The opinion in support of the decision being entered today was *not* written for publication and is *not* binding precedent of the Board

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Ex parte SIMON ANNE DE MOLINA

Appeal 2006-3100
Application 10/662,547
Technology Center 3600

Decided: August 29, 2007

Before: TERRY J. OWENS, MURRIEL E. CRAWFORD, and DAVID B. WALKER, *Administrative Patent Judges*.

CRAWFORD, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF CASE

Appellant appeals under 35 U.S.C. § 134 (2002) from a final rejection of claims 7 to 15 and 18. We have jurisdiction under 35 U.S.C. § 6(b) (2002).

Appellant invented a shock absorber having a sliding sleeve which moves progressively to close off one of the two flow paths, which in turn provide a firm damping (Specification 1 to 3).

Claim 7 under appeal reads as follows:

> 7. A two-stage shock absorber comprising:
> a pressure tube defining a chamber;
> a piston rod assembly disposed within said chamber;
> a valve assembly fixably attached to said piston rod assembly and slidably engaging said pressure tube within said chamber, said valve assembly dividing said chamber into an upper and a lower working chamber, said valve assembly providing a first and a second fluid flow path between said upper and lower working chambers completely through said valve assembly, said first and second flow paths of said valve assembly being totally separate from one another; and
> a sleeve slidably disposed on said piston rod assembly, said piston rod assembly defining a passage and a plurality of holes through said piston rod assembly, the plurality of holes being arranged in a helical spiral formation to create a third separate and distinct flow path extending between said upper and lower working chambers, said sleeve being operable to progressively close said third flow path by sequentially covering said plurality of holes when movement of said piston rod assembly exceeds a specified distance, said progressive closing of said third flow path providing a progressively higher resistance to the movement of said piston rod assembly, said sleeve being operable to simultaneously cover all of said plurality of holes to fully close said third flow path.

The Examiner rejected claims 7 to 11 under 35 U.S.C. § 103(a) as being unpatentable over DeMolina in view of Lee and Dressell.

The Examiner rejected claims 12 to 15 and 18 under 35 U.S.C. § 103 as being unpatentable over DeMolina in view of Dressell or Schupner.

The prior art relied upon by the Examiner in rejecting the claims on appeal are:

Schupner	US 4,071,122	Jan. 31, 1978
Dressell, Jr.	US 4,133,415	Jan. 9, 1979

Lee	US 4,742,898	May 10, 1988
DeMolina	US 6,352,145 B1	Mar. 5, 2002

In regard to the rejection of claims 7 to 11, it is the Examiner's contention that DeMolina discloses the invention as claimed except that DeMolina does not disclose a plurality of holes in helical spiral formation which are sequentially closed to progressive close a third flow path. The Examiner relies on Lee and Dressell for teaching various aspects of the progressive closing of the third flow path.

Appellant contends that none of the references cited discloses or suggests a sleeve operable to progressively close the third flow path by sequentially covering the plurality of holes in the piston rod assembly and being operable to simultaneously cover all of the plurality of holes as required by claim 1.

In regard to the rejection of claims 12 to 15 and 18, it is the Examiner's opinion that DeMolina discloses the invention as claimed except that DeMolina does not disclose the third passageway comprised of a single hole and groove with a depth of the groove decreasing from the hole to a terminal end and the sleeve simultaneously covering the hole and groove to fully close the third flow path. The Examiner relies on Dressell and Schupner for disclosing helical grooves with varying depth with holes which open into them.

Appellant contends that neither Dressell nor Schupner discloses a sleeve operable to progressively close the third flow path by progressively covering the groove from the hole to the terminal end.

ISSUES

The first issue is whether the Appellant has shown that the Examiner erred in finding that Lee and Dressell disclose or suggest a sleeve operable to progressively close the third flow path by sequentially covering the plurality of holes in the piston rod assembly and being operable to simultaneously cover all of the plurality of holes.

The second issue is whether Appellant has shown that the Examiner erred in finding that Lee and Schupner disclose a sleeve slidably disposed on a piston rod assembly, a hole located at the base of a groove and the sleeve operable to close a third flow path by progressively covering the groove from the hole to the terminal end.

