ENGINEERING INVENTIONS.

A means for preventing condensation in steam cylinders has been patented by Mr. Charles W. Crawford, of Brazil, Ind. It consists in the application of a current of hot air to jacketed cylinders, a blower being used to maintain circulation from heater to the cylinder and back, and the air being heated, in any suitable heater, to a temperature greater than the steam in the cylinder.

A detecting bar for railway switches has been patented by Mr. James A. Bonnell, of New York city. This invention covers detecting bars used at night or during fogs to ascertain if a train is on a switch before throwing or setting the switch, and is an improvement on a detecting bar patented by the same inventor in July, 1881. By this device the splitting of trains on switches is avoided, even if the switchman cannot see the signals.

An improved car coupling has been patented by Mr. Charles Uebinger, of St. James, Ind. The drawhead is of the usual construction, the coupling pin is held on the outer end of a projecting arm, and this is connected with a lever projecting from the top of the car, where it will strike a similar lever from an approaching car, and so drop the pin through the coupling link; there is also an arm or apron guide on the bottom of the drawhead, to engage a similar one on the approaching car, for guiding the link.

An ore concentrator has been been patented by Mr. Alexander D. Clarke, of New York city. It is an improved device for washing off and removing particles of sand in placer mining, and catching the heavy and float gold. The flow of sand, ore, etc., is conducted upon a screen by an inclined chute, from whence another inclined chute conducts it to a transverse gutter, and thence it flows into suitable settling tanks, the chute that conducts the water from the screen being inclined in the inverse direction from the chute that conducts the water upon the screen.

A superheating attachment for steam boilers has been patented by Mr. James A. Stout, of Belleville, Ill. This invention is designed for portable and traction engines, and provides for a novel construction of superheater to take the place of ordinary steam dome, so the steam will be superheated by the gaseous products of combustion as they pass to the chimney; the dome has its heads formed of cast metal rings at its opposite ends, and is combined with the smoke box end of the boiler; the dome also has combined with it a steam supply pipe connecting it with the boiler, preventing foaming or priming, as well as economizing fuel and water.

MECHANICAL INVENTIONS.

A saw tooth swage has been patented by Mr. Samuel J. Chalfant, of Albion, Cal. It consists of an anvil block adapted for being held in a vise, with jaws and a clamping lever for holding removable saw teeth with the points on the anvil, for drawing or swaging with a light hammer, to widen and sharpen the points, the dies being changeable for different forms of teeth, so that worn teeth may be sharpened and perfectly refitted.

A shingle sawing machine has been patented by Messrs. William F. Dake and James H. Seek, of Grand Haven, Mich. The object is to facilitate the utilization of saw mill refuse in making shingles, and for this purpose the saw frame has an endless chain of bars provided with dogs and driven by chain drums, a worm and worm wheel, and a belt and pulley from the saw mandrel. The machine has a movable table, with a guide plate and spring, so that wedge pieces and slivers will push back the table and escape.

AGRICULTURAL INVENTIONS.

An improved cultivator has been patented by Mr. Henry D. Teller, of Starrsville, Ga. By this invention single beam cultivators can be readily adjusted to use as covering plows, and to work deeper or shallower in the ground, as desired, the construction being durable and effective.

A check row attachment for corn planters has been patented by Mr. William W. Robinson, of Ida Grove, Iowa. This invention provides for the operating of the seed dropping slide by the advance of the machine, and covers a novel combination and disposition of parts to facilitate the planting of corn in accurate check rows.

MISCELLANEOUS INVENTIONS.

An improved bracket has been patented by Mr. Jonas Herrmann, of Columbus, Ohio. It is a novel design, adapted for holding a crossbar out from the wall, the cross piece being very securely held, while it is at the same time easily removable.

An improved faucet has been patented by Mr. Joseph H. Dorgan, of Plattsburg, N. Y. The principal object of this invention is to make more easy and convenient the adjustment of the faucet in barrel or cask, with provision for accommodating the faucet to different sized barrel plugs.

A broom support has been patented by Mr. William T. Shaffer, of Evanston, Wyoming Territory. The invention provides for a new and improved pocket or receptacle for holding the broom when not in use, the pocket straightening the bent straws and holding the broom fixed in its proper shape.

A crock cover has been patented by Mr. Daniel W. Frost, of Keokuk, Iowa. This invention provides a crock cover with recesses for holding it on the crock in such a way that the bail of the cover can be used to lift the crock, and the cover can be adjusted to fit different sized crocks.

A clothes drier has been patented by Mr. Robert R. Richardson, of Laramie City, Wyoming Territory. It is an improved combined clothes horse and press or closet, which can be erected or folded easily and rapidly, does not occupy much space when folded, and when in use the sides and doors may be swung open and expose the clothes to the air.

A draught equalizer has been patented by Mr. John Bowers, of Brookville, Ill. It is so constructed that, when three horses are employed, each one will exert a like draught. The middle horse has a two-third leverage over the horse on the other side of the tongue, and a compound leverage over the outside horse on the same side of the tongue.

