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(54) **Surface stripping aid.**

(57) The present invention provides a surface stripping aid 2 comprising a body 10 having a sole plate 11 and a handgrip means 18. The body 10 has a heated water passage means 13 with an inlet means 17 provided with connection means 19 for connection to a water supply 8, 9 so as to supply water to said passage means 13 in use of the aid 2 with said sole plate 11 disposed in a substantially vertical position and outlet means 27 extending through and distributed across said sole plate 11. The heated water passage means 13 is formed and arranged so that when water enters said passage means 13 it is substantially vapourised and expelled through the sole plate 11 via said outlet means 27 therein into contact with a surface 5 to be stripped against which said sole plate 11 is held. The water connection means is preferably provided with one-way valve means 20 for permitting only admission of water to the passage means 13 through said inlet means 17.

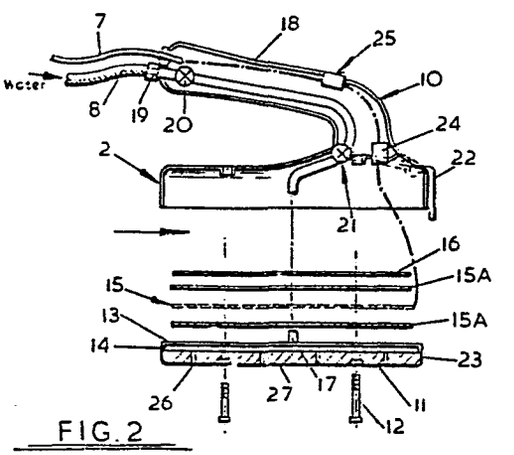

FIG. 2

EP 0 159 134 A1

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SURFACE STRIPPING AID

The present invention relates to a surface stripping aid suitable for use in stripping wallpaper and/or other coverings from surfaces.

Conventional steam wallpaper strippers are relatively large and cumbersome employing remote steam generators and then conveying the remotely generated steam to a stripping head via a suitable conduit which normally involves significant heat loss along its length and possible discomfort or injury through coming into contact therewith, or even if it is insulated becomes relatively awkward and cumbersome.

It is an object of the present invention to avoid or minimise one or more of the above disadvantages.

The present invention provides a surface stripping aid comprising a body having a sole plate and a handgrip means, said body having a heated water passage means with an inlet means provided with connection means for connection to a water supply so as to supply water to said passage means in use of the aid with said sole plate disposed in a substantially vertical position and an outlet means extending through and distributed substantially across said sole plate, said heated water passage means being formed and arranged so that when, in use of the aid, water enters said passage means it is substantially vapourised and expelled through the sole plate via said outlet means therein into contact with a surface to be stripped against which said sole plate is held.

The present invention also provides a surface stripping aid comprising a body having a sole plate and a handgrip means, said body having a heated water passage means with an inlet means provided with connection means for connection to a water supply and a plurality of outlet means extending through and distributed across said sole plate, said heated water passage means being formed and

arranged so that when in use of the aid, water enters said passage means it is substantially vapourised and expelled through the sole plate via said outlet means therein into contact with a surface to be stripped against which said sole plate is held, said connection means being provided with one-way valve means for permitting only admission of water to the passage means through said inlet means.

With a stripping aid of the present invention steam can be generated more or less directly at the point of use and more or less immediately as required. This enables a relatively lightweight and economic form of construction to be employed which is easy to handle in practice.

Further preferred features and advantages of the invention will appear from the following detailed description given by way of example of a preferred embodiment illustrated with reference to the accompanying drawings in which:

Fig. 1 is a schematic view of a wallpaper stripping system including an aid of the invention in use;

Fig. 2 is an exploded sectional elevation of the head of the stripping aid of Fig. 1;

Fig. 3 is a detail longitudinal section of a flash steam generator suitable for use in the aid of Fig. 2;

Fig. 4 is a transverse section through the steam generator of Fig. 3;

Fig. 5 is a side elevation of a scraper suitable for use in conjunction with the aid of Fig. 2 as shown on Fig. 1;

Fig. 6 is a longitudinal vertical section of a second stripping aid of the invention;

Fig. 7 is a detail view of the safety valve of the aid of Fig. 6;

Fig. 8 is a view corresponding to Fig. 6 of a third aid of the invention; and

Fig. 9 is a schematic side view of an external water supply suitable for use with an aid of the invention.

