

MAILED *Ex parte Solhjell* *File*

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Paper No. 14

PATENT OFFICE
BOARD OF PATENT APPEALS
AND INTERFERENCES
UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte ERIK SOLHJELL

Appeal No. 94-1970
Application No. 07/717,935¹

ORDER REMANDING TO EXAMINER

An Information Disclosure Statement filed May 2, 1994 (Paper No. 13) has been matched with this application at the Board of Patent Appeals and Interferences. The Information Disclosure Statement needs to be considered by the Primary Examiner with respect to compliance with the criteria set forth in 37 C.F.R. §§ 1.97 and 1.98. A communication notifying applicant of the Primary Examiner's decision is required.

Accordingly, it is

ORDERED that the application is remanded to the Examiner for such consideration of the Information Disclosure Statement, appropriate notification to applicant and for such further action as may be appropriate.

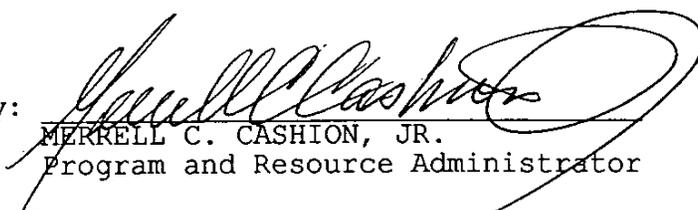
¹ Application for patent filed June 20, 1991.

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The application, by virtue of its "special" status, requires immediate action. See Manual of Patent Examining Procedure, § 708.01(d). It is important that the Board of Patent Appeals and Interferences be informed promptly of any action affecting the appeal.

BOARD OF PATENT APPEALS
AND INTERFERENCES

By: 

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Program and Resource Administrator

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Ex parte Solhjell

THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

Paper No. 17

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

MAILED

Ex parte ERIK SOLHJELL

JAN 23 1997

PAT & TM OFFICE
BOARD OF PATENT APPEALS
AND INTERFERENCES

Appeal No. 94-1970
Application 07/717,935¹

ON BRIEF

Before THOMAS, HAIRSTON, and BARRETT, Administrative Patent Judges.

BARRETT, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal under 35 U.S.C. § 134 from the final rejection of claims 28-52. Claims 1-27 have been cancelled.

¹ Application for patent filed June 20, 1991, entitled "Mouse For Data Entry And Control With Control Of Ball Friction Force."

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The disclosed invention is directed to a mouse system with an operator accessible adjusting means that permits an operator to adjust the rolling force of the mouse. Six embodiments of the rolling force adjusting means are disclosed: (1) figure 6, an adjustable friction force applied via friction pad 24 directly to the mouse ball; (2) figure 7, a friction force applied via leaf spring 33 to a free roller in contact with the mouse ball; (3) figure 8, a friction force applied to a disk attached to an axis of the free roller via a spring clutch-like arrangement; (4) figure 9, a magnetic force applied to a disk attached to an axis of the free roller; (5) figure 10, a generator attached to an axis of the free roller to control the rotational force; and (6) figure 11, an iron core in the mouse ball is acted on by an external magnet 66.

Claim 28 is reproduced below.

28. A mouse system, comprising:

a mouse ball;

means for retaining and sensing rotation of the mouse ball;

operator accessible adjusting means for permitting each individual operator of the mouse system to select a rolling force of the mouse ball which is specifically desired by the particular operator to satisfy his or her preference for a specific feel and to thus satisfy a specific requirement of the operator during use; and

said adjusting means comprising friction means for applying a friction surface against an outer periphery of the mouse ball.

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THE REFERENCES

The examiner relies on the following U.S. patents:

Armbruster	3,376,551	April 2, 1968
Arraiza	3,407,319	October 22, 1968
O'Neill	3,416,749	December 17, 1968
Bose	3,625,083	December 7, 1971
Wickham et al. (Wickham)	4,546,298	October 8, 1985
Hovey et al. (Hovey)	4,562,347	December 31, 1985
Affinito et al. (Affinito)	4,868,549	September 19, 1989
Jones et al. (Jones)	4,906,843	March 6, 1990
Sato et al. (Sato)	5,027,115	June 25, 1991 (filed August 31, 1990)
Aoki	5,078,019	January 7, 1992 (filed April 25, 1990)

THE REJECTIONS

Claims 28, 29, 51, and 52 stand rejected under 35 U.S.C. § 103 as being unpatentable over Bose and Hovey.

