

difficulty, the U. S. S. Massachusetts was recently fitted out at the New York navy yard with a coal transporter, which will enable her to take coal either when at anchorage off a blockaded port or when steaming at slow speed in moderately calm water.

The Temperly Transporter is the name by which this new form of hoisting and conveying device is known. The large engraving represents the battleship Massachusetts taking coal from a barge which she is towing abeam, at a distance of twenty or thirty feet, and at the rate of six or seven knots an hour. It will be seen that the device consists of a traveler running on a suspended beam, which reaches out over the barge and is carried from one of the boat cranes of the battleship. This beam, which is 60 feet in length, and weighs about 3,000 pounds, is suspended from a strap, attached to the crane by four steel guys, and it is prevented from swinging fore and aft by means of other guys which lead inboard and are made fast to the deck of the vessel. A novel form of self-locking carriage is employed, which travels upon the lower flanges of the beam, and is capable of traversing its entire length. The beam is pitched at an angle sufficient to cause the carriage to run out by gravity, and a single hoisting rope coiled about the barrel of the steam winch serves at once to operate the carriage and hoist the load. The rope after leaving the drum is led to a sheave which is secured at the point of suspension of the beam, from thence to a pulley at the higher end of the beam inboard, and from there it passes around a sheave in the carriage and terminates in a hook to which the bags of coal are attached.

In operation we will suppose that the carriage is at the lower end of the beam over the barge, where it is locked automatically to one of the stops on the under side of the beam, the locking gear of the carriage being then in the position shown in the first figure. After the hook is secured to the coal bag, the hoisting rope is drawn in by the winch, the load rises rapidly to the carriage, where a catch on the hoisting chain, striking a lever, automatically locks the load to the carriage and releases the car from the stop above mentioned on the under side of the beam. This position is shown clearly in the second figure. The further inhauling of the hoisting rope causes the carriage to travel rapidly up the beam. The stops on the under side of the beam are spaced five feet apart, and the carriage is drawn up until it passes that one which is located over the point where it is desired that the bag shall be delivered. The winch is now stopped and reversed, and the carriage moves back until it is arrested by the engagement of the latch, which is shown at the top of the carriage with this particular stop. The dropping of the latch into the stop automatically releases the load from the carriage, and it is forthwith lowered to the deck. The bag is then unhooked, an empty bag is put on in its place, and the operation is reversed, the empty bag being run down the full length of the beam and delivered to the barge. The whole operation is performed in less than a minute, and it requires no skill upon the part of the operator. The long reach of the beam permits coal to be taken from a vessel of any description, which may stand off from the battleship a distance of from twenty to twenty-five feet, and the operation may be carried out in any sea in which it would be safe for two boats to lie at anchor at that distance apart. As the transporter is supported entirely from the battleship, no part of it can be injured by the rolling from the two vessels.

To appreciate the full advantages of such a machine we have only to suppose that the White Squadron is blockading the harbor of an enemy and that every vessel is required for the purpose. Under such conditions the coal boats could be brought directly to the scene of the blockade, and the coaling carried out upon the ground. Of course the coal barges or ships would have to be escorted by a convoy, but this ship would be necessary in any case for the transport of supplies and dispatches.

It will be evident that the coaling ship may be towed at a moderate speed parallel with the warship, and that the operation may be carried out with equal success under such conditions. The French navy, which uses this system of coaling extensively, made a successful trial of coaling the Richelieu while she was steaming under the headway of six and a half knots an hour, and they were able on this occasion to transfer one hundred tons of coal in three hours. The British Admiralty, during a series of tests, has handled forty tons an hour in bags by this same device, and it was so well satisfied with the performance that one hundred and fifty of the transporters have already been furnished to the British navy. We are informed by Mr. Spencer Miller, C.E., to whom we are indebted for the data and drawings from which our engravings and description have been prepared, that in addition to the two powerful navies above mentioned, this device has been adopted in the navies of Germany, Austria and Italy.

It is proposed to raise 10,000,000 francs to restore the Palace of the Popes, at Avignon. It is proposed to create a museum which will illustrate the whole history of Languedoc.

Scientific American.

ESTABLISHED 1845.

MUNN & CO., - - - EDITORS AND PROPRIETORS.

PUBLISHED WEEKLY AT

No. 361 BROADWAY, - - NEW YORK.

TERMS FOR THE SCIENTIFIC AMERICAN.

(Established 1845.)

One copy, one year, for the U. S., Canada or Mexico, \$3.00
One copy, six months, for the U. S., Canada or Mexico, 1.50
One copy, one year, to any foreign country, postage prepaid, \$4.00
Remit by postal or express money order, or by bank draft or check.

The Scientific American Supplement (Established 1876)

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, for the U. S., Canada or Mexico, \$6.00 a year, or £1 4s. 8d., to foreign countries belonging to the Postal Union. Single copies 10 cents. Sold by all newsdealers throughout the country. See prospectus, last page. Combined Rates.—The SCIENTIFIC AMERICAN and SUPPLEMENT will be sent for one year, to one address in U. S., Canada or Mexico, on receipt of seven dollars. To foreign countries, eight dollars and fifty cents a year, or £1 14s. 11d., postage prepaid.