An improved cotton press has been patented by Messrs. F. L. Faison and George M. Newell, of Wake Forest College, N. C. This invention covers a new construction and combination of parts, including a grooved rail, flanged and grooved rollers, endless rope, thrust bars, follower, drum, and axle, with rock shaft, levers, slide bolts, connecting rods, side doors, etc.

A weather strip has been patented by Mr. Ira Paddock, of Greeley, Kansas. It combines a curved metallic strip with a curved flexible strip, the former doubled and the latter clamped within its fold and secured to the bottom of the door or sash, a spring being attached to the door and to the strip, adapted to hold up the latter as the door opens and closes.

A fire escape has been patented by Mr. Samuel Norris, of Halifax, N. S., Canada. This invention provides for an endless belt with pockets and strengthening chains, suspended bearings to carry an endless belt roller, brake straps, brake levers, and brake cords for controlling the escape, the whole designed to facilitate the escape of people and removal of property from burning buildings.

A pencil holder has been patented by Mr. Bernhard Eybel, of New York city. The object of the invention is to facilitate the adjustment of leads in pencil holders and provide a simple construction. According to this device, the lead is forced outward into position by turning its tapering end in one direction; or withdrawn by revolving it the opposite way, so the pencil can be carried without breaking off the point of the lead.

A combined letter box and mail bag has been patented by Mr. Carl Friedrich Teller, of Offenbach-on-the-Main, Germany. The invention provides for a mail box with a sliding bottom, and when the box is to be emptied a locked bag is passed under the bottom in such manner that, with this especial construction, the letters may be dropped into the bag, and when the box is emptied the bottom is pushed back and the bag closed.

An improved pitman rod connection has been patented by Mr. George E. Waggoner, of New Hampton, Mo. It is more especially intended for the connection of a harvester or mower and sickle bar, the solid eye of the pitman rod having a fitted thimble connected with the jaws of the sickle bar head by a screw bolt and jam nut, with means to fix the thimble, a presser box behind the eye of the pitman in the jaws of the head, and a set screw and jam nut to take up the slack.

A fireproof sheet, for use for curtains, theater scenes, roof covering, etc., has been patented by Mr. Junius Nagel, of Vienna, Austria. It consists of either a mixture of asbestos with a zinc oxide, asbestos with magnesia, or asbestos with lime, or a mixture of all these in different proportions according to the proposed use, the mixtures being saturated with a sulphate of alumina, or a chloride of some metal, or a mixture of these solutions, and a particular manner of applying the same to a wire netting or cloth.

A dynamo electric machine has been patented by Mr. Jonas Wenstrom, of Orebro, Sweden. This invention provides for the more complete utilization of excited magnetism than heretofore; the bulk of the wire is enveloped in iron, and the excited magnetism in all directions meets iron for conducting it where wanted, this iron serving as a frame connection between all parts of the machinery, and allowing the armature to move freely between the polar surfaces, and in very close proximity thereto.

A disinfecting tank for the disposal of sewage has been patented by Mr. James J. Powers, of New York city. It combines with a settling tank another one for disinfecting and a small one for receiving the disinfecting liquid, the latter arranged for automatically discharging the disinfecting liquid into the disinfecting tank. The fluids are withdrawn from the latter by a siphon, the outer end of which has an automatically closing valve, and is in a smaller tank connected with absorption or drain tiles.

A balloon propeller has been patented by Mr. Kansas D. Davis, of Cole City, Ga. This invention is intended to control the motions of a gas balloon, by attachments to the car or its frame; there are outwardly projecting arms with supporting sleeves, reversing wings, and sailing wings with means for operating them by driving shaft with reverse cranks and connecting rods, also a specially devised rudder and apparatus for arresting flight, as well as to control ascent and descent.

An improved coffee and tea pot has been patented by Mr. Frank Rosebrook, of Elmira, N. Y. The coffee or tea pot has a perforated false bottom, the true bottom beneath which is tapering or conical, in the middle of which is a faucet; the coffee or tea is placed on this false bottom, and then the desired water is added, after which the pot is placed inside another vessel of suitable construction to hold water all around, and the larger vessel is placed over the fire, thus extracting the flavor and the aroma from the tea and coffee, so that none of it will be lost.

NEW BOOKS AND PUBLICATIONS.

RELATIVE PROPORTIONS OF THE STEAM ENGINE. By William Dennis Marks. J. B. Lippincott & Co., Philadelphia.

This is the second edition of a work originally published in 1878, with two added chapters, on "The Cheapest Point of Cut-off" and "The Errors of the Zenner Valve Diagram." The author is Whitney, Professor of Dynamical Engineering in the University of Pennsylvania, and undertakes to give rules and formulæ for proportions of different parts of engines, so that the engineer may conveniently work out the design and details of any specially desired construction, to meet new circumstances, or better perform the work now done by engines ill adapted for their purpose. The book fills a place, for those who have the designing of engines, which is hardly taken by any other work in the English language, but there will be general regret that the author did not treat more extensively of the economical point of cut-off, the grounds for the proper consideration of which he has stated in such comprehensive terms.

FOR MOTHERS AND DAUGHTERS. A Manual of Hygiene for Women and the Household. By Mrs. E. G. Cook, M.D. Fowler & Wells, New York.

The importance of physical culture