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(Illustrated articles are marked with an asterisk.)

PUBLICATION OF THE PATENTS.

Our readers will remember that the publication of the diagrams and abstracts of the patents, in the annual Patent Office reports, was discontinued by Congress some three years ago, much to the dissatisfaction and inconvenience of a large portion of the public. But there was good reason for the discontinuance. The printing entailed an immense cost upon the government, while large quantities of the books, given over as they were to members of Congress for free distribution, were thrown away and wasted, or gathered into the cellars of wrapping paper dealers.

After the discontinuance of the reports, the Commissioner of Patents began the weekly publication of the patent claims in a special pamphlet, which has proved of much value, and is in a measure a substitute for the annual reports. This weekly pamphlet has lately been styled the *Official Gazette*, and it is furnished to regular subscribers at $5 a year. To make the *Gazette* still more complete, the Commissioner of Patents now proposes to publish in it, weekly, the drawings, with abstracts, of all patents issued. For the information of members of Congress and to illustrate the proposed method of publication, the Commissioner has caused to be issued one number of the *Gazette* with abstracts of the specifications, claims, and drawings of the patents for one week, the drawings being photo-lithographed on a reduced scale. This number is now before us, and it is altogether the most concise, economical, practicable and valuable form of patent publication that has yet been produced at Washington. It reflects the highest credit upon the Commissioner of Patents, and we trust that Congress will promptly grant the necessary authority and means for its continued and regular issue.

The present number of the *Gazette* presents the abstracts, claims and drawings of 205 new patents, and they occupy 26 pages. All the drawings are perfectly clear, and yet so compact is the printing that a single volume of 1,600 pages would suffice to contain the drawings and abridgments of all the patents for an entire year, or about thirteen thousand in number. The last complete Patent Office report, that of 1868, consisted of four volumes, comprising over 3,500 pages, and in it were illustrated not quite thirteen thousand patents. To be sure, the pages were a little smaller than those of the *Gazette;* but the economy of space, of paper, and consequently of expense, is considerably in favor of Commissioner Leggett's present plan of printing.

We earnestly hope that Congress will authorize the proposed publication. Nothing contributes more directly to the growth and prosperity of our varied industries than the general circulation of intelligent descriptions and drawings of the latest improvements. All our artisans are interested in them; they stimulate thought, they encourage industrial progress.

Having thus signified our approval of the Commissioner's project, for we regard it as a step in the right direction, we will now suggest, to him and to Congress, some reasons for advancing a little further. Instead of giving only abstracts of the specifications, we ask the Government to *print the specifications in full.*

The Commissioner shows us, in his specimen, how readily the drawings may be reduced and printed, and how compactly the abstracts may be presented. We ask him now to compact the publication a little more, and print the specifications and drawings in full every week, thus placing them conveniently before the public.

The chief defect of our present patent system consists in its lack of provision for the full publication of existing patents *in a condensed, cheap and popular form, so that everybody may possess them.* This once accomplished, patents may be granted to every applicant, and the present cumbersome and defective system of Patent Office examinations, with all its delays, expenses, injustices, and unnecessary prosecutions, may be discarded. Instead of a small corps of official examiners, we should then have twenty thousand examiners, every applicant for a patent being his own examiner.

In no country in the world is there so much patent litigation, or so much time and money wasted in procuring, defending, and wrangling about patents as in the United States. The value and validity of a patent rests upon the clearness of its statements and its priority over other patents. But when these other patents are unknown or difficult of access by the people, as are our patents, quarrels and confusion are the natural result.

It may be laid down as an axiom in regard to patents that, where the full specifications and drawings are easily accessible to the public, there will be little or no patent litigation.

In England, the drawings and specifications of all patents are printed in full and are, to a considerable extent, accessible to the public. The practical result is that England is almost exempt from patent litigation, although patents are granted to almost every person who chooses to file an application.

The evidence recently presented to Parliament shows that in all England the average number of patent cases in which proceedings are commenced before the courts is *only eighteen cases per annum!*

To say nothing of our courts, there is more trouble and litigation over patent cases before our Patent Office in one month, than there is in all the courts of England in an entire year! It is true that five times as many patents are granted here; but the excess of American litigation is out of all proportion to the augmentation of patents. We apply the term litigation to all contested patent cases.

The remedy is simple. 1. *Print the patents in full, at the cheapest rates, so that everybody may possess them.* 2. Grant patents to every applicant who presents proper papers. 3. Dispense with models, official examinations, rejections, appeals to Boards of Examiners, appeals to the Commissioner, appeals to the District courts, and all the other cumbersome machinery of the Patent Office which now burdens the inventor with expense and annoyance.

CONGRESS AND PATENT EXTENSION CASES.

As will be gathered from the letter of our special correspondent at Washington, published in another column, there is at the present time an unusual number of applications before the Committees on Patents in Congress for extensions of patents. The success of a few of the applicants, and the apparent facility with which those presented are reported upon by the Committees and passed by Congress, is giving encouragement to those disappointed in their efforts to obtain extensions before the Patent Office, and so increases the demands upon Congress for special legislation as to threaten to become a serious evil.

It has always been our opinion that Congress ought not to meddle with these cases, an opinion to which we have given the most clear and emphatic expression in these columns. We have never seen cause to change our views upon this subject, and we now repeat that the only proper action on the part of the National Legislature in regard to such applications is to authorize the Commissioner to take cognizance of and act upon applications which for valid reasons have not been presented during the time fixed by our patent laws. An application that the Commissioner has refused should never receive the sanction of the Committee on Patents, nor the time of Congress be used in discussing such claims. In the first place, that body has not the requisite knowledge, or time to obtain knowledge, on which to act intelligently. Second, the presentation of such applications is like those of claims, a great opportunity to the lobby, who will either enforce inventors to entrust these camp vultures with the prosecution of applications, or strive to defeat any favorable action. It is well known that the merit of a claim is seldom what passes it. We were once, when pressing the merits of a claim upon the mind of a distinguished member of the third house, interrupted by the bluff assurance that "bless your innocence, the merits make no manner of difference. Claims don't go through on their merits; but they do go through, and if you can spend money enough yours will go through, and not without." We would not spend money enough in this way, so our claim still stands unsatisfied.

