

v.7, no.5-38
HAMMERSCHLAG v. SCAMONI.

Circuit Court, S. D. New York. April 16, 1881.

1. RE-ISSUE No. 8,460—PATENT No. 209,393—IMPROVEMENTS IN WAXING PAPER—MOTION FOR PRELIMINARY INJUNCTION—INFRINGEMENT.

Re-issued letters patent No. 8,460, granted to Siegfried Hammerschlag, October 22, 1878, and letters patent No. 209,393, granted to Siegfried Hammerschlag, October 29, 1878, for “improvements in waxing paper,” to render it water-proof, *held, infringed* as to the first, second, third, and fifth claims of the former, and as to the first and second claims of the latter, upon a motion for preliminary injunction.

2. INVENTION—LAWS OF NATURE.

The arrangement of machinery is designed to secure the operation of laws whose operation is certain to follow such arrangement of it, and those certain laws are the laws of nature: and it is because those known laws are certain to follow such an arrangement that the arrangement is made. The arrangement is none the less an invention because it brings into operation the laws of nature.

3. PIONEER PATENT—CONSTRUCTION.

A patent being a pioneer and foundation patent, both as to process and machine, is not to be construed as confined to specific details, if it fairly admits of the liberal construction to which such a patent is entitled.

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4. PATENT—UTILITY—CONSTRUCTION.

Where, previous to the invention, the article was not capable of being made by a machine or mechanical process then known, and being made by hand was too expensive for general use; and where, by reason of the invention, the article is made of superior quality and greatly cheapened in price, and on these accounts has created a new branch of industry,—the patent securing such invention is entitled to a liberal construction.

In Equity.

Frost & Coe, for plaintiff.

Kitchen & Brown, for defendant.

BLATCHFORD, C. J. This is a motion for preliminary injunction on two patents. One is a re-issue granted to the plaintiff October 22, 1878, No. 8,460, for an "improvement in waxing paper;" the original patent, No. 193,867, having been granted to him August 7, 1877. The specification of the re-issue says:

"The object of this invention is to apply paraffine or other wax to paper, to render the same water-proof. This paper is adapted to confectionery, to prevent the adhesion of articles, one to another, or to the paper, and the paper may also be used in wrapping butter, cheese, cutlery, and other articles requiring a water-proof protection. My improvement relates to a means for heating the wax, applying it to the paper, spreading or diffusing the wax into the paper, removing surplus wax, and then polishing the surface prior to winding the paper upon a reel. In the drawing, figure 1 is a plan view, and figure 2 is a longitudinal section of the apparatus employed by me. The cylinders, *a*, *b*, *c*, are hollow. * * * Each cylinder is supplied with steam to heat the same to the desired temperature, as in a calendering machine. * * * There is a trough, *n*, beneath the cylinder, *a*, into which paraffine or other wax is introduced, and the proximity of the rollers, *a*, *b*, to this trough insures the melting of such wax, and the surface of the cylinder, *a*, takes up a layer of wax and applies it to the web of paper, 8, that is drawn off the reel *t* and wound upon the reel *w*. The scraper, *x*, is applied to the cylinder, *a*, between the wax trough and the place of contact with the paper, to remove surplus wax, and only allow a uniform layer of wax to adhere to the heated cylinder, *a*. The paper passes beneath the heated cylinder, *b*, with the plain surface of the paper next to the heated cylinder. This serves to heat the paper, and melt and diffuse the wax throughout the fabric of the paper, so as to render it thoroughly water-proof. The paper now is drawn

over the stationary scraper, *l*, to remove any surplus paraffine, and then it is brought over the heated cylinder, *c* with the waxed surface in contact therewith. By this cylinder, *c*, the paraffine is again fused and spread into and upon the surface of the paper. thereby ironing and 586 smoothing the wax, and giving to the same a polished and uniform appearance, and the surface of the heated cylinder, *c*, by preference, travels in the opposite direction to the paper with which it comes into contact. The paper prepared in this manner is saturated and rendered transparent, or nearly so, by the action of the wax, and it is a new article of manufacture adapted to various uses in the arts as aforesaid.”

