided on said surface portion of said disc for grippingly engaging said outer surface portion of said inner strut; a handle fixedly attached to said disc and extending from the same for facilitating the turning movement of said disc; a lever turnably carried by said bearing brackets for movement about an axis substantially parallel to the turning axis of said disc and said lever extending upwardly from its turning axis toward said inner strut and having a length between said strut and said latter turning axis greater than the distance from said inner strut to said latter turning axis, said inner strut having a second surface portion engaging an end surface portion of said lever; gripping teeth provided on said end surface portion of said lever for grippingly engaging said second surface portion of said inner strut; and a slot provided in said outer strut between said bearing brackets through which said disc and said lever project toward said inner strut to engage the same.

4. An adjustable shore the length of which can be adjusted under load, comprising, in combination, a tubular outer strut; an elongated inner strut having a substantially smooth outer surface and being located at least partly within said outer strut for movement therealong; bearing brackets carried by said outer strut, each being provided with an elongated slot having closed ends and converging toward the strut axis so as to include an acute angle with the same; a disc supported in said slots for a sliding movement and for a turning movement about an axis substantially perpendicular to that of said struts and spaced from the axis of said disc so that a peripheral surface portion of the latter moves toward an outer surface portion of said inner strut during turning of said disc in one direction on said support means and away from said outer surface portion upon turning of said disc in opposite direction, said surface portions of said disc and inner strut being in engagement with each outer; gripping teeth provided on said surface portion of said disc for grippingly engaging said outer surface portion of said inner strut; a handle fixedly attached to said disc and extending from the same for

facilitating the turning movement of said disc; locking means for locking the turning movement of said disc in at least one direction; a lever turnably carried by said bearing brackets for movement about an axis substantially parallel to the turning axis of said disc and said lever extending upwardly from its turning axis toward said inner strut and having a length between said strut and said latter turning axis greater than the distance from said inner strut to said latter turning axis, said inner strut having a second surface portion engaging an end surface portion of said lever; gripping teeth provided on said end surface portion of said lever for grippingly engaging said second surface portion of said inner strut; and a slot provided in said outer strut between said bearing brackets through which said disc and said lever project toward said inner strut to engage the same.

5. An adjustable shore the length of which can be adjusted under load, comprising, in combination, a tubular outer strut; an elongated inner strut located at least partly within said outer strut for movement therealong; bearing brackets carried by said outer strut, each being provided with an elongated slot having closed ends and converging toward the strut axis so as to include an acute angle with the same; a disc supported in said slots for a sliding movement and for a turning movement about an axis substantially perpendicular to that of said struts and spaced from the axis of said disc so that a peripheral surface portion of the latter moves toward an outer surface portion of said inner strut during turning of said disc in one direction on said support means and away from said outer surface portion upon turning of said disc in opposite direction, said surface portions of said disc and inner strut being in engagement with each other, said disc having parallel end surfaces formed with a plurality of holes perpendicular to said end surfaces and evenly spaced on a pitch circle adjacent to said peripheral surface, and each of said bearing brackets being provided with a plurality of holes evenly spaced about a pitch circle having the same center and diameter as said pitch circle of said holes on said disc, the number of said holes in each of said bearing brackets being by one smaller than the number of said holes in said disc, to provide a vernier arrangement for aligning said holes in said disc with said holes in said brackets; a pin for selectively projecting through aligned holes in said disc and said bearing brackets to prevent a turning movement of said disc; gripping teeth provided on said surface portion of said disc for grippingly engaging said outer surface portion of said inner strut; a handle fixedly attached to said disc and extending from the same for facilitating the turning movement of said disc; a lever turnably carried by said bearing brackets for movement about an axis substantially parallel to the turning axis of said disc and said lever extending upwardly from its turning axis toward said inner strut and having a length between said strut and said latter turning axis greater than the distance from said inner strut to said latter turning axis, said inner strut having a second surface portion engaging an end surface portion of said lever; gripping teeth provided on said end surface portion of said lever for grippingly engaging said second surface portion of said inner strut; and a slot provided in said outer strut between said bearing brackets through which said disc and said lever project toward said inner strut to engage the same.

6. An adjustable shore the length of which can be adjusted under load, comprising, in combination, a tubular outer strut; an elongated inner strut located at least partly within said outer strut for movement therealong; bearing brackets carried by said outer strut, each being provided with an elongated slot having closed ends and converging toward the strut axis so as to include an acute angle with the same, and each having an arcuate surface provided with locking teeth; a disc supported in said slots for a sliding movement and for a turning movement about an axis substantially perpendicular to that of said struts and spaced from the axis of said disc so that a peripheral surface portion of the latter moves toward an outer surface portion of said inner strut during turning of said disc in one direction on said support means and away from said outer surface portion upon turning of said disc in opposite direction, said surface portions of said disc and inner strut being in engagement with each other; gripping teeth provided on said surface portion of said disc for grippingly engaging said outer surface portion of said inner strut; a handle fixedly attached to said disc and extending from the same for facilitating the turning movement of said disc; a locking pawl turnably mounted on said handle having oppositely directed free ends, one of said free ends being provided with a locking tooth engaging said locking teeth provided on said arcuate surface; a spring engaging the other free end of said locking pawl for keeping said locking tooth in engagement with said locking teeth on said arcuate surface and to allow turning of said disc only in a direction for lifting said inner strut; a lever turnably carried by said bearing brackets for movement about an axis substantially parallel to the turning axis of said disc and said lever extending upwardly from its turning axis toward said inner strut and having a length between said strut and said latter turning axis greater than the distance from said inner strut to said latter turning axis, said inner strut having a second surface portion engaging an end surface portion of said lever; gripping teeth provided on said end surface portion of said lever for grippingly engaging said second surface portion of said inner strut; and a slot provided in said outer strut between said bearing brackets through which said disc and said lever project toward said inner strut to engage the same.

