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(54) Device for cutting plate-shaped elements

(57) Device for cutting plate-shaped elements, comprising a base (17) supporting a plate-shaped element (28, P), a sliding element (1, 2) tiltable with respect to respective guide means (21) and sliding on them from a first position in line with a side or vertex of said plate-shaped element (28, P) to a second position in line with the opposite side or vertex of the plate-shaped element (28, P), and vice-versa, said sliding element (1, 2) has a handle (1), at an outer end, cutting means (14, 15) and pressing means (3, 4), at an inner end; said pressing means (3, 4) and said cutting means (14, 15) are so arranged that the cutting means (14, 15) are followed by the pressing means (3, 4) both when the sliding element (1, 2) is moved from said first position to said second position and when it is moved from said second position to said first position.

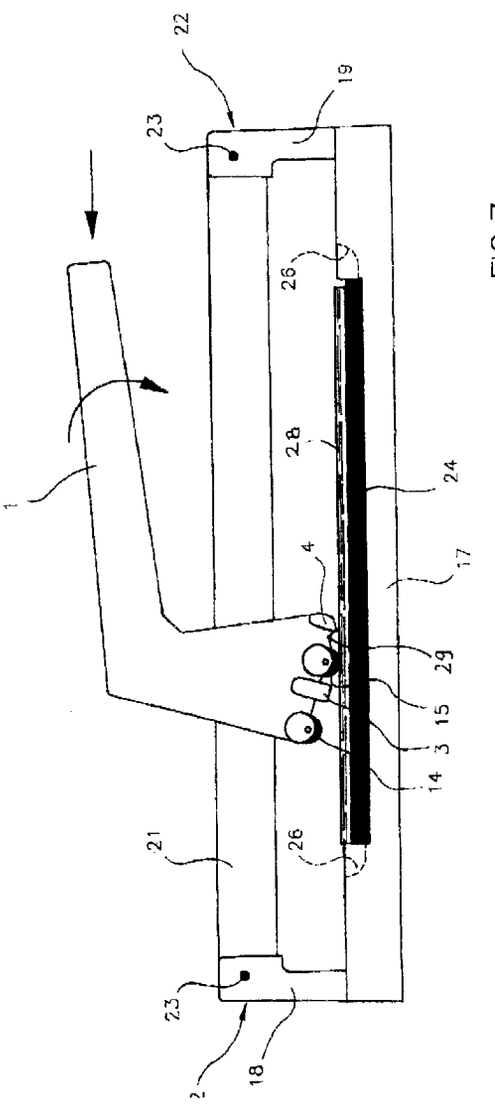

FIG.7

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Description

The invention concerns a manually operable device for cutting plate-shaped elements, for example, ceramic tiles.

Such a device is used in order to adapt the tiles to the dimensions and shape of the area available for them to be laid, such as in the areas bordering with walls, floors or other obstacles.

The prior art comprises devices provided with a surface on which a tile to be "split" is placed and with a horizontal beam placed above said surface and guiding a sliding element, movable from a first position in line with a side of said plate-shaped element to a second position in line with the opposite side of of the plate-shaped element. The sliding element is equipped, on its upper side, with a handle and, on its lower side, with a tool for cutting the tile along a "split" line and with a projection designed to be pressed down - at the end of a cutting stroke - in an area astride the incision to cause the "splitting" along said cutting line: said projection follows said cutting tool when the sliding element is moved from said first position to said second position.

Such a device enables the cut of the tile to be effected only in the outward stroke, that is in the stroke of the sliding element from said first position to said second position, the subsequent "splitting" may be effected only at the end of the return stroke, that is after the sliding element has been brought back in said first position, having overturned the handle.

All that implies dead times in the use of the device and low productivity.

Such prior art may be subject to considerable improvements with a view to eliminating the said drawbacks.

From the foregoing emerges the need to resolve the technical problem of inventing a device that enables to achieve great productivity, eliminating the dead times.

The invention resolves the said technical problem by adopting a device for cutting plate-shaped elements, comprising a base supporting a plate-shaped element, a sliding element sliding on respective guide means from a first position in line with a side of said plate-shaped element to a second position in line with the opposite side of the plate-shaped element, and vice-versa, said sliding element being provided with a handle, at one end, with cutting means and pressing means, at the opposite end, said cutting means being followed by said pressing means when the sliding element is moved from said first position to said second position, characterized in that said cutting means are followed by said pressing means even when the sliding element is moved from said second position to said first position.

The advantages offered by this invention are: elimination of dead time; possibility of cutting and splitting the plate-shaped element in both directions, as preferred by the operator, greater productivity.

An embodiment of the invention is shown, purely by way of example, in the eight tables of drawings attached, in which:

Figure 1 is a rear view of the device without cutting tools;
Figure 2 is the vertical section II-II of Figure 1;
Figure 3 is a side view of the sliding element of the device;
Figure 4 is the interrupted and enlarged view from below of Figure 3;
Figure 5 is a partially sectioned side view of a possible embodiment for the part supporting the tile and of the sliding element of the device itself;
Figure 6 is the plan view of Figure 5;
Figure 7 is a side view relating to a first way to use the device according to the invention;
Figure 8 is a side view as in Figure 7, but relating to the "splitting" phase of the tile;
Figure 9 is a side view like that of Figure 7, but relating to a second way to use the device according to the invention;
Figure 10 is an interrupted view as in Figure 9, but relating to the "splitting" phase of the tile.