It will not be long, if this sort of patent extension legislation continues, before it will become a matter of lobbying altogether, and it is not much better than that now. Occasionally the maladroitness of some blunderer gives the public a peep into the mysteries of lobbying. Some of our readers—not the oldest by any means—will recollect how one of these "too smart" manipulators, who pressed an application for the third extension of one of the most valuable patents ever granted, invited the lawgivers with their wives to a feast, and how beside each gentleman's plate was placed a handsome revolver mounted in the richest style, enveloped in a handsome case, and how beside each lady's plate was a box of the finest kids, and how, the fact being published abroad by the watch dogs of the press, the storm of protest thus evoked, through the lobby man's overdoing, made that gentleman's anticipated cake turn out the most underdone kind of dough. This thing was not done in a corner; that is probably the reason why it failed so signally in its desired effect, but it indicates the existence of the probabilities referred to. Skillful lobbyists understand more thoroughly the value of corners, both literal and figurative, than did the bungler who afforded the public an insight into the way things may be accomplished by demonstrating how not to do them.

The kind of action which we consider legitimate, namely, the authorization of the Commissioner to act on applications after the legal time has expired, may be exercised with justice and equity, and it gives less rise to jobbery; but the reasons for such exceptions should be good, and if, as in some cases, the fault rests with the party, who has omitted, through simple carelessness, to apply, within the period limited by law, to the Patent Office tribunal for his extension then we contend the applicant has no right to the attention of Congress to remedy his own heedlessness. The passing of an act to extend a patent, after the application has been refused by the Commissioner on grounds deemed valid and derived from thorough investigation, seems an insult to the intelligence of that officer, and is a kind of special legislation which must inevitably lead to corruption and foster monopolies. We see no reason why Congress should not as soon give a patent to a man who has been refused a grant on an original application as to extend a patent to one who has not only enjoyed all the privileges pertaining to his original patent, but has in the opinion of the Commissioner, who has the opportunity to know, reaped an adequate, or more than an adequate, reward for his invention and the labor and expense of introducing it to the public. But this is not the worst of patent legislation; after an extension of seven years by the Patent Office, making the monopoly enjoyed by the patentee 21 years—the limit allowed under the patent law—the patentee, or more usually the manufacturer monopolist in the name of the patentee, goes to Congress and asks a further extension for the poor inventor! Not because he has not been amply rewarded, but because he has made so much out of the invention as to enable him to afford the large expense necessary to enforce his claim. Those persistent applicants are the ones most likely to succeed before Congress, and it is against legislation in such cases that we most specially protest. Instead of encouraging and fostering inventions and manufactures, such legislation discourages the poorer inventors and brings into disrepute our patent system.

DRYING SUBSTANCES BY STEAM.

There are three physical states in which water may exist above the temperature of 32° Fahr.: first, as liquid; second, as saturated steam; third, as superheated steam. When the word "steam" is used alone, saturated steam is what is meant. Saturated steam always contains, as we have shown in previous articles, a specific number of units of heat in each unit of weight, no matter of what temperature or pressure. Steam generated where heat is applied only to the water from which the steam is made is always saturated, because no heat can pass into the water without converting a portion into steam. When we speak, then, of saturated steam, or simply *steam*, it is to be understood that such steam as contains the normal amount of water specific to steam generated from water under ordinary atmospheric pressure is meant. The weight of saturated steam corresponding to a given number of heat units is always the same for any pressure or temperature at which steam can be generated. This, of course, follows from the law previously stated, and therefore requires further no remark.

Superheated steam, on the contrary, is produced by applying heat to the steam while it is isolated from water, either by a *septum* of saturated steam, or by walls of metal or other suitable material. Superheated steam may contain more or less heat in proportion to its weight. It differs, therefore, from saturated steam in that its quantity of heat is not specific to its weight. These distinctions are important to the clear understanding of what is to follow.

Substances may be dried either by saturated steam or by superheated steam, and either the one or the other may be employed in one of two different ways, the principles of which differ.

First, the steam or superheated steam may be used in a confined state, as in racks of pipe, steam cylinders, etc. In this way, the heat is transmitted by the steam through the material, that surrounds it to the substance to be dried, the moisture in which, being thus transformed into vapor, passes off into the surrounding atmosphere. To successfully dry substances in this way, two points must be observed, namely, the water which accumulates in the heater must be constantly removed, and the air, which absorbs the vapor from the drying material, must be changed so often as not to become saturated. Free circulation of air in drying rooms heated by enclosed steam is therefore an absolute essential to success, and it should be secured even if necessary to use fans for the purpose. Cold dry air will dry substances faster than hot air saturated with watery vapor.

There are many substances, such as cotton or woolen yarn, white lead, sand, etc., that, having a great attraction for water, will not dry rapidly when confined steam at 212° Fahr. is employed. At this temperature, there is slow evaporation from the surface. The water converted into steam is condensed and held by action of capillary attraction at the surface. The water is thus slowly forced from the interior outward, and so on until the substance is at last sufficiently dried When drying is performed solely by heat externally applied, it will proceed almost as well at 90° as at 210°, provided a good circulation of air is maintained. The air cannot take up the water faster than the capillary attraction will convey it from within to the surface, and as up to a temperature of 212° this action is in no way aided by the expansive force of steam generated at higher temperatures in the interior, a