JAY GOULD'S TOMB.

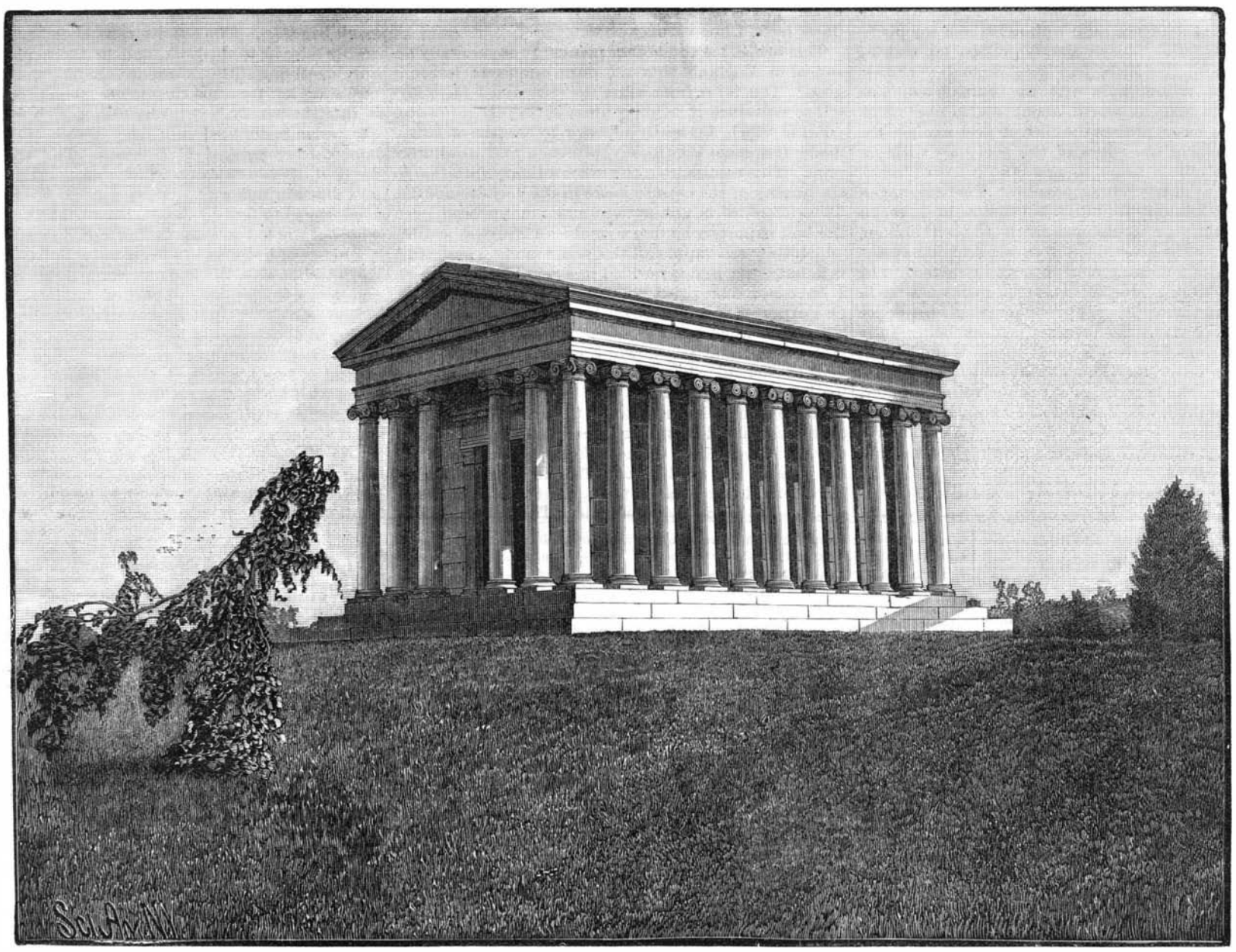
Perhaps the most noted financier and railway speculator of the past twenty-five years was Mr. Jay Gould, who died at his home in New York City, on December 2. The tomb erected for him several years since is shown in the accompanying illustration. It is copied after the famous *Maison Carre*, at Nimes, France, built some two thousand years ago, and perhaps the best preserved and most beautiful specimen of Grecian architecture in existence. Reared as it is upon a grass-covered knoll, where it commands a striking view of the surrounding country, the full beauty of the handsome marble structure, with its graceful Ionic columns, is appreciated by a beholder approaching it from any direction.