In the drawings of the various embodiments like parts are identified by like reference numerals.

Fig. 1 shows a personlusing a stripping aid 2 of the invention in one hand and a scraper 3 in the other to remove wallpaper 4 from a wall surface 5. The relatively light-weight stripping aid 2 is connected to an electrical mains supply 6 by a medium duty electrical cable 7 which together with a relatively light and small bore water hose 8 is conveniently trailed over the user's shoulder. The water hose 8 is connected to a pressurised e.g. hand pumped water container 9 or could instead be connected to the domestic water supply.

As may be seen in Fig. 2 the stripping aid 2 comprises a body 10 conveniently of lightweight plastic, having a metal (e.g. steel or aluminium) sole plate 11 secured thereto with the aid of mounting screws 12.

At the rear side 13 of the sole plate 11 is provided a closely spaced wall 13 defining a shallow chamber 14 which forms part of a water passage means. Behind the wall 13 is provided an electrically insulated 15A heating element 15 suitably supported 16 in thermal contact with said wall 13.

At its centre the wall 13 is provided with a rearwardly extending conduit means 17 which is led out through a handgrip portion 18 of the body 10 to a connector 19 whereat is connected the water supply hose 8. Downstream of said connector is provided first a non-return valve 20 and then a normally-closed automatic valve 21 provided with an operating linkage 22 which extends to alongside one edge 23 of the sole plate 11 so as to stand slightly proud thereof and so that when the sole plate 11 is held against the surface 5 the linkage 22 is displaced to automatically open the automatic valve 21.

The heating element 15 is provided with an automatic

thermal cut-out switch 24 and a manually operable control switch 25.

The sole plate 23 is provided with a plurality of small bore outlets 26 distributed across its bottom face 27 and extending from the chamber 14 behind it and from a terminal portion of the water passage means which extend from the connector 19 and through said chamber 14.

In use of the aid liquid water is fed into the chamber 14 when the sole plate 23 is placed against the wall surface 5 and is substantially immediately vapourised filling the chamber with steam which is forced out through the outlets 26 into the wall paper 4 which is rapidly softened and can then be readily scraped off with the aid of a suitable scraper 3 shown in more detail in Fig. 5. Conveniently the scraper is provided with a spray nozzle 27 connected by a suitable hose 28 to a pressurised water supply (not shown) and disposed so as to direct a water spray 29 between the blades 30 at each end of the scraper.

Various modifications may be made to the above devices without departing from the scope of the present invention. Thus for example in place of the generally plate-form heating arrangement Fig. 2 there could instead be used a compact flash-steam generator as shown in Figs. 3 and 4. In this case it would be practicable to use for example a plastic sole plate in place of a metal one.

The flash-steam generator of Figs. 3 and 4 comprises a generally cylindrical body 31 having at one end 32 an axial bore 33 provided with a non-return valve 34, said bore extending radially outwardly at an axially intermediate part 35 of the body 31. The body 31 has an external screwthread 36 which screwthreadedly engages an internally threaded portion at one end of a tubular member 38 on which is supported an annular electrical heating element 39. The other end portion 40 has a cylindrical inner wall surface 41 having a diameter corresponding to the outside diameter of the screwthread 36 so as to define a narrow helical water passage means 37

into which the water is fed from the bore 33 and then vapourised and forced out of under pressure. An outer housing 42 provides electrical and thermal insulation as required.

Fig. 6 shows a second stripping aid of the invention generally similar to the first, like parts being identified by like reference numerals. In this case though there is also provided an internal water supply in the form of a reservoir 43 mounted at the forward end 44 of the body 10 so that in the operating position of the aid with the sole plate 11 substantially vertical the reservoir 43 is substantially above the inlet means 17 so that water is fed via the latter into the heated passage means 13 under the influence of gravity. In addition the inlet means 17 is provided with a manually operable valve 45 operating means in the form of a trigger mechanism 46 (all these parts being indicated schematically).

