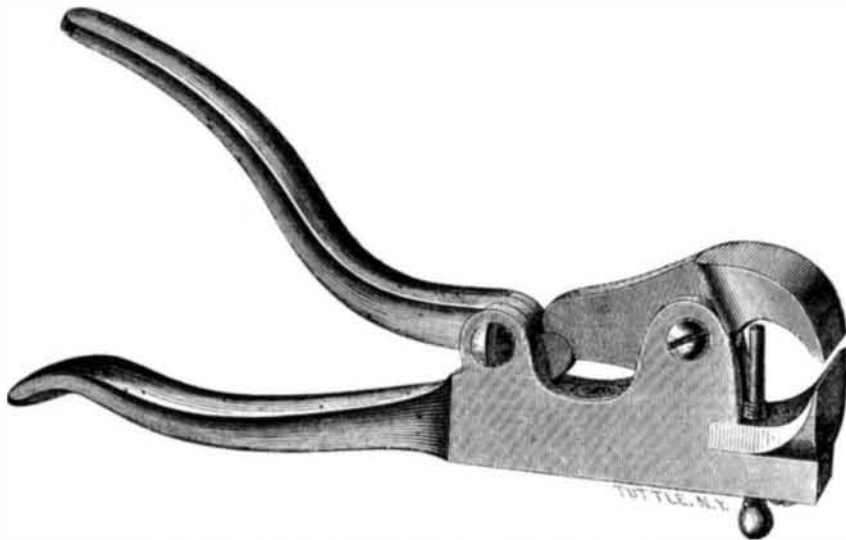


Improvement of Cutting Nippers.

The ordinary wire cutters, or cutting nippers, have no device to prevent the edges of the jaws from bearing powerfully one upon the other, and thus becoming speedily dulled or broken, which once being the case there is no remedy but to procure a new pair.

The one represented in the engraving differs essentially from others in these points, and also in the fact that it acts with a much more powerful leverage. Its construction and mode of operation are apparent from an examination of the engraving. The cutting portion of the stationary jaw is capable of being removed and ground when dull, being secured by a screw passing through the stock and secured in the cutter, and being also seated at its inner edge in that portion of the stock that forms a fulcrum for the movable jaw, which does not, as is usual, extend to the hand end to form one of the levers, but ends a short distance back from its fulcrum in a rule joint, on its underside, which engages with the handle proper, pivoted close to its inner end.



HALL'S IMPROVED CUTTING NIPPERS.

It will be understood that by depressing the outer lever, or

bringing the two handles together, an immense leverage is brought to bear upon the movable cutter, while a spring seated under it raises the cutting edge when the pressure is removed. An adjustable screw, passing through the lower jaws and coming in contact with the inside of the upper jaw when closed, prevents the edges from coming into injuri-

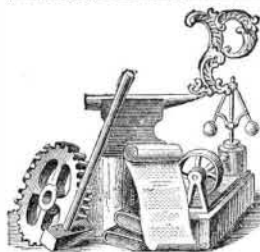
ous contact. The jaws are made of the best cast steel and tempered so as to cut pianoforte wire without showing a mark. All the parts are manufactured by gages, so that any

portion, if injured, may be readily replaced by a duplicate. The patent for the United States was obtained through the Scientific American Patent Agency, May 14, 1867, and foreign patents are now pending through the same agency. Further information may be obtained by application to Hall & Gifford, 187 Bowery, or at the office of the European Company, 85 South street, New York City.

CURIOSITIES OF IRON.

In some marked respects iron differs from all other metals. If it was as scarce as gold and silver there is no doubt it would be deemed much more valuable than either, not only for its usefulness but because of its singular qualities. While gold, silver, copper, and other metals are softened by heating and sudden immersion in cold water, the effect of this process on iron is directly the reverse. Although its grain is coarse compared with that of the metals just mentioned, it will receive and retain a fine edge impossible to be induced upon them. It can be changed from a brittle, impure mass without tenacity, to a substance so tough, ductile, malleable, and elastic as to be quite unapproachable in these respects; or it can be made into steel as brittle as glass while as elastic as it is possible to conceive of any metallic substance.

