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Lindsey

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[54] **LOCKING DEVICES**

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[52] **U.S. Cl.** ..... **403/49,** 52/638, 52/645, 52/655, 52/712, 85/5 CP, 85/8.3, 211/177, 248/341, 403/368, 403/405

[51] **Int. Cl.** **F16d 3/08**

[58] **Field of Search** ..... 24/201 LP, 201 SL; 403/49, 403/189, 263, 316, 355, 155, 405, 368; 248/341; 211/177, 178 R; 85/5 CP, 8.3; 52/638, 645, 655, 712

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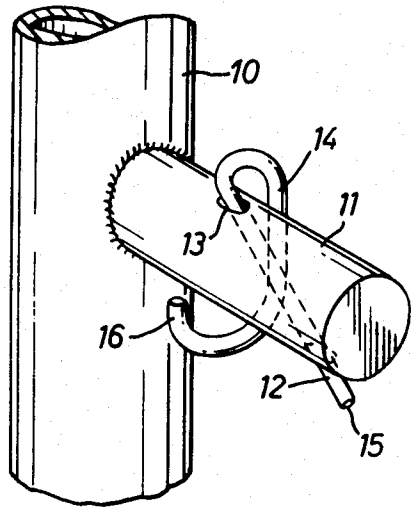
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Assistant Examiner—Conrad L. Berman
Attorney, Agent, or Firm—Stevens, Davis, Miller & Mosher

[57] **ABSTRACT**

A locking device for holding a projecting peg locked in a hole in another member has an elongate latch member held captive on the peg member. The latch member is movable but is constrained to move longitudinally and obliquely of the peg, so that it can be brought to a position in which it projects obliquely through the hole and on both sides of the other member. Preferably, the latch member is a wire extending through a bore in the peg.