Claims 30 and 47 stand rejected under 35 U.S.C. § 103 as being unpatentable over Bose, Hovey, and Armbruster.

Claims 48 and 49 stand rejected under 35 U.S.C. § 103 as being unpatentable over Bose, Hovey, Armbruster, and Sato.

Claims 31, 32, 33, and 43 stand rejected under 35 U.S.C. § 103 as being unpatentable over Bose, Hovey, and Affinito.

Claim 34 stands rejected under 35 U.S.C. § 103 as being unpatentable over Bose, Hovey, Affinito, and Jones.

Claims 35 and 36 stand rejected under 35 U.S.C. § 103 as being unpatentable over Bose, Hovey, Affinito, Aoki, and Wickham.

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Claims 37 and 38 stand rejected under 35 U.S.C. § 103 as being unpatentable over Bose, Hovey, Affinito, and O'Neill.

Claims 39, 40, 41, 42, and 44 stand rejected under 35 U.S.C. § 103 as being unpatentable over Bose, Hovey, Affinito, and Arraiza.

Claims 43, 45, and 46 stand rejected under 35 U.S.C. § 103 as being unpatentable over Bose, Hovey, Armbruster, and Sato.

Claim 50 stands rejected under 35 U.S.C. § 103 as being unpatentable over Bose, Hovey, and Jones.

We refer to the Examiner's Answer for a statement of the examiner's position.

OPINION

We affirm-in-part.

Claims 28, 29, 51 and 52 - Bose and Hovey

Claims 51 and 52 are argued to be patentable for the same reason as claim 28 (Brief, page 10). These claims are broader than claim 28 because they are generic to all six embodiments and do not recite any specific adjusting means. Thus, claims 51 and 52 do not stand together with claim 28. Claims 51 and 52 are unpatentable if claim 28 is unpatentable, but are not necessarily patentable if claim 28 is deemed patentable.

Appellant does not dispute that the track ball of Bose is a mouse ball, as broadly defined, or that it would have been

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obvious to make Bose with the ball facing downward as in claim 51 in view of Hovey (Brief, page 9).

Bose discloses a pressure pad 26 comprising an adjustment screw 28 which is adjusted against spring 30 which bears against thrust bearing 32 that contacts the equator of track ball 12. The pressure pad assures suitable friction contact between the ball and the surface of the friction disc 20 of the encoders (column 2, lines 33-35). The examiner finds that all materials exhibit friction and the thrust bearing 32 of pad 26 would have friction (Examiner's Answer, page 9). We agree with the examiner's finding that the surface of bearing 32 constitutes a friction surface as broadly recited in claim 28 and a friction pad as recited in claim 29. The thrust bearing 32 is not located exactly opposite either encoder which means that the surface of the ball will slide (rather than roll) relative to the surface of bearing 32, providing frictional contact. The surface of bearing 32 has to have some friction even if it is smooth; thus, increasing the force of the bearing surface against the ball by the screw 28 and spring 30 has to increase the rolling resistance of the ball because the ball is pinched tighter between three points (two discs 20 and bearing 32). Alternatively, claim 28's recitation of "said adjusting means comprising friction means" can be interpreted broadly to mean that friction discs 20 are the friction means.

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Appellant argues that ball bearings are provided in figure 4 of Bose to assure minimum rotational friction and minimum wear on the surface of the track ball and "since it is a goal of this inventor to ensure minimum rotational friction, the thrust bearing 32 is only a thrusting surface and not a friction surface which would inhibit rotational friction" (Brief, page 8). However, appellant does not explain how the surface of thrust bearing 32 in Bose can realistically thrust without exhibiting friction. The bearings in figure 4 address a different problem of maintaining smooth rolling contact under the downward force of a hand on the trackball.

Appellant further argues that "a reasonable interpretation is that the thrust bearing 32 has a very smooth outer surface so that it will not inhibit the main goal of providing the track ball with minimum rotational friction" (Brief, page 9). However, assuming this interpretation is correct, appellant does not explain why the small friction of a very smooth surface does not meet the claim language. Nor has appellant presented any logical reason why the rolling force of the ball will not increase if the force of the bearing against the ball is increased.

