

has been presented there, but is an opinion based upon what knowledge we may acquire of a similar invention from the records in our Home Office.

Caveats.

Persons desiring to file a caveat can have the papers prepared in the shortest time by sending a sketch and description of the invention.

How to Make an Application for a Patent.

Every applicant for a Patent must furnish a model of his invention, if susceptible of one; or if the invention is a chemical production, he must furnish samples of the ingredients of which his composition is composed, for the Patent Office.

Rejected Applications.

We are prepared to undertake the investigation and prosecution of rejected cases, on reasonable terms. The close proximity of our Washington Agency to the Patent Office affords us rare opportunities for the examination and comparison of references, models, drawings, documents, &c.

All persons having rejected cases which they desire to have prosecuted are invited to correspond with us on the subject, giving a brief history of their case, inclosing the official letters, &c.

Foreign Patents.

We are very extensively engaged in the preparation and securing of Patents in the various European countries. For the transaction of this business, we have offices at Nos. 66 Chancery-lane, London; 29 Boulevard St. Martin, Paris; and 26 Rue des Eperonniers, Brussels.

Inventors will do well to bear in mind that the English law does not limit the issue of Patents to Inventors. Any one can take out a Patent there.

Circulars of information concerning the proper course to be pursued in obtaining Patents in foreign countries through our Agency, the requirements of different Patent Offices, &c., may be had gratis upon application at our principal office, No. 37 Park-row, New York, or either of our Branch Offices.

Interferences.

We offer our services to examine witnesses in cases of interference, to prepare arguments, and appear before the Commissioner of Patents or in the United States Court, as counsel in conducting interferences or appeals.

For further information, send for a copy of "Hints to Inventors," furnished free. Address MUNN & CO., No. 37 Park-row, New York.

The Validity of Patents.

Persons who are about purchasing Patent property, or Patentees who are about erecting extensive works for manufacturing under their Patents, should have their claims examined carefully by competent attorneys, to see if they are not likely to infringe some existing Patent, before making large investments.

Extension of Patents.

Valuable Patents are annually expiring which might be extended and bring fortunes to the households of many a poor Inventor or his family. We have had much experience in procuring the extension of Patents; and, as an evidence of our success in this department, we would state that, in all our immense practice, we have lost but two cases, and these were unsuccessful from causes entirely beyond our control.

It is important that extension cases should be managed by attorneys of the utmost skill to insure success. All documents connected with extensions require to be carefully drawn up, as any discrepancy or untruth exhibited in the papers is very liable to defeat the application.

Of all business connected with Patents, it is most important that extensions should be entrusted only to those who have had long experience, and understand the kind of evidence to be furnished the Patent Office, and the manner of presenting it. The heirs of a deceased Patentee may apply for an extension. Parties should arrange for an application for an extension at least six months before the expiration of the Patent.

For further information as to terms and mode of procedure in obtaining an extension, address MUNN & CO., No. 37 Park-row, New York.

Assignments of Patents.

The assignment of Patents, and agreements between Patentees and manufacturers, carefully prepared and placed upon the records at the Patent Office. Address MUNN & CO., at the Scientific American Patent Agency, No. 37 Park-row, New York.

It would require many columns to detail all the ways in which the Inventor or Patentee may be served at our offices. We cordially invite all who have anything to do with Patent property or inventions to call at our extensive offices, No. 37 Park-row, New York, where any questions regarding the rights of Patentees, will be cheerfully answered.

Communications and remittances by mail, and models by express (prepaid), should be addressed to MUNN & CO., No. 37 Park-row, New York.

TO OUR READERS.

Models are required to accompany applications for Patents under the new law, the same as formerly, except on Design Patents, when two good drawings are all that is required to accompany the petition, specification and oath, except the government fee.

PATENT CLAIMS.—Persons desiring the claim of any invention which has been patented within thirty years, can obtain a copy by addressing a note to this office, stating the name of the patentee and date of patent, when known, and including \$1 as fee for copying. We can also furnish a sketch of any patented machine issued since 1863, to accompany the claim, on receipt of \$2. Address MUNN & CO., Patent Solicitors, No. 37 Park Row, New York.

