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Pacheco, et al v. The Coats Company, Inc., et al.

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UNITED STATES COURT OF APPEALS
FOR THE THIRD CIRCUIT

No. 93-1791

HECTOR PACHECO;
MARIA PACHECO,
Appellees

vs.

THE COATS COMPANY, INC.;
HENNESSY INDUSTRIES, INC.,
Appellants

Appeal from the United States District Court
for the Eastern District of Pennsylvania
(D.C. Civil No. 89-08115)

Argued
March 7, 1994
Before: MANSMANN, LEWIS and SEITZ, Circuit Judges.

(Filed June 6 , 1994)

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OPINION OF THE COURT

MANSMANN, Circuit Judge.

Hector Pacheco was severely and permanently injured when the tire he was removing or about to remove from a Coats 40-40 tire changer exploded and launched from the tire changer table top, striking his left elbow with such kinetic force as to irreparably shatter his elbow. Pacheco and his wife, Maria, brought a diversity products liability action against the Coats Company and Hennessy Industries on the theory that the "launch-pad effect" which caused his injury constitutes a design defect which renders the Coats tire changer unsafe for its intended use. The alleged defect centers on the condition of the changer table top to act as a thrust surface, not unlike any other table top or flat surface. The Pachecos do not assert a defect in any active phase of the machine's function, or that the machine itself caused the tire to rupture.

The jury returned a verdict in favor of the Pachecos for \$325,000. The defendants appeal from a denial of their motion for judgment notwithstanding the verdict, now known as judgment as a matter of law. We must decide whether there is substantial evidence to support the jury's verdict on the questions of product defect and proximate causation.

I.

Hector Pacheco, a 42-year-old self-employed automobile mechanic, had just completed a tire change using a Coats 40-40

tire changer and was about to lift the tire from the surface of the machine, when the tire suddenly and violently exploded. The tire and tire rim were thrust from the surface of the tire changer and one or both of them apparently struck Mr. Pacheco's left elbow, causing the total irreparable disintegration of the elbow bone. Pacheco has undergone several surgical procedures, including an elbow transplant and ultimately a replacement of the natural bone joint with a prosthesis, which may require future revision, and suffers a loss of arm function as well as the loss of his employment capacity as a mechanic. The manufacturers of the tire and tire rim have not been identified. The Pachecos commenced a strict product liability action against the manufacturers of the Coats 40-40 tire changer, i.e., the Coats Company and Hennessy Industries ("Coats").⁰

The overwhelming evidence at trial converged to establish that the tire explosion caused Mr. Pacheco's injury, although some controversy centered on the exact positioning of Mr. Pacheco's arms at the time of the explosion, and whether the injury was necessarily the result of contact with the projectile. The evidence further tended to prove to a high degree of certainty that the explosion resulted from a tire bead failure

⁰ Hennessy Industries is a subsidiary of Danaher Corporation, and Coats is a brand name of Hennessy Industries. Hennessy has been making tire changers under the Coats name since the 1960s.

The manufacturer of the tire which exploded is unknown. Mr. Pacheco testified that the exploded tire was removed from the accident scene by someone other than himself, perhaps the owner, and has not been recovered.

which occurred after the completion of the tire changing process. Thus the parties agreed that a defective tire, and not the Coats 40-40, caused the explosion which injured Mr. Pacheco. Mr. Pacheco's theory of defective design product liability, however, is based on evidence that the table top of the Coats 40-40 served virtually as a "launching pad" against which the ruptured tire bead reacted, resulting in the intensely powerful thrust of exploding tire material. Moreover, substantial evidence showed that at the time of Mr. Pacheco's accident, this type of scenario was foreseeable, that Coats was long aware of the serious risk of bodily harm associated with working with compressed air and the tire inflation process, that such risk could have been significantly reduced through feasible product design modifications, and that Coats failed to "design out" the product defect.

