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(54) Hydraulic press

(57) The present invention is related to a modulated hydraulic press with special devices which allows a great efficiency and performance in the stamping processes of metallic plates and similar.
The hydraulic press is constituted of structures (1), assembled in sequence, where each of them is provided, in its intermediate part, with transversal bar (2) and longitudinal bar (3) and, in its lower part (4), with two bars (5), longitudinally placed and feet (6), which are locked by transversal (7) and longitudinal (8) bars, and which receive a micro-structure (9), with electric motor and hydraulic pump (10) and, in its upper part, said structure (1) is provided with a top with holes (11), upper tray (13), in which are fixed the alignment guides (14) provided, in their lower ends, with threaded tips (18) and having further a lower tray (12) in which are fixed longitudinal bars (16), which receive the touch of the hydraulic jacks piston (17) supported in the bars (5).

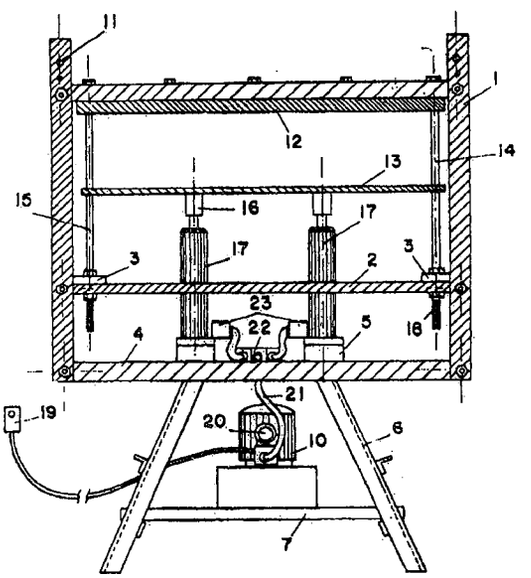

Fig. 1

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Description

The present invention is related to a hydraulic press with special devices which allows a great efficiency and performance in the stamping processes of metallic plates and similar.

The incorporation of such devices presents adjustment facilities and potentializes the uses of such equipment, making that the press, object of the present invention, actuates either as press and as stamping machine, because the trays and alignment guides are incorporated in the press itself.

In accordance with the improvement of the industrial techniques, there is currently in the market a wide range of presses, complying with the most varied requirements in the constant search for the technological solutions viewing the utilization which make feasible the achievement of better elaborated products.

Specifically, in what is concerned to the vertical hydraulic presses, they are simple hydraulic presses, with no extraordinary resources, of big size, weight, etc., built in steel and with capacities proportional to the loads required in the stampings, being that for its seating, such press is provided with a large base, in which are placed columns with variable heights and in the top, between them, it is fixed a head, linking and locking the columns, which has hydraulic devices with piston(s) with advance and down movement, also variable, driven by means of electrical or pneumatic pump.

In the base of said press and between the columns, it is fixed the lower part of the stamps set, that is, cradle or tray and, in the piston, the upper part of the same. Each stamp is a mechanical set, containing alignment guides, besides of upper and lower "cradle" or "tray", which "cradles" are the structural basis used to fix the two parts, of the male-female type, which compose the mold itself, being the main element to obtain the stamping format.

After the fixation of the stamp in the pistons and in the press base, it is started the hydraulic device, the movement with the release load is started, achievement therefore the pressing of the foreseen part, made with metallic plate or other material deposited therein.

The existing presses have as disadvantages the fact of being big size equipment, with high cost and expensive maintenance, besides that, to stamping of bigger parts, are necessary bigger stamps with major weight reinforcements and considerable prices.

In order to solution such inconvenient, it was developed the hydraulic press, object of the present invention, which may be better understood through the description of the attached figures, which schematically represents:

- Figure 1: front view in cut of one of the hydraulic press structures;
- Figure 2: front view of one of the structures which forms the hydraulic press;
- Figure 2a: side view of one of the structures which forms the hydraulic press;
- Figure 2b: upper view of one of the structures which forms the hydraulic press;
- Figure 3: side view, in cut, of the hydraulic press;
- Figure 4: upper view of the upper tray of the hydraulic press.

