Scientistic 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, 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, 85 00 a year, postage paid, to subscribers Single copies, 19 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. To 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 guarante lation in all commercial places throughout the world. Address MUNN & CO., 37 l'ark Row, New York.

NEW YORK, SATURDAY, JANUARY 29, 1881.

Contents

(Illustrated articles are marked with an asterisk.)

(Illustrated articles are n
Agriculture, machinery for ... 72
Alum baking powders in court ... 73
Anthracite, steamer, report on ... 61
Apprentice system reviving ... 67
Beetles, carpet, preventive for ... 72
Cast iron, to repair (9)... 71
Cast iron, to solder (18) ... 74
Cattle feeder, improved ... 67
Cements for the shop ... 70
China, our trade with ... 73
Clouds, solar, and sun spots ... 65
Comet new, l'ennule ... 68
Cotton pressing, improvement in. 69
Cotton seed hulls, a use for ... 70
Gliding by dippling (20) ... 74
Glass making in Ohio ... 67
Grave, curious a* ... 72
Hammering to deadanthe poise ... 67
Hammering to deadanthe poise ... 67
Hammering to deadanthe poise ... 67 Hass making in Ono
-frave, curious a*
-frave, curious a*
-frave, curious a*
-frave, improved*
-fornbill, the commou*
-fornbill, the commou*
-fydraulic mortars and cements.
-fix his black (11)
-fraventions, miscellaneous.
-fraventions, new
-fraventions, recent.
-fraventions Inventions, recent.

Yory, to render flexible.....

Jupiter's moons in a mirror (?)

Keely motor deception....

Lantern, magic. simple*...

Magic lantern, simple*...

Marine fauna of the N. E. coast...

Matanzas international fair...

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.	
I	AGE
1. ENGINERRING AND MECHANICS.—America's Coal Supply. Improved Portable Compound Engine. S figures. Progress of Engineering in America. The New Overland Route The Northern Pacific Railway Gas Motors.—System of Buss, Sombart & Co. S figures. Blowers or Outbursts of Gas. By W. PURDY. 2 figures. Improved Steam Hammer. 1 figure. Jack-screws for Raising Rails figure Improvement in Winding Machines. 6 figures Brewing in Austria.—Austrian brewery plant. 7 figures. Machinery Steel The Melbourne Exhibition MacAdam vs. Cedar Block	4215 4216 4216 4216 4216 4217 4218 4218 4218 4218 4221 4221 4221 4221
II. TECHNOLOGY AND CHEMISTRY—Labels, Tablets, or Sheets for Advertising, etc. I figure Manufacture of Spot Yarns. By G. A. J. Schott. I figure A pharatus for Manufacturing Celluiold. 4 figures A New Process for the Metallurgical Treatment of Complex Ores Containing Zinc. By Edw. A Parnyll. Electro-Chemical Analysis of Metals. I figure How to Coat Articles with Lead.—The galvanizing process Soap in Pomades. Synthesis of Alcohol Manufacture of Soda Corn Sugar	4223 4228 4224 4226 4226 4226 4226 4227 4227 4227
III. ELECTRICITY, LIGHT, HEAT, ETC.—Electric Lighting. Lecture at Newcastle-on-Tyne, by J. W. SWAN. Deprez's Current Measure. 1 figure Printing Music by Electricity. 1 figure. Fast Speed Working on Cables. On a Septum Permeable to Water and Impermeable to Air, with Application to a Navigational Depth Gauge.	4224 4225 4225 4225 4225
IV. PHYS10LOGY, MEDICINE, ETC.—Flaying of the Voca Cords. By Dr CARIO LABUS Cold as a Cause of Deafness. What Determines Sex in Children?	4227 4227 4227
V. HORTICULTURE, AGRICULTURE, ETC.—The Story of a Plant. The Destruction of our Forests	4228 4228 4228
VI. ART. ARCHITECTURE. ETC.—Placing the Capstone upon the Finial of the South Tower of the Cathedrai in Cologne. I full page illustration. Mirror Frame in Wood Carved and Gitt. By FR. SCHENTHALER, Vienna. Large illustration.	4222
VII. MISCELLANEOUS.—Frosts and Autumnal Tints. Uninflammable Tissues. The Origin of Anthracite. Prehistoric Men. 1 figure Ancient wooden statute of Ra-Em-Ke, Governor of a Province under the Second Egyptian Dynasty. Hearing Noises Taking Place in the Sun A successful African Exploring Expedition.	4221 4229

THE TENDENCY OF RECENT COURT DECISIONS WITH by the United States Supreme Court, in the case of the REGARD TO REISSUED PATENTS.

