

**IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF PENNSYLVANIA**

INDEMNITY INSURANCE COMPANY :	
OF NORTH AMERICA a/s/o/ :	CIVIL ACTION
SPRINGFIELD TOWNSHIP SCHOOL :	
DISTRICT, :	
Plaintiff, :	
	:
	:
v. :	
	:
	:
GROSS-GIVEN MANUFACTURING :	
COMPANY and RIH, INC. f/k/a ROWE :	
INTERNATIONAL, INC. :	No. 08-3
Defendants. :	

MEMORANDUM

Schiller, J.

January 11, 2010

Plaintiff Indemnity Insurance Company of North America (“ACE-INA”) brings this action against Defendant Gross-Given Manufacturing Company (“Gross-Given”) for damages resulting from a fire that caused property damage to an elementary school that Plaintiff insured. Plaintiff asserts strict liability and breach of warranty claims. On November 23, 2009 this matter was tried without a jury. The Court now enters the following Findings of Fact and Conclusions of Law as required by Federal Rule of Civil Procedure 52(a). For the reasons that follow, The Court finds for Defendant Gross-Given and against Plaintiff ACE-INA.

I. FINDINGS OF FACT

A. The Fire

A fire took place in the faculty lunch room at Erdenheim Elementary School at approximately 10:10 p.m. on July 27, 2007. (Tr. at 9-11, 13, 63, 119.) Few people were working that day because it was summertime and school was out of session. (*Id.* at 49.) The last two

employees to leave for the day did so between 5:00 and 6:00 p.m., at which point the school was vacant for the night. (*Id.* at 37, 49-50.) The outer doors to the school were locked behind the last employees. (*Id.* at 37, 49.)

The teachers' lounge housed the following appliances: a soda machine, a refrigerator, a coffee urn, a toaster oven, a microwave, and a tabletop Rowe 499 Showcase Jr. vending machine ("vending machine" or "machine") that sat atop a metal cabinet. (*Id.* at 14-16.)

The electrical feed to the appliances started at a duplex plug receptacle at the wall. (*Id.* at 195.) Plugged into that socket was a short extension cord, which split into three outlet openings. (*Id.*) A yellow extension cord was plugged into one of the three outlet openings of the short extension cord. (*Id.*) A power strip was then plugged into the single outlet of the yellow extension cord. (*Id.*) Plugged into the power strip were the refrigerator and microwave. (*Id.*) The vending machine was plugged into one of the two remaining outlets of the short extension cord. (*Id.*) A large electric coffee urn was also found in the area.

The vending machine had been in the same position for seven or eight years prior to the fire. (*Id.* at 39, 40-41, 50-51.) Thus, the vending machine was at least seven or eight years old at the time of the fire.¹ The exact age of the machine could not be conclusively determined because its serial number was destroyed in the fire, making its history impossible to trace. (*Id.* at 39, 51, 180.)

Rudy Tacconelli began servicing the vending machine approximately 2 ½ years before the fire. (*Id.* at 133.) Keys are required to open the machine, which is necessary to either refill it

¹ The Court's visual inspection of the machine and an exemplar suggested, however, that it was significantly older.

with snacks or to remove money from it, and only Tacconelli's vending company had those keys. (*Id.* at 40.) Tacconelli kept a service log for the machine during the 2 ½ year period that he serviced it. (*Id.* at 134-35.) There is no record of the use or service history of the vending machine before Tacconelli began servicing it. (*Id.* at 117, 118, 133.) While the vending machine was at the school, it experienced no problems or malfunctions, and it never required repair. (*Id.* at 41, 46, 51, 138-39.) There was no evidence of abuse to the machine, or tampering with it. (*Id.* at 289.) The vending machine was last serviced on May 31, 2007. (*Id.* at 135.) At that time, it was not restocked with snacks, because in the summertime the machine was seldom used.² (*Id.* at 136.) If there were any snacks left in the machine at the time of the fire, their type and quantity are unknown. (*Id.* at 120, 136-37.) It is clear that the machine was not being used at the time of the fire—i.e. no one was purchasing a snack. (*Id.* at 119-20.)

