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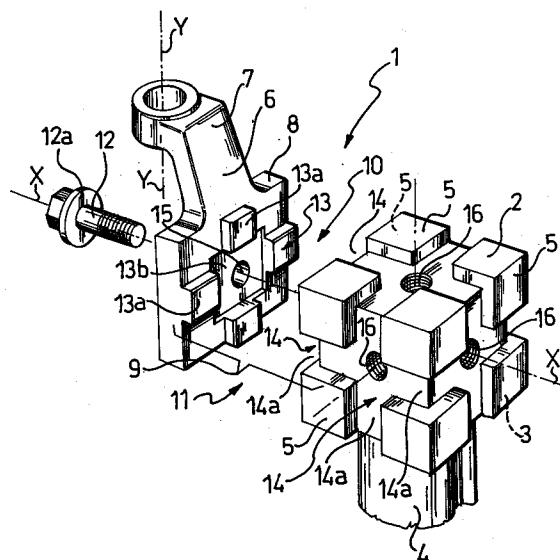
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I-20122 Milano(IT)(54) **Tooling for unitized car body straightening stands.**

(57) A tooling (1) for unitized car body straightening stands, affording uniquely fast setting up features, comprises a cube element (2) made fast with a pillar (4) through one face (3) and having the other faces (5) free, a fixture (6) and a mortise joint (11) between the fixture (6) and each free face (5) of the cube element (2), and a screw (12) for clamping the fixture (6) to the cube element (2).

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This invention relates to a tooling for unitized car body straightening stands, being of a type which comprises a cube element made unitary with a pillar through one face and having the other faces free, a fixture to be selected from a plurality of fixtures, and a keeper arrangement for clamping the fixture to the cube element.

As is known, with stands for straightening the unitized car bodies of collision-damaged motor vehicles, a unitized car body to be straightened is set on the stand by securing it to specially provided fixtures, at spots on the car body unaffected by the damage.

The damaged portion of the car body is then subjected to strong pulling forces, applied to it through chains or the like, for straightening until its damaged spots are brought one at a time to contact the respective fixture, thereby they can be firmly secured on the latter.

It follows from the above that the fixtures are to withstand unharmed considerable stresses during the car body straightening operation.

Also known is that the fixtures which equip a straightening stand can be of varying types to agree with key spots of an individual car body and different unitized car body designs.

Accordingly, the fixtures have to be replaced each time to suit a specific unitized car body design under repair.

With prior art tooling, the aforesaid demands are met by having the means for clamping the fixtures to the cube element comprised of four screws which engage in four threaded holes provided at the apices of each face of the cube element.

While being in many ways satisfactory, such prior tooling has a drawback, forcibly accepted heretofore: that is, considerable time is required to replace a fixture. This reflects on the stand operation, making it fairly expensive and slow to run.

It is the object of this invention to provide a tooling of the kind specified hereinabove, which has such constructional and performance features as to meet the aforesaid demands, and overcome the above-noted drawback as well.

This object is achieved by a tooling as indicated being characterized in that the keeper arrangement comprises a mortise joint and a clamping screw.

Further features and the advantages of this invention will become apparent from the following detailed description of an embodiment thereof, given by way of example and not of limitation with reference to the accompanying drawing, the single Figure whereof shows an exploded perspective view of a tooling according to the invention.

With reference to the drawing figure, generally indicated at 1 is a tooling for a unitized car body

straightening stand, useful to secure a key spot of the car body to the stand.

The tooling 1 comprises a cube element 2 which is made fast, through an inward face 3 thereof, with the top end of a pillar 4, and has its other faces 5 free.

The tooling 1 also includes a fixture 6, to be selected from a kit of fixtures, which has an anchor portion 7, being in this example in the form of an eye with an axis Y-Y, adapted for securing an area of the unitized car body -- e.g. a support pad for the engine block -- and a plate-like portion 8 having a square face 9 which is same as the cube element faces.

