Smith Vs. Snow

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SooperKanoon Citation : sooperkanoon.com/96222

Court : US Supreme Court

Decided On : Jan-07-1935

Appeal No. : 294 U.S. 1

Appellant : Smith

Respondent : Snow

Judgement :

Smith v. Snow - 294 U.S. 1 (1935)
U.S. Supreme Court Smith v. Snow, 294 U.S. 1 (1935)

Smith v. Snow

No. 102

Argued December 3, 4, 1934

Decided January 7, 1935

294 U.S. 1

CERTIORARI TO THE CIRCUIT COURT OF APPEALS

FOR THE EIGHTH CIRCUIT

SYLLABUS

1. Claim 1 of the Smith Patent, No. 1,262,860, for a method for the incubation of eggs, held valid, and infringed. P. 294 U. S. 7 .

2. Claim 1 covers broadly the essential elements of the Smith invention, *viz.,* (a) the arrangement of the eggs at different levels in staged incubation in a closed chamber, having restricted openings of sufficient capacity for the escape of foul air without undue loss of moisture; (b) the application to the eggs of heated air in a current created by means other than variation of temperature, and (c), as marking the boundaries of the claim, a sufficient velocity in the current to circulate and diffuse the air and maintain it throughout the chamber at substantially the same temperature, whereby the air will be vitalized, moisture conserved, and the units of heat carried from the eggs in the more advanced stage of incubation to those in a less advanced stage.

HELD

(1) The claim is not limited by the particular mode of use described in the specifications, since the claims of the patent, not its specifications, measure the invention. P. 294 U. S. 11 .

(2) Examination of the claim in the light both of scientific fact and of the particular form in which the inventor reduced it to practice as described in the specifications makes it plain that the claim does not require any particular order or arrangement of the eggs in staged incubation in the incubator, or that the propelled air current

should reach them in any particular order, or that it should be guided, controlled, or directed by any particular means, or in any particular manner other than that it should be of sufficient velocity to produce the results prescribed by the claim. Pp. 294 U. S. 9 , 294 U. S. 13 .

(3) There is nothing in the file wrapper to suggest that any addition was made to Claim 1 to restrict the patent to any particular order of arrangement of the eggs or any particular direction or means of control of the current of air, other than its velocity, and nothing to estop the patentee from asserting that the claim is not restricted by such features. P. 294 U. S. 14 .

(4) The claim is not limited by the prior art. P. 294 U. S. 16 .

(5) The invention as claimed was infringed by respondents' apparatus in this case. P. 294 U. S. 18 .

3. The fact that a claim broadly covering the essentials of an invention omits particular means of application which are called for by other claims is evidence that the broader claim was not intended to be so restricted. P. 294 U. S. 13 .

4. The inventor of a novel method of artificial incubation of eggs, which solved the major problems of that art in a highly efficient manner and was attended by great practical and commercial success, is entitled to broad claims in his patent, and to a liberal construction of them tending to secure to the patentee the benefit of his invention, rather than to defeat the grant. P. 294 U. S. 14 .

5. A broad claim is not to be given a restricted construction because its allowance in the Patent Office followed the rejection of narrow claims. P. 294 U. S. 16 .

6. The invention of a combination is not anticipated by earlier and impracticable experiments for the same end with isolated elements of the combination. P. 294 U. S. 17 .

70 F.2d 564 reversed.

Certiorari to review a decree reversing a decree of the District Court and holding valid, but not infringed, a claim of a patent for an improved apparatus and method for the incubation of eggs.

MR. JUSTICE STONE delivered the opinion of the Court.

Certiorari was granted to review a decree of the Circuit Court of Appeals for the Eighth Circuit, 70 F.2d 564, which reversed the decree of the District Court and held valid, but not infringed, the first claim of the Smith patent, No. 1,262,860, of April 16, 1918, for an improved apparatus and method for the incubation of eggs. [Footnote 1] The Court of Appeals for the Ninth Circuit held the same claim valid and infringed in *Waxham v. Smith,* 70 F.2d 457, in which case certiorari was also granted. The question thus presented is one of the scope of the claim.