The vending machine, which was constructed of a steel housing and plastic materials, was severely damaged by the fire. (*Id.* at 92, 105.) Combustible items within the machine included the plastic lid, the plastic devices that hold the snacks, and non-propagating insulation on the wiring.³ (*Id.*) After the fire, all of the plastic from the machine was consumed, leaving only the metal parts intact. All of the insulation on the wires in the machine was consumed, and the wires were left a dark red color, indicating exposure to significant heat. (*Id.* at 108.)

² In fact, the machine was seldom used even during the school year—it made only \$20 to \$35 in sales per month. (Tr. at 137.)

³ Non-propagating insulation will burn if there is a heat source present, but as soon as the heat source is removed, it will extinguish. (*Id.* at 246.)

B. The Origin and Cause of the Fire

Fire investigation typically begins by determining where a fire started (“origin”), before it is determined how it started (“cause”). In general, a fire spreads upward and outward, leaving a V-shaped mark on walls and surfaces affected by the fire. This mark is called a “V pattern,” and is useful to fire investigators in determining origin. (*Id.* at 17, 27.) The lowest point of a “V pattern” is suggestive of an origin. (*Id.*) Areas of calcination (indicative of intense heat) are also helpful in determining origin. (*Id.* at 25.) Another relevant consideration in determining origin is “drop down,” a situation in which combustible materials are set ablaze by an initial fire, then fall down and start other fires. (*Id.* at 19.) The concept of “drop down” is important when a fire scene has multiple “V patterns” and an investigator is trying to establish which fire started first.

The origin of the fire in this case is uncertain. There was a burn pattern that may have emanated from the snack machine, and extended upward in a “V pattern.” (*Id.* at 17-18.) However, there is also an area of calcination just above the floor on the wall below and to the right of the cabinet on which the vending machine sat. (*Id.* at 25-26, 29.) A clear “V pattern” emanates from this area of calcination, up through the metal cabinet, the vending machine and the soda machine. (*Id.* at 29-30.) The yellow extension cord and the coffee urn were located in the area of this burn pattern. (*Id.* at 30.) Combustible materials in this immediate area included a plastic trash can and a wooden table. (*Id.* at 20, 125.) The fire may have originated at the snack machine, or the fire may have begun in the low area near the yellow extension cord and coffee urn.

Plaintiff’s expert James Bonner opined that the fire originated in the vending machine. (*Id.* at 83.) He based this conclusion on his observation of a “V pattern” which emanated from

the machine, the fact that the vending machine was severely damaged, and his observation that the machine was uniformly damaged on its inside and outside, indicating intense heat. (*Id.* at 91-92.) However, intense heat in the vending machine does not necessarily indicate that a fire started inside. The National Fire Protection Association, in its publication *NFPA 921: Guide for Fire and Explosion Investigations* (2004) (“NFPA 921”), Section 24.5.1.2.3 instructs that an appliance with a steel housing “does not necessarily keep internal components from reaching very high temperatures. If a closed steel box is exposed to vigorous fire for a long enough time, the inside of the box can become hot enough to cook materials, to gray ashes, or to melt copper.” (*Id.* at 128.)

Plaintiff’s experts Fire Marshal Timothy Schuck and James Bonner both testified that they believed that the area of calcination and the related “V pattern” near the floor resulted from a “drop down” caused by a fire started in the vending machine. (*Id.* at 19, 98.) Under this theory, the vending machine fire spread to shelves holding combustible material, which were located above and to the right of the vending machine, causing the shelves and their contents to drop to the floor and start a second burn pattern. (*Id.* at 96-98.) However, Schuck testified that if the fire had started in that area near the floor, the burn “pattern would probably be the same” as if it had started in the machine. (*Id.* at 19-20.)

The Court finds that the cause and origin of this fire are undetermined. There are several possible points of origin of this fire: 1) the vending machine, 2) the yellow extension cord, and 3) the coffee urn. At whichever point the fire originated, the cause of the fire would appear to be from what is known as an arc. An arc is the electrical activity that results from a short-circuit on a copper wire. (*Id.* at 163.) A short circuit occurs when a copper wire contacts metal and the

wire and metal repel. During an arc there is sufficient heat to melt the copper wire,⁴ and sparks are usually created. (*Id.* at 177.) Sparks from arcs burn at very high temperatures, but are only momentary, meaning that they burn out very quickly. (*Id.* at 246.) Because they are momentary, sparks are generally not a capable of igniting solid materials, and are therefore not what experts call a “competent ignition source” for solids. (*Id.* at 253.)

