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(54) STANCHION WITH BRACING MEANS

(57) For application as an element supporting horizontal formwork or as a bearing or shoring element. The means of inter-shore bracing comprise a tubular structure (6) which is provided with horizontal tubes (7) and struts (8), there being associated with the ends of the horizontal tubes (7) bracing clamps (9) that encircle the outer tubes (1) of the shores forming a shoring tower with said shores. The bracing clamps (9) comprise a fixed clamp (11) welded to the end of the horizontal tube (7) and have a recess (12) which engages on an axial rib (13) of the outer tube (1) for its adjustment, encircling the outer tube (1) of the shore with the assistance of a moving clamp (14), which swivels around the fixed clamp (11), being completed with a wedge (16) which fixes the moving clamp (14) to the fixed clamp (11) in this position.

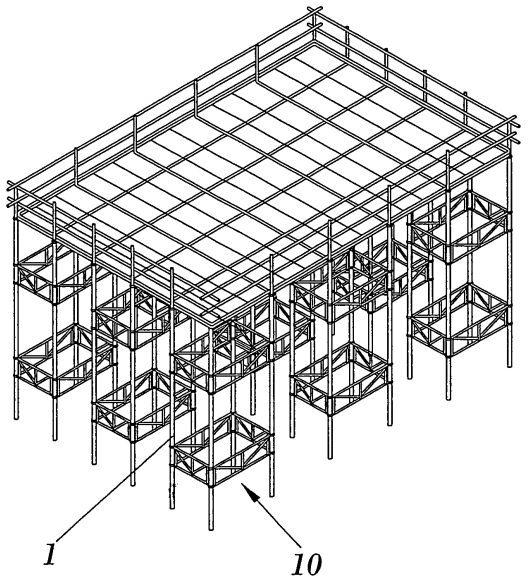

FIG. 1

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Description

OBJECT OF THE INVENTION

[0001] The present invention refers to shores adjustable for height designed to be used as support elements for horizontal formwork and as support or shoring elements.

[0002] The object of the invention is the means of intershore bracing, which form shoring towers together with the actual shores, said means of bracing comprising a rectangular frame made up of tubular structures terminated at their ends with bracing clamps that encircle the shores.

[0003] A further object of the invention is the particular structure, constitution and geometry of the bracing clamps in combination with the actual external geometry of the shore that they encircle, which are designed to assure the adjustment and fixing of the clamps to the shore in a simple and secure fashion.

BACKGROUND OF THE INVENTION

[0004] The shores conventionally comprise an inner threaded tube that moves vertically in relation to an outer tube under the action of a nut which adjusts the height of the shore in accordance with the height of the formwork or other element to be supported.

[0005] In order to establish the fixing of the relative position of the inner tube in respect of the outer tube the design contemplates the inclusion of a hitch integral with the outer tube of the shore, which is provided with anchoring means that establish the connection between a plate of said tube and the actual nut. This hitch is normally swivelling and is subject to the action of a spring which must be pressed to release the anchorage. This configuration is shown for example in the shore that constitutes the object of Invention Patent EP 0 921 254.

[0006] As a possible solution for shoring, consideration is given to the use of a number of shores combined with bracing elements to form a framework that provides greater supportive stability and strength than that achieved by means of independent shores.

[0007] Invention Patent ES 2 021 047 describes a support system adapted to arch centering which consists of a framework that comprises two vertical legs interlinked by a series of horizontal cross members, each of which has a connecting element which is fixed to the support leg by means of bolts which traverse the leg through the corresponding holes.

[0008] Furthermore, Invention Patent ES 2 078 632 refers to a connector used in a shoring system which comprises a plurality of uprights and frames joining the uprights, the outer surface of each of said uprights displaying slots that extend in an axial direction in which the connectors are engaged. These consist basically of latches that slide axially for insertion of their head into said axial slot. Complementarily and in order to establish the fixing of the latch, this is provided with a longitudinal housing in which a wedge moves. Such wedge is provided with an angular slot which in the course of its movement in the housing pushes a cross stem of the latch causing the axial movement of the latch in a direction perpendicular to the movement of the wedge. In this way, the cross members may be engaged or released in respect of the vertical uprights.

DESCRIPTION OF THE INVENTION

[0009] The shore with means of bracing that is the object of this invention proposes an alternative solution for establishing the simple and secure union between shores and means of bracing in order to form rectangular shoring towers.

[0010] The shore is basically composed of an outer tube and an inner tube moving in a vertical direction in relation to the former under the action of a nut, and it is distinguished mainly by the fact that the outside face of the outer tube has axial lozenge-shaped ribs which are encircled by bracing clamps provided at the ends of tubular structures which link the shores. The assemblage of a number of tubular structures joining various shores forms a closed, preferably rectangular bracing frame defined between four shores with which a shoring tower is configured.

[0011] The bracing clamp is composed of a fixed clamp, a moving clamp and a wedge.

[0012] The fixed clamp is welded to the tubular structure and it is adapted to the shape of the outer tube of the shore, so that one of the lozenge-shaped ribs of the outer tube is housed in a recess defined in the fixed clamp, whose recess has a similarly lozenge-shaped configuration.

[0013] The moving clamp can turn in relation to the fixed clamp, both encircling the outer tube, while the locking position between the two is established by the wedge. The moving clamp has a contact protuberance that forms the first sector, which impinges on the outer tube as the clamp approaches, so that the moving clamp swivels in relation to the fixed clamp until both encircle the outer tube.

[0014] Two symmetrical moving clamps are provided, a right-hand moving clamp and a left-hand moving clamp.