BINDING.—We are prepared to bind volumes, in handsome covers, with illuminated sides, and to furnish covers for other binders. Price for binding, 50 cents. Price for covers, by mail, 60 cents; by express or delivered at the office, 40 cents.

NEW PAMPHLETS IN GERMAN.—We have just issued a revised edition of our pamphlet of Instructions to Inventors, containing a digest of the fees required under the new Patent Law, &c., printed in the German language, which persons can have gratis upon application to this office. Address MUNN & CO., No. 37 Park-row, New York.

TO ARCHITECTS.—THE BOARD OF SUPERVISORS of Kings county, having resolved to build a Court House for said county, the undersigned, by authority and on behalf of said Board, hereby invite architects who desire to compete for prizes to submit plans on or before 12 o'clock noon, on or before the third day of June next, to be deposited with A. H. Osborn, Clerk of said Board, at his office, No. 355 Fulton-street, Brooklyn.

STEPHEN CROWELL, No. 345 Fulton-street, Brooklyn, or No. 62 Wall-street, Brooklyn. WILLIAM COIT, No. 9 Court-street, Brooklyn. JOHN GARRISON, corner Bushwick avenue and Cook-street. WILLIAM J. CROSEY, Fort Hamilton. SAMUEL BOOTH, No. 66 Myrtle avenue.

THE AMERICAN ENGINEER—A WEEKLY JOURNAL, devoted to the interests of Marine, Locomotive and Stationary Engineers. This paper is now in its third volume, and is enlarged to sixteen pages. Price \$3; or five copies sent to one address for \$5. The only Engineers' paper now published in the United States. Address JOHN C. MERRIAM, Editor, No. 2 Nassau-street, New York. 15 ft

BOOK OF PORTABLE ENGINES.—"PRACTICAL INSTRUCTIONS for the Portable Engine, Enabling Every One to be His Own Engineer; by a Graduate of the Military Academy, and Former Member of the United States Corps of Engineers." A large illustrated pamphlet, sent by mail to any part of the country, price 25 cents, by the WASHINGTON IRON WORKS, Newburg, N. Y.

FOR SALE—A FARM OF 40 ACRES, ON WHICH IS a saw and planing mill 20x34 feet, a building 32x48 feet; suitable for business; running large power, horse, wind, and water, and being an excellent location for known devices for the production of a compact, efficient and cheap Portable Engine.—SCIENTIFIC AMERICAN. 18 3*

\$100 PER MONTH CAN BE MADE WITH OUR \$10 hand engraved stencil tools; every die is made by a finished workman. WM. BAERNARD & CO., Box 1,014, Cincinnati, Ohio. 18 3*

\$8,000 WILL BUY A GOOD STEAM FACTORY, with Machinery and five acres of Land, in this city; the best location for a furniture, chair or agricultural implement manufactory in the West. For terms, address WM. FARGHER, Jr., Laporte, Ind. 17 3*

HAYDEN SANDERS & CO., NO. 304 PEARL-STREET, New York, Manufacturers of Brass Work for Steam, Gas and Water. 9 13*

WHITNEY'S LATE IMPROVED TIN AND SHEET iron workers, machines, ratchet and geared drilled stock.—The only machines that always have cast-steel rolls, and any party that is purchasing machines for their own use should be sure the rolls are cast steel if they wish great durability. They have many advantages not included in any other make of machines. They are warranted in every respect, and will be sold at price satisfactory to all that are in want of good machines. Please address A. W. WHITNEY, Woodstock, Vt. 18 2*

N. E. HALE, MANUFACTURER OF PATENT BELT Hooks, Pliers and Belt Punch, Nashua, N. H. 16 11*

LABORATORY OF INDUSTRIAL CHEMISTRY.—Advices on Chemistry applied to Arts and Manufactures, Agriculture, &c.; Commercial Assays. Address Professor H. DUBSAUGE, Chemist New Lebanon, N. Y. 1*