The claims are as follows:

“(1) In a machine for applying wax to the surface of paper, a heated cylinder revolved within the trough containing the wax, and acting to heat the wax and apply a layer to a web of paper, substantially as set forth. (2) The method herein specified of applying wax to the surface of paper, consisting in transferring the melted wax from a trough to the paper by a roller, moving the paper in contact with such roller, and removing the surplus wax by a scraper, substantially as set forth. (3) In a machine for applying wax to the surface of paper, the heated cylinders, *a* and *b*, in combination with the trough, *n*, and scraper, *l*, and means for supplying paper, whereby the heated wax is applied to one surface of the web of paper by the roller, *a*, and afterwards the paper is heated at the other surface, to draw the wax into the paper, substantially as set forth. (4) The heated cylinders, *a*, *b*, *c*, in combination with the trough, *n*, the scraper, *l*, and mechanism for revolving the cylinder, *c*, in the opposite direction to the movement of the paper with which it is in contact, substantially as set forth. (5) The method herein set forth of waxing paper, consisting in spreading the wax upon the surface, heating the paper

from the opposite side, to spread and fuse the wax into the fabric of the paper, removing the surplus wax, and remelting and polishing the wax upon the paper, substantially as set forth.”

There is no dispute as to the manner of the construction of the defendant’s machine, in so far as it is alleged to infringe the said re-issue. A lettered drawing of it is furnished, with reference to which the description of it, as given by the plaintiff’s expert, is as follows:

A indicates a reel containing a web of paper, *P*, to be coated with wax or paraffine. *B*,¹ *B*, are guides, being small wooden rollers, over and under which the paper passes on its way to the machine. *C* is a steamheated cylinder, about 10 inches in diameter, revolving in a trough containing melted wax or paraffine. At one side of said cylinder, extending the whole length thereof, is a wooden bar, *E*, padded with felt, and forcibly held against the cylinder, *C*, with a constant pressure, and serving to prevent more than a given quantity of wax or paraffine from being carried up to the paper. Close by, say about six inches therefrom, is a horizontal plate, *F*, somewhat wider than the paper and about 18 inches long, heated by a number of steam-pipes, *g*, beneath it. This plate, *F*, has a groove, *h*, *h*¹, in its upper surface, all around its margin, about one and one-half or two inches from the edge thereof. One end, *f*, of the plate is 587 set lower than the other, and in the groove, *h*, at that end, are a number of holes (see dotted lines) which allow wax taken off the under side of the paper, passing over the plate, to pass through. Upon this heated plate, *F*, and receiving heat therefrom, are two diffusers, *J*, *J*. These are bars of wood covered with thick felt and with cloth over all. They are long enough to reach entirely across the web of paper, and are about four and a half inches wide and two inches thick. Immediately

beyond these diffusers is a brush, *K*, having at each end a trunnion playing in a slot in a standard, there being one standard on each side, and the trunnions permitting the brush to rock or incline. The diffusers, *J*, are weighted, and they and the brush, *K*, rest on the paper, and occupy about one-half of the surface of the plate, and serve to hold the paper in close contact with the plate. Beyond the further edge of the plate, but not far from it, is a steam-pipe, *M*, one and one-fourth inches in diameter, reaching entirely across the machine from side to side, the upper surface of which is flat and dressed smooth for half an inch in width. The operation of the machine, as given by the plaintiff's expert, is as follows: The steam is first turned on, and the entire apparatus is properly heated, before commencing to run the paper through. The web of paper on the reel, *A*, passes first over the guide, *B*;¹ and then under the guide, *B*, and thence, in a slightly upward direction, to, over, and in close contact with the surface of the upper side of the steam-heated revolving cylinder, *C*, from which the surplus wax has been removed by the bar, *E*, serving as a scraper. The cylinder, *C*, which acts to heat the wax in the trough, also takes up wax and applies it to the under side of the web of paper. The paper then passes to and over the heated iron plate, *F*, with the under or waxed surface in contact with said plate. The wax now begins to come through the tissue of the paper to the upper side thereof, which upper side is next brought in contact with the heated diffusers, *J*, *J*, which, by means of the pressing of their heated surfaces on that side of the paper on which the wax is not applied, thoroughly incorporate the wax into the substance of the paper. As the paper passes on under the brush, *K*, that device operates to finish the spreading and equalization of the wax. The paper emerging from under the diffusers, *J*, *J*, and the brush, *K*, and still in close contact with the

heated plate, *F*, is drawn across the marginal groove, *h*, in the plate, which groove acts as a scraper, and removes any extra wax still remaining and which can be spared, and the paper then passes over so much of the heated plate as is outside of the groove. Finally the paper passes over and in contact with the top surface of the heated pipe, *M*.

