IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
LUFKIN DIVISION

ANASCAPE, LTD.	§	
	§	Hon. Ron Clark
Plaintiff,	§	
	§	
v.	§	Civil Action No. 9:06-CV-00158-RC
	§	
MICROSOFT CORPORATION, and NINTENDO OF AMERICA, INC.,	§ §	
	§	
Defendants.	§	

DECLARATION OF STUART YANIGER

1. My name is Stuart Yaniger. I am currently employed by Neocork Technologies, Inc. (Napa, CA) and Neocork Technologies, BV (Sittard, NL) as Chief Technical Officer. I make this declaration of personal knowledge, and if called upon to testify, I could and would testify competently thereto.

2. I received a Bachelor of Arts degree in Chemical Physics and Physics from the University of Maryland Baltimore County in 1977. From 1987 to 1996, I was the Chief Scientist and Vice President of Research and Development for Interlink Electronics, Inc. in Camarillo, California ("Interlink"). During my time at Interlink, I invented a series of pressure and force transducers aimed at computer input, music, presentation, and game controller applications. I developed materials for pressure and force transducers, processes for making pressure and force transducers, basic electronic interfaces, and mechanical systems incorporating pressure and force transducers. I hold 24 issued U.S. patents, with ten of them relating specifically to variable resistance devices and applications for user input, and numerous foreign counterparts. As part of my work at Interlink, I became very familiar with the art of pressure and force transducers,

including conductive rubber material having the property that the material's conductivity changes with pressure. At Interlink, I invented a design of a type of pressure transducer that we called a Force Sensing Resistor.

3. As stated in my patent, pressure responsive transducer devices based on compressible conductive rubber were known at the time that I applied for a patent. A typical prior art pressure transducer device was described in U.S. Pat. No. 3.806,471 to Mitchell. It was a device that changes conductance with changes in pressure. The Mitchell device relies on a particular type of material that itself changes in conductivity as pressure is applied to it. Such material was known to a performance that degraded too quickly over time, and was very temperature sensitive. My invention of a particular FSR pressure transducer was an improvement over the Mitchell pressure transducer because it functioned by an entirely different mechanism using an entirely different material.

4. Force Sensing Resistor ("FSR") is the term used by Interlink for its proprietary pressure transducer devices. U.S. Pat. No. 5,296,837 ("the '837 patent") describes my invention of an FSR device having a particular FSR material. Prior to my invention, other FSR devices having different FSR materials were invented at Interlink by my colleague there, Frank Eventoff.

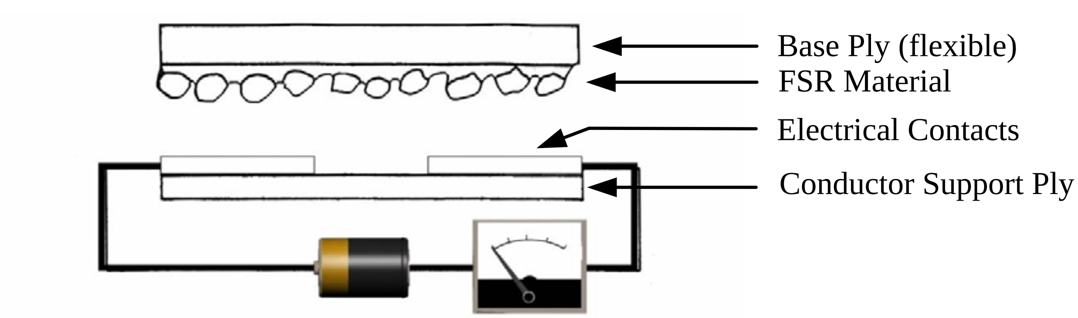

Figure 1

5. An FSR device consists of FSR material (usually applied as an ink, then cured with heat), adhered to a base ply, and electrical contacts adhered to a conductor support ply, with

at least one of the plies being flexible. This is shown diagrammatically in Fig. 1.

6. An FSR device works on the principle that the greater the number of micro-protrusions that touch the electrical contacts, the greater the electrical conductance of the FSR device. Under increasing pressure, the flexible base layer of the FSR device non-compressively deforms to allow more micro-protrusions of the FSR material to touch the electrical contacts, causing the conductance through the FSR device to increase with pressure while the conductivity of the FSR material remains constant. This mechanism for achieving this sort of force sensor is taught in my patent, U.S. Pat. No. 5,296,837, and is illustrated in Fig. 2.

