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**Datasheet for the decision
of 3 June 2014**

Case Number: T 2203/10 - 3.2.06

Application Number: 01201243.1

Publication Number: 1157861

IPC: B60C25/132

Language of the proceedings: EN

Title of invention:

Wheel rim locking device for tyre removal machines

Patent Proprietor:

CORGHI S.p.A.

Opponent:

Snap-On Equipment GmbH

Headword:

Relevant legal provisions:

EPC 1973 Art. 54, 56, 84

RPBA Art. 12(4), 13(1)

Keyword:

Late-filed document - admitted (yes)

Novelty - main request (no)

Late-filed request - admitted (yes)

Inventive step - auxiliary request (yes)

Decisions cited:

G 0003/14

Catchword:



**Beschwerdekammern
Boards of Appeal
Chambres de recours**

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Case Number: T 2203/10 - 3.2.06

D E C I S I O N
of Technical Board of Appeal 3.2.06
of 3 June 2014

Appellant: Snap-On Equipment GmbH
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Decision under appeal: **Decision of the Opposition Division of the
European Patent Office posted on 18 August 2010
rejecting the opposition filed against European
patent No. 1157861 pursuant to Article 101(2)
EPC.**

Composition of the Board:

Chairman M. Harrison
Members: M. Hannam
W. Ungler

Summary of Facts and Submissions

I. An appeal was filed by the appellant (opponent) against the decision of the opposition division to reject the opposition filed against the European patent No. 1 157 861. In support of its request to set aside the decision, the appellant made objections under Articles 54 and 56 EPC. The following prior art *inter alia* was cited:

D3 US-A-5 383 361

D5 US-A-2 825 395, filed for the first time with the grounds of appeal

II. The respondent (proprietor) requested that D5 not be admitted due to it being both late filed and not *prima facie* relevant.

III. The Board issued a summons to oral proceedings including a communication containing its provisional opinion, in which it indicated *inter alia* that the admittance of D5 may be a point of discussion at oral proceedings, as might the novelty of the subject-matter of claim 1 with respect to D5.

IV. In reply to the summons, the respondent submitted an auxiliary request.

V. Oral proceedings were held before the Board on 3 June 2014, during which the respondent filed a new auxiliary request replacing the auxiliary request previously on file.

The appellant requested that the decision under appeal be set aside and that the European patent No. 1 157 861 be revoked. The respondent requested that the appeal be

dismissed, or auxiliarily that the patent be maintained as amended in the following version:

Description: Page 2 as filed 3 June 2014; page 3 of the patent specification.

Claims: 1 and 2 of the auxiliary request filed 3 June 2014;

Drawings: Figures 1 and 2 as granted.

VI. Claim 1 of the main request reads as follows:

"A wheel rim locking device for tyre removal machines, comprising, for supporting the wheel rim (2), an upper plate (6) provided with an axial hole and supported at the top of a hollow vertical rotary shaft (3), conical means (132, 137) to be inserted axially into said hole and into the cavity of said shaft to lock the wheel rim in a centered position, means (9, 110) driving said conical means towards the wheel rim and axially locking them, and means (133, 134, 135, 136) for rotatably locking said hollow shaft relative to said wheel rim."

Claim 1 of the auxiliary request reads as per claim 1 of the main request with the following features appended:

"characterised in that said conical locking means comprise an axial cone with a bar provided with circumferential teeth and insertable into said shaft, within which said teeth engage a pawl which can be laterally inserted into the interior of said hollow shaft, and means for causing said pawl to move axially to said shaft, to lock said cone against said wheel rim."

VII. The appellant's arguments may be summarised as follows:

D5 should be admitted as it was filed with the grounds of appeal in reaction to the opposition division's interpretation of the conical means in claim 1. The document was further *prima facie* prejudicial to the novelty of the subject-matter of claim 1, as it disclosed a wheel rim locking device used on a machine suitable for tyre removal (see col.6, line 45 onwards). D5 disclosed a conical means comprising lugs 61 connected to the center post 56, whilst 'means driving said conical means towards the wheel rim' comprised the clamp down cone 82 and roller 87, which through interaction were stated to pull down the center post (see col.3, lines 19-21). The wheel rim was clearly locked in D5 as indicated in col.1, lines 36-39. Claim 1 gave no indication of the magnitude of the force applied to the wheel rim in order to achieve locking, such that no difference in the degree of locking could be seen between claim 1 and the locking device of D5.