MILITARY TELESCOPES, POWERFUL MARINE AND Land Opera Glasses, Spectacles, of great range for land and sea use. C. T. AMSLER, Optician, No. 636 Chestnut-street, Philadelphia, Pa. 19 2*

\$1.27 PROCURES, POSTPAID, SUBSCRIBER'S Patent Press Book for copying business letters in plain and perfect. For full particulars, terms to agents and illustrated circular, address with stamp, J. H. ATWATER, Providence, R. I. 1*

GUANO \$10 PER TON, \$1.25 PER BARREL.—FIBRIN Guano, composed of the bones and muscular parts of animals prepared in such a manner as to retain their valuable properties which are usually lost through the ordinary methods of preparation. For references and further information, apply to W. H. PINNER, No. 112 West Seventeenth-street, New York. 19 4*

BRYANT'S COPYING INSTRUMENTS FOR ENLARGING or reducing pictures from two to nine times with positive accuracy, including Photographs, Ambrotypes, and Drawings from Nature. Price \$1, and 24 cents extra for postage. Address R. E. BRYANT, Balaudvale, Mass. 19 3*

LES INVENTEURS NON FAMILIERS AVEC LES LANGUES ANGLAISE ET QUI PRESENTENT NOUS COMMUNIQUER LEURS INVENTIONS EN FRANCAIS, POURVOIR EN UN DECRET DE NOTRE GOUVERNEMENT. ENVOYER NOUS UN DECRET DE NOTRE GOUVERNEMENT POUR NOTRE EXAMEN. TOUTES COMMUNICATIONS SONT REÇUES AVEC CONFIDANCE. MUNN & CO., SCIENTIFIC AMERICAN OFFICE, No. 37 Park-row, New York.

PORTER'S IMPROVED GOVERNOR. The reputation of these governors is well established. Parties troubled with unsteady power may send for them in entire confidence. They never fail. The numerous valves in use are all equally good, if well made; the form of the opening is immaterial. The governors are warranted to work perfectly with any and all valves, which move freely and close tightly by light. A style is made expressly adapted to waterwheels, to which they will give a perfectly uniform motion, under any variation of resistance. I have long done with troubling my customers for certificates; but am able to refer to a large number of parties now using this governor in a majority of the States of the Union. I will send a governor to any responsible party for trial. If it does not operate perfectly it may be returned. A liberal discount to the trade, whose orders will always be promptly filled. CHARLES T. PORTER, No. 235 West Thirtieth-street, corner of Ninth-avenue, New York City. 1 13

OIL! OIL! OIL!—FOR RAILROADS, STEAMERS, AND for Machinery and Burning.—Pease's Improved Machinery and Burning Oil will save fifty per cent, and will not gum. This Oil possesses qualities vitally essential for lubricating and burning, and found in no other oil. It is offered to the public upon the most reliable, theoretical and practical test. Our most skillful engineers and machinists pronounce it superior to and cheaper than any other, and the only oil that is in all cases reliable and will not gum. The SCIENTIFIC AMERICAN, after several tests, pronounces it "superior to any other they have ever used for machinery." For sale only by the Inventor and Manufacturer F. K. PEASE, No. 81 Main-street, Buffalo, N. Y. F. K.—Reliable orders filled for any part of the United States and Europe. 14 13

6000 AGENTS WANTED—TO SELL SIX NEW Inventions—two very recent, and of great value to families; all pay great profits to agents. Send four stamps and get 90 pages particulars. EPHRAIM BROWN, Lowell, Mass. 16 13*

PUMPS! PUMPS!! PUMPS!!!—CARY'S IMPROVED Rotary Force Pump, adapted for pumping hot or cold liquids. Manufactured and sold by CARY & BRAINERD, Brocport, N. Y. Also, sold by J. C. CARY, No. 2 Astor House, New York City. 11 15

NEW SHINGLE MACHINE—THAT WILL RIVE AND Shave 24,000 Shingles in a day, for sale by S. C. HILLS, No. 12 Platt-street, New York. 14*

