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(Illustrated articles are marked with an asterisk.)

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THE PATENT OFFICE AGAIN.

We last week reviewed some of the errors which had crept into the *administration* of the Patent Office. We shall now refer to others which are embodied in the *statute*. Both these classes of errors have sprung mainly from the same source, and are alike prejudicial to the inventor.

The act of July 8, 1870, which was a revision of all our patent laws, corrected or removed some of the defects which previously existed, but it introduced more mischiefs than it cured. Its chief changes interposed needless and unreasonable obstacles in the way of the inventor.

For instance, nothing is more important to him than the right to amend his patent through a reissue. Rarely does a patent, as first obtained, embody the invention in a fully available shape, and often is its real gist mistaken altogether. The common law authorized amendments by means of a surrender and reissue, and the statute regulated and rendered more definite the rights of the patentee in this respect. The great purpose, in both cases, was to limit the new patent to the real original invention, giving the full benefit thereof to the inventor, but nothing more.

To guard against abuse and to prevent a patentee from enlarging the scope of his patent, or from wringing in a new subject matter through a reissue, the courts have—rather severely—held that oral proof of the full scope of the original invention was inadmissible, and that nothing could be claimed in the reissued patent unless either the model, the drawings, or the specification—as originally filed—showed the invention thereof.

The new law has taken a most indefensible step in farther limitation of a previously existing right, by rendering the most reliable of record evidence wholly incompetent in such cases. The model or drawings may still be called as witnesses, but not the specification. No matter how fully or how clearly the invention may be set forth in the latter, still, in cases where there are drawings, nothing can be claimed in a reissue which is not shown in those drawings or in the model. A credibility is thus given to a *sign* or a *mute device*, which is absurdly denied to a *written declaration*. Pantomime is regarded as more reliable than articulate language. This is all wrong.

Again, it has always been considered a sound and just rule of practice that an application for a patent should be wholly *ex parte*, that no outsider should be allowed in any manner to interfere in the proceeding, and that he should not even know of its existence. The reason for this rule is that, as inventors are generally poor, if wealthy companies were allowed to interpose, such expensive controversies and harassing delays would result as would often prevent the obtaining of a just patent. After having obtained his patent, the inventor will be in a better condition to face his antagonist by securing auxiliaries or otherwise.

The act of 1870 introduces the anomaly that, in all appeals from the Commissioner, he "shall notify all parties who appear to be interested therein." This would enable them to appear and oppose the grant of a patent. The applicant is also required in such cases to be at the extra expense of procuring certified copies of all the original papers and evidence in the case. Whether intentional or otherwise, these provisions would in many cases operate as the denial of undoubted justice. Quite as reprehensible is another provision connected with these appeals. When the act of 1870 was before the committee which framed it, the then Commissioner endeavored to so change the previously existing system as to render a decision by him final, by cutting off appeals to the court. This was, however, so strenuously opposed, by those who sought to protect the interests of inventors, that the committee refused to adopt it. They even went so far in the opposite direction as to determine that—in cases of interferences, where there are antagonist parties either of whom may appeal, and where cases of sufficient importance to be appealed to the Commissioner would generally be certain to be carried to the court—the unsuccessful party, before the Board of Examiners in Chief, might appeal at once to the court, without the useless necessity of an intermediate appeal to the Commissioner. But when the act came to be published, all was found to be so far most unaccountably changed, that in interference cases not only did an appeal still lie to the Commissioner, but his decision was made absolutely final. The appeal to the court was thus cut off in those cases which of all others it is best qualified to decide, while in questions of mere patentability, with which the Commissioner may be presumed to be most conversant, and therefore best qualified to judge, the appeal still lies to the court.

These are given as mere specimens of the mistakes and incongruities in the new law, not as an attempt at their enumeration. There are many others of no trivial importance, most of which equally militate against the interests of inventors. The only effectual remedy is to be sought for in a general change or codification of the statute. And in making this change, the spirit which dictated the provision in the Federal Constitution by which the statute is authorized should never be lost sight of. The law should be framed in aid of the inventor, and not as an instrumentality for circumscribing his rights within their narrowest limits, or for annihilating them altogether. This is a dictate of sound policy as well as of the plainest justice.

There are many unreflecting minds who honestly regard the whole patent system as being founded on error, and who look upon a patentee as the possessor of an odious monopoly. If their notions are correct, the institution of property of all kinds should be abolished, for every kind of property is a monopoly. A patent for an invention is no more so than is a patent for land. But who would build a house, or cultivate a field, or otherwise provide for the comforts or necessities of life, if he were denied all property in the fruits of his labor, in other words, if he were not to enjoy a monopoly in what he had thus created? Civilization could never have existed without the institution of property. It would soon take its departure from the earth if that institution should cease to exist.

These principles are as applicable to inventions as to tangible objects. The application of communist doctrines may sometimes seem enticing, but the general rule would operate as perniciously in the one case as in the other. Deny all property in inventions, and you paralyse the efforts of that class in the community which, more than any other, has contributed and is still contributing to human progress. The thousands of minds who are devoting their every energy to the promotion of human welfare would feel that their chief inducement to effort had ceased to exist.