Only so much of the patent as relates to a method for incubation is now involved. Correct appreciation of the contentions made requires a brief exposition of the well known phenomena which attend the incubation of eggs under natural conditions.

The period for hatching eggs of the domestic hen is twenty-one days. The eggs are cold at the beginning of the period of incubation, although at that time generation has already progressed slightly. Continuation of this process and successful incubation depend upon the

Page 294 U. S. 4

application of heat to the eggs, and the maintenance of their temperature at not less than body heat, about 100 F. and not more than 105 F. Any substantial divergence from this range of temperature results in deterioration or death of the embryo, and consequent failure of the hatching process. If the temperature is maintained within this range, the eggs, during the first ten days of the period, absorb heat required to generate and maintain the life of the embryo. The eggs are then said to be endothermic, or heat absorbing. From the eleventh day until the end of the period, the embryo has developed to a point at which the egg generates more heat than is needed to keep the embryo alive. They are then said to be exothermic. From that time on, the excess heat is given off to the surrounding air or to objects in contact with the eggs, if at a lower temperature than the eggs.

The development of heat accompanies the oxidation of food elements within the egg, in consequence of which it gives off carbon dioxide during the period of incubation and absorbs oxygen from the external air, both of which pass through the shell of the egg and its lining membrane. During the period of incubation, there is also gradual evaporation of moisture from the egg, which tends to reduce its temperature slightly. The best results are obtained if the total evaporation during incubation does not exceed about 15%. Evaporation in excess of that amount affects the embryo adversely; the chick when hatched being undeveloped and lacking normal strength.

Successful artificial incubation therefore involves conformity to three principal requisites: the maintenance of proper temperature during the period of incubation, the prevention of excessive evaporation of moisture, and the supply of an adequate amount of oxygen, which involves also the removal from the incubator of the carbon dioxide which results from oxidation of the contents of the egg.

The artificial incubation of eggs is an ancient art. It appears to have been known to the Egyptians two thousand years ago, and for a comparable period to the Chinese. Until Smith, the patentee, carried on his experiments, the effort had been generally to reproduce as nearly as practicable the natural conditions of incubation. In practice, eggs, in relatively small numbers, seldom more than 300, and usually less, were placed on the same level in a cabinet with heating means above the eggs, so that the temperature above the eggs was maintained at a higher point -- about 103 F. -- than that below. To secure the requisite exposure of the eggs to the higher temperature, it was necessary in the course of incubation to turn the eggs frequently, as is done by the hen in nature. Provision was made for supplying fresh air to the cabinet and for humidifying the air within the cabinet. All incubators were of the still air type -- that is to say, the only movement of air within the incubator was that caused by variations of temperature at different points within the cabinet, resulting in some transmission of heat by radiation or convection. The opinion seems to have prevailed that the presence of currents of

air either within or surrounding the cabinet was harmful. Successful operation of this method required nice adjustments of the heating means so as to avoid overheating as the eggs passed into the more advanced stages of incubation, reaching their highest temperature about the seventeenth day.

Smith, conceived the idea, embodied in his patent, of setting the eggs in staged incubation within the cabinet and applying to them, in convenient arrangement for that purpose, a current of heated air, propelled by means other than convection. Staged incubation is the successive setting of eggs in the same cabinet at brief intervals of about three days. At the twenty-first day. there would thus be several settings of eggs in the incubator, each at a different stage of incubation, part in the endothermic

Page 294 U. S. 6

stage and part in the exothermic. Smith arranged the egg trays or racks in tiers so that air could be freely circulated among the eggs. He subjected them to a continuous current of air of the requisite constant temperature of about 100 F. propelled by a fan so that it would circulate freely and repeatedly throughout the cabinet. The heat of the eggs in the later stages of incubation was thus carried by the circulating air of lower temperature to the cooler eggs in the earlier stages, so that there was a continuous tendency to equalize the temperature throughout the cabinet at approximately the temperature of the introduced current of air.