MACHINE BELTING, STEAM PACKING, ENGINE HOSE.—The superiority of these articles, manufactured of vulcanized rubber, is established. Every belt will be warranted superior to leather, at one-third less price. The Steam Packing is made in every variety, and warranted to stand 300 degs. of heat. The Hose never needs oiling, and is warranted to stand any required pressure; together with all varieties of rubber adapted to mechanical purposes. Directions, prices, &c., can be obtained by mail or otherwise at our warehouse. NEW YORK BELTING AND PACKING COMPANY. JOHN H. CHEEVER, Treasurer, Nos. 37 and 38 Park-row, New York. 14 13

FOR FREE DISTRIBUTION.—A PRACTICAL Treatise on the Incrustation of Steam Boilers; its Causes and Effects; its Removal and Prevention, without injury, and at a trifling cost. Address H. N. WINANS—Office, 11 Wall-street—Box 6, Post-office, New York. 16 4*

A NEW STYLE OF KNITTING MACHINE, JUST OUT, for family use and manufacturing purposes; elegantly constructed, durable, light, portable and cheap; every family should have one. For full particulars, send for an illustrated pamphlet, to address B. AIKEN, Franklin, N. H. Agents wanted in every State and county. 15 11*

SCIENTIFIC REPORTING.—PATENT SUITS, INVOLVING questions of science or mechanics, reported verbatim: scientific lectures, or the proceedings of scientific societies, either reported in full or condensed, by HENRY M. PARKURST, of the firm of Burr & Lord, Short-hand Writers and Law Reporters, No. 131 Nassau-street, New York. 14*

GUILD & GARRISON'S STEAM PUMPS FOR ALL kinds of independent Steam Pumping, for sale at Nos. 55 and 57 First-street, Williamsburgh, L. I., and No. 74 Beekman-street, New York. 1 261 GUILD, GARRISON & CO.

SOLID EMERY VULCANITE.—WE ARE NOW MANUFACTURING wheels of this remarkable substance for cutting, grinding and polishing metals, that will outwear hundreds of the kind commonly used, and will do a much greater amount of work in the same time, and more efficiently. All interested can see them in operation at our warehouse, or circulars describing them will be furnished by mail. NEW YORK BELTING AND PACKING CO., Nos. 37 and 38 Park-row, New York. 14 13

PECK'S PATENT DROP PRESS.—THE MOST PERFECT machine in use for the manufacture of silver, copper or tinware, spoons, jewelry, forging, &c. Manufactured by the patentee. 10 12* WILLO PECK & CO., New Haven, Conn.

C. L. GODDARD, AGENT, NO. 3 BOWLING GREEN, New York. Only manufacturer of the Steel Ring and Solid Packing Burring Machines and Feed Rolls for Wool Cards, &c. 25 26*

IRON PLANERS, ENGINE LATHES, AND OTHER Machinists' Tools, of superior quality, on hand and finishing, and for sale low; also Harrison's Grain Mills. For descriptive circular address New Haven Manufacturing Company, New Haven, Conn. 1 26*

WOODWORTH PLANERS.—IRON FRAMES TO PLANE 18 to 24 inches wide, at \$80 to \$110. For sale by S. C. HILLS, No. 12 Platt-street, New York. 14*

PORTABLE STEAM ENGINES.—COMBINING THE maximum of efficiency, durability and economy with the minimum of weight and price. They received the large GOLD MEDAL of the American Institute at their late Fair, as the "Best Portable Steam Engine." Particularly adapted to railway purposes, as repair shops and station engines. Every engine warranted satisfactory, or no sale. Descriptive circulars sent on application. Address J. C. HOADLEY Lawrence, Mass. 8 26*

Zur Beachtung für deutsche Erfinder. Die Unterzeichneten haben eine Anleitung, die Erfindern das Verhalten anzeigt, um sich ihre Patente zu sichern, &c. ausgegeben, und verabschieden solche gratis an dieselben. Erfinder, welche nicht mit der englischen Sprache bekannt sind, können ihre Mitteilungen in der deutschen Sprache machen. Solchen von Erfindungen mit kurzen, deutlich geschriebenen Beschreibungen beliebe man zu adressieren an Munn & Co., 37 Park Row, New-York. Auf der Office wird deutsch gesprochen. Dasselbst ist zu haben: Die Patent-Gesetze der Vereinigten Staaten, nebst den Regeln und der Geschäftsordnung der Patent-Office und Anleitungen für Erfinder, um sich Patente zu sichern, in den Ver. St. sowohl als in Europa. Ferner Aufträge und den Patent-Gesetzen fremder Länder und darauf bezügliche Beschreibungen; ebenfalls nützliche Hülfs für Erfinder und solche welche Patente zu machen. Preis 30 Cts., per Werk 25 Cts.

