Paper No. 33

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte DAMON DELORENZIS, RICHARD MEYER and DANIEL LAMKIN

Appeal No. 1999-1757
Application No. 08/895,637

ON BRIEF

Before STONER, Chief Administrative Patent Judge, FRANKFORT and LAZARUS, Administrative Patent Judges.

LAZARUS, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal from the examiner's final rejection of claims 1, 3 through 5 and 7 through 17. Claims 24 through 27 were withdrawn from consideration as being for a non-elected invention (see Paper No. 10, mailed May 1, 1996). Claims 2, 6 and 18 through 23 have been canceled.[1]

[1] Claims 2, 6 and 18-23 were canceled pursuant to the amendment filed February 2, 1996 (Paper No. 7).

The appellants' invention relates to a vibration control system and specifically relates to the use of a liquid spring in a variety of environments (specification, p. 1). A copy of the claims under appeal is set forth in the appendix to the appellants' brief.

The prior art references of record relied upon by the examiner in rejecting the appealed claims are:

Kirchner	4,079,923	Mar. 21, 1978
Kouda et al. (Kouda)	4,826,205	May 2, 1989

Claims 1, 3 through 5 and 7 through 17 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Kouda in view of Kirchner.

Rather than reiterate the conflicting viewpoints advanced by the examiner and the appellants regarding the above-noted rejection, we make reference to the rejection (Paper No. 23, mailed October 15, 1997), the final rejection (Paper No. 26, mailed May 14, 1998) and the answer (Paper No. 30, mailed February 2, 1999) for the examiner's complete reasoning in support of the rejection, and to the brief (Paper No. 29,

filed October 9, 1998) and reply brief (Paper No. 31, filed April 5, 1999) for the appellants' arguments thereagainst.

OPINION

In reaching our decision in this appeal, we have given careful consideration to the appellants' specification and claims, to the applied prior art references, and to the respective positions articulated by the appellants and the examiner.[2] For the reasons which follow, we cannot sustain the examiner's rejection.

Claim 1, the sole independent claim, reads as follows:

1. A vibration control system for use between a first mass and a second mass said system comprising:

(a) a liquid spring operably interposed between said first and second masses,

[2] In our review of the appellants' specification we note that element "252" in the drawing is referred to as an "interior chamber" (page 7), a "position sensor" (page 10), a "cylindrical rod" (page 10) and a "sensor rod" (page 34). A reference character should refer to a part by use of one name, not different names. This matter should be addressed by the appellants and/or the examiner during any further prosecution.

said liquid spring having a housing including a chamber in which a first volume of compressible liquid is disposed and restriction means slidably disposed within said housing, said restriction means having a surface in contact with said first volume of compressible liquid, said compressible liquid having a spring rate, wherein said spring rate is an inverse function of volume further wherein said liquid spring provides damping by causing said compressible liquid to flow about said restriction means;

(b) a second volume of compressible liquid in a second chamber, said second volume removably connected to the first volume by a fluid passage;

(c) valve means coupled to said fluid passage, said valve means selectively operable to place said second volume in communication with said first volume; and

(d) control means for varying at least one of spring and damping forces in response to a sensed vibration by operating said valve means to place into communication said first volume with said second volume, said communication combining first and second volume [*sic*] into one active volume producing a change in spring rate.

Kouda (Fig. 1) discloses a shock absorber 20 variable between harder and softer damping modes and a pneumatic spring 30 variable between stiffer and softer modes (see, for example, column 2, lines 16-30). In the normal state shock absorber 20 operates in the soft mode. In response to a control signal from control unit 100, shock absorber 20 operates in the hard mode e.g., a greater damping force is produced than in the soft mode (column 8, lines 21-44).

Control unit 100 also operates the pneumatic spring assembly between soft spring mode and hard spring mode (column 10, lines 20-53).

The examiner's final rejection (Paper No. 26) is explained by reference to the previous office action wherein it is stated that

> Kouda et al. show the vibration control system as claimed except for the type of shock absorbing medium... [and] [i]t would have been obvious to one of ordinary skill in the art to have utilized a compressible liquid in the system of Kouda et al such as shown by Kirchner so as to provide damping and spring action (Paper No. 23, page 3).

The examiner additionally expresses the view that

> [t]he summary of invention contained in the brief is deficient because contrary to Applicant's description there is only one volume of fluid separated by a valve. The discussion of two volumes is but a matter of nomenclature for claim recitation purposes. As clearly shown in the figures, there is but one volume of fluid (emphasis ours) (answer, page 2).

The appellants challenge the examiner's position by arguing that whereas Kouda discloses a variable damping shock absorber, and a separate springing device, by contrast, the

single suspension of the appellants' claim 1 controls spring and damping forces by means of a compressible fluid (brief, page 6). Also,

> Kouda's shock absorber relies on the incompressibility of a single volume liquid to produce the damping force. Accordingly, replacing the fluid in Kouda with a compressible liquid will not yield the Applicants' invention since multiple volumes are not contemplated by Kouda. Applicants' invention utilizes two volumes of compressible liquid which can be combined or separately used by one single suspension. By combining the two volumes into one active volume, a change in springing and damping is produced as recited in claim 1 (emphasis ours) (brief, page 7).

