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## AERONAUTICAL PATENT LAW

By

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Aeronautical patent law is a most interesting branch of the jurisprudence of the science of flight. This is true because aeronautical patent law is closely related to aeronautical science, itself a very fascinating subject. In fact the history of aeronautical patent law parallels to no small extent the history of aeronautics.

Aeronautics being a new art, comparatively speaking at least and particularly the branch thereof which is subject to the laws of aerodynamics, fundamental patents in connection therewith should be liberally construed. In other words patents should be granted on grounds which are broad and basic and should be upheld on the same basis. This is truly essential with regard to early inventions relating to the science of aeronautics. It is only fair that those who are pioneers in any new science or field should be fully rewarded for these early inventive efforts. Aeronautics being a comparatively new art, the early inventions therein are quite naturally fundamental and basic and consequently broad in their aspects and should be so regarded. Such early aeronautical inventions therefore call for a liberal interpretation thereof even though they may be crude and naturally possessed with the characteristic ruggedness of all pioneer efforts.

Historically it is of interest to learn that one of the early patents with reference to aircraft was the Henson patent of a monoplane type issued in England over a century ago, to be exact one hundred and ten years, in 1842. This patent

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was with reference to an airplane which was supported in the air by the reaction of the air flow on its plane or wing surfaces as it was propelled or pushed through the air by an engine powered with steam. The relative motion created as the vehicle was driven through the air created a dynamic action of the air flow on its wing surfaces.

One of the early aeronautical patents granted in the United States was that issued to Wilbur and Orville Wright in 1906. This covered an airplane device for maintaining lateral, longitudinal and directional control by means of elevators and a vertical rudder and through warping of the wings. Lateral control was maintained in the Wright Brothers' early airplane by warping the after portion of the tip sections of the wings in such a way as to vary the camber at the tips. The early Wright machines were not equipped with the auxiliary wing surfaces which we know today as ailerons. The practicability of such a plane was epochally demonstrated by the Wright Brothers' first flights on the eventful December 17th, 1903, at the now famous Kill Devil Hills, Kitty Hawk, North Carolina as well as in their later flights.

#### *Pioneer Patents Liberally Construed*

Infringement suits on the Wright patent naturally arose in the course of time. The first case was that of *Wright Company v. Herring-Curtiss Company*.<sup>1</sup> The Wrights claimed that Glenn H. Curtiss infringed upon their patent in his aeroplane the June Bug. While this aeroplane possessed some dissimilarities in structure and changes in form the Court held that it infringed on the Wright patent and that the patentees were pioneers in the invention of heavier-than-aircrafts and their patents were to be liberally construed. This case was reversed in 180 Fed. 110 on the ground that a preliminary injunction was improperly granted against Herring-Curtiss Company as an alleged infringer of Wright Patent No. 829393, when the question to be decided was one of fact and the evidence consisted wholly of *ex-parte* affidavits.

On proper sworn testimony as a correction for the *ex-parte* affidavits previously relied upon, this case again came up for judicial determination in 204 Fed. 597, (1913). The facts disclosed that Wright patent No. 829393 issued May 22, 1906 to Orville and Wilbur Wright for a flying machine was alleged to be infringed upon by the flying machine of the Curtiss-Herring Company. It was held that the patent was a valid one and that as the patentees were pioneers in the practical art of flying with heavier-than-aircraft that their claim was entitled to a liberal construction. It was also held that the use of a vertical rudder in the original Curtiss machine synchronously with the wings to restore balance was tantamount to an infringement of the plaintiffs' patent, because a machine which infringes part of the time is an infringement although such machine may be operated at other times so that not to infringe the Wright patent. Judge Hazel said:

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<sup>1</sup> 177 Fed. 257 (1910).

"And even if the patentees were not strictly pioneers, in the sense of producing an apparatus novel in its entirety, they nevertheless strikingly surpass their predecessors in devising means for restoring lateral balance, and are entitled to a liberal construction of their claims in controversy, and to the application of a range of equivalents that will include an aeroplane approximating substantially the same instrumentalities and the same principle of operation."