Building Edition of Scientific American.

(Established 1885.)

THE BUILDING EDITION OF THE SCIENTIFIC AMERICAN is a large and splendidly illustrated periodical, issued monthly, containing floor plans and perspective views pertaining to modern architecture. Each number is illustrated with beautiful plates, showing desirable dwellings, public buildings and architectural work in great variety. To architects, builders, and all who contemplate building this work is invaluable. Single copies 25 cents. By mail, to any part of the United States, Canada or Mexico, \$2.50 a year. To foreign countries, \$3.00 a year, or £0 12s. 4d. Combined rate for BUILDING EDITION with SCIENTIFIC AMERICAN, to one address, \$5.00 a year. To foreign countries, \$6.50 a year, or £1 6s. 9d. Combined rate for BUILDING EDITION, SCIENTIFIC AMERICAN, and SUPPLEMENT, \$9.00 a year. To foreign countries, \$11.00 a year, or £2 5s. 2d., postage prepaid.

Export Edition of the Scientific American

(Established 1878)

with which is incorporated "LA AMERICA CIENTIFICA E INDUSTRIAL," or Spanish edition of the SCIENTIFIC AMERICAN, published monthly, uniform in size and typography with the SCIENTIFIC AMERICAN. Every number contains about 30 pages, profusely illustrated. It is the finest scientific industrial export paper published. It circulates throughout Cuba, the West Indies, Mexico, Central and South America, Spain and Spanish possessions—wherever the Spanish language is spoken. THE SCIENTIFIC AMERICAN EXPORT EDITION has a large guaranteed circulation in all commercial places throughout the world. \$3.00 a year, or £0 12s. 4d., postpaid to any part of the world. Single copies, 25 cents.

MUNN & CO., Publishers, 361 Broadway, New York. The safest way to remit is by postal order, express money order, draft or bank check. Make all remittances payable to order of MUNN & CO.

Readers are specially requested to notify the publishers in case of any failure, delay, or irregularity in receipt of papers.

NEW YORK, SATURDAY, APRIL 24, 1897.

Contents.

(Illustrated articles are marked with an asterisk.)

Archaeological news, 262
Bicycle, the, and tuberculosis*, 262
Blind slating machine, a new*, 261
Blood, changes in, 265
Blotting paper, facts about, 267
Book, the world's costliest, 260
Bore hole, deepest in the world, 264
Bridge, the new Niagara*, 264
Cadavers, crystals in, 263
Canal, proposed Black Sea and North Sea, 259
Cataract crossing, equatorial, 265
Cement, transparent waterproof (7150) 268
Coaling warships at sea*, 257
Cope, Prof., death of, 266
Industrial supremacy, American, 259
Inventions recently patented, 268
Inventors, a warning to, 259
Locomotives, most powerful in the world*, 260
Microscopical Society, the N. Y., 266
Mountain shadows*, 267
Mount Hood*, 267
Nature's balance, 260
Nature study, Chicago schools, 267
Opera glass, a trick*, 265
Patent commissioner's responsibilities, 258
Patent decisions, recent, 263
Patent Office, the six months rule in the, 259
Patents granted, weekly record of, 269
Picture gallery, a circulating, 250
Pike's Peak*, 267
Progress, sixty years of, 262
Science notes, 263
Ships, coaling at sea*, 257
Speed indicator, Herdén's*, 261
Steam turbine, a 300 horse power*, 261
Tight rope daring*, 265
Waxed paper, uses of, 267

TABLE OF CONTENTS OF Scientific American Supplement No. 1112.

For the Week Ending April 24, 1897.

Price 10 cents. For sale by all newsdealers.

I. ACOUSTICS.—The Perception of Sound.—A popular article..... 17781
II. ARCHAEOLOGY.—Deliberate Deception in Ancient Buildings.—A most interesting resume of Prof. Goodyear's important researches on deliberate deception in ancient and mediæval buildings. Roman Theaters..... 17776
III. CIVIL ENGINEERING.—The Reno Rapid Transit Plan for Broadway, New York.—By J. W. RENO.—Full particulars of a perfectly feasible system for tunneling Broadway without interference with existing property rights.—5 illustrations..... 17772
IV. ECONOMICS.—The Future of American Industries.—By A. E. OUTERBRIDGE, Jr.—A paper which bristles with important facts which are presented in an interesting manner..... 17780
V. ELECTRICITY.—The Commencement of Submarine Telegraphy.—By J. H. JACKSON. The Electric Heater.—By H. E. STAUFFER.—An original and valuable paper upon various forms of electric heaters, with excellent diagrams.—6 illustrations..... 17778
VI. FORESTRY.—A Fireproof Tree.—By G. CLARK NUTTALL..... 17781
VII. LOCOMOTIVE ENGINEERING.—The Evolution of the American Locomotive.—By HERBERT T. WALKER.—The first installment of a very important series of papers upon this interesting subject by a writer of authority, with unique illustrations..... 17770
VIII. MARINE ENGINEERING.—The Development of the Rudder Motor.—Particulars of a new electric rudder motor for small boats.—2 illustrations..... 17769
IX. MECHANICAL ENGINEERING.—Crushing, Grinding and Separating Machinery.—3 illustrations..... 17774
The Filz Rotary Steam Motor.—A valuable paper on a curious and interesting form of rotary motor.—6 illustrations..... 17775
The Midget Steam Trap.—1 illustration..... 17775
Vulcanite Graphite Bearings..... 17775
X. MEDICINE.—Role of the Nerves in the Mind Cure..... 17782
XI. MISCELLANEOUS.—The Celebration in Honor of William the Great.—Interesting details of the recent celebration, showing the monument erected to the memory of William I.—5 illustrations..... 17767
The Pope's Army..... 17768
The Capsizing of a Ship.—Particulars of an accident of an uncommon character.—1 illustration..... 17769
Engineering Notes..... 17777
Electrical Notes..... 17777
Miscellaneous Notes..... 17777
Selected Formulae..... 17776
Apparatus for Registering the Outgoing and Incoming of Carrier Pigeons..... 17779
XII.—TECHNOLOGY.—Liquid Metal Polish..... 17776