The Burning of Gosport Navy Yard.

ELEVEN VESSELS SCUTTLED AND BURNED—THE STEAM TUG "YANKEE" TOWS THE "CUMBERLAND" TO SEA.

On Saturday evening, April 21st, at 9 o'clock, the *Pawnee* arrived from Washington with 200 volunteers and 100 marines, besides her own crew, and at once the officers and crew of the *Pawnee* and *Cumberland* went to the Navy Yard and spiked and disabled the guns, and threw the shot and small arms into the river. At 10 o'clock, the marines, who had been quartered in the barracks, fired them, and came on board the *Pawnee*. This movement was premature, for it was the intention to fire all the buildings simultaneously. A party of officers, meantime, were going through the different buildings and ships, distributing waste and turpentine, and laying a train so as to blow up the dry dock. They were engaged in this work until two o'clock, when the train was fired. At 3 o'clock, the *Yankee*, to the captain of which, Charles Germain, much credit is due, came along and took the *Cumberland* in tow, the *Pawnee* taking the lead. All the vessels beat to quarters, the guns were manned, and everything was in readiness to carry out the threat of Commodore McAuley, that if a gun was fired from either shore, he would level both Portsmouth and Norfolk. At this time the scene was indescribably magnificent, all the buildings being in a blaze, and explosions here and there, scattering the cinders in all directions.

The government vessels had been scuttled in the afternoon before the *Pawnee* arrived, to prevent their being seized by the Secessionists, who had been in arms in both Norfolk and Portsmouth, under the command of General Taliaferro. Their number is estimated at some 1,400 men. The scuttling was done between 12 and 2 o'clock on Saturday. Lest this mode of destruction should not be complete, however, trains were laid on them and the vessels were fired with the buildings.

The following are the names of the vessels which were destroyed:—*Pennsylvania*, 120 gun-ship; steam-frigate *Merrimac*, 40 guns; sloop-of-war *Germantown*, 22 guns; sloop *Plymouth*, 22 guns, frigate *Raritan*, 50 guns; frigate *Columbia*, 50 guns; *Delaware*, 84 gun-ship; *Columbus*, 180 gun-ship; *United States*, in ordinary; brig *Dolphin*, 8 guns; and the powder-boat.

Of these the *Merrimac*, *Plymouth* and *Germantown* were ready for sea, but the *Pawnee* made her appearance at the yard too late to save them. The *Merrimac*, in fact, had had steam on only a few hours previously.

The *Yankee*, as we have already said, left the yard with the *Cumberland* in tow about 8 o'clock. The fleet proceeded down the river until 9 o'clock, when it came to anchor within a mile of the point where wrecks were known to have been sunk for the purpose of obstructing the navigation. Boats were sent out to take soundings in order to ascertain whether some other passage than the regular channel could not be found. All efforts proved unsuccessful, so the fleet raised anchor and forced their way directly through the wrecks. The *Cumberland* caught one of the sunken vessels and carried it along with her, and apprehensions were at first entertained that she might be carried on to Sewell's Point, where it was supposed the rebels had erected batteries. Meantime the *Keystone State* came up from Washington with marines, and by her help and that of the *Yankee*, the *Cumberland* was towed into deep water and the wreck disentangled. She then went up under protection of the guns of Fort Monroe and came to anchor. While the vessels lay there, four men, who had been employed in the Navy Yard, succeeded in making their way down the river, and reported that they left everything in flames, and the smoke and flames could easily be seen from the *Cumberland*. The rebels, too, they reported, were fearful of attempting to arrest the flames, because they apprehended that a train was laid to blow up the buildings.