It is contended that the defendant's machine infringes claims 1, 2, 3, and 5 of said re-issue. The infringement of claim 5 will be first considered. The theory of the defendant is that the melted paraffine, being very fluid under heat and having great penetrating power, when brought in contact with the thin, raw, or unsized paper is absorbed almost instantly into its pores by capillary attraction; that the 588 incorporation of the wax into the tissues of the paper is completed at and on the surface of the waxing cylinder, and during the contact of the paper therewith; that the process of waxing is there finished, and all that remains to be done is to polish the paper and make it merchantable; that the chief expense is the wax, and the use of as little of that as is possible is secured by means of the pressure of the felted bar against the waxing cylinder; that the purpose and result of the remaining steps in the defendant's apparatus, after the paper leaves the waxing cylinder, are merely to keep the wax fused so long that the laws of nature shall have time to diffuse the wax throughout the breadth of the paper; that the passage of the paper over and in contact with the heated plate, *F*, serves only to iron the paper and give it a smooth surface; that the liquid surface cannot be polished in any true sense, while the paper is passing over the plate, *F*; and that the polishing, after the ironing, is due to friction. In support of this theory the defendant's machine was stopped while being operated, and a length of paper extending throughout the elements of the process was cut out and marked with cross-lines,

showing the successive parts of it corresponding with the successive parts of the machine. This length of paper is produced. It is claimed that this exhibit shows that the wax came through the paper and appeared on the opposite surface of it while it was on the waxing cylinder. In connection with the foregoing views, it is contended for the defendant that the blocks of wood, *J, J*, are placed on the paper solely to keep it in contact with the heated plate, *F*; that they are not heated and do not become hot, but simply warm, and can be handled with perfect comfort; that a small piece of solid paraffine allowed to remain on the side of the weights exposed to the plate did not melt, while a small piece of it placed on the plate melted almost instantaneously; that, as far as concerns the blocks, *J, J*, the plate is the source of heat; and that the blocks do not and cannot diffuse heat towards the paper and the plate. In regard to claim 5 of the re-issue, the defendant contends that he does not heat his paper from the opposite side, and 589 thereby fuse the wax into the fabric of the paper; that there is nothing to depress the web of paper below the level of the edge of the groove, *h*, while it is passing over that edge, and so make a scraping action to remove the surplus wax; that the wax is maintained in a melted state throughout, and so is not remelted; and that the ironing is produced by the friction of the waxed surface against the plate.

It is admitted by the defendant, that, while the paper is passing across the heated plate, *F*, its previously waxed surface is maintained in close contact with the surface of the plate by the action of the weighted bars, *J, J*, coated with felt, and of the brush. It is plain that the paper, while passing over the waxing cylinder, not only receives wax, but absorbs a given quantity of it. The wax may even appear on the opposite surface of the paper while the paper is still in contact with the cylinder. But it is impossible to

believe that the subsequent use of the heated plate, the weighted bars, the brush, the groove in the plate, and the heated steam-pipe, is not because thereby the wax is thoroughly incorporated into and diffused throughout the body of the paper and the fabric made merchantable. Even if it be necessary that the wax should be maintained in a melted state to be ironed or smoothed, yet, in this very operation, by the heat which is maintained as the paper passes under the weighted blocks and the brush, in close contact with the plate, the thorough diffusion or incorporation of the melted wax into the fabric of the paper is secured. This heat is thus maintained so as to secure the thorough heating of the unwaxed surface of the paper, and so allow the wax to follow the pores to and throughout that surface, from the waxed surface and through the body, and become a uniform body of wax in all the paper. To say that the heated plate keeps the wax fused only so as to allow the laws of nature to diffuse the wax throughout the breadth of the paper, is only to concede the infringement. In all machinery, the arrangement of it is designed to secure the operation of laws whose operation is certain to follow such arrangement of it, and those certain laws are the laws of nature; and it is because those known laws are certain 590 to follow such arrangement, that the arrangement is made. The arrangement is none the less an invention because it brings into operation the laws of nature.