8 Claims, 5 Drawing Figures



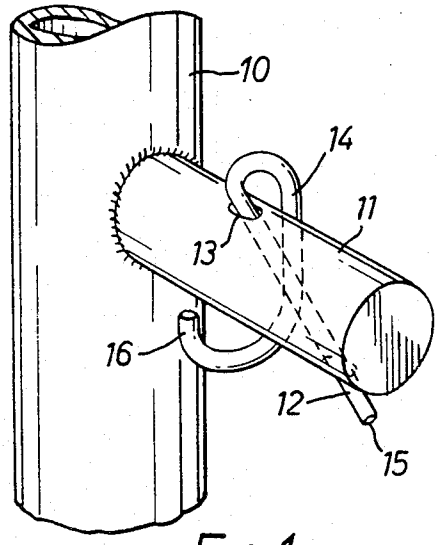


FIG. 1

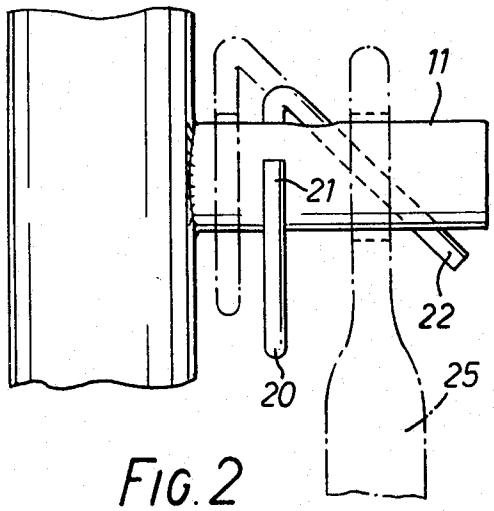


FIG. 2

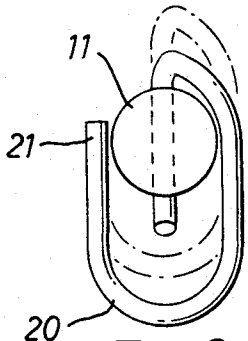


FIG. 3

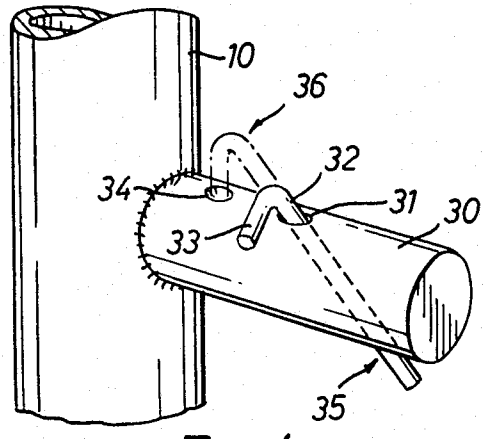


FIG. 4

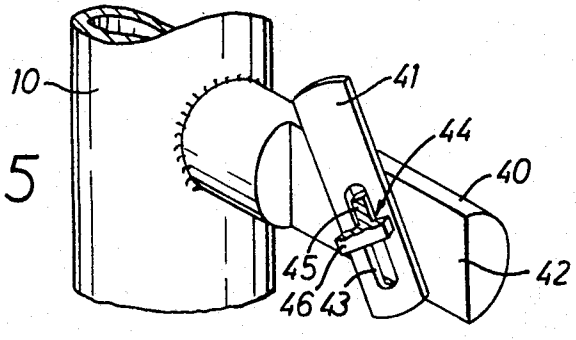


FIG. 5

LOCKING DEVICES

BACKGROUND OF THE INVENTION

This invention relates to locking devices.

In many applications, one member is locked to another by passing a peg on the one through an aperture in the other and then providing a stop at the outer end of the peg. The stop may take many forms, including that of a pin through a transverse hold in the peg.

SUMMARY OF THE INVENTION

The present invention provides a locking device adapted to secure a member thereon, comprising a peg member and an elongate latch member slidably and captively mounted on the peg member to provide constrained movement of the latch member longitudinally and obliquely of the peg member between a securing position with the latch member projecting on both sides of the peg member and a retracted position with the latch member projecting on one side of the peg member whereby another member having a matching aperture may pass over said peg member and said other member is securable on the peg member by said constrained movement of the latch member from said retracted position into said securing position with the latch member projecting on both sides of said other member.

A hole may be provided which extends longitudinally and obliquely through the peg member and said latch member may be in the form of a pin which is slidably mounted in the hole. Alternatively, there may be provided on the peg member a fixed stud having flat opposing surfaces and said latch member is in the form of a bar having a longitudinal slot slidably mounted on the stud whereby the flat opposing surfaces engage inner surfaces of the slot and determine the constrained movement of the bar.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** shows a perspective view of a preferred embodiment of the invention;

FIG. **2** shows a side view of a further embodiment;

FIG. **3** shows an end view of the arrangement in FIG. **2**; and

FIG. **4** shows a perspective view of a third form of the invention.

FIG. **5** shows a perspective view of a fourth form of the invention.

DESCRIPTION OF PREFERRED EMBODIMENTS

FIG. **1** shows an upright pole **10** of a scaffold frame. A solid peg **11** is welded to the pole and projects from it. The peg, and others on other uprights, act as anchorage points for cross-bracing in the form of a diagonal bar or bars, or of scissor-braces, with a hole at each bar end.

The pegs forms part of a locking device which prevents the accidental disengagement of a brace once it has been positioned on the peg. The locking device further comprises a single length of spring wire, one part **12** of which is straight (to constitute the aforesaid pin) and passes through a hole **13** drilled longitudinally and obliquely at **45°** through the peg. In the upright position of the pole, the hole **13** extends in a vertical plane diagonally downwards and outwards from the pole, so that the wire normally drops to the position shown. The

other part **14** of the wire is bent in a loop, the plane of which intersects the part **12** at an acute angle.

The loop is open and is so dimensioned that if the free end **15** of the wire is passed through the hole **13** from above, being pushed through until the meets **14** of the wire meetss the top surface of the peg, the loop can thereafter be swung until its free end **16** springs past the lower surface of the peg. The position of the wire is then as shown in the drawing, and it is captive.

A further form of the invention is shown in FIGS. **2** and **3**. In this instance, the loop **20** of the wire is deeper and the free end **21** extends higher, while the rest of the device is the same as in FIG. **1**. In this form, the wire must be fitted before the peg is welded to the pole, by sliding the straight part of the wire into the hole and allowing the loop to pass directly over the end of the peg which is to be welded. The depth of the loop is determined by the clearance necessary for this operation.

Both these forms of the invention operate in the same way. An end **25** of the cross-bracing bar (FIG. **2**) is pushed over the free end of the peg **11**. As the bar end **25** moves inwards along the peg, it pushes the straight part of the wire up the hole in the peg until its free end (**15** in FIG. **1**; **22** in FIG. **2**) lies within the hole. This allows the end **25** to pass to the position shown in chain line. Thereafter, the wire drops under gravity, but will not rise again if the end **25** moves outwardly. The bracing bar must be released manually by pushing the wire upwards and pulling the end **25** off the peg. Preferably the lowermost end of the wire is rounded to allow it to slide against the face which is pushing it upwards.