It is our opinion that the examiner's statement that "Kouda et al. show the vibration control system as claimed except for the type of shock absorbing medium" does not reflect an appreciation of the appellants' claimed "liquid spring" which, as recited in claim 1, provides variable damping by causing compressible liquid to flow about a restriction and, in conjunction with control means, provides a variable spring rate by combining a second volume of compressible liquid with the first volume. One of ordinary skill in the art would recognize that Kouda does not teach or suggest a liquid spring. Kouda discloses a pneumatic spring

30 used in conjunction with a shock absorber 20 to provide a suspension control system for an automotive vehicle that can suppress squat or nose-up upon vehicle acceleration, not a liquid spring. Also, to the extent that the examiner has focused on modifying the shock absorber 20 of Kouda, seen in Fig. 2 of the patent, we see no reasonable basis for the examiner's statement that it would have been obvious to have utilized a compressible liquid in the system of Kouda. Moreover, Kouda has a spring and a separate shock absorber, and even if one of ordinary skill did use a compressible liquid in Kouda's shock absorber this would not result in a vibration control system utilizing a liquid spring and control means for varying at least one of spring and damping forces as recited in the appellants' claim 1.

When challenged that "neither reference cited discloses the use of multiple liquid volumes for the same (emphasis added) mechanism" (brief, page 9), the examiner takes the untenable position that "there is only one volume of fluid separated by a valve" (answer, pages 2 and 4) and makes no attempt to explain what there is in the prior art that the

examiner perceives as one volume separated by a valve. We must not lose sight of the fact that the purpose of the appellants' second volume is to produce a change in spring rate when combined with the first volume. Like the appellants, we see nothing in Kouda which would teach or suggest a second volume as required by claim 1 which when combined with the first volume produces a change in spring rate.

In making a rejection based on 35 U.S.C. § 103, the examiner has the initial duty of supplying the requisite factual basis and may not, because of doubts that the invention is patentable, resort to speculation or unfounded assumptions to supply deficiencies in the factual basis. See In re Warner, 379 F.2d 1011, 1017, 154 USPQ 173, 177-78 (CCPA 1967), cert. denied, 389
U.S. 1057 (1968). Here the examiner has made the bald assertion that Kouda shows the vibration control system as claimed except for the type of shock-absorbing medium without providing any factual basis whatsoever to support this assertion.

We have also carefully reviewed Kirchner and find no disclosure of a second volume as called for in the appellants' claim 1, nor any teaching or suggestion of producing a change in spring rate by combining a first volume of compressible liquid (which provides damping) and a second volume of compressible liquid into one active volume. Even assuming that one of ordinary skill in the art would have combined Kouda and Kirchner, the combination would not have yielded a vibration control system with first and second volumes as recited in claim 1.

Accordingly, we will not sustain the examiner's rejection of independent claim 1, or of claims 3 through 5 and 7 through 17 which depend from claim 1, under 35 U.S.C. § 103(a) as being unpatentable over Kouda in view of Kirchner.

CONCLUSION

To summarize, the decision of the examiner to reject claims 1, 3 through 5 and 7 through 17 under 35 U.S.C. § 103(a) is reversed.

REVERSED

BRUCE H. STONER, JR. Chief Administrative Patent Judge	)
CHARLES E. FRANKFORT Administrative Patent Judge	) BOARD OF PATENT APPEALS AND INTERFERENCES
RICHARD B. LAZARUS Administrative Patent Judge	)

GEORGE W. HOOVER
BLAKEY SOKOLOFF TAYLOR AND ZAFAM
12400 WILSHIRE BOULEVARD 7TH FLOOR
LOS ANGELES CA, 90025

RL/

1. A vibration control system for use between a first mass and a second mass said system comprising:

(d) a liquid spring operably interposed between said first and second masses,
said liquid spring having a housing including a chamber in which a first volume of compressible liquid is disposed and restriction means slidably disposed within said housing, said restriction means having a surface in contact with said first volume of compressible liquid, said compressible liquid having a spring rate, wherein said spring rate is an inverse function of volume further wherein said liquid spring provides damping by causing said compressible liquid to flow about said restriction means;

(e) a second volume of compressible liquid in a second chamber, said second volume removably connected to the first volume by a fluid passage;

(f) valve means coupled to said fluid passage, said valve means selectively operable to place said second volume in communication with said first volume; and

(d) control means for varying at least one of spring and damping forces in response to a sensed vibration by operating said valve means to place into communication said first volume with said second volume, said communication combining first and second volume into one active volume producing a change in spring rate.

Kouda discloses a suspension assembly 10 comprising a shock absorber 20 having variable damping characteristics, a pneumatic spring assembly 30 having variable spring characteristics and a suspension coil spring 18 (column 5, lines 47-57). Kouda teaches a control unit 100 is provided to

adjust the damping characteristics of the shock absorber 20 and the spring characteristics of the pneumatic spring assembly 30. The control unit 100 is connected to various sensors including a transmission selector position sensor 102, an engine speed sensor 106, a steering angle sensor 116, vehicle height sensor 118, etc. (column 5, lines 58-68). With reference to Fig. 2, the shock absorber 20 is variable of the damping characteristics between a HARD suspension mode position and a SOFT suspension mode position (column 6, lines 62-67). The shock absorber 212 generally comprises a hollow cylinder 220 and a piston 224 fitting flush within the hollow interior of the cylinder 220. The piston 224 defines upper and lower fluid chambers 226 and 228 within the cylinder 220 (column 7, lines 17-21). Chambers 258 and 260 are connected by fluid passages 256, 258 and 260. Fluid passages 258 and 260 are closed by flow-restricting valves 262 and 264, respectively and "open to allow fluid communication between the upper and lower fluid chambers 226 and 228 only when the fluid pressure difference between the upper and lower chambers 226 and 228 overcomes the effective pressure of the valves" (column 7, lines 47-61).

APPEAL NO. 1999-1757 - JUDGE LAZARUS
APPLICATION NO. 08/895,637

APJ LAZARUS

APJ FRANKFORT

APJ STONER

DECISION: REVERSED

Prepared By:

DRAFT TYPED: 24 Oct 01

FINAL TYPED: