
United States Circuit Court of Appeals

FOR THE THIRD CIRCUIT.

IN EQUITY No. 2545,
March Term 1920.

BETHLEHEM STEEL COMPANY,
Defendant-Appellant,

CARNEGIE STEEL COMPANY,
Intervening Defendant-Appellee,

against

CHURCHWARD INTERNATIONAL STEEL
COMPANY,
Plaintiff-Appellee.

**BRIEF ON BEHALF OF CHURCHWARD IN-
TERNATIONAL STEEL COMPANY,
PLAINTIFF-APPELLEE.**

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STEEL COMPANY,
Plaintiff-Appellee.

In Equity,
on Patents,
845,756 and
868,327.

**BRIEF FOR CHURCHWARD INTERNA-
TIONAL STEEL COMPANY, Appellee.**

Statement.

This is an appeal from a decree entered on the decision of his Honor Judge Dickinson in the court below, finding the Bethlehem Steel Company to have infringed, and sustaining as valid, claim 1 of United States Patent 845,756 issued March 5, 1907, and claims 1 and 3 of patent 868,327 issued October 15, 1907, both

issued to James Churchward and owned by plaintiff-appellee under assignments of record.

In the court below the defendant Carnegie Steel Company was permitted to intervene as to a subsidiary issue between the parties on a contract dated June 10, 1914, whereby the plaintiff had transferred to the Carnegie Steel Company rights under the patents in suit for steel thereafter to be made and used for war materials. The contract issue then raised was entirely subordinate to the main issues involved and has now been eliminated from the issues on appeal.

For convenience, patent in suit 845,756 filed November 1, 1906, and issued March 5, 1907, will be hereinafter referred to as the "first patent", and patent in suit 868,327 filed April 12, 1907, and issued October 15, 1907, as the "second patent". Plaintiff-appellee will be referred to as the "Churchward Company", defendant-appellant as the "Bethlehem Company" and intervening defendant-appellee as "Carnegie Company".

This action was commenced by bill filed October 29, 1915, alleging infringement by Bethlehem Company. The delay in the progress of the case since that time has been due to an agreed postponement pending the decisions by the United States Supreme Court in *Curtis vs. Cram* and *Marconi vs. Simon*, 246 U. S. 28, 46; which decisions have also eliminated here the defense up to that time urged by Bethlehem Company of its statutory release on account of sale of practically all the infringing material as projectiles to the Federal Government.

The trial record was made in open court before Judge Dickinson in May 1917 and in September 1919. On the testimony of the witnesses appearing in person, on a full consideration of the record made and all defenses raised, and on extended argument, the court below handed down its decision October 30, 1919, in favor of the Churchward Company. This decision is comprehensive, analytical and complete in that each defense raised by the Bethlehem Company is considered and decided.

SUBJECT MATTER.

The patents in suit relate to improvements in the composition of alloyed steels.

This subject matter is, of course, of vast importance. Undoubtedly no other material approaches the utility and value of steel in the progressing needs of the world. Moreover, this subject matter constitutes a highly technical and complex art which draws its advancing knowledge not from a single science alone, but from a refined coordination of metallurgy, chemistry and physics. It is to be borne in mind also that the manufacture of steel is world-wide, and that progress resulting from experiment and research is made in this art not casually but by the painstaking efforts of specialists who give their lives to the problems. It may be noted that perhaps no other material loosely identified under a single generic term includes such a wide range of different chemical and

physical compositions as steel. That this is the fact becomes, of course, clear when it is remembered that all the metal elements known (including copper, nickel, molybdenum, sulphur, phosphorus, tungsten, cerium, thorium, manganese, sodium, titanium, aluminum, vanadium, silicon, chromium, arsenic, cobalt, boron, platinum, uranium, tellurium) are potentially capable of use in the making of steel, and that these elements may be used in practically an infinity of different proportions and combinations.

THE CLAIMS IN SUIT.

The attention of the Court is primarily directed to the claims of the patents in suit found to be infringed. These are:

“An alloy containing the following metals in about the proportions given, namely: steel, which contains from 0.2 to 0.6 percent. of carbon, from 90 to 95 parts; nickel, from 1 to 3.5 parts; chromium, from 0.5 to 2 parts; manganese, from 0.15 to 0.7 parts, and vanadium, from 0.05 to 0.25 parts”

which is claim one of the first patent, and

“An alloy composed of steel combined with small proportions of nickel, chromium vanadium and manganese.”

“An alloyed steel containing the following alloying metals in about the proportions given, namely: steel, containing .20

per cent. to 1.25 per cent. carbon, from 91.50 to 98.30 parts; nickel from 1.00 to 3.50 parts; chromium from .50 to 2.50 parts; vanadium from .05 to 1.50 parts, and manganese from .15 to 1.00 parts"

which are respectively claims 1 and 3 of the second patent.

Notwithstanding that appellant pretends to disparage these claims as indefinite, the fact is immediately apparent that the claims are precise, readily understandable, and, *when viewed from the complexity of the art and infinite range of permissible proportions of permissible elements, decidedly narrow*. In passing on the questions of validity and the other defenses herein raised, it is pointed out that the court must in all cases refer for definitions of the Churchward inventions to *the claims in suit*, and must exercise caution in accepting the casual and loose statements by appellant as to the "patented steel" and "what Churchward did".

PRIOR LITIGATION.

Both patents in suit come before this court with their prima facie presumption of validity reinforced by corroborating facts and circumstances somewhat in the nature of public acquiescence, and somewhat in the nature of prior adjudication. That is to say, in 1910 a bill was filed by the present plaintiff against the Carnegie

Company alleging infringement of both of the patents here in suit, and that action was long and vigorously contested. Prolonged testimony was taken under the old equity rules, and the Carnegie Company in its endeavor to prove invalidity not only searched the prior published art, as has the Bethlehem Company herein, but took the testimony of steel makers and experts in the United States, France, Germany and England. *Among the witnesses then examined (Vol. 1 Rec. p. 178) were S. S. Wales of the Carnegie Company, A. L. Colby, J. A. Mathews, Ehrenfried Corleis, Chief Chemist of the Krupp Works, Fritz Ritterhousen, Metallurgical Engineer for Krupps, Leon Guillet, F. W. Harbord, J. Kent Smith and E. R. Sankey, all of whom by indirection through their published statements are now offered by the Bethlehem Company in its defense.* The litigation with the Carnegie Company did not go to final hearing, and accordingly the patents then were not judicially passed upon. Nevertheless the outcome of that litigation is extremely significant. The Carnegie Company failed in its exhaustive investigations to find anything to invalidate the Churchward patents, and therefore, knowing the patents to be valid the suit was settled before final hearing, upon payment to the Churchward Company of \$275,000. The facts above recited were offered herein in rebuttal as evidence tending to prove the *utility* of the steel patented to Churchward. The evidence was admitted by the lower court for this purpose, as appears from Judge Dickinson's decision, and while it is believed that this evidence cannot fail also to be persuasive of the value and validity of

the patents in suit, it must conclusively and for all time establish that the Churchward steel has been *useful*.

ISSUES.

INFRINGEMENT ADMITTED.

Notwithstanding the general metallurgical complexities otherwise involved, the issue here is considerably narrowed by the admitted fact of infringement of all claims in suit by the Bethlehem Company. It is distinctly surprising to find the appellant seeking to raise the question of infringement under Paragraphs 5, 6, 7 and 8 of its Assignment of Errors, (Rec. Vol. 1, p. 413), and mentioning the point again in its brief on appeal, pp. 50 and 57. *It is emphatically reiterated that infringement has been admitted and is now an indisputable, proven fact.* Prior to the trial interrogatories were filed by the plaintiff and sworn answers made thereto on behalf of Bethlehem Company, defendant. Interrogatory No. 8 is directed to claim 1 of the first patent and reads:—

“Interrogatory No. 8: Has the defendant, between the 29th day of October 1909, and the 29th day of October 1915, manufactured for any purpose other than for use as war material, or between the 29th day of October 1909, and the 23rd day of June, 1914, manufactured for use as war material for sale to the United States Government or otherwise,

an alloy containing the following metals in about the following proportions by weight: steel containing from 0.2 to 0.6% of carbon, from 90 to 95 parts; nickel, from 1. to 3.5 parts; chromium, from 0.15 to 0.7 parts, and vanadium, from 0.05 to 0.25 parts? A. Yes."

Interrogatory No. 7 is directed to claim 3 of the second patent and reads:

"Interrogatory No. 7: Has the defendant, between October 29, 1909, and October 19, 1915, manufactured for any purpose other than for use as war material or between October 29, 1909, and June 23, 1914, manufactured for use as war material for sale to the United States Government, or otherwise, alloyed steel containing the following alloying metals in about the following proportions by weight: steel containing .20 per cent. to 1.25 per cent. carbon, from 91.50 to 98.30 parts; nickel, from 1.00 to 3.50 parts; chromium, from .50 to 2.50 parts; vanadium, from .05 to 1.50 parts, and manganese from .15 to 1.00 parts? A. Yes.

Interrogatories Nos. 4 and 5 are directed to claim 1 of the second patent and read:

"Interrogatory No. 4: Has the defendant, subsequent to October 29, 1909, and prior to October 29, 1915; manufactured for any purpose an alloy composed of steel combined with small proportions of nickel, chromium, vanadium and manganese? A. The defendant

has not manufactured any steels which in addition to the iron, contained only manganese, nickel, chromium and vanadium; it has, however, manufactured steel containing small proportions of manganese, nickel, chrome and vanadium."

"Interrogatory No. 5: If the answer to the last interrogatory is in the affirmative, give the proportions by weight of the elements employed and the purpose for which the steel was manufactured. A. It has manufactured and sold (1) steel as merchant material containing manganese from .37 to .60, nickel from 1.45 to 3.29, chromium from .60 to 1.26, vanadium from .11 to .24; (2) and steel as war material containing manganese from .2 to .6, nickel 2.25 to 2.36, chromium .79 to 2.60 vanadium .10 to .35."

In the latter answers the Bethlehem Company thus at first denied infringement of claim 1 of the second patent.

It was at this stage of the case that the defendant itself introduced testimony as to the tonnage of steel in controversy and voluntarily showed that some four thousand tons had been supplied the Federal Navy Department as projectiles (Rec. Vol. 1 p. 43). Having denied by its answer to interrogatories that it had made *any* steel within claim one of the second patent, this evidence necessarily meant that the projectile tonnage was included in the only infringement it admitted, namely, of claim one of the first patent and/or claim three of the second patent. Moreover, it was on account of this projectile

steel having been sold the Government, that the Bethlehem Company gained a respite of two years in the trial of this case, pending the decisions of the Supreme Court in *Marconi vs. Simon and Cramp vs. Curtis*. Therefore appellant cannot be permitted with impunity to reverse its position at this date and deny that this projectile steel is covered by claim one of the first patent and/or claim three of the second patent. Nor does its present admission of infringement of claim one of the second patent excuse the appellant in its present denial of infringement of claim one of the first patent and claim three of the second patent. Not on the same record can defendant admit, as it did admit below, we have infringed claim one of the first patent and claim three of the second patent, and the steel in controversy includes four thousand tons sold the Government as projectiles (Interrogatories 7 and 8, Vol. 1 Rec. p. 28, Acker, Vol. 1 Rec. p. 43 et seq., Statements of counsel, Rec. pp. 48-50), but that we have not infringed claim one of the second patent (Interrogatory 4, Vol. 1, Rec. p. 27); and then say, as it does now on appeal, the steel in controversy infringes claim one of the second patent, but does not infringe the other claims in suit.