Before Smith, there had been efforts to set eggs in staged incubation, but without practical success because of the difficulties of securing adequate heat distribution within the incubator. He was the first to apply mechanically circulated currents of air to eggs so arranged. He followed this procedure in conjunction with the use of a restricted opening for the elimination of foul air. By this combination, the difference in temperature of the eggs was equalized within the desired range throughout the incubator during the period of incubation, the air within the incubator was gradually replaced by fresh air, and the moisture of the eggs was conserved. His method thus solved the major problems of artificial incubation in a highly efficient manner. It was novel, and involved invention. *See The Barbed*

Wire Patent Case, 143 U. S. 275 , 143 U. S. 283 ; *Krementz v. S. Cottle Co.,* 148 U. S. 556 , 148 U. S. 559 -560.

That it was invention is not seriously disputed here, and, of the many courts which have passed on the patent, none has denied its validity. The new method had certain marked advantages over earlier ones. It was possible to carry on the process of incubation continuously by placing fresh eggs in the incubator at intervals as those of the most advanced stage hatched and the new-born chicks were removed. It was possible to apply

Page 294 U. S. 7

heated air to the eggs at a constant temperature, thus avoiding the necessity of varying by nice adjustments the temperature of the applied air, so as to conform to the varying temperatures of the eggs as they passed through successive stages of incubation. As the egg racks or trays could be placed in tiers, instead of on a single level, it was possible to arrange them more compactly, and greatly increase the number of eggs in a single incubator. Before staged incubation as developed by Smith, it had not been practicable to operate incubators of a capacity of more than about 300 eggs. By use of the new method, it is possible to operate successfully an incubator containing as many as 52,000 eggs, and the%age of eggs successfully hatched by artificial incubation has been materially raised.

The commercial success of the new method was immediate and striking. At first, the inventor devoted himself to developing his own hatchery for the use of the new method; it was the largest in existence, with a capacity of over 1,000,000 eggs. In 1922, he began the manufacture and sale of the new incubator.

In ten years he, and a corporation which he had organized for the purpose, had made sales of incubators aggregating about $24,000,000, having a total egg capacity of over 188,000,000. The old type of incubation, with eggs arranged at a single level, all in a single stage of incubation, has thus become obsolete.

That the method employed in the Smith type of incubator was novel and revolutionary in the industry is not challenged. The question presented here is

what scope may rightly be given to Claim 1 of the patent; whether the petitioner has drafted it in such form as to secure the fruits of his invention? Claim 1 reads as follows:

"1. The method of hatching a plurality of eggs by arranging them at different levels in a closed chamber having restricted openings of sufficient capacity for the escape

Page 294 U. S. 8

of foul air without undue loss of moisture and applying a current of heated air, said current being created by means other than variations of temperature and of sufficient velocity to circulate, diffuse, and maintain the air throughout the chamber at substantially the same temperature, whereby the air will be vitalized, the moisture conserved, and the units of heat will be carried from the eggs in the more advanced stage of incubation to those in a less advanced stage for the purpose specified."

It will be observed that the claim, standing by itself, asserts the essential elements of the method of incubation to be: (a) the arrangement of the eggs at different levels in staged incubation in a closed chamber, having restricted openings of sufficient capacity for the escape of foul air without undue loss of moisture; (b) the application to the eggs of heated air in a current created by means other than variation of temperature, and (c) as marking the boundaries of the claim, the current of air is to be of sufficient velocity to circulate, diffuse, and maintain the air throughout the chamber at substantially the same temperature whereby the air will be vitalized, moisture conserved, and the units of heat carried from the eggs in the more advanced stage to those in the less advanced.