As observed through the Figures, the hydraulic press is constituted of structures (1), assembled in sequence, where each of them is provided in its intermediate part, with transversal bar (2) and longitudinal bar (3) and, in its lower part (4), with two bars (5), longitudinally placed, besides of which are fixed the feet (6), which are locked by longitudinal (8) and transversal (7) bars, and which receive a micro-structure (9), in which is fixed the electrical motor and the hydraulic pump (10).

In its upper part, said structure (1) is provided with a top with holes (11) intended to the prolongation of the space between the "cradles" or upper (13) and lower (12) trays, which trays are receiver of the molds, composed by two parts, male-female type, and in the upper tray (13) are fixed the alignment guides (14), which have their lower parts (15) supported by said transversal (2) and longitudinal (3) bars, which have as function to reinforce the general structure of the set.

It is further observed that the alignment guides (14) are provided, in their lower ends with threaded tips (18), to allow the adjustment of the space height between the trays (12; 13), which creates extraordinary conditions for deeper stampings. The enlargement of this space is made through the screws existing in the upper part of the structure, placing them in the desired holes existing in the top, at the same time in which the threads of the alignment guides are "lifted" in the same proportion.

In the lower part of the tray (12) are fixed longitudinal bars (16), which receive the touch of the piston of the hydraulic jacks (17), which are supported in the longitudinal bars (5), intended to evenly support and distribute the pressing loads.

The micro-structure (9) receives an electrical motor and hydraulic pump (10) with extension cable and digital switch (19), manometer (20), oil tubes (21), besides of a "tree" (22), from where bifurcates the oil tubes which feed the jacks, where in the base of them there is a solenoid valve (23), which is capacited to gauge the load pressure which each jack must receive.

Therefore, the utilization of the press, the desired mold must be placed in the upper (13) and lower (12) trays, already existing in the press, adjusting the adjustment of the solenoid valve (23), indicating the load of each jack (17), nothing that such valve has basic devices of fundamental importance to a perfect pressing, that is:
First stage - it has automatic device to fast step;
Second stage - it has automatic device to slow step, besides of automatic brake to tray return.

The starting of the motor is made through the electrical cable with digital switch (19) of the Stop and Go type, being therefore remotely commanded.

Once started, the hydraulic system starts its operation, starting the jack, which quickly causes the lifting of

its piston with the lower tray and, upon contact with the upper tray, which is fix, the load weights, starting the 2nd stage of slow stop, providing a gradual stamping, up to the load limit preset in the valve.

After this, the motor is turned off, starting the return of the tray by gravity, and the brake device existing provides safety in the return slowness, protecting the equipment against abrupt and inconvenient shocks, protecting therefore the physical integrity of the equipment and avoiding sonorous pollution.

These movements complete the operation, the next step being remove the product from the press, by the front part of the equipment, by where it is also introduced the material to be pressed and stamped.

The press object of the present invention has the following advantages:

- its modulated construction makes feasible the unlimited reaching of horizontal and vertical spaces;
- provided with alignment guides and trays, it makes easier the engineering jobs and constructive techniques, and considerably reduce the material and molds costs; and
- it creates technological improvements opportunites for the wide segment of the metallurgy sector.

Claims

1. Hydraulic press characterized by being constituted of structures (1), assembled in sequence and where each of them is provided, in its intermediate part, with transversal bar (2) and longitudinal bar (3) and, in its lower part (4), with two bars (5), longitudinally placed and feet (6), which are locked by longitudinal (8) and transversal (7) bars, and which receive a micro-structure (9), and its upper part said structure (1) is provided with a top with holes (11) and upper tray (13) in which are fixed the alignment guides (14), provided, in their lower ends, with threaded tips (18) and lower tray (12), in which are fixed longitudinal bars (16), which receive the touch of the hydraulic jacks piston (17) which are supported in said longitudinal bars (5).

2. Hydraulic press in accordance with claim 1, characterized by having a micro-structure (9), an electrical motor and hydraulic pump (10) with extension cable and digital switch (19), manometer (20), oil tubes (21), and a "tree" (22), from where bifurcates the oil tubes connected to the solenoid valves (23).