Of course, plaintiff below urged that the denial of infringement of claim one of the second patent by answer to Interrogatory 4 was inadequate and evasive for the reason that by defendants own witnesses, it had been established that the other elements (silicon, phosphorus and sulphur) were *impurities in negligible percentages, not intentionally present, not added and not beneficial.*

But now the sole effect of appellant's position is to enable the plaintiff to accept the sworn answers to Interrogatories 7 and 8 that it has infringed claim one of the first patent and claim three of the second patent, and the binding statements of its counsel now made that "of course, all of this nickel, chrome, vanadium steel infringes claim one of the second patent in suit (Brief p. 57).

Therefore, infringement of all the claims involved having been contended by plaintiff, having been conceded by defendant, and having been found by the District Court, that fact is removed from the controversial issues on this appeal.

VALIDITY.

Both patents are now assailed as invalid on three grounds which may be classified as,—

- First, the patents are anticipated,
- Second, they are obvious, or lack invention,
- Third, they are inutile, which is to say that the patented steel is not useful.

Before combating specifically the issues thus raised, it is believed that the court will especially desire to gain a knowledge of the then state of the art and to reach, if possible, a contemporaneous point of view from which the character of Churchward's inventions can be fairly estimated, and for this purpose it is not only of interest, but it is believed will be extremely helpful, to examine the admissions and statements regarding the art as made in the various publications set up by the defense herein.

In 1906 and 1907, the filing dates of the Churchward patents the steel art was in a compound stage of development. On the one hand, great progress had been made in the improvement of steel composition and manufacture, with the result that the industry had become to an extent stabilized and the various manufacturers were then producing a variety of standard steels for a corresponding variety of well known uses. On the other hand, a few of the most advanced practical and scientific workers engaged both in the theoretical and manufacturing branches of the business, were beginning to realize the tremendous potential possibilities for improvement in the composition of alloyed steels for special needs. These leaders had been gradually supplied by the contemporaneous development of chemistry with a great many new metal elements, and were then beginning to experiment with such elements and to discuss the same, for the manufacture of special steels.

THE STATE OF THE ART.

This stage of the art is clearly indicated from the quotations following, Vol. 2 of the Record, wherefrom clearly appears the inchoate and vague knowledge then available with respect to the more complex alloyed steels and the recognition of the necessity for further study and research to solve the intricate and highly technical problems then facing metallurgists.

Harbord and Hall, Rec. p. 79 and p. 103.

“Iron alloys readily with most metals, so that the number of steels of this nature

which can be produced is necessarily large, moreover it has been found that *in many cases comparatively small difference in the proportion of the added metal makes a very considerable difference in the properties of the resulting special steel. Hence it is easy to see that the field is a very large one, and one that has not yet been fully developed*".

"The influence of Vanadium on steel, so far as published results go, has not been systematically worked out in the same way as that of Manganese, Silicon, and Nickel, but from the results given it will appear that it has a most marked effect on the physical properties of the metal, *and it offers a promising field for research*".

The Engineer, Rec. p. 157.

"The general question of whether it is worth the manufacturer's while to go wholeheartedly into the business of pressing the rarer metals of a promising kind into his service is demanding attention. Recent developments in the metallurgy of steel show that possibilities lie that way. One difficulty is the securing of men to whom the many-sided responsibilities of such a post could be entrusted. The men required need not have encyclopaedic knowledge, but must know where it is and how to quickly assimilate the helpful portion of it. They need not claim first-hand acquaintance with the multifarious operations of a modern steel works, but must know how to utilize them to their

purpose with as little disturbance as possible. Men more or less approximating such are utilized for other purposes in both Germany and America, and are found to be worth their salt. The tendency in England is to throw such work on to the shoulders of a man who already earns all he gets in some other capacity. The problem, however, cannot be begged in that manner".

Guillet, Rec. p. 178.

"Vanadium steels have as yet not been the subject of systematic investigation".

Wiener, Rec. p. 237.

"He was fully convinced that vanadium, used in small quantities, would have very startling results, and he *believed that steel experts were as yet only on the threshold of its ultimate possibilities.*"

Stafford, Rec. p. 331.

"I will say, however, that the use of vanadium so far has been confined to European practice, for the reason that the supply has been very limited, and was considered more of a laboratory curiosity than a possible factor destined to revolutionize the process of steel manufacture."

Taylor, Rec. p. 343.

"Silicon, manganese, nickel, chromium, vanadium, tungsten, molybdenum, titanium,

arsenic, aluminum and cobalt have been added to steel in various combinations with a view to producing desirable qualities in the metal, and their effects on the physical characteristics of the metal under a variety of thermal treatments have been the subject of careful study.

The great number of the variables, however, together with their wide range and the difficulty of controlling their variation, has thus far prevented the laws governing the subject from being accurately determined."

Pratt, Rec. p. 350.

"Some of the metals—as nickel, chromium, and tungsten—are now entirely beyond the experimental stage and are well established in the commercial world as definite steel-hardening metals, and new uses are being constantly devised for the different steels, which are causing a constant increase in their production. Others, as molybdenum and vanadium, though they have been proved to give certain positive values to steel, have not been utilized to any large extent as yet in the manufacture of molybdenum or vanadium steel, partly on account of the high cost of the ores containing these metals."

From these frank admissions not, it will be noted, collected by plaintiff, but on the contrary taken from the very publications which the defendant relies upon as most pertinent in the whole published literature of the world, there clearly appears a definite recognition at the

dates thereof of (1st) the fact of the problem, that is to say, an appreciation that the art was then in a fluxing condition, (2nd) a recognition and acceptance of the complexity of the problem, and the difficulties to be encountered prior to the achievement of success in solving the problem. (3rd) an appreciation of the value of improvements in alloyed steels if and when made, and (4th) a most complete refutation and denial of appellant's present easy assumption that the field of invention was exhausted and that all of the elements, all of the combinations, and all the proportions thereof were "old, obvious, and well known".

THE PATENTS IN SUIT WERE NOT ANTICIPATED.

For convenience, the claims in suit are here quoted:

"1. An alloy containing the following metals in about the proportions given, namely: steel, which contains from 0.2 to 0.6 per cent of carbon, from ninety to ninety-five parts; nickel, from one to 3.5 parts; chromium, from 0.5 to two parts; manganese, from 0.15 to 0.7 parts, and vanadium, from 0.05 to 0.25 parts."

"1. An alloy composed of steel combined with small proportions of nickel, chromium, vanadium and manganese."

"3. An alloyed steel containing the following alloying metals in about the propor-

tions given, namely: steel, containing .20% to 1.25% carbon, from 91.50 to 98.30 parts; nickel, from 1.00 to 3.50 parts, chromium, from .50 to 2.50 parts; vanadium, from .05 to 1.50 parts, and manganese, from .15 to 1.00 parts."

It will be noted that these claims are brief, concise, definite and readily understood. Notwithstanding their brevity, however, the Bethlehem Company, after searching the art of the world, now presents Vol. 2 of the record, a compilation of 381 pages from the published records (and nothing from the practical records), in an endeavor to show an anticipation of the compositions specified in the sixteen lines of the three claims in suit. *Moreover, it is extremely pertinent that the defense has not presented, or explained the failure to present, witnesses in person who did, or who knew, what the publications set up state as matters of rumor or prophesy.* So far as appears herein, defendant's publications may all be grouped under the classification of paper patents. The disclosures were sterile, and no evidence whatever has been produced sufficiently showing a single actual prior alloyed steel having a composition anticipatory of the steels specified by the claims in suit.

Apparently in an endeavor to overcome this deficiency, the Bethlehem Company produces Dr. Henry M. Howe as an expert witness. Here again it is of immediate interest that Dr. Howe was originally cited in defendant's answer as one having prior knowledge of the Churchward patented inventions, but that he was withdrawn

from the answer by amendment, and the attempt is now made to show by indirection as an expert what Dr. Howe was unable to show as a fact witness. Appellant now urges that the failure to cross-examine Dr. Howe at the trial wreathes the learned Doctor with a halo of omniscience. The fact is of course that Dr. Howe's expert opinion is entitled only to as much respect as the sources of information relied on by him in support of his opinion. These sources are the prior art, and subsequent art, set up by defendant's answer and constituting Vol. 2 of the Record, and tabulated by the witness at Vol. 1, Record p. 153. THE SUFFICIENCY OF THE DEFENSE OF *lack of novelty* MUST STAND OR FALL ON THOSE PUBLICATIONS. That they are not sufficient, can be now demonstrated.

INACCURACY AND INSUFFICIENCY OF HOWE TABULATION.

In his effort to show prior nickel chrome vanadium manganese steels, Dr. Howe first cites French Patent No. 336,532 (Rec., Vol. 2, p. 73) as steel with "vanadium 0.4 to .80, carbon 0.18 to 0.30, nickel 3. to 4., and chromium 0.40 to 0.80." Turning to the patent itself it will be noted that the invention relates to a *process* of manufacture of armor plates, and that in the whole specification there is but a single paragraph mentioning a composition in the following language:

"The metal employed has a carbon content which is relatively high and quite common in practice; it varies from 0.180 and 0.300. The content in foreign metals varies between 3 and 4 per cent. of nickel and does not exceed 0.40 to 0.80 per cent. of chromium,

thus producing a steel which can be easily cast. * * Moreover all or a part of the chromium may be replaced by the following bodies: titanium, tungsten, molybdenum, or vanadium, the ferro-alloys of which are now being generally manufactured."

Dr. Howe's lack of frankness in thus *combining* the elements carbon, nickel, chromium and vanadium, and none of the others, to instance a steel composition including chromium 0.40-0.80 with also vanadium .4-.8 is equalled only by the inaccuracy of his calculation and the misleading character of the inference he attempts to draw therefrom. The patent, moreover, is entirely irrelevant to the Churchward claims for the reason that *the manganese content as specified by Churchward in stated proportions, is entirely omitted by the reference.* Further than this, the extremely vague and loose statement in the French patent that "all or a part" of the chromium may be replaced by the following bodies, "titanium, tungsten, molybdenum or vanadium" cannot, it is submitted, constitute under any reasonable rule an anticipation in the slightest degree of the patented steel of different composition and improved quality which was disclosed to the art fully and beneficially for the first time by Churchward.

Dr. Howe next cites the United States patent to Schneider, No. 925,659 (Vol. 2 Rec., p. 35). This is tabulated by the witness (Vol. 2, Rec., p. 153) as disclosing *September 1, 1906*, a steel including vanadium, carbon, nickel and chromium with manganese not specified. The patent

to Schneider was not set up in the original or any amended answer of the Bethlehem Company, was not specified in its bill of particulars of references to be relied on, and its admission or testimony regarding the same was duly objected to by the plaintiff on this ground (Vol. 1, Rec., p. 163). Dr. Howe treated the Schneider patent as an anticipating reference as of September 1, 1906. We assume that this date was not given by the witness to mislead, but was his voluntary, though mistaken, assumption that the United States patent dated from the filing date of the French Patent No. 397,188, a certified translation of which appears (Rec. Vol. 1, p. 331). On this appeal appellant urges only that Schneider was a *prior inventor* of the thing patented to Churchward and relies upon Schneider's French patent as evidencing the date of invention of the thing disclosed in Schneider's United States patent. But it is respectfully insisted that the patent is utterly irrelevant and immaterial herein for any purpose. It was filed August 2, 1907, and issued June 22, 1909, long after the proved dates of both the Churchward inventions. The French patent, on the other hand, was applied for September 1, 1906, delivered September 2, 1907, and published October 26, 1907. Both the delivery date and the publication date are thus likewise too late to be of the slightest affect or relevancy against Churchward. *Consequently, even assuming identity between the French and United States patents and assuming that the French application date was September 1,*

1906, the fact of the then knowledge of the subject matter by Schneider in France can constitute no bar whatever to the validity or scope of the Churchward patents in suit, Section 4923 of the Revised Statutes (Section 9469 Compiled Statutes) specifically excludes such foreign knowledge as a bar to United States patent. The Statute reads:

"Whenever it appears that a patentee at the time of making his application for the patent believed himself to be original and first inventor or discoverer of the thing patented, the same shall not be held to be void on account of the invention or discovery of any part thereof having been known or used in a foreign country before his invention or discovery thereof, if it had not been patented or described in a printed publication."

The French application to Schneider, at its filing date, obviously constituted neither foreign patenting nor foreign publication, and the disclosure dates both of Schneider's French and United States patents are obviously too late to be competent herein.

Furthermore, and conclusively answering the defense of *prior invention*, it appears from the certified copy of the file wrapper of Schneider's United States Patent 925,659 (Vol. 1, Rec., p. 295) that Schneider's claims were rejected, *inter alia*, on patent to Churchward, 845756, the first patent in suit, and the rejection so far as dates were concerned acquiesced in by Schneid-

er. Not only this, but in Schneider's second United States Patent No. 934,697 (Defendant's Exhibit F, Vol. 1, p. 315) it appears in the file wrapper that Schneider claimed as follows: "A steel alloy for armor plates containing carbon 0.3 to 0.5 per cent, manganese less than 0.35 per cent, nickel 3 to 5 per cent, chromium 0.5 to 1.4 per cent, vanadium less than .05 per cent, and the remainder of iron", and that this claim was rejected on the first Churchward patent in suit *and the rejection acquiesced in by Schneider*. It indisputably follows therefore that Schneider in his United States patents denied himself to be the inventor prior to Churchward, and on the contrary specifically conceded priority to Churchward as the inventor of nickel, chrome, vanadium, manganese steel. Yet the patent to Schneider is urged at greatest length in appellant's brief (pp. 28, 29, 30, 31, 32 and 33).

Dr. Howe, as a third example, cites the book of Harbord & Hall, 1904, on "The Metallurgy of Steel", Vol. 2, Rec., p. 77, and tabulates this reference as disclosing an anticipatory steel with "usual" percentages of vanadium, carbon, manganese, nickel and chromium. Turning to the document itself, there appears only one sentence mentioning these elements and reciting.

"As regards the material now used for armor plates, each manufacturer has a particular metal which he regards as best for his purpose; but generally, it is a special steel with varying percentages of such metals

as nickel, chromium, manganese, vanadium and tungsten".

It is this statement of the author's belief unsupported by corroborating facts, and which, it will be noted, mentions the elements only *separately* (and by inference also others which may be molybdenum, copper, cobalt, sodium, uranium, titanium, &c.,) that the Bethlehem Company permits its witness to convert into a *composite alloy* embodying "usual" percentage of a limited number of the elements *in combination*. This publication, if it discloses anything of legal effect, discloses only the author's *opinion* regarding the practice of manufacturing special steels which may have been distinctive types, such as plain nickel steels, plain chromium steels, plain manganese steels, plain vanadium steels, plain tungsten steels, or plain other element steels, and in which the percentages may have varied through an extreme and unsuggested range. The reference wholly fails to set forth a steel embodying a composition of any definite elements present in any definite percentages, and of course not even purports to teach the art the manufacture of *any* steels.

Dr. Howe for a fourth instance, cites Mr. Wiener, Vol. 2, Rec., p. 238, as publishing a steel with "usual" percentage of vanadium, carbon, manganese, nickel and chromium. Turning to the article, it appears that in the casual and apparently extemporaneous discussion following the delivery of a paper of Dr. Guillet of Paris before the Iron & Steel Institute, Mr. Wiener commented as follows:

"Dr. Guillet was evidently of opinion that nickel vanadium steel or nickel chromium vanadium steel would be a grand material for armorplates, and appeared to think that such would come into use for this purpose".

This alleged anticipatory reference therefore deals not with a steel, but with an *opinion*; that is to say Mr. Wiener *thought* that Dr. Guillet *thought* etc. Mr. Wiener was, moreover, interested in the exploitation of vanadium as managing director of "New Vanadium Alloys, Ltd." and has been referred to as a "promoter" and "a patent medicine propagandist" by appellant's witness herein, (Vol. 1, Rec. p. 76, 118). Finally even Mr. Wiener's assumption of Dr. Guillet's opinion was wholly indefinite and *without the recitation of any percentages* whatever for the alloying elements and *without the mention or suggestion of any manganese*. It is significant that appellant's counsel are driven to urge that the Churchward patents in suit are invalid in view of this opinion of an opinion, vague, indefinite, non-anticipatory and forgotten.

Dr. Howe tabulates Mr. Fay's article in "The Automobile" of June, 1906 (Vol. 2, rec., p. 337) as a fifth example of steel combining "usual" percentages of vanadium, carbon, manganese and nickel with chromium from .5 to 2.5. In the course of an article relating to desirable qualities of metals for use in automobile construction this paragraph appears:

"Chromium from $\frac{1}{2}$ to $2\frac{1}{2}$ % may be used in steel in conjunction with nickel or other-

wise, and as an intensifier chromium ranks carbon, and besides hardening, as does carbon, chromium prevents the crystalline formation so detrimental to strength and pliability. Chromium is better in all probability than vanadium for these purposes, *but there seems to be no impropriety* in the use of both chromium and vanadium, with or without nickel”.

It is difficult to resist the belief that Dr. Howe's distortion of what Mr. Fay says *may not constitute an impropriety* into a disclosure and publication of a pre-Churchward alloyed steel comprising the elements named and the proportions specified in the claims in suit, depends upon Dr. Howe's post-Churchward knowledge and interest rather than upon an accurate and unprejudiced statement as to the true disclosures of the references set up. No percentages whatever of the alloying elements other than chromium appear in this publication. *No suggestion whatever is there made of the presence of manganese*, and under no interpretation can there be spelled from the reference an instruction to the art of the composition specified in the claims in suit and first beneficially taught by Churchward.

Dr. Howe likewise summarizes the statement of Mr. Stafford (Vol. 2, Rec., p. 331) as showing prior steel including “usual” percentages of vanadium, manganese, nickel and chromium. Here again, however, the article itself makes no reference whatever to percentages of the alloying elements, *does not in any wise include man-*

ganese or carbon, and expresses only an *understanding* of Mr. Stafford as follows:

"I understand that in France there is a car on which is pronounced unbreakable in its material parts. * * These steels are known as vanadium, nickel vanadium and nickel chrome vanadium steels. * *"

It will be obvious that the "understanding" of the author may as well have been based on fiction as on fact, and that the statement is neither evidence of prior use or knowledge in this country or abroad of any steel, much less the patented steels comprising the alloys claimed by Churchward in definite, precise and relatively narrow limits.

The seventh instance of a vanadium nickel chromium steel cited by Dr. Howe is taken from patent 807,826 to Heroult. Here the expert witness supplements the reference by joining in combination elements not so joined in the patent and attributing percentages "as desired" in place of unknown and unsuggested percentages. The Heroult patent is for a *process*. All of the claims are directed to a process and in the entire specification there is but a single sentence referring to alloying elements as follows:

"Equally well there may be added at a suitable moment alloys or metals—such as ferro manganese, ferro nickel, ferro chrome or chromium, nickel, tungsten, molybdenum, vanadium, etc., if it is desired to obtain steel containing such metals."

Here again the language now relied on by the defense is utterly vague and meaningless. No compositions, that is combinations of elements, are suggested, and no percentage ranges of the alloying elements are disclosed. The British patent corresponding to this United States patent 807,826, is No. 7027 of 1903 introduced by defendant (Vol. 2 of Rec., p 65). In the provisional specification of the British patent the statement is made.

“Any other material may be added which may be necessary to produce any particular kind of steel such as an alloy or metal.”

The offer of either of these patents as a defense to the validity of claim 1 of the first patent and claims 1 and 3 of the second patent in suit is ridiculous. *If the scattering statement therein appearing could serve to anticipate and render invalid the Churchward claims relied on, then the statement might by identic reasoning and with equal propriety foreclose forever the field of invention in the manufacture of all alloyed steels.*

The eighth example cited by Dr. Howe is taken from the article of Mr. Taylor of January 20, 1906 (Vol. 2, Rec., p. 341) based on a statement therein appearing

“It (vanadium) has been added to both chrome-nickel and silico-manganese steels with good results.”

Contrary to Dr. Howe's tabulation, no percentages of chrome or nickel are given or suggested, and the presence of manganese is not even referred to. The vagueness and inadequacy of Mr. Taylor's statement, its incompetence as a defense herein, and the author's own characterization of the state of the art can best be understood by a second quotation from page 343 which states:

"Silicon, manganese, nickel, chromium, vanadium, tungsten, molybdenum, titanium, arsenic, aluminum and cobalt have been added to steel in various combinations with a view to producing desirable qualities in the metal, and their effects on the physical characteristics of the metal under a variety of thermal treatments have been the subject of careful study. *The great number of variables, however, together with their wide range and the difficulty of controlling their variation has thus far prevented the laws governing the subject from being accurately determined.*"

The last example of a pre-Churchward nickel chromium manganese vanadium steel cited by Dr. Howe is taken from United States Patent to Wales, filed August 1, 1906 and issued September 22, 1914 (Vol. 2, Rec., p. 37). This patent is not cited in the answer of the Bethlehem Company and was not mentioned in its bill of particulars specifying the publications and patents upon which it intended to rely. Due objection on this ground was made to the admission of the patent and the

certified copy of the file wrapper (Vol. 1, Rec., p 164). The patent speaks as a *disclosure*, of course, only as of its *issuance* date which is September 24, 1914, but appellant's argument is that the patent constituted a reduction to practice as of its filing date, August 1, 1906, and that the patentee was a prior inventor. In the answer, however, a Samuel S. Wales, *without address and without further identification as required by statute* (Rev. Stat. 4920 Comp. Stat. 9466) was cited as an individual having prior knowledge of the inventions covered by the Churchward patents. No proof has been given or offered that the patentee of patent 1,111,709 is the same person as the Samuel S. Wales set up in defendant's answer, and furthermore the patent standing alone, is not competent evidence of any prior knowledge on the part of the patentee. Mr. Wales was not called as a witness in this case and his absence was not explained. It is significant, furthermore, that the patent appears on its face to have been assigned to the Carnegie Company and that the patentee testified at great length as a witness in the prior litigation on these patents between the present plaintiff and the Carnegie Company, and that, *despite the now alleged prior knowledge of Mr. Wales, his assignee paid to the plaintiff more than a quarter of a million dollars and recognized the validity of the Churchward patents.*

It is pointed out also that the Wales patent is objectionable on other grounds. The patent specifies the radically high proportion of nickel from 5. to 12. per cent., which is far in excess of the percentage ranges for this element as specified in

the claims of the patents here in suit, and it recites a too low chromium content from .1 to .25. *It cannot meet the terms of any claim in issue and consequently cannot evidence priority and identity of invention by Wales.* Moreover, since the patent became public only in 1914, the composition set forth in the patent may not be considered the basis for the slightest modification or amplification prior to that date. It must indisputably follow that the application is totally insufficient to establish prior invention of the thing claimed by Churchward.

The Wales patent, however, does afford an interesting commentary on the correlative arguments urged by appellant to the effect that it was obvious and natural to "add" vanadium to previous nickel steels and chrome steels. Mr. Wales in the introduction to his specification cites his familiarity with the composition of Krupp armor plate having the content of carbon .26, manganese .35, nickel 3.75, chromium 1.70, and in attempting to improve such steel he did not merely "add" vanadium, but on the contrary greatly *increased the nickel content and materially lowered the chromium content and included and claimed tungsten*, and he thereby produced, what may be assumed from the failure of the defendant to prove otherwise, an absolutely worthless result.

Appellant's brief (p. 36) urges anticipation of the patents in suit by prior patent to Churchward, 832,773, issued October 9, 1906. Apparently this earlier Churchward patent was not deemed of sufficient interest to be tabulated by

the eminent Dr. Howe. As the point is now raised, however, plaintiff is quite prepared to make response. Churchward in his earlier patent disclosed and claimed only a composition including tungsten, and including nickel 4. to 6. (in excess of that specified in the claims relied on) and vanadium .25 to .50. That patent has not been infringed, and no more does it anticipate.

On the references above identified, the defense of invalidity of the patents in suit must stand or fall. This court is well aware of the danger in accepting carefully hand-picked excerpts of publications divorced from their context. Nothing less than the most painstaking study, *in extenso*, of Volume 2 of the record can be fairly used as a basis to gauge appellant's agreement. Nevertheless, it is respectfully submitted that if the tabulation of defendant's expert, Dr. Howe, (Vol. 1, Rec., p. 153), as above discussed represents the most pertinent compilation of alleged anticipating steels of which the published art of the world is susceptible, then the clear novelty of the inventions made by Churchward is demonstrated.

When Dr. Howe is permitted to testify that the Schneider patent, issued in 1909 on an application filed August 2, 1907, evidences prior invention of a vanadium nickel chromium manganese steel although the file wrapper indicates the practical concession of priority to Churchward by Schneider, and although the patent moreover is made irrelevant by Statute; and when the witness departs from the record to supply "usual" percentages to alloying elements,

some mentioned and some not mentioned by Harbord & Hall, Wiener, Fay and Stafford; and when he joins *in combination* elements *not mentioned in combination*, and ascribes percentages "as desired" to percentages not given by Heroult; and when he again supplements a phrase of Taylor with the specification of "usual" percentages, and with the addition of an unsuggested manganese; and when he incorrectly summarizes the disclosure of French patent to Marrel Freres; then this Court can only conclude, as was concluded by the Lower Court, that the testimony of the expert is lamentably insufficient and that the defendant has failed to produce any instance of prior steel or of prior use or knowledge of steel having a composition within the terms of the Churchward claims of the first and second patents in suit. The Bethlehem Company in its original answer cited Dr. Howe as himself being a prior user of the patented steel. This citation was eliminated by amendment and the defendant cannot now succeed in its defense of invalidity by employing Dr. Howe as a filtering expert to prove that which it conceded by amendment he could not prove directly.

On this branch of the case it is necessary to make only one further comment. We refer to Appellant's brief, p. 34 and quote:

"These prior disclosures require no amplification. But if any were needed, if any further instruction was required as to the proportions in which such alloying metals

as chromium, vanadium and nickel should be used that was accorded by the common use of such metals in various steels."

In other words, no single prior publication or patent teaches the art an alloyed steel combining the elements in the proportions demanded by claim 1 of the first patent in suit and claims 1 and 3 of the second patent in suit, and appellant now urges that while a hypothetical and academic *combination and reconstruction* of the prior art references set up is also insufficient, yet that perhaps an anticipatory combination can be deducted from a further intermingling of the disclosures of uncited and unknown additional art! The argument of invalidity thus laboriously erected topples and falls of its own weight.

THE INVENTIONS CLAIMED BY CHURCHWARD WERE
NOT OBVIOUS.

Throughout appellant's brief its assertions of invalidity of the claims in suit of the Churchward patents are alternative arguments of anticipation and lack of patentable invention. These two grounds cannot be so lightly interwoven. The defenses are, in fact, contradictory and it is a fair conclusion from the argument on the second ground that the argument on the first ground concededly fails. It is clearly true that the record as made does fail to establish any single instance of alloyed steels prior to Churchward's inventions which would be embraced with-

in the definitions and limitations set forth in the claims in issue. As this Court is aware, proof with respect to the patentability of differences cannot be treated categorically. In this case, however, the Court may have the benefit of numerous correlative circumstances directly pertinent to this issue and all persuasive to the conclusion that Churchward's new alloyed steels were validly patented to him.

THE RULE OF THE ADAMITE CASE.

The appellant urges that steel made in conformity to Churchward's inventions as claimed has not been shown to possess new properties, is not startlingly different from other steels and that extending *Brady Brass. Co. vs. Ajax*, 160 Fed. 84, 90 and *Pittsburgh Iron vs. Seaman-Sleeth*, 248 Fed. 75, the patents are invalid.

In *Brady Brass vs. Ajax* the patented composition, that is an association of the same ingredients in combination, was old. The novelty of the patent then before the court was consequently limited to a novelty of proportions and of degree reached gradually. In *Pittsburgh vs. Seaman-Sleeth*, the patented composition, that is of the same ingredients in combination, and even in percentages within the limitations of the claim then involved, was old. This Court here states very clearly the doctrine that patents claiming a composition of matter which differs from the prior art in degree only, but not in kind, may be saved from a holding of invalidity as lacking patentability, by sufficient proof that such novelty, (difference in degree) brought about a new, or unexpected, or markedly superior resultant product. The soundness of the rule thus laid down is not disputed by plaintiff. Its applicability

to the claimed inventions now before the Court, however, is most earnestly denied. The rule referred to, for convenience, may be called "the rule of the Adamite case" (248 Fed. 705).

This rule becomes increasingly useful as a judicial gauge of patentability, in proportion as the "difference of degree" in the novelty of the claimed inventions before the Court becomes smaller. We take it for granted that the rule of the Adamite case ceases to be available in defense where the claimed invention before the Court possesses novelty of *kind*, that is, novelty in elemental composition, and not mere novelty in *degree*, that is, in percentages of elements already old in the same combination. To hold otherwise would, in cases, reverse the burden of proof and render patents presumptively invalid instead of presumptively valid. To hold otherwise would further impose upon the patentees of composition inventions a burden not imposed upon patentees of mechanical inventions.

Appellant invokes the rule of the Adamite case on the assumption that the steels claimed by Churchward differ from the steels of the prior art in mere negligible degree of percentages and not in kind.

"Now **IF** alloy steels containing small proportions of nickel, chromium and vanadium (together with the inevitable carbon and manganese) were known before Churchward's time, * * then there can be nothing patentable in what Churchward has disclosed, unless he has hit upon and specified

some new proportions, not natural or obvious, producing some new result, or a steel having some new properties. It is well settled that a compound or alloy differing from what had previously existed **MERELY** in the proportions of the ingredients, is not patentable" (appellant's brief p. 7). *

The immediate controversy here presented is therefore as to whether or not the inventions claimed by Churchward possessed novelty of kind, that is, in elemental composition, or mere novelty in slight proportion changes of an old composition.

The record as made in this case fails utterly to prove that Churchward was not the first to discover and teach the art to avail itself of an alloy composed of steel with nickel, chromium, vanadium, and manganese. The evidence submitted by defendant in its attempt to prove such an alloy old is summed up and tabulated by its expert, Dr. Howe, at page 153 of Vol. 1 of the record. But no one of these publications otherwise competent shows the *kind* of composition claimed by Churchward.

*Appellant's premise is insufficient with respect to claim 1 of the second patent (and it is believed, to claim 3 also) since the assumption refers to steels *containing* instead of steels *composed of* the elements mentioned. It is further erroneous in the statement that manganese is *inevitably* present, and is finally misleading in the conclusion with respect to patentability of what Churchward *disclosed* instead of what he *claimed*.

French patent 336,531 to Marrel Freres is for a process, includes tungsten, molybdenum and titanium, and omits manganese.

Schneider U. S. Patent 925,659, is rendered incompetent herein by Section 4923 of the Revised Statutes. Schneider in his divisional patent 934,697, conceded priority to Churchward by his acquiescence in the rejection on Churchward of a claim for the composition.

Harbord & Hall list elements, but not in combination and therefore not as *any* inclusive or exclusive composition.

Wiener expresses his opinion of Dr. Gillet's opinion of a future something and with no mention of manganese.

Fay states what "may not be an impropriety" in the use of a composition not including manganese nor any definite alloy composition.

Stafford expresses his understanding (belief, not fact) of an unproved foreign steel not stated to include manganese.

Heroult describes a process which may be used on a variety of steels but defines no example of any composition of elements, in combination inclusively or exclusively.

Taylor makes no reference to any manganese content nor to any definitely inclusive or exclusive alloy.

Wales U. S. Patent 1,111,709 is incompetent and was properly and duly objected to (Record, Vol. 1, p. 164). Wales' application fails to show invention by him of an alloy composed of steel with nickel, chromium, vanadium and manganese. Furthermore, Wales has heretofore testified as a witness for the defense in liti-

gation on the patents now involved and there failed to establish priority of invention.*

Plaintiff therefore repeats that this record affords no proof of any expressed, beneficial, or real knowledge by the art prior to Churchward of an alloy composed of steel with nickel, chromium, vanadium and manganese. Appellant chooses to read a manganese content into publications themselves lacking mention of manganese, and chooses to base this extra-record inclusion on the contention that manganese is inevitably present, but plaintiff denies that manganese (in a form other than a negligible or ineradicable residue, irrelevant to the patents and to the infringing material here involved) is present in all steels. The Patent Office makes the same denial:

“The elements, manganese, nickel, chromium and tungsten occur in steel only when specially added to modify the character of the resulting steel * *”. (Record Vol. 1, top p. 374).

The defendants witness Morris himself says that manganese (like silicon) is *usually* employed as a “scavenger” for deoxidizing and cleaning the bath (Rec. Vol. 1, p. 70, Qs. 28, 29). [The scavenging metal may be consumed in its work and disappear from the final alloy].