With reference to the Figures: the device according to the invention comprises a base plate 17 (Figure 5) which acts as a support for a plate-shaped element 28, P, for instance, a ceramic tile to be split. The base plate 17 is equipped with risers 18, 19, which may be equipped with respective end forks 22 in which the ends of a guiding beam 21 are inserted and fixed with respective pins 23.

The device according to the invention further comprises a sliding element 1, 2, tiltable with respect to said guiding beam and slidable on it. Said sliding element 1, 2 is provided with a body 2 ending at its outer end with a handle 1 slightly inclined with respect to the direction of movement of the sliding element. The body 2 widens at its inner end with an advantageously trapezoidal profile, constituting an adequate mass for the arrangement of the cutting tools and for manoeuvring.

The body 2 is provided at said inner end with first pressing means and second pressing means: the first pressing means consists of a first pair 3 of projections diverging transversely downwards, said first pair 3 being placed at an intermediate position between the longitudinal ends of said body 2; the second pressing means consists of a second pair 4 of projections diverging transversely downwards, said second pair being placed in line with one of the longitudinal ends of said body 2.

Between said first pair 3 of projections and said second pair 4 of projections a first cutting tool 15, for instance of a rolling type, is placed, said cutting tool being supported to a first pair of lower wings 5 of the body 2, equipped with a respective hole 11 in which the axis of the first cutting tool 15 is fixed.

A second cutting tool 14 is placed at the end of said body 2 opposite to the end in line of which the second

pressing means 4 are placed.

Said second cutting tool is supported to a second pair of lower wings 13 of the body 2, equipped with a respective hole 12 in which the axis of the cutting tool 15 is fixed.

The cutting tools 14, 15 are inserted in a longitudinal lower groove 6 of the body 2.

The cutting tools 14, 15 exhibit working ends lying substantially on a same cutting plane A, said pressing means exhibiting working ends lying at predetermined different distances from said cutting plane A.

Said first pressing means 3 exhibit a corresponding working end parallel to said cutting plane A and said second pressing means 4 exhibit a corresponding working end inclined with respect of said cutting plane A at a predetermined angle.

A recess 29 of said inner end of the body 2 of the sliding element is interposed between the second pressing means 4 and the respective cutting tool 15.

The body 2 of the sliding element is equipped with a longitudinal slit 9, placed above with respect to the groove 6 and delimited by a lower plane 7 and an upper plane 8, respectively. The longitudinal slit 9 allows the body 2 of the sliding element to slide and oscillate on the guiding and supporting beam 21.

A lower front bridge 10 (Fig. 2) is provided in said body 2 between said lower plane 7 and said groove 6.

Lateral external recesses 16 are provided in the body 2 in line with the cutting tools 14, 15.

The base plate 17 is equipped with a seat 25 having end notches 26, a layer of elastic material being set into the seat 25 to support the tile 28, P.

The base plate 17 is further equipped with transverse graded beams 27 for measuring the distance of the cutting line from the edge of the tile, a square indicator element, not shown, being slidable on said transverse beams.

Figures 7 and 8 illustrate a first way of using the device according to the invention, according to which the tile is cut by means of the first cutting tool 15, moving the sliding element 1, 2 from a first position in line with a side of the tile 28 to a second position in line with the opposite side of the tile and pushing the handle 1 towards the tile 28. When the cutting has been completed, the "splitting" of the tile 28 is made by means of the second pressing means 4 pushing again the handle 1 towards the tile 28. During said operation, the recess 29 prevent the body 2 of the sliding element from getting in contact with the surface of the tile 2 before the pressing means 4.

Figures 9 and 10 illustrate a second way of using the device according to the invention, according to which the tile P is cut by means of the second cutting tool 14, moving the sliding element from said second position to said first position, in a direction opposite with respect to the previous case, and pulling the handle 1 away from the tile P. When the cutting has been completed, the "splitting" of the tile P is made by means of the first pressing means 3, pushing the handle 1 towards the tile P. During said operation, the inclination of the working end of the second pressing means prevents them from interfering with the surface of the base plate 17.

In practice the materials, dimensions and details of execution may be different from, but technically equivalent to those described without departing from the juridical domain of the present invention.

At least one of the cutting tools 14, 15, for example, even though less advantageously, could be of a type other than the rolling type.

In addition, the device may be equipped with a single cutting tool placed between the first and second pressing means, or may be equipped with a single pressing means, placed between the first and second cutting tools.

Claims

1. Device for cutting plate-shaped elements, comprising a base (17) supporting a plate-shaped element (28, P), a sliding element (1, 2) tiltable with respect to respective guide means (21) and sliding on them from a first position in line with a side or vertex of said plate-shaped element (28, P) to a second position in line with the opposite side or vertex of the plate-shaped element (28, P), and vice-versa, said sliding element (1, 2) being provided with a handle (1), at an outer end, with cutting means (14, 15) and pressing means (3, 4), at an inner end, said cutting means (14, 15) being followed by said pressing means (3, 4) when the sliding element is moved from said first position to said second position, **characterized in that** said pressing means (3, 4) and said cutting means (14, 15) are so arranged that the cutting means (14, 15) are followed by the pressing means (3, 4) even when the sliding element (1, 2) is moved from said second position to said first position.

2. Device, according to claim 1, characterized in that said cutting means comprises at least one cutting tool (14; 15) placed between consecutive pairs of projections (3, 4) defining said pressing means.

3. Device, according to claim 1, characterized in that said pressing means comprises at least a pair of projections (3; 4) placed between consecutive cutting tools (14, 15) defining said cutting means.