The auxiliary request should not be admitted due to it being filed very late and it being unclear (Article 84 EPC). It was not clear what the 'conical locking means' were, since solely locking means had previously been claimed. Furthermore the means for causing the pawl to move axially to said shaft could not be understood. Pending a decision from the referral to the Enlarged Board of Appeal G3/14, the present proceedings should be stayed in view of the lack of clarity.

The subject-matter of claim 1 of the auxiliary request did not involve an inventive step (Article 56 EPC) when starting from D5 and combining this with the locking mechanism of D3. Starting from D5, the objective technical problem was to be seen as providing an improved locking arrangement without damaging the wheel rim. With reference particularly to Figs. 1, 4 and 8,

D3 disclosed a secure locking arrangement via chuck claws 40 engaging with teeth 91, which arrangement could be simply exchanged with the locking arrangement of D5 through attachment to the stationary support 12. It was furthermore obvious to exchange the lugs 61 of D5 with an axial cone and to provide apertures in the support 12 for the chuck claws to be inserted into the interior of the hollow shaft.

VIII. The respondent's arguments may be summarised as follows:

D5 should not be admitted as it was first introduced in the appeal proceedings against a claim which was the subject of the opposition proceedings. D5 was further not *prima facie* relevant.

D5 disclosed a tyre bead breaker, not a tyre removal machine. In order to remove the tyre from the rim in D5 significant operator intervention was required. Its function was also significantly different to that of the claimed device since, as very little friction was generated between the levers 44, 46 and the tyre, firm locking of the wheel rim was not even required.

The axial extension of the table support 16 could not be considered a shaft as this term implied a long and thin structure whereas the table support 16 had a radial extent exceeding its axial length. The wheel table 14 was also not supported at the top of the hollow vertical shaft 16.

D5 did not disclose any conical means inserted axially into the cavity of the shaft, rather simply the tubular portion of the center post 56 was so inserted. In claim 1, the cone 132 and the annular projections 137 had a

conical shape, such that conically shaped elements were inserted into the cavity of the shaft. The centered position of the wheel rim was also only achieved by the operator of the device of D5 inserting the center post into the shaft.

D5 further failed to disclose means driving the conical means towards the wheel rim, rather D5 imparted a pure radial clamping force. The roller 87 would rotate when contacted by the clamp down cone, thus imparting no axial force on the center post. Col.3, lines 19-21 was incorrect and should be interpreted as 'push' rather than 'pull'. Also, a pushing force would be understood by the skilled person through the expression 'drawn down' in col.3, lines 39-42.

D5 was thus both *prima facie* not relevant and did not deprive the subject-matter of claim 1 of novelty (Article 54 EPC).

The auxiliary request should be admitted since it was filed in reaction to the preliminary opinion of the Board. The further amendment during oral proceedings comprised a simplification of the auxiliary request previously on file by way of deletion of dependent claims. Claim 1 of the request met the requirements of Article 84 EPC as it was clear that the conical locking means corresponded to the conical means which lock the wheel rim in a centered position. It was also clear that the axial direction referred to several times in claim 1 was one and the same direction; the expression 'axially to said shaft' also referred to this axial direction. The pawl 11 was also able to move in such a direction since a rotational movement of the pawl could be resolved partly into an axial movement for all parts of the pawl not on the axis of rotation itself.

Movement perpendicular to the axial direction was referred to as a 'lateral' movement in claim 1 through the expression 'laterally inserted'.

D5 disclosed only the features of the preamble of claim 1. Regarding the characterising features, D3 did not disclose an axial cone, nor could the chuck claws 40 move axially to the teeth 91 in D3 such that a combination of D5 and D3 would not lead to the subject-matter of claim 1 without involving an inventive step (Article 56 EPC).