*These publications are discussed in detail and their insufficiency on other grounds pointed out, *infra* pp. 21-33.

Dr. Howe says only that manganese is the "residual quantity" and "almost" necessarily present. (Rec. Vol. 1, p. 147; and Q. 21, p. 148.)

Our conclusion is that Churchward was the inventor of a new *kind* of alloy possessing novelty of elemental composition and not of degree merely, and therefore that plaintiff is excused from establishing striking superiority of the Churchward steel and is relieved from the rule of the Adamite case.

THE TEST OF FAILURE BY OTHERS.

Futher than this, however, plaintiff conceives the rule of the Adamite case as but one, and that not exclusive, judicial test of the patentability of pre-found novelty. Among other tests laid down by the courts as guides to resolve the same question, is the test as to whether others skilled in the art of contemporaneous date and engaged in the problem, succeeded or failed. This test may be here applied in favor of the plaintiff.

The attention of the Court is redirected to the quotations hereinabove (pp. 12-15) from the published statements which have been introduced by appellant. From these it is manifest that the art at that time recognized the field for improvement, recognized that inventions remained to be made, and recognized that future improvements in alloyed steels could be attained only by painstaking effort and inventive research.

In the whole mass of secondary and hearsay evidence introduced by the appellant, there are opinions many and divergent, but there is no charting of the road to progress which the appellant now points back along as obvious. Dr.

Howe, the expert witness, coasts down over the path of improvement, failing to realize, or choosing to ignore, the difficulties and disappointments encountered and overcome by those who, progressing upward and forward, blazed that path.

The invention of the improvements patented to Churchward were not obvious to the Bethlehem Company with all its resources. Its metallurgist, Mr. Morris, was commissioned in 1904 to traverse Europe for the purpose of investigating, among other things, the then knowledge of vanadium in the use and manufacture of steel. He spent months abroad in England at the Sheffield Works and in Germany at the Krupp Works, and reported back to Mr. Johnston, his superior, the result of his investigations.

"They make two hundred and sixty different alloys of crucible steel, using nickel, chromium, vanadium, tungsten, molybdenum, etc. as alloys depending upon the use to which the material was to be put." The alloy of vanadium which they use is 0.20 of one per cent. When vanadium is used, it *replaces* tungsten (as in tool steel), or nickel and chromium as in other special steels." They are not enthusiastic about vanadium on account of cost and say by making high nickel alloys (with chromium also) "they can get much better results". Vol. 1, Rec. pp. 75, 76).

His investigations thus confirm what the publications set up in defense also show, that nickel

—chromium—vanadium—manganese steels were not then known. Nevertheless, Mr. Morris states that he "began urging upon my return in 1904 an experiment using vanadium with nickel chrome steel. I continued through the whole year 1905 but it was not until the latter part of 1905 that my company would warrant my going ahead with making an experiment that cost so much money and promised so little results". Vol. 1, Rec. p. 79. Thereafter he began the experimentation which led to the production of ingot No. 70547. This experiment was not successful, and further work along that line was abandoned. The cumulative and sole effect of Mr. Morris's testimony is that despite his ability and wide experience, despite his familiarity with the published instructions of the art as now set up, and with the resources of the Bethlehem Company available to him, he failed to produce successfully the alloyed steels covered by the Churchward patents. Mr. Morris' work, at the most, constituted a *secret and abandoned experiment*, which, moreover, had been forgotten and buried, and which was not even disinterred at the time the Bethlehem Company later, *and after the issuance of the Churchward patents*, began the manufacture of the infringing steel which in herein complained of.

Mr. Morris's testimony reads, Vol. 1 Rec. p. 86, 87.

"Q78. From the practical standpoint you got very little result either at Sheffield or at Krupp? That is correct, is it not? A.

Practically I got very little result as far as the actual compositions showed.

Q79. And after you came back you conducted the *experiments* of your own with nickel chromium vanadium steel? A. Yes, sir.

Q80. After you came back you conducted some *experiments* of your own as to the manufacture of nickel chrome vanadium steel? A. Armor plate, yes.

Q81. And it is fair to say, as a general proposition, that those *experiments* were not satisfactory or did not disclose a satisfactory result? A. They were satisfactory, but they did not show any improvement over nickel chrome armor plate.

Q82. It did not show any improvement which induced you to proceed with the manufacture of nickel chrome vanadium steel? A. Exactly, yes.

Q83. Or to make the results of those *experiments* public? A. To make them how?

Q84. They did not show results that would induce you to make those results public? A. Oh, no.

Q85. You did not print them in any way? A. *I think, as far as that goes, the more successful they had been the less public I would have been likely to make them.*

Q86. As a matter of fact, in this instance after those *experiments* were made the matter became and was, as a result of the experiments, a dead issue? A. Well, no. The *experiments*, as you will note, extended over

several years. I gave up the use of vanadium very reluctantly. I wanted to use it. I wanted to make it go.

Q87. But you gave it up because you could not make it go, as a matter of fact? A. I didn't know how.

Q88. You did not give it up because of the high price of vanadium? A. I did not give it up on that account. I had a great deal of opposition from my company always on account of the high price of vanadium. But that was not worrying me."

Here is the statement of a practical man, familiar with world wide developments at that time, with a belief in the possibility of improvements, and with time and money at his disposal, that he failed to produce successfully the steels covered by the Churchward patents, *because he did not know how to make them and was forced to abandon his work.* The data with respect to it was pigeonholed and forgotten by the Bethlehem Company. Appellant's counsel now for the first time seek to give the inference that the Bethlehem Company, in manufacturing the infringing steel, predicated its manufacture on, and availed itself of, the previous work of Mr. Morris. *The record herein offers not the slightest warrant for such a contention.* Not a word of testimony was offered to connect the manufacture of the infringing steel by the Bethlehem Company with the earlier experiments of Mr. Morris. The data of those experiments was not utilized. Mr. Morris' work clearly falls within the definition of abandoned experi-

ment as laid down in the Supreme Court's decision in *Deering vs. The Harvester Works*, 15 Sup. C. Rep. 118-120.

No more were these inventions obvious to the agents of the Carnegie Company. Mr. Wales, at about that time, filed his application for patent on what was apparently his effort to solve this problem. His solution was different from Churchward's, and so far as the record shows, the Wales steel never passed beyond the paper of his patent application.

Moreover it is not within the realm of probability that the Carnegie Company having infringed and been sued and having taken extended testimony in the United States and through Europe should settle the litigation and take restricted licenses under the patents in suit and pay to the Churchward Company over a quarter of a million dollars, if the steels patented to Churchward had been "merely obvious" alloy compositions.

Again, the production of the Churchward steels was not obvious to the Krupps in Germany in spite of their general familiarity with vanadium. As Mr. Morris reported back to his principal:

"They (Krupps) make 260 different alloys of crucible steel using nickel, chromium, vanadium, tungsten, molybdenum, etc. as alloys. * * * They are not enthusiastic about vanadium and say that by making high nickel alloys (chromium also) they can get much better results." (Vol. 1, Rec. p. 75).

Finally it was not obvious to the man called by defendant "an expert of the highest authority in the steel making art", Dr. Howe. As above pointed out, this witness was cited in defendant's original answer as a fact witness having prior knowledge of alloy steels within the composition and percentage ranges specified by the claims in suit. By amendment to the answer Dr. Howe was eliminated and thereby it was admitted that the witness had not known what appellant now insists was commonplace and obvious. A commentary also on the substantial character of the problems solved by Churchward is provided by an incident recited by this witness in stating his qualifications. It appears that Dr. Howe was one of an Advisory Committee to the Bureau of Ordnance for the War Department during the late war and was commissioned to make discoveries or recommendations on improved steel to replace that then in use as a material for soldiers' helmets. Diligent investigations was begun by this Committee in September 1917. It apparently covered a wide range. The resources of the Government were at the disposal of the Committee—but even the highly skilled Dr. Howe and his co-scholars were able to conclude their tests and make their recommendations only at a period some fourteen months later, after the fighting had ceased. (Rec. Vol. 1, p. 160, 161).

There are thus too many outstanding features of importance in favor of the patentability of the Churchward inventions and the validity of the Churchward patents to be overcome by the belated and academic defense now urged by the Bethlehem Company. It is not believed that this

Court will desire or permit the merely deprecatory and self-serving arguments of the defendant, and its belated distortion of the prior art, to outweigh the well-reasoned judgment of the hard headed business officials of the Carnegie Company, the reinforced *prima facie* presumption of validity of the patents in suit and the force of the decision in favor of validity reached by the lower Court.

THE TEST OF COMMERCIAL SUCCESS.

A second test availed of by the courts to weigh the patentability of invention is the fact, or lack of fact, of commercial utility and success of the thing patented.

It appeared during the trial that the defendant urged inutility of the Churchward steels as its main defense on the question of validity of the patents in suit. Its witnesses Acker, Morris, Furness, Custer, Holman and Howe each attempted to disparage the patented steels and each attempted to assert that the manufacture of this steel was a failure and had been abandoned.

The record affords many and complete answers to the contention thus raised. In the first place the question of utility is not subject to denial by the Bethlehem Company, an admitted infringer. The courts have uniformly laid down the very natural and salutary rule that as against an infringer patented improvements must be presumed to be useful. This Court, by his Honor Judge Buffington, followed the rule in *Goss Printing Press v. Scott*, 108 Fed. 253, stating:

"Was it useful? That it was not alone useful but useful to a marked degree the weight of the testimony and the consideration of the practical results showed. Indeed the contest waged in this case, its extent, expense and warmth, are in themselves a reasonable measure of the opinion of all parties in that regard. It is improbable that men will render themselves liable to actions for infringement unless infringement be useful and the fact that a patent has been infringed by a defendant is, as against such infringer, sufficient to establish its utility."

Likewise in *American Caramel Co. v. Glenrock Co.*, 201 Fed. 363 (366), Judge Witmer quoted and followed the above case and the doctrine as stated in 30 Cyc. 840, saying of the infringer: "He is estopped to deny that it possesses utility."

Moreover the Bethlehem Company did not make and sell the infringing steel for a season only. On the contrary the record shows the defendant to have made and sold this steel in infringement of the patents for many years. In the course of its infringement, moreover there was presented the opportunity for direct comparison. Mr. Morris testified that when the vanadium stock was exhausted defendant made nickel chrome steel, *but only until a new supply of vanadium could be secured.* (Rec. Vol. 1. p. 117, Q 2, p. 119 Qs 12, 13). It is incredible to believe that this extended production running in large quantities was necessary to convince the defend-

ant of the worthlessness, *ab initio*, of the patented steel, or that the coincidence of cessation of manufacture by the defendant with the settlement of Carnegie litigation and the acquiescence by the latter company in the validity of the Churchward patents constituted a mere coincidence. Counsel for appellant attempt to belittle the circumstances of the prolonged infringement with the argument—

“Of course it requires very extended use in order to prove whether or not any stated composition is helpful or harmful.” (Brief p. 15).