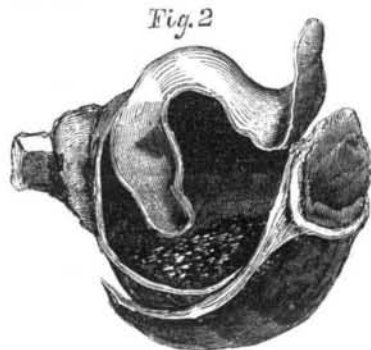
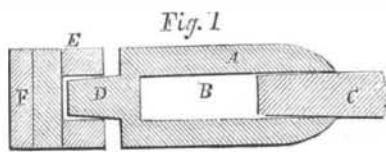
The *Yankee* left on Tuesday morning for New York. She reports that the *Pawnee* and *Keystone State* had got the crew of the *Pennsylvania*, and the marines who occupied the barracks, on board, to carry them to Washington. Both left for the capital at 9 o'clock.

No vessels are allowed to leave New York harbor now between sunset and sunrise, an order to that effect coming from the Secretary of the Treasury. The rule is enforced by armed vessels in the Narrows and in Long Island Sound.

EXPLOSIVE RIFLE BULLETS.

The only superiority which breech-loading cannon has over those which are loaded at the muzzle, is that they are adapted for the use of explosive shells. We do not mean bomb shells, but those which are charged with powder and explode when they strike. Breech-loading rifles may be used for the same purpose in a most effective manner, and we revive our percussion explosive bullet, in order to draw attention to its destructive qualities. Fig. 1 is a section of it, and Fig. 2 represents it after striking and exploding. A is the hollow conical bullet, cast with a stem of lead, D; or this stem may be a common screw nail placed in the mold to form a pin for the sabot. B is a hollow chamber filled with percussion powder, and C is a plug fitted in the opening. E is a sabot made of cork fitted in the stem, D, and two pieces of leather, F, are glued to the sabot, which would be a little wider than the bullet. Such an explosive missile as this may be used for breech-loading rifled cannon, and by having the sabot of greater diameter than the shell, the latter need not be made with lead bands around it.

When used for cannon, the plug, C, should be made of iron: for rifles the plug may be a small conical



glass tube filled with percussion powder. When the point of the bullet strikes an object, the plug ignites the percussion powder in the interior, B, and the shell explodes.

We would suggest an important improvement of General Jacobs on this explosive bullet, so as to render it as safe for carriage by a soldier as a common cartridge. It is this:—Instead of casting the bullet for a moveable plug, let it be cast for the insertion of a small conical fixed nipple, to be inserted after the shell is charged with the common powder, or gun cotton. When about to load the rifle with one of these shells, place a percussion on its point, and this, when it strikes, will ignite the charge inside.

The late General Jacobs, of the East Indian army, was a most consummate tactician for mounted riflemen. His troops were armed with double barreled rifles, and were the terror of the natives during the great Indian rebellion. He made a host of experiments with explosive rifle balls; and he has frequently set ammunition wagons on fire at a distance of 1,200 yards with them. With the common rifle, by careful loading at the muzzle, General Jacobs also blew up caissons at 2,400 yards distance, at Enfield, England, in 1857, just with such shells.

In the Baden and Württemberg German armies, rockets are used for small arms. These rockets are inclosed in copper tubes. Capt. Delvigne has also introduced these explosive bullets into the French army.

MAP OF THE SEAT OF WAR.—It is impossible to understand military operations without maps, and in order that our account of the great war now raging in the country may be intelligible, we accompany it with a remarkably plain plan of the present theater of hostilities. It shows clearly the relations of Harper's Ferry and the Gosport Navy Yard to Washington; also, the line of communication now open from the North to the seat of government *via* Annapolis Railroad.

SOME 20 tons of ammunition, including about 400,000 musket cartridges, have been sent from the Watertown (Mass.) Arsenal to Harrisburg, Pa.