The design of the mausoleum was made by Mr. F. T. Fitz Mahony, and it cost $80,000. It is built throughout of Westerly granite. It is 33 feet long, 22 feet wide, and 20 feet high to the apex of the roof. The technical name of the building would be a Greek hexastyle, peripteral temple. It has six columns in front and eleven columns on each side in single rows. (This is counting the corner columns twice.) Three rows of steps run up to the temple on all sides and form its base. Between the columns and the walls of the temple is a considerable space. Columns and walls are bare, without the faintest attempt at ornamentation. In the center of the row of columns facing the south it looks as if a column had been removed to make a broad passageway. Facing this opening is the double door of the tomb. Each section of this door is 8 feet high and 2 feet wide, and weighs a ton. The doors are of heavy bronze, and the lower part is paneled and ornamented on the outside with two dragons' heads, a big iron ring swinging in the mouth of each dragon. The upper part of the doors is a fretwork of cherubs and vines, through the opening of which the interior of the crypt can be seen. The interior is 20 feet long, 7 feet wide, and 13 feet high. Its roof is a solid slab of granite, which weighs six tons. The border of the ceiling is paneled with egg and dart moulding. The floor is one plain marble slab. Along the sides of the interior are the catacombs. Of these there are twenty, ten on each side, in double rows. The rows are separated from each other by granite slabs. Each catacomb is 7½ feet long and 2½ feet wide. Between the lower end of the catacombs and the outside of the wall of the tomb is a thickness of 18 inches. The outer part of this thickness is, of course, granite, but facing the interior the walls are of light pink and cream-colored Tennessee marble, highly polished. The light enters the crypt through a stained glass window in the back. This window, which is 6 feet high and 3 feet wide, pictures a choir of angels. The roof of the mausoleum consists of granite slabs 32 feet long, each weighing fifteen tons, and so placed together that they overlap, making the roof waterproof. The whole temple weighs about 300 tons, and rests on a solid concrete foundation 8 feet thick.

Mr. Gould was born at Roxbury, Delaware County, N. Y., on May 27, 1836, his father being a small farmer, who kept a dairy of twenty cows. As a boy it was Jay Gould's duty to drive these cows and to help his sisters in milking them. He went barefooted and got thistles in his feet. He did not like it, and one day he told his father that he would like to go to school. He was then 14 years old, and his father was keeping a small store in the village. The elder Gould thought his son was too young to go to school, but the son gained his consent by persistence. He soon learned to write a good hand, and by writing up the books of the village blacksmith at night he earned enough to take him through a small select school. After that he got a clerkship in a country store. He made himself generally useful, sweeping it out and looking after business, working from 6 o'clock in the morning until 10 at night. He had a taste for mathematics, and got up at 3 o'clock in the morning to study until it was time to sweep out the store.

In a year or so he started out as a surveyor, and was employed to make a survey for a map of Ulster county. By odd pieces of luck through the summer that followed he made $500 out of his work as a surveyor. Afterward he made similar surveys and maps of Albany and Delaware counties, and by that time was worth $5,000. This he invested in the tanning business, his interest in which he afterward sold, and with all his capital in cash in his pocket bought the entire issue of the first mortgage bonds of the Rutland and Washington road to Troy. They were offered in the market at ten cents on the dollar, and the investment proved exceedingly profitable. It was the commencement with him of a life of dealing in railroad securities.

The history of Mr. Gould's railroad deals and financial enterprises would fill a volume. But they are merely incidents now, and can only be accepted as a part of the great movements which went to develop his characteristics and renown. He is perhaps most widely known by his connection with the Erie Railroad from 1868 to 1872, and his participation in the Black Friday gold excitement of September 24, 1869. He left a fortune estimated at about $75,000,000.



THE TOMB OF JAY GOULD, WOODLAWN CEMETERY, NEW YORK CITY.

97·3 Miles an Hour.