Monopolies are justly odious when made applicable to what was before common property, but not when limited to the authors of new creations or even new discoveries. The government whose flag is first planted on an uninhabited island is, by common consent, the owner thereof. How much more complete would have been its title thereto had it created that island! Such is the title of the inventor. Under a proper administration of a sound patent system, the patentee is only protected in his property to his own discovery, and, more generally, to his own creation. He would be allowed a limited monopoly in what, but for him, might never have existed, or, at all events, was previously unknown.

But we have heard it asserted that the inventor is only entitled to protection in the *machine* he builds, and that any mechanic ought to be equally protected in the work of his own hands, though identical in form and operation with that of the inventor. But in what does a real invention consist? It is not in the materials, nor in the contrivances out of which the machine is constructed. These are the mere instrumentalities which give expression to the thought that lies beyond. They bear the same relation to the real invention that the visible Universe does to its Creator, or that the material body does to the human soul. An invention is a soul or principle, which has found a material means of evincing its existence and character.

That many wrongs have resulted from the defects and abuses of our patent system no one will doubt, but these are certainly not greater than the frauds and crimes which have had their origin in the institution of property in material things. In both cases these evils are infinitely overbalanced by the advantages which result from that institution. Correction, and not annihilation, is the appropriate remedy for these mischiefs.

Our conclusion, therefore, is: *First*, that a well regulated patent system is of incalculable importance to the public welfare: *Secondly*, that the laws on this subject should aim primarily to encourage invention by facilitating the means of obtaining patents and protecting property therein, and: *Thirdly*, that in administering those laws the Office should be actuated by their spirit and purpose, and govern its conduct accordingly. To aid in bringing about these results has been the main purpose of these articles.

TWO TYPICAL EXPERIMENTS.

Dr. Bastian pursues his investigations touching the origin of life with praiseworthy energy. For every objection urged against the conclusiveness of his experiments, he straightway performs a new series to meet the difficulty, carrying the war into the very camp of the panspermatists, and keeping them constantly on the defensive. Results formerly denied are now admitted; but they are met by raising the thermal death point of certain germs to 227° or 230° Fah., and alleging that the organisms developed in boiled solutions, hermetically sealed, came from invisible germs not killed by the heat to which the solution had been subjected.

For the benefit of those raising this objection, he now reports the following experiments, selected from several, in some of which, he says, even higher temperatures were resorted to:

Experiment I: To a strong infusion of turnip, made faintly alkaline by *liquor potassæ* a few separate muscular fibers of codfish were added. Some of this mixture was then introduced into a flask of nearly two ounces capacity, and the neck of the flask was drawn out and hermetically sealed by a blowpipe flame while the fluid within was boiling. Thus closed, the flask was about half full of fluid. It was then placed in an iron digester, and gradually heated to a temperature from 270° to 275° Fah., at which it was kept for twenty minutes. For an entire hour the flask, heating and cooling, had a temperature exceeding 230° Fah., the alleged death point of bacteria germs. Withdrawn from the digester, the closed flask was kept at a temperature of 75° to 80° Fah., for eight weeks, a part of the time exposed to the influence of direct sunlight. After it had been ascertained that the flask was free from any crack or flaw, its neck was broken, and its contents examined. The fluid showed a decidedly acid reaction, and it had a sour though not fœtid odor, as though fermentation had taken place. It was also slightly turbid, and there was a well marked sediment, consisting of reddish brown fragments and a light flocculent deposit. On microscopical examination, the fragments were found to be portions of altered muscular fiber; the flocculent deposit was composed for the most part of granular aggregations of *bacteria*. In the portions of fluid and of deposit which were examined, there were thousands of bacteria, of most diverse shapes and sizes, either separated or aggregated into flakes. There were also a large number of moriliated chains of various lengths, of a kind very frequently met with in abscesses and other situations (where pyæmia or low typhoid states of the system exist) in the human subject. There were, in addition, a large number of *torula* corpuscles, besides brownish nucleated spore-like bodies, gradually increasing in size from mere specks, about one thirty-thousandth of an inch in diameter, up to one twenty-five-hundredth of an inch. Lastly, there was a small quantity of the mycelium of a fungus, bearing short lateral branches, most of which were capped by a single spore-like body.

Experiment II: A strong infusion of common cress, to which a few of the leaves and stalks of the plant were added, was enclosed in an hermetically closed flask, and treated in precisely the same manner, and at the same time, as the infusion of experiment I. The flask was opened the ninth week after heating. Before breaking the neck of the flask, the inbending of the glass under the blowpipe flame showed that it was still hermetically sealed. The reaction of the fluid was found to be distinctly acid, though there was no notable odor. The fluid was tolerably clear and free from scum; but there was a dirty-looking flocculent sediment at the bottom of the flask, amongst the *débris* of the cress. On microscopical examination (with a $\frac{1}{12}$th immersion objective), much altered chlorophyll existed, either dispersed or aggregated among the other granular matter of the sediment; and among some of this, three minute and delicate