POWDER SEIZED.—A brigantine called the *Tornado* was seized, a few days since, by the Surveyor of this port, having on board 8,000 kegs of gunpowder. It seems she cleared from this port in December last, for New Orleans, and, in a gale of wind, lost her mast, and was obliged to put into St. Thomas in distress, where she was refitted as best she could be, the Captain not having the means to repair, and she returned to this city. The peculiar circumstances of the case led to the discovery of the nature of her cargo, and to its providential seizure.

SOLDIERS' COMFORT.—Opposite to our windows in the park, extensive temporary barracks have been constructed, for the accommodation of troops arriving in this city. The eating house is 400 feet long, and the wash room and bunk room is 200 feet. They are fitted with gas and Croton fixtures, and have three large ranges in the kitchen of sufficient capacity to cook for 2,000 men.



OF THE

SCIENTIFIC AMERICAN.

THE BEST MECHANICAL PAPER IN THE WORLD

SEVENTEENTH YEAR.

VOLUME IV.—NEW SERIES.

A new volume of this widely circulated paper commences about the 1st of January and 1st of July each year. Every number contains sixteen pages of useful information, and from five to ten original engravings of new inventions and discoveries, all of which are prepared expressly for its columns.

The SCIENTIFIC AMERICAN is devoted to the interests of Popular Science, the Mechanic Arts, Manufactures, Inventions, Agriculture, Commerce and the Industrial Pursuits generally, and is valuable and instructive not only in the Workshop and Manufactory, but also in the Household, the Library and the Reading Room.

The SCIENTIFIC AMERICAN has the reputation, at home and abroad, of being the best weekly publication devoted to mechanical and industrial pursuits now published, and the publishers are determined to keep up the reputation they have earned during the SIXTEEN YEARS they have been connected with its publication.

To the Inventor!

The SCIENTIFIC AMERICAN is indispensable to every inventor, as it not only contains illustrated descriptions of nearly all the best inventions as they come out, but each number contains an Official List of the Claims of all the Patents issued from the United States Patent Office during the week previous; thus giving a correct history of the progress of inventions in this country. We are also receiving, every week the best scientific journals of Great Britain, France, and Germany; thus placing in our possession all that is transpiring in mechanical science and art in these old countries. We shall continue to transfer to our columns copious extracts from these journals of whatever we may deem of interest to our readers.

To the Mechanic and Manufacturer!

No person engaged in any of the mechanical pursuits should think of "doing without" the SCIENTIFIC AMERICAN. It costs but four cents per week; every number contains from six to ten engravings of new machines and inventions, which cannot be found in any other publication. It is an established rule of the publishers to insert none but original engravings, and those of the first class in the art, drawn and engraved by experienced persons under their own supervision.

Chemists, Architects, Millwrights and Farmers!

The SCIENTIFIC AMERICAN will be found a most useful journal to them. All the new discoveries in the science of chemistry are given in its columns, and the interests of the architect and carpenter are not overlooked; all the new inventions and discoveries appertaining to these pursuits being published from week to week. Useful and practical information appertaining to the interests of millwrights and mill-owners will be found published in the SCIENTIFIC AMERICAN which information they cannot possibly obtain from any other source. Subjects in which planters and farmers are interested will be found discussed in the SCIENTIFIC AMERICAN; most of the improvements in agricultural implements being illustrated in its columns.

Terms.

To mail subscribers:—Two Dollars per annum, or One Dollar for six months. One Dollar pays for one complete volume of 416 pages; two volumes comprise one year.

Club Rates.

Five Copies, for Six Months.....	\$2
Ten Copies, for Six Months.....	\$3
Ten Copies, for Twelve Months.....	\$5
Fifteen Copies, for Twelve Months.....	\$7
Twenty Copies, for Twelve Months.....	\$8

For all clubs of Twenty and over, the yearly subscription is only \$1.40. Names can be sent in at different times and from different Post-offices. Specimen copies will be sent gratis to any part of the country.

Southern, Western and Canadian money or Post-office stamps take at par for subscriptions. Canadian subscribers will please to remit cents extra on each year's subscription to pre-pay postage.

MUNN & CO., Publishers,
No. 57 Park-row, New York.

FROM THE STEAM PRESS OF JOHN A. GRAY.