*A Device Which Infringes Only Part of the Time  
Is Nevertheless an Infringement.*

Answering the claim of the respondent Herring-Curtiss Company that the machine did not infringe the Wright patent because it might be operated without using such features and principles alleged to be infringed, on appeal<sup>2</sup> the Circuit Court of Appeals, after endorsing what Judge Hazel had said in the lower court, stated:

"As to the other claims, in which the vertical rear rudder is an element, we are satisfied from the testimony, as was the court below, that during some part of their flight defendant's machine used the rudder synchronously with the wings, so that by their joint action lost balance may be restored, or a threatened loss of balance be averted. Such use of the rudder constitutes infringement, and a machine that infringes part of the time is an infringement, although it may at other times be so operated as not to infringe."

*Mere Changes in Specifications of Equivalents Does  
Not Relieve Infringement.*

*Wright v. Paulhan*<sup>3</sup> was a similar case in which application made for a preliminary injunction to prevent infringement of a Wright patent before adjudication, was denied on technical grounds of proof. This case was reversed in 180 Fed. 112. Paulhan used the Wright Brothers' idea of a vertical rudder 'operating' with the warping of the wings to maintain lateral control. The higher court held that Wright patent No. 821393, was a valid patent of an original combination of elements, consisting of a device for maintaining and restoring equilibrium by changing the angle of incidence of the wings to the air and at the same time turning the rudder towards the side of least angle of incidence. It was also held that the Wright patent was entitled to liberal construction. The learned court said:

"All I do say is that I cannot find that anyone prior to their patent had flown with a patented system, and that the changes from the specifications which the defendant has made are no more than equivalents which do not relieve him from infringement."

*Reduction to Practice Necessary Requisite*

Some litigation also ensued in connection with patent rights to a flying boat or a hydroplane. Curtiss in 1910 created a crude form of hydroplane but it could

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<sup>2</sup> 211 Fed. 654 (1914).

<sup>3</sup> 177 Fed. 261 (1910).

do no more than skim along the water at rapid speed and the craft could not rise over the water. The District of Columbia Court<sup>4</sup> held that the invention of such a craft was not an actual reduction to practice, because in the new art of flying nothing short of achievement could rise to the dignity of actual reduction to practice. It was also held that the lack of power of the motor was an insufficient excuse because it could have in good faith been relied upon by hundreds of other inventors who had sought patents for forty or fifty years prior to the decision. In this case the court reiterated the well settled rule of law that where an invention is designed to perform a definite purpose, a construction embodying it must be capable, when operated, of performing that purpose. And that when tests are necessary to demonstrate such capability, then tests must be made, and the tests so made must result in the expected performance.<sup>5</sup>

One Albert S. Janin had fostered the idea of an aeroplane back in 1907. He filed a claim for a patent on January 26, 1911 and was granted a patent. By coincidence on the same date, January 26, 1911 Curtiss was finally able to rise from the water in an hydroplane. In 1916 in the case of *Janin v. Curtiss*<sup>6</sup> it was ruled that Janin was entitled to the preference of a patent for a hydroplane. This decision was approved in *Curtiss Aeroplane and Motor Corporation v. Janin*.<sup>7</sup> On appeal however, the United States Circuit Court of Appeals held that the patent to Janin should be cancelled and a patent granted to Curtiss. The basis of this transfer of patents or the right to same were that the specifications filed by Janin did not disclose an operative hydroplane but only a "hull-like body", the type of which would be incapable of rising from the water consistent with flying. The court held in effect on the appeal as follows in *Curtiss Motor Corporation v. Janin* 278 Fed. 454.

A patent application in order to constitute a "constructive reduction to practice," must enable a person who is skilled in the art to construct a machine capable of operation without the further exercise of inventive machinery. And the final test of the "reduction to practice" of an invention is that the inventor has shown by description or by actual construction and operation the use of his idea to one skilled in the art. A hydroplane is properly defined as a machine which floats on the water, rises therefrom to fly, descends again to the water, and is capable of repeating such operation at will. It was held further that Curtiss was the first to reduce to practice by successful operation whereas Janin had not constructively reduced to practice such a machine and described the boat element simply as a "hull like body." The Circuit Court of Appeals in the *Janin* case in speaking of the phrase "reduction to practice," stated:

"Reduction to practice is not merely a matter of construction, building and trial, but may consist in the disclosure of the idea by any kind of des-

<sup>4</sup> In *Re Curtis*, 45 App. D.C. 362 (1916).