FINDINGS OF FACT

Appellant discloses a piston rod assembly 46 that includes a first flow path 54, a second flow path 56 and a third flow path 74. The third flow path 74 extends from a first chamber 20 through an opening in the piston rod 18 through the piston rod and through a plurality of helical holes 86 into a second chamber 22 (Figure 2). A sliding sleeve 78 is provided that is operable to move along the piston rod to progressively close more and more of the holes 86 in sequence. This gradual closing of the passage provides the advantage of a major reduction or elimination of the switching noise typical with a dual-stage damping device (Specification, p.7).

Lee discloses a shock absorber having a piston assembly 14 which slides within a chamber 100 bound by a sleeve 18. The sleeve 18 has a plurality of holes 34. As the piston moves in the chamber 100 from a first position depicted in Figure 1 to a position depicted in Figure 2, the

cylindrical surface 76 of the piston covers each of the holes 34 in sequence (Lee, col. 7, ll. 39 to 48). Lee does not simultaneously cover all of the holes 34 (Lee, Figures 1 and 2) nor does Lee utilize a sleeve slidably disposed on the piston rod to close the holes 34. Rather, it is the cylindrical surface 76 of the piston head that is utilized to close the holes 34.

Dressell discloses a shock absorber that includes a sleeve 76 which surrounds the outer diameter of the cylinder 20 in which a piston 54 is disposed for movement. The cylinder 20 has holes 80, 82 and 84 which cooperate with annular grooves 86, 88, and 90 formed on the interior of the sleeve 76 so that when the sleeve is disposed over the cylinder 20, in one orientation, the grooves lie over the holes (Dressell, col. 5, ll. 52 to 68) and provide a flow path for fluid. The amount of restriction is controlled by the rotational position of the sleeve 76 with respect to the cylinder 20. The radial orientation of the cylinder relative to the sleeve 76 is fixed by a pin 78 (Dressell, col. 6, ll. 47 to 51). Dressell does not disclose a sequential closing of the holes but rather a progressive closing of all the holes simultaneously.

Dressell also discloses an alternative form of the sleeve having rectangular spiral grooves 132 formed on its interior diameter (Dressell, col. 7, ll. 30 to 34). The grooves have a width that is equal to the diameter of the holes 80, 82 and 84. As the cylinder is rotated relative to the sleeve, the grooves will be shifted longitudinally, relative to the holes 80, 82 and 84 changing the effective area of the holes 80, 82, 84 (Dressell, col. 7, ll. 60 to 68; Figure 10). Dressell does not disclose a sequential closing of the holes but rather a progressive closing of all the holes simultaneously by the spiral grooves.

Schupner discloses a shock absorber having a main body 10, a piston 12 and a rotatable sleeve 11. The sleeve 11 has a series of helical grooves 70, 71, 72 and 73, of uniform cross-section and the body 10 has a series of holes 47 to 50 (Schupner, Figure 5). At one end of the range of rotation, the slots are the width to expose the full diameter of the holes 47 to 50. At the other end of the range of the rotation, the outer ends of the openings all but close the holes 47 to 50 (Schupner, col. 3, ll 38 to 44). Schupner closes or opens all of the holes and grooves at once. Schupner does not disclose progressively cover the groove from the hole to the terminal end.

DISCUSSION

We will not sustain the rejection of claims 7 to 11 because the combined teachings of the references relied on by the Examiner do not disclose or suggest a slidable sleeve for sequentially covering the plurality of holes to progressively close a third flow path and which is operable to simultaneously cover all the holes.

Lee does not disclose a slidable sleeve covering holes but rather that the surface of the piston itself covers the holes. In addition the piston surface of Lee passes over the holes to cover the holes one by one but does not disclose simultaneously covering all the holes.

Dressell discloses a sleeve that rotates around the piston to progressively cover all the holes at once but does not disclose sequentially closing the holes.

There is no disclosure or suggestion of a slidable sleeve operable to sequentially cover the holes in a piston rod and to simultaneously cover all the holes.

We will also not sustain the Examiner's rejection of claims 12 to 15 and 18 because the combined teachings of references do not disclose or suggest a sleeve operable to progressively close a third flow path by progressively closing a groove, with a hole at its base, from the hole to the terminal end.

Dressell and Schupner both disclose a sleeve that rotates to cover all the grooves or uncover all the grooves.

The decision of the Examiner is reversed.

REVERSED

JRG

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