Reasons for the Decision

1. Main request
- 1.1 Admittance of D5
 - 1.1.1 D5 was admitted into the proceedings as its disclosure was found to be *prima facie* prejudicial to the novelty of the subject-matter of claim 1.
 - 1.1.2 D5 was first filed with the grounds of appeal when, with no change in the subject-matter of claim 1 since grant, it arguably could have been filed before the opposition division. The Board thus had to consider whether, with regard to Article 12(4) RPBA, it should exercise its discretion not to admit D5 into proceedings. However, the appellant's argument, that D5 assumed greater significance only in view of the opposition division's interpretation of the prior art before it not anticipating the conical means in claim 1, is accepted. In the light of a particular, possibly unexpected interpretation by the opposition division, depending on the case, it may be reasonable for a party

to make a further search and thus present a document which has taken on greater relevance as a result of such interpretation. Of course, as is established practice before the Boards of Appeal, in order that such a document be admitted in the appeal proceedings, the requirement of it being of very high relevance to the maintenance of the patent should be established.

- 1.1.3 Document D5 discloses all features of claim 1 as shown by the following feature analysis of the claim, the reference signs in parentheses referring to D5:
A wheel rim locking device (see Figs. 1-4; col.1, lines 36-39) for tyre removal machines (suitable for a tyre removal machine as detailed in col.6, line 72 - col.7, line 8), comprising, for supporting the wheel rim (31), an upper plate (wheel table, 14) provided with an axial hole (see Fig. 1) and supported at the top of a hollow vertical rotary shaft (the downward axial extension of table support 16; see Fig. 2), conical means (a member comprising lugs 61 and center post 56) to be inserted axially into said hole and into the cavity of said shaft (16; see Fig. 2) to lock the wheel rim in a centered position (see col.3, lines 11-15), means (58, 82, 87) driving said conical means (61, 56) towards the wheel rim (31) and axially locking them (see col.3, lines 3-15; col.4, lines 7-12), and means (68) for rotatably locking said hollow shaft (16) relative to said wheel rim (31).
- 1.1.4 Regarding the respondent's contention that D5 disclosed a tyre bead breaker, not a tyre removal machine, and that in order to remove the tyre from the rim in D5 significant operator intervention was required, the Board finds this not to preclude D5 of being of very high relevance with respect to claim 1. It is firstly noted, that claim 1 is directed to a wheel rim locking

device for (i.e. "suitable for") a tyre removal machine and is thus not limited to a tyre removal machine *per se*. Further, as stated from col.6, line 72 to col.7, line 14, complete tyre removal from the wheel is foreseen in D5, the locking device disclosed thus being suitable for a machine on which tyres are removed. As to the need for operator intervention in D5 for removal of the tyre, this is of no relevance as regards the wheel rim locking device claimed and its suitability for locking wheel rims for the removal of tyres as described in D5. Also, in claim 1, the specific steps in tyre removal by way of the tyre removal machine are not specified, such that the claim itself provides no differentiation from an operator intervening to remove the tyre as in D5.

1.1.5 The Board finds the respondent's argument that firm locking of the wheel rim was not required in D5 and that the disclosure was thus not suitable for locking the wheel rim for a tyre removal machine, to be unconvincing. Neither claim 1 (nor indeed the entire specification of the opposed patent) provides an indication of a locking force threshold which is required in order for a wheel rim to be adequately secured to enable tyre removal from the rim. It is thus not possible to conclude that the locking in D5 is not in some way secure enough, particularly in view of the passage from col.6, line 72 to col.7, line 14 which describes tyre removal from the rim utilising the therein disclosed wheel rim locking device. It thus follows that D5 discloses a wheel rim locking device suitable for a tyre removal machine.