There is also provided a second passage 47 parallel to the main inlet means passage 17. This second passage 47 may be used as a return passage where a recirculating water supply system is used (see below) or as an additional inlet means which by means of manual operation of the controller 48 of an associated valve 49 can be used to increase the steam output of the aid by increasing water supply to the heated passage means 13 for example when it is required to strip heavier wallpapers. Alternatively or in addition there can be used a variable flow rate form of the manually operable valve 45 to vary the steam output rate.

The steam output rate of the aid of the invention may be varied within relatively wide rates and in general will be selected to be similar to that of conventional stripping aids. Conveniently an output rate corresponding to a water consumption rate of some 4 to 40 mls. per minute is used though it will be appreciated that the aid of the present invention will tend to produce a higher

useful steam output rate i.e. at the sole plate than conventional aids due to the greater efficiency of the aid of the present invention.

As shown in Fig. 7 the second aid uses a modified form of the automatic valve means 21 and operating member 22 wherein the latter is formed integrally with a frusto-conical valve member 50 and is in the form of a cylindrical member slidably mounted in a bore 51 in the sole plate 11. The valve member 50 sealingly engages with its frusto-conical surface 52 the outlet 53 of the inlet means 17 and is held thereagainst by a resilient biasing means in the form of a helical spring 54. When the sole plate 11 is placed against a wall surface 5 the operating member 22 is pushed back against the force of the spring 54 moving the valve member 21 away from said outlet 50 to allow water to pass through an annular passage 55 defined therebetween.

The third embodiment of Fig. 8 is again generally similar to the previous ones and accordingly for purposes of clarity details of the water supply arrangements have been omitted. In this embodiment instead of an electrical heating means there is used a fluid fuel burner 55 mounted towards the rear end 56 of the body 10 at the base of a combustion chamber 57 extending across and immediately the heated water passage 13 above the sole plate 11. An air inlet 58 is provided adjacent the burner 55 and an exhaust outlet 59 at the forward end 44 of the body 10. Suitable liquid or gaseous fuel is supplied to the burner from an internal reservoir (not shown) or from an external one via a fuel pipe 60. A suitable ignition means with a remote operating switch 61 is also desirably provided. Conveniently an integral scraper 62 is also provided at the forward end 44 of the body 10 to break the surface of impermeable material to be stripped e.g. gloss painted wallpaper and/or to loosen material which has already been treated to a greater or lesser extent with the aid e.g. during a return stroke of the aid.

Fig. 9 shows an external water supply 9 with a manual pump 63 for pressurizing the vessel 64 of said supply 9 to expel water via a first valved 65 branch 66 of the water supply hose 8 leading to the main body 10 of the aid. As an alternative a mechanical, e.g. electrically propelled, circulating pump 67 is connected to a second branch 68, unused water being recycled to the vessel 64 via the return pipe 47. When the mechanical pump is operating the valve 65 in the first branch is closed. Instead of the manual pump there could be used a pressurized gas container 68 with suitable valve means 69 or motorized air pump 74 and filter 75. Desirably a pressure gauge 70 and/or pressure relief valve 71 are also provided for safety reasons and operating convenience. Also a filling cap 72 is provided as well as filters 73 to protect the circulating pump 67 and first branch 66 against ingress of foreign bodies.

It will be appreciated from the above that the stripping end of the invention can be made relatively economically and compactly so that it can be easily used even by DIY practitioners for extended periods without fatigue.

CLAIMS:

1. A surface stripping aid (2) comprising a body (10) having a sole plate (11) and a handgrip means (18), said body (10) having a heated water passage means (13) with an inlet means (17) provided with connection means (19) for connection to a water supply (8,9) so as to supply water to said passage means (13) in use of the aid (2) with said sole plate (11) disposed in a substantially vertical position and an outlet means (27) extending through and distributed substantially across said sole plate (11), said heated water passage means (13) being formed and arranged so that when, in use of the aid (2), water enters said passage means (13) it is substantially vapourised and expelled through the sole plate (11) via said outlet means (27) therein into contact with a surface (5) to be stripped against which said sole plate (11) is held.

2. A stripping aid according to claim 1 wherein said water supply comprises a water reservoir (9) on or in said body (10).

3. A stripping aid according to claim 2 wherein said reservoir (43) is disposed so that in use of the aid in its vertical operating position water can flow from said reservoir (43) into the heated water passage means (13) under the influence of gravity.