For the reasons stated above, the rejection of claims 28 and 29 and generic claims 51 and 52 is sustained. In addition, with respect to claims 51 and 52, increasing the force of the

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bearing surface 32 against the ball in Bose by the screw 28 and spring 30 has to increase the rolling resistance of the ball because the ball is pinched tighter between three points. No particular adjusting means is claimed in claims 51 and 52.

Claims 30 and 47 - Bose, Hovey, and Armbruster
Claims 48 and 49 - Bose, Hovey, Armbruster, and Sato

The examiner finds that Armbruster, column 38, lines 20-38, "teaches an iron ball with magnet (23) as a friction force" (Examiner's Answer, page 4) and concludes that it would have been obvious to modify Bose to provide an alternative friction force. The examiner errs in finding that the purpose of the iron ball and magnet is to exert a friction force. The purpose of the magnet 23 is "to attract one or the other of the poles of the ball so that an unconfined ball is brought back to a normal position" (column 38, lines 25-27). There is no description of the magnet providing a friction force. Whatever friction or resistance will inherently occur from the magnetic attraction is apparently minuscule during operation and does not perform the function of selecting the rolling force. In addition, we find no motivation in Bose or Armbruster to replace or modify the pressure pad of Bose with the magnetic orientation system of Armbruster. The magnetic orientation structure of Armbruster would not perform the function of exerting pressure on the ball and there is no need

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for any orientation of the ball in Bose. Accordingly, we conclude that the examiner has failed to establish a prima facie case of obviousness with respect to claims 30 and 47 and reverse the rejection of these claims.

Because we reverse the rejection of independent claim 47, we also reverse the rejection of claims 48 and 49, which depend therefrom. Additionally, Sato, which has been added to the rejection for claims 48 and 49, does not provide the magnetic friction force found missing in the rejection of claim 47. The lands 8 and recesses 9 on the magnetic ball 7 in figure 5 of Sato do not interact with a magnet to provide a friction force as impliedly found by the examiner. Magnetic sensors 18a, 18b are passive devices that detect the magnetic field; they are not magnets that provide a friction force by interacting with the lands and recesses of the magnetic ball.

Claims 31, 32, 33, and 43 - Bose, Hovey, and Affinito

Claims 31 and 43

The examiner finds that Affinito teaches changing the rotating force of a roller in contact with a mouse ball by magnetic means and concludes that it would have been obvious to modify Bose to have the magnetic means of Affinito (Examiner's Answer, page 5). We agree.

Affinito discloses a mouse with feedback means that produces resistance to motion of the mouse physically perceived

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by the user as the cursor moves across predetermined areas of the display screen. The feedback resistance is under computer control (column 5, line 33, to column 6, line 38). The feedback resistance can be set to produce a gradual increase to resistance to motion as the cursor approaches some predetermined area of the screen (column 5, lines 23-26), to indicate an invisible grid (column 6, lines 30-31), or to produce resistance proportional to weight of furniture to be moved in a furniture moving simulator (column 6, lines 32-34).

"[T]here is no limit to the ways in which the resistive feedback mouse can be used" (column 6, lines 35-37). In the embodiment of figure 5, resistance is produced by energizing electromagnetic brakes 50, 52 on the shafts of the encoders 60, 62 which, in turn, are frictionally engaged with the mouse ball (column 8, lines 28-38). We find that the electromagnetic brakes attached to the roller axes in Affinito are "at least one roller in contact with an outer periphery of the ball and wherein said adjusting means comprises means for selectively changing a rotating force of the roller" as recited in claim 31; claim 31 does not require the roller to be a free roller. We further find that the electromagnetic brakes in Affinito are "magnetic means for controlling said rolling force" as broadly recited in claim 43.

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Appellant argues that Affinito "only discloses feedback control and there is no disclosure whatsoever of providing an operator accessible adjusting means which permits each individual operator to select a rolling force which is specifically desired by the particular operator to satisfy his or her preference for a specific feel and operator requirement during use" (Brief, page 12). This argument is just a restatement of the claim language without any discussion of how Affinito fails to meet the particular language of the claim. First, as to the "operator accessible adjusting means," nothing in this limitation requires a manual adjustment like the various mechanical screws and potentiometer adjustments shown in the figures. Mouse control parameters such as sensitivity (pointer speed), pointer arrow size, etc. have long been adjustable by the user (e.g., in Microsoft Windows) as admitted in appellant's specification at the bottom of page 1. Program control set by a user is operator accessible adjusting structure equivalent to manual control.