<sup>5</sup> *Sydean v. Thomas*, 32 App. D.C. 362.

<sup>6</sup> 45 App. D.C. 362 (1916).

<sup>7</sup> 267 Fed. 198 (1920).

cription, pictorial, verbal, or written, which will enable one skilled in the art to make and use that which is disclosed. We think a drawing may possibly be a sufficient reduction to practice, and an experimental machine insufficient, for the question is one of degree, and the ultimate test is always whether the inventor has shown operative means to that theoretical omnipresent person, the man skilled in the art."

Reduction to practice may of course be either a constructive reduction to practice or an actual reduction to practice. Whether a reduction to practice is by drawings or a constructed model, the final test is as follows as stated by the said Circuit Court of Appeals.

"The law is well settled that where an invention is designed to perform a definite purpose, a construction embodying it must be capable, when operated, of performing that purpose."

*Mere Assembling in a Single Structure of Known Mechanical Equivalents, is Prior Art.*

Embodying for the first time in a single structure a range of mechanical equivalents which are instrumentalities not new to the art, does not offer a device which is patentable. This is so because such a device is obviously prior art. Particularly true is this when such an assembly of equivalents does not provide for any new and novel method of operation.<sup>8</sup> In the case of *In re Smith*,<sup>9</sup> the court said at page 644:

"The combination here sought to be patented, while not disclosed in a single structure of the prior art, is so completely shown in different prior inventions as to admit easily of mechanical simulation."

This case was with reference to a combination of prior patented equivalents in the form of an airplane with hydroplane features. The court held that such a device was not patentable because it was the mere assembling in a single structure of mechanical equivalents of ideas not new in the art.

*Foreign Aircraft Exempt from Seizure for Infringement*

Before proceeding further with some of the developments in patent jurisprudence with relation to aeronautics, the international character of the latter should receive attention in the form of Article 18 of the International Air Navigation Convention, the Paris Convention of 1919 (CINA). The purpose of the article was to prevent any retarding of international flying. The article reads as follows:

"Every aircraft passing through the territory of a passing State, including landing and stoppages reasonably necessary for the purpose of such transit, shall be exempt from any seizure on the ground of infringement of patent, design of model, subject to the deposit of security the amount of which in default of amicable agreement shall be fixed with the least possible delay by the competent authority of the place of seizure."

<sup>8</sup> *In Re Curtis*, 75 C.C. 286.

<sup>9</sup> 262 Fed. 643 (1920).

The significance of this provision is at once apparent. Even in maritime navigation no similar provision exists for the exemption from seizure on the ground of patent infringement of craft engaged in international commerce. And neither has any such exemption been granted in any convention or international agreement or treaties with reference to the movement of motor vehicles or other land craft. At the Paris Convention the American delegation objected to this provision on the ground that it was concerned with a domestic matter and there should be no international interference therein. At first the French delegates were also opposed to the article, but later they withdrew their objection when the provision was added for the deposit of a guarantee or security to secure the release of the aircraft. When the Havana Convention was framed, because of the prominent position of the United States as a country of large production and manufacture of aircraft, it was only natural that no such provisions as contained in Article 18 of the Paris Convention was to be embodied in the Havana document.

The application of Article 18, however, has been invoked on but few occasions. In one instance where the question of seizure arose, the matter was settled without litigation. This was the occasion of a Ford airplane making sale flight demonstrations over Europe about twenty years ago. The Junker Company alleged that the Ford machine infringed on their patent. The matter came before a Spanish court because the patent was taken out in Spain, but as has been stated the matter was settled amicably in order to permit the plane to carry on its tour. It developed however, that in that case Article 18 did not apply. Furthermore the United States, Spain and Germany were not parties to the Paris Convention.