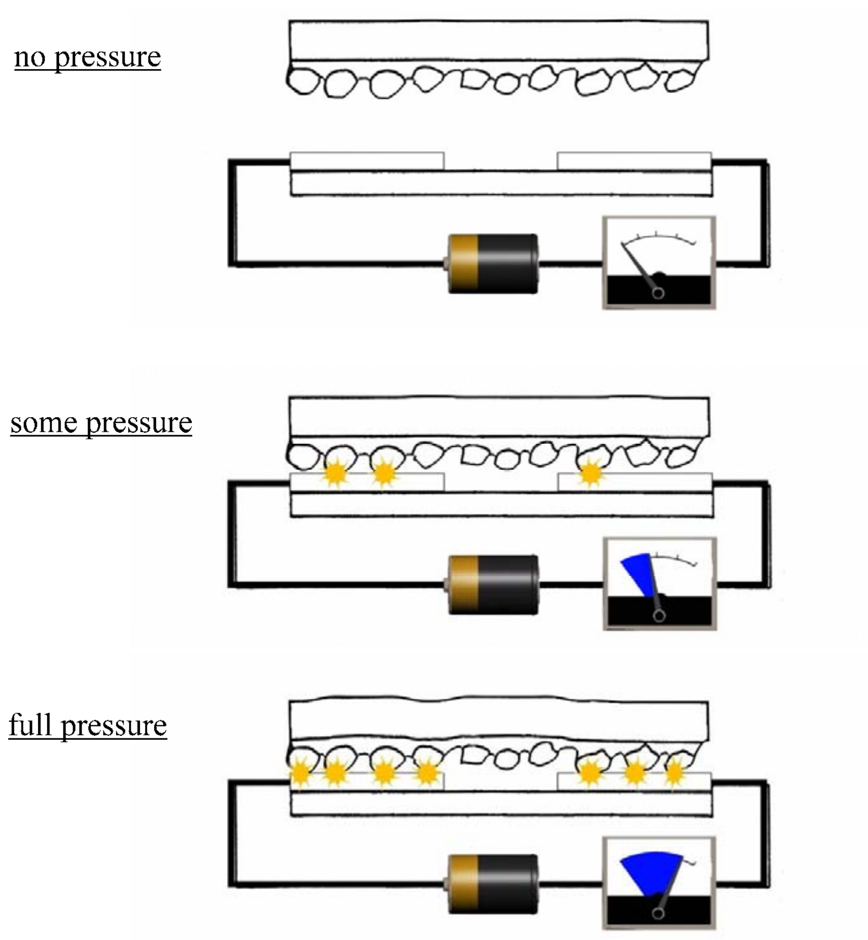

Figure 2

7. The overall FSR device exhibits a changed in conductance with an increase in

pressure or applied force. While the conductance across the overall FSR ***device*** varies with pressure or force, the substance that makes up the FSR ***material*** does not have the property that its conductivity changes with pressure.

8. FSR material is a substance with semi-conductive particles embedded in a semi-conductive binder. In my patent, the semi-conductive particles are stannous oxide. The stannous oxide particles form micro-protrusions of varying heights on the surface of the FSR material. The binder consists of a resin that is loaded with much smaller conductive particles (usually carbon) dispersed evenly therein, making the resin semi-conductive to electricity. The cured resin and stannous oxide particles are quite hard. Because of their hardness, stannous oxide particles are commonly used as an abrasive. The carbon-loaded semi-conductive resin is a material commonly used to from resistor tracks on circuit boards and volume controls, so is formulated to be essentially incompressible.

9. I know from my experience working with FSR material that its conductivity does not change as a function of pressure. As described above, I designed the FSR transducer disclosed in my patent to work in a completely different way than the Mitchell pressure transducer. In fact, I specifically avoided materials that would vary conductivity as a function of pressure because of the poor performance that Mitchell transducers were known to have.

10. I performed a test to show that the FSR material in the Xbox controllers does not have a conductivity which varies as a function of pressure. I first examined an Xbox controller.

11. With the top shell of the controller removed to reveal the circuit board, the top ply of the FSR can be seen adhered to the circuit board as shown in Fig. 3. I peeled the top ply of the FSR off of the circuit board. The top ply is a flexible polymer film with FSR material on the bottom side facing the circuit traces.