But this argument is flatly contradicted by another of defendant's witnesses, Mr. Furness, of the Midvale Company, (the accuracy and reliability of whose testimony is sharply denied) but who testified that the Midvale Company had made some infringing steel at a date after Churchward's inventions and that *that single manufacture* had afforded data on which the Midvale Company based its (alleged) decision to cease manufacture of the (alleged) inferior steel. As above noted the Midvale Company is now the defendant in another pending action on the patents in suit and is therefore a decidedly interested party. The present protestation of its subordinate employee, whose credibility was indicated by his manner when testifying and was undoubtedly correctly appraised by the lower Court, are not material to the present case. The true facts respecting the practice of the Midvale Company will undoubtedly be brought out at length in the action referred to. But the point is,

the present defendant cannot be permitted in one breath to exclaim that the ascertainment of the failure of the patented steels required a period of quantity infringement over many years, and in the next breath that the determination could have been made in one test.

It is to be remembered also that substantially all of the infringing steel made by the Bethlehem Company was sold to the Navy Department of the Federal Government and was supplied to fulfill the contractual specification demanding (Defendant's Exhibit "A", Vol. 1 of the Record p. 271).

"No. 9. Projectiles must be made of the best quality of steel".

It was to rebut the contention of inutility of the Churchward alloys that the Court below received in evidence testimony with respect to the prior litigation of the Carnegie Company on the patents in suit and the settlement of that litigation by payment to the Churchward Company of \$275,000. with the Carnegie Company taking a restricted license for the future manufacture. There the Carnegie Company had manufactured approximately 19,000 tons of infringing steel which had been sold and used and the practicability and superiority of which was not denied.

Moreover an occurrence on the eve of the trial below is significant on the point now raised. Mr. Griffith, the active manager of the business of the Churchward corporation, testified to an unsolicited request just received on behalf of the

United States Steel Corporation as to whether it might obtain a further license permitting the manufacture of Churchward steel for commercial material in addition to its then right to manufacture such steel for war material. It was on cross-examination by Mr. Usina, counsel for the Carnegie Company, that Mr. Usina's letter of September 4, 1919 (Record Vol. 1, pp. 220-222) was introduced. This letter has various interesting aspects and the Court will of course read it in full. For present purposes, however, it is sufficient that the Steel Company does inquire regarding a license for commercial steels to supplement its existing rights as to war material, and states: "It is said that some of the other steel concerns are making such material". This letter is referred to in the decision of the lower Court. Undoubtedly its showing is squarely at variance with and discredits this testimony of its employees and the testimony on behalf of the Bethlehem Company now offered to show the failure of the Churchward patented steels. This letter seems to have thrown appellant's counsel into some confusion. Their brief on appeal and their argument with respect to it are most disingenuous. They declare their inability to understand the meaning of the request of Mr. Usina, counsel for the Steel Corporation, but they feel sure that the request for terms as to the enlarged license could indicate not at all that the Steel Corporation had any desire to pay out money for an extension of the license, and apparently appellant's counsel feel convinced that Mr. Usina's letter was only a measure of

precaution on their part to forestall having a further license thrust upon them!

THE TEST OF TRIBUTE PAID BY AET.

A third test indicative of patentability, and applied by the Court in the Adamite case, is the tribute accorded the thing patented as reflected by the price paid therefor in commerce and in competition, and by licensed manufacture under royalty.

There is, positive testimony herein on this point to demonstrate the utility and value of the alloyed steels embraced within the restricted scope of the Churchward patents. Plaintiff's witness, Mr. Griffith, has been familiar with Churchward steel and its manufacture for the past seven years and he testified (Vol. 1 Record p. 197 *et seq.*) that this steel is now being made in quantity by the United Alloys Steel Corporation under license by and payment of royalty to the Churchward Company. Further than this, that the steel so manufactured is actually supplanting in competition other kinds of steel including nickel chrome steel, high nickel steel, low nickel steel, chrome vanadium steel, and open hearth carbon steel. (p. 201) Mr. Griffith testifies that Churchward steel is now being used to meet the most trying service in automobile differentials and states:

"The steel is not only satisfactory for such use but I should have no hesitancy in saying as I have heretofore in other connections that this steel is not only the best but is today the only steel to use for such gears". (202)

Again the licensed steel thus made by the United Alloys Steel Corporation is being sold in increasing quantities *at a higher price* and is nevertheless supplanting the other steels in competition (Vol. 1, Record p. 201 Q. 86).

This one circumstance utterly disproves the contention made by the Bethlehem Company that the Churchward patented steel is inutile, and counsel for appellant are driven to the lamentably weak response (Appellant's Brief p. 22):

“But if the United Alloys Steel Company is in fact using a nickel chrome vanadium steel, it will probably find when it has experimented with such steel for a longer time that the presence of the vanadium is a disadvantage”.

Since appellant thus departs from the record and engages in the realm of speculation, appellee is justified in stating the actual facts in this respect, to wit, *That the licensed manufacture and sale by the United Alloys Company is continuing on a rapidly increasing scale and that the royalty paid by that company under the patents is continuing in augmented amount. The licensed steel made by this Company alone already exceeds in tonnage the four thousand tons of infringing steel here complained of. And the licensed steel receives the tribute of a price which is materially higher than that of the steel supplanted.*

CONCLUSION.

We have here actual proof of the novelty of the claimed alloy compositions, public acquiescence by the Carnegie Company and by present licensees in the validity of the patent, demonstrated utility of the improvements and demonstrated commercial success of the improved steels. Moreover the plaintiff asks for relief against a wilful infringer. It ill becomes the Bethlehem Company to deny the claims of the plaintiff for an accounting of profits which the Bethlehem Company has made, while shielding itself *pro tanto* under the acquiescence of the Carnegie Company in the validity of the patents, and after so long appropriating the merit and profit of the Churchward inventions. The fact, even if it were a fact, that it has now ceased the appropriation of those inventions constitutes no equitable or legal support of its refusal to recompense the patentee for past infringement. These patents have not long to run. They have been in litigation since 1910 and they merit the favor of the court.

The Bethlehem Company professes slight interest in the steel and admits, in effect, that the decision of the lower Court does not materially prejudice its interest.

To the Churchward Company, on the other hand, however, the holding of this Court is of most vital interest. Churchward steel will continue to be used by the art in large quantities.

Its use up to the present time has been restricted by the fact of this litigation. When the situation is cleared finally by the decision of this court, irrespective of the tenor of that decision, Churchward steel will unquestionably be very largely used. On this point appellant's brief deals in "probabilities". We *know* of an order, which is only illustrative of one of many, covering material for one hundred thousand automobiles. The only open question on that branch of the case is as to whether or not the credit is to be given Mr. Churchward, which is his very due, and the Churchward Company is to continue to receive the royalty which may, in part, recompense the Churchward Company and Mr. Churchward for their expense and effort in the development and exploitation of this steel and the protection of their rights thereunder.

It seems to us quite significant that under the circumstances, pending this litigation, the Churchward Company should be shown as receiving substantial amounts of cash as the result of a license under these patents, such payments being made by a large and important company (Rec. Vol. I, p. 198, Q. 78), necessarily familiar with the art, the entire history of these patents and the present litigation thereover. As the Judge of the lower Court said in substance, it is impossible for any one looking at this situation without bias, to fail to be impressed by the verdict of practical men and practical manufacturers in the art, confirmed and evidenced by cash payments made for rights under these patents, as to the merit and utility

of the Churchward steels involved in this litigation.

We believe most sincerely that the decision of the lower Court was right from all standpoints of equity and law, and we respectfully submit that the arguments advanced by appellant for reversal of the decision of the lower Court are most painfully inadequate.

THE REMAINING DEFENSES.

Appellant, failing to sustain a defense on the merits, grasps at technicalities.

NO DOUBLE-PATENTING.

Appellant argues that the second patent in suit is invalid as double-patenting the invention of the first patent in suit. For convenience of reference the claims in issue are again quoted.

Claim 1 of the first patent, filed November 1, 1906, issued March 5, 1907:

"1. An alloy containing the following metals in about the proportions given, namely: steel, which contains from 0.2 to 0.6 per cent of carbon, from ninety to ninety-five parts; nickel, from one to 3.5 parts; chromium, from 0.5 to two parts; manganese, from 0.15 to 0.7 parts, and vanadium, from 0.05 to 0.25 parts."

Claims 1 and 3 of the second patent, filed April 12, 1907, issued October 15, 1907:

"1. An alloy composed of steel combined with small proportions of nickel, chromium, vanadium and manganese."

"3. An alloyed steel containing the following alloying metals in about the proportions given, namely: steel, containing .20% to 1.25% carbon, from 91.50 to 98.30 parts; nickel, from 1.00 to 3.50 parts, chromium, from .50 to 2.50 parts; vanadium, from .05 to 1.50 parts, and manganese, from .15 to 1.00 parts."

This question of double patenting has been twice disposed of favorably to the plaintiff heretofore. The first patent in suit was considered by the Patent Office in granting the second patent in suit as appears from the file wrapper of the latter (Vol. 1. Rec., p. 253). The holding was then made that the claims of the two patents were warrantable and valid. The question was also considered and passed upon by the lower Court which reached the same conclusion.

Appellant, however, now elaborates the argument and gives (brief, facing p. 45) what purports to be a chart indicating the identity of the patents. This chart, however, is fallacious and is based on the *disclosures* of the two patents rather than on their *claims*. The question of double-patenting can be dependent only on the fact of identity or of difference of the inventions *claimed*.

Claim 1 in suit of the first patent demands an alloy CONTAINING in prescribed percentages

alloying elements. Claim 1 of the second patent demands an alloy COMPOSED OF steel with prescribed proportions of prescribed alloying metals. The subject matter of the two claims is not identical. An alloy steel may have a composition within the terms of claim 1 of the first patent and without the terms of claim 1 of the second patent. The latter is restricted to a steel *composed of*, while the former may include a steel *containing the same elements AND OTHERS*. A graphic illustration may be represented as follows:



wherein the red circle typifies the boundaries of claim 1 of the first patent, the blue circle the boundaries of the composition demanded by claim 1 of the second patent, and the green circle the boundaries of the composition demanded by claim 3 of the second patent. They do not coincide, and the second patent does not

embrace all of the first. It will be observed that appellant's chart omits a representation of the carbon proportion, and that in fact the requirement in this respect of claim 3 of the second patent is not coincident with, or inclusive of, the corresponding requirement of claim 1 of the first patent.

The defense of double-patenting is a technical one and is introduced herein as a last resort. Demonstrably there is not identity in the inventions claimed by claims 1 and 3 of the second patent with the invention claimed by claim 1 of the first patent. Lacking identity, therefore, and the claim of the first patent being capable of infringement by an alloy steel which would not fall within the terms of either claim of the second patent, the defense of double-patenting must be discarded by this Court as it was discarded by the Patent Office and by Judge Dickinson.

Claims 1 and 3 of the second patent in suit are definite and of a valid scope to cover all defendant's nickel chrome vanadium manganese steel here involved.