[0015] The wedge is the fast-fixed type and slides in slots in the moving clamp, so that said wedge, which has snugs at its lower end, can come out of the lower slot in the releasing operation, given the latter's special configuration, but it will be retained by the upper slot narrower than the snugs, so that the wedge can never be detached or separated from the moving clamp.

[0016] Furthermore, on its curved outer edge the fixed clamp is provided with a rebate in which the wedge is lodged in the locking position.

[0017] This assembly achieved between tubular structures with end clamps and the two shores is repeated for other shores, finally configuring a closed bracing frame

which forms rectangular shoring towers together with the shores.

[0018] It should moreover be pointed out that the inner tube has a four lead-in trapezoidal thread for quick adjustment and that the outer tube has inner shoulders which reduce the clearance between the inner tube and the outer tube, limiting friction to a few contact points, which may be four for example, thus facilitating adjustment.

[0019] The nut which adjusts the height of the inner tube in respect of the outer tube will normally be winged to facilitate its turning, either with the aid of a hammer or levering with a bar for example, being designed internally, matching up with the wings, to have rebates that interrupt the thread to assist the removal of the dirt that may have collected in the thread, thereby assuring that it remains clean.

[0020] The shore also includes an intermediate plate riveted to the end of the outer tube which constitutes the support on which the nut rests and turns and which supports the inner tube, while also acting as the support to which a hitch is attached that likewise engages on the base of the nut, establishing the connection between the inner tube and the outer tube once the adjustment is made.

DESCRIPTION OF THE DRAWINGS

[0021] To supplement the description that is being given and in order to assist in a clearer understanding of the features of the invention, in accordance with a preferred practical embodiment of same, a set of drawings is adjoined as an integral part of said description, wherein there is represented, for informative and non-restrictive purposes, the following:

Figure 1.- It shows a perspective view of a number of rectangular shoring towers consisting of four shores and their bracing frame.

Figure 2.- It shows a perspective view of a shore with an amplified close view in which we may observe the nut and the hitch which establishes the anchorage between the inner tube and the outer tube.

Figure 3.- It shows a sectional plan view of the shore in which we may observe the geometry of both the inner tube and the outer tube.

Figure 4.- It shows a perspective view of a tubular structure at the ends of which we observe the end bracing clamps for coupling on the respective shores.

Figure 5.- It shows a perspective view of a bracing clamp.

Figure 6.- It shows a perspective view of the fixed clamp.

Figure 7.- It shows a plan view of the fixed clamp coupled to the outer tube.

Figure 8.- It shows a perspective view of the moving clamp, right and left.

Figure 9.- It shows a plan view of the bracing clamp in the position prior to coupling on the outer tube of the shore.

Figure 10.- It shows a plan view of the bracing clamp in the end position coupled to the outer tube of the shore.

PREFERRED EMBODIMENT OF THE INVENTION

[0022] The shore with means of bracing which constitutes the object of this invention has its application as an element for supporting horizontal formwork or as an element for supporting or shoring and it includes an outer tube (1) and a threaded inner tube (2) which moves in a vertical direction under the action of a nut (3). The outer tube (1) incorporates a hitch (4) which locks the nut (3) up against an intermediate plate (5) integral with the outer tube (1) establishing the fixing of the relative position between the inner tube (1) and the outer tube (2).

[0023] Starting from this basic configuration, the invention is notable mainly because the means of inter-shore bracing comprise a tubular structure (6) which has horizontal tubes (7) and struts (8), there being associated with the ends of the horizontal tubes (7) bracing clamps (9) that encircle the outer tubes (1) of the shores configuring a closed bracing frame (10) which makes up a shoring tower together with said shores.

[0024] The bracing clamps (9) comprise a fixed clamp (11) welded to the end of the horizontal tube (7) of the tubular structure (6), exhibiting a curved contact surface broken by at least one recess (12) which has the same geometry as a series of axial ribs (13) defined in the outer tube (1) for fitting on one of these ribs (13), encircling the outer tube (1) of the shore with the assistance of a moving clamp (14), which swivels around the fixed clamp (11) in relation to a swivel axis (15).

[0025] The bracing clamp (9) is completed with a wedge (16) which, on becoming lodged, establishes the fixing position of the moving clamp (14) in relation to the fixed clamp (11) in the situation of coupling and locking of the bracing clamp (9), encircling the outer tube (1).

[0026] As the bracing clamps (9) approach the outer tube (1), the moving clamp (14) impinges on the outer tube (1) by means of a contact protuberance (17), which determines the swivelling of the moving clamp (14) towards the outer tube (1), which will thus be encircled both by the fixed clamp (11) and the moving clamp (14) and will be locked in this encircling position by the wedge (16).

[0027] The fast-fixed type wedge (16), i.e. it remains

attached to the moving clamp (14) all the time, moves in slots (18) and (19) in said moving clamp (14), remaining in both slots in the locking position, while in the release position the lower end of the wedge, which is provided with snugs, can disengage from the slot (19), given the latter's special configuration, but not from the slot (18), narrower than the snugs, so that the wedge (16) always remains attached to the moving clamp (14).

[0028] Likewise, on its outside edge, specifically in the elbowed area, the fixed clamp has a rebate (20) in which the wedge (16) is lodged in order to lock the clamps.

[0029] Furthermore, it should be pointed out that the inner tube (2) of the shore has a four lead-in trapezoidal thread (21) which permits a quick turning of the nut (3) and thereby a quick adjustment for height of the shore, while the outer tube (1) is also provided internally with shoulders (22) that minimize the clearance between the inner tube (2) and the outer tube (1), limiting the possible friction between these to the contact between the inner tube (2) and the shoulders (22), so that there is no interference with adjustment.