patents when the original is inoperative or invalid by reason reissued patent. The original specification was as perfect, of a defective or insufficient specification, or by reason of the so far as it went, as the new one, the pretended correcpatentee claiming as his invention or discovery more than tions having been introduced to widen the scope of the 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 to show that the patentee before obtaining his original patent have inserted and claimed originally, but failed to, through had made and done all those things which are embraced in ignorance or oversight, and sometimes matter which had or covered by the reissued patent. If this were true it been disallowed by the Office or voluntarily disclaimed by the inventor to secure the issue of his patent. By means of such granted for the same invention which was originally patented. reissues the inventor's afterthoughts and discoveries have If it were otherwise a door would be opened to the admisbeen covered, and too frequently the subsequent inventions sion of the greatest frauds. Claims and pretensions shown of others, or processes and machinery which others may have to be unfounded at the time might, after the lapse of a few broughtinto profitable use, knowing them to be not patented. | years, after a change of officers in the Patent Office, the death In this way much injustice has been wrought, and occasion of witnesses, and the dispersion of documents, be set up given for many if not most of the more serious complaints anew, and the reversal of the first decision obtained without 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 error had arisen through inadvertence, accident, or mistake, 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 appli- the practice of the Patent Office it is obvious that a grave, cant in order to get his patent through is the occasion of im- perhaps the gravest source of objection to the patent system mense 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 public at large. 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, machinery of the little British steamer Anthracite, made at District of California, October, 1880, Field, J.), the right of the Navy Yard, Brooklyn, N. Y., August 13 and 14, 1880. the court to review a decision of the Patent Commissioner. The board was composed of three Chief Engineers of the was clearly stated. In this case a reissued patent was de- U. S. Navy, namely, Chas. H. Loving, S. L. P. Ayres, and clared invalid because its specification contained an inven. Geo. W. Magee, all gentlemen of ability and experience. tion of broader scope than the original. The court said:

the result of an unintentional error, and if so, to what ex- best sea going vessels rarely exceeds 75 to 80 pounds. tent a new or additional specification should be allowed to . In a previous running trial of the Anthracite in England, the doctrine is one of the settled rules of patent law. Butit (135 pounds combustible used). does not preclude the examination of the original and reisfor an invention different from that described in the original used). patent."

strictly to those cases in which the original patent is inope-ference are clearly shown by our engineers to be due to the rative or invalid from unintentional error, or where the in- differences in the conditions of the two trials. Thus, the ventor's claim exceeds his invention, the fact that the patent coal used by Mr. Bramwell was superior; he did not lose does not cover all that the patentee could have claimed if heat by throwing open the furnace doors to remove clinkhis specification had come up to his invention, furnishes no er; he carried a lower water level, and consequently supersufficient ground for a reissue.

tion.'

The same principle was laid down even more specifically | Anthracite. They think that her successful passage of the

Swain Turbine and Manufacturing Company, appellant, vs. The patent laws provide for the reissue and correction of Ladd. This was another instance of expanded claims in a 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 would be nothing to the purpose. A reissue can only be 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 patent. Thus in the case of Leggett et al. vs. Avery et al. would naturally be reflected in a reissue of the patent, and (U. S. Supreme Court, October, 1879), it was held that no how unjust it might be to third parties who had kept pace with the march of improvement. Hence there is no safe or but that the Commissioner had committed manifest error in 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 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

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

The Anthracite, it will be remembered, is an iron steamer, "As the power to accept a surrender and issue new letters 86 feet 4 inches long, 16 feet 1 inch wide, 10 feet 2 inches is vested exclusively in the Commissioner of Patents, his deep, draught loaded, 9 feet. The total weight of engines. decision in the matter is not open to collateral attack in a boiler, shaft, propeller, and all fittings was 25 tons. Her suit for the infringement of reissued letters. His action, like propeller was worked with three steam cylinders, the first, that of all officers specially designated to perform a particu- single acting, 7% inches diameter; the second, single acting, lar duty of a judicial character for the government is pre- $15\frac{1}{18}$ inches diameter; the third, double acting, $22\frac{1}{18}$ inches sumed to be correct until impeached by regular proceedings diameter. Stroke of pistons, 15 inches. The most novel to avail or modify it. He must judge, in the first instance, | feature - the Perkins system-was the high steam pressure of the sufficiency of the original specification whether the intended to be carried, namely, from 300 to 500 pounds to same is defective in any particular, whether such defect was the square inch. The pressure now usually carried on the

describe correctly the invention claimed; and it is to be as- by Mr. F. J. Bramwell, C.E., May 22, 1880, with a boiler sumed in every case that he has done his duty. The deci- pressure of 360 pounds, the total horse power per hour was sions of the Supreme Court to this effect are numerous, and obtained by an expenditure of 16,719 1503 units of heat F.

In the Brooklyn trial, made with the vessel tied to the sued patents, to see whether or not they disclose on their wharf and with a boiler pressure of 3161/2 pounds to the inch, face a case in which the Commissioner had authority to act the total horse power per hour was obtained by an expendior whether he has exceeded his authority in issuing letters ture of 20,498 22 units of heat F. (192 pounds combustible

Mr. Bramwell's results were 18:35 per cent more economi-The Commissioner's authority to reissue being limited calthan the Navy Yard results. The reasons for this difheated the steam more, and had less cylinder condensation; "The statute authorizing a reissue," the court said, "was he carried a higher boiler pressure, and so obtained a higher intended to protect against accidents and mistakes, and it is initial pressure in the first cylinder, etc. If the proper calcuonly when thus restricted that it can be regarded as a bene-lated deductions for these differences in the conditions were ficial statute. If the patentee does not embrace by his speci- allowed our engineers find that there would be a discrepancy fications and claim all that he might have done, and there has between their results and those of Mr. Bramwell of only 4 been no clear mistake, inadvertence, or accident in their presper cent; they are further of opinion that the difference of paration, the presumption of law is that he has abandoned to the results was wholly due to the difference in the cylinder the use of the public everything outside of them, or at least condensations; these being greater in the American trials has postponed any additional claim for further considera- gave poorer economic results. Our engineers speak very highly of the Perkins system, as shown by their trials of the