A similar provision to Article 18 of the Paris Convention is also embodied in the Convention on International Civil Aviation, the Chicago Convention dated December 7, 1944. The Paris Convention has been superseded by the Chicago instrument. Article 27 of the Chicago Convention is somewhat broader and more comprehensive than Article 18 of the Paris Convention. Article 27 provides as follows:-

"(a) While engaged in international air navigation, any authorized entry of aircraft of a contracting State into the territory of another contracting State or authorized transit across the territory of such State with or without landings shall not entail any seizure or detention of the aircraft or any claim against the owner or operator thereof or any other interference therewith by or on behalf of such State or any person therein, on the ground that the construction, mechanism, parts, accessories or operation of the aircraft is an infringement of any patent, design, or model duly granted or registered in the State whose territory is entered by the aircraft, it being agreed that no deposit of security in connection with the foregoing exemption from seizure or detention of the aircraft shall in any case be required in the State entered by such aircraft."

"(b) The provisions of paragraph (a) of this Article shall also be applicable to the storage of spare parts and spare equipment for the aircraft and the right to use and install the same in the repair of an aircraft of a

contracting State in the territory of any other contracting State, provided that any patented part or equipment so stored shall not be sold or distributed internally in or exported commercially from the contracting State entered by the aircraft."

"(c) The benefits of this Article shall apply only to such States, parties to this Convention, as either (1) are parties to the International Convention for the Protection of Industrial Property and to any amendments thereof; or (2) have enacted patent laws which recognize and give adequate protection to inventions made by the nationals of the other States parties to this Convention."

#### *Formation of Manufacturers' Aircraft Association.*

Much patent litigation in the United States was prevented through the formation of the Manufacturers' Aircraft Association in 1917. Prior to that time the main patents in the aircraft industry were owned and controlled by either the Wright-Martin Aircraft Corporation or the Curtiss Aeroplane and Motor Corporation, both of which were involved in patent litigation with each other. The Wright people claimed the control of basic patents and the Curtiss concern other important patents. Both of them were exacting high royalties from aircraft manufacturers. The result was that the costs of airplanes were exceedingly high. What is more, manufacturers were reluctant to enlarge their plants with the result that orders were slow in filling. This chaotic situation with reference to both the validity and ownership of basic patents, together with impending infringing suits and the threatening of others had a general demoralizing affect on the industry. From this acute situation, the exigency of the conditions gave birth to the Manufacturers' Aircraft Association.<sup>10</sup> Through the Association all patents were to be pooled and cross-license agreements were to be made by the Association with subscribers or stockholders of the organization. Only responsible manufacturers could become subscribers or stockholders and no stockholder could obtain more than one share. For each airplane manufactured a royalty of \$200 for each craft was to be paid into the Association. Three voting trustees consisting of three members had the active management of the corporation. The Wright and Curtiss concerns were represented by one trustee, the small manufacturers by another, and the third member was appointed by the National Advisory Committee for Aeronautics. Such Committee was largely the author of the idea of such an organization. From the pooling of the patents under the arrangement, the manufacture of aircraft was greatly stimulated. And as heretofore indicated, for each plane manufactured, the manufacturer or the United States for the manufacturer, if the plane was for the former, paid a royalty of \$200. As to airplanes purchased by the United States from non-subscribers of the Association, the United States agreed impliedly, if not by specific terms, at the time of the consummation of the arrangement, to pay the royalty.

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<sup>10</sup> Attorney General's Letter of Oct. 6, 1917 to the Secretary of War.

### *Save Harmless Clause*

Under the cross-license arrangement of the Manufacturers' Aircraft Association, the "save harmless clause" which was embodied in all government contracts with reference to aircraft during the period of the war, manufacturers were protected against the burden of suits by reason of the possible infringement of patents in connection with the construction of government work. Thus the government had the burden of defending all such violations or providing reimbursement for them in connection with their manufacturer of essential war supplies. The patent owner's only remedy for an infringement against a manufacturer engaged in government contract work was in the Court of Claims. In those cases where the patent was infringed in connection with production of work for other than the government for war use, the remedy of the patentee or owner was in the regular court through the usual channel.