4. A stripping aid according to any one of claims 1 to 3 wherein is provided a water supply in the form of an external water reservoir (9) having an extended flexible water supply pipe (8) connected to said inlet connection means (19).

5. A stripping aid according to claim 4 wherein said external water reservoir (9) is provided with a pump means (67) formed and arranged for propelling water along said water supply pipe (8) to the heated water passage means (13) in use of the aid.

6. A stripping aid according to any one of claims 1 to 5 wherein said inlet means (17) is provided with a manually operable control valve (45) having an operating means (46) mounted on said body (10) in the vicinity of said handgrip means (18) so as to be digitally operable in use by a hand gripping said handgrip means (18).

7. A stripping aid according to any one of claims 1 to 6 wherein said inlet means (17) is provided with an automatic valve means (21) having an operating member (22) mounted on said body (10) so as to project below the sole plate (11) in a closed position of said valve means (21) and be displacable by a surface to be stripped (5) when said sole plate (11) is held against a said surface (5) into a retracted position in which it opens said automatic valve means (21).

8. A stripping aid according to any one of claims 1 to 7 wherein said inlet means (17) is provided with a one-way valve means (20) for allowing water flow towards said heated passage means (13) only.

9. A stripping aid according to any one of claims 1 to 8 wherein said heated passage means (13) is provided with an electrical heating element.

10. A stripping aid according to any one of claims 1 to 9 wherein said outlet means (27) heated water passage means (13) and inlet means (17) are dimensioned and arranged so as to discharge steam from said sole plate (11) at a rate corresponding to a water consumption of 4 to 40 ml/min.

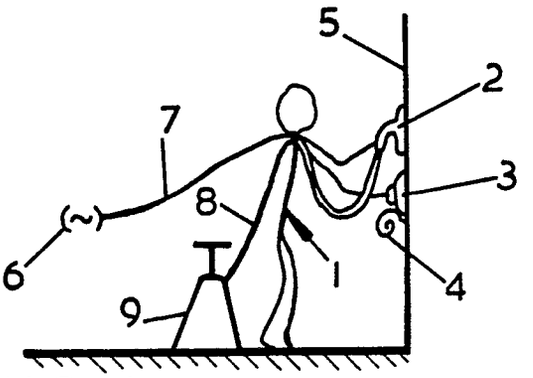
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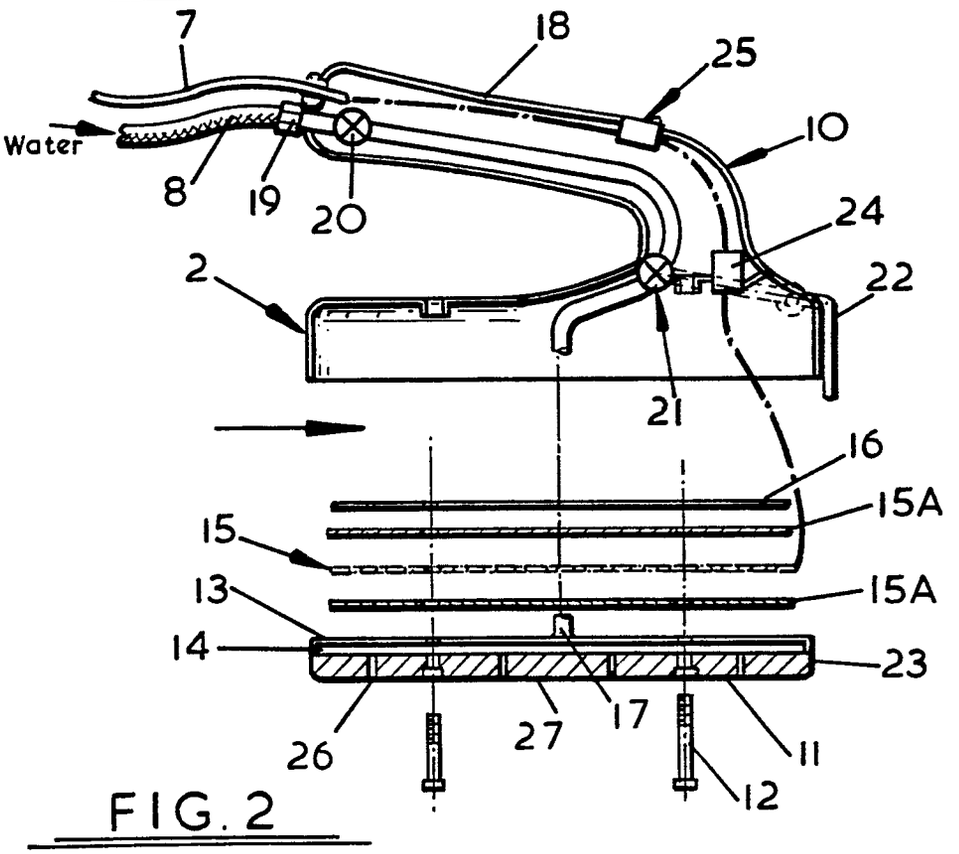
FIG. 1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18
25
Water
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8
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FIG. 2