It is true that claim 5 speaks of heating the paper from the opposite side, to spread and fuse the wax into the fabric of the paper; and that, in the plaintiff's patent, the unwaxed surface of the paper is next to the heated cylinder, *b*, while in the defendant's apparatus the waxed surface is next to the heated plate. But the plaintiff's specification shows, and the fact is plain, that the object of the maintaining of the heat is to maintain it at the unwaxed surface of the paper, so as to draw the wax from the waxed surface through

the body to the unwaxed surface, by reason of its melted condition and of the absorbing character of the paper. This is expressed in claim 3, where it is said, that, after the heated wax is applied to one surface of the paper, the paper is heated at the other surface, to draw the wax into the paper. That is the operation, and the defendant's machine performs it by substantially the same means, although in that machine the waxed surface of the paper is placed next the heated plate, because the arrangement of plate, paper, weighted bars, and brush is such as to heat the paper at its unwaxed surface, and thus keep the wax melted and secure its incorporation and diffusion in the same way and to the same extent secured by the plaintiff. Claim 5 is for a process, not for machinery. It is a claim to an art, consisting of successive steps, which result in waxing the paper. The steps specified in claim 5 are four in number. All those four steps are practiced by the defendant in substantially the same way and the same order as by the plaintiff. The raw paper is moved over and in contact with a steam-heated cylinder which acts to spread the wax on the surface of the paper. This is step one of the plaintiff. In the passage of the paper over the plate and under the bars, *J, J*, the action is such as to heat the unwaxed surface of the paper where it is closely pressed by the bars at the place of contact between the bars and such unwaxed surface, and keep the wax melted and thus draw and spread and fuse it into the fabric of the paper 591 between the waxed surface and the unwaxed surface, and on the latter. This is step two of the plaintiff. The drawing of the paper, after it leaves the brush, across the groove in the plate, allows any surplus wax to drop into the groove from the waxed surface. This is step three of the plaintiff. The drawing of the waxed surface in contact with the heated plate beyond the groove and then in contact with the pipe, *M*, keeps the

wax in such a melted state that the waxed surface of the paper is polished. This is step four of the plaintiff.

As to claim 3, that also is infringed. The heated cylinder, *C*, corresponds to the plaintiff's heated cylinder, *a*. The troughs in the two correspond. The bars, *J, J*, acting with the heated plate, *F*, correspond to the plaintiff's cylinder, *b*. The groove corresponds to the plaintiff's scraper, *l*. There are means for supplying paper. The heated wax is applied to one surface of the web of paper by the heated cylinder, *C*, and afterwards the paper is heated at the other surface, to draw the wax into the paper, by the action of the bars, *J, J*, in conjunction with the heated plate, *F*.

Claim 2 is infringed. The melted wax is transferred from a trough to the paper by a roller, which is a hollow, heated cylinder. The paper is moved in contact with such roller, and the surplus wax is removed by a scraper. The scraper intended by the claim is the scraper *x*, the office of which is stated to be to remove the surplus wax and to allow only a uniform layer of wax to adhere to the cylinder, with a view to having the cylinder apply such layer to the paper. The scraper spoken of in the claim is a scraper used to perform part of the process of applying the wax to the paper, in its initial application. It is, therefore, the scraper *x*; but even if it were the scraper *l*, the groove in the plate, *F*, corresponds to that scraper.

Claim 1 is infringed, because there is a heated cylinder revolved within a trough containing wax, and acting to heat the wax and apply a layer of it to the web of paper.

The defendant's expert refers to the following prior patents:

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English patent No. 10,774, to Thomas R. Williams, dated July 21, 1845, specification enrolled January 20, 1846; what he calls "British letters patent No. 55, of 1862, to John Stenhouse," a copy of which is not

furnished; United States patent No. 97,893, granted December 14, 1869, to Cheney and Milliken, assignees of John Stenhouse, and patented in England January 8, 1862; English patent No. 5,849, to Thomas Cobb, dated September 15, 1829, specification enrolled March 15, 1830; and United States patent No. 157,068, granted November 24, 1874, to Richard J. Edwards.