1.1.6 Regarding the respondent's suggestion that the table support 16 could not be considered to comprise a shaft, this view is not accepted. On reading Fig. 2 it is

apparent that the table support 16 has an axial extension, referred to as a 'lower cylindrical section' in col.4, lines 29-30, which is perpendicular to the table surface. This axial extension has the form of a shaft (being cylindrical and free to rotate relative to the main support tube 12 via the cylindrical rollers 100), whereby the horizontal portion of the table support 16 has the form of a flange attached to one end of the axial extension. It is thus apparent that table support 16 includes a shaft in the form of the 'lower cylindrical section'. This can be equated with the claimed hollow vertical shaft of claim 1.

1.1.7 The respondent's further argument, that the wheel table 14 was not supported at the top of the hollow vertical shaft 16, is also not accepted. It is true that the wheel table of D5 is not supported directly in contact with the top of the hollow vertical shaft; however, this is also not claimed. From Figs. 1 and 2 it is apparent that the wheel table 14 is coupled to the table support 16 via a spacer piece (not referenced in Fig. 1) clearly visible as secured to the table support via bolts from below. It thus follows that the wheel table 14 is securely fastened to the table support 16 at all times that the bead breaking machine is assembled for use and that the wheel table can thus be considered supported at the top of a hollow vertical rotary shaft 16, as required by claim 1.

1.1.8 Contrary to the opinion of the respondent, the Board finds that D5 does indeed disclose a conical means to be inserted axially into the cavity of the shaft. The expression 'conical means' is very broad and is, in effect, limited only to an element comprising a conically shaped feature somewhere in its structure. In this respect, the lugs 61 of D5 present a frustro-

conical section (see col.3, line 13) and are part of the wheel clamp 60 which is secured to the upper end of the center post 56 (see col.3, lines 8-9). A frustro-conical section is, seen geometrically, a truncated cone and thus clearly has a conical shape. It thus follows that the lugs 61, forming part of the wheel clamp 60, in combination with the center post 56, may be seen as a single combined structure falling within the scope of the expression 'conical means'. The respondent's argument that the claim defines that the conically shaped element itself must be inserted into the cavity of the shaft finds no reflection in the claim, in which simply the conical means are identified as to be inserted into the cavity of the shaft. As found above, the center post 56 is part of the conical means in D5 such that the insertion of the center post 56 alone into the cavity of the shaft anticipates this feature of claim 1.

- 1.1.9 The respondent's argument that the feature of claim 1 'conical means to be inserted ... to lock the wheel rim in a centered position' was not disclosed in D5, in which device the operator simply inserted the center post into the shaft, is not to be extracted from D5. Both col.1, lines 36-39 and col.3, lines 11-15 disclose the centering of the wheel through operation of a locking device. The locking device of D5 is described in detail from col.3, line 43 onwards and clarifies how the lugs 61 on the center post 56 are pulled tight in order to center the wheel on the wheel table. The wheel rim locking device of D5 thus clearly includes the claimed conical means which lock the wheel rim in a centered position.
- 1.1.10 The Board cannot concur with the respondent's view that D5 failed to disclose means driving the conical means

towards the wheel rim. Whilst the clamp down roller 87 surely exerts a radial force on the center post 56 to lock it in position when the clamp down cone 82 is lowered, basic resolution of forces justifies the conclusion that an axial force is also exerted by the roller 87 on the center post 56, at least during the initial contact between roller and clamp down cone 82. Fig. 3 clearly shows how the inclined face of the clamp down cone will, when lowered relative to the clamp down roller 87, impart a force with both radial and axial components to the roller. The roller 87 is axially restrained by the clamp down retainer 85 and the clamp down retainer cap 89 (see col.3, line 74 - col.4, line 4), both of which are screwed together and are axially supported on a clamp down retainer spring 91 (col.4, lines 3-7). It is clear, not only from the mechanical resolution of component forces but also from col.4, lines 12 - 17, that the clamp down roller 87 is subject to axial forces and, in combination with the clamp down retainer 85 and cap 89, undergoes an axial movement during locking which must therefore impart an axial force on the center post 56. The respondent's further argument in this respect, that the roller 87 would rotate when contacted by the clamp down cone, changes nothing in the way in which the mechanical force imparted by the clamp down cone 82 on the roller 87 can be resolved into both radial and axial forces; as a consequence, at least during initial movement of the clamp down cone, an axial force must be transferred to the center post 56. The feature of claim 1 'means driving said conical means towards the wheel rim' is thus disclosed in D5.