The fixture 6 is intended for attachment, through its face 9, to one of the free faces 5 of cube element 2, using a keeper arrangement generally designated 10.

The keeper arrangement 10 comprises a mortise joint 11 created between the face 9 and each free face 5 of the cube element, and a screw 12 having an axis X-X perpendicular to face 9.

In particular the joint 11 includes a tenon 13 protruding from face 9 and a mortise 14 formed in each face 5 of the cube element 2.

The tenon 13 is a cross pattern with arms 13a of the cross extending along the median lines of face 9. A broad undercut 13b is formed in the cross-pattern tenon and part of the plate-like portion 8 at the barycenter of face 9. The mortise 14 is also a cross-like pattern, with arms 14a of the cross extending along the median lines of face 5.

The screw 12, complete with a washer 12a, is adapted to go through a hole 15 formed in plate 8 at the barycenter of face 9 and engage threadably in a threaded hole 16 formed in each free face 5 of the cube element, again at the respective face barycenter.

The fixture 6 is secured to the cube element 2 by engaging tenon 13 in 14 on a face 5 of the cube element, and then tightening the screw 12. In this way, the fixture is secured to the cube element in a releasable manner by means of the screw and so as to inhibit undesired movements thereof, e.g. pivotal movements about axis X-X, by virtue of the tenon 13 becoming engaged in the mortise 14.

A major advantage of the tooling according to this invention is the quick way of securing and removing the fixture to/from the cube element and replacing it with another fixture, as required. It has been found in actual practice of the inventive tooling that the time required to replace the fixture can be reduced to about one fourth.

A further advantage of the tooling according to the invention is that it is more reliable, since any problems from incomplete securement of the fixture to the cube element, as may result from hasty or careless setting by an operator, can be avoided

completely.

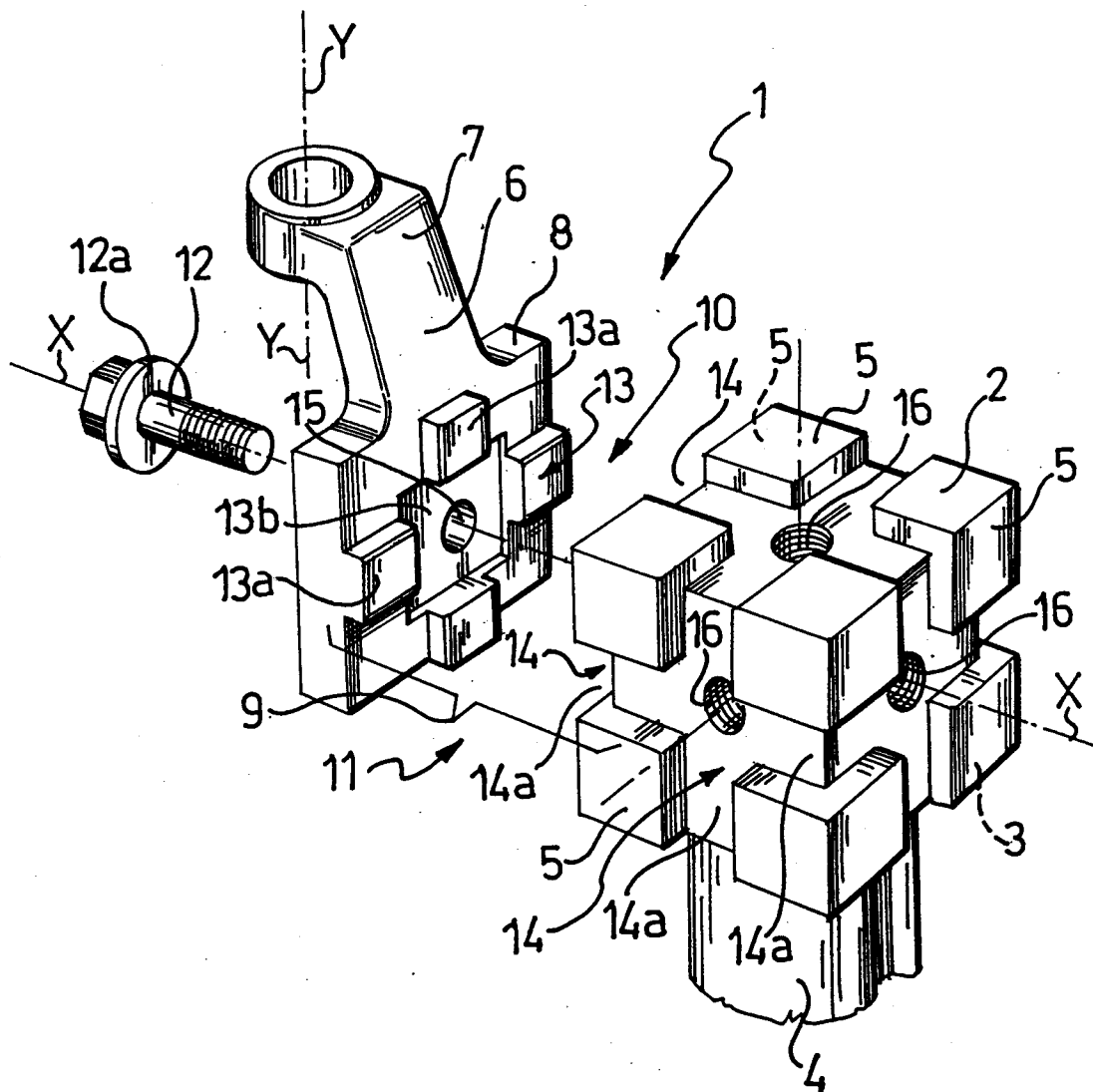
Lastly, an additional advantage is that the mortise joint of the inventive tooling interlocks the joined parts, thereby taking up most of the loads and relieving the screw of much of the stress involved. 5