At trial it was shown that in past years Coats' engineers had conducted a number of tests which examined the "launch effect" of exploding tires reacting to its tire changer table top. In particular, the "Strang test," named after the engineer who carried it out in 1966, concluded that the shape of the machine's table surface affects its potential to serve as a "launching pad" when a tire resting on it explodes. Although the Coats employee charged with overseeing safety programs for the company testified that this test was incomplete, conducted solely for the purpose of drafting warning labels and operating instructions, was inconclusive as to design implications, and was superseded by subsequent studies undertaken by Coats, the weight

of the evidence clearly established that, from the 1960s, Coats was aware of the phenomenon of ruptured tire beads striking the table top and launching upwards. The evidence further showed that other tests carried out by Coats' employees, including the "Gottsholl test" in the 1970s and the "MacInnelli test" of 1987, studied the height that a tire was lifted off a platform when it exploded, and demonstrated that elevating the tire above the platform minimizes an exploding tire's upward thrust.

Mr. Pacheco's attorney argued from the findings of Coats' own studies that a reduction in the launch pad effect through a redesign of the tire changer would be feasible. Dr. Alan Milner, a professional engineer and consultant with a special expertise in the area of tires and tire explosions, testified on behalf of Mr. Pacheco that modifications to the Coats 40-40 model could reduce the kinetic energy of an explosion by 98%. He proposed a hypothetical redesign whereby the table surface of the tire changer would be reduced to the size of the tire rim and elevated 6-1/2" from any surrounding surface so as to dissipate the energy emitted from an explosion. As a theoretical matter, this would reduce the upward thrust of an exploding tire to a mere fraction of what it would be if the tire bead were in contact with the table top at the time of explosion. Mr. Pacheco's attending physician, as well as an accident reconstructionist and biomedical engineer, testified that a substantial reduction in the upward thrust of an exploding tire would have reduced Mr. Pacheco's injury.

Coats' safety program overseer countered that as a practical matter, the effects of a thrust surface cannot be reduced by diminishing the size of the thrust surface, and that a reduction in the launch effect can only be achieved if the launch surface is eliminated. Because he thought it was not possible to design a tire changer without a table top, or so impracticable as to make it virtually impossible, he testified that the proposed hypothetical redesign would not be practically feasible. Coats' witness discredited the proposed redesign as being merely conceptual and lacking the scrutiny of the various engineering disciplines required to complete a product design. He further asserted that the proposed redesign would create a false sense of security and would itself create new ergonomic problems while not eliminating either the risk of tire explosion or the risk of serious injury from such explosion.

Mr. Pacheco testified that he was aware of the potential danger of the tire explosion, and that he was also aware of the warning labels placed by Coats on the tire changer. The parties agreed that an exploding tire would react identically whether it exploded off of the table top of the Coats 40-40 or off of virtually any other flat surface, such as a floor. The parties agreed that the Coats 40-40 did not cause the explosion. The pivotal factual dispute at trial concerned whether the flat table top of the Coats 40-40 constitutes a defective design, whether a redesign would have been feasible, and whether the

failure to implement a redesign was a substantial cause of Mr. Pacheco's injury.⁰

The jury returned a verdict in favor of Mr. Pacheco on the issues of whether the tire changer was defective and whether the defect was a proximate cause of Mr. Pacheco's injuries. In accordance with the jury's responses to the special interrogatories, the district court entered judgment in favor of Mr. Pacheco in the amount of \$300,000, and in favor of Mrs. Pacheco in the amount of \$25,000 on her claim for loss of consortium. The Coats Company and Hennessy Industries timely moved pursuant to Federal Rule of Civil Procedure 50 for a judgment notwithstanding the verdict, or alternatively, for a new trial pursuant to Federal Rule of Civil Procedure 59. They withdrew their Rule 59 motion; the district court denied their Rule 50 motion in an order dated July 20, 1993. Notwithstanding its acknowledgement that the trial produced conflicting evidence as to whether the Coats 40-40 was defective in design, the court found substantial evidence to support the jury's verdict as to all the issues. The Coats Company and Hennessy Industries timely appealed the district court's final order.

Reviewing the record in a light most favorable to the non-moving party, we must ascertain de novo whether the record contains sufficient evidence to sustain the jury's verdict. See,

⁰ There was also evidence at trial concerning the extent of Mr. Pacheco's injuries and damages. The jury verdict as to damages is well supported by the evidence and is not in itself contested in this appeal.

e.g., Chuy v. Philadelphia Eagles Football Club, 595 F.2d 1265, 1273 (3d Cir. 1979) (in banc).