- 1.1.11 The respondent's argument, that col.3, lines 19-21 should be interpreted as 'push' rather than 'pull', is not only unfounded, but would not be interpreted as

such by the skilled person and is furthermore technically unrealistic. Whilst the operator of the machine of D5 is indeed required to insert the center post 56 through the wheel rim until the lugs 61 contact the rim, this is not the only way in which contact pressure is obtained between the lugs 61 and the wheel rim. As identified in point 1.1.10 above, the center post is axially pulled down by way of the clamp down roller locking mechanism, such that the description passage in col.3, lines 19-21 would indeed be interpreted by the skilled person in confirmation of this axial pulling down, rather than the alleged 'pushing' argued by the respondent, which would require the specification to be interpreted in the complete opposite way to that which is literally disclosed. The interpretation of the Board is further supported through the expression 'drawn down' in col.3, lines 39-42, which again cannot be interpreted as an operator induced 'pushing' force as alleged by the respondent.

1.1.12 It thus follows that all features of the subject-matter of claim 1 are disclosed in D5, whereby D5 was highly likely to be prejudicial to maintenance of the patent, such that the Board exercised its discretion to admit this document into the proceedings.

1.2 Novelty

1.2.1 With no arguments of the respondent to the novelty of the subject-matter of claim 1 extending beyond those already presented regarding the admittance of D5, the Board finds, with reference to points 1.1.3 to 1.1.11 above, that the subject-matter of claim 1 lacks novelty in view of D5 (Article 54 EPC 1973). The main request is thus not allowable.

2. Auxiliary request

2.1 Admittance of the request

2.1.1 The Board exercised its discretion in admitting the auxiliary request under Article 13(1) RPBA. The request was additionally, at least *prima facie*, found to meet the requirements of Article 84 EPC 1973.

2.1.2 The Board finds that the auxiliary request filed during oral proceedings represented a simplification, due to the deletion of dependent claims 3-5 and 7, of the auxiliary request previously on file. As such the new request did not represent complex new subject-matter, particularly in view of the arguments already made by the parties, and in view of the claims of the request having all been present in the previous auxiliary request on file. The new auxiliary request also appeared *prima facie* to overcome the previous objections without giving rise to new objections. The Board thus exercised its discretion to admit the request into proceedings under Article 13(1) RPBA.

2.1.3 Regarding the clarity of the auxiliary request, the reference to 'said conical locking means' in the characterising portion of claim 1 is found, for the skilled person, to clearly refer to the 'conical means' claimed in the preamble of the claim. This 'conical means' is qualified in the preamble as being 'inserted axially into said hole and into the cavity of said shaft to lock the wheel rim in a centered position'. The locking function of the conical means is thus clearly defined for the skilled reader of the claim, such that the the feature 'said conical locking means' clearly refers to the conical means with the locking

function of the preamble.

2.1.4 The expression 'means for causing said pawl to move axially to said shaft' is also clear for the skilled person. Whilst the wording 'axial to' might be considered linguistically unusual, in the context of the claim in which the term 'axial' or 'axially' is always used to define a direction parallel to the shaft 3, it is clear to a skilled person that the axial movement of the pawl is also in this direction.

2.1.5 The Board thus finds the claims of the auxiliary request to meet the clarity requirement of Article 84 EPC 1973. Also, no further objections were raised under Article 84 EPC 1973 nor are any immediately apparent.

2.1.6 With respect to the above, the outcome of the referral to the Enlarged Board of Appeal G3/14 would have no relevance to this finding. Any need to stay these proceedings was thus not present, such that the appellant's request to stay proceedings is refused.

2.2 Novelty

2.2.1 The novelty (Article 54 EPC 1973) of the subject-matter of claim 1 was not questioned by the appellant. The Board also sees no objections in this regard given the state of the art on file.