To avoid petitioner's charge of infringement, two main contentions are pressed by respondents: first, that Claim 1 is restricted to an arrangement of the eggs in such order with respect to the direction of the propelled current of heated air that it will first come in contact with the more advanced eggs. Thus, construed, respondents do not infringe, as concededly the movement of air within their incubator does not

pass to the eggs in staged incubation in any particular order. Second, that the movement of air in respondents' incubator, produced by the agitating action of fans or propellers, does not result in "a current of air" traveling in a constant predestined path within the meaning of Claim 1. In passing upon these contentions,

Page 294 U. S. 9

it is necessary to ascertain the proper scope of Claim 1 and to determine whether the characteristic features of respondents' incubator come within its scope. Respondents maintain that the claim is restricted in its scope in the manner indicated above (a) by the disclosures of the patent itself, (b) by the prior art, including the patentee Smith's own prior public usage, and (c) by estoppels arising from the file wrapper record of the patent.

1. The court below rested its decision on its interpretation of Claim 1, read in the light of the disclosures of the patent, as restricting the patented method to a particular arrangement of the eggs whereby the current of heated air, after being introduced into the cabinet, first comes in contact with the eggs in the most advanced stage of incubation. It reached this conclusion by comparison of that part of the claim, which speaks of the units of heat as being "carried from the eggs in the more advanced stage of incubation to those in a less advanced stage," with the specifications, which disclose an arrangement of the eggs such that the introduced current of heated air first passes to the more advanced eggs. As respondents' incubators have no such arrangement of the eggs, and as, in consequence, the forced draft of heated air does not reach the eggs in any particular order, the court held that the respondents do not infringe Claim 1.

The patentee, obedient to the command of the statute (R.S. 4888), gave such description of the manner of using his discovery as would enable others skilled in the art to use it. The specifications first describe generally the method by which the eggs in staged incubation are arranged in tiers and subjected to forced circulation of heated air through the incubating chamber. The patent states:

"The temperature of circulating air should be such as will prevent the eggs in the early stage of incubation from falling below 100, and the speed or velocity of the circulating air should be such as to carry the heat

away from the eggs in the later stage of incubation, and thereby hold the temperature of those eggs at 105 or slightly below that. It is manifest that the temperature will remain practically the same throughout the column of eggs, but the air is impelled with sufficient velocity to carry the heat away from the eggs which happen to be in the advanced stage of incubation."

The drawings and specifications show the eggs arranged in tiers on either side of the chamber, with an open space or corridor between at the top of which a revolving fan forces the air downward in the open space of the corridor. Above the fan is a valve controlled air intake for the introduction of fresh air, and above the trays of eggs on either side are shown "outlets for the release of foul air . . . of such restricted capacity as to prevent the undue escape of moisture."

It is true that drawings and specifications indicate a particular arrangement of the eggs from the top to the bottom of the tiers of trays, according to the stage of the incubating process, the eggs being arranged progressively from the least advanced, placed at the top, to the most advanced, placed at the bottom of the tiers. They indicate also that, as the eggs most advanced are hatched, they are to be replaced by moving downward the trays containing the several successive settings of eggs which are in earlier stages of incubation. They also speak of a "column" of air of such speed as to keep the temperature substantially uniform, and show curtains hanging from the top of the chamber covering the ends of the trays on either side of the corridor and extending to a point a short distance above the floor.

With this arrangement, the air would be propelled downward to the floor of the chamber, gaining access to the eggs by passing beneath the ends of the curtains to the trays of eggs at the bottom of the tiers. So much of the air as was introduced

through the intake would thus reach

Page 294 U. S. 11

the more advanced eggs first. It would then be deflected upward through the egg trays to the top of the chamber, and so much of it as did not pass out through the restricted capacity outlets located at the top of the tiers of trays would be returned to the fan to be propelled again through the described circuit.