But the only statement made in reference to those patents as affecting claims 2, 3, and 5, of re-issue No. 8,460, is that the plaintiff's scraper, x, is old and is shown in those patents. In regard to claim 1, the statement is that "the device" is old and is shown in those patents. No reasons are given. What it is in those patents that is referred to is not pointed out. The scraper, x, is not claimed by the plaintiff by itself. It is not asserted that either claim 2 or claim 3 or claim 5 is shown or described in any of those patents. The burden is on the defendant to make out anticipation. The plaintiff's expert states that he does not find claim 1 or 2 or 3 or 5 in the Williams' patent, No. 10,774, and he gives his reasons. He examines an English patent, No. 1,379, granted to one Edwards in 1872, (which is understood to show what is shown in the United States Edwards' patent, No. 157,068,) and says that it does not anticipate claim 1 or 2 or 3 or 5, and he gives his reasons. He also alludes to the Cobb patent, and says that it is for making roofing, and to the Stenhouse patent, No. 97,893, and says that it shows no machine at all. He also says that neither Stenhouse, nor Cobb, nor Edwards, shows a heated cylinder acting to heat wax and to apply the wax to paper preparatory to the subsequent drawing of the wax into the paper. Certain it is that no patent referred to by the defendant's expert affects claims 2, 3, or 5, and claim 1 must stand, so far as this motion is concerned.

It is quite clear, from the history of the article made by the plaintiff's machine and process, that that article was not capable of being made by any machine or mechanical process before made known. The article existed before and was a very desirable article, but it was made by hand and was too 593 expensive for general use. The plaintiff, being in the business of making paraffine or wax candles, had his attention directed to waxed paper, then made by hand. It was the first time he had seen it. He was told that it was made by hand, and was too expensive for general use, and that it would be a good thing to get up a cheaper method of making it. He immediately began experiments which resulted in the machine and the process which he patented by his original patent No. 193,867. He was the first person who ever made waxed paper by machinery, or in a continuous web. The total amount before made by hand was less than 100 reams a year, and it sold for four dollars a ream, and was of inferior quality to that made by the machine. Making it cheaper and of better quality has caused it to be applied to many new uses, and in fact created a new branch of industry. The sale now is 100,000 reams a year, the plaintiff has reduced the price to one dollar a ream, and infringers have sold it at 60 cents a ream. The plaintiff's rights have been generally respected, but he has sued infringers and stopped some by suit and otherwise. Under all these circumstances, his patent being a pioneer and a foundation patent, both as to process and to machine, is not to be construed as confined to specific details, if fairly admitting of the liberal construction which such a patent is entitled to. It does admit of the construction which has been given to it, and it is entitled to that construction.

The other patent sued on is No. 209,393, granted to the plaintiff October 29, 1878, for an "improvement in waxing paper." The specification says that the

invention is an improvement on No. 193,867, and that “a reference is hereby made to the same for a description of the construction and operation of the parts, except so far as the present features of improvement.” The cylinders, *a* and *b*, and the trough, *n*, are the same in the drawings of No. 209,393, as in the drawings of re-issue No. 8,460. The specification says:

“The roller or cylinder, *a*, revolving in the trough, *n*, is heated by steam introduced into the interior or otherwise, and the cylinder *a* is located in relation to the cylinder *b*, and roll of paper, in such a manner that the roll of paper is in contact with its periphery for a space of two or three inches (more or less) in width, and the speed of the paper is different to that 594 of the surface of roller, *a*, in order that, where the paper moves faster than the surface of the roller, *a*, the roller, *a*, will spread the paraffine wax in a thin layer upon the paper, because the heated wax is maintained in a fluid condition by the heat of the roller, and the thickness of the layer of wax on the paper to that on the cylinder will be in proportion to the relative speed of the paper and the roller, *a*, and, if the wax is to be applied in greater quantities, the surface speed of the roller, *a*, is increased so as to be greater than that of the roll of paper, and a thicker layer of wax is applied to the sheet of paper.”

Claims 1 and 2, which are those here concerned, are as follows:

“(1) The method herein specified, of waxing paper, consisting in drawing the paper over the surface of a cylinder coated with melted wax at a speed different to the movement of the surface of the cylinder, so as to regulate the thickness of the layer of wax by the relative speed of the paper to that of the surface of the waxed cylinder, substantially as set forth. (2) The combination, in a machine for waxing paper, of a trough for the wax, a heated cylinder for transferring

the wax to the paper, and mechanism for moving the waxing cylinder at a different speed of surface from that of the paper with which it is in contact, substantially as specified.”