2.3 Inventive step

2.3.1 The subject-matter of claim 1 involves an inventive step (Article 56 EPC 1973) over the document combination and arguments presented by the appellant.

2.3.2 Starting from D5 as the document representing the closest prior art, as argued by the appellant, the subject-matter of claim 1 differs through the features of the characterising portion, namely that said conical locking means comprises an axial cone with a bar provided with circumferential teeth and insertable into said shaft, within which said teeth engage a pawl which can be laterally inserted into the interior of said hollow shaft, and means for causing said pawl to move axially to said shaft, to lock said cone against said wheel rim. The objective technical problem to be solved based on these features may be seen as how to improve upon the known locking arrangement.

The locking arrangement of D3 does not logically allow a combination of its features with the device of D5 in order to solve the objective technical problem and reach the subject-matter of claim 1. The lock shaft 90 of D3 comprises engaging projections 91 with which chuck claws 40 interact to lock the wheel between rims 13, 14 (see col.5, lines 8-12; col.7, lines 1-8). Whilst this can be equated with the claimed bar provided with circumferential teeth and the pawl in claim 1, the chuck claws 40 of D3 themselves are supported within the interior of the ring shaft 50 (see e.g. Fig. 1) and thus cannot be 'inserted into the interior of said hollow shaft'. Furthermore, the chuck claws 40 of D3 undergo no movement axially to the lock shaft 90 or projections 91, their relative movement being restricted to a direction perpendicular to the axial direction of the lock shaft (col.8, lines 2-14). D3 thus fails to provide the claimed 'means for causing said pawl to move axially to said shaft'. It thus follows that the skilled person is provided with no guidance from D3 which would enable him to modify the locking device of D5 and reach the subject-matter of

claim 1 while solving the objective technical problem. The subject-matter of claim 1 thus involves an inventive step (Article 56 EPC 1973).

2.3.3 Regarding the appellant's argument that D3 disclosed a secure locking arrangement which could be simply exchanged with the locking arrangement of D5 through attachment to the stationary support 12, is unconvincing. The locking mechanism of D5 presents a relatively complex arrangement with the clamp down rod 70 interacting with the clamp down cone 82 relative to the fixed main support tube 12. A simple replacement of this arrangement with the chuck claws 40 and projections 91 of D3, without significant further redesign of the locking device of D5, is thus not apparent. Furthermore, it is not evident how the chuck claws 40 of D3, corresponding to the claimed pawl, could be arranged to allow their lateral insertion into the interior of the hollow shaft, as required by claim 1. For this to be possible, the chuck claws would need to be supported externally to the cylindrical extension of the table support 16 of D5 which, contrary to the appellant's opinion, would require a considerable redesign of the D5 locking device, not least due to the required different placement of the locking elements with respect to the cylindrical extension of the table support 16.

2.3.4 The appellant's argument that it would be obvious to exchange the lugs 61 of D5 with an axial cone is also not convincing. The lugs 61 forming the wheel clamp 60 of D5 are perfectly functional in reliably locating the wheel rim relative to the bead breaking machine. It is not evident, and it was notably not argued by the appellant, that an axial cone provides an advantage as regards locking of the wheel rim relative to the lugs

61 of D5. Any incentive for such a modification is thus lacking.

2.3.5 No further lines of argument were presented questioning the presence of an inventive step in claim 1. The Board thus finds that the subject-matter of claim 1 involves an inventive step over the cited prior art (Article 56 EPC 1973).

2.3.6 The description was adapted to the claims of the auxiliary request, which adaptation met with no objections from the appellant; nor did the Board itself find any reason to raise an objection in this regard.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the department of first instance with the order to maintain the patent as amended in the following version:
Description: Page 2 as filed during the oral proceedings of 3 June 2014; page 3 of the patent specification;
Claims: Nos. 1 and 2 of the auxiliary request as filed during the oral proceedings of 3 June 2014;
Drawings: Figures 1 and 2 as granted.

The Registrar:

The Chairman:



M. H. A. Patin

M. Harrison

Decision electronically authenticated