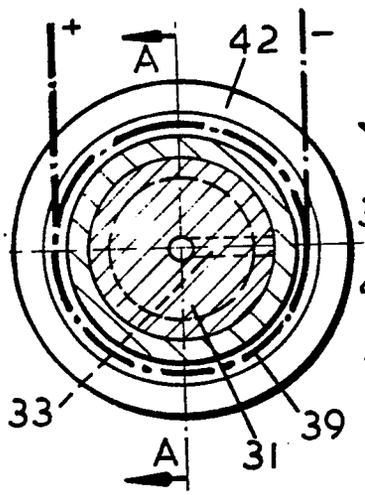

FIG. 4

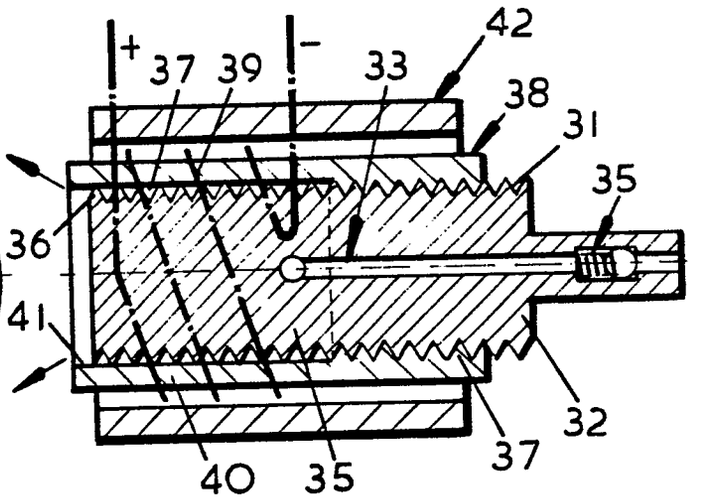

FIG. 3

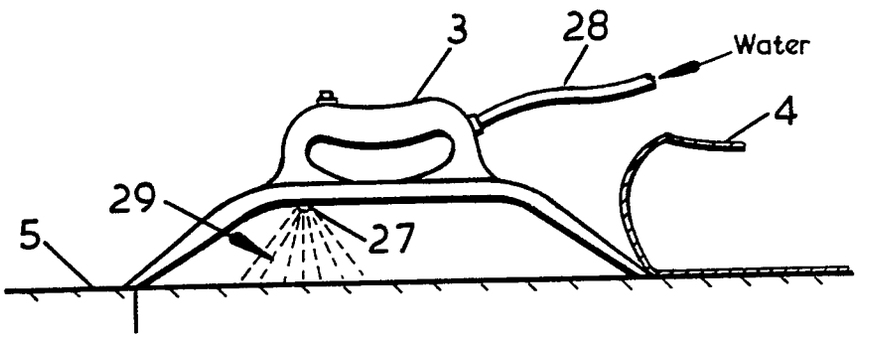

FIG. 5

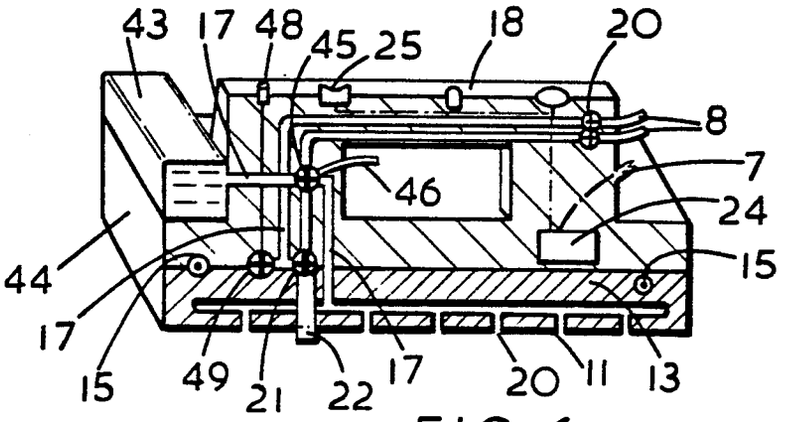

FIG. 6

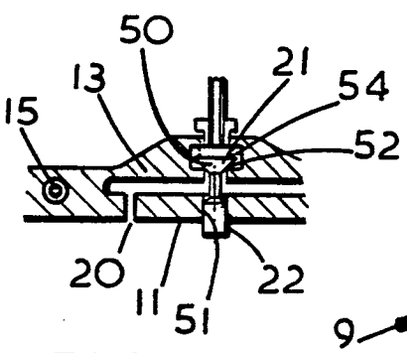

FIG. 7

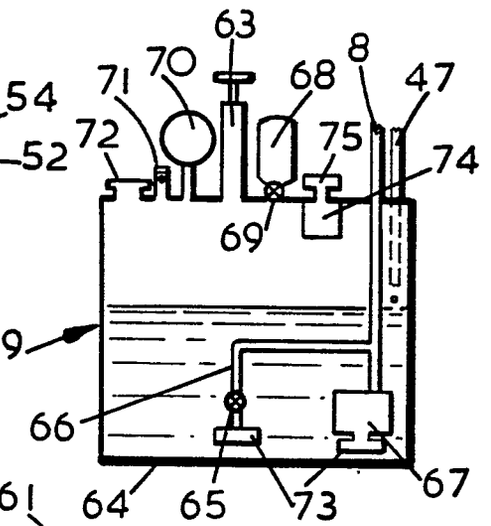

FIG. 9

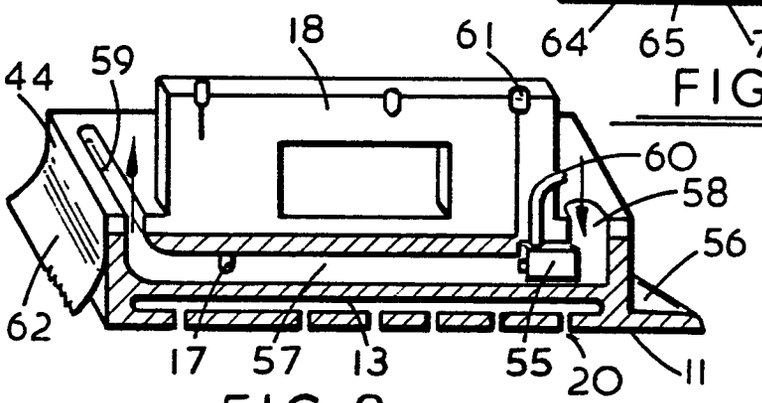

FIG. 8

European Patent Office

EUROPEAN SEARCH REPORT

0159134
Application number

DOCUMENTS CONSIDERED TO BE RELEVANT

EP 85301667.3

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int Cl 4)
Y	WO - A1 - 83/02 753 (SKILTEN ELECTRONICS) * Page 1, lines 2-4; page 4, lines 19-23; fig. 2 *	1,6,9	B 44 C 7/02 B 44 D 3/16
Y	GB - A - 665 501 (EDWARDS) * Fig. 1 *	1,6,9	
A		4	
Y	US - A - 3 109 083 (MELTZER) * Fig. 10 *	1,6,9	

TECHNICAL FIELDS SEARCHED (Int Cl 4)

B 44 C
B 44 D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
VIENNA	27-06-1985	GLAUNACH

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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