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D E C I S I O N
of 20 January 2003

Case Number: T 0538/00 - 3.2.6

Application Number: 92119626.7

Publication Number: 0543338

IPC: B23K 26/00

Language of the proceedings: EN

Title of invention:
Method for connecting two parts along abutting edges and connection obtained thereby

Patentee:
Hans Oetiker AG Maschinen- und Apparatefabrik

Opponent:
Etablissements Caillau Société Anonyme à Directoire et conseil de Surveillance

Headword:
-

Relevant legal provisions:
EPC Art. 52(1), 56

Keyword:
"Inventive step - no"

Decisions cited:
-

Catchword:
-

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Beschwerdekammern | Boards of Appeal | Chambres de recours

Case Number: T 0538/00 - 3.2.6

D E C I S I O N
of the Technical Board of Appeal 3.2.6
of 20 January 2003

Appellant: (Proprietor of the patent)
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Decision under appeal: **Decision of the Opposition Division of the European Patent Office posted 17 March 2000 revoking European patent No. 0 543 338 pursuant to Article 102(1) EPC.**

Composition of the Board:

Chairman: P. Alting van Geusau
Members: G. C. Kadner
M.-B. Tardo-Dino

Summary of Facts and Submissions

I. European patent No. 0 543 338, granted on application No. 92 119 626.7, was revoked by the Opposition Division by decision announced during oral proceedings on 8 March 2000 and posted on 17 March 2000. The Opposition Division was of the opinion that the subject-matter of independent claims 1 and 6 as granted according to the main request did not involve an inventive step. The auxiliary request filed during oral proceedings was rejected for the reason that the claims being identical to those of the main request did not involve an inventive step and that the amendments to the description did not meet the requirements of Article 123(2) EPC.

II. The following evidence available in the file is relevant for this decision:

D1: US-A-5 001 816

D2: La Revue de Métallurgie, November 1988, Prange W. and Schneider C.: "Utilisation de la soudure par laser des tôles fines"

D3: DE-A-40 07 842

III. On 26 May 2000 the Appellant (Patentee) lodged an appeal against this decision simultaneously paying the appeal fee. On 27 July 2000 it filed together with the statement of grounds of appeal a new main request with amended claims 1 and 6.

IV. In an annex to the summons to oral proceedings pursuant to Article 11(2) of the Rules of Procedure of the Boards of Appeal sent to the parties on 15 November 2002 the Board submitted that discussion appeared to be necessary as to whether the amendments to the description were sufficiently supported by the application as originally filed and whether the subject-matter of the amended claims 1 and 6 involved an inventive step.

V. Oral proceedings were held on 20 January 2003.

The Appellant requested that the decision under appeal be set aside and that the patent be maintained on the basis of the amended claims 1 and 6 filed with letter of 27 July 2000.

The Respondent (Opponent) requested that the appeal be dismissed.

Claims 1 and 6 read as follows:

"1. An arrangement for connecting two parts along two edges thereof which extend essentially parallel to one another at least along a common section, specially a clamp-like ring wound from a length of flat steel band with the end parts (1, 5, 31, 35) of said length being connected along two transverse edges (3, 7, 33, 37) thereof which extend essentially parallel to one another at least along a common section, comprising retaining means (9, 29, 39) projecting from the edge (3, 33) of one part (1, 31) in the direction toward and over the edge (7, 37) of the other part (5, 35) and form-lockingly engaging from behind, as viewed in the edge direction, in a recess (13, 23, 43) provided in

the other part, and at least one projection (17, 19, 47, 49) at the edge (3, 33) of the one part (1, 31), which is laterally offset with respect to the retaining means and form-lockingly abuts at the other part (5, 35) in such a manner as to constrain bending movement in the edge direction within the other part (5, 35) that might cause the recess (13, 23, 43) to open in the presence of tensional forces in the two parts, and further additional welded fastening means (25) along at least one common section of at least one of the retaining means (9, 29, 39) and of the projection (17, 19, 47, 49), characterized in that said two parts are made of galvanized steel and said additional welded fastening means are a number of laser beam welded points (25).

6. A method for connecting two end parts especially of a ring made of a length of weldable steel, with each end part having an edge which extends essentially parallel to the respective other edge at least along a common section, comprising the steps of providing at least one retaining element (9, 29, 39) at one edge (3, 33), introducing the retaining element in a corresponding recess (13, 23, 43) in the other edge (7, 37) so as to engage form-lockingly from behind the recess, as viewed in the edge direction, in order to prevent a pulling out of the retaining element and to hold the two parts at one another, providing at least one projection (17, 19, 47, 49) at the one edge (3, 33) laterally offset with respect to the retaining element (9, 29, 39) in the direction of the engagement from behind which form-lockingly abuts at the part (5, 35) having the recess (13, 23, 43) essentially in the edge direction in such a manner as to counteract force components acting essentially in the edge direction

away from the recess (13, 23, 43) and resulting during tensional and/or compressive loads in the connection by reason of the engagement from behind of the recess and by the retaining element, and fastening together by welding the two parts at least along one common section for securely fixing the connection, characterized in that said two parts are formed from a length of galvanized steel and are fastened together by providing a number of laser beam welded points (25)."