These forms of the invention have the advantage that the end of the bracing bar itself lifts the wire catch as it is fitted over the peg. In known forms of bracing lock, the lock must first be set so that the bar can be fitted on the peg, and afterwards released to lock. Two operations are thus saved.

A third form of the invention is shown in FIG. **4**. A peg **30** again has an oblique hole **31**, within which slides a wire **32**. This has a single bend in it, to form a retaining part **33**, preferably at an acute angle to the straight part as shown. The peg **30** also has a small recess **34** large enough to receive the free end of the retaining part **33** of the wire. The latter normally rests in its lower position **35**, from which it is raised as a bracing bar end is fitted on the peg and to which it drops back. The wire can also however, be held in its raised position **36** (dotted lines) simply by turning it slightly about its own axis until the end of the retaining part **33** fits into the recess **34**. This can be of advantage in dismantling a framework, since the brace locks can be lifted first at both ends of a brace before it is lifted off.

The wire **32** is retained in the hole **31** because clearly it cannot escape downwards, and removal upwards is prevented by the pin meeting the pole **10** to which the peg **30** is fixed. The wire must therefore either be fitted in its finished shape before the peg is welded to the pole, or be inserted from below and the retaining part **33** bent over in situ.

Another form of locking device is shown in FIG. **5**. Again a pole **10** has a peg **40** projecting from it. The peg **40** is cut away to the extent of half its diameter at its outer end thereby forming an aperture, and has a latch member **41** attached to the flat surface **42** formed by the cut. The member **41** has a longitudinal slot **43** and is held by a fixed stud **44**. The latter has a shank

45 with flat sides and a head 46 (shown partly broken away).

The flat sides of the shank 45 engage the inner surfaces of the slot 43 and thus constrain the latch member 41 to move only in an oblique line. When held upright, so that the latch member drops under gravity, it takes up a position such that it extends at both ends beyond the periphery of the peg 40. This requirement determines the length and position of the slot 43 in the member 41.

In use, the device operates as in previous embodiments. As the peg 40 is pushed through an aperture in another member, the latch member 41 slides upwards. It drops down again once it is clear of the other member, and locks the latter in position.

It will be clear that the various forms of locking device described are as secure as those already known, but cheaper to manufacture and easier and quicker to use. Though described in the form of brace locks for scaffolding, they are applicable in many other fields, such as gate locks or tailboard locks for vehicles. If the wire should be damaged, it is easily replaced.

It will be understood that the above description of the present invention is susceptible to various modifications changes and adaptations.

I claim:

1. A locking device adapted to secure a member thereon, comprising a peg member and an elongate latch member, said peg member including an aperture providing longitudinally and obliquely extending sliding means through said peg member, said latch member including upper stop means; said latch member being slidably mounted in said aperture and having a constrained movement longitudinally and obliquely in said peg member between a first securing and a second retracted position, said first position permitting said latch member to project on both sides of said peg member, and said second position permitting the latch member to project on only one side of said peg member, whereby another member having a receiving aperture is adapted to receive said peg member and said other member is adapted to be secured on said peg member by said constrained movement of the latch member from said second retracted position into said first securing position, with said latch member projecting on both sides of said other member.

2. A locking device as claimed in claim 1, wherein a fixed stud is mounted in said aperture and has flat opposite surfaces, and said latch member is a bar having a longitudinal slot slidably mounted on the stud whereby the flat opposite surfaces of said stud engage inner surfaces of the slot and determine the constrained movement of the bar.

3. A locking device according to claim 1, wherein said aperture extends longitudinally and obliquely through the peg member and said latch member comprises a pin slidably mounted in said aperture.

4. A locking device according to claim 3, wherein the stop means of said pin includes one end portion bent transversely to the axis of the aperture thereby blocking passage of said end portion through the aperture.

5. A locking device according to claim 4, wherein the pin has a free end defining the upper end of said one end portion and the surface of the peg member is provided with a recess adapted to receive said free end when the pin is located in said retracted position.

6. In combination with a framework, the locking device according to Claim 4, wherein the peg member is securely mounted at one end on the framework with said aperture spaced therefrom by a distance insufficient to permit withdrawal of the pin.

7. A locking device according to claim 4, wherein said one end portion is a loop adapted to partly encompass the peg member to captively retain the latch member on the peg member.

8. A locking device according to claim 7, wherein the loop has a free end adapted to spring past a surface of the peg member about the axis of the hole, whereby the loop is swingable between a position in which it does not encompass the peg member and a position in which it encompasses at least partly the peg member.

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