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Aktenzeichen / Case Number / N° du recours : T 55/86 - 3.2.1

Anmeldenummer / Filing No / N° de la demande : 80 300 309.4

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Bezeichnung der Erfindung: Trailer or semi-trailer vehicle braking apparatus  
Title of invention:  
Titre de l'invention :

Klassifikation / Classification / Classement : B60T 13/40  
B60T 15/20

ENTSCHEIDUNG / DECISION  
vom / of / du 15 March 1988

Anmelder / Applicant / Demandeur :

Patentinhaber / Proprietor of the patent /  
Titulaire du brevet :

BENDIX LIMITED

Einsprechender / Opponent / Opposant :

WABCO Westinghouse  
Fahrzeugbremsen GmbH

Stichwort / Headword / Référence : Braking apparatus/Bendix

EPO / EPC / CBE Article 56 EPC

Kennwort / Keyword / Mot clé : "Inventive step (No) - replacement of one known integer by another known integer".

Leitsatz / Headnote / Sommaire

Europäisches  
Patentamt  
Beschwerdekammern

European Patent  
Office  
Boards of Appeal

Office européen  
des brevets  
Chambres de recours



Case Number : T 55/86 - 3.2.1

**D E C I S I O N**  
of the Technical Board of Appeal 3.2.1  
of 15 March 1988

**Appellant :**  
(Opponent)

WABCO Westinghouse Fahrzeugbremsen GmbH  
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**Representative :**

**Respondent :**  
(Proprietor of the patent)

Bendix Limited  
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**Representative :**

**Decision under appeal :**

Interlocutory decision of the Opposition Division of  
the European Patent Office dated 2 January 1986  
concerning maintenance of European patent  
No. 0 014 575 in amended form.

**Composition of the Board :**

**Chairman :** P.E.M. Delbecque

**Members :** C.T. Wilson

O.P. Bossung

## Summary of Facts and Submissions

- I. European patent No. 0 014 575 was granted with two claims on the basis of European patent application No. 80 300 309.4 on 2 March 1983.
- II. The patent was opposed in due time and form on 22 August 1983. The Opponent requested revocation of the patent on grounds of lack of inventive step in the light of DE-C-2 152 996 and of DE-C-1 131 535.
- III. On 26 April 1984 the Patentee contested the arguments of the Opponent, filed new Claims 1 and 2, suggesting also amendments to the description and requested that the patent be maintained in the amended form.
- IV. In the Interlocutory Decision within the meaning of Article 106(3) EPC, dated 2 January 1986, the Opposition Division maintained the patent as amended on the basis of the documents specified in the communication pursuant to Rule 58(4) EPC, dated 6 November 1984, and incorporating the above-mentioned new Claim 1.
- V. The Opponent appealed against this decision on 29 January 1986, at the same time paying the appropriate fee. In his Grounds for the Appeal, filed 3 February 1986, the Appellant (Opponent) argues for revocation of the patent in its entirety. He is of the opinion that the characterising feature of Claim 1 is known from DE-C-2 152 996, and that it would be obvious for the person skilled in the art, wishing to eliminate the check valve before the circuit protection valve, to replace the fluid pressure biased members in the relay valves by spring biased members.

- VI. In his observations, filed 12 May 1986, on this statement of the Appellant, the Respondent (Patentee) requests that the appeal be dismissed. He argues that in fact GB-A-1 397 307, mentioned in his patent, represents the nearest prior art. Moreover, even if one considers the disclosures of both GB-A-1 397 307 and DE-C-2 152 996 together, it would not be obvious for the person skilled in the art to adopt the present invention in order to dispense with the non-return check valve.
- VII. In a response filed 19 November 1987 to a communication from the Board setting out its provisional opinion that DE-C-2 152 996 represents the nearest prior art, and that the subject-matter of Claim 1 appears to lack an inventive step in the light of the disclosures of DE-C-2 152 996 and GB-A-1 397 307, the Respondent made the following observations:
- (a) The present invention arose as a result of an expectation of a higher level of residual braking on trailers and the simplicity of the system of EP 0 014 575 to achieve this as compared with that of DE-C-2 152 996 is self-evident.
  - (b) The subject of higher levels of residual braking with two-line control of trailers had been of continuing interest over the period covered by these patents. In spite of this, there appears to have been no substantial advances between October 1971 and Patentees' proposal of February 1979, which is now energetically argued against by Opponent's.
  - (c) The reduced complication of Patentees' system resides not only in the fact that the mentioned check valve is