II.

Mr. Pacheco's personal injury case was brought under the laws of Pennsylvania for defective products. The Pennsylvania Supreme Court has adopted § 402A of the Restatement (Second) of Torts⁰ to govern strict product liability claims. Webb v. Zern, 220 A.2d 853, 854 (Pa. 1966). We review well-settled principles of Pennsylvania law regarding this section.

A.

⁰Section 402A provides:

(1) One who sells any product in a defective condition unreasonably dangerous to the user or consumer or to his property is subject to liability for physical harm thereby caused to the ultimate user or consumer, or to his property, if

(a) the seller is engaged in the business of selling such a product, and

(b) it is expected to and does reach the user or consumer without substantial change in the condition in which it is sold.

(2) The rule stated in Subsection (1) applies although

(a) the seller has exercised all possible care in the preparation and sale of his product, and

(b) the user or consumer has not bought the product from or entered into any contractual relation with the seller.

Section 402A imposes strict liability for injuries caused by defective product design. See Lewis v. Coffing Hoist Div., Duff-Norton Co., 528 A.2d 590, 592 (Pa. 1987) (citations omitted). In Azzarello v. Black Bros. Co., 391 A.2d 1020 (Pa. 1978), the Supreme Court of Pennsylvania set forth the legal standard for defective design strict liability claims. The court held that before such a claim is submitted to a jury for factual determinations, the court itself must resolve the legal question of risk allocation. Id. at 1025-27; see also Griggs v. BIC Corp., 981 F.2d 1429, 1432-33 (3d Cir. 1992) (the first step of a strict liability defective product claim requires a judicial determination as a matter of law where the risk of loss shall fall). A judicial determination that Pennsylvania social policy allocates the risk away from the manufacturer in a strict product liability case is tantamount to a judicial conclusion that the product is not defective.

If a judicial determination is made that recovery against the manufacturer would be justified as a matter of law, then the court may submit to the jury the question of whether the product was sold in a defective condition as alleged. Griggs, 981 F.2d at 1432-33. The jury may find that a product is defective if "the product left the supplier's control lacking any element necessary to make it safe for its intended use or possessing any feature that renders it unsafe for the intended use." Azzarello, 391 A.2d at 1027 (footnote omitted); see also Fitzpatrick v. Madonna, 623 A.2d 322, 324 (Pa. Super. Ct. 1993) (citing Azzarello); Marshall v. Philadelphia Tramrail Co., 626

A.2d 620, 626 (Pa. Super. Ct. 1993); Dambacher v. Mallis, 485 A.2d 408, 420-24 (Pa. Super. Ct. 1984), appeal dismissed, 500 A.2d 428 (Pa. 1985). It is not sufficient for liability that the product is shown to be unsafe for a use not intended; rather, a plaintiff must prove that the product is unreasonably dangerous to intended users for its intended use. See Griggs, 981 F.2d at 1433. We have held that the intended use of a product "includes all those which are reasonably foreseeable to the seller." Sheldon v. West Bend Equip. Corp., 718 F.2d 603, 608 (3d Cir. 1983). More recently, we have acknowledged that the term "foreseeability" is associated with the law of negligence and should not be applied in a strict liability analysis. Griggs, 981 F.2d at 1435. Nevertheless, the intended use and user, while primarily an inquiry into the manufacturer's intent, is measured against an objective standard of reasonableness. If the plaintiff proves that the product was defective, the final requisite under a strict liability cause of action is proof that the defect was the proximate cause of the plaintiff's injury. Griggs, 981 F.2d at 1432; Habecker v. Copperloy Corp., 893 F.2d 49, 54 (3d Cir. 1990) (Habecker I) (causation is essential factor in products liability action).

We note, with regard to the question of risk allocation, that the Supreme Court of Pennsylvania has already concluded that "the risk of loss for injury resulting from defective products should be borne by the suppliers, principally because they are in a position to absorb the loss by distributing it as a cost of doing business." Azzarello, 391 A.2d at 1023.

