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JUDICIAL AND REGULATORY DECISIONS

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MANUFACTURER'S LIABILITY IN AIRCRAFT ACCIDENTS

Recent release of the official CAB accident report concerning a DC-6 crash at Bryce Canyon, Utah,¹ is illustrative of the various liabilities attendant to many modern airline crashes. A layman's cursory reading of the accident report would reach the same conclusion as the jurist—the aircraft manufacturer, Douglas Aircraft Company, was certainly partly at fault. Since the owner-operator is the party considered *prima facie* liable and because of the higher degree of care to which carriers are held, carrier counsel is concerned, when possible, with shifting the liability to a third party—the manufacturer. Notwithstanding the dearth of litigation on the subject, it appears that an aircraft manufacturer may occasionally be shown, in a suit for damages, to have been negligent in either design or construction. Therefore the purpose of this note is to suggest guides for the analysis of the cases, to set forth conclusions as to the accepted law regarding manufacturer's liability, and to point out ancillary problems.

ANALYSIS

Before discussing the cases an analysis should be made as to the legal status of the parties and as to what their respective relationships are to each other. Generally the parties will fall into one of the following six categories: 1) passenger, 2) carrier personnel, 3) carrier, 4) manufacturer, 5) his supplier of component parts and materials, and, 6) third persons. As against third persons and carrier personnel there looms always a probable defense of contributory negligence. Although contributory negligence may be a defense employed between some party relationships, it does not follow that it may be invoked in others, i.e. a farmer's cow killed by a forced landing.

A logical classification of the causes of most aircraft crashes is important in order to relate manufacturer's liability to the whole legal problem presented by any airplane accident. All crashes find their genesis either in (1) pilot and/or other personnel error or (2) mechanical failure or (3) a combination in varying proportions of both. Ever advancing technical progress and scientific accident analysis have forced a retreat of the *vis major* and "act of God" explanations for man's ignorance and frailties. We are

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¹ CAB Accident Investigation Report, United Air Lines Inc., Bryce Canyon, Utah, October 24, 1947, SA-153-156, File No. 1-0097-47. Adopted: December 16, 1948, Released: December 21, 1948, in which 47 passengers and 5 crew members were killed. The CAB report establishes conclusively that the cause of the accident was the improper location of one of the alternate tank vent outlets—it being located diagonally forward of the cabin heater combustion air intake scoop so that the overflow was carried by the slipstream into the scoop. The fire resulting in a crash while attempting an emergency landing was caused by an overflow of gasoline while transferring fuel to equalize the load; the spilled gasoline being picked up by the cabin heating system and burning with sufficient violence to ignite the emergency landing flares. However, see CAA press release No. 323, Dec. 23, 1948, "CAA presents facts not included in CAB accident report" which points out that the CAA flight manual and the operations manual for the DC-6 issued by the Douglas Aircraft Company prior to the accident both set forth safe procedure for the feeding of fuel from all tanks to any engine. The transfer of fuel in flight from one tank to another was not authorized by the manual. Although transfer in flight was reported common practice among pilots, neither CAA nor Douglas considered a mandatory prohibition necessary.

primarily concerned here with mechanical failure, the cause of which breaks down progressively into improper (1) design, (2) construction or (3) maintenance. The latter is due usually to fault on the part of the air carrier's operations department, and therefore not treated here. Hence our focus is brought to bear upon negligence in either design or construction which may be established as the cause of a crash.

MANUFACTURERS' LIABILITY

The development of manufacturer's liability has had a long and interesting history.² Today the cases dealing with this subject usually proceed from the reasoning set forth by Justice Cardozo in *MacPherson v. Buick*.³ The problem was worked out on a tort duty theory as follows:

"If the nature of a thing is such that it is reasonably certain to place life and limb in peril when negligently made, it is then a thing of danger. . . . If to the element of danger there is added knowledge that the thing will be used by persons other than the purchaser, and used without new tests, then, irrespective of contract, the manufacturer of this thing of danger is under a duty to make it carefully. . . . There must be knowledge of a danger, not merely possible, but probable. . . . There must also be knowledge that in the usual course of events the danger will be shared by others than the buyer. . . . We are dealing now with the liability of the manufacturer of the finished product, who puts it on the market to be used without inspection by his customers."

As evidenced by the reservation made in the last sentence above, this theory applies only to the ultimate customer purchasing new goods.