While cast iron is one of the most brittle substances known, yet the manipulations of the puddler, aided by fire and oxygen, readily change it to the toughest and most fibrous material. Yet even as cast iron it possesses much elasticity. A large steam cylinder if allowed to rest upon its side will sink by its own weight, so that if five or six feet in diameter it will be depressed from top to bottom of its diameter over an inch. Wire drawn from iron is worked just as wax would be by the moving of the outside particles over the inner as it passes through the dies; yet this process makes it almost as hard and compact as steel.



PATENTS

The First Inquiry that presents itself to one who has made any improvement or discovery is "Can I obtain a Patent?" A positive answer can only be had by presenting a complete application for a Patent to the Commissioner of Patents. An application consists of a Model, Drawings, Petition, Oath, and full Specification. Various official rules and formalities must also be observed. The efforts of the inventor to do all this business himself are generally without success. After a season of great perplexity and delay, he is usually glad to seek the aid of persons experienced in patent business, and have all the work done over again. The best plan is to solicit proper advice at the beginning.

If the parties consulted are honorable men, the inventor may safely confide his ideas to them: they will advise whether the improvement is probably patentable, and will give him all the directions needful to protect his rights.

Messrs. MUNN & CO., in connection with the publication of the SCIENTIFIC AMERICAN, have been actively engaged in the business of obtaining patents for over twenty years—nearly a quarter of a century. Over Fifty thousand inventors have had benefit from our counsels. More than one third of all patents granted are obtained by this firm.

Those who have made inventions and desire to consult with us, are cordially invited to do so. We shall be happy to see them in person, at our office, or to advise them by letter. In all cases they may expect from us an honest opinion. For such consultations, opinion, and advice, we make no charge. A pen-and-ink sketch, and a description of the invention should be sent, together with stamps for return postage. Write plainly, do not use pencil nor pale ink; be brief.

All business committed to our care, and all consultations, are kept by us secret and strictly confidential. Address MUNN & CO., 37 Park Row, New York.

In Order to Apply for a Patent, the law requires that a model shall be furnished, not over a foot in any dimensions, smaller, if possible. Send the model by express, pre-paid, addressed to Munn & Co., 37 Park Row, N. Y., together with a description of its operation and merit. On receipt thereof we will examine the invention carefully and advise the party as to its patentability, free of charge.

The model should be neatly made of any suitable materials, strongly fastened, without glue, and neatly painted. The name of the inventor should be engraved or painted upon it. When the invention consists of an improvement upon some other machine, a full working model of the whole machine will not be necessary. But the model must be sufficiently perfect to show, with clearness, the nature and operation of the improvement.

New medicines or medical compounds, and useful mixtures of all kinds, are patentable.

When the invention consists of a medicine or compound, or a new article of manufacture, or a new composition, samples of the article must be furnished, neatly put up. Also, send us a full statement of the ingredients, proportions, mode of preparation, uses, and merits.

Quick Applications.—When from any reason, parties are desirous of applying for Patents or Caveats, in GREAT HASTE, without a moment's loss of time, they have only to write or telegraph us specially to that effect, and we will make special exertions for them. We can prepare and mail the necessary papers at less than an hour's notice, if required.

Caveats.—A Caveat gives a limited but immediate protection, and is particularly useful where the invention is not fully completed, or the model is not ready, or further time is wanted for experiment or study. After a Caveat has been filed, the Patent Office will not issue a patent for the same invention to any other person, without giving notice to the Caveator, who is then allowed three months time to file in an application for a patent. A Caveat, to be of any value, should contain a clear and concise description of the invention, so far as it has been completed, illustrated by drawings when the object admits. In order to file a Caveat the inventor needs only to send us a letter containing a sketch of the invention, with a description in his own words. Address MUNN & CO., 37 Park Row, N. Y.

Additions can be made to Caveats at any time. A Caveat runs one year, and can be renewed on payment of \$10 a year for as long a period as desired.

For Instructions concerning Foreign Patents, Resolves, Interferences, Hints on Selling Patents, Rules and Proceedings at the Patent Office, the Patent Laws, etc., see our Instruction Book. Sent free by mail on application. Those who receive more than one copy thereof will oblige by presenting them to their friends.