The plaintiff’s expert, in an affidavit made by him January 3, 1881, states that the defendant’s machine before described, and which the expert says he inspected in operation, in the presence of the defendant, on November 27, 1880, “contains mechanism for so moving the paper with reference to the cylinder,”—that is, as described in No. 209,393,—“and moves it at a faster speed than the cylinder;” and that, therefore, it contains the subject-matter of claims 1 and 2 of No. 209,393. In another affidavit made by the same expert, on the same day, he says:

“The machine of defendant I saw in operation at his factory making waxed paper, contains the differentiation of speed claimed by complainant as aforesaid, and contains mechanism therefor, and for producing waxed paper thereby, including the scraper for removing surplus wax from the cylinder.”

The defendant, in an affidavit made January 14, 1881, quotes what the plaintiff’s expert says, as above, in his first affidavit, and states that that part of said affidavit in which said expert so states “is not true,” and that, “as a matter of fact, in the defendant’s machine both the web of paper and the waxing cylinder are run at the same rate of speed.” This 595 is hardly a denial that, on November 27, 1880, the machine contained the mechanism stated, or that the expert, on that day, saw the paper moving in the machine at a faster speed than the cylinder, as claimed in the plaintiff’s patent.

The defendant’s expert states that the mechanism referred to is shown in the Williams patent, before mentioned, No. 10,774; and in the English provisional specification of Alexander Robertson, No. 2,315, filed

October 16, 1858; and in English letters patent to Stanislas T. M. Sorel, No. 1,440, of 1855; and in English letters patent to John Dickinson, No. 4,152, of 1817. No copy of the Sorel patent or of the Dickinson patent has been furnished to me. The expert does not state what it is he refers to in any one of the four patents. The plaintiff's expert says that Williams does not refer to the subject. He does not allude to Robertson or Sorel. He examines the Dickinson specification at length, and says that it shows that the differentiation of speed was known to Dickinson in the operation of sizing paper, but that the plaintiff's scraper, *x*, is wanting in Dickinson; that without that scraper it is not possible to utilize the variation of speed in waxing paper; that the scraper removes from the cylinder the greater proportion of the wax taken up by it from the trough: that the method of reducing, by the differentiation of speed, the amount of wax to be deposited on the paper, is a method added to the method of reducing such amount by means of the scraper; that the scraper, though not referred to by name in the text of No. 209,393, is clearly shown in the drawing; that the language of the text in regard to No. 193,867, and the reference thereto "for a description of the construction and operation of the parts, except so far as the present features of improvement," is a substantial incorporation of the new improvement upon the former one; that the specification of No. 193,867 fully describes the scraper, *x*; that, taking the two patents together, the one as an improvement on the other, the scraper is an essential part of the mechanism, and its operation is part of the method named in claim 1 of No. 209,393; and that, therefore, Dickinson does not contain plaintiff's invention, as secured 596 by claims 1 and 2 of No. 209,393. Claim 1 is to a method, and claim 2 is to a combination of machinery. The plaintiff's expert says that Dickinson does not, in his drawings,

show any machinery for effecting the differentiation of speed, but simply says that it might be done; yet that, if the machinery he does show was adapted to waxing paper by merely substituting wax for size, the description in Dickinson would be sufficient without drawings.

The specification of No. 193,867 is not furnished to me, but I assume that it states what is found in the specification of re-issue No. 8,460, which is that "the scraper, *x*, is applied to the cylinder, *a*, between the wax trough and the place of contact with the paper to remove surplus wax and only allow a uniform layer of wax to adhere to the heated cylinder, *a*." Taking the description in No. 209,393 as if the description in No. 193,867 were incorporated in it, as it must be, and assuming that the latter describes the scraper, *x*, in the above terms, "the cylinder coated with melted wax," in claim 1 of No. 209,393, must be understood as meaning a cylinder coated "substantially as set forth;" that is, with wax of the thickness and uniformity left after applying the scraper, *x*. In the like view, the expressions in claim 2, "a heated cylinder for transferring the wax to the paper" and "the waxing cylinder," must be understood as meaning a cylinder "substantially as specified;" that is, not only a cylinder coated with melted wax, but a cylinder coated with wax of the thickness and uniformity of the coat of wax with which the cylinder in the description would be coated, namely, the coat left after using the described scraper, *x*. This is the proper construction of the two claims, and under it neither the Dickinson patent nor any other patent, so far as it appears, anticipates the claims; and, as the defendant used the scraper, *x*, in connection with the differentiation of speed, he must be held to have infringed the claims.

An injunction is granted on claims 1, 2, 3, and 5 of re-issue No. 8,460, and on claims 1 and 2 of No. 209,393.

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