Not least advantage of this tooling is that it readily lends itself, at the tooling manufacturing stage, to fast and accurate machining on standard equipment. 10

Understandably, the tooling described hereinabove may be altered and modified in several ways by a skilled person in the art to meet specific and contingent demands, and all this within the invention scope as defined in the appended claims. 15

Claims

1. A tooling (1) for unitized car body straightening stands, being of a type which comprises a cube element (2) made unitary with a pillar (4) through one face (3) and having the other faces (5) free, a fixture (6) to be selected from a plurality of fixtures, and a keeper arrangement (10) for clamping the fixture (6) to the cube element (2), characterized in that the keeper arrangement (10) comprises a mortise joint (11) and a clamping screw (12). 20
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2. A tooling (1) according to Claim 1, characterized in that said mortise joint (11) comprises a tenon (13) protruding from the fixture (6) and a mortise (14) formed in the cube element (2). 35
3. A tooling (1) according to Claim 2, characterized in that the mortise (14) is a cross-like pattern. 40
4. A tooling (1) according to Claim 3, characterized in that the tenon (13) is a cross-like pattern. 45
5. A tooling (1) according to Claim 4, characterized in that it has an undercut (13b) formed in the tenon (13) around the barycenter of the face (5). 50
6. A tooling (1) according to Claim 5, characterized in that the screw (12) extends at the barycenter of the face (5). 55





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EUROPEAN SEARCH REPORT

Application Number

EP 92 10 2931

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
Y	US-A-2 668 727 (ZINKE)	1	B21D1/12
A	* column 2, line 40 - column 3, line 1 * * column 3, line 9 - line 20; figures * ---	2,3	B21D1/14
Y	GB-A-2 098 522 (MARCHIO) * page 2, line 8 - line 19; figures * ---	1	
A	DE-A-2 408 350 (MAUSER-SCHAEERER GMBH) * page 20, line 21 - line 27; figure 4 * -----	1-3	
			TECHNICAL FIELDS SEARCHED (Int. Cl.5)
			B210 B23Q
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 27 APRIL 1992	Examiner BARROW J.
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	