This policy, however, does not make the manufacturer an absolute insurer of any injury caused by its product, and must be applied within the parameters of the manufacturer's intended use of the product. The district court properly submitted to the jury the question of whether the product was defective -- a question which pivots on a finding as to whether the product was being operated by an intended user for an intended use at the time of the accident. In its July 20, 1993 order, the district court held:

. . . Clearly, there is substantial evidence of record to support a jury finding that the intended use of the tire changing machine includes placing the tire and wheel onto and removing it from the machine before and after the tire changing function has been completed and allowing the wheel and tire to rest thereon before, during, and after the tire is changed. Also, there is substantial evidence to support the jury determination that Plaintiff's use of the machine was consistent with and within its intended use.

We agree. A reasonable jury could properly conclude that the tire changing function includes the mounting and demounting of a tire onto and off of the tire changing machine, and that the Coats 40-40 is engaged in its intended use during these indispensable first and last steps of the tire changing process. Clearly, mounting and demounting the tire was reasonably intended by the seller. Furthermore, Mr. Pacheco was undeniably an intended user of the Coats 40-40. The jury viewed evidence that Coats was well aware of the "launch-pad" effect, as well as evidence that a practical and feasible alternative design could greatly reduce the potential for the severity of injury

which Mr. Pacheco suffered. Our review of the record supports the district court's view that the jury had substantial evidence from which it could rationally conclude that the Coats 40-40 was defectively designed for its intended use and that an alternative feasible redesign of the product was reasonably practicable.⁰

B.

We turn now to the plaintiff's second task -- to show that the product defect actually caused the claimed injury. Again we find that Mr. Pacheco introduced sufficient evidence at trial from which a jury could reasonably infer that the Coats 40-40 table top proximately caused Mr. Pacheco's injury. It is not dispositive to the issue of causation that the Coats 40-40 flat table top was merely a "passive" reactive surface and that the machine itself did not emit the kinetic force which ruptured the tire. Coats is not exonerated by the fact that a defective tire or tire rim contributed proximately to Mr. Pacheco's injury if the Coats 40-40 design defect was a substantial factor in causing the harm. The jury heard evidence that explosive kinetic energy reacting against a thrust surface created the potential hazard realized in this case. Coats itself testified to the fact that the upward thrust of exploding tire material is caused, at least

⁰ The dissenting opinion characterizes the majority holding to be that "prevention or reduction of injuries from exploding tires is an intended use of a tire changer as a matter of law." We wish to clarify that we understand tire changing to be the intended use of the Coats 40-40, but that the Coats 40-40 lacked an element necessary to make it safe for that intended use. The Coats 40-40 lacked safety features which substantial evidence showed could have been reasonably incorporated into its design.

in part, by "leaping," i.e., when a ruptured tire bead is bounced off of a flat surface. In short, the jury heard sufficient evidence from which it could reasonably conclude that the exploding tire's contact with the Coats 40-40 table top was a substantial factor causing Mr. Pacheco's injury.⁰

III.

The district court properly submitted the factual questions of defect and proximate causation to the jury. The evidence of record supports a jury verdict against Coats on the theory that a defect in the design of the Coats 40-40 tire changer was a proximate cause of Mr. Pacheco's injury, as the district court held in denying Coat's post-trial motion.⁰²

⁰ We find it necessary to clarify that the majority holding does not rely on "causation of enhanced injury" in the absence here of "causation of the accident," as the dissent indicates. We acknowledge that the Coats 40-40 did not cause the tire bead to fail. Nevertheless, the bead failure, alone, did not cause the injury to Mr. Pacheco. The accident, or injury, resulted from the convergence of more than one substantial factor, primarily among which were the bead failure and the explosive reaction against the thrust surface of the Coats 40-40. Thus, the Coats tire changer was a substantial, even if passive, cause of the injury.

