

Correspondence.

Lightning for Diamond Making.

To the Editor of the Scientific American:

I notice in your issue of July 26 that a correspondent of *English Mechanic* proposes to utilize lightning for the purpose of manufacturing diamonds, but has failed thus far on account of the scarcity of lightning strokes in the locality in which his apparatus has been erected.

Will you please inform the gentleman through your paper that I can show him a place where lightning strikes on an average once a year; at least it has done so for the last four years, keeping within a radius of two hundred yards from my house.

An annual yield of half a bushel or so of diamonds will amply repay all expenses of moving and resetting the apparatus. No charges made for this information; a donation for the rebuilding of my school, destroyed by lightning a couple of weeks ago, will, however, be thankfully received.

PETER J. DESMETT,
Pastor of St. Mary's.

Cheboygan, Mich., July 28, 1884.

Work of a Small Engine.

To the Editor of the Scientific American:

We have in our mill a direct-acting engine, 10" x 12" cylinder, which was fed last season from a small boiler, 40" x 10", thirty-two 3" flues, with a steam dome, 24" x 3'. This engine runs a 60 inch saw, with 80 to 90 pounds pressure, 450 to 600 revolutions per minute, cutting 20,000 feet of elm per day; size of steam pipe, 2 1/2"; size of exhaust, 8". The exhaust from this engine was fed into steam boxes, making an estimated back pressure against it of 50 pounds. The same engine is fed this season with the same sized pipe from a larger boiler, and is doing even better. It is commonly run up to 600 revolutions per minute, as tested by the speed indicator. The reason of our putting in a larger boiler was to get additional steam for another engine, not because we found the other boiler at all inadequate. The manner of fitting a saw has a great deal to do with the power of an engine; poor fitting will choke an engine down as quick as anything.

F. H. S.

Trenton, Mich., August 4.

[The statement of F. H. S. seems rather extravagant—600 revolutions per minute with 80 or 90 pounds steam, with 50 pounds back pressure, leaving 30 to 40 pounds only as utilized, cutting 20,000 feet of elm per day. Who will add their experience to this?—ED.]

The Registration of Labels.

To the Editor of the Scientific American:

An intelligent discussion of any controverted point in the statutes which the Patent Office is required to administer is always of interest and value to us who are employed in the office, as well as to the public, to whom presumably such discussions in the columns of the *SCIENTIFIC AMERICAN* are addressed. I have therefore read with interest two articles which you have recently published criticising the action of the Commissioner of Patents in refusing to admit to registration, under the act of June 18, 1874, labels which in his judgment constitute trade marks. It is none of my business to defend one so well able to take care of himself as the present Commissioner, and yet for the information of the public there are some things not yet stated in your valuable columns which in fairness ought to be exhibited as elements in the determination of the question whether he is right or not in the position he takes.

I therefore venture to ask you to print the full text of the section of the law whose interpretation is in question, and which is as follows:

SEC. 3. That in the construction of this act the words 'engraving, cut, and print' shall be applied only to pictorial illustrations or works connected with the fine arts, and no prints or labels designed to be used for any other articles of manufacture shall be entered under the copyright law, but may be registered in the Patent Office. And the Commissioner of Patents is hereby charged with the supervision and control of the entry or registry of such prints or labels, in conformity with the regulations provided by law as to copyright and prints, except that there shall be paid for recording the title of any print or label, *not a trade mark*, six dollars, which shall cover the expense of furnishing a copy of the record, under the seal of the Commissioner of Patents, to the party entering the same."

I agree with you that there is room for doubt as to the constitutionality of this law; but with that the Commissioner has nothing to do. As long as no court having authority has pronounced upon the question, and the statute stands unrepealed, he must administer it in the interest of the public, interpreting it in accordance with his best judgment.

He may employ such means as he finds best to guide his judgment, may seek the aid of counsel, may endeavor to procure the determination of courts, but no law can be so framed as to take away from the executive officer to whom it is committed to administer, all exercise of discretion.

Now I think no one can read carefully the above section without observing that some discretionary power is conferred upon the Commissioner.

He is charged with "the entry of such prints and labels in conformity with the regulations provided by law as to copyright and prints," but the statute goes on to particular

ize, that prints and labels *such as are not trade marks* are the only ones provided for under it.