On Friday, November 18, engine 385 of the Central of New Jersey, the Vauclain four-cylinder compound, which several months ago made a record of 91 miles an hour, traveled a mile in 37 seconds, and two consecutive miles in 75 seconds, thus beating its own record as well as all others. This was done with a regular train of four cars, going east, between Fanwood, N. J., and Westfield, the grade being 32 feet per mile, descending. On the same trip a distance of five miles was traversed in 3 minutes 25 seconds, thus making the best record for that distance (87·8 miles an hour). This was between Somerton and Parkland, Pa., on the Reading, which is the same portion of the road where so much fast running has been done heretofore. The grade here is partly descending at 11 and at 37 feet per mile and partly level. This engine, No. 385, has four 78-inch driving wheels, weighs 62 tons, with 44⅓ tons on the drivers.—*Railroad Gazette.*

A Manual Training School in Louisville.

The city of Louisville, Kentucky, is to have a fully equipped manual training high school for whites, which will be an adjunct to the regular public schools, and will be controlled by the school board. The school and its equipment is to be the gift of Mr. A. V. Du Pont. In the prospectus some interesting details of the proposed work are given. All teachers in the manual training department are to be graduates of some reputable manual training school. No special trade will be taught in the school; neither will any articles be manufactured for sale. The shop building will be 132 feet long by 60 feet wide and the school building 122 feet long by 58 feet wide, each being three stories in height. The shops are to be run by independent electric motors, driven by a dynamo actuated by an 80-horse power Ball-Wood engine. The cost of the school will probably be $120,000.

Artificial Gum Arabic.

For the preparation of a so-called artificial gum arabic the *Rev. de Chem. Indust.*—through *Nouv. Remedes*, 1892, No. 13 supplem.—gives the following process: 10 kilogrammes linseed are boiled with 80 kilogrammes sulphuric acid and 100 liters of water for three or four hours. The liquid is then filtered and four times its volume of alcohol is added. The precipitate is collected, washed, and dried. The product is amorphous, colorless, insipid, and gives, with water, a thick mucilage.

Essence of Lemon.*

BY ARTHUR A. BARRETT, MESSINA.

A few notes on the manufacture of essence of lemon will, I hope, be acceptable. In the first place, we all learn in England that essence of lemon is made with an ecuelle. Every book I can find says so, and on coming out here I was not a little surprised when I could not find a single one. The principle on which the extraction of the essence is carried on may be illustrated in this way: If you hold a piece of lemon peel up to the light and turn it inside out, a fine shower of mist will be seen to be forcibly ejected. This is not all oil, but a mixture of oil and water. Most people are unpleasantly acquainted with this phenomenon, though many have not actually seen it, for in peeling a lemon or orange with the fingers a little of the oil is often ejected into the eye, causing a considerable amount of pain. By turning the lemon peel inside out, almost the whole of the essence is removed from the peel, for each little globule of oil appears to be surrounded by water, and the liquid which remains adherent to the peel consists principally of water. As it is impossible to turn every piece of peel actually inside out, the following method is adopted:

One man takes a lemon in his hand, and with three rapid strokes with a large knife cuts off nearly all the peel in three slices. The central portion, which is left, consists of most of the pulp with a little of the peel—top and bottom. This is simply pressed for making lemon juice. The slices pass to a second workman, who sits on a low chair, with an ordinary common quality bath sponge, worth about 6d., in one hand. With the other he presses the slice of peel against the sponge, pressing the edges of the peel only with his fingers, the object being to press the convex piece of lemon peel as nearly flat as possible. The amount of pressure used is very slight, and at first sight it seems incredible that the oil globules can have been broken, but if you try the experiment of turning this exhausted peel inside out, nothing more can be extracted. The sponge is periodically squeezed. One man working in this way can extract about 1½ pounds (English) essence of lemon per day. To insure the cells being fully charged with moisture, it is usual to allow the lemons to stand in water for a short time; and I myself propose washing the lemons in a stream of running water. A second method, which, so far as I know, has not yet been published in England, originated in a clever fraud; but it is now, I believe, a thoroughly well understood business.

A large trade has already been done here in lemon peel packed in brine, which has been exported for the manufacture of candied peel. Formerly the peels were sent in the natural state. They are now exported with about three-fourths of the essence removed. This is accomplished as follows: The lemon, instead of being cut as before described, is cut in two, lengthwise. Should there be any defect in the lemon, the workman contrives to cut it in such a way that, by removing a thin slice, the defect is cut away and two half lemons remain, both free from blemish, and only a thin piece wasted. The pulp and a little of the white is then cut out with a kind of spoon, care being taken not to rupture the oil vessels of the peel. Another workman then presses the half lemon in various directions against a sponge, and, though it is evident that the sponge process is rather at a disadvantage, he manages to extract about three-fourths of the total amount. The quantity of essence obtained in this way is considerable. As a consumer of candied peel, I should be inclined to condemn this process; though, as I have not seen the product and compared it with that made with the oil, I cannot say that it is inferior. It is stoutly maintained that if the essence were not removed it would be destroyed by the brine; and it is possible that there is some truth in this. As the essence made in this way is of superior quality, being made from the finest fruit, I hope it may be so.