⁰ Coats' final challenge to the jury verdict attacks the application of the "crashworthiness doctrine" to the facts of the case. In its basic formulation, the crashworthiness doctrine holds an automobile manufacturer liable for designing and producing a crashworthy vehicle. See, e.g., Huddell v. Levin, 537 F.2d 726, 737 (3d Cir. 1976). Coats argues that this doctrine has not and should not be extended to non-vehicle product liability cases. We decline to decide that issue here. While the district court did charge the jury on the crashworthiness theory, there is no evidence that the jury found for Mr. Pacheco under, or exclusively under, that theory. The jury did find that the Coats 40-40 was defective and that the

We will affirm the district court's order of July 20, 1993, denying Coats' motion for judgment notwithstanding the verdict.

product defect was a substantial factor causing Mr. Pacheco's injury, supporting Mr. Pacheco's 402A defective product cause of action.

Hector Pacheco, et al. v. The Coats Company,
Inc., Hennessy Industries, Inc.
No. 93-1791

Seitz, *Circuit Judge*, dissenting.

I find myself in dissidence with the majority because, in my view, no defect in the design of the tire changer caused the injuries about which plaintiffs complain.

An exploding tire of unidentified origin shattered plaintiff Hector Pacheco's elbow as he removed the tire from a Coats Co. 40-40 tire changer just after inflation. The experts on both sides agreed that failure of the bottom bead of the tire caused the explosion.⁰ Plaintiffs' experts testified that the table top was a "launching pad," whereas the defendants' expert described it as merely a "reaction surface." Plaintiffs' experts agreed that the result would have been the same with any horizontal or vertical surface.

The risk presented occurs only during the 30 seconds between detaching the hold-down cone and removing the inflated (or overinflated) tire from the tire changer. There is no risk of explosion while mounting or dismounting uninflated tires. Furthermore, the hold-down cone will restrain the tire if it explodes while being inflated.

I. Product Defect

Plaintiffs argue that the product was defective because it should have been designed to prevent injuries from the foreseeable event that a tire could explode in the time between releasing the hold-down cone and removing the tire from the tire changer.⁰

⁰An anonymous customer who brought the tire to Pacheco for mounting reclaimed it after the accident but before its manufacturer was identified.

⁰A tire bead "is a strip of steel wire that is wrapped around and around [the inner edge of a tire] to help hold the tire on the rim of the wheel." Deanna Sclar, *Auto Repair Dummies* 223 (1976). When the bead "seats" properly, the air pressure holds the edge of the tire against the rim. When the bead fails, *i.e.*, breaks, the air escapes from the tire and, much like a balloon whose neck has been released, the tire becomes a projectile.

⁰An order granting partial summary judgment eliminated "[a]ll claims that the tire was defectively designed because of the absence of an interlock to prevent inflation unless the hold-down cone was attached to the center post [or] because it lacked a device which would restrain exploding tires and/or rims." A previous order identified the

Defendants counter that plaintiffs' concept for redesigning the tire changer does not eliminate explosions or serious injuries from explosions and it does eliminate the possibility of using one changer for a variety of tire sizes. Ultimately, the thrust of the argument is that the product is not defective because it cannot proximately cause the type of accident.

Defendants assert that the district court erred by refusing to find as a matter of Pennsylvania social policy that they are not required to bear the risk of loss caused by defective tires. In a Pennsylvania strict products liability case, before submitting the case to the jury, the court is to decide "whether, under plaintiff's averment of the facts, recovery would be justified." *Azzarello v. Black Bros. Co.*, 391 A.2d 1020, 1027 (Pa. 1978).⁰ In other words, the court decides whether the product is "unreasonably dangerous" or in a "defective condition" as the term is used in *Restatement (Second) of Torts* § 402A. *Id.* This involves consideration of whether the "product left the supplier in control lacking any element necessary to make it safe for its intended use or possession or any feature that renders it unsafe for the intended use. *Id.* at 1027. The court exercises its judgment as a social philosopher and a risk/utility economic analyst.

genuine issue of material fact as "whether the configuration of the tire/wheel support structure of the Coats tire changer was responsible for the force with which the tire/wheel assembly struck plaintiff." With the issue thus narrowed, and the plaintiffs' experts' concessions regarding the cause of the explosion, I am not sure there was any theory for the jury under the district court's rulings. However, the defendants do not explain the significance of these orders so I shall proceed as if they became irrelevant in later proceedings.