Now, as you say, "a trade mark is defined by law, a label is not." That readers may not be misled, it is as well to say here, that when you say defined "by law" you do not mean *by statute*, at least in the United States. What constitutes a trade mark is determined by a thousand decisions and rulings of the courts; and, unfortunately perhaps, there is not a single decision or ruling of United States courts, so far as I am aware, out of which a legal definition of a label can be derived.

Still, a trade mark being well defined, it can be easily apparent to the Commissioner, when a case is presented to him, whether it is a trade mark or not. No legal definition of a label is needed to guide him in this question, and being, as he interprets the statute, inhibited from registering any labels but such as are not trade marks—trade marks within the well known definitions—it appears to me that when he refuses to register any label because in his judgment it amounts to a trade mark, he is simply exercising the discretion which the statute intends he shall exercise.

The Willcox & Gibbs case, which you cite in your article of Aug. 9, was a suit for *mandamus*. Legally it settled the status of the particular case, and no other. The Commissioner has never been legally bound by it.

The late Commissioner thought best to be guided by it; the present Commissioner does not. I think I may venture to say that he will be perfectly satisfied to have a case carried up to the Supreme Court of the District of Columbia, where it will be properly argued by counsel on his behalf (as the Willcox & Gibbs case was not), and even to the Supreme Court of the United States, for a final determination of the meaning of what has already been the most obscure statute with which the office has had to deal.

The public can hardly be aware of the confusion and conflict of rights resulting from the practice upon which you insist, but the office is painfully aware of them, and under constant embarrassment in consequence of them. The position taken by the Commissioner is the only one now seen by which this confusion can be prevented; and unless it is desired that the office shall be kept in hot water by the issue of papers which, whatever their actual value, are employed as conflicting evidence of title, he should be sustained in the interest of honest trade and fair dealing.

Very truly yours,

F. A. SEELY,

Examiner of Trade Marks.

U. S. Patent Office, Aug. 9, 1884.

The Label Registry Statute, as we may term it (Sec. 3, 4, and 5, Act of June 18, 1874, referring to patents, trade marks, and copyrights), is characterized by our learned correspondent as obscure. Such being admitted, it would seem proper to use in its interpretation any light afforded by the courts. In the decision in the case we cited—the Willcox & Gibbs Sewing Mach. Co. vs. E. M. Marble, Com.—the statutes are so clearly explained and defined that to our minds it seems that further light is not needed. This case treats the question in the broadest possible way. Of course, all the decision did "legally" was to determine the issuing of the final *mandamus*. The three judges then sitting discussed the question in so full a form, and yet so concisely, that it is an injustice to quote fragments of the decision. We will quote enough, however, to show that it "practically" should settle, as far as the office is concerned, the status of all this class of cases.

"Of course, then, when this control over the registry of the same prints now called 'labels which are not trade marks' was transferred to the Commissioner of Patents, it had only the same limited application, and did not include any discretion to determine whether a particular label should be classed as a trade mark or as only a label. If Congress had intended to take away from the owner of a label his former right to determine what use he should make of it and how he would have it entered, that intention would have been plainly expressed. The actual intention was merely to change the place of registry. When an applicant for registry complies with all the requirements of the law and the lawful regulations, as the relator appears to have done, the function of the Commissioner is merely ministerial."

If the Willcox & Gibbs case was not argued properly by counsel, it would make little difference before such a tribunal as the District of Columbia Supreme Court. The three judges were well able, *sua sponte*, to investigate all the law relating to the case. In admitting trade marks to registration an examination is required to see that they comply with the law, scattered through many decisions, as our correspondent observes. This examination is a source of expense to the office, and is provided for in the fee (\$25) charged for registration as trade mark. In registering labels no examination is authorized, and this seems indicated by the much lower fee (\$6) charged for label registration.

The courts have been prolific in decisions on trademarks; the common sense interpretation of the statutes makes such definition of labels uncalled for. The Willcox & Gibbs decision gives an abler and more concise statement of the matter than we could pretend to, so we do not feel called on to argue the case at length. At present the Hon. Commissioner of Patents simply refuses to accept the opinion of the Supreme Court, deliberately expressed, as of weight in affecting his action. Finally, we beg leave to tender our thanks to our correspondent for the courteous manner in which he has criticised the two articles.

Conductivity of Metals and Alloys.