We may take it that, as the statute requires, the specifications just detailed show a way of using the inventor's method, and that he conceived that particular way described was the best one. But he is not confined to that particular mode of use, since the claims of the patent, not its specifications, measure the invention. *Paper Bag Patent Case,* 210 U. S. 405 , 210 U. S. 419 ; *McCarty v. Lehigh Valley R. Co.,* 160 U. S. 110 , 160 U. S. 116 ; *Winans v. Denmead,* 15 How. 330, 56 U. S. 343 . While the claims of a patent may incorporate the specifications or drawings by reference, *see Snow v. Lake Shore R. Co.,* 121 U. S. 617 , 121 U. S. 630 , and thus limit the patent to the form described in the specifications, it is not necessary to embrace in the claims or describe in the specifications all possible forms in which the claimed principle may be reduced to practice. It is enough that the principle claimed is exemplified by a written description of it and of the manner of using it "in such full, clear, concise, and exact terms" as will enable one "skilled in the art to make, construct, compound and use the same."

Here, the specifications showed an arrangement of the eggs and a means of guiding the current of air so that it would reach the most advanced eggs first. But neither the arrangement nor the means of guiding the current of air are requisite to the application of the principle which Smith discovered and claimed. Without either, the heated air may be given, as Claim 1 prescribes,

"sufficient velocity to circulate, diffuse, and maintain the air throughout the chamber at substantially the same temperature whereby . . . the units of heat will be carried

Page 294 U. S. 12

from the eggs in the more advanced stage of incubation to those in a less advanced stage."

Claim 1 made no mention of curtains or any column of air or means of guiding the current of air, and the inventor made no claim for any particular arrangement of the eggs, except that they should be at different levels. Moreover, while the specifications and drawings show a particular arrangement of the eggs and a particular direction of the current, nowhere, in specifications or claim, is it stated either that the direction of the current is material or, what is the equivalent, that the order in which it reaches the eggs is material.

Only by resort to the assumption that heat units could not be carried from the more advanced to the cooler and less advanced eggs unless the initially introduced air first came in contact with the more advanced is it possible to support the conclusion of the court below, and read the claim as calling for a particular arrangement which would enable the air current to reach the advanced eggs first. Such, of course, would be the case only if the current of air were to make a single circuit, and either remain at its end in contact with the cooler eggs or pass out of the incubator altogether. Neither occurs in petitioner's machine, and there is no reason to suppose that either would produce the desired equalization of temperature. The specifications and claim both contemplate a continuous circulation of the current of heated air through the chamber, which, regardless of its direction, would continuously operate, by repeated contacts with the eggs in all stages, to equalize the temperature throughout the chamber by carrying heat units from the warmer to the cooler eggs.

The claim conforms to the specifications in prescribing "restricted openings of sufficient capacity for the escape of foul air without undue loss of moisture." The amount of foul air allowed to escape through the outlet of restricted capacity necessarily controls the amount of

air taken in. In petitioner's commercial machines, regulated to produce the prescribed result in air vitalization and conservation of moisture, the interchange of foul air for fresh is from 1/2 to 1% to 3% of the air content for each complete circuit of the chamber. This means that the air content of the chamber must make the circuit many times, theoretically from 33 to 200, before an equal volume of fresh air would be drawn in through the intake. Such continuous circulation of the air at constant temperature, lower than that of the more advanced eggs and higher than that of the less advanced, tends to produce the equalization of the temperature of the eggs by flow of heat units from the warmer eggs to the cooler, regardless of the direction of the current in the circuit and regardless of the particular stage of the eggs which it reaches first. With other factors constant, the efficiency of this equalization process would depend upon the velocity of the current. The statement of Claim 1 is that the current of air is to be "of sufficient velocity to circulate, diffuse and maintain the air throughout the chamber at substantially the same temperature." The specifications state:

"It is obvious that the fans can be so arranged and can be operated at such speed as to cause the hot air to circulate fast enough to keep the temperature throughout the chamber between the limits of 100 and 105."