⁰Denying a defense motion for judgment as a matter of law (whether for summary judgment, directed verdict, or judgment notwithstanding the verdict) is construed as an implied ruling that the product is unreasonably dangerous. See *Hammond v. International Harvester Co.*, 691 F.2d 646, 650 (3d Cir. 1982); *Dambacher ex rel. Dambacher v. Mallis*, 485 Pa. 408, 421, 423 n.6 (Pa. Super. Ct. 1984), appeal dismissed, 500 A.2d 428 (Pa. 1985). Although it might be preferable to resolve the matter pretrial by summary judgment, cases do not find any impediment to a later motion. Therefore, the defendants' motion for directed verdict and j.n.o.v. sufficiently preserved this point even though we find a motion for summary judgment.

Fitzpatrick v. Madonna, 623 A.2d 322, 324 (Pa. Super. Ct. 1993) (listing factors to be considered).

Courts in other states have described the intended use of a tire changer as exactly the event about which plaintiffs complain. In a case very similar to ours, albeit involving a 30-year older model, a unanimous Supreme Court of Iowa accepted the defendant's contention that "the machine was a tire changing machine only, and not a tire holding machine," in a case of a tire explosion by reason of air suddenly escaping from or adjoining the tire. *Davis v. Coats Co.*, 119 N.W.2d 198, 200 (Iowa 1963). A Florida appeals court has also held that "[t]he purpose of the machine was not to prevent a tire from exploding nor to prevent it from coming down if it did explode." *Simpson v. Coats Co.*, 306 So. 2d 573, 574 (Fla. Dist. Ct. App. 1975). In affirming the directed verdict for the defendant, the *Simpson* court went on to state:

Neither was there any evidence that the use of the machine caused the explosion or the accident. This is not a case of faulty design nor defective manufacture. The exploding tire was the proximate cause of the accident, not the tire changing machine supplied by appellee.

Id. (citing *Menking v. Bishman Mfg. Co.*, 496 S.W.2d 762 (Tex. Civ. App.—Corpus Christi 1973, no writ).

Although these cases differ on whether there was no negligence (*Davis*), no proximate cause as a matter of law (*Simpson*), or no proximate cause as a matter of fact (*Menking*), all concur that the responsibility properly lies with the tire manufacturer, not the tire changer manufacturer.

At first blush, plaintiffs' theory holding the tire changer manufacturer liable for some appeal because tire explosions are more likely to occur on a tire changer than anywhere else, so it would be desirable if tire changer manufacturers designed their products to accommodate these aberrations. However, there are two stronger counterarguments.

First, it is the tire manufacturer's classical manufacturing defect that caused the accident. Products liability law developed to force the manufacturer to spread the cost of the few nonconforming items out of a large production lot. The law should not require the manufacturer of another product to insure this risk. Furthermore, liability for manufacturing defects forces the producer to adopt the appropriate level of quality control. Yet Coats cannot inspect nor improve products it does not control. As the New York Court of Appeals explained in refusing to hold a tire manufacturer liable for injuries caused by a defective rim:

This is not a case where the combination of one sound product with another sound product creates a dangerous condition about which the manufacturer of each product has a duty to warn. Nothing in the record suggests that Goodyear created the dangerous condition in this case. Thus, we conclude that Goodyear had no duty to warn about the use of its tire with potentially dangerous multipiece rims produced by another where Goodyear did not contribute to the alleged defect in a product, had no control over it, and did not produce it.

Rastelli v. Goodyear Tire & Rubber Co., 591 N.E.2d 222, 226 (N.Y. 1992) (citation omitted).

Second, this product in no way increases the risks attendant to tire changing that existed prior to the invention of the machine. Without the machine, tire changing could be done on the ground, or some other horizontal surface. See *Davis*, 119 N.W.2d at 120. That plane would provide the same reactive surface the tire changer does. The machine does ease the task, and therefore provides utility. Among the questions to be considered is whether the product is safe for its intended use, not whether it could be made safer. See *Pascale v. Hechinger Co.*, 627 A.2d 750, 753 (Pa. Super. Ct. 1993).

Under our prediction of Pennsylvania law, the trial court should have concluded that the manufacturer of a tire changing machine is not liable for injuries caused by exploding tires. This would have ended the case.