Second, the language "to select a rolling force of the mouse which is specifically desired by the particular operator to satisfy his or her preference for a specific feel and to thus satisfy a requirement of the operator during use" in claims 31 and 43 does not distinguish over Affinito's teaching of selecting a rolling force to provide a specific feel in

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parts of the screen. The resistive feedback in Affinito is consistent with selecting a rolling force of the mouse ball. The "specific feel" can be the Affinito's feel near an area on the screen or the feel of an invisible grid. The claims do not require the rolling force feel to be constant everywhere. In addition, it is our opinion that one skilled in the art would have interpreted Affinito's general teaching that "there is no limit to the ways in which the resistive feedback mouse can be used" (column 6, lines 35-37) to suggest the obviousness of programming the mouse to provide any other operator desired mouse feel, including a constant force.

Appellant argues the teachings of Affinito, but does not argue the propriety of the combination of Affinito with Bose. We agree with the examiner's conclusion that it would have been obvious to apply the electromagnetic brakes from Affinito to the trackball in Bose for the purpose of providing resistive feedback. However, it appears that claims 31 and 43 would have been obvious to one skilled in the art over Affinito alone.

For the reasons stated above, we sustain the rejection of claims 31 and 43 over Bose, Hovey, and Affinito.

Claims 32 and 33

With respect to claim 32, the examiner finds that Hovey teaches rollers 14 with a lateral displacement about a pivot to ensure good contact (Examiner's Answer, page 10). This finding

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is correct and we agree that it would have been obvious to one of ordinary skill in the art to mount the rollers in Bose or Affinito for lateral displacement given the teaching of such mounting in Hovey. Thus, we sustain the rejection of claim 32. Appellant's arguments that the displacement means "is nowhere found in Bose, Hovey and Affinito" (Brief, page 12) and "[i]n these references the rollers are rigidly supported" (Brief, page 13) does not address the displacement structure of Hovey.

With respect to claim 33, the examiner finds that Hovey teaches a free roller 14A (Examiner's Answer, page 11). "The support members 14 and 14A can be wheels, rollers, ball bearings, or low friction pads" (column 4, lines 10-12). Free rollers are support rollers that do not detect and, thus, the rollers 14, 14A in Hovey are fairly called free rollers. Moreover, appellant admits that free rollers are well known in the art as shown in figure 5. It is probable that Affinito has free rollers that are just not shown in addition to the detection rollers for the reasons of support noted in appellant's specification at page 4; the two rollers in Affinito alone are not capable of supporting a mouse ball. It would have been obvious to one of ordinary skill in the art to mount the electromagnetic brakes of Affinito to free rollers as taught, for example, in Hovey instead of to the detection rollers because the brake function is unrelated to the

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coordinate detection function. Thus, we will sustain the rejection of claim 33. Appellant's argument that "[n]either Hovey nor Bose has such a free roller" (Brief, page 13) does not address the free roller teaching in Hovey.

Claim 34 - Bose, Hovey, Affinito, and Jones

The examiner finds that "Jones further teaches a leaf spring (116) providing friction to a roller (114)" (Examiner's Answer, page 5). The examiner errs in this finding. Jones states that "[a]n intermediate portion of the shaft is journaled in a bearing 114, which is retained in a bearing seat (not visible) in the underside of the housing 86 by a retainer spring 116" (column 8, lines 62-65). Element 114 is not a roller in the sense of turning with the shaft. The outer circumference of bearing 114 sits in a bearing seat and does not move, so the spring 116 does not provide frictional force. Accordingly, the examiner has failed to establish a prima facie case of obviousness and the rejection of claim 34 is reversed.

Claims 35 and 36 - Bose, Hovey, Affinito, Aoki, and Wickham

The examiner relies on Aoki as teaching a roller 4, an axle 9, and a movable disk 6 and on Wickham as disclosing a movable disk 41 and a fixed disk 40 for decreasing the movement of the moveable disk (Examiner's Answer, page 6). Aoki provides no further teaching than Affinito as far as encoder

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structure. Wickham shows an electric actuator. The examiner provides no reason why one of ordinary skill in the art would have found motivation from the references (that is, either from the references or what was known to those skilled in the art) to combine the teachings of Wickham with a mouse system. "The mere fact that the prior art may be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art suggested the desirability of the modification." In re Fritch, 972 F.2d 1260, 1266, 23 USPQ2d 1780, 1783-84 (Fed. Cir. 1982), citing In re Gordon, 733 F.2d 900, 902, 221 USPQ 1125, 1127 (Fed. Cir. 1984). Accordingly, the examiner has failed to establish a prima facie case of obviousness and the rejection of claims 35 and 36 is reversed.