This brings me to another point. It is generally assumed in England that all pure essence of lemon is good. This is far from being the case, and I have myself seen essence of lemon containing 15 per cent of turpentine which was really superior to essence of lemon made the same day in my presence, and absolutely pure. This results from the extraordinary variation in the quality of the essence made in the various months. This difference is not noticed much in England, even the best exporters having to make an average sample which they can supply all the year round. Turpentine is in large use, and is purified in a peculiar way, which I have not discovered, so as to have very little smell. One exporter is said to use ten tons per annum. Strange to say, the worst qualities of essence all go to London, Manchester, and Glasgow. English wholesale druggists in particular have an unenviable reputation here for buying low qualities. One Sicilian dealer thinks that the climate has something to do with the inability of Englishmen to distinguish between turpentine and essence. In addition to the difference depending upon the season, the product of different districts varies. Experienced buyers claim to be able to distinguish the district and village in which an essence has been made simply by smell and inspection.

Testing is carried out as follows: A sample is poured out into a tumbler and shaken up after placing the hand on top. Great attention is then paid to the duration and size of the bubbles and froth, the color is noted, and one smell is taken with the glass full and another after emptying it. Turpentine will certainly be detected in this way if over five per cent is present. Conducted in this way the purchase of essence of lemon is a matter requiring great judgment, and most of it being sold by peasants in small quantities, dealers cannot avoid sometimes buying a bad lot. If you make essence in your own works, the difficulties are not removed, only changed, the substitution of turpentine for essence by the workmen being frequent and so contrived as to be very difficult to detect. A favorite means of bringing turpentine into the works is by means of a bladder and tube, which is carried as near as possible to the bladder with which we all are provided. It is a very easy matter to empty this and attend to the calls of nature without exciting suspicion.

The following inferior qualities of essence of lemon are distinguished here:

Sacotte.—As soon as the essence is made it is allowed to deposit and the clear portion poured off. There remains a deposit in the bottom which is pressed in a small bag (sac). The essence thus obtained is considerably inferior to the bulk, and in those places where only small quantities of essence are made, and the deposits are left for some time to accumulate, the quality is extraordinarily bad. The cake which is left after expression is distilled in a very rough way, yielding lambicato or distilled oil of lemon. The whole of the distilled essence of lemon which was made in Sicily is now made in this way. Often enough the dregs have commenced to ferment, and in some cases have lost the whole of the lemon smell before being distilled.

Essence of lemon made from the rejected fruit from the warehouses.—In November and December a large amount of fruit is cut and packed, but instead of being at once sent abroad, it is stored in warehouses—fruit gathered at this season having qualities which enable it to be kept longer than any other. Before sending it abroad it is all repacked, the bad and doubtful fruit being used for essence making. This essence never has the fine flavor of its own, described as the smell of the wood (di legno), which is easily recognized.

* Pharmaceutical Conference Proceedings.

ACCORDING to the last census there are 33,163 lawyers in the United States.

RECENTLY PATENTED INVENTIONS.

Railway Appliances.

CAR COUPLING.—Thomas Courser, Lake City, Fla. This device has a knuckle with a coupling hook connected therewith, and is provided also with an auxiliary pivoted coupling hook, the latter being concealed when the main hook is in use. The knuckle is adapted to be employed in the same manner as such coupling devices are ordinarily used, while the auxiliary device may be used in connection with an opposing drawhead of the link and pin type, or it will be employed if any accident happens to the hook of the knuckle. The device is very simple and easily operated.

SNOW PLOW.—Patrick H. Craddock, Leadville, Col. This is a plow adapted to be secured to the pilot board of an engine, and its construction is such that it will automatically adjust itself vertically or laterally should an obstruction be met with on the track. By an operative mechanism connected with a storage reservoir of compressed air the engineer may elevate or lower the plow as desired. The plow consists of a clearing board or fender in the shape of two sides of a triangle, a cutter being centrally formed thereon and downwardly extending brushes are adapted to engage with the treads of the rails.