Two other theories have been employed to impose liability upon the manufacturer or dealer in used or new machines, one of false representation and the other of warranty. The former has been considered even strong enough to overcome the plaintiff's own contributory negligence where a representation as to a safety feature was concerned.⁴ We are not concerned with this theory here since it depends upon factors attendant at the sale of the item rather than the manufacture. A recovery upon a theory of warranty is, of course, also open when the facts of the transaction reveal that there was an express warranty; however, it is usually restricted to those who are in privity with the seller and only by a stretch of the imagination could it be considered to "run with the product" in order to include a passenger. The theory of implied warranty fell into disuse upon the general acceptance of the reasoning in *MacPherson v. Buick*.⁵

² Manufacturers received their early protection through the reasoning employed in *Winterbottom v. Wright*, 10 M&W 109, 11 L.J. Ex. 415 (1842), which stands for the proposition that neither the manufacturer nor supplier of a mail coach were liable for the injuries sustained by its driver when the coach foundered due to a latent defect in the construction of a wheel. The theory of denying recovery against the manufacturer by the driver or passengers was that of lack of privity with the manufacturer. Later this theory was undermined by *Devlin v. Smith*, 89 N.Y. 470 (1882) where the builder of a scaffold for a painting contractor was held liable for the death of plaintiff's intestate, a painter, when he plunged to his death due to a failure of the structure. The decision flew in the face of the old non-privity lines of reasoning and predicated liability on the builder's knowledge of the use to which the scaffolding was to be put, and that he could have reasonably foreseen that injury would result from a negligently erected structure. Final preparation for the *MacPherson* doctrine came in *Thomas v. Winchester*, 6 N.Y. 397 (1852) wherein a seller was held liable to third persons for negligence in the preparation or sale of an article "inherently dangerous" to human safety. It is interesting to speculate as to whether this theory might not be directly applied to airplanes without reliance upon the *MacPherson* doctrine. See also A.L.I. Restatement of Torts, section 395.

³ 217 N.Y. 382, 111 N.E. 1050 (1916).

⁴ *Bahlman v. Hudson Motor Car Co.*, 290 Mich. 683, 288 N.W. 309 (1939).

⁵ *Supra*, note 3.

Entirely different theories of liability might apply as to the pilot-owner of a light plane who has made no inspection of his craft before the crash, and the case of a passenger on a large transport ship which was inspected thoroughly by carrier maintenance personnel or possibly even manufactured under their supervision. If the carrier has inspected the plane the express exception to the *MacPherson* case might apply: "We are dealing now with the liability of the manufacturer of the finished product who puts it on the market to be used without inspection by his customers." Interwoven with this problem is that of the degree to which inspection should be made both by the manufacturer and the carrier. Although one usually thinks in terms of the alternative liability of either manufacturer or carrier in this field, concurrent liability may well lie where both manufacturer and carrier have been lax in their inspections. Such ideas will find their expression articulated in terms of the relative degrees of care and particularity of inspection which the manufacturer and carrier must exercise under varying circumstances. It is interesting to observe that although the carriers are held to a high degree of care, the manufacturers of their equipment are held to a degree of care measured by an "ordinary individual" test.

Perhaps the best aircraft case, squarely in point on the facts, is *Maynard v. Stinson Aircraft Corp.*⁶ The plaintiff sued and recovered \$27,500 in damages for injuries received when an airplane, manufactured by the defendant, in which she was a passenger, caught fire and burned on the ground. She claimed two grounds of negligence which concurrently caused the fire: (1) that the exhaust stacks were too short and would emit hot gas fumes too close to the fuselage (1" from the metal skin of the fuselage), and, (2) that the carburetor drain was too close to the exhaust stacks so that spilling gasoline would cling to the skin in the boundary air layer and be ignited by the exhaust.

In the charge to the jury the judge said that negligence was to be given the "ordinary individual" test, qualified to the extent that this ordinary individual should be one skilled in the art of designing aircraft possessed with knowledge commensurate with the advanced state of science in the art at the time of the design, 1934. The plaintiff was given the burden of showing that (1) gasoline did come out of the carburetor drain and adhere to the skin, and, (2) that gases at the ignition temperature of gasoline did come out of the exhaust stacks and cause the fire. Furthermore, the plaintiff was required to show that this was known, or should have been known to an ordinary designer in 1934. Testimony as to the general practice in the industry at the time was held not to be exculpatory. Recovery was had on a basis of the negligent design of the exhaust stacks and fuel drain.