It is evident that Claim 1 does not prescribe that the current of air shall be propelled by any particular means, except that it shall be by means other than variation of temperature, nor does it prescribe that the means of propulsion shall be given any particular location, or that the current of air shall be guided by any particular means or given any particular direction. The omission of these requirements from Claim 1 is the more pointed as the other claims of the patent speak in particular of a power-driven fan, of the location of the fan, of curtains and a partition obviously intended to give direction to the current

of air, of a vertically directed current of air, and of air circulating from the bottom of the chamber into the parts of it occupied by the tiers of egg trays. Thus, by striking and obviously intended contrast with other claims, Claim 1 covers broadly the

essential elements of the Smith invention as we have already described it. *Symington Co. v. National Malleable Castings Co.,* 250 U. S. 383 , 250 U. S. 385 ; *Lamson Consolidated Store Service Co. v. Hillman,* 123 F. 416, 419; *Wm. B. Scaife & Sons Co. v. Falls City Woolen Mills,* 209 F. 210, 214.

Examination of the claim in the light both of scientific fact and of the particular form in which the petitioner reduced the claim to practice as described in the specifications makes it plain that the claim does not call for a particular order or arrangement of the eggs in staged incubation in the incubator, or that the propelled current should reach them in any particular order, or that it should be guided, controlled, or directed by any particular means or in any particular manner other than that it should be of sufficient velocity to produce the results prescribed by the claim. If the matter were doubtful, it is plain from what has been said that the character of the patent and its commercial and practical success are such as to entitle the inventor to broad claims and to a liberal construction of those which he has made. *Morley Sewing Machine Co. v. Lancaster,* 129 U. S. 263 , 129 U. S. 273 -277; *Eibel Process Co. v. Minnesota & O. Paper Co.,* 261 U. S. 45 , 261 U. S. 63 ; *Winans v. Denmead, supra,* 56 U. S. 341 . In such circumstances, if the claim were fairly susceptible of two constructions, that should be adopted which will secure to the patentee his actual invention, rather than to adopt a construction fatal to the grant, *Keystone Manufacturing Co. v. Adams,* 151 U. S. 139 , 151 U. S. 144 -145; *McClain v. Ortmayer,* 141 U. S. 419 , 141 U. S. 425 .

2. We find nothing in the file wrapper defense to disturb our conclusion as to the correct interpretation of Claim 1. It is a familiar rule that a patentee cannot

Page 294 U. S. 15

broaden his claim by dropping from it an element which he was compelled to add in order to secure his patent. *I.T.S. Rubber Co. v. Essex Rubber Co.,* 272 U. S. 429 , 272 U. S. 443 ; *Smith v. Magic City Kennel Club,* 282 U. S. 784 , 282 U. S. 789 -790. But the file wrapper lends no support for the application of this rule to petitioner's Claim 1.

The history of Smith's application in the Patent Office is a long one. Four groups of method claims were successively presented to the Patent Office, and three were successively rejected. The fourth group ultimately matured into Claims 1, 2 and 3 of the patent. It suffices to say that Claims 1 and 25 of the first group claimed broadly,

"The method of hatching eggs by arranging the eggs in a column and applying heated air forced about the eggs, the heated air being adapted to the eggs in various stages of incubation,"

and "The method of hatching eggs by arranging the eggs in a column one above the other and forcing heated air through said column." In due course, the broad claims thus asserted were modified and narrowed by the inclusion of new elements, until they appeared in the form of Claim 1 of the patent. But, as we have seen, none of these additions involves any particular order of arrangement of the eggs or any particular direction or control of the air current, except that the current is to be "of sufficient velocity to circulate, diffuse and maintain the air throughout the chamber at substantially the same temperature."

It is an illuminating fact that the entire written argument filed in support of Claim 1, as it was finally presented to the Patent Office and allowed, makes no reference to any order or arrangement of the eggs, or to shifting the location of the eggs in the incubator, no reference to the location of the fan, the direction of the air current, or to curtains or partitions. The features emphasized were the superiority, over drafts caused by variations of temperature, of "current produced by mechanical

means" applied to eggs in staged incubation arranged at different levels, the conservation of moisture, and the elimination of foul air by the restricted air outlets, all features of Claim 1 which are characteristic of both petitioner's and respondents' incubators. We find nothing in the file wrapper to suggest that any addition was made to Claim 1 to restrict the patent to any particular order of arrangement of the eggs or any particular direction or means of control of the

current of air, other than its velocity, and nothing to estop the patentee from asserting that the claim is not restricted by such features. *See Baltzley v. Spengler Loomis Mfg. Co.,* 262 F. 423, 426; *National Hollow B.-B. Co. v. Interchangeable B.-B. Co.,* 106 F. 693, 714. It is of no moment that, in the course of the proceedings in the Patent Office, the rejection of narrow claims was followed by the allowance of the broader Claim 1. *Westinghouse Electric & Mfg. Co. v. Condit Electrical Mfg. Co.,* 194 F. 427, 430.