Arcing is evidenced by spherical deposits, called “beads,” on the ends of the copper wire.⁵ (*Id.* at 163-64.) When copper melts because of an external flame, as opposed to a short-circuit, the ends of the wire tend to be less spherical because of the effects of gravity and tend to have dirt mixed into the copper. (*Id.* at 164.) Identification of arcing on a wire is not a simple task. (*Id.* at 187.) Metallurgical testing can be performed in order to determine if a bead is present, or if the wire was damaged by a fire. (*Id.* at 187-88.) In this case, no metallurgical testing was performed. Instead, the experts on both sides tried to identify the possible beads by sight. (*Id.* at 188.) Possible beads were found in several locations at the fire scene. Plaintiff focuses on possible beads present on two wires located inside the vending machine. However, there are also possible beads on the yellow extension cord, and on the cord attached to the coffee urn. (*Id.* at 232-233.) Either of those beads could indicate arcing, which would point to the origin of the fire that led to the lower “V pattern.” In this case, the Court cannot identify which wires were subject to arcing, and which were consumed in the fire. Three sites had possible beads, but none of them were determined to be beads. The possible beads in the machine were difficult to identify

⁴ Copper’s melting point is about 1,950 degrees Fahrenheit. (*Id.* at 163.)

⁵ Beading of wiring does not in and of itself indicate a point of origin of a fire. (*Id.* at 129.)

because the wires were badly damaged by the fire.

Plaintiff's expert Terrence DuVall noted the electrical activity on the wires on the floor, but then ruled those wires out as the cause of the fire. (*Id.* at 161-62.) DuVall also relied on Bonner's finding that the origin was in the machine, and not the wires near the floor. (*Id.* at 169.) DuVall testified that the beading on two wires in the machine was from arcing. (*Id.* at 164.) On direct examination, DuVall testified that arcing in the machine was the result of an insulation failure, and that insulation failure was a result of a manufacturing defect. (*Id.* at 172.) In his earlier deposition testimony, however, DuVall conceded that he did not know if any defect in the wire insulation caused the fire. (*Id.* at 182.) DuVall also conceded that he could not identify the nature of any manufacturing defect within the insulation of the wiring. (*Id.* at 183-84.) DuVall could not identify the specific wire that arced, and in turn caused the fire. (*Id.* at 188.) Plaintiff offered no testimony or evidence on how any manufacturing defect in wire insulation could have occurred during the original manufacturing process of the vending machine, yet not surfaced until the night of the fire. (*Id.* at 185.) The Court is therefore left wondering how the wire insulation could have been defective when it left the manufacturer's control, but still have functioned properly for the seven to eight years that it was at the school, and then combust in the middle of the night when it was not being used.

The wiring inside the machine that DuVall claimed arced and caused the fire was very low voltage wiring, which is not usually considered to be a competent ignition source because any arc generated on it does not produce sufficient heat for a long enough time to raise combustible materials to their ignition temperatures. (*Id.* at 190, 236.) DuVall posited a scenario whereby the electrical energy from a 120 volt wire in the machine could have possibly jumped to

the low voltage wires, which could have caused them to arc. (*Id.* at 174-76.) This hypothetical chain of events does not, however, satisfy Plaintiff's burden of persuasion.

While Plaintiff suggested that some wiring inside the machine could have been exposed by an unidentified insulation defect, jumped from a high voltage wire to a low voltage one, made contact with a metal source inside the vending machine and caused a fire-starting arc, when the machine was not in use and was sitting alone on top of a metal cabinet, it failed to credibly explain how this scenario could have taken place. (*Id.* at 193-94.)