Claims

1. Shore with means of bracing for application as a supporting element for horizontal formwork or as a bearing or shoring element which incorporates an outer tube (1) and at least one threaded inner tube (2), which moves in a vertical direction under the action of a nut (3), the outer tube including (1) a hitch (4) for the coupling and locking of the nut (3) to an intermediate plate (5) integral with the outer tube (1) in order to establish the relative position between the inner tube (2) and the outer tube (1), provided with means of inter-shore bracing comprising a tubular structure (6) which has horizontal tubes (7) and struts (8), **characterised in that** associated with the ends of the horizontal tubes (7) it has bracing clamps (9) that encircle the outer tubes (1) of the shores, configuring a closed bracing frame (10), the bracing clamps (9) of which consist of a fixed clamp (11) welded to the end of the horizontal tube(7) of the tubular structure (6), exhibiting a curved contact surface broken by at least one recess (12) which displays the same geometry as a series of axial ribs (13) defined on the outer tube (1) for its fitting on one of these ribs (13), encircling the outer tube (1) of the shore with the assistance of a moving clamp (14) which swivels around the fixed clamp (11) in respect of a swivel axis (15), the bracing clamp (9) being completed with a fast-fixed wedge (16), which establishes the locking of the moving clamp (14) in relation to the fixed clamp (11) in the coupling position of the bracing clamp (9) encircling the outer tube (1).

2. Shore with means of bracing according to claim 1, **characterised in that** the moving clamp (14) has a contact protuberance (17) which impinges on the outer tube (1) as the bracing clamps (9) approach the afore-mentioned outer tube, causing the swivelling of the moving clamp (14) towards the outer tube (1) which remains encircled between the fixed clamp (11) and the moving clamp (14).

3. Shore with means of bracing according to the preceding claims, **characterised in that** the fast-fixed wedge (16), which is provided with snugs at its end, moves in an upper closed slot (18) and in a lower T-shaped slot (19) in the moving clamp (14), so that in the locking position it is housed in both slots and in the release position it may come out of slot (19) due to the latter's special configuration, but it cannot escape from the slot (18) narrower than the snugs.

4. Shore with means of bracing according to the preceding claims, **characterised in that** on its periphery, specifically in the elbowed area, the fixed clamp (11) is provided with a recess (20) in which the wedge (16) moves in the locking position.