Specific reference to and adoption of the doctrine of the *MacPherson* case in *Breen v. Conn*⁷ is unfortunately dictum since the facts involved are not squarely applicable. The action involved a suit by the administratrix of a deceased passenger against the executrix of the deceased operator's estate for damages arising out of a crash. Eleven grounds of negligence were alleged against the operator. Waco Aircraft was joined as a defendant because it had manufactured the plane and sold it later as second-hand to Conn, allegedly mindful that it had been damaged prior to the sale and consequently in a weakened condition. With respect to the liability of defendant Waco the court cited *MacPherson v. Buick*,⁸ quoted the well known Cardozo formula, *supra*, and then commented: "This innovation in the law of torts

⁶ 1940 USAvR 71, 1 Avi. 698 (Wayne County Cir. Ct., Mich. 1937).

⁷ 1938 USAvR 160, 1 Avi. 772, 30 Ohio Law Abstract 483 (1938).

⁸ *Supra*, note 3.

has been applied to the purchase of new automobiles. *It likewise applies to the purchase of new airplanes.* Under no circumstance, however, could the rule be applicable to the sale of a second-hand airplane under the allegations in this petition."⁹

The last sentence of this language shows that the italicized sentence is merely dictum. However, the tenor of the opinion reveals an almost axiomatic acceptance of the *MacPherson* doctrine into the aircraft field. Waco was held free of negligence since the plane was purchased knowingly as second-hand and since no express contract of warranty was pleaded. Thus we have the *Maynard* case in which the facts applied and the *MacPherson* doctrine was implicitly followed, and the *Breen* case in which the *MacPherson* doctrine was explicitly adopted, however, as admitted dictum since the facts did not apply.

RELATED CASES

Close kinship between the liability of manufacturers and those who undertake extensive aircraft repairs and modifications, warrants a discussion of the latter type of cases. Perhaps the best is *American Airways et al. v. Ford Motor Company*¹⁰ in which the defendant, Ford, solicited the plaintiff with a view to installing new high speed equipment on its planes. Six were processed, all of which were three motored planes presumably of the defendant's manufacture, the ill-fated one amongst them. Facts adduced at the trial showed that the crash was caused by a propellor hub failure due to scratches on the inner machined surfaces of the hub.¹¹ It was held that the plaintiff had a right to rely on the defendant's performance, and that correspondingly the defendant had a duty to check for these scratches which it knew were fraught with dangerous potentialities.

Here again the theory is built upon a right-duty analysis very much like the *MacPherson* case. No jury was employed. On appeal the case was affirmed as to the liability of defendant, Ford, with only a minor modification as to the insurer's expenses incurred in the settlement of death claims. One dissent was registered, but only as to the evidentiary matter as to whether there was sufficient proof that the defendant knew or should have known of the dangerous potentialities of the tool marks, and, whether the tool marks were the actual cause of the hub failure and resultant crash.

*McCoy v. Stinson Aircraft Corp.*¹² involved a modification installed by one of Stinson's employees on a relatively new Stinson plane.¹³ The court in

⁹ Emphasis supplied. See *Flies v. Fox Brothers Buick Co.*, 196 Wis. 196, 218 N.W. 855, 60 A.L.R. 357 for liability of seller of used automobiles.

¹⁰ 1939 USAvR 149, 1 Avi. 809, 17 N.Y.S. (2d) 998, *aff'd*, 284 N.Y. 807, 31 N.E. (2d) 925 (1935).

¹¹ An item of importance on the work order was to "recondition propellers—etch—balance—polish—paint tips." "Etching" was a process of treating the hubs with an acid solution to detect possible cracks. None were reported. The previous year the defendant's engineering department in a memorandum to the repair department reported a hub failure due to a crack propagated by sharp tool marks and warned that deep scratches were a breeding ground for fatigue failure. Proof adduced at trial revealed that this was the cause of the hub failure in the instant case and that machine marks, easily visible with an ordinary magnifying glass, were inside the hub. As a matter of showing further culpability of the defendant and elimination of the manufacturer, letters from the Hamilton Propellor Company informing the defendant that the hubs were not adequately designed and could be replaced free of charge were introduced.

¹² 1940 USAvR 84, 1 Avi. 868, Ontario Supp. (1939).