In March 1925, the Attorney General also ruled,<sup>11</sup> that both the Secretary of War and the Secretary of the Navy could enter the contracts with patentees or owners of patents to pay royalties for use of patents on aeroplanes for the United States Government. Also as to patents theretofore used by the government and upon which no royalties had been paid, the Secretaries of both War and Navy might embody such in an agreement in the form of an account stated. Under the latter arrangement the government very properly met a moral obligation at least.

### *Anti-Trust Act Not Violated*

Being the instigator of the Aircraft Manufacturers' Association plan, in order that the production of aircraft for the war might be stimulated, it was quite natural that the United States, through the Attorney General should rule that the Association did not violate the provisions of the Sherman Anti-Trust Act.<sup>12</sup> This opinion said in affect the association which was incorporated under the laws of the State of New York, and the cross license agreements under which it operated on July 24, 1917, was not in contravention of the anti-trust laws of the United States. The opinion could hardly be otherwise because the Wilson Administration as part of its airplane program made an agreement with the Manufacturers' Aircraft Association under which the organization was paid approximately \$1,800,000 for the use of patents under its control.

### *Manufacturers' Aircraft Association v. United States*

The arrangement under the Manufacturers' Aircraft Association, was one in which the specified royalties paid by the United States were divided as follows, 12½% to the Association and the balance to be paid over to patentees in accordance with fixed percentages. It was provided in the arrangement with the government that the latter was to pay royalties on patent devices used on aeroplanes sold to it and made by the United States and which aircraft was used by the govern-

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<sup>11</sup> 34 Op. A-G 447.

<sup>12</sup> Op. A-G 166, Oct. 6, 1917.

ment within the United States. It later appeared that the Federal government had paid between July 24, 1917 and December 31, 1928 to manufacturers from whom the government purchased aircraft or aircraft devices and that such manufacturers were not stockholders or subscribers to the cross-license agreement of the Manufacturers' Aircraft Association. These manufacturers had used patents of the Association and no royalties had been paid for such use. Consequently the Association instituted an action in the United States Court of Claims to recover \$363,600.00 under implied contracts for royalties on 2,216 aeroplanes using patented devices. This case was the *Manufacturers' Aircraft Association v. United States*, decided by the United States Court of Claims.<sup>18</sup>

A formal contract had been entered into between the Association and the United States to continue the arrangement with reference to the patent for a period of seven and a half years from December 1st, 1928. The Attorney General had advised the Secretaries of War and Navy that as to royalties on patents used between July 24th, 1917 and December 1st, 1928 by non-stockholders of the Association and non-subscribers to the cross-license agreement with such Association and which manufacturers had sold to the government for war use, aeroplanes with such patented devices, that payment of royalties could not be authorized by a provision in the formal contract. In place thereof such royalties would have to be paid under an implied agreement to pay such royalties at the time of the consummation of the arrangement back in 1917. Upon invoices submitted by the Association, the Comptroller General approved payment, but later refused to issue a certificate for payment wherever upon the suit was instituted.

The defendant contended that the suit, if any liability existed, should be instituted by the patentees and that claims for royalties on aeroplanes made and purchased after July 25th, 1922 was barred by the Statute of Limitations.

Speaking through Judge Littleton it was held that a claim based upon a contract implied in fact constituted a good cause of action. Also it was decided that the acts and conduct of the party and their relations established an implied contract on the part of the government to pay the plaintiff the royalties sued for. The United States had sponsored the organization and had practically dictated its own terms so that the patents would be made available to it without being forced to become a party to impending infringement suits or condemnation proceedings. Moreover it was held that the action was not based on the infringement of patents but on the theory of an implied contract in fact. The cause of action was held to accrue not upon the delivery date of the aeroplane, but upon the usages established between the parties after the reports upon the planes in question had been made by the United States and invoices rendered thereon by the plaintiff. Meeting the contention that the plaintiff was not the absolute owner of the patent the learned court ruled that the plaintiff not only controlled the patents and had an interest therein but that the actual patentees were parties to the agreement.

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<sup>18</sup> 77 C.C. 481 (1933).

