

acid, 1 part; dissolve by aid of heat, and add 1 part spirits of wine.

(31) W. F. A. asks: 1. Is there any way by which a vein of water can be found in the ground before boring or digging...

(32) R. W. Y. asks for a recipe for tempering steel springs, flat, spiral, etc.; something that would give a pretty fair idea to work on.

(33) J. J. R.—Make your drills of the best quality of tool steel; harden, and do not draw the temper on the extreme edge.

(34) M. M.—The so-called "heat lightning" is considered as nothing more than ordinary lightnings striking across the clouds at such a distance that the thunder cannot reach the ear of the observer.

(35) S. H. C. B. asks how to make an emery strap. A. Coat the strap with a good quality of glue to which a very small quantity of glycerin has been added...

MINERALS, ETC.—Specimens have been received from the following correspondents, and examined, with the results stated:

J. C. A.—The crystalline substance found in the cave is principally gypsum—calcium sulphate. Used in the manufacture of plaster of Paris, and several cements, by potters, for glazing, etc., and for fertilizing purposes.

Any numbers of the SCIENTIFIC AMERICAN SUPPLEMENT referred to in these columns may be had at this office. Price 10 cents each.

COMMUNICATIONS RECEIVED.

The Editor of the SCIENTIFIC AMERICAN acknowledges with much pleasure the receipt of original papers and contributions on the following subjects: Labor Saving Machinery. By O. H. K.

HINTS TO CORRESPONDENTS.

We renew our request that correspondents, in referring to former answers or articles, will be kind enough to name the date of the paper and the page, or the number of the question.

Many of our correspondents make inquiries which cannot properly be answered in these columns. Such inquiries, if signed by initials only, are liable to be cast into the waste basket.

Persons desiring special information which is purely of a personal character, and not of general interest, should remit from \$1 to \$5, according to the subject, as we cannot be expected to spend time and labor to obtain such information without remuneration.

[OFFICIAL.]

INDEX OF INVENTIONS

FOR WHICH

Letters Patent of the United States were Granted in the Week Ending

September 24, 1878,

AND EACH BEARING THAT DATE.

[Those marked (r) are reissued patents.]

A complete copy of any patent in the annexed list, including both the specifications and drawings, will be furnished from this office for one dollar.

Table listing inventions such as Air register, E. A. Tuttle, Animal trap, T. J. Gaynor, Awning or tent cloth, striped, C. E. Wheeler, etc.

Main table listing inventions such as Boots, etc., button hole stay for, D. Crane, Boring machine, E. S. Winchester, Bottle stopper, F. Koeller, Box and sifter, ash, C. K. Ramsey, etc.

EXPLOSIVE DUST. A COMPREHENSIVE description of the Dangers from Dust in various Manufactures and the Cause of many Fires. How combustible substances can explode. Spontaneous Combustion of Iron, Charcoal and Lampblack in Air. Flour Dust and Brewery Dust Explosions. Explosions of Coal Dust in Mines. Contained in SCIENTIFIC AMERICAN SUPPLEMENT No. 125. Price 10 cents. To be had at this office and of all newsdealers.

THE TECHNOLOGY OF THE PAPER TRADE. By William Argot, F.R.S. Its Early History. Invention of the Beating Engine. Introduction of Soda, etc., and the First Machine-made Paper. Cameron's Machine; the Fourdrinier Machine. Interesting sketch of the Old Time Paper-mill vs. the Mill of Modern Times, the latter described at length, with all the Apparatus; the Sorting, Boiling, Breaking, Pouching, and Beating Processes; Progress of the Pulp through the Machine; the Draining, the Rolls, the Cooling Rolls, the Sizing-bath. Raw Fibrous Materials, their Characteristics and Treatment Preparatory to Pulping. Cotton, Straw, Linen, Hemp, Esparto Wood. Instructive Account of the Numerous Chemical and Boiling Processes, etc. This treatise gives Practical Particulars on every Department of Papermaking, describing the Latest and Best Processes and Machines in use, with Statistics, Profit, etc. Contained in SCIENTIFIC AMERICAN SUPPLEMENT No. 109 and 110. Price 20 cents for the two. To be had at this office and of all newsdealers.

NEW PATENT LAW FOR Spain, Cuba, Porto Rico, etc.

By the terms of the New Patent Law of Spain, which has lately gone into operation, the citizens of the United States may obtain Spanish Patents on very favorable conditions. The Spanish Patent covers SPAIN, and all the Spanish Colonies, including CUBA, Porto Rico, the Philippine Islands, etc. Total cost of obtaining the Patent, \$100. Duration of the Patent, 20 years, 10 years, and 5 years, as follows:

MUNN & CO., Solicitors of American and Foreign Patents, Proprietors of the SCIENTIFIC AMERICAN, 37 PARK ROW, NEW YORK.



CAVEATS, COPYRIGHTS, TRADE MARKS, ETC.

Messrs. Munn & Co. in connection with the publication of the SCIENTIFIC AMERICAN, continue to examine Improvements, and to act as Solicitors of Patents for Inventors. In this line of business they have had OVER THIRTY YEARS' EXPERIENCE, and now have unequalled facilities for the preparation of Patent Drawings, Specifications, and the Prosecution of Applications for Patents in the United States, Canada, and Foreign Countries.

We send free of charge, on application, a pamphlet containing further information about Patents and how to procure them; directions concerning Trade Marks, Copyrights, Designs, Patents, Appeals, Reissues, Infringements, Assignments, Rejected Cases, Hints on the Sale of Patents, etc. Foreign Patents.—We also send, free of charge, a Synopsis of Foreign Patent Laws, showing the cost and method of securing patents in all the principal countries of the world.

Copies of Patents.—Persons desiring any patent issued from 1836 to November 26, 1867, can be supplied with official copies at reasonable cost, the price depending upon the extent of drawings and length of specifications.

Any patent issued since November 27, 1867, at which time the Patent Office commenced printing the drawings and specifications, may be had by remitting to this office \$1.

When ordering copies, please to remit for the same as above, and state name of patentee, title of invention, and date of patent.

A pamphlet, containing full directions for obtaining United States patents sent free. A handsomely bound Reference Book, gilt edges, contains 140 pages and many engravings and tables important to every patentee and mechanic, and is a useful hand book of reference for everybody. Price 25 cents, mailed free.

Address MUNN & CO., Publishers SCIENTIFIC AMERICAN, 37 Park Row, N. Y. BRANCH OFFICE—Corner of F and 7th Streets, Washington, D. C.

TRADE MARKS.

Table listing trade marks such as Billiard table cushions, Brunswick & Balke Co., Buckskin, jeans, and doeskin cloths, J. Brown & Sons, etc.

DESIGNS.

Table listing designs such as Buttons, J. H. Wilson, Brooch, Hiram Howard, Ornamental chain, D. A. Beam, etc.

English Patents Issued to Americans.

From October 18 to October 22, inclusive.

Table listing English patents such as Apparatus for producing embossed figures.—H. Loewenberg, New York city, Bank checks.—F. W. Brooks, New York city, etc.