Address all communications to MUNN & CO., No. 37 Park Row, New York City. Office in Washington, Cor. F and 7th streets.

Patents are Granted for Seventeen Years, the following being a schedule of fees:— On filing each Caveat.....\$10 On filing each application for a Patent, except for a design.....\$15 On issuing each original Patent.....\$20 On appeal to Commissioner of Patents.....\$30 On application for Reissue.....\$30 On application for Extension of Patent.....\$50 On granting the extension.....\$50 On filing a Disclaimer.....\$10 On filing application for Design (three and a half years).....\$10 On filing application for Design (seven years).....\$15 On filing application for Design (fourteen years).....\$50 In addition to which there are some small revenue-stamp taxes. Residents of Canada and Nova Scotia pay \$500 on application.

Advertisements.

A limited number of advertisements will be admitted in this page on the following terms:— Seventy-five cents a line, each insertion, for solid matter; one dollar a line for space occupied by engravings.

BRONSON'S DRAWING PROTRACTOR, T & BEVEL SQUARE.



This Instrument is made of German Silver, in two sizes, and can be relied upon as being correct. For circular, containing further information and prices, address A. BRONSON, 4 1/2 127 Elm street, New York.

PLATINA POINTS.—For Lightning Rods, Glass Insulators, Staples, Connections, etc., etc., of our celebrated make. A Priced List sent free on application. Wm. Y. McALLISTER, 728 Chestnut street, Philadelphia, Pa.

LINDSAY'S Patent SCREW WRENCH.—THREE TIMES THE STRENGTH WITHOUT ADDITIONAL WEIGHT.—Call at the nearest Hardware Store and look at it, or send for circular to 21 1/2 31 1/2 31 1/2 MANVEL & LINDSAY, New York.

\$18.00 A DAY.—Agents wanted, male and female, to introduce a new article of household utility. Only Five Dollars Capital Required. Particulars free. Address W. A. HENDERSON & CO., Cleveland, Ohio. 18 08*-R.

TURBINE WATER WHEELS.



The REYNOLDS PATENT embodies the progressive spirit of the age. Simply, Economy, Durability, Accessibility all combined. The only Turbine that excels Overshots. Awarded the Gold Medal by American Institute. Shattering, Gearing and Pulleys furnished for all kinds of Mills, made on Mechanical Principles, under my personal supervision, having had long experience. Circulars sent free.

GEORGE TALLCOT, No. 96 LIBERTY STREET, NEW YORK.

ENGINEERS' TRANSITS.—RAILROAD TRANSITS, ENGINEERS' LEVELS, SURVEYORS' COMPASSES, Tripods, Surveying Chains, Chesterman's Metallic and Steel Tape Measures, Sleppe Levels, Lockes' Hand Levels, etc., etc. Swiss Instruments, Mathematical Instruments, Standard Rules, etc., etc. A Priced and Illustrated Catalogue sent free by mail on application. Wm. Y. McALLISTER, 728 Chestnut street, Philadelphia, Pa.

EUROPEAN AGENCY for the Exhibition and sale of American Patents and Manufactures. BLANCHARD & MCKEAN, No. 3 Rue Scribe, Paris, France. Will attend personally and promptly to all business relating to the interests of American Inventors and Manufacturers in Europe. Correspondence solicited. GEO. A. BLANCHARD, 2 08st [J. A. MCKEAN.

WANTED-AGENTS—\$75 to \$200 per month everywhere, male and female, to introduce throughout the United States the GENUINE IMPROVED COMMON SENSE FAMILY SEWING MACHINE. This machine will stitch, hem, fell, tuck, quilt, bind, braid, and embroider in a most superior manner. Price only \$18. Fully warranted for 5 years. We will pay \$1,000 for any machine that will sew a stronger, more beautiful, or more elastic seam than ours. It makes the "Elastic Lock Stitch." Every second stitch can be cut, and still the cloth cannot be pulled apart without tearing it. We pay agents from \$75 to \$200 per month and expenses, or a commission from which twice that amount can be made. Address SECOMB & CO., Cleveland, Ohio. CAUTION.—Do not be imposed upon by other parties palming off worthless cast-iron machines, under the same name or otherwise. Ours is the only genuine and really practical cheap machine manufactured. 2 08st

CIRCULAR SAWS.