3. Hydraulic press in accordance with claim 1, characterized by the lower (12) and upper (13) trays being receiver of the molds which are composed by two parts, male-female type.

4. Hydraulic press in accordance with claim 1, characterized by the alignment guides (14), through their lower parts (15), being supported by said transversal (2) and longitudinal (3) bars.

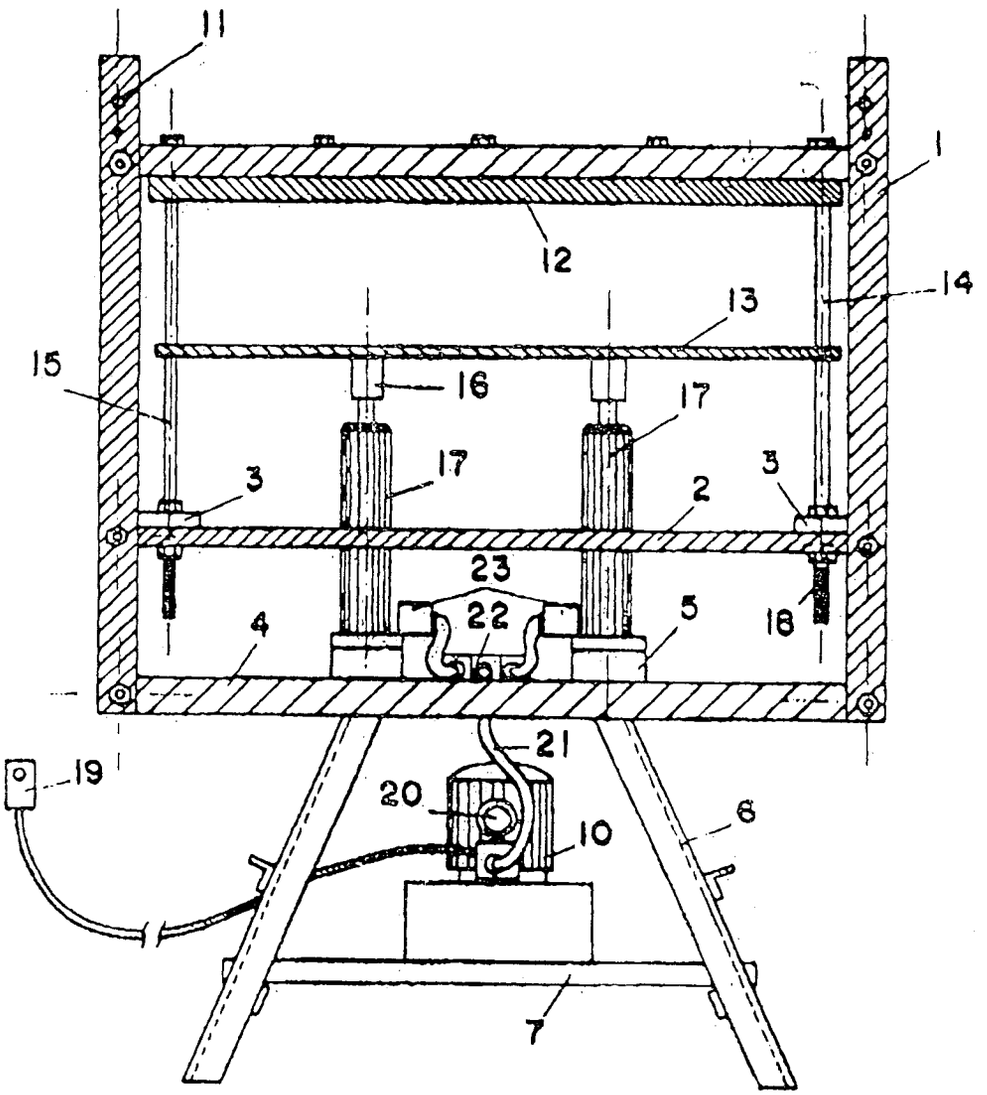

Fig. 1

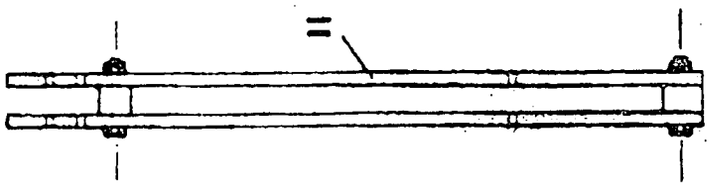