¹³ Plaintiff's deceased husband had flown the plane to one of defendant's branches where a gusset was welded onto a wing fitting. This gusset and the member to which it was welded were found broken upon examination of the wreckage. Three grounds of negligence were alleged in the plaintiff's case: (1) it was negligent to weld a gusset to this plate in that the process of welding would weaken the plate, (2) that the weld itself was improperly made, and, (3) that the deceased pilot was not apprised of the dangerous condition.

holding for the defendant, ruled that it must be shown that the condition causing the crash could not have been introduced after delivery; or between the performing of the welding operation and the crash. Also, which is but a clearer statement of the prior proposition, that the plaintiff in her proof had not eliminated extraneous causes which might account for the defective condition which undoubtedly brought about the crash.

It is interesting to note that in the *McCoy* case and the *Ford* case the substantive rules of liability appear to be accepted without argument. The dispute centers over the degree of proof required as evidenced by the dissent in the *Ford* case and the majority in the *McCoy* case. At first blush this may appear to be an indication of a trend toward applying the doctrine of *res ipsa loquitur*; however, the cases show that only as between passenger and carrier does this doctrine weigh heavily. Between carrier and manufacturer there must be an actual showing of negligence.

*Gladstone v. Grumman*¹⁴ illustrates very effectively the degree to which a manufacturer's liability may extend. Plaintiff's intestate was a Naval Reservist flying in the gunner's seat of a plane of defendant's manufacture when he was thrown into the sea—his seat still strapped to him. Negligence was predicated upon faulty drawings prepared by the defendant from which the U.S. Government made blueprints to be used as a guide for reassembly after a major overhaul. A small contrivance, presumably a safety catch, was negligently omitted from the drawing, and by virtue thereof it was omitted in reassembly causing the seat to come loose while the plane was engaged in acrobatics. The defendant's motion to dismiss was in the nature of a demurrer, and was denied. On appeal the order denying the motion was affirmed without opinion.

Only two cases with regard to the liability of a manufacturer of component parts have been found: *Sellers v. Champion Spark Plug Co.*¹⁵ and *Lewis v. United Airlines*.¹⁶ In the former case (the only one which proceeded to a trial upon the merits) the plaintiff's theory was that the crash of the plane which he was piloting was due to the fouling of improperly designed spark plugs which brought about the engine failure causing the crash. The plugs were manufactured by the defendant Champion, and sold to the plaintiff by the defendant, Orgill Brothers' Hardware. The action was in the nature of a bill in chancery, with the allegations and the evidence in sharp conflict. The chancellor denied relief and dismissed the bills stating that the plaintiff's allegations of fact were not sufficiently supported by the evidence. On appeal to the Supreme Court of Mississippi it was held that the finding of the chancellor would not be disturbed unless it appeared from the record to be manifestly in error. This was perhaps the first case on the subject (1928), and was resolved on an issue of fact; demonstrating that even at that early date the question of law was not deemed worthy of discussion by the court. Here the defense of contributory negligence was open to both defendants, but would not have been had the action been against Champion for the indemnification of Orgill Brothers.

A recapitulation of the cases discussed thus far leaves us with the conclusion that *MacPherson v. Buick* is accepted by the courts to apply to aircraft manufacturers either by direct enunciation or by the results reached. The main controversy is the degree of proof required in each individual case to support adequately the legal theory. We turn now to the ancillary

¹⁴ 5 N.Y.S. (2d) 252 (1938).

¹⁵ 1929 USAvR 61, 1 Avi. 126; 150 Miss. 473, 116 So. 883 (1928).

¹⁶ 1941 USAvR 245; 29 F. Supp. 112 (1939).

problems raised in connection with the judicial process in fixing liability on the manufacturer.

ANCILLARY PROBLEMS

The *Lewis* case¹⁷ vividly demonstrates the procedural impediments to the maintenance of the type of action required to resolve the liabilities when several potential defendants exist. There the cause of action arose out of a crash involving a United Airlines plane manufactured by United Aircraft. The alleged cause of the engine failure resulting in the crash was a crack in one of the engine cylinders. Four plaintiffs were involved, all citizens of different states acting in representative capacities for the estates of their decedents. Lewis was a citizen of Connecticut; United Airlines, an Illinois corporation; and United Aircraft and Bethlehem Steel, both Delaware corporations. The original action began in the Superior Court at Hartford, Connecticut. Later the case was removed by United Aircraft (the manufacturer) to the Federal District Court on grounds of diversity of citizenship. Thereafter United Aircraft filed a third party complaint against the Bethlehem Steel Corporation, the grounds being that if the cylinder was defective, the defect had been caused by Bethlehem who had sold the forging to Aircraft.

