Scientific American.

ESTABLISHED 1845.

MUNN & CO., Editors and Proprietors.

PUBLISHED WEEKLY AT
NO. 37 PARK ROW, NEW YORK.

O. D. MUNN. A. E. BEACH.

TERMS FOR THE SCIENTIFIC AMERICAN.

One copy, one year postage included..... $3 20
One copy, six months, postage included 1 60

Clubs.—One extra copy of THE SCIENTIFIC AMERICAN will be supplied gratis for every club of five subscribers at $3.20 each: additional copies at same proportionate rate. Postage prepaid.

Remit by postal order. Address

MUNN & CO., 37 Park Row, New York.

The Scientific American Supplement

Is a distinct paper from the SCIENTIFIC AMERICAN. THE SUPPLEMENT is issued weekly. Every number contains 16 octavo pages, uniform in size with SCIENTIFIC AMERICAN. Terms of subscription for SUPPLEMENT, $5 00 a year, postage paid, to subscribers Single copies, 10 cents. Sold by all news dealers throughout the country.

Combined Rates.—The SCIENTIFIC AMERICAN and SUPPLEMENT will be sent for one year postage free, on receipt of *seven dollars*. Both papers to one address or different addresses as desired.

The safest way to remit is by draft postal order, or registered letter.

Address MUNN & CO., 37 Park Row, N. Y.

Scientific American Export Edition.

The SCIENTIFIC AMERICAN Export Edition is a large and splendid periodical, issued once a month. Each number contains about one hundred large quarto pages, profusely illustrated, embracing: (1.) Most of the plates and pages of the four preceding weekly issues of the SCIENTIFIC AMERICAN, with its splendid engravings and valuable information; (2.) Commercial, trade, and manufacturing announcements of leading houses. Terms for Export Edition, $5.00 a year, sent prepaid to any part of the world. Single copies 50 cents. ☞ Manufacturers and others who desire to secure foreign trade may have large, and handsomely displayed announcements published in this edition at a very moderate cost.

The SCIENTIFIC AMERICAN Export Edition has a large guaranteed circulation in all commercial places throughout the world. Address MUNN & CO., 37 Park Row, New York.

NEW YORK, SATURDAY, JANUARY 29, 1881.

Contents.

(Illustrated articles are marked with an asterisk.)

TABLE OF CONTENTS OF

THE SCIENTIFIC AMERICAN SUPPLEMENT

No. 265,

For the Week ending January 29, 1881.

Price 10 cents. For sale by all newsdealers.

THE TENDENCY OF RECENT COURT DECISIONS WITH REGARD TO REISSUED PATENTS.

The patent laws provide for the reissue and correction of patents when the original is inoperative or invalid by reason of a defective or insufficient specification, or by reason of the patentee claiming as his invention or discovery more than he had a right to claim as new, provided it is shown that the error arose from inadvertence, accident, or mistake, without any fraudulent or deceptive intention on the part of the patentee.

The matter to be introduced into the amended specification is limited strictly to such as was clearly indicated, described, or suggested in the original specification, drawings, or model, and such as might have been lawfully claimed, but was not, for the reasons mentioned.

The practice of the Patent Office has been less exacting on this point than the rules prescribe, so that in many cases the reissue specifications have contained substantially new matter; sometimes matter which the patentee might lawfully have inserted and claimed originally, but failed to, through ignorance or oversight, and sometimes matter which had been disallowed by the Office or voluntarily disclaimed by the inventor to secure the issue of his patent. By means of such reissues the inventor's afterthoughts and discoveries have been covered, and too frequently the subsequent inventions of others, or processes and machinery which others may have brought into profitable use, knowing them to be not patented. In this way much injustice has been wrought, and occasion given for many if not most of the more serious complaints against the patent system.