*British-American Patent Interchange Agreement.*

In World War II, the British-American Patent Interchange Agreement of 1941 was of material assistance in the prosecution of the war by the Allied Nations. Under the agreement for the duration of the war, American and British manufacturers were permitted to manufacture goods under British and American patents. Through the reciprocal arrangement the exchange was license free. At the termination of the war the patent rights reverted to the owners thereof. Many devices used in aeronautics were included in the patent pool, the confidential nature of which articles naturally could not be disclosed at that time. In a joint statement by the United States Army and Navy in January 1944, the following comment was made:-

"Under the arrangement, there has been a free flow of patent rights and scientific and technical information. Aircraft, radio and ordinance, particularly, have benefited by this united effort. Great savings have been made in time and money through having specialists in their particular fields contribute their talents and inventions in solving problems that demanded speedy solution in the stress of war."

"The program involves highly confidential equipment that is a major factor in the forthcoming victory. Government contractors under the plan have received, absolutely free in a great number of cases, patented and unpatented ideas of real value to the prosecution of the war."

*Sale of Patented Articles Frees it from Patent Monopoly*

Another suit arising in connection with aircraft manufactured for war purposes but which material was not used because of the cessation of hostilities, in World War I was the case of *Curtiss Aeroplane and Motor Corporation v. United Aircraft Engineering Corporation*.<sup>14</sup> Holding that the sale by a patentee or his assignee of patented articles frees the articles from any monopoly of any patent which the vendor might have possessed, it was ruled that a purchaser has the absolute right to deal in any way he sees fit with property he has purchased. The plaintiff had sold for a consideration of \$4,000,000 to the Imperial Munitions Board of Canada, the right to manufacture aeroplanes with some thirteen patent devices, the patents of which have been issued by the United States. Inserted in the terms of sale was the statement that the aeroplanes to be manufactured by the Board were to "become the absolute property of the British Government". At the close of the war the British Government sold its surplus aeroplanes to the defendant. The plaintiff sought to prevent the defendant from selling such aeroplanes to the United States.

By common law, the court stated that a patent monopoly was not recognized and such monopoly was only created and authorized by Article 1, paragraph 8 of the Federal Constitution under which Congress has the power to promote the progress of science and useful arts by securing for the patentee, for a limited

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<sup>14</sup> 266 Fed. 71 (1920).

time, the exclusive right to their inventions. Consequently when the machines passed to the purchaser they were no longer within the limits of the monopoly. The purchaser has an absolute right to such property unrestricted by time or space. An aeroplane is a decidedly mobile article susceptible of use anywhere in the world and its widespread use was contemplated in the contract for the sale of the use of the right to utilize such thirteen patents in machines to be made by the original purchaser later on the assignor. The aircraft sold had made their contribution for the right to use the patent and therefore such machines are free from the shackles of monopoly.<sup>15</sup>

### *Wing Design Patents*

Fundamental problems in basic design of form and structure of wings were met by such pioneers as Lilienthal, Langley, Wright Brothers and others. Nevertheless later inventors and aeronautical engineers have been endeavoring to increase the lift of wings as well as decrease the drag or friction thereon as an airplane is propelled through the air. In the conventional wing design the continuity of the smooth flow of air on the upper surface of the wings and which boundary layer of air creates a suction lift by reason of the camber or convexity in the wing surface, is interrupted by a turbulent air condition at a point about one-third of the distance back from the leading edge of the wing. Engineers have attacked the problem with a view to delaying the transition from a smooth flow of air to the burbling or eddying current of air, to a point somewhere near the trailing edge of the wing. Such an accomplishment would prolong the suction lift and of course increase the lift of the wing. At the same time the drag or surface friction would be greatly if not actually reduced to a minimum. The result would be a high speed wing design.

Some years ago Handley Page sought to increase the lift of wings at low speed and thus increase the safety co-efficient. To accomplish this, he designed wing slots with the view of breaking up the turbulent air on the upper wing surface and to thus increase the velocity of the airstream. In other words Handley Page contended that the primary object of his invention was to provide a means or a construction whereby the turbulent effect on the upper surface of the forward portion of a wing could be overcome, so that the same lift could be obtained at lower speeds, through having the disturbed airflow smoothed out by reason of an airstream passing from the lower surface of the wing through the wing slot device.