II. Proximate Cause

Leaving aside whether the tire changer was "unreasonably dangerous," the case not have gone to the jury because Coats' machine did not proximately cause the accident. Other jurisdictions have so held on almost identical facts. *Simpson*, 306 So. 2d at 765. *Menking*, 496 S.W.2d at 765.

Defendants appropriately compare this case with the ramp in *Habecker I*. In this diversity case controlled by Pennsylvania law, the plaintiffs sued the manufacturer of a ramp that turned over when their decedent drove a forklift off the ramp's edge. Even if the ramp was defective, it did not cause Mr. Habecker's death. Driving off the ramp caused the fall and the death; the ramp's twist did not contribute. *Habecker v. Coats Corp.*, 893 F.2d 49, 54 (3d Cir. 1990). Similarly, the tire changer manufacturer should not be responsible for the (mis)application of other products to its machine.

The tire changer certainly did not cause this accident. Even plaintiffs' experts agree that the tire caused the accident. Therefore, plaintiffs cannot recover under traditional products liability law. That leads to plaintiffs' enhanced injury theory.

III. Enhanced Injury

Under this variation on the crashworthiness or "second collision" doctrine, plaintiffs show that the product proximately caused additional injuries, rather than causing the accident itself. In the seminal crashworthiness case, the Court of Appeals for the Eighth Circuit defined collisions as an "intended use" of automobiles—indeed, "frequent and inevitable contingency"—and therefore held the manufacturer liable for subjecting occupants to unreasonable risks of injury. *Larsen v. General Motors Corp.*, 391 F.2d 495, 502 (8th Cir. 1968).⁰

⁰Defendants contend that "crashworthiness" can apply only to vehicle design suits. It makes no sense to call the theory "crashworthiness" for a product that does not crash. However, the underlying logic permitting recovery for enhanced injury is easily transferrable. The original case adopting the theory described the liability as being imposed for incremental injury caused by negligent design although the accident was produced by the defect. *Larsen*, 391 F.2d at 502. The District Court for the Eastern District of Pennsylvania recently applied the theory to allow recovery for the marginal injuries caused by the inability to shut off a motor, even though a malfunction of

Our case differs from *Larsen* in several important respects. In *Larsen*, no product caused the collision. The driver who was responsible for the accident was liable for the initial injuries; the manufacturer of the car that exacerbated the injuries was liable for the increment. Here, under plaintiffs' theory of the case, another defective product is the source of the accident. The manufacturer of that product—the tire—is the appropriate defendant.

The manufacturer was held liable in *Larsen* because features of the car inflicted additional injuries when the passenger had a "second collision" with the interior of the automobile. Our court has reiterated that the defect must have "increased the severity of the injury over that which would have occurred absent the defective design." *Habecker v. Clark Equip. Co.*, 942 F.2d 210, 213 (3d Cir. 1991) (*Habecker II*) (quoting *Barris v. Bob's Drag Chutes & Equip.*, 685 F.2d 94, 99 (3d Cir. 1982)). Given that both parties' experts agree any plane—including the garage floor or the backyard—would have provided the same surface, the tire changer did not increase the injuries.

Even accepting the majority's contention that prevention or reduction of injury from exploding tires is an intended use of a tire changer as a matter of law, and substituting causation of enhanced injury for the lack of causation of the accident, plaintiffs would be required to prove (1) an alternative, safer design, practicable under the circumstances; (2) what injuries, if any, would have resulted had the alternative

cheese grater to which it was attached caused the original injuries. *Calloway v. K&K Corp.*, 1992 WL 309629 (E.D. Pa. Oct. 15, 1992).