dispensed with but also in that the practical realisation of the valve assemblies 10 and 12 of DE-C-2 152 996.

The need inter alia for dividing walls 59, 60 and associated seals is clearly avoided by virtue of the invention.

- (d) In DE-C-2 152 996 it is to be noted that it is necessary to provide at least one further check valve 18 for maintaining pressure in line 7 during an emergency brake application. Moreover, with only one such check valve as shown therein only the reservoir 15 is able to supplement the pressure in pipe 7 for the purposes of establishing emergency brake application. Accordingly, if there is a loss of pressure in reservoir 15 due to a failure, emergency operation of the remaining circuit using pressure from reservoir 16 is likely to be seriously impaired. Although braking regulations may not demand that the eventuality of two faults shall be catered for, this is clearly an advantage with the present invention without check valves.
- (e) Whilst it is not denied as known that fluid pressure biasing can be replaced by spring biasing in appropriate applications, until filing of the opposed patent, skilled engineers had either failed to realise or had rejected such possibility in the present context. Only after the Patentees' disclosure has Opponent's now appreciated the practical and cost advantages to be achieved by apparatus as claimed in the patent.

VIII. At the oral proceedings held on 15 March 1988 at the request of the Respondent, both parties re-iterated their arguments, and the Respondent filed new Claims 1 and 2, (based on the disclosure of DE-C-2 152 996 as the closest prior art), amended during the oral proceedings to read as follows:

1. A trailer or semi-trailer vehicle fluid pressure braking apparatus for two-line operation including first and second relay valves (10, 11) responsive to the magnitude of fluid pressure in a first brake control line (2) to apply braking pressure respectively from first and second reservoirs (6, 7) to independent brake pressure circuits, said first and second reservoirs being chargeable via circuit protection valve means from a second emergency/supply line, which enables charging of one said reservoir from the second line even with excessive loss of air from the other reservoir, at least one said relay valve having a pressure responsive member with a discrete fluid pressure-responsive area (31) connected to be subject to pressure at a second emergency/supply line and being such that collapse of fluid pressure in the second line enables said member to cause an emergency brake application by the respective circuit regardless of the fluid pressure in the first line and characterised by said member being biased by a spring, which is normally counteracted by the presence of said fluid pressure in the second line and the, or each, reservoir, which is supplying a said at least one relay valve being connected directly to the second line for charging via the circuit protection valve means (4, 5).

2. A braking apparatus as claimed in Claim 1, characterised by both said relay valves having a spring biased pressure responsive member with a discrete fluid pressure-responsive

area (31) connected to the second line, to cause an emergency application by the respective circuit regardless of the fluid pressure in the first line.

- IX. The Appellant (Opponent) requests cancellation of the decision against which he is appealing and revocation of the European patent in its entirety. The Respondent (Patentee) requests that the appeal be dismissed and the patent maintained on the basis of Claims 1 and 2 as filed and amended during the oral proceedings on 15 March 1988.

#### Reasons for the Decision

1. The appeal is admissible.
2. There is no objection to the amendments made to the granted patent on formal grounds. Since this has not been disputed, there is no need for further detailed substantiation of this matter.
3. Novelty.

After a thorough examination of all documents cited in the proceedings so far, the Board has come to the conclusion that the subject-matter of Claim 1 is novel. Again, this has not been disputed and will not therefore be further substantiated.