It was held that although the ancillary jurisdiction of the court invoked by the third party complaint embraced the subject matter, as to the person of defendant Bethlehem, the third party complaint was to be considered a new action. Hence under section 51 of the Judicial Code¹⁸ the objection of improper venue was open to Bethlehem and consequently the holding that Bethlehem would have to be sued in the district of which it was an inhabitant.

In a subsequent action¹⁹ between the same parties the issue was as to whether a suit by representation for a declaratory judgment could be maintained. The court then held that the operator was not entitled to a declaratory judgment against the manufacturer for such sums as the operator has had to pay or may be called upon to pay without the presence of the other claimants, whom the court refers to as "stranger-plaintiffs". The court itself infers what the substantive law is and emphasizes the completely procedural nature of the defense by the commentary: "Indeed, by the pending application (United) Aircraft does not question the propriety of a judgment, if it shall eventually be warranted by the *proofs*, requiring (United) Aircraft to indemnify Airlines for such sums as Airlines may become liable to pay to the plaintiffs in this suit."²⁰

Frequently counsel is faced with the problem in cases of a technical nature as to whether trial should be before a jury, the court alone, or a master. It is the writer's opinion that a jury will not always be capable of rendering a fair and considered judgment of the technical evidence involved in cases such as have been discussed in this article. Unfortunately, elimination of the right to trial by jury in ordinary civil actions in the United States can come only by way of statute. A contemporary Canadian case²¹ seems to

¹⁷ *Ibid.*

¹⁸ 28 Mason's USC 112.

¹⁹ 1941 USAvR 239, 1 Avi. 854; 34 F. Supp. 124 (1939).

²⁰ Emphasis supplied.

²¹ *Nysted v. Wings, Ltd.*, 1940 USAvR 151, 1 Avi. 1036; 51 M.R. 63 (1940). The plaintiff was desirous of a trial by jury since a previous trial, *Galer v. Wings, Ltd.*, 1938 USAvR 177, 1 Avi. 778; 47 M.R. 281 (1938), by another passenger and arising out of the same accident, resulted in an adverse determination by the judge sitting without a jury. The technicalities of the case are briefly as follows:

present the better view. There it was stated that courts of appeal have generally concurred in the proposition that in cases involving the weighing and consideration of scientific evidence it is better for the judge to be the trier of the facts. When one bears in mind the extent of damage to the plane and the difficulty of determining the causes of aircraft crashes through examination of the wreckage, plus the possibility of fatigue failure, overstressing, etc., it is not difficult to conclude that such matters are beyond the realm of knowledge and experience of the average juror. Indeed, such matters may be beyond most judges and might well be referred to a master equipped with an aeronautical engineering or similar technical background.

It is also interesting to note that in *Maynard v. Stinson*²² the court would not allow the introduction in evidence of a certificate of airworthiness. This ruling accords with the hearsay evidence rule since the testimony of the parties making out and granting the certificate was theoretically available. However, the Secretary of Commerce instructed the examiners who issued the certificate not to testify. Furthermore it has been held that air carriers cannot rely upon the certificates and inspections accomplished by government inspectors as a complete fulfillment of their duty of care.²³

We are faced with the conclusion that manufacturers must assume liability when warranted by the evidence—a dearth of litigation and rapid settlement of claims buttresses this conclusion. Plaintiffs who must nevertheless bring suit are met with a nightmare of procedural and technical difficulties.

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The accident occurred when the plane was taking off and a propellor blade sheared off near the hub. The resultant vibration set up tore the engine loose from its mounts, fire broke out, and the passengers were seriously injured. Expert testimony revealed facts which proved that the failure of the propellor was due to grain growth in the metal resulting from fatigue. High stresses were set up in the propellor near the hub because the blade faired off too abruptly into the hub. This was so designed in order to create a blast of air on the base of the cylinders for proper cooling. The license to manufacture this design of propellor was cancelled in 1933 in the United States, and its use prohibited absolutely on June 25, 1936, just two months subsequent to this accident. The judge found that the failure was due to faulty design; however, he further found that the flaw was not known to those skilled in the science and art at the time of the design. Consequently the suit was dismissed as to the defendant air carrier.

²² *Supra*, note 6.

²³ *Kamienski v. Bluebird Air Service*, 321 Ill. App. 340, 63 N.E. (2d) 181 (1944).

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