Fig. 2a

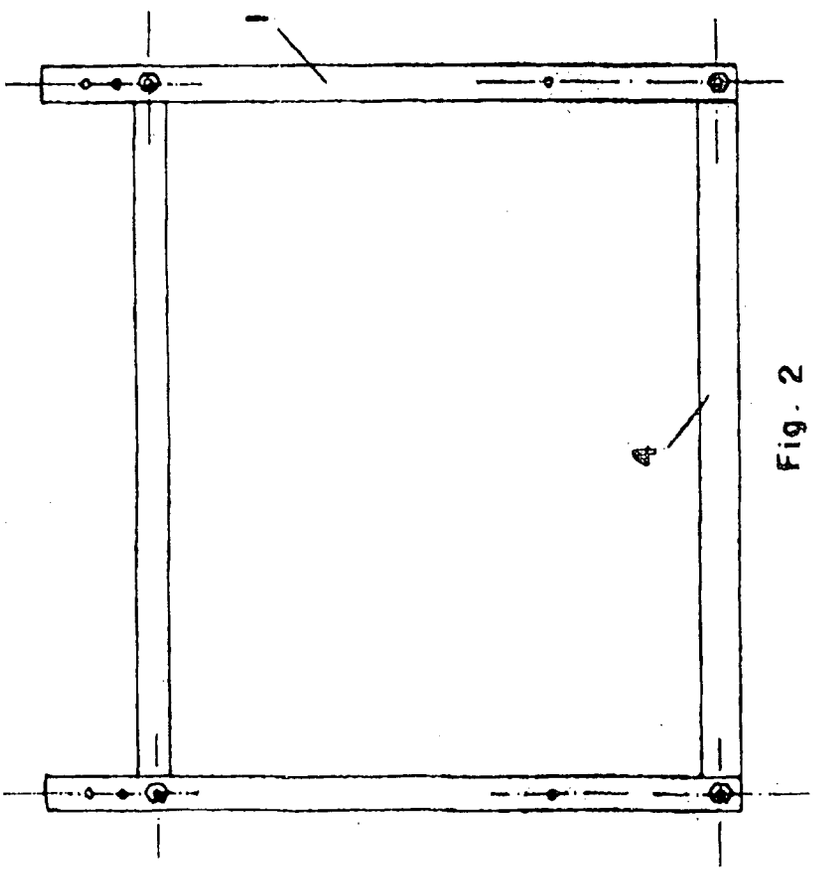

Fig. 2

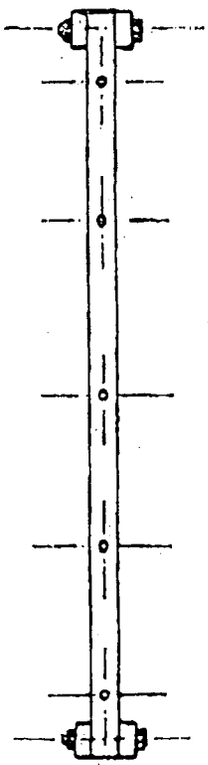

Fig. 2b

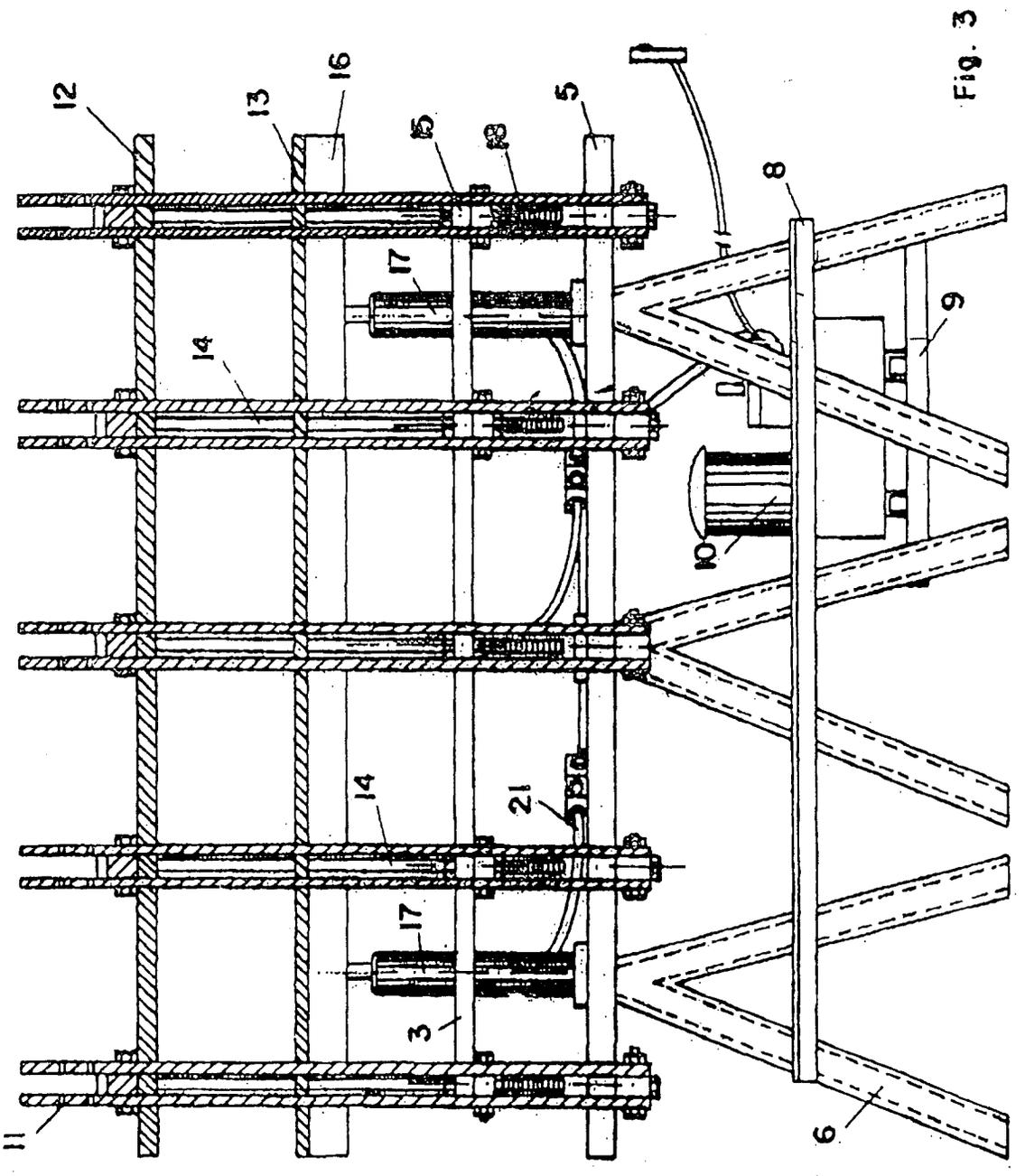

Fig. 3

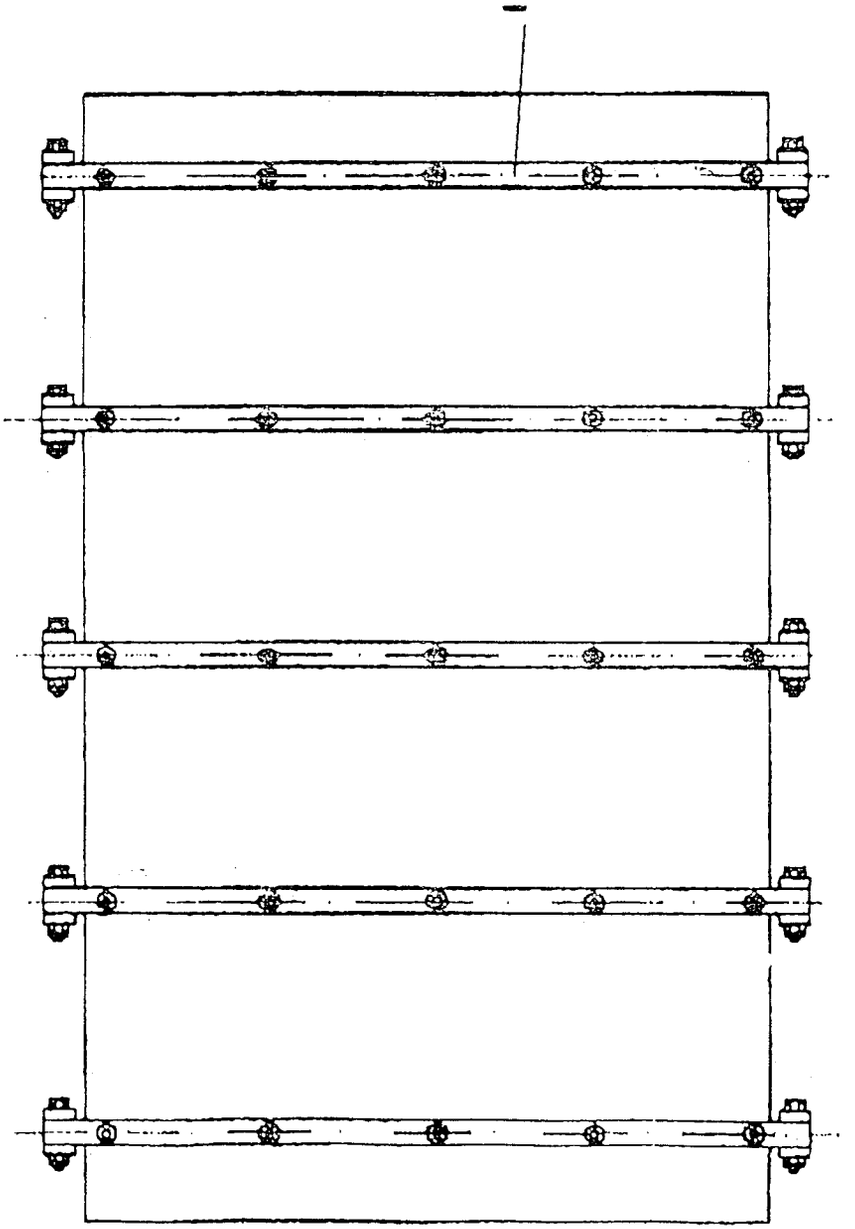

Fig. 4

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EUROPEAN SEARCH REPORT

Application Number
EP 95 83 0523

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)
A	DE-U-87 14 959 (STAUCH ET AL.) 11 May 1988 * the whole document *	1-4	B30B15/04 B30B1/32
A	FR-A-2 254 425 (PLASTIREMO) 11 July 1975 * claims; figures *	1-4	
A	FR-A-1 096 235 (LOPRIENO) * the whole document *	1,2	
A	FR-A-932 623 (VOISARD) * figures *	1	
A	US-A-2 627 290 (BERTHELSEN) * claim; figures *	1	
A	US-A-2 932 245 (HAUSMAN) * the whole document *	1	
A	PLASTVERARBEITER, vol. 43, no. 4, 1 April 1992 page 32, 34, 36 XP 000267697 STAUCH H E 'FORMTEILE WIRTSCHAFTLICH UND UMWELTSCHONEND HERSTELLEN' * figures 1,2 *	1	TECHNICAL FIELDS SEARCHED (Int.Cl.6) B30B B21J B27D
A	DE-A-16 27 879 (SCHIELE) 5 November 1970 * claims; figures *	1	
A	CA-A-1 156 548 (SMEETS GERARD G F) 8 November 1983 * claims; figures *	1	
A	GB-A-651 725 (HOPE JNR.) * figure 1 *	1	

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	27 March 1996	Voutsadopoulos, K

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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