4. Device, according to claim 1, characterized in that a plurality of said consecutive pressing means (3, 4) and a corresponding plurality of said consecutive cutting means is provided, the respective pressing means (3, 4) being alternated with respective cutting means (14, 15).

5. Device, according to one of claims 1 to 4, characterized in that said cutting means (14, 15) are rotatably supported to a respective pair of wings (5, 13) delimiting a longitudinal groove (6) wherein said cutting means (14, 15) are partially received.

6. Device, according to claim 4, characterized in that one of said cutting means (14) and one of said pressing means (4) hold opposite longitudinal end positions of said inner end.

7. Device, according to claim 4, characterized in that said cutting means (14, 15) exhibits working ends lying substantially on a same cutting plane (A), said pressing means exhibits respective working ends lying at predetermined and different distances from said cutting plane (A).

8. Device, according to claim 7, characterized in that at least one of said pressing means (3) has the corresponding working end substantially parallel to said cutting plane (A).

9. Device, according to claim 7, characterized in that, at least one of said pressing means (4) has the corresponding working end inclined with respect to said cutting plane.

10. Device, according to claims 6 and 7, characterized in that a recess (29) of said inner end is interposed between that pressing means (4) occupying said end position and the respective cutting means (15).

11. A method of cutting plate-shaped elements, comprising positioning a plate-shaped element (28, P) on a supporting base (17), cutting said plate-shaped element by means of cutting means along a cutting line running through said plate-shaped element and splitting said plate-shaped element when said cutting has been completed, characterized in that after said splitting the positioning of an other plate-shaped element is provided for, with subsequent respective new cutting and new splitting along a new cutting line obtained by moving said cutting means in a direction opposite to the direction followed to obtain said cutting and splitting.

12. A method, according to claim 11, characterized in that said splitting is obtained by rotating a sliding element around an axis parallel to the cut surface of said plate-shaped element.

13. A method, according to claim 12, characterized in that said sliding element is operated by pushing forward and downward a respective handle (1) to obtain, respectively, the cutting of the plate-shaped element (28) and the splitting by means said pressing means (4) when said cutting has been completed.

14. A method, according to claim 12, characterized in that said sliding element is operated by pulling backward and upward a respective handle (1) to obtain, respectively, the cutting of the plate-shaped element (P) and the splitting by means of said pressing means (3), when said cutting has been completed, by pushing downward said handle.