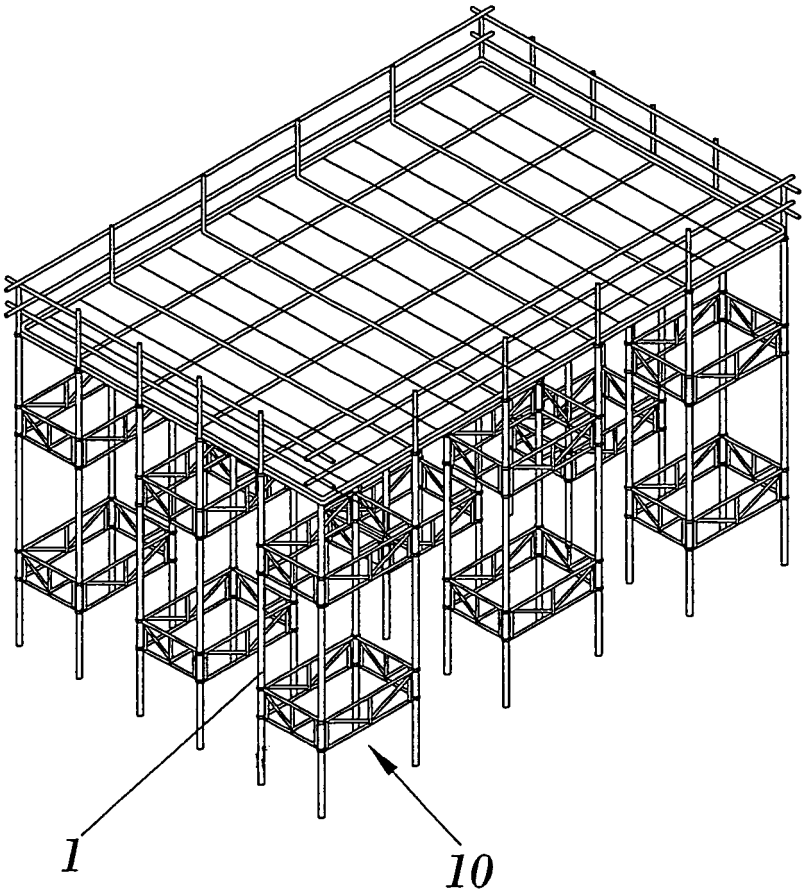

FIG. 1

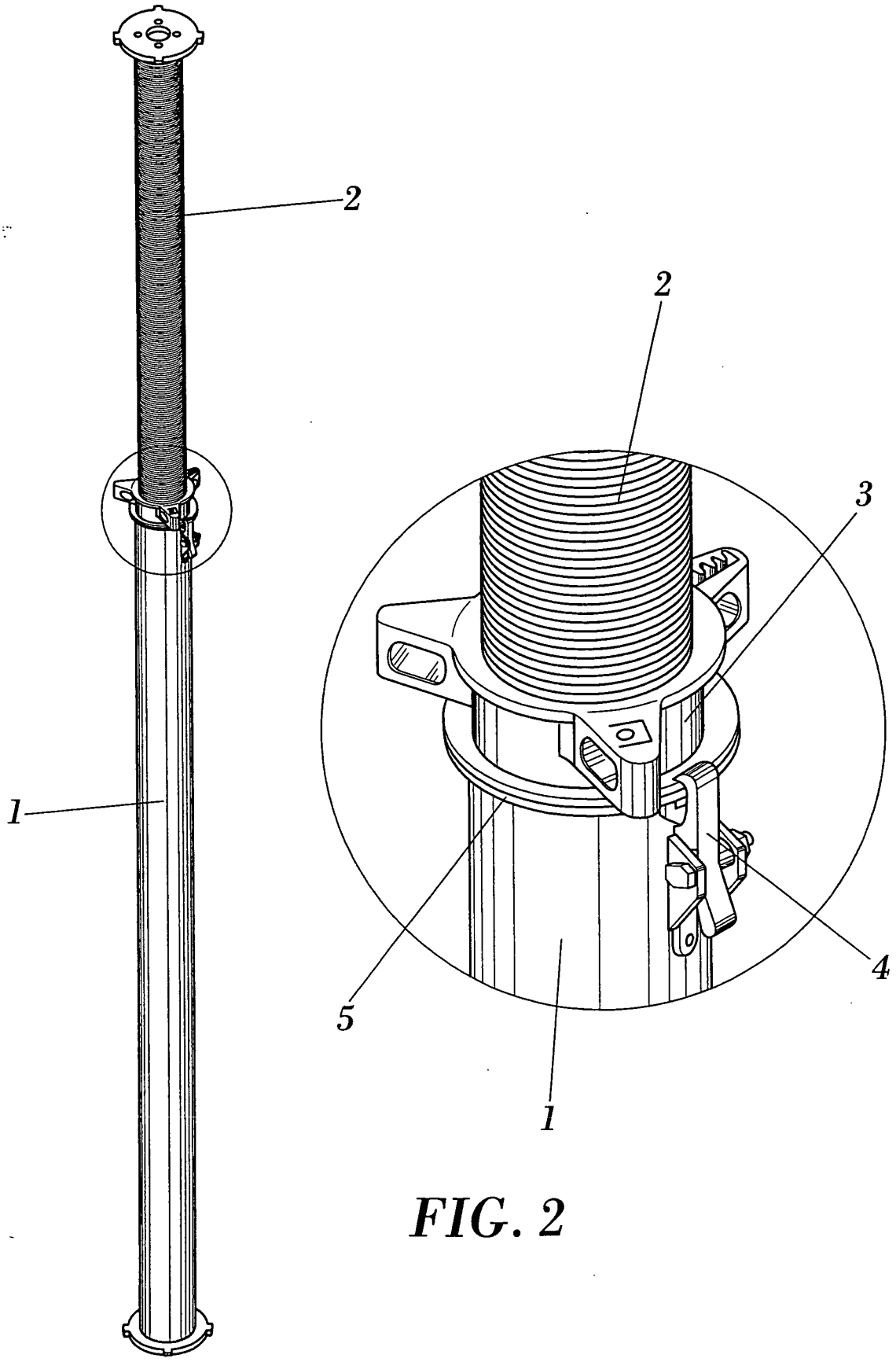

FIG. 2

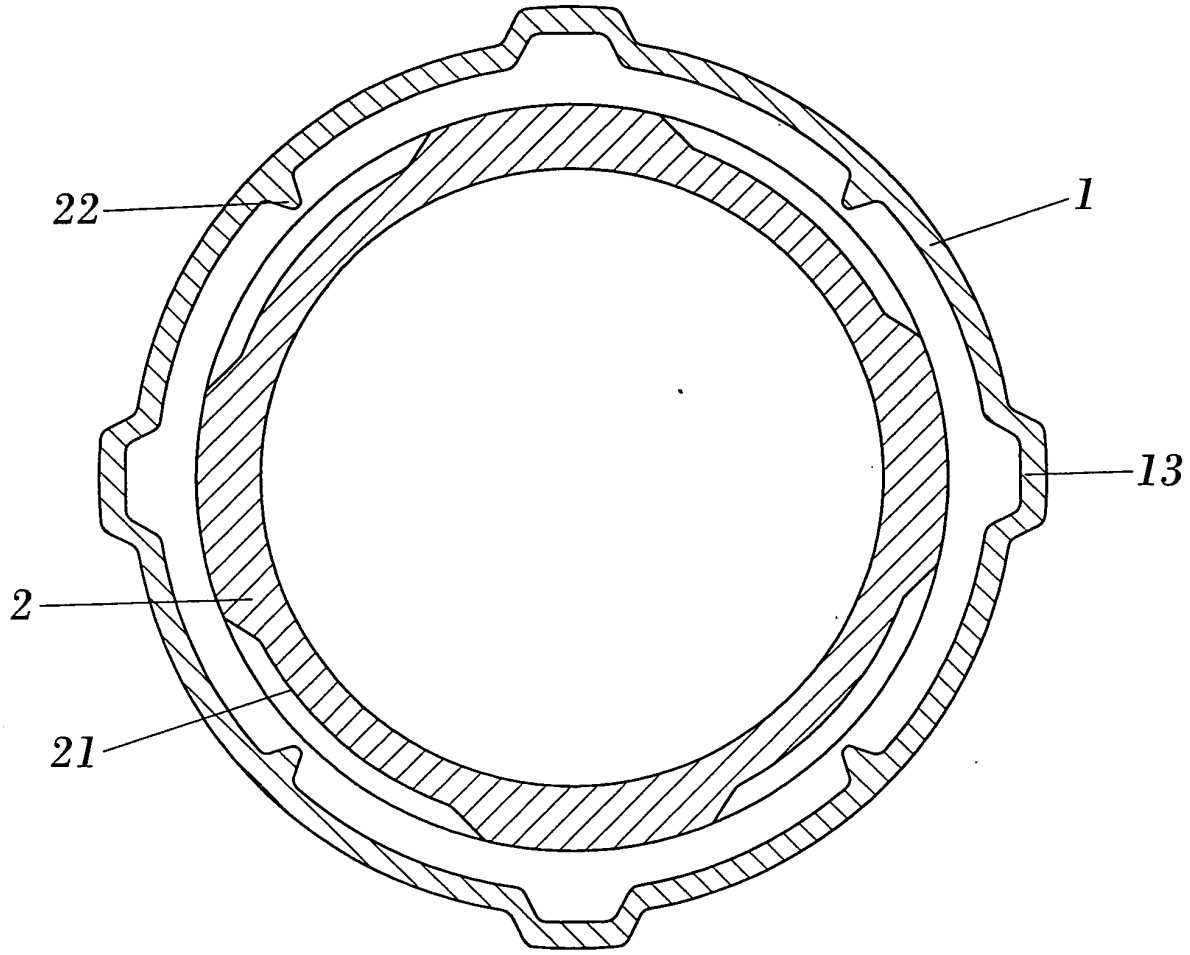

FIG. 3

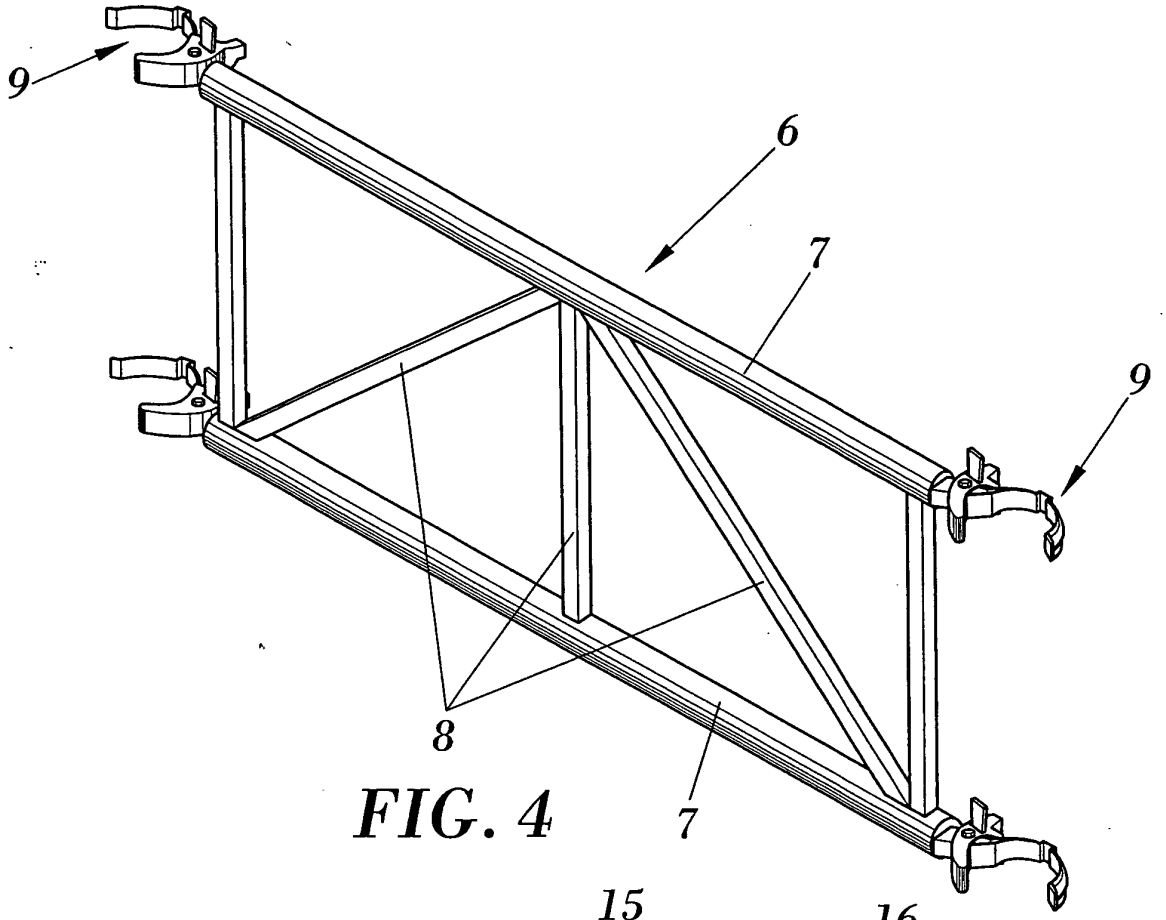

FIG. 4

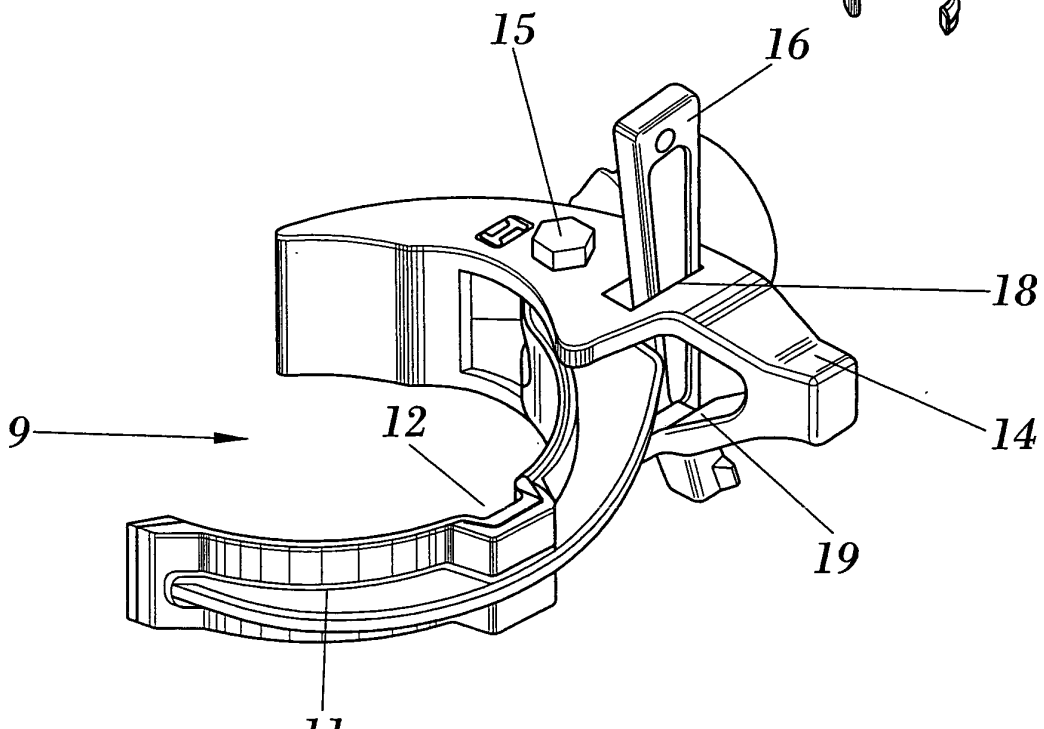

FIG. 5

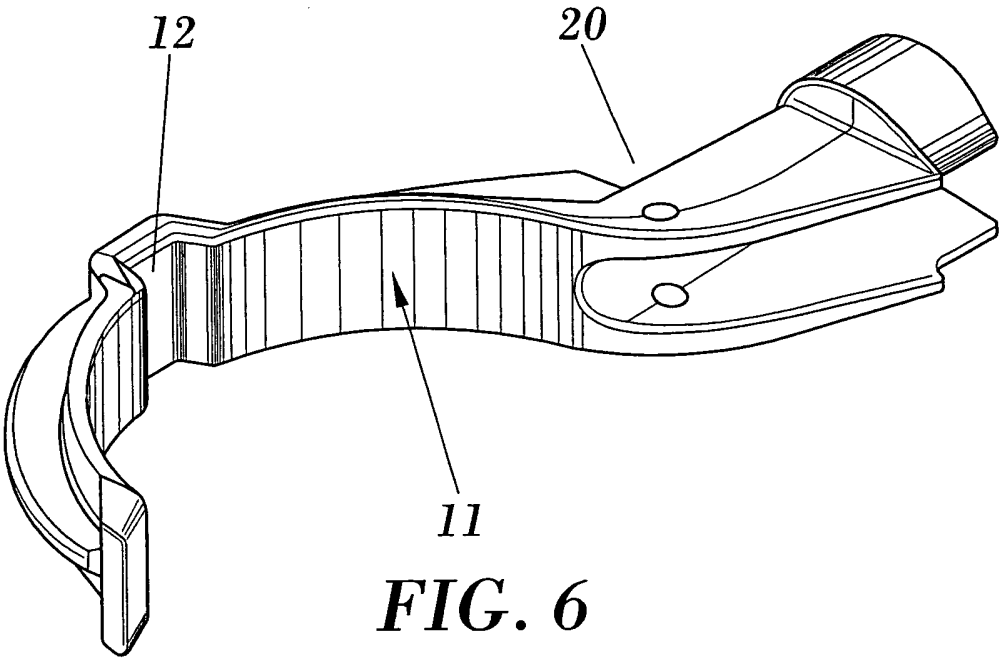

FIG. 6

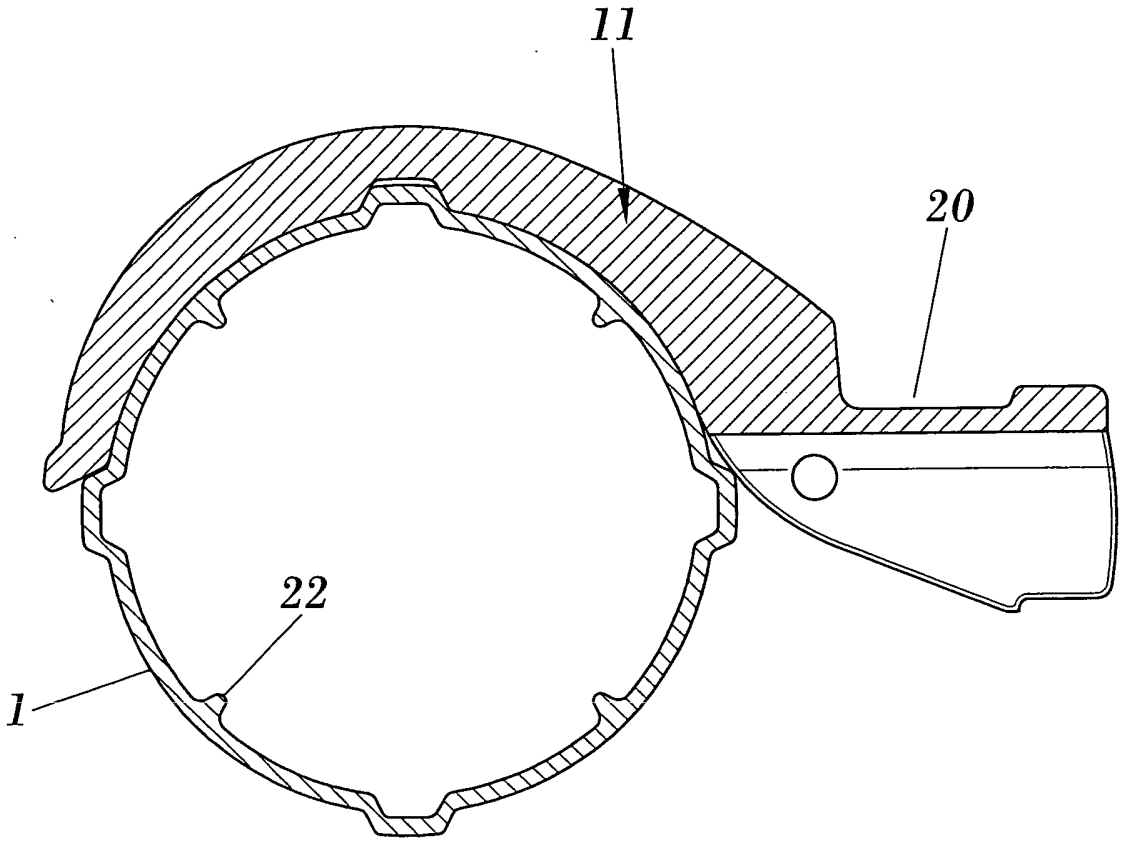

FIG. 7