The parties also seem confused by this court's holding in *Barris v. Bob's Drag Chutes & Equip.*, 685 F.2d 94 (3d Cir. 1982). *Barris* does not refuse to extend the crashworthiness theory to non-vehicles. Plaintiffs sued for the failure of a race car harness to protect the driver during a rollover, resulting in his death. Of course, this is the intended use of such a harness. This was not a manufacturing defect. Nor was it an unintended effect of the harness performing some other useful function. The defective design prevented the harness from fulfilling its purpose—reducing or preventing all injuries. Therefore, jury instructions for a typical § 402A strict liability case were corrected. *Barris* did not require enhanced injury proofs because that was the doctrinally correct holding, not because the plaintiff did not introduce the theory.

safer design been used; and (3) as a corollary to the second element, the extent of enhanced injuries attributable to the defective design. *Huddell v. Levin*, 537 F.2d 737-38 (3d Cir. 1976).⁰

Plaintiffs' proof of each of the three required elements is lacking. They have shown an alternative design that performs the required functions nor have they shown sufficient specificity the injuries that would have occurred with the use of this hypothetical redesign and therefore the increment of enhanced injuries.

Plaintiffs' expert proposes using a disk the size of the interior diameter of to support the tire instead of the tabletop. Defendants respond that this will not accommodate all sizes of tires as the changer does now, and will not prevent explosions serious injuries from explosions. When asked for details of the redesign, such as height of the disk, plaintiffs' expert cavalierly responded that he would use the ergonomic data. This is not an adequate redesign.

Our prediction of Pennsylvania enhanced injury law requires proof of an alternative feasible design. Plaintiffs are not prepared to say that their proposal will work show that it can perform the same tasks as the current model. Plaintiffs' expert says that he has not done any engineering studies, much less built a prototype or produced a product. Defendants explained that the proposed disk cannot handle the forces required to mount a tire. The studies offered by the plaintiff showed that a smaller disk reduced the height the tire flew, but if you cannot change a tire on the alternative machine, a shorter flight path is irrelevant. I conclude that plaintiffs' "design" is not evidence of a "feasible alternative, practicable under the circumstances" sufficient to go to the jury.

⁰*Huddell* embodied the Third Circuit's prediction of New Jersey law. 537 F.2d at 737. This rule has since been adopted as a prediction of Pennsylvania law until its supreme court speaks. *Jeng v. Witters*, 452 F. Supp. 1349 (M.D. Pa. 1978), *aff'd without op.* 591 F.2d 1334 & 1335 (3d Cir. 1979); *see also Roe v. Deere & Co.*, 855 F.2d 151, 153 & n.2 (3d Cir. 1988).

Plaintiffs' proof of enhanced injuries is also vague. The only evidence I find what the injuries would have been is the orthopedic surgeon's testimony that the fractures would not have been comminuted and could have been repaired if the force had been substantially reduced. Our court's prediction of Pennsylvania law requires proof of impairment the simple fractures would have precipitated, but I do not find such evidence here. The plaintiffs' failure expert contended that his design would have reduced the force by 98%. However, the design was not shown to perform the necessary tasks, nor the 98% figures demonstrated to apply to the facts of this accident. Moreover, the reduction in force cannot be directly applied to reduce the injuries or the medical expenses by 98%. This too is a failure of proof.

Because the tire changer did not cause the accident, enhanced injury is the only theory under which the plaintiffs could recover. Yet the jury was erroneously permitted to award damages for the entire injury.⁰

IV. CONCLUSION

Regardless of the problems of proof in the crashworthiness case, crashworthiness is still a subset of design defect strict liability law. Pennsylvania courts would apply regular products law before limiting damages to the incremental injury. Therefore, a finding of nondefectiveness as a matter of law prevents recovery under either theory.

Even without holding that the risk of loss belongs to the tire manufacturer, the plaintiffs should have been limited to recovery for their enhanced injuries only. The plaintiffs have not borne their burdens on this record. I would reverse the judgment for plaintiffs.

⁰Plaintiffs argue that *defendants* requested the enhanced injury instruction and should be allowed to object to its use. Plaintiffs also assert that "there is no evidence whatsoever" that the jury based its verdict on an enhanced injury theory. In my view, the parties have reversed their roles. It was in the *plaintiffs'* interest to request the instruction and to secure a verdict based on this theory because their own experts conceded that the tire changer did not cause the accident. In the face of this concession, no rational jury could have found for the plaintiffs without an enhanced injury theory. Accepting plaintiffs' statement in their appeal brief that the jury found the product defective in a customary § 402A defective design case, plaintiffs cannot recover.