A short argument is made in appellant's brief (pages 48-49) that the limitation "small proportions" set forth in claim 1 of the second patent is insufficiently definite and renders the claim invalid; citing *Minerals Separation v. Butte*, 250 Fed. 241, *Minerals Separation v. Hyde*, 242 U. S. 261, *Preston v. Manard*, 116 U. S. 661, and *Loutrell v. Mellor*, Fed. Cases

5039. These decisions are worthy of a more careful exposition than appellant's brief accords them.

Loutrel v. Mellor, Fed. Cases 5039 (Vol. 9, p. 685) concerned a reissue patent having a claim for

"Combining glue, glycerine and sugar or any other analogous saccharine matter to form a new and useful composition of matter for various purposes."

These elements were not claimed in *any* proportions or *any* amounts and the Court found

"The complainants cannot successfully claim to be the first to combine glue, glycerine and sugar; but they may claim to have discovered that these elements may be combined in such proportions as to yield a new product."

The claimed invention therefore in elemental composition was *not new*, nevertheless the Court, under the doctrine in which it states

"Patents are to be construed liberally so as to sustain and not destroy the right of the inventor"

held the claim valid with the restriction imposed thereon of relative proportions of the elements as defined in the specification.

Preston v. Manard, 116 U. S., 661 (6. Sup. Ct. Rep. 695) involved the claim of a reissue patent including "a reel of large diameter".

The claim of the original patent had previously been held void for want of novelty against the same inventor and in finding against the distinction of the reissue over the original claim the Court held:

“The fact that water will flow through a hose wound on a reel if the diameter of the reel is large enough and the curves and angles are not too abrupt is a matter of common knowledge which no one can appropriate to his own use to the exclusion of the public. In any view of the case the *specification describes nothing that the patentee is entitled to claim* but only what everyone has the right to use without his assistance.”

In *Minerals Separation v. Hyde*, 242 U. S., 261, (38 Sup. Ct. Rep. 82), the Supreme Court held claim 9 of the patent invalid because its novelty, if any, was a matter of degree only and not in the elemental composition employed in the process. The Court states:

“As we have pointed out in this opinion there were many investigators at work in this field to which the process in suit relates when the patentees came into it and it was while engaged in prior kindred processes that their discovery was made. While the evidence in the case makes it clear that they discovered the final step * *, yet the investigations preceding were so informing that this final step was not a

long one and the patent must be confined to the results obtained by the use of oil within the proportions often described in the testimony and in the claims of the patent as 'critical proportions', 'amounting to a fraction of one per cent. of the ore', and therefore the decree of this Court will be that the patent * * is invalid as to claims 9, 10 and 11."

It is unnecessary to go further in answering appellant's present contention than to cite the decision of this Court by his Honor Judge Woolley in *Miami Copper v. Minerals Separation*, 244 Fed. 752. In this leading case the first patent involved, No. 835,120, had been before the Supreme Court in *Minerals Separation v. Hyde*, and this Court also found its novelty to be in degree of critical proportions rather than in the elemental composition employed.

"Thus it may be stated generally that in the prior art oil was used for its known selective affinity for metal, agitation to mix the oil with the metal, and air to supplement the buoyancy of oil in raising oil coated metal particles to the surface".

In the second patent, however, No. 962,678, claims 1, 2, 5, and 6 were sustained broadly though specifying:

"Mixing the powdered ore with water containing in solution a SMALL QUANTITY of a mineral frothing agent."

because the elemental composition, that is, water containing in solution a mineral frothing agent, was broadly new. The Court thus properly drew a sharp distinction between claims possessing novelty of degree or proportion, and claims possessing novelty of kind.

The instant case it is believed falls clearly under the doctrine applied to the second patent in *Miami v. Minerals Separation*. Claim 1 of the second patent here in suit calls for

"An alloy composed of steel combined with small proportions of nickel, chromium, vanadium and manganese."

and thus recites a new combination of elements constituting a new composition. The further definition in the claim that the new elements are combined in "small proportions" is a voluntary restriction imposed by the patentee and makes the claim especially clear and definite. This claim therefore enjoys basic novelty, and merits a scope to cover all of the defendant's nickel chrome vanadium manganese steel here involved and further to cover what may be future efforts in the remaining four years of its life to appropriate the substance of Churchward's invention while attempting to evade, in terms, the limits of his other claims.

The Supreme Court in *Minerals Separation vs. Butte*, 250 U. S. 336, did not modify the situation as above outlined. The work of the Court in this respect is lightened, moreover, by the blanket admissions of appellant herein:

"Of course all of this nickel chrome vanadium steel infringes the terms of claim 1 of the second patent in suit" (appellant's brief p. 50)

and

"The District Court stated in its opinion that there is no question of infringement * *. This is true in the sense that all nickel chrome vanadium steels infringe claim 1 of the second patent in suit" (appellant's brief p. 57).

On this point we wish to cite only one further decision which has other and special pertinency to the present case, *Diamond Rubber Co. v. Consolidated Rubber Tire Co.*, 220 U. S. 428, 31 Sup. Ct. Rep. 444, sustaining the Grant patent:

"It possesses such amount of change from the prior art as to have received the approval of the Patent Office, and is entitled to the presumption of invention which attaches to a patent. Its simplicity should not blind us as to its character. Many things, and the patent law abounds in illustrations, seem obvious after they have been done, and 'in the light of the accomplished result', it is often a matter of wonder how they so long 'eluded the search of the discoverer and set at defiance the speculations of inventive genius.' *Pearl v. Ocean Mills*, Fed. Cases No. 10,876. Knowledge

after the event is always easy, and problems once solved present no difficulties, indeed, may be represented as never having had any, and expert witnesses may be brought forward to show that the new thing which seemed to have eluded the search of the world was always ready at hand and easy to be seen by a merely skilful attention. But the law has other tests of the invention than subtle conjectures of what might have been and yet was not. It regards a change as evidence of novelty, the acceptance and utility of change as a further evidence, even as demonstration. * * * A patentee may be baldly empirical, seeing nothing beyond his experiments and the result; yet if he has added a new and valuable article to the world's utilities, he is entitled to the rank and protection of an inventor. And how can it take from his merits that he may not know all of the forces which he has brought into operation? It is certainly not necessary that he understands or be able to state the scientific principles underlying his invention, and it is immaterial whether he can stand a successful examination as to the speculative ideas involved." * * *

"When a person produces a useful instrument, to say that he did not know what he was about is at least confusing. To take from him the advantage of it upon nice speculation as to whether it was an ignorant guess or confident knowledge and adaptation might do him great injustice. His success is his title to consideration."

ACCOUNTING**PLAINTIFF IS ENTITLED TO THE PROFITS OF DEFENDANT'S INFRINGEMENT.**

The decree below in the usual form awarded plaintiff an injunction and an accounting for profits, damages having been waived. Upon plaintiff's motion to settle the form of decree, defendant strenuously contended that, by reason of Section 4900 of the Revised Statutes, plaintiff was not entitled to an accounting for the profits which defendant had made by its infringement. Upon that motion defendant advanced all the arguments and substantially all the authorities now set forth in pages 57 to 69 of its brief. Two questions were involved:

(1) Does Section 4900 have any application to a plaintiff who neither manufactured nor sold any product, and

(2) Does the word "damages" in that section include "profits" so as to deprive a plaintiff, who has neither marked nor given notice, of the right to recover the profits which defendant has made from infringement?

After most careful consideration Judge Dickinson allowed the decree for profits, for reasons set forth at length in his opinion published in 262 Fed. 438 and printed at P. 400 of Rec. Vol. I. The specific ground of that decision was that "this section relieves infringers without notice

from payment of damages but not from accounting for profits."

The distinction between a recovery of defendant's profits and for plaintiff's damages is fundamental in patent law. It is clearly recognized in Revised Statutes, Section 4921, which says:

"And upon a decree being rendered in *any* such case for an infringement the complainant shall be entitled to recover, in addition to the profits to be accounted for by the defendant, the damages the complainant has sustained hereby;" (Emphasis ours).

Under R. S. Section 4900, however, the statute with equal distinctness limits the penalty which is to be imposed upon the plaintiff who fails to mark the patented articles as required by that section to a loss of his right to *damages* and makes no reference to the right to profits which he clearly has by the portion of R. S. Section 4921 above quoted. The controlling case in this circuit is believed to be *Sharpless v. Lawrence*, 213 Fed. 423, 130 C. C. A. where Grey, C. J., ruling directly upon the distinction between damages and profits says:

"We think, however, that the distinction between a decree for the recovery of damages and one for the recovery of profits, should not be lost sight of, and in general is not lost sight of, and that the latter is not included in the former. ***

This brings us to the real question in the case. We do not see why this plain and in-

telligible language should be subject to any process of interpretation. It concerns the administration of justice and affects the interest of litigants, that the plain and obvious meaning of the language of a judgment or decree should be upheld. The word 'damages', as a word of art, has a clear and definite legal meaning."

The same conclusion was reached as to Section 4900 by Judge Thompson in *Rollman Manufacturing Co. vs. Universal Hardware Works*, 207 Fed. 97, 107,:

"The complainant, having failed to meet the requirements of section 4900, is not entitled to damages.

While the provisions of section 4900, Compiled Statutes, deprive the complainant of the right to recover damages by reason of its failure to mark, it is not thereby deprived in a proper case of its right to an accounting for the defendant's profits. R. S. Section 4821, Compiled Statutes, as amended 1897 (U. S. Comp. St. 1901, p. 3395); *Tilghman v. Proctor*, 125 U. S. 136, 7 Sup. Ct. 894, 31 L. Ed. 664; *Beach v. Hatch* (D. C.) 153 Fed. 763; *Mast v. Superior Drill Co.*, 154 Fed. 45, 83 C. C. A. 157."

To the same effect see *Ashley vs. Weeks-Numan Co.*, 220 Fed. 899, where Rogers, C. J., speaking for the Circuit Court of Appeals for the Second Circuit, says at page 904:—

"If there has been no infringement since the bill was filed then there are no damages to be recovered. The complainant is entitled as a matter of course to any profits, gains, and advantages which the defendant has derived, received, and made since the date of the issue of the complainants' design patent No. 42,077 by reason of its infringement."

See also *Metalic Extraction Co. vs. Brown*, 104 Fed. 345, 354; 43 C. C. A. 568.

The distinction here drawn seems equitable as well as technically correct. It serves the purpose of guarding an innocent infringer against being mulcted in damages, and at the same time gives to the patentee that to which he is entitled; i. e., the profits which the use of his invention has brought to the defendant. In many cases, of course, one or the other of these two elements—profits and damages—has been unimportant from a practical standpoint, and it is therefore possible to find judicial expressions in conflict with the doctrine prevailing in this Circuit. In many cases these conflicting expressions are obviously obiter dicta, and in others the distinction seems not to have been brought to the attention of the court—possibly because practically unimportant in the particular case. A contrary view would practically deprive all inventors who were unable to market their product of the real fruits of their invention, for it must often happen, as it does in this case, that the defendant's infringement is so concealed and so difficult to discover that no direct notice can be given.