3. Claim 1 is not limited by the prior art. It is urged that there was disclosure by Smith by public use more than two years before his application for the patent. At the time indicated, he used commercially an incubator arranged in three completely separated compartments, in each of which there was circulation of the air by a fan. But there was no staged incubation in any single compartment.

The German patent, Stulik, No. 155,917, issued in 1901, disclosed the arrangement of trays of eggs in staged incubation in an enclosed column or stack, with the endothermic eggs at the bottom. The eggs were subjected to a rising column of heated air, which was allowed to escape at the top of the chimney. There was no forced draft of air, no circulation or recirculation of air, and, in consequence, no carrying of heat units from the more advanced eggs at the top to the less advanced eggs at the bottom.

Other patents named, as Winkler, No. 286,756, of 1883, and Zimmer, No. 1,075,747, of 1913, show types of staged incubation, but made no use of a current of air propelled by means other than variations of temperature, and in other respects were so plainly impractical as to call for no extended discussion. This is true also of the description in the 1867 edition of Ure's Dictionary, 652, 653, said to represent a method of incubation devised in 1777 by Bonnemain, a Frenchman, and not used since the French Revolution, by which eggs in staged incubation were placed in a closed room heated by hot-water pipes, but without other means of producing currents of air. Such rudimentary experiments with isolated elements

of Smith's combination did not anticipate his invention. *See Smith & Griggs Mfg. Co. v. Sprague,* 123 U. S. 249 , 123 U. S. 255 .

Other patents are cited showing varying types of incubators in which the eggs were placed at different levels, but in which the circulation of air through the incubating chamber by means other than variations in temperature is wanting. [Footnote 2]

The Proctor & Knowles patent, No. 426,321 of 1890, and the Schwartz patent, No. 535, 175 of 1895, for methods and apparatus for conditioning tobacco and other materials, as well as other procedures for ventilation, are so remote from the problems and procedure for hatching eggs as to call for no comment.

This history of the prior art serves to emphasize, rather than to discredit, the striking advance made by Smith in effecting the combination defined in Claim 1. More than the skill of the art was involved in combining and adjusting its elements in such fashion as to solve the major problems

Page 294 U. S. 18

of artificial incubation. The prior art discloses no application of a continuously circulating current of air to eggs in staged incubation which would restrict Claim 1 with respect either to the arrangement of the eggs or the direction or control of the current of air.

4. There remains the question of infringement. The respondents' machine exhibits a closed chamber, with restricted outlet for the escape of foul air and an intake for fresh air, with eggs arranged at different levels in staged incubation, with a fan-impelled movement of air which circulates and recirculates throughout the chamber. The air moves over and about the eggs, carrying the units of heat from the warmer to the cooler eggs, maintains a substantially uniform temperature throughout the chamber, vitalizes the air, and conserves moisture.

As Claim 1 of petitioner's patent is not restricted to any particular order in which the current of air reaches the eggs, respondents do not avoid infringement by

interspersing indiscriminately, as they do, the trays of eggs in different stages of incubation. Respondents' claim of noninfringement is thus reduced to the contention that their incubators do not employ circulating currents of air called for by Claim 1. Their emphasis is on the agitation of air in respondents' machine in such a manner that its movement does not follow defined paths through the chamber, so as to answer to the description "current of air."