VI. In support of its request the Appellant essentially relied upon the following submissions:

The closest prior art from which the invention started was undisputedly the clamping ring disclosed in D1. When producing the fixing points by brazing or soldering the band material required to be made of stainless steel. However, this prior art document disclosed only punching or displacing cold deformed material in order to secure the parts together, and no spot-welding at the fixing points of the ring made of flat galvanized steel material.

The claimed laser beam spot-welding allowed the connection of parts made of galvanised steel without damaging the galvanized surface during welding because the welded points were very small. Moreover, small rings formed of a band starting at a width of 5 mm could thus be formed.

D2 disclosed laser beam welding of large galvanized metal sheets together at an extended weld seam whereas the laser beam welded points according to the invention

only secured the connection, and the tensional and/or compression load was directed through the puzzle-like formed connection.

The disclosure of D3 did not go beyond that of D2 since the ring disclosed therein was formed by butt-welding the ends of a preformed ring made of galvanized steel band.

When looking for a solution to provide weld points only for securing galvanized flat steel parts the skilled person would not draw D2 or D3 into consideration because they related to a different technical field, and therefore the claimed arrangement and method was non-obvious.

VII. The Respondent's submissions are summarised as follows:

D1 disclosed more than the content of the precharacterising portion of claims 1 and 6 because its Figure 5 showed not only welded fastening means but welded points 24, 25. On the other hand the patent specification had been extended over the content of the application as filed since the technical problem (column 2, lines 42 to 47) underlying the opposed patent was not originally disclosed.

In D1 (column 1, lines 38 to 41) the problem of damaging the galvanisation was already mentioned. When using the methods of brazing or soldering stainless steel was required, however when using other metal sheet material like galvanized steel the fixing points were provided by punching, cold deformation or spot welding. Starting from D1 the remaining objective problem was to find an improved method of welding to

provide the welded points. The skilled person having knowledge of the advantages of laser beam welding as indicated in D2 and D3 would without any doubt apply the teachings of those prior art documents in the method disclosed in D1 because they showed a way to weld galvanized flat steel material without degrading the zinc deposit. Therefore the arrangement and method according to claims 1 and 6 was arrived at in an obvious manner by replacing spot welding at points 24, 25 of D1 by laser beam welded points.

Reasons for the Decision

1. The appeal is admissible.

2. *Admissibility of amendments*

The amendments to claims 1 and 6 are supported by the description of the patent (column 5, lines 5 and 6) and the respective text of the application as filed. They restrict the scope of protection and are therefore admissible under Article 123(2) and (3) EPC.

3. *Novelty*

The claimed arrangement and method according to claims 1 and 6 can be regarded as novel since none of the prior art documents discloses the combination of all features of these claims.

4. *Inventive step*

4.1. As was acknowledged by the Appellant, D1 discloses an arrangement for connecting two parts having the features of the precharacterising portion of claim 1.

The Board does not agree with the Respondent's opinion that figure 5 of D1 explicitly shows welded points 24, 25 because according to the description these places 24, 25 are defined as "punching places" or "soldered or brazed places" (column 5, lines 62 to 65; column 6, lines 1 and 2, lines 30 to 32, lines 53 to 55).

However, punching, rivet-like cold deformation and/or spot-welding are referred to as alternative fixing means in the description (column 3, lines 12 to 14; column 4, lines 5 to 8) and in claims 6, 12, 14, 16 and 20 of D1. In the understanding of a skilled person securing the two parts 1 and 5 together at these places 24, 25 may also be done by spot-welding, i.e. spot-welded points are therefore implicitly disclosed in D1.

The acknowledgment of D1 in the patent specification (column 2, lines 2 to 8) does not correctly interpret the disclosure of D1 (column 6, lines 1 to 3) because only brazing and soldering require the use of stainless steel. Spot-welding is not mentioned in connection with stainless steel, and since the problem of the use of galvanized steel is already generally referred to in D1, the object underlying the subject-matter of claim 1 as mentioned in column 2, lines 42 to 48 of the patent specification is not correct.

4.2. In fact, when starting from the prior art according to D1 the objective problem underlying the patent in suit, which is also supported by the application as originally filed, is to provide an alternative welding method for securing the parts together. The solution to this problem is characterized in that the spot-welded points are laser beam welded.

4.3. D2 or D3 deal with the problem of welding galvanized steel sheets thereby not damaging the galvanized surface near the weld seam. The recommended solution there is laser beam welding which allows a very narrow weld seam and does not degrade the protection by the zinc deposit.

Contrary to what was submitted by the Appellant the Board is convinced that the skilled person looking for an improvement of the connection as known from D1 would draw the teachings of D2 or D3 into consideration because they belong to the same technical field of welding metal sheets or strips. In particular, the advantages of laser beam welding of galvanized steel sheets described there give an indication to replace conventional spot welding by laser beam spot welding in order to maintain protection provided by the galvanized surface. Since the skilled person is well aware that laser beam welding is commonly used both for forming extended weld seams as well as for spot welding, no prejudice is present to discourage the use of the laser beam in order to form the additional connection of the parts 1, 5 at places 24, 25 of D1. Thus the subject-matter of claim 1 can be arrived at without the involvement of an inventive step (Article 56 EPC).

Since claim 1 of the Appellant's request cannot be granted for lack of inventive step the main request has to be rejected.

4.4 At this point, it should be noted that since the main request is rejected, considerations in respect of the newly formulated objective to be introduced into the patent specification, in accordance with the auxiliary request, have become redundant.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

M. Patin P. Alting van Geusau