Upon the question of the historical difference between damages and profits, as well as upon the question of the weight to be given to decisions which are actually or apparently contra, a reference should be made to the opinion of Judge Dickinson, Rec. Vol. I, P. 400. As pointed out in that opinion, neither the Supreme Court nor this Court has ever passed upon the distinction between profits and damages, except in the Sharpless case (*supra*) where that distinction was recognized and enforced. *Dunlap vs. Schofield*, 152 U. S. 244, which defendant chiefly relies upon, was an action for the statutory penalty of \$250., profits being expressly waived, and there was accordingly no possibility of the present distinction being in issue. The same is true as to *Mowrey vs. Whitney*, 81 U. S., 620, where the question at issue was as to the allowance of interest upon the recovery, and as to *Sessions vs. Romadka*, 145 U. S., 29, where it was held that the goods were sufficiently marked. Likewise in *Rubber Co. vs. Goodyear*, 9 Wall. 788, a different point was in issue, and the inference of counsel for defendant as to what the court might have decided is entirely without support in the opinion. We shall not attempt to add anything to the careful statement of Judge Dickinson in reference to the cases in this circuit which defendant cites, further than to point out the fact that all are prior to the Sharpless case.

While the decree entered finds adequate support in this distinction between damages and profits, plaintiff believes that it might be supported equally well by the position that R. S.

Section 4900 does not apply to a plaintiff who neither manufactures nor sells the patented article. The portion of R. S. Section 4900 which requires marking reads as follows:

"Patented articles must be marked as such. It shall be the duty of all patentees, and their assigns and legal representatives, and of all persons making or vending any patented article for or under them, to give sufficient notice to the public that *the same* is patented; either by fixing *thereon* the word "patented", together with the day and year the patent was granted; or when, from the character of the article, this cannot be done, by fixing to *it*, or to the package wherein *one or more of them* is enclosed, a label containing the like notice". (Emphasis ours).

It will be noted that the prescribed methods of giving notice to the public are in the alternative:

- (1) By marking "thereon", and
- (2) By fixing to "it" or to the package wherein "one or more of them" is enclosed a label.

All the words italicised are meaningless unless they presuppose the existence of an article made in accordance with the patent. No method is prescribed here for giving notice in any other way than in connection with some article. The remainder of Section 4900 imposes a penalty for

the neglect to mark by one of these two prescribed methods, and reads as follows:

“and in any suit for infringement, *by the party failing so to mark, no damages shall be recovered by the plaintiff*, except on proof that the defendant was duly notified of the infringement, and continued, after such notice, to make, use, or vend the article so patented”. (Emphasis ours).

Considering now the second portion of the section, it is apparent that the penalty of a denial of damages is imposed only in the case of a “suit for infringement by the party *failing so to mark*”. Such failure can obviously not occur unless the plaintiff is itself manufacturing or dealing in the goods made under the patent, and therefore has an opportunity to mark the same. This is the interpretation put upon this section of the Statutes by the Supreme Court in *Dunlap vs. Schofield*, 152 U. S., 244, 247; 14 Sup. Ct. 576, 577 where Mr. Justice Gray says:

“The clear meaning of this section is that the patentee or his assignee, *if he makes or sells the article patented*, cannot recover damages against infringers of the patent, unless he has given notice of his right, either to the whole public, by marking his article “Patented”, or to the particular defendants, by informing them of his patent, and of their infringement of it”. (Emphasis ours).

This doctrine has been applied in the Third Circuit in the case of *United States Mitis Co.*

vs. Carnegie Steel Co., 89 Fed. 206, (affirmed by the Circuit Court of Appeals for the Third Circuit without opinion in 90 Fed. 829). In this case Acheson, Circuit Judge says:

“Section 4900 of the Revised Statutes is not applicable here. The patent in suit is exclusively for a process, and therefore the case is not within either the letter or the spirit of section 4900. Even in a case where the patent is within the purview of section 4900, its provisions apply, as against the plaintiff, only “if he makes or sells the article patented”. *Dunlap v. Schofield*, 152 U. S., 244, 247, 14 Sup. Ct. 576; *Campbell v. Mayor, etc.*, 81 Fed. 182, 184”.

To the same effect see *Campbell vs. Mayor, etc.*, of New York, 81 Fed. 182, 184, and *United States Mitis Co. vs. Midvale Steel Co.*, 135 Fed. 103, 112. The above decisions consider together and exclude from the operation of the Statute, cases where the patent is for a process and those where the patentee neither manufactures nor sells goods made in accordance with the patent. Both are instances in which the plaintiff is obviously unable to comply with any requirement as to marking, and is therefore excused from any penalty for failing so to do. The latter is admittedly the situation of the plaintiff in the instant case.

In view of this fact plaintiff respectfully submits that the Revised Statute can have no bearing upon its rights to any recovery, whether of damages or of profits.

The legal doctrines here advanced are particularly appealing in the present case because of certain facts brought out in the testimony. It appears that Mr. Churchward, the inventor of the patents in suit, conducted certain experimental work at the plant of defendant Bethlehem Steel Company as was well known to Morris, defendant's witness and metallurgical engineer. Rec. Vol. I, p. 123). It appears further that the defendant took extraordinary precautions to conceal the fact of this infringement, even going to the length of supplying the United States Government with incomplete and misleading analyses of the infringing steel which it made and sold to the Government. Plaintiff's witness Morris testified, Rec. Vol. I, p. 71, that defendant's steels "were always sold as nickel chromium steels" and at Record Vol. I, p. 122 that defendant supplied the Government with analyses which failed to show the presence of vanadium, though the latter element was contained in the steel and listed in the private records of defendant (Rec. Vol. I, pp. 103 and 105). The entire testimony on this point included in pages 118 to 122 of the Record is an admission of the means used by the defendant to conceal its infringement and was advanced by the witness Morris without any explanation for the occurrence.

To ask that under these circumstances plaintiff who was not itself a manufacturer or dealer in steel should penetrate the disguise which defendant had thrown about its product, discover the infringement and formally notify defendant to discontinue it would be asking an absurdity.

Out of a total of over 4,500 tons of infringing steel sold by defendant all was purchased by the United States Government except one lot of 175 tons purchased by the Argentine Government and a shipment of about a ton and a third to the Auto Car Company.

We submit that, in any event, plaintiff may recover the profits of the infringement by accounting, and that the defendant may not be allowed to profit by its own wrong.

RESUME.

1. The art to which the patents in suit relate is complex and technical.
2. The number of permissible alloying elements "all in the catalog" as Mr. Morris said, and the wide range of permissible percentages of those elements rendered the field of research and invention with respect thereto of almost unlimited breadth.
3. Comparing the patents in suit with the state of the art and with the potential field of invention, the claims in issue are definite, clear, and relatively narrow.
4. Nevertheless the restricted limits of the improvements allotted to Churchward by the claims

in issue have been admittedly invaded by the defendant.

5. In all the mass of published art set up by the defendant there is no single anticipation or substantial approximation of the alloys set forth in the claims in suit.

6. As in a mechanical patent, so here, a defense dependent on hypothetical combinations of elements, where these elements in the actual prior art were set forth separately or in other combinations, cannot prevail.

7. Furthermore the publications set up in defense establish the then recognition by the art of the future field for invention, and the unreliability of a priori deduction in the progress toward improvements.

8. Appellant's argument in support of its contention of the invalidity of the patents rests on the unconvincing elaboration by an expert of published statements of opinion and prophecy; with the authors of those statements not called in person, not subject to cross-examination, and their absence not explained.

9. The patents are presumptively valid.

"The burden of proof is upon the defendants to establish this defense; for the grant of letters patent is *prima facie* evidence that the patentee is the first inventor of the device described in the letters patent, and of its

novelty. *Smith v. Goodyear Dental Vulcanite Co.*, 93 U. S., 486; *Lehnbeuter v. Holthaus*, 105 U. S., 94. Not only is the burden of proof to make good this defense upon the party setting it up, but it has been held that 'every reasonable doubt should be resolved against him.' *Coffin v. Ogden*, 18 Wall, 120, 124; *Washburn v. Gould*, 2 Story, 122, 142."

Cantrell v. Wallick, 6 Sup. Ct. Rep., 970, 973-974; 117 U. S., 689.

"The defendant is an admitted infringer. The complainant's patent implied novelty and invention; the burden of proof to establish prior use and want of novelty is upon the defendant. And every reasonable doubt should be resolved against it".

Wood's Sons Co. v. Valley Iron Works, 191 Fed., 196, 200. Affirmed by the present court.

10. The admitted infringement by the defendant estops it to deny utility of the thing patented.

11. The infringement by the Carnegie Company demonstrates the utility of the patented steel and the value and validity of the patents in suit.

12. The letter of Mr. Usina, counsel for the Carnegie Company, of September, 1919, proves the present recognition of the utility of the patented steels.

13. The present and continuing manufacture of the patented steels by the United Alloy Steel Company proves the utility of the patented steel.

14. The manufacture of the patented steels by that company under license, and the successful and increasing sale thereof in competition with steels of lesser cost, is convincing of the actual superiority of the patented steels.

15. The inventions covered by the claims in issue were patentably new and not obvious.

16. The Churchward inventions were not obvious to the Bethlehem Company. Mr. Morris, its engineer, testified to his familiarity with the published art at that date and to his knowledge of the unpublished art through conference with the unreported experts, and he tried to produce the inventions and failed, and his experiments were abandoned.

17. The Bethlehem Company, in undertaking the infringing manufacture, after the public instruction by the Churchward patents, did not revert in the slightest degree to the unsuccessful and forgotten data of Mr. Morris.

18. The Churchward inventions were not obvious to the Carnegie Company, who contested the patents in litigation on all the defenses now generally raised, and later acquiesced in the validity of the patents by taking a license thereunder and by paying \$275,000.

19. The Churchward inventions were not obvious to Mr. Wales, the engineer of the Car-

negie Company who sought the improvement but whose efforts were directed along the divergent path of high nickel and whose achievement has not warranted the grace of an epitaph.

20. The Churchward inventions were not obvious to the Research Department of the Krupps in Germany, whose failure in this respect is attested by Mr. Morris.

21. There has been a substantial public acquiescence in the validity of the Churchward patents.

22. The settlement of the Carnegie litigation, the payment of \$275,000 for past infringement, and the acceptance of a continuing license under the patents, constitutes a convincing recognition of validity.

23. The manufacture of the patented steels by the United Alloys Steel Company, under license and on payment of royalty, confirms the recognition of the art in the validity of the patents in suit.

24. Claim 1 of the second patent, as well as the others in suit, is clear and definite. It recites a composition of alloyed steel which was new and which has been infringed by the defendant, which was infringed and paid for by the Carnegie Company, and which is now being utilized by the United Alloys Company.

25. Claim one of the second patent recites an alloy steel *composed* of materials and percentages

not the same as alloys embraced within claim one of the first patent. A steel may infringe claim one of the first patent and not infringe claim one of the second patent. Therefore, claim one of the second patent is not invalid as repatenting the invention reserved by claim one of the first patent.

26. Claim three of the second patent has a variation in the percentages of certain constituents from the ranges specified in claim one in the first patent. An alloy might infringe claim one of the first patent and not infringe claim three of the second patent. Therefore claim three of the second patent is not invalid as repatenting the invention claimed in the first patent.

27. The claims in issue of both patents in suit are valid and infringed.

The decision of the lower court should, therefore, be affirmed with costs against appellant.

Respectfully submitted,

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