In respondent's machine, fans or air propellers are located at either side of the chamber, about midway of its height, near the wall and between the wall and tiers of egg trays. They are constructed and operated in such fashion that the air is "drawn" by their action from the central corridor through the tiers of eggs toward the center of the propellers. There, by the centrifugal action of the propellers, it is thrown off the ends of the propeller blades toward the top, bottom, and adjacent ends of the chamber. There, it is deflected by ceiling, floor, and ends

Page 294 U. S. 19

of the chamber into the corridor, from whence it is, in due course, again drawn through the tiers of eggs to the propellers. The propellers are operated, and the air moves, continuously. Since the main movement of the air at the top and bottom of the tiers is toward the center corridor, and since the fans draw in air through the middle of the tiers, there are points in the space occupied by the tiers where the movement of the air is toward the corridor until it joins and is turned back by the current moving toward the propellers.

Claim 1, as already stated, does not call for a current of air moving in any particular direction. Assuming, without deciding, that it calls for a current of air so constant in its movement and direction as not to depart substantially from a well defined path, one would expect that a fan operating, as in respondents' machine, within a closed chamber under substantially constant conditions would produce currents of air without substantial variations of path. No valid scientific reason or explanation is advanced for any different result. Extensive testimony and elaborate arguments are presented to support the contention that, notwithstanding the application of force to the air within the closed chamber by the action of

respondents' propellers, under practically constant conditions, the results produced are so variable that "the air goes where it *listeth;*'" *they are not convincing. The conclusion is abundantly supported by evidence that there is a continuous movement of air from the blades of respondents' propellers toward the top and bottom and sides of the chamber, thence to the corridor, and thence through the tiers of egg trays back to the propellers, and that this movement achieves the purpose declared in Claim 1, "to circulate, diffuse and maintain the air throughout the chamber at substantially the same temperature." The trial judge so found.*

That there is a mixture of the air and some confusion of its movement in the corridor, and that, at different

Page 294 U. S. 20

levels within the space occupied by the tiers of trays, the movement is not in the same direction is immaterial. It is enough that there is a movement of air in current form following substantially defined paths through the tiers of egg trays sufficient to effect the desired transfer of heat units. Claim 1 does not prescribe that a current of air is to be maintained throughout the chamber. It calls for the application to the eggs of a current of air "of sufficient velocity to circulate, diffuse, and maintain the air throughout the chamber at substantially the same temperature." This respondents accomplish by the currents of air set in motion either directly or indirectly by the movement of the blades of the propellers. The method is that of Smith. Respondents do not avoid infringement of the method by varying the details of the apparatus by which they make use of it. *Cochrane v. Deener,* 94 U. S. 780 , 94 U. S. 788 ; *Tilghman v. Proctor,* 102 U. S. 707 , 102 U. S. 730 -731.

Reversed.

[Footnote 1]

The patent has been extensively litigated. Claim 1 has been held valid and infringed in *Buckeye Incubator Co. v. Wolf,* 291 F. 253, *aff'd,* 296 F. 680; *Buckeye Incubator Co. v. Cooley,* 17 F.2d 453; *Miller Hatcheries, Inc. v. Buckeye*

Incubator Co., 41 F.2d 619; *Smith v. Jensma,* 1 F.Supp. 999; *Waxham v. Smith,* 70 F.2d 457. It has been held valid, but not infringed, in *Buckeye Incubator Co. v. Blum,* 17 F.2d 456, *aff'd,* 27 F.2d 333; *Buckeye Incubator Co. v. Petersime,* 19 F.2d 721; *Buckeye Incubator Co. v. Hillpot,* 22 F.2d 855, *aff'd,* 24 F.2d 341; *Boling v. Buckeye Incubator Co.,* 33 F.2d 347, *reversed on other grounds,* 46 F.2d 965; *Snow v. Smith,* 70 F.2d 564.

[Footnote 2]

Guerin, United States patent, No. 3,019, March 30, 1843; Bassini & Heyden, United States patent, No. 330,457, November 17, 1885; Van Keuren, United States patent, No. 1, 160,793, November 16, 1915; Bell, United States patent, No. 691,837, January 28, 1902; Koons, United States patent, No. 916, 454, March 30, 1909.