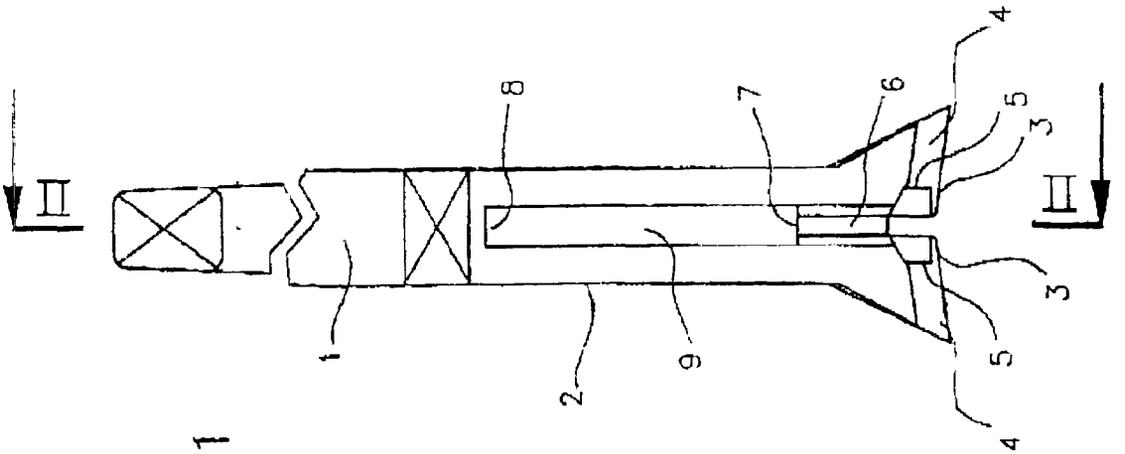


FIG.1

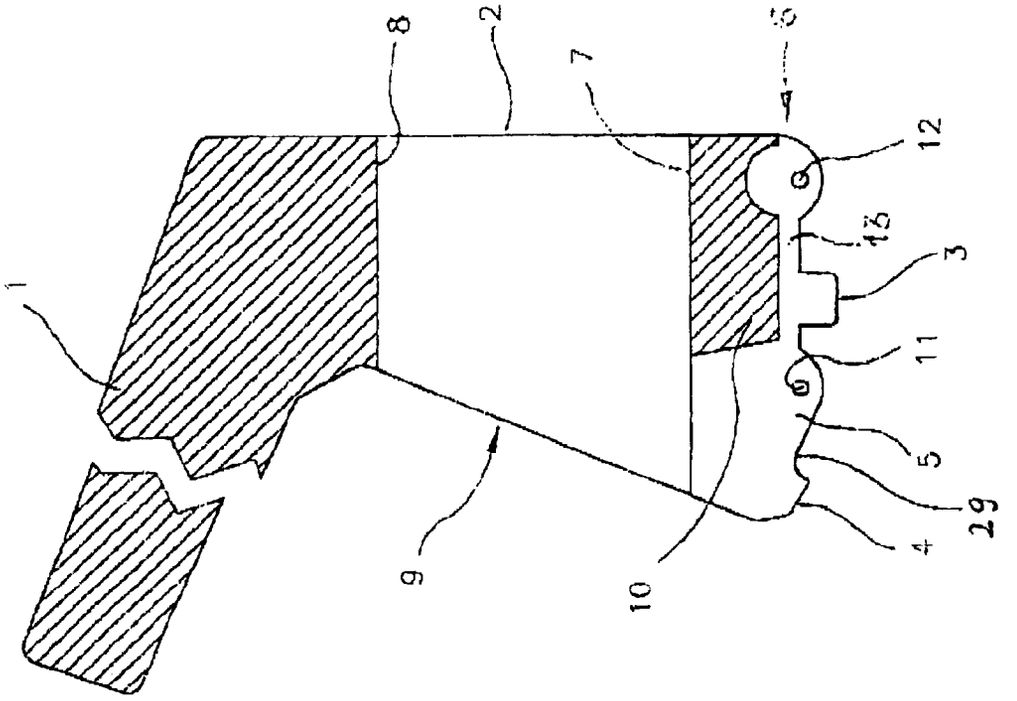
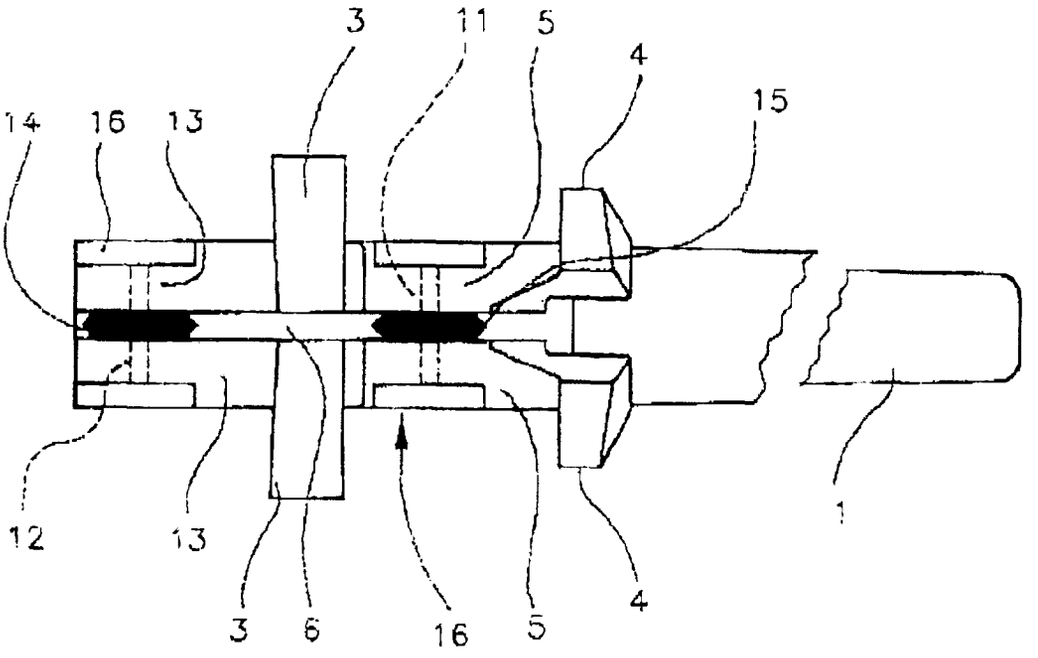