At first the courts were inclined to hold that the decision of the Commissioner of Patents in granting the reissue was final and conclusive, and could not be revised. More recently there has been a manifest disposition to go behind the Commissioner's action to inquire whether he may not have exceeded his jurisdiction or improperly performed his duty in granting a reissue for more than was covered by the original patent. Thus in the case of Leggett *et al. vs.* Avery *et al.* (U. S. Supreme Court, October, 1879), it was held that no error had arisen through inadvertence, accident, or mistake, but that the Commissioner had committed manifest error in allowing the reissue for more than was included in the extended patent, and for what was expressly disclaimed therein. In this decision Mr. Justice Bradley remarked that the allowance of claims once formally abandoned by the applicant in order to get his patent through is the occasion of immense frauds upon the public, and is to be discountenanced. In the same connection he said:

"It is doubtful whether a reissue patent can be sustained in any case where it contains claims that have once been formally disclaimed by the patentee, or rejected with his acquiescence in order to obtain his patent. In such case the rejection (omission) of the claim can in no just sense be regarded as matter of inadvertence or mistake, and even if it were such the applicant would seem to be estopped from setting it up on application for a reissue."

In the case of the Giant Powder Company *vs.* the California Vigorite Powder Company *et al.* (U. S. Circuit Court, District of California, October, 1880, Field, J.), the right of the court to review a decision of the Patent Commissioner was clearly stated. In this case a reissued patent was declared invalid because its specification contained an invention of broader scope than the original. The court said:

"As the power to accept a surrender and issue new letters is vested exclusively in the Commissioner of Patents, his decision in the matter is not open to collateral attack in a suit for the infringement of reissued letters. His action, like that of all officers specially designated to perform a particular duty of a judicial character for the government is presumed to be correct until impeached by regular proceedings to avail or modify it. He must judge, in the first instance, of the sufficiency of the original specification whether the same is defective in any particular, whether such defect was the result of an unintentional error, and if so, to what extent a new or additional specification should be allowed to describe correctly the invention claimed; and it is to be assumed in every case that he has done his duty. The decisions of the Supreme Court to this effect are numerous, and the doctrine is one of the settled rules of patent law. But it does not preclude the examination of the original and reissued patents, to see whether or not they disclose on their face a case in which the Commissioner had authority to act or whether he has exceeded his authority in issuing letters for an invention different from that described in the original patent."

The Commissioner's authority to reissue being limited strictly to those cases in which the original patent is inoperative or invalid from unintentional error, or where the inventor's claim exceeds his invention, the fact that the patent does not cover all that the patentee could have claimed if his specification had come up to his invention, furnishes no sufficient ground for a reissue.

"The statute authorizing a reissue," the court said, "was intended to protect against accidents and mistakes, and it is only when thus restricted that it can be regarded as a beneficial statute. If the patentee does not embrace by his specifications and claim all that he might have done, and there has been no clear mistake, inadvertence, or accident in their preparation, the presumption of law is that he has abandoned to the use of the public everything outside of them, or at least has postponed any additional claim for further consideration."

The same principle was laid down even more specifically by the United States Supreme Court, in the case of the Swain Turbine and Manufacturing Company, appellant, *vs.* Ladd. This was another instance of expanded claims in a reissued patent. The original specification was as perfect, so far as it went, as the new one, the pretended corrections having been introduced to widen the scope of the patent to give its owners a large and valuable monopoly of an important class of waterwheels. In the Circuit Court of the United States for the District of Massachusetts, the claims of the reissued letters patent had been restricted to the distinct limitation of the invention in the original patent, and that decision was sustained by the Supreme Court. In the opinion of the court, delivered by Mr. Justice Bradley, it was pointed out that "the mistake of the patentee or his assignees seems to have been in supposing that he was entitled to have inserted in a reissued patent all that he might have applied for and had inserted in his original patent. The appellants produced on the argument exhibits tending to show that the patentee before obtaining his original patent had made and done all those things which are embraced in or covered by the reissued patent. If this were true it would be nothing to the purpose. A reissue can only be granted for the same invention which was originally patented. If it were otherwise a door would be opened to the admission of the greatest frauds. Claims and pretensions shown to be unfounded at the time might, after the lapse of a few years, after a change of officers in the Patent Office, the death of witnesses, and the dispersion of documents, be set up anew, and the reversal of the first decision obtained without an appeal and without any knowledge of the previous investigation on the subject. New light breaking in upon the patentee as the progress of improvement goes on, and as other inventors enter the field, and his monopoly becomes less and less necessary to the public, might easily generate in his mind an idea that his invention was really more broad and comprehensive than had been set forth in the specification of his patent. It is easy to see how such new light would naturally be reflected in a reissue of the patent, and how unjust it might be to third parties who had kept pace with the march of improvement. Hence there is no safe or just rule but that which confines a reissued patent to the same invention which was described or indicated in the original."