RESPONSIBILITIES OF THE NEW COMMISSIONER.

Among all the appointments which are made by an incoming President, it would be difficult to find one which calls for the exercise of more careful judgment than the appointment of the Commissioner of Patents. The responsibilities of the office are of a particularly trying character, and the relations of the commissioner to the government, the inventor, and the patent attorney invest him with a degree of discretionary judicial power which finds no parallel in the various courts of law. Inasmuch as he has the final word, so far as the Patent Office is concerned, in the settlement of all difficult cases, it is necessary that he should have, in the highest sense of the term, a judicial mind; and in addition to a general knowledge of the law he should also have a very intimate knowledge of the theory and practice of patent law. His tenure of office and its emoluments should be such as to place him entirely beyond the reach of all external influence, whether commercial, political, or otherwise, and there is no question that the permanent tenure of the position by a commissioner who has proved himself in every way acceptable would be greatly to the advantage of the Patent Office, the patent bar and the great body of inventors throughout the country.

We have spoken of the extraordinary judicial authority invested in the office. It is safe to say that there is no power possessed by the commissioner which brings with it more serious responsibility than that which enables him to disbar any patent attorney who may be guilty of unprofessional practices before the Patent Office. We say "disbar" for the want of a better term. As a matter of fact, there is unfortunately no such thing as a recognized patent bar in this country. Any attorney who conforms to the procedure of the office may file an application for a patent and argue the case before the commissioner or his representative.

It will thus be seen that the door of entrance into patent practice is about as broad as it is possible to make it. The only supervision to which the practitioner is subject is that of the commissioner, who may suspend an offender for notoriously dishonest practices. Just what degree of offense calls for disbarment seems to be left to the discretion of the commissioner. In nine cases out of ten the reason given for disbarment is embezzlement of money; that is to say, the withholding of government fees. In 1871 Commissioner Leggett issued an order that an examiner who borrowed money from an attorney would be in danger of dismissal and the attorney of disbarment. This order was approved by Commissioner Mitchell in 1889; but it does not seem that any attorney has been disbarred for this cause.

In looking over the record of disbarments for the past thirty years, it is noticed that the average number per year has remained practically stationary, in spite of the fact that practice before the Patent Office has enormously increased in the interim. The obvious inference is either that questionable practices in connection with patent soliciting are less frequent than they were thirty years ago or else that commissioners have grown lenient or have no power to act in regard to these matters. We fear that the first alternative is as unlikely as that the others are probable; and to the last, among other causes, is to be attributed the rise and growth of a certain notorious class of practitioners, whose methods are at once a snare to the inventor, a disgrace to the profession, and are liable, if not checked with a strong arm, to cast a shadow upon the Patent Office itself.

In this connection we call attention to an article in Lords' Power and Machinery Magazine which we republish on the adjoining page, in which some of the worst irregularities that have crept into the patent practice are enumerated. How far the powers of the Patent Commissioner enable him to take cognizance of these practices we do not know. If such practices do not constitute cause for disbarment, upon the presentation of charges of irregularity to the commissioner, it is difficult to find any way in which the inventor or the public can be protected.

This is the only method, so far as we can see, by which the practice of the Patent Office can be purged of this glaring and rapidly growing evil. Such a course would be more effective than any action that could be taken by the Patent Bar Association, should one ever be formed.

THE SIX MONTHS RULE IN COURT.

The United States Supreme Court has recently made a decision through Chief Justice Fuller which has the effect of sustaining the six months rule which was established and enforced in the Patent Office by the late Commissioner, Mr. Seymour. The decision was rendered in the case of Hyne against the Court of Appeals of the District of Columbia. Hyne applied for a writ of mandamus to compel the court to hear and decide an appeal taken more than forty days from the decision of the Commissioner of Patents, the forty days rule being one of the rules of the Court of Appeals. Hyne claimed that, under the patent laws, he was allowed two years in which to take this appeal as provided for in the revised statutes. He claimed the conflict between the