Plaintiff's expert Schuck conceded that if there was evidence of arcing on the yellow extension cord down by the floor then that area could not be ruled out as a point of origin of this fire. (*Id.* at 30.) Defense expert Bruce Crowley did find evidence of possible arcing on the yellow extension cord, and could not exclude the yellow extension cord as a cause of the fire (*Id.* at 232-233, 239.) Schuck similarly testified that if there was evidence of arcing on the cord to the coffee urn, that could not be ruled out as a point of origin of this fire. (*Id.* at 30-31.) Crowley did find evidence of possible arcing on the cord to the coffee urn, and could not rule out the coffee urn as a cause of the fire. (*Id.* at 232-233, 240.) The Court heard testimony that the coffee urn was not plugged in, and had not been for years. (*Id.* at 54.) However, if a bead was present on the wire, it could only result from arcing, which would mean that the urn was plugged in, and was a possible cause of the fire. (*Id.* at 30.) The Court cannot rule out the yellow extension cord or the coffee urn as possible causes. According to Crowley, the vending machine could not have caused the fire because of, among other things, its low voltage wiring and the improbability of DuVall's untested ignition scenario. (*Id.* at 235-36.) The Court cannot exclude the vending machine as a possible cause, but the Court counts it only as one among several possible causes.

Crowly classified the cause of the fire as undetermined. (*Id.* at 228.) NFPA 921 instructs that if a fire investigator cannot explain “every piece of the puzzle,” then he must classify a fire as undetermined. (*Id.* at 115-16.) The Court joins in finding that the cause of this particular fire is undetermined.

II. CONCLUSIONS OF LAW

A. Strict Product Liability

To succeed on a strict product liability claim in Pennsylvania, a plaintiff must demonstrate that: (1) the product was defective; (2) the defect caused the plaintiff’s injury; and (3) the defect existed at the time it left the manufacturer’s control. *Barnish v. KWI Building Co.*, 980 A.2d 535, 541 (Pa. 2009); *Ducko v. Chrysler Motors Corp.*, 639 A.2d 1204 (Pa. Super. Ct. 1994)

In the present case, the machine was severely damaged by the fire, making it difficult to identify a manufacturing defect within it. In such a case, rather than relying on direct evidence, plaintiffs may rely on the malfunction theory of product liability. *Barnish*, 980 A.2d at 541. Under the malfunction theory, a plaintiff can satisfy the defect prong by demonstrating that a malfunction occurred and eliminating abnormal use or reasonable secondary causes for the malfunction. *Id.* at 541-42. While the plaintiff need not demonstrate the actual product defect, she cannot rely on conjecture or guesswork. *Dansak v. Cameron Coca-Cola Bottling Co.*, 703 A.2d 489, 496 (Pa. Super. Ct. 1997). The plaintiff may present circumstantial evidence, such as: (1) the malfunction of the product; (2) expert testimony as to a variety of possible causes; (3) the timing of the malfunction in relation to when the plaintiff first obtained the product; (4) similar

accidents involving the same product; (5) elimination of other possible causes of the accident; and (6) proof tending to establish that the accident does not occur absent a manufacturing defect.

Plaintiff has failed to prove that a defect existed in the vending machine. As an initial matter, the Court is not convinced that the fire started in the vending machine. There is evidence of possible electrical arcing in the vending machine, and near the floor, on both the yellow extension cord and on the cord to the coffee urn. An arc from any of these sources could have created a spark, which in turn could have started the fire. There is a distinct “V pattern” emanating from the floor, near the yellow extension cord and coffee urn. The “V pattern” extends up through the metal cabinet, and through the vending machine. The floor area may be where the fire originated. It is also possible that the original “V pattern” stemmed from the vending machine, and the “V pattern” from the floor is the result of a later fire that merged into the vending machine’s pattern. However, Plaintiff’s expert Schuck indicated that there was no way to tell which scenario occurred, as they would both look the same after the fact.

Plaintiff’s strict liability theory requires that the Court find that the origin of the fire was in the machine. Plaintiff’s theory is that the fire started in the machine, that the source of the fire must be the wiring because that was the only heat source inside the machine, and that the only way the wiring could start a fire was if there was a manufacturing defect. Plaintiff has not, however, produced sufficient evidence for the Court to so find.