M. Lazare Weiller has conducted a new and independent investigation into the electrical conductivity of certain metals and alloys, the results of which he lately presented to the Society Internationale des Electriciens. For the purposes of his experiments he caused small bars of metal to be cast of a diameter of about 13 mm. (0.51 in.). These were divided in such a way as to show the grain of the fracture, and one part was drawn into wire to be used in the trials. Those alloys which can neither be drawn nor rolled easily, such as silicides and phosphides, were tested directly on the cast bars after the method of Sir William Thomson. In the trials the bars, fitted with binding screws at each end, rested upon knife edges at an invariable distance apart. These knife edges were respectively in communication with two resistances composed of two parts, of which the one was a thousandth part of the other. The extremity of one was connected to the fixed terminal of a Wheatstone bridge with a sliding contact, and the other to the slider itself.

The two points which separated the resistances communicated with the galvanometer. Finally the extremities of the bridge were connected to the binding screws by means of a circuit, which included a battery of four elements and a contact key.

The resistance sought was then equal to the resistance measured upon the wire of the bridge, divided by 1,000. The measurements, which were very carefully and accurately conducted, and were effected on a great number of specimens, were made in part by M. Weiller himself, and in part by M. Duffon, in the laboratory of Messrs. Breguet. The results are given in the following table:

1. Pure silver	100
2. Pure copper	100
3. Refined and crystallized copper	99.9
4. Telegraphic silicious bronze	93
5. Alloy of copper and silver (50 per cent)	86.65
6. Pure gold	78
7. Silicide of copper with 4 per cent of silicium	75
8. Silicide of copper with 12 per cent of silicium	54.7
9. Pure aluminium	51.2
10. Tin with 12 per cent of sodium	46.9
11. Telephonic silicious bronze	35
12. Copper with 10 per cent of lead	30
13. Pure zinc	29.9
14. Telephonic phosphor bronze	29
15. Silicious brass with 25 per cent of zinc	26.49
16. Brass with 35 per cent of zinc	21.5
17. Phosphor tin	17.7
18. Alloy of gold and silver (50 per cent)	16.12
19. Swedish iron	16
20. Pure Banca tin	15.45
21. Antimonial copper	12.7
22. Aluminium bronze (10 per cent)	12.6
23. Siemens steel	12
24. Pure platinum	10.6
25. Copper with 10 per cent of nickel	10.6
26. Cadmium amalgam (5 per cent)	10.2
27. Dronier mercurial bronze	10.14
28. Arsenical copper (10 per cent)	9.1
29. Pure lead	8.88
30. Bronze with 20 per cent of tin	8.4
31. Pure nickel	7.89
32. Phosphor-bronze with 10 per cent of tin	6.5
33. Phosphor-copper with 9 per cent of phosphorus	4.9
34. Antimony	3.88

The resistances are not given in ohms, but as proportions to a given body. They may be reduced to the conventional standard on the assumption that a wire of pure silver, one millimeter in diameter, has, at a temperature of zero Cent., a resistance of 19.37 ohms per kilometer.

A New Domestic Machine Wanted.

We are all of us too apt to forget past annoyances in protracted but temporary exemption from them, and yet what has been will be again, with many inconveniences at least, especially those which are peculiar to the different seasons. The severity of last winter, however, must be fresh in the memories of most of us. The frequency of snow falls, and the necessity and expense of clearing off the sidewalks in front of our dwellings, made many a good housewife's heart ache, and the numerous annoyances, dangers, and accidents to pedestrians, consequent upon the accumulation of snow and ice on our street pavements, were too forcibly brought to our notice or experience to be very easily forgotten.

Here then, we think, is a field for new and profitable invention, and the man who can devise a good and cheap machine for removing the snow and ice from in front of our dwellings and stores would be a public benefactor. All previous attempts employing heat have been failures. What is needed is a good hand machine that can be manipulated much in the same manner as a carpet sweeper or a hand lawn mower, and which can be readily used by any ordinary domestic. Something more than a mere brush or scraper would be requisite, but such a machine need not necessarily be very complicated. We are tired and ashamed of those clumsy expedients now in use, the shovel and the crowbar, and have often wondered why more efficient and economical means could not be discovered.

If a cheap and serviceable machine, such as we have here indicated, can be invented, there is money in it; but whoever would try to bring out an implement of the kind should not leave it till the winter is on us again, but at once proceed to make the effort and have his invention patented and his machines, in sufficient quantities, in the hands of the dealers in time to meet the coming winter's demand; and this would not be confined to a single place, but would apply to every city afflicted with snow and ice during no inconsiderable portion of the year.