7. An adjustable shore the length of which can be adjusted under load, comprising, in combination, a tubular outer strut; an elongated inner strut located at least partly within said outer strut for movement therealong; bearing brackets carried by said outer strut, each being provided with an elongated slot having closed ends and converging toward the strut axis so as to include an acute angle with the same; a disc supported in said slots for a sliding movement and for a turning movement about an axis substantially perpendicular to that of said struts and spaced from the axis of said disc so that a peripheral surface portion of the latter moves toward an outer surface portion of said inner strut during turning of said disc in one direction on said support means and away from said outer surface portion upon turning of said disc in opposite direction, said surface portions of said disc and inner strut being in engagement with each other; gripping teeth provided on said surface portion of said disc for grippingly engaging said outer surface portion of said inner strut; a handle fixedly attached to said disc and extending from the same for facilitating the turning movement of said disc; a lever turnably carried by said bearing brackets for movement about an axis substantially parallel to the turning axis of said disc and said lever extending upwardly from its turning axis toward said inner strut and having a length between said strut and said latter turning axis greater than the distance from said inner strut to said latter turning axis, said inner strut having a second surface portion engaging an end surface portion of said lever; gripping teeth provided on said end surface portion of said lever for grippingly engaging said second surface portion of said inner strut; spring means carried by said bearing brackets and engaging said lever for keeping said gripping teeth provided on said end surface portion of said lever in engagement with said inner strut; and a slot provided in said outer strut between said bearing brackets through which said disc and said lever project toward said inner strut to engage the same.

8. An adjustable shore the length of which can be

adjusted under load, comprising, in combination, a tubular outer strut; an elongated inner strut located at least partly within said outer strut for movement therealong; bearing brackets carried by said outer strut, each being provided with an elongated slot having closed ends and converging toward the strut axis so as to include an acute angle with the same; a disc supported in said slots for a sliding movement and for a turning movement about an axis substantially perpendicular to that of said struts and spaced from the axis of said disc so that a peripheral surface portion of the latter moves toward an outer surface portion of said inner strut during turning of said disc in one direction on said support means and away from said outer surface portion upon turning of said disc in opposite direction, said surface portions of said disc and inner strut being in engagement with each other; gripping teeth provided on said surface portion of said disc for grippingly engaging said outer surface portion of said inner strut; a handle fixedly attached to said disc and extending from the same for facilitating the turning movement of said disc; a lever turnably carried by said bearing brackets for movement about an axis substantially parallel to the turning axis of said disc and said lever extending upwardly from its turning axis toward said inner strut and having a length between said strut and said latter turning axis greater than the distance from said inner strut to said latter turning axis, said inner strut having a second surface portion engaging an end surface portion of said lever; gripping teeth provided on said end surface portion of said lever for grippingly engaging said second surface portion of said inner strut; spring means carried by said bearing brackets and engaging said lever for keeping said gripping teeth provided on said end surface portion of said lever in engagement with said inner strut; stop means for limiting the turning movement of said lever and to keep said lever in an upward extending position; and a slot provided in said outer strut between said bearing brackets through which said disc and said lever project toward said inner strut to engage the same.

9. An adjustable shore the length of which can be adjusted under load, comprising, in combination, a tubular outer strut; an elongated inner strut located at least partly between said outer strut for movement therealong; bearing brackets carried by said outer strut, each being provided with an elongated slot having closed ends and converging towards the strut axis so as to include an acute angle with the same; a disc supported in said slots for a sliding movement and for a turning movement about an axis substantially perpendicular to that of said struts and spaced from the axis of said disc so that a peripheral surface portion of the latter moves toward an outer surface portion of said inner strut during turning of said disc in one direction and away from said

outer surface portion upon turning of said disc in opposite direction, said surface portions of said disc and inner strut being in engagement with each other; gripping teeth provided on said surface portion of said disc being in engagement with said surface portion of said inner strut for grippingly engaging the latter; a handle integrally made with said disc and extending from the same for facilitating the turning movement of said disc; a pin having journal portions carried by said bearing brackets for a turning movement about an axis substantially parallel to the turning axis of said disc, and a middle portion integral with and eccentric to said journal portions; a locking lever turnably carried by said middle portion for movement about an axis substantially parallel to the turning axis of said disc, and said lever extending upwardly from its turning axis toward said inner strut and having a length between said strut and said latter turning axis greater than the distance from said inner strut to said latter turning axis, said inner strut having a second surface portion engaging an end surface portion of said lever; gripping teeth provided on said end surface portion of said lever; spring means carried by said bearing brackets and engaging said lever for keeping said gripping teeth on said lever end surface in engagement with said second surface portion on said inner strut; a lever fixedly attached to said pin for turning the same and for disengaging said gripping teeth provided on said end surface portion of said lever from said second surface portion of said inner strut in a direction substantially normal to the strut axis; and a slot provided in said outer strut between said bearing brackets through which said disc and said lever project toward said inner strut to engage the same.

10. An adjustable shore according to claim 9 and the end faces of said gripping teeth on said disc and said lever formed to correspond to the shape of said portions of the inner strut engaged by the same.

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