Mechanical.

BALANCE WHEEL.—Hiram Bouck and Julius H. Lovendale, Salt Lake City, Utah Ter. This is a wheel having radial and circumferential slots, holes extending through the wall of the wheel being connected with the slots, while screws and nuts may be entered in the holes and fastened in the several slots, whereby an adjustment may be readily made without removing the wheel from the shaft, the weight being adjusted to come more or less on one side of the center as desired.

SAW HANDLE ATTACHMENT.—Mitchell Pyper, New York City. Secured to the blade of a handsaw, immediately in front of the handle, are side-pieces forming abutments for a swinging square arm and bevel arms, whereby the saw may be conveniently used as a square and bevel. The swinging arm is pivoted and held by a thumb screw in any desired position, or may be detached at will, it being split longitudinally and held to straddle the saw blade.

Miscellaneous.

TREATING GOLD ORES.—Louis C. Daumas, Paris, France. This invention covers a process and apparatus for extracting gold from the ore. Protochloride of sulphur saturated with dry chlorine is used to dissolve gold at about 130° Centigrade, a double chloride of gold and sulphur being formed, while if the ore contains other metals they are transformed into oxide by roasting. The apparatus comprises a hopper-like receptacle surrounded by a steam coil, cross pipes extending through the receptacle and a filtering material being held in its lower portion.

SATURATING ARTICLES.—John A. Titzel, Glenshaw, Pa. This invention relates to an improved process of coating or saturating electric cables, to secure insulation, etc., and similarly treating hard and soft wood, terra cotta, etc., rendering the articles treated waterproof and preventing decay. The articles are first subjected to heat, to expand the air and fluids in the pores, and then immersed in a coating or saturating liquid, at a lower temperature, causing the liquid to be drawn into the pores of the heated article.

CENTRIFUGAL HONEY EXTRACTOR.—Charles W. Metcalf, Santa Paula, Cal. This is a device in which a rotating frame supports swinging holders or baskets, the centrifugal force of the frame causing the honey in the outer half of the combs to be ejected, the baskets then being reversed so that the comb holders change their position and the remainder of the honey is extracted, after which the comb-holding baskets can be readily removed and the holders refilled.

WINDOW WASHER.—David Mendelson, New York City. This is a simple and cheap apparatus with which a person may stand in a room and readily wash the outside of a window, the apparatus also facilitating the cleaning of the inside of the window, or the washing of a wall or ceiling. It consists of a telescopic main handle in hinged sections, fastening devices fixing the position of the sections, and a fixed jaw and a spring-pressed jaw being carried at the upper end of the handle. The jaws carry a wet swab at one end and a dry cloth at the other.

WINDOW SASH JACK.—Valentine Schirmer, New York City. This is an improvement on a former patented invention of the same inventor, providing a swinging support for sashes to facilitate cleaning them. The improved jack is light and cheap, and is adjustable to engage fixtures on different windows. The improvement was on exhibition at the late fair of the American Institute, New York City, its simple construction admitting of the window sashes being swung inwardly, either right or left, for the purpose of ventilation or cleaning. One swinging jack or skeleton bracket is sufficient for a building, its weight not exceeding four pounds.

COIN WRAPPER.—Ferdinand A. Jaekel, Memphis, Tenn. This improvement provides an oblong wrapper, properly marked for different values, and gummed at one end, and having also a central longitudinal line of perforations, in which coin may be neatly wrapped in specific amounts, and the package quickly separated into two equal portions, thus releasing the coin.

TWINE HOLDER.—Walter T. Hanson, Macon, Ga. This device has a base plate provided with a conical friction plug or spindle to enter the core of a ball of twine, in connection with a stationary angled arm having a suspension eye and guide eyes through which the cord is passed. The holder may be conveniently attached to an overhead support, to a counter, or be suspended in any position, holding the ball in such manner that the cord may be readily unwound.

BAG HOLDER.—Michael Fortin, Stillwater, Minn. This holder is provided with a frame, with a board held in inclined position on which the bag rests, and the holder, made of a single piece of wire bent to form connected loops engaging staples in the board, has curved arms at right angles to the loops, and having a sliding connection at their ends. The device is of simple and durable construction, self-tightening, and arranged to expand and open the bag when filling it.