The United States Government in and about the time of World War I entered into an agreement with Handley Page for the use of his slotted wing aeroplane patent. It was provided however that if the patent proved *prima facie* invalid within one year, Handley Page would be required to return one-half of the royalties and payment thereafter would be limited. The patent was found impractical, particularly for safe landing. At the request of the Assistant Secretary

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<sup>15</sup> n. 14.

of the Navy, T. Roosevelt, Jr., the Attorney General in 33 Op. A-G 211 (1922) said:-

"The qualified engineers of this Department are convinced that the structure disclosed in the patent is not such as will accomplish the purpose stated therein, or any useful purpose without further invention and the making of additions not within the present knowledge of those skilled in the art.

The patent to Handley Page, No. 1,353,666 is prima facie invalid because it does not set out and disclose with the necessary sufficiency and particularity required by law, a description of the construction and operation of the device to which his invention relates to enable others skilled in the art to successfully construct and practice the invention."

In other words although the inventor Page may have had an excellent idea, it had not been reduced to a practical basis and other refinements and changes were necessary to justify it being a valid patent.

It is of interest to note that while the Handley Page patent was at one time ruled impracticable, aircraft manufacturers have since produced a wing with a "no-drag wing slots" device. In this type of wing at the usual point of interruption of a smooth airflow, the airflow is speeded up through a so called "*venturi action*" coming through the wing slots, thus increasing the velocity of the airstream right up to the trailing edge of the wing. It is claimed that in this type of wing there is "positive air velocity which insures aileron control at all speeds".

In 1922, a patent was granted to Handley Page for a device for balancing and regulating the lift of aircraft by hinging flaps in order to create slots in the wings. In the case of *Handley Page, Ltd. v. Leech Aircraft, Inc.*,<sup>16</sup> the Circuit Court of Appeals, Second Circuit, held that the Page patent was not infringed by the three-position flaps used in the aircraft by Leech Aircraft, Inc., because such flaps could not be used as ailerons for maintaining lateral stability. Also the court held that insofar as the Handley Page, Ltd., made certain claims under the Page patent which covered the two-position structure embodied in the Stinson Reliant Device, such claims are void for double patenting and also for lack of invention in the light of the earlier U. S. Patent No. 1,139,343.

#### *Invention Must Have Practical Utility*

The Attorney General's opinion in the Handley Page matter expounded some very sound fundamental patent law which should furnish a guide to future inventors and erstwhile patentees. Among other things, the opinion stated in effect that every patent application must state in full, clear, concise, and exact terms a description of the device so as to enable any person skilled in the art or science to which it appertains or with which it is most nearly connected, to make, construct, compound and use the same. Also, although a patentee may have a valuable idea,

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<sup>16</sup> 126 F.2d 267 (1942).

if he does not embody it in practical form, and something more is necessary to make it practicable, his device is not patentable. Finally the opinion in speaking of the term "useful" as contended in the patent law stated as follows:

"When applied to a machine, 'useful' means that the machine will accomplish the purpose practically when applied in industry. It is to be given a practical and not a speculative meaning. It means that the machine will work and accomplish the purposes set forth in the specifications. Even if the machine can be made to accomplish the purpose specified, it is not useful, within the meaning of patent law, if from its inherent nature it will accomplish the purpose only to such a restricted extent as to make its use in industry prohibitive. This has been the interpretation put upon the term in the patent law from the earliest decisions to the present time."

*Elements of Relative Width, Height and Contour  
Of Surface of an Airfoil Are Necessary in a Description.*

The definition of an aerofoil in its commonly accepted meaning as "any sustaining surface", is not broad enough, when used in a patent claim, to embrace the element of relative width and height as well as the contour of the surface of a structure. This question came up in the patent case of *In re Burnelli*.<sup>17</sup> Appealing from the Board of Appeals of the Patent Office affirming the decision of the primary examiner, finally rejecting the appellant's application, Burnelli took his case to the court. The latter held that the applicant's claim for a patent of a particular aerofoil was broader than the described invention and furthermore the invention lacked the element of novelty as it was known to the prior art, and that the term aerofoil was not broad enough to embrace the element of relative width, height as well as contour. The appellant insisted that "aerofoil contour" referred not alone to the contour of the surfaces of the fuselage, but included the production of a useful dynamic reaction, and that, unless the structure had a greater lift than drag it was not considered in the airplane art as an aerofoil. Burnelli in support of his contention submitted a definition of aerofoil adopted by the National Advisory Committee for Aeronautics. Such definition defined an aerofoil as any surface design to be projected through the air in order to produce a useful dynamic reaction. Nevertheless the court asserted as follows:

"If the element of relative width and height, as well as contour of the surfaces, of a structure be an essential part of appellant's invention, then he has not described it in his claim by the use of the word 'aerofoil', as that word is commonly understood.