Beyond that, Plaintiff presents an ignition scenario that amounts to guesswork, and is too speculative to credit. Because the evidence of possible arcing in the machine was on low voltage wires which are not generally considered to be a competent ignition source, Plaintiff posits that the electrical charge from a 120 volt wire could have jumped onto the low voltage wires.

However, Plaintiff does not offer any evidence to suggest how or why this scenario could have occurred in this case. Plaintiff suggests that somehow the wire arced, although Plaintiff cannot identify how any exposed part of the copper wire could have come in contact with metal while the machine was not being used. Plaintiff then speculates that a spark from the arc jumped from the wire and ignited combustible material. There is no proof that there were snacks in the machine, and even if there were, the machine had a high carousel wall that would have likely blocked sparks from reaching those combustibles. The Court is not convinced by this proposed ignition scenario. The Court finds that Plaintiff has failed to prove by a preponderance of the evidence that the machine had a defect. Having found that Plaintiff failed to prove that a defect existed, there is no need to discuss whether the defect caused the Plaintiff's injury.

Even assuming Plaintiff could prove that there was a defect in the vending machine, it has failed to carry its burden of proving that the defect existed at the time the machine left the manufacturer's control. In order to prove that the product was defective when it left the manufacturer's control, a plaintiff must present evidence that explains how the product could have functioned properly prior to the accident but still have been defective at the time of delivery. *Barnish*, 980 A.2d at 535, 547 (citing *Rogers v. Johnson & Johnson Prods., Inc.*, 523 Pa. 176 (1989)). Prior successful use of a product undermines the inference that it was defective when it left the manufacturer's control. *Barnish*, 980 A.2d at 547. Such use does not foreclose a plaintiff's ability to prove that a product was defective, however, it is the plaintiff's burden to explain how this is possible. *Id.*

Here, the vending machine was successfully used at the school for seven or eight years. Plaintiff offered no evidence to explain how the machine could have been defective when it left

the manufacturer and yet still have functioned properly for so long. Plaintiff suggests that it has proven that the defect existed when it left the manufacturer's control because: (1) there were forty machines like the one at issue being serviced by the vendor, (2) there was no evidence of abuse to the machine, and (3) insulation failure takes place over time. This does not assist the Court in determining how a manufacturing defect could lay dormant for so long. Plaintiff fails to carry its burden on this element.

Alternatively, Plaintiff could have proven that there was a defect at the time of delivery by demonstrating that the product at issue failed before the expiration of its expected lifespan. *Id.* at 547-48. No such evidence was presented in this case. The Plaintiff did not establish the expected life of this product.

B. Breach of Warranty

Plaintiff claims that Gross-Given breached the implied warranty of merchantability when the vending machine caught fire.⁶ To prevail on such a breach of warranty claim in Pennsylvania, a plaintiff must prove: (1) that a product malfunctioned; (2) that the plaintiff used the product as intended or reasonably expected by the manufacturer; and (3) the absence of other secondary reasonable causes. *Altronics of Bethlehem, Inc. v. Repco, Inc.*, 957 F.2d 1102, 1105 (3d Cir. 1992).

As discussed above, Plaintiff did not prove that there was a defect in the machine under the malfunction theory. The same analysis leads the Court to find that there is no malfunction in the machine for purposes of the breach of warranty claim. As such, Plaintiff fails the first prong

⁶ Pursuant to the Asset Purchase Agreement between Defendant and Rowe International, Inc., Defendant assumed all liabilities for warranties on the vending machine. (Pl.'s Ex. 8-6 [Asset Purchase Agreement] ¶ 1.5(d).)

of the breach of warranty test, and its claim must fail.

III. CONCLUSION

Accordingly, the Court will enter judgment for Defendant Gross-Given and against Plaintiff ACE-INA. An appropriate Order will be docketed separately.

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ORDER

AND NOW, this 11th day of **January, 2010**, upon consideration of the parties' Proposed Findings of Fact and Conclusions of Law, and following a bench trial on the merits held on November 23, 2009, and for the reasons presented in the Court's Memorandum dated January 11, 2010, it is hereby **ORDERED** that judgment is entered in favor of Defendant Gross-Given and against Plaintiff ACE-INA. The Clerk of Court is directed to close this case.

BY THE COURT:



Berle M. Schiller, J.