LOCK FOR BAGS, PURSES, ETC.—Frederick R. Deck, Brooklyn, N. Y. This lock comprises two leaves placed back to back and having interlocking knuckles, the outer edges of the leaves being flanged and a pivot pin passing through the knuckles of both leaves, while a spring coiled on the pivot pin exerts tension upon the flanges of the leaves. The improvement is designed especially for double frames for double pockets, to lock both sections of the frame, both leaves being controlled by the same spindle and spring, but each leaf being operated independently.

CASH AND PARCEL CARRIER.—Samuel J. Besthoff, New York City. This improvement provides a car which may be placed upon a cable and carries its own driving mechanism, of a simple, durable, and inexpensive character. The car has a simple automatic locking device to hold it upon the cable, and the opening of the door of the cash compartment winds up the propelling mechanism. A parcel carrier, to transport goods with the cash, may or may not be used, as desired, in connection with the cash car.

PICK.—Kenneth J. Morrison and Michael McLellan, Stellarton, Canada. This patent is for a pick head having transverse slots to hold removable points, air passages leading from the slots into the eye, this improvement preventing the broken or "cracked" sound so often made in using picks having removable points.

DESIGN FOR BOOK REST AND UMBRELLA HOLDER.—Charles Pegler, Elgin, Ill. This is a combined book rest and cane and umbrella holder exhibiting a novel configuration of parts of bracket-like ends supporting a connecting board or shelf placed at an angle.

DRAWING INSTRUMENT.—Charles L. Davis, New York City. This is a draughtsman's compass designed for conveniently and rapidly drawing spiral lines, ovals, ellipses, and other curvilinear geometrical lines and figures. The improvement is included in a simple and durable construction, and the invention consists principally of a cord connected with one of the legs of the compass and adapted to wind on a drum mounted to rotate loosely on a spindle held on the other leg at the joint of both legs.

NOTE.—Copies of any of the above patents will be furnished by Munn & Co., for 25 cents each. Please send name of the patentee, title of invention, and date of this paper.

NEW BOOKS AND PUBLICATIONS.

METAL COLORING AND BRONZING. By Arthur H. Hiorns. London and New York: Macmillan & Co. 1892. Pp. xv, 328. Price $1.10.

The coloring of metals for the production of bronzes and other color effects is every day exciting more attention. The present work quite exhaustively treats of the different aspects of the question and how to treat different metals. Numerous formulæ are given.

A PRACTICAL TREATISE ON THE MANUFACTURE OF PERFUMERY. Comprising directions for making all kinds of perfumes, sachet powders, fumigating materials, dentifrices, cosmetics, etc. By Dr. C. Deite, assisted by Borchert, Eichbaum, E. Kugler and H. Toeffner. Translated by W. T. Brannt. Philadelphia: H. C. Baird & Co. 1892. 12mo. Pp. 358. Illustrated. Cloth. Price $3.

This work also contains a full account of the volatile oils, balsams, resins, and other materials used in the manufacture of perfumes. This book gives more details of manufacturing perfumes and toilet specialties on a commercial scale than any work on the subject which has come under our notice. The section relating to hair preparations is excellent and the chapter on cosmetics seems to be well up to date. Fruit ethers receive a fair share of attention. The number of receipts given in the book is large.

THE PRACTICAL BRASS AND IRON FOUNDER'S GUIDE. By James Larkin. Philadelphia: H. C. Baird & Co. 1892. 12mo. Pp. 394. Illustrated. Cloth. Price $2.50.

This is a new and enlarged edition of Larkin's well known work. The work has been revised and brought up to date, so as to include Mitis castings, steel castings, bell founding, bronze casting, chill casting, casting without a core, casting on other metals, casting upon inflammable materials, etc. Many sections of the old work have been entirely rewritten.

THE MANUFACTURE OF INK. Comprising the raw materials, and the preparation of writing, copying, and hektograph inks, ink extracts and powders, colored inks, solid inks, lithographic inks and crayons, etc. By Sigmund Lehner. Translated by W. T. Brannt. Philadelphia: H. C. Baird & Co. 1892. 12mo. Pp. 229. Illustrated. Cloth. Price $2.

The present work is founded on "Die Tinten-Fabrikation." A careful consideration is given to the raw materials, their selection and preparation. A large number of receipts is given, embracing nearly every kind of ink, and the author states that most of the receipts have been tested. Great attention is paid to