N. W. SPAULDING & BROTHERS, 224 WASHINGTON ST., CHICAGO, ILL.—Manufacturers of Spaulding's Patent Adjustable-Tooth Circular Saws, adapted to sawing all kinds of timber. These teeth have been in successful use for the last eight years. They save saws, power, and time, making the safest, most durable, and economical saw in use. Particular attention paid to straightening and repairing large saws. All saws sold and work done, warranted. Send for descriptive pamphlet. 2 08st

\$20.00 AGENTS WANTED—\$100.00—Male and female, to introduce our New Patent Star Shuttle Sewing Machine. It is adapted for family use and Tailoring. It makes a stitch alike on both sides. Price only Twenty Dollars. Extraordinary inducements to Agents. For full particulars, address W. G. Wilson & Co., Cleveland, Ohio.

CIRCULAR SAWS,



EMERSON'S PATENT MOVABLE TEETH.

These Saws cut More and Better Lumber in the same time, and with Less Power, than any other Saw in the world with Less Expenditure of Labor and Files to keep in order, and never Wear Smaller. Also

EMERSON'S PATENT GAUGING AND SHARPENING SWAGE,

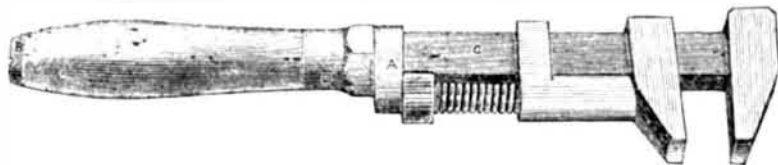
For Spreading the Points of Saw Teeth. Send for New Descriptive Pamphlet, with Price List.

AMERICAN SAW COMPANY, 1 1st

2 Jacob street, near Ferry street, New York.

COLLINS & CO.'S NEW PATENT SCREW WRENCH.

THE STRONGEST AND MOST DURABLE WRENCH EVER MADE.



All Consumers have noticed that their wrenches first fail by reason of the forcing back of the handle, and by the springing of the bar. Our improvement remedies both these defects, the bars being finished wider than any other wrench in market, and the handle cannot be displaced, as all strain on it is prevented by the screw thimble, D. (see cut.) Already adopted as the best by the principal railroads and machine shops, and for sale by Hardware dealers generally. Address COLLINS & CO., 212 Water street, New York.

Scientific American, 4000 Book Pages a Year THE BEST NEWSPAPER IN THE WORLD.

This paper differs materially from other publications being an Illustrated Periodical, devoted to the promulgation of information relating to the various Mechanical, and Chemical Arts, Photography, Manufactures, Agriculture, Patents, Inventions, Engineering, Mill Work, etc. Every number of the SCIENTIFIC AMERICAN contains sixteen large pages of reading matter, abundantly illustrated. All the most valuable discoveries are delineated and described in its issues; so that, as respects inventions, it

maybe justly regarded as an Illustrated Repertory, where the inventor may learn what has been done before him in the same field which he is exploring, and where he may bring to the world a knowledge of his own achievements.

The contributors to the SCIENTIFIC AMERICAN are among the most eminent scientific and practical men of the times.

Mechanics, Inventors, Engineers, Chemists, Manufacturers, Agriculturists, and people in every profession of life, will find the SCIENTIFIC AMERICAN to be of great value in their respective callings. Its counsels and suggestions will save them hundreds of dollars annually, besides affording them a continual source of knowledge, the value of which is beyond pecuniary estimate.

An official list of all Patents granted, together with the claims thereof, is published weekly.

The form of the SCIENTIFIC AMERICAN is adapted for binding and preservation; and the yearly numbers make a splendid volume of nearly one thousand quarto pages, equivalent to nearly four thousand ordinary book pages. Published Weekly, \$3 a year, \$1.50 half year, 10 copies for 1 year, \$25. Specimen copies sent gratis. Address

MUNN & CO., No. 37 Park Row, New York