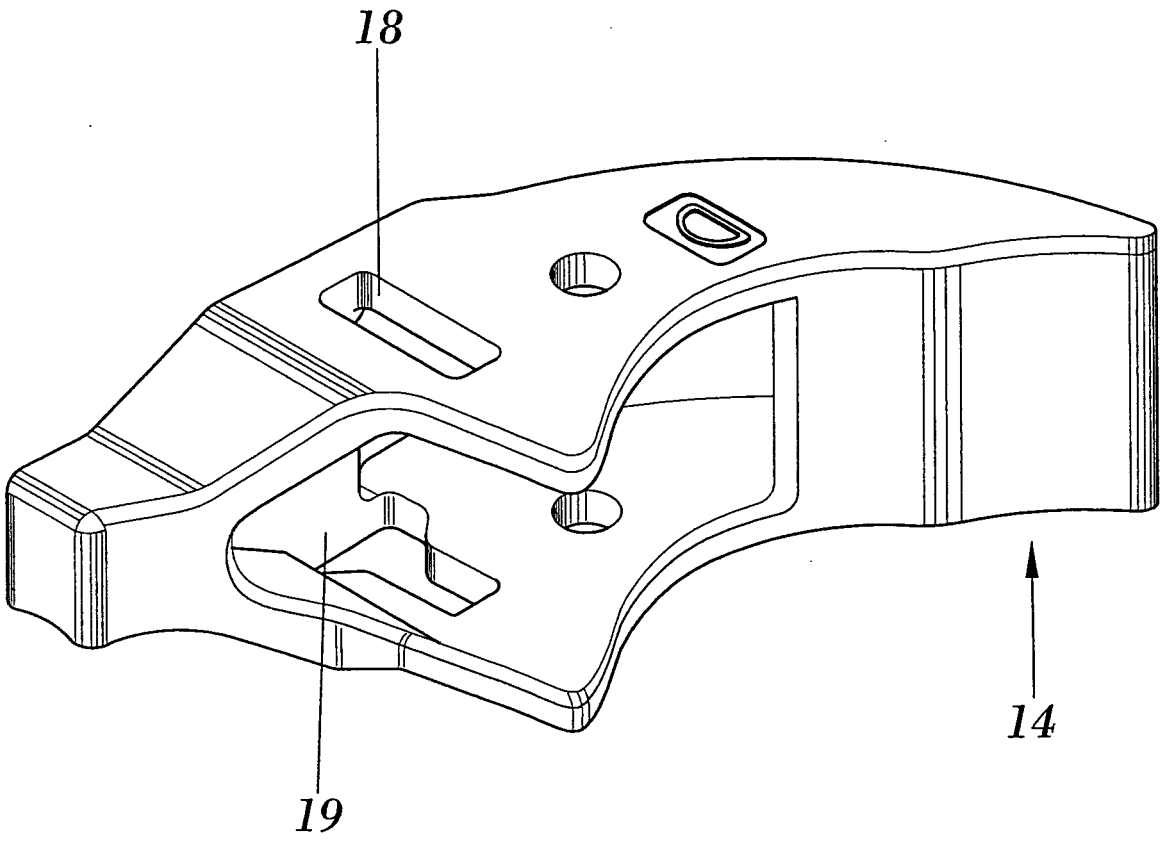

FIG. 8

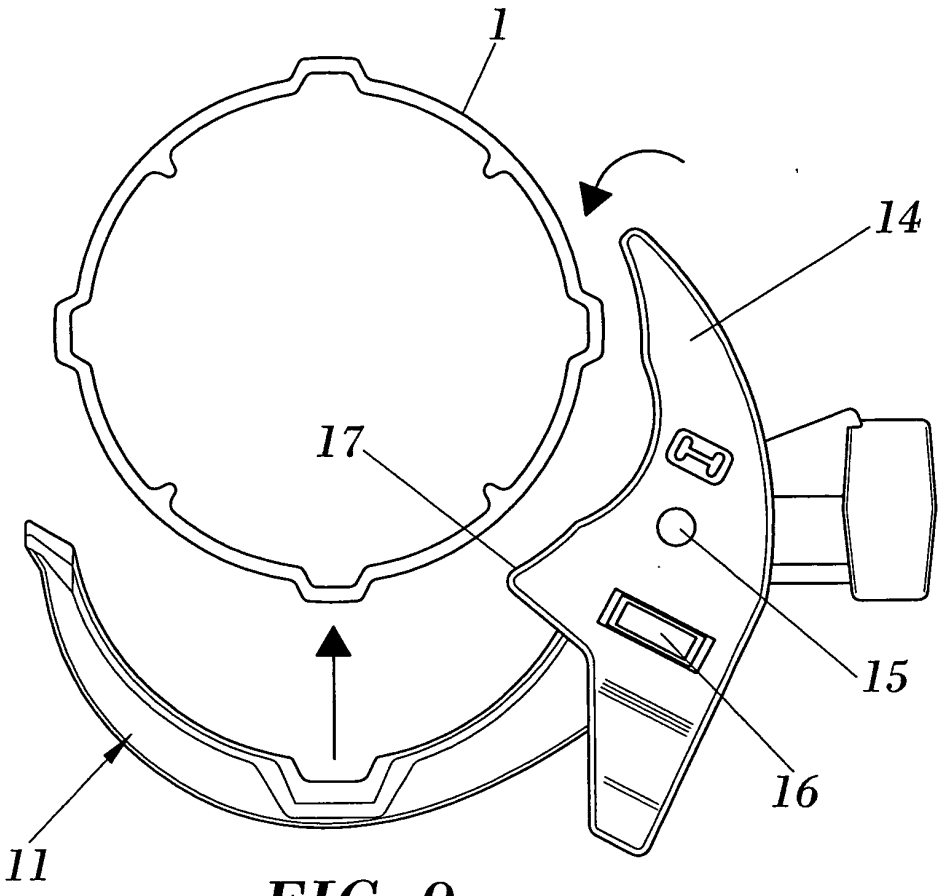

FIG. 9

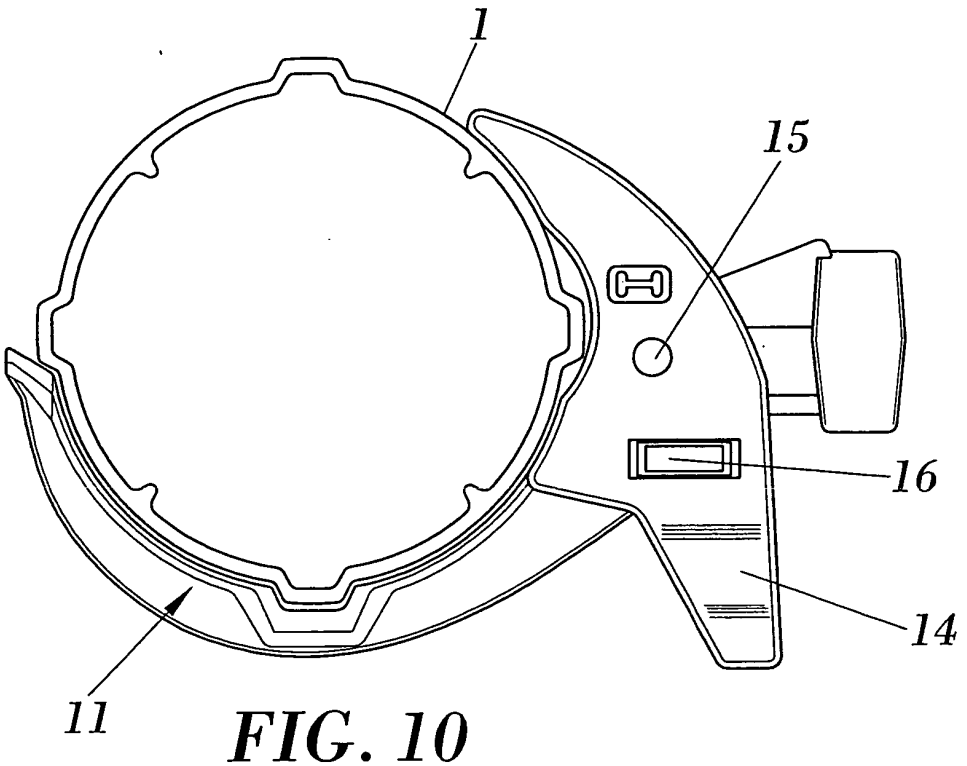

FIG. 10

INTERNATIONAL SEARCH REPORT

International application No.
PCT/ ES 2004/000121

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 E04G11/48, E04G25/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 E04G11/48,E04G25/00,E04G25/02,E04G25/04

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

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C. DOCUMENTS CONSIDERED TO BE RELEVANT

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A	US-6481912-A 19.11.2002 SHIH LC **the whole document**	1
A	ES-0246993-U 16.12.1980 S.N.E.T.M **the whole document**	1,3
A	FR-2069263-A 03.09.1971 MANNESMAN **the whole document**	1,3
A	US-3376056-A 02.04.1968 LINSTEAD **the whole document**	1
A	EP-0921254-A 09.06.1999 SGB SERVICES **the whole document**	1

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Date of the actual completion of the international search	Date of mailing of the international search report
22 June 2004 (22.06.04)	**21 July 2004 (21.07.04)**
Name and mailing address of the ISA/ **S.P.T.O.** Facsimile No.	Authorized officer Telephone No.

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INTERNATIONAL SEARCH REPORT

Information on patent family members

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