4. Inventive step.

The present invention relates to fluid pressure braking apparatus for trailers or semi-trailers of tractor/trailer vehicle combinations. It has been proposed to provide trailer braking control from the towing vehicle by means of two connections between the towing vehicle and the trailer.

One connection supplies a normal service or secondary braking control pressure to a trailer relay valve and the other connection provides a source of fluid pressure for charging the trailer reservoir or reservoirs and also constitutes an emergency line if fractured. Assuming that the trailer reservoir is already charged, collapse of emergency line pressure causes trailer brakes to be automatically applied regardless of the value of the control pressure in the control pressure connection. In order to achieve such a manner of operation, it is customary to employ on the trailer a so-called relay emergency valve which has one piston area responsive to the control pressure and another piston area which overrides the action of the first piston area in the event of the emergency line pressure collapsing to effect the emergency brake application.

5. In order to provide two independent sources of braking force on a trailer, so that one remains operable in the event of the other ceasing to become effective, it has been proposed in DE-C-2 152 996, to provide two separate reservoirs 15, 16 on a two-line trailer chargeable from the emergency line 2 via a two-circuit protection valve 17. Here, the double relay emergency valve (10) is connected directly to the emergency line. The relay valve is provided with pressure responsive members 40, 41 having discrete fluid pressure responsive areas connected to the emergency line 2 and such that collapse of fluid pressure in this line enables the members to give rise to emergency brake application regardless of the pressure in the brake control line 20. This corresponds to the situation in the present Claim 1.

However, whereas according to the present Claim 1, the plungers 40, which correspond to the members 40, 41, according to DE-C-2 152 996, are spring biased, those

members 40, 41 are fluid pressure biased. In particular, they are biased by pressure from the emergency line 2. When the pressure in this line collapses, this bias pressure is maintained in the line between the check valve 3 and the circuit protection valve means 17 including a check valve 18.

9. A comparison of the subject-matter of the present Claim 1 with that of DE-C-2 152 996 reveals that this difference in biasing pressure, namely spring pressure and fluid pressure, is the essential difference between the two.
10. An assessment of the problem to be solved by the present invention, revealed as a result of this comparison with the most relevant prior art, shows, therefore, that it was to simplify the circuit (by eliminating the check valves) in the apparatus of DE-C-2 152 996.
11. This was achieved by connecting the reservoirs directly to the emergency line for charging via the circuit protection valve means and by utilising spring biasing on the plungers 40. However, the use of spring-biased emergency relay valves in trailer or semi-trailer vehicle fluid pressure braking apparatus for two-line operations was already known, e.g. from GB-A-1 397 307.

It would, therefore, have been obvious to the person skilled in the art to replace the known fluid pressure biasing of the apparatus of DE-C-2 152 996 by the known spring biasing of the apparatus according to GB-A-1 397 307 if he wanted to eliminate the dependency on the fluid pressure. This replacement would render the check valves 3 and 18 superfluous so that they would be omitted and the reservoirs would be connected directly to the emergency line via the circuit protection valve means in accordance with the system according to the present Claim 1.

12. The subject-matter of Claim 1 is therefore lacking in inventive step, and the claim is unallowable.
13. The arguments advanced by the Respondent in his communication filed 19 November 1987 are not sufficiently persuasive to change this conclusion.

In particular, the simplicity of the system as claimed in Claim 1 is reproduced by the combination of teachings of the prior art. The elimination of many of the disadvantages was foreseeable by the man skilled in the art when selecting spring-biasing to replace fluid pressure biasing. Also, the presence of bonus effects or advantages and of secondary indications of the presence of inventive step (e.g. age of documents) is no substitute for the technically skilled assessment of the invention vis-à-vis the state of the art, pursuant to Article 56 EPC.

#### Order

For these reasons, it is decided that:

1. The decision of the Opposition Division is set aside.
2. The patent is revoked.

The Registrar:

The Chairman:

S. Fabiani

P. Delbecque