It is well established that any claim which is broader than the described invention is void; even where that invention is valuable, and could have supported a valuable claim."

The Burnelli invention's distinctive feature is an unusually wide fuselage which is in the shape of a giant aerofoil and thus is an important part of the

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<sup>17</sup> 38 F.2d 891 (1930).

lifting surface of the airplane. In truth the fuselage is a section of a huge wing which is almost the entire structural part of the aircraft.

*"Dry" Crank Case Prior Art-New and Novel Method  
Of Operation are Essential Elements.*

Glenn H. Curtiss at one time alleged that the United States infringed on his patents in producing the Liberty Motor. In a suit instituted in the court of Claims<sup>18</sup> it was decided that the uses made of a Liberty Motor in the form of a dry crankcase was generally and usually in use and that the United States was actually using that feature and consequently no infringement occurred. The court stated at page 325:

"The Curtis patent doubtless served to maintain a substantially dry crank case in an aeroplane motor when the same went into acute angular positions. It did this by the location of a plurality of pumps rather than single ones. This precise thing has been done repeatedly in relation to automobile motors and its application to aeroplanes was publicly discussed and disclosed in advance of the Curtiss patent. Not one but all engaged in the art had resorted to pumps to free the crank case from excess oil, and after a careful analysis of the record the case impresses us, that the teachings of the prior art definitely establish that it was only within the limits of skilled mechanics to adopt existing and old functioning elements to a new condition of use which in its essential element exacted no more than the application of the old system in a modified form without altering in any essential particulars its functioning elements, or introducing into it a new and novel method of operation."

*Life-Pack in a New Container, Prior Art*

A patent granted for a parachute, a "life-pack" for aviators, beneath which a parachute is folded into a sheet of flexible material to form a compact mass and which is opened by a cord extending to the front of the aviator was held to be valid. In *Floyd Smith Aerial Equipment Company v. Irving Air Chute Company*,<sup>19</sup> the plaintiff alleged an infringement of letters patent of such a parachute as above described. The defendant's life-pack contained all the essential features of that of the plaintiffs with the exception that the containers were different in form and construction. The plaintiff's was a flat sheet of flexible material whereas the defendant's container was in the form of a boxlike structure. It was held that the defendant's device infringed that of plaintiff's patented article. In this case the court said:

"The departure by defendant from the infolding sheet of complainant's patent did not result in a change of function or mode of operation, and, indeed, the precise result of compacting the mass was attained that is attained by the sheet of flexible material around the parachute of the patent in suit."

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<sup>18</sup> 75 C.C. 286 (1932).

<sup>19</sup> 276 Fed. 834.

### *Novelty Always an Essential Element*

Notwithstanding the possible utility of a device if it lacks novelty in being known to the prior art it will be rejected. Of course such pronouncement is elemental, and yet in the case of *In re Woolson*<sup>20</sup> this principle had to be again enunciated. The appellant applied for a patent on an aeroplane engine of the internal combustion type and the alleged novel features were in its internal structure. As indicated the court held that there was no novelty as the ideas were known to the prior art.

Thus it is found that even in the comparatively new science of aeronautics the fundamental requirement of "novelty" as to patents, find frequent expressions in aeronautical patent law.

### *Minimum of Patent Litigation*

During the period of its existence, the Manufacturers Aircraft Association has made a substantial contribution to aeronautical patent jurisprudence. Through its Cross-License Agreement of many years standing, the adoption of a specialized procedure to encourage arbitration of patent disputes and through its Patent Research Division's efforts to minimize infringement claims, much has been accomplished.

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<sup>20</sup> 58 F.2d 434 (1932).