Claims 37 and 38 - Bose, Hovey, Affinito, and O'Neill

The examiner relies on O'Neill as teaching a braking system comprising a disk 112, a first magnet 68, and a second magnet 70 (Examiner's Answer, page 6) and concludes that this would have been an obvious alternative way to provide adjustable friction to a ball. The examiner has provided no motivation why one of ordinary skill in the art, considering the references, would have sought to combine the teachings of O'Neill with a mouse system. Thus, the examiner has failed to

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establish a prima facie case of obviousness and the rejection of claims 37 and 38 is reversed.

Claims 39, 40, 41, 42, and 44 - Bose, Hovey, Affinito, and Arraiza

The examiner finds that Arraiza teaches that an electric motor is a magnetic brake and that an electric motor can be used as a generator, and concludes that it would have been obvious to make the electromagnetic brake of Affinito as an electric motor or generator (Examiner's Answer, page 7). The examiner errs in the factual findings at least insofar it is implied that the magnetic brake in Arraiza is what is claimed. Further, even if Arraiza taught what the examiner finds it does, we find no motivation to combine.

It is true that some electric motors may be used as generators, but we find no teaching of this in Arraiza. The generator referred to at column 1, line 44, is part of the braking circuit, not a teaching that a motor can be a generator. It is true that the brake in Arraiza is a magnetic brake, but it does not act by "applying a variable electric field to the rotor of the generator for varying said rotating force," as recited in claim 39, or by "applying a variable electric field to the rotor of the motor for varying said rotating force," as recited in claim 41. Arraiza discloses friction brakes in the background of the invention (column 1,

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lines 10-28) in which two friction surfaces, one fixed and one integral with the shaft, are brought together by a permanent magnet or electromagnet. Arraiza's invention is a magnetic brake in which movable magnetic plate 11 rests against fixed plate 12 when the motor is disconnected producing the desired braking effect; friction ring 25 to cushion the contact of plate 11 is optional (column 2, lines 60-64). Arraiza does not produce braking by changing the electric field in the rotor, as claimed. Furthermore, the examiner has not described why one skilled in the art would have found motivation from the references to use the brake of Arraiza. The structure of the electromagnetic brake in Affinito is not known, and absent further evidence about the structure of electromagnetic brakes, it is improper to resort to speculation or unfounded assumptions to supply deficiencies in the factual basis for a rejection. In re Warner, 379 F.2d 1011, 1017, 154 USPQ 173, 178 (CCPA 1967), cert. denied, 389 U.S. 1057 (1968). Accordingly, we conclude that the examiner has failed to establish a prima facie case of obviousness and the rejection of claims 39-42 is reversed.

With regard to claim 44, Arraiza is not a generator and is not connected to a variable resistor. Therefore, we conclude that the examiner has failed to establish a prima facie case of obviousness and the rejection of claim 44 is also reversed.

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Claims 43, 45, and 46 - Bose, Hovey, Armbruster, and Sato

For the reasons discussed with respect to claim 30, in particular, the fact that the magnet in Armbruster is not designed to provide a friction force, we reverse the rejection of claim 43 and dependent claims 45 and 46. Furthermore, with respect to the examiner's rejection of claim 45, the lands and recesses in Sato are not acted on by a magnet to provide a friction force as discussed in the rejection of claims 48 and 49.

Claim 50 - Bose, Hovey, and Jones

For the reasons discussed with respect to claim 34, the rejection of claim 50 is reversed. The examiner has noted that the reasoning in both rejections is the same (Examiner's Answer, page 6).

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CONCLUSION

The rejections of claims 28, 29, 31-33, 43, 51, and 52 are sustained.

The rejections of claims 30, 34-42, and 44-50 are reversed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

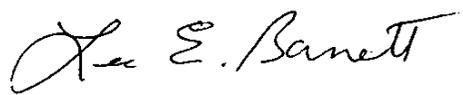
AFFIRMED-IN-PART



JAMES D. THOMAS
Administrative Patent Judge)



KENNETH W. HAIRSTON
Administrative Patent Judge)



LEE E. BARRETT
Administrative Patent Judge)

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