If an unswerving adherence to this rule can be secured in the practice of the Patent Office it is obvious that a grave, perhaps the gravest source of objection to the patent system will be stopped. In the meantime the growing disposition of the courts to review the action of the Commissioner in reissuing patents, in cases of alleged infringement under them, and to construe the reissued patents rigorously, is a matter of much encouragement to manufacturers and the public at large.

OFFICIAL REPORT ON THE STEAMER ANTHRACITE.

We have received from the Bureau of Steam Engineering of the Navy Department, a copy of the full official report of the Board of U.S. Naval Engineers, relating to the tests of the machinery of the little British steamer Anthracite, made at the Navy Yard, Brooklyn, N. Y., August 13 and 14, 1880. The board was composed of three Chief Engineers of the U. S. Navy, namely, Chas. H. Loving, S. L. P. Ayres, and Geo. W. Magee, all gentlemen of ability and experience.

The Anthracite, it will be remembered, is an iron steamer, 86 feet 4 inches long, 16 feet 1 inch wide, 10 feet 2 inches deep, draught loaded, 9 feet. The total weight of engines, boiler, shaft, propeller, and all fittings was 25 tons. Her propeller was worked with three steam cylinders, the first, single acting, 7¾ inches diameter; the second, single acting, 15 1/16 inches diameter; the third, double acting, 22 1/16 inches diameter. Stroke of pistons, 15 inches. The most novel feature—the Perkins system—was the high steam pressure intended to be carried, namely, from 300 to 500 pounds to the square inch. The pressure now usually carried on the best sea going vessels rarely exceeds 75 to 80 pounds.

In a previous running trial of the Anthracite in England, by Mr. F. J. Bramwell, C.E., May 22, 1880, with a boiler pressure of 360 pounds, the total horse power per hour was obtained by an expenditure of 16,719·1503 units of heat F. (1·35 pounds combustible used).

In the Brooklyn trial, made with the vessel tied to the wharf and with a boiler pressure of 316½ pounds to the inch, the total horse power per hour was obtained by an expenditure of 20,498·22 units of heat F. (1·92 pounds combustible used).

Mr. Bramwell's results were 18·35 per cent more economical than the Navy Yard results. The reasons for this difference are clearly shown by our engineers to be due to the differences in the conditions of the two trials. Thus, the coal used by Mr. Bramwell was superior; he did not lose heat by throwing open the furnace doors to remove clinker; he carried a lower water level, and consequently superheated the steam more, and had less cylinder condensation; he carried a higher boiler pressure, and so obtained a higher initial pressure in the first cylinder, etc. If the proper calculated deductions for these differences in the conditions were allowed our engineers find that there would be a discrepancy between their results and those of Mr. Bramwell of only 4 per cent; they are further of opinion that the difference of the results was wholly due to the difference in the cylinder condensations; these being greater in the American trials gave poorer economic results. Our engineers speak very highly of the Perkins system, as shown by their trials of the Anthracite. They think that her successful passage of the