FIG.2

FIG.4



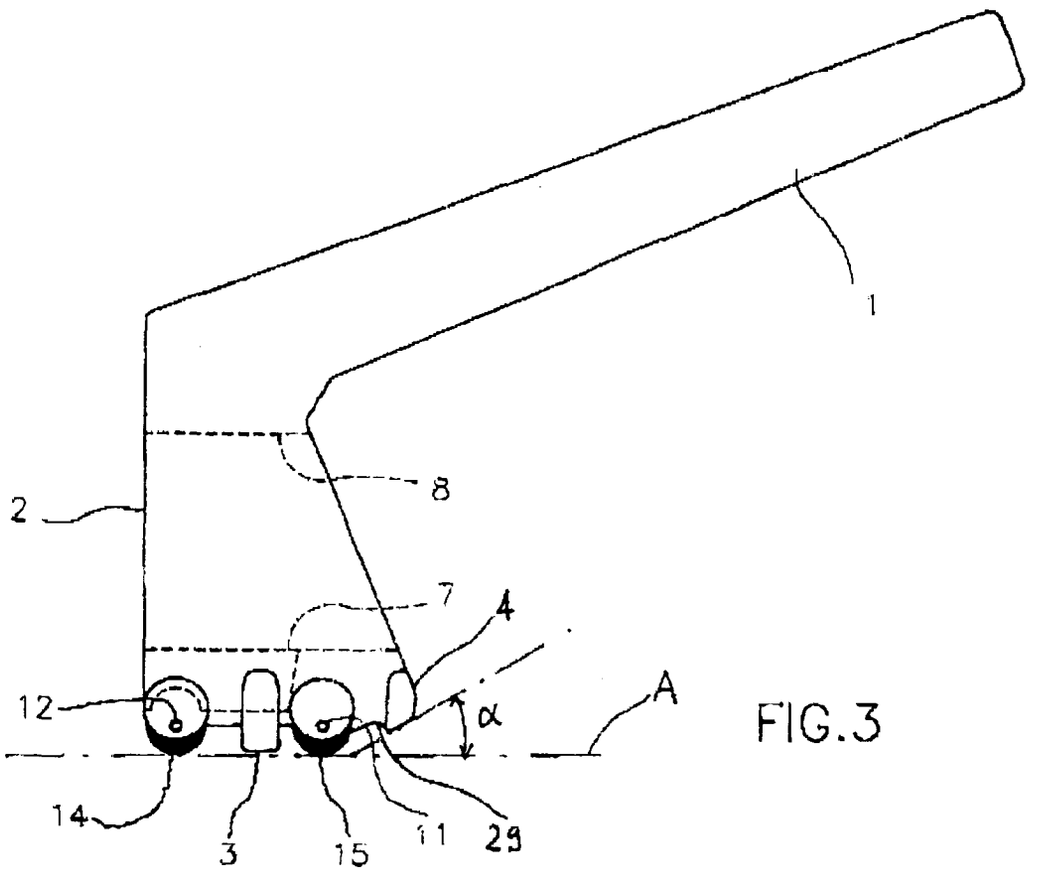


FIG.3

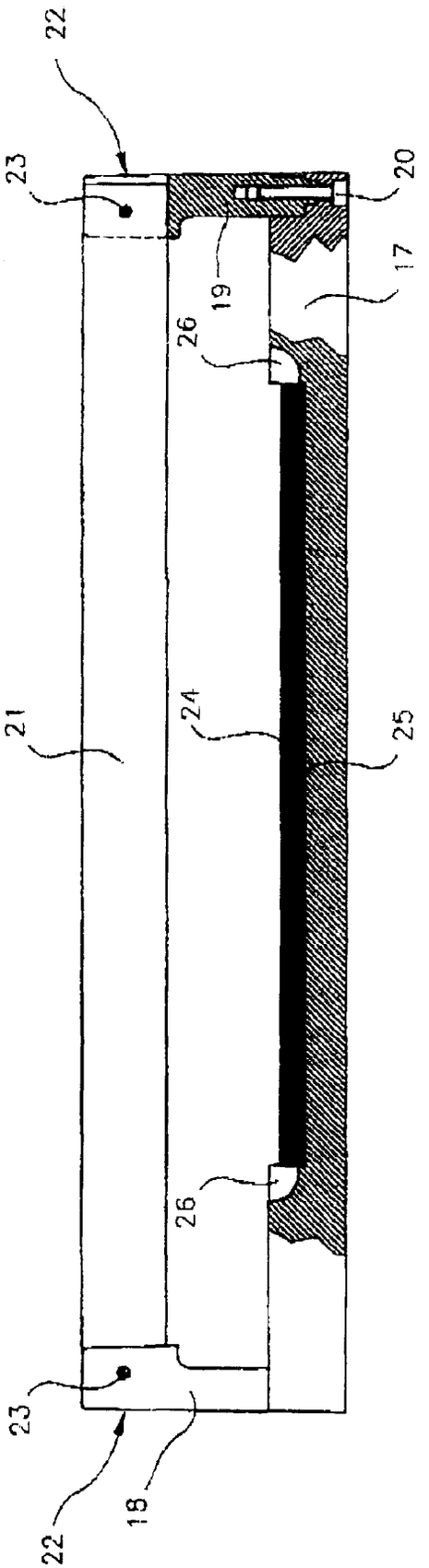


FIG.5

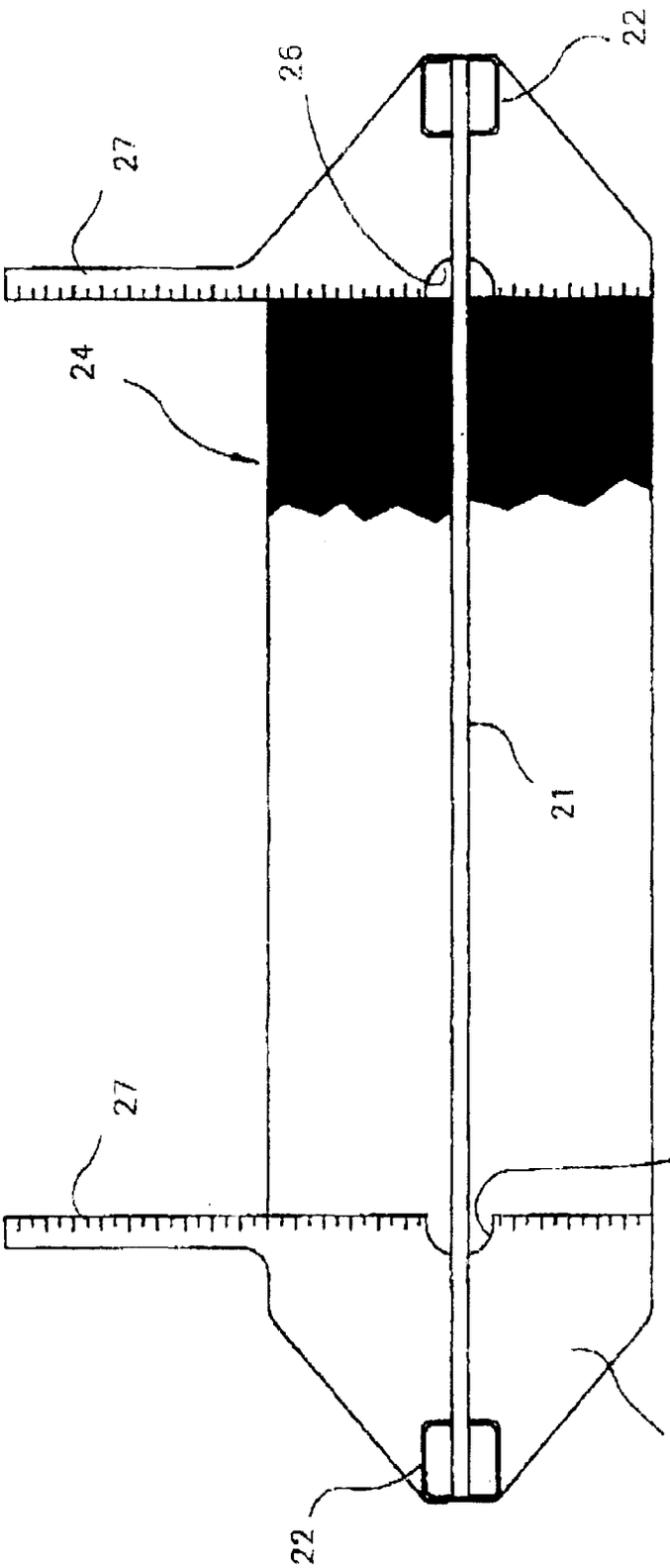


FIG. 6

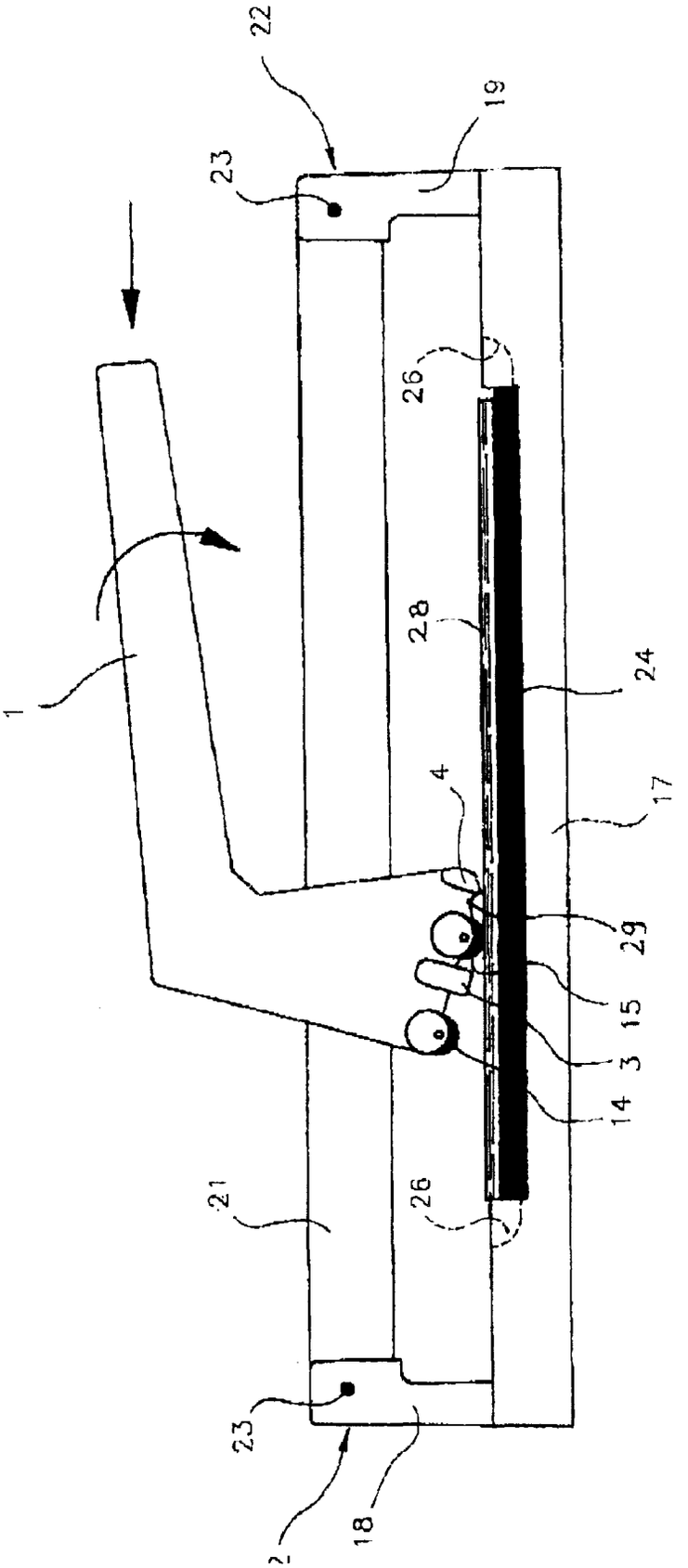


FIG.7

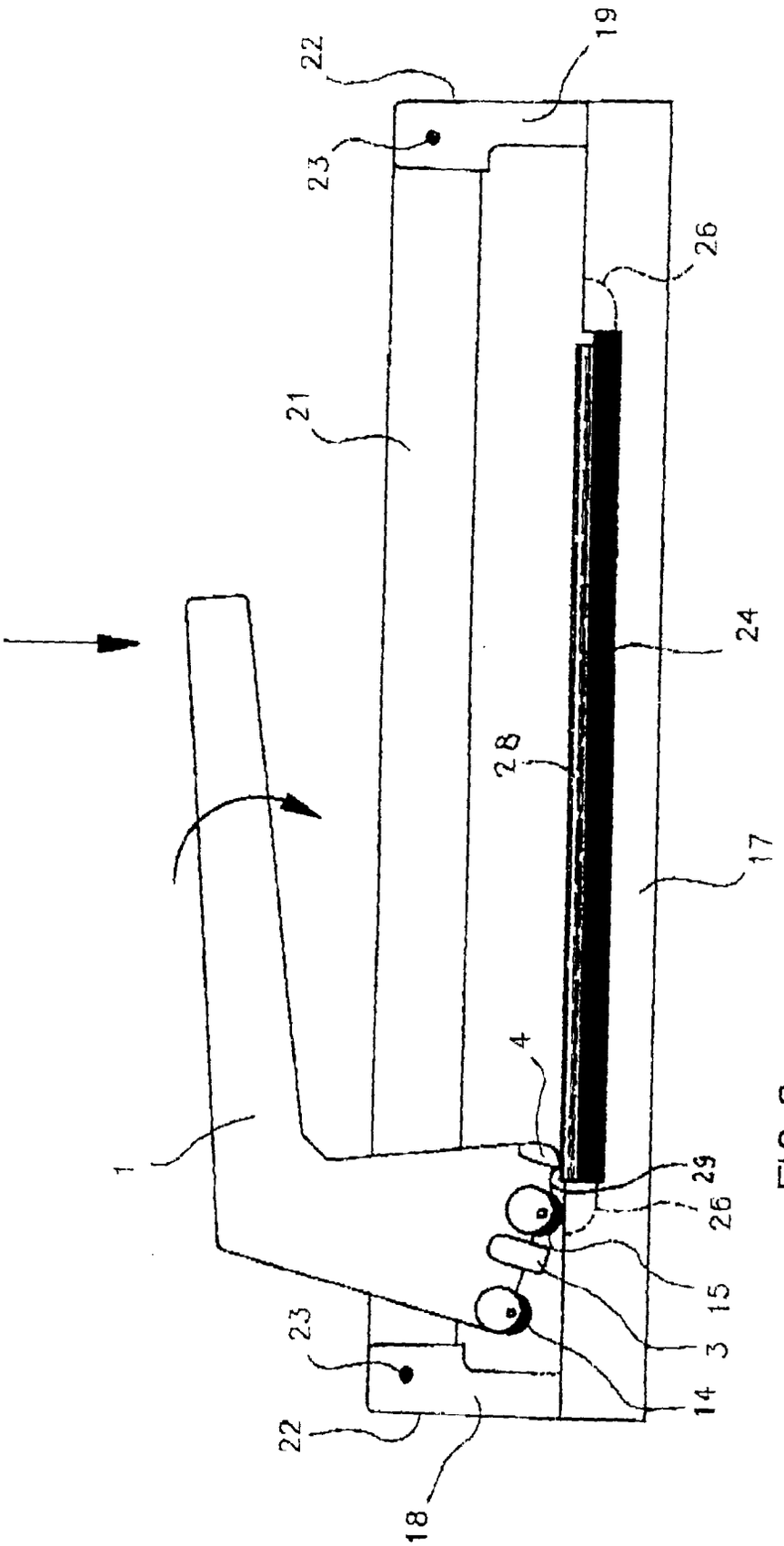


FIG.8

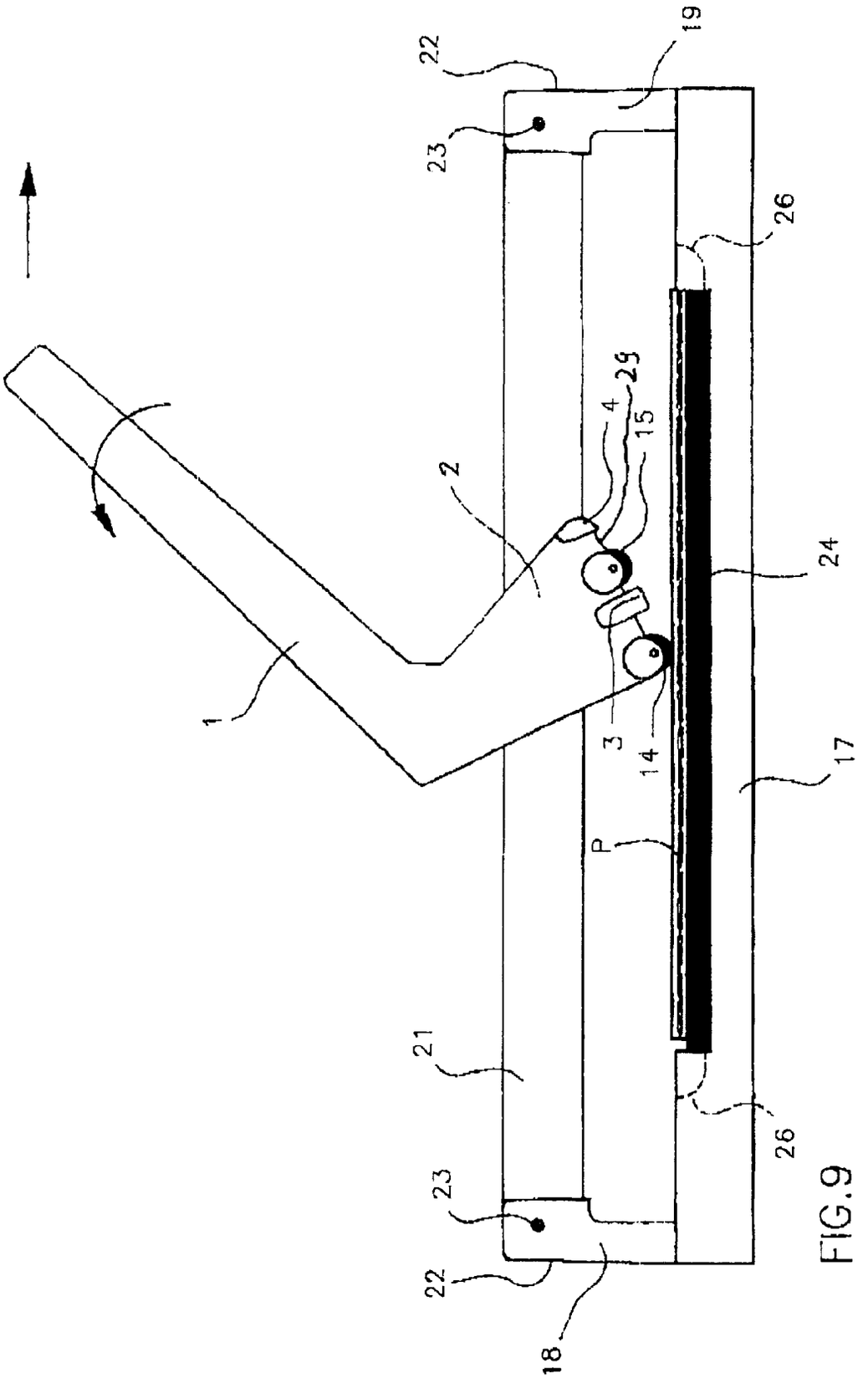