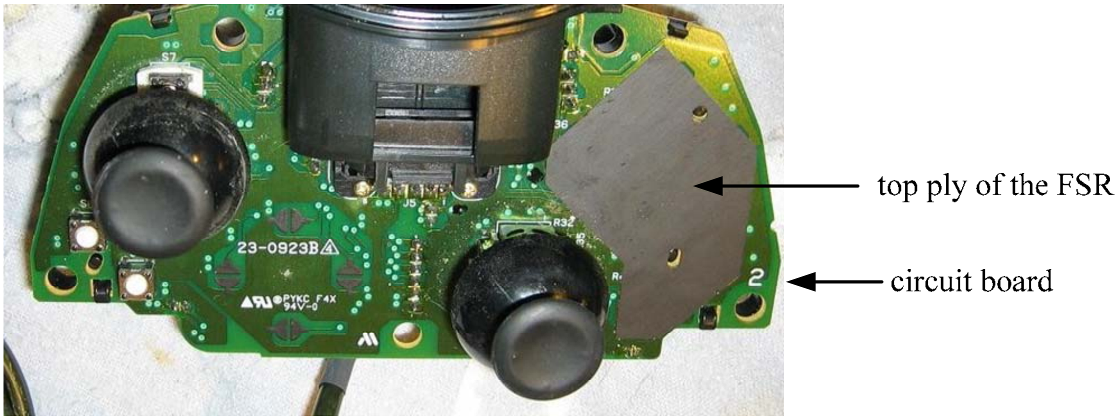

Figure 3

12. Fig. 4 shows the underside of the top ply of the FSR. The shiny portion is the layer of adhesive that holds the top ply down on the rigid circuit board. Openings or "windows" in the adhesive layer are cut to expose the circular areas of FSR material. One can tell, even at this low magnification that the surface of the FSR material is grainy from the high concentration of stannous oxide particles loaded into the semi-conductive FSR layer. These circular patches of FSR material were positioned over interdigitated electrical contacts on the circuit board (which forms the conductor support ply of Fig. 1), so that when one of the buttons was pushed, the FSR material comes into contact with the electrical contacts.

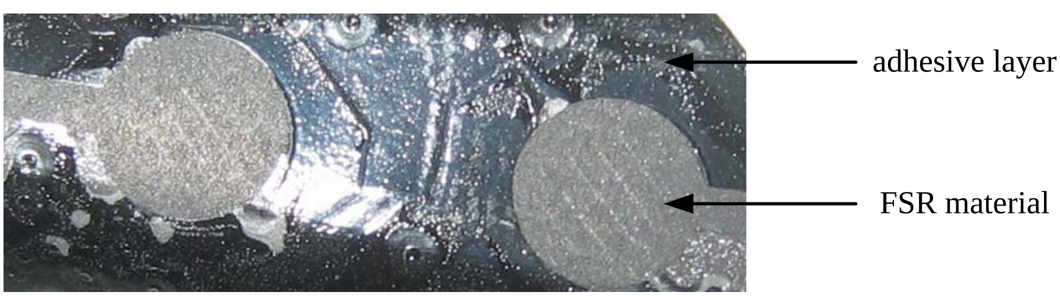

Figure 4

13. To test whether the FSR material has the property that its conductivity changes with pressure, I painted two traces of silver conductive ink about 5mm apart directly on the semi-conductive FSR material using a circuit pen made for repairing printed circuit boards. As shown in Fig. 5, I have labeled the two silver traces as contact A and contact B. This allowed me to measure the conductivity across the FSR material by measuring the resistance between A and B. If the FSR material has the property that its conductivity varies with pressure, then the resistance between A and B would change as pressure was applied to the FSR material because of the intimate contact of the painted-on traces eliminating surface contact effects.

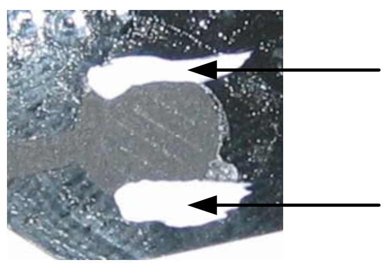

Figure 5

14. With no force applied, the resistance between A and B measured approximately 22k ohms. This was a resistance that I expected to see based on my experience with the FSR material that I invented and that is described in my patent. Using a nonconductive plastic probe, a two pound force was applied to the area between the two traces and the resistance and the resistance between A and B remained at 22k ohms. I applied more than 10 pounds of pressure on the FSR material by leaning on the plastic probe and the resistance between A and B remained at 22k ohms. Thus, the FSR material in Microsoft's Xbox controller does not have the property that its conductance changes as pressure is applied to it.

15. I declare under penalty of perjury under the laws of the United States of America

that to the best of my knowledge the foregoing is true and correct.

Executed this 21st day of December, 2007.

Stuart Yaniger