FIG.9

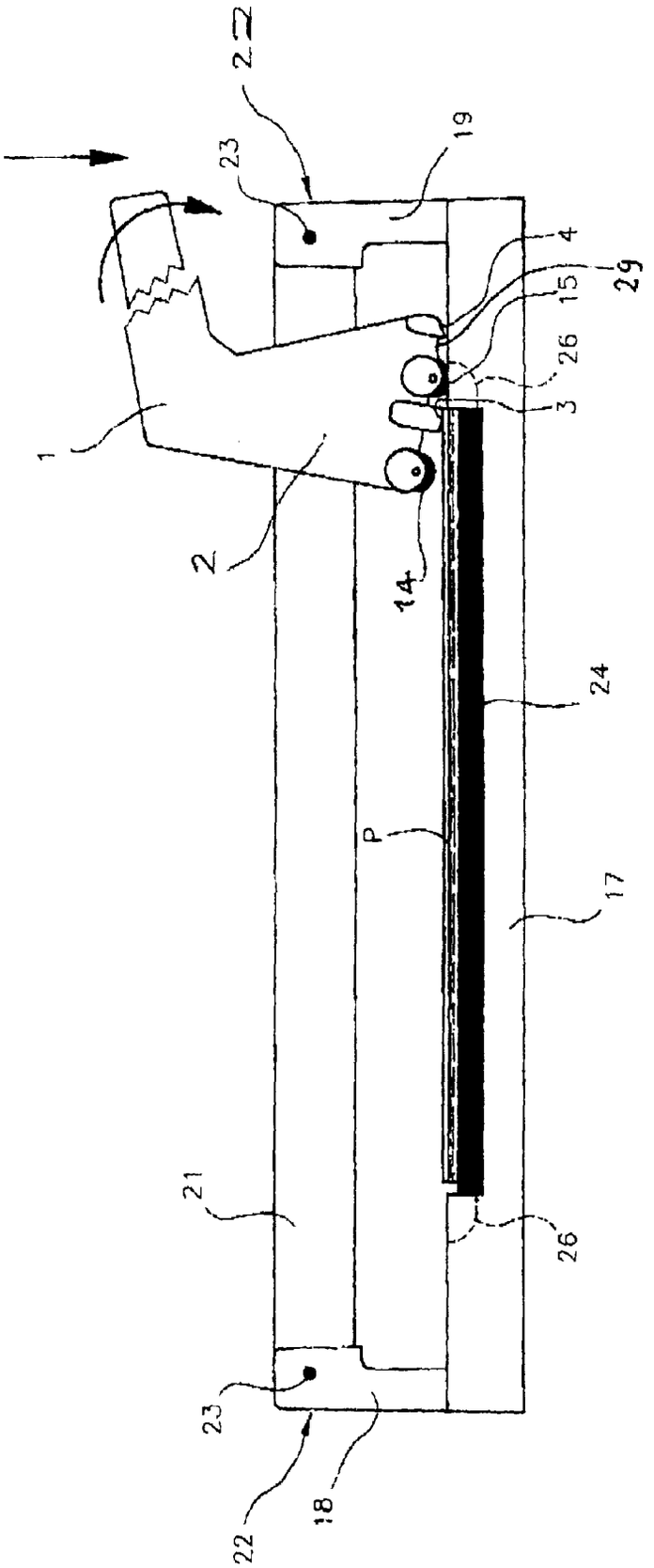


FIG.10

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 96 20 1324

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.6)
X	EP-A-0 216 707 (TOMECANIC SA) * column 2, line 56 - column 3, line 19 * * column 4, line 40 - line 53 * * column 5, line 17 - line 22 * * column 5, line 61 - line 63 * * figures 1,9 *	11-14	B28D1/22
A	---	1	
X	US-A-5 040 445 (U.-F. LIOU) * column 2, line 60 - line 67 * * figures 1-3 *	11	
A	---	1	
A	EP-A-0 592 345 (GERMANS BOADA SA) * column 5, line 47 - line 53 * * figures 3,4 *	1	
A	---		
	US-A-4 201 104 (T.A. INSOLIO) -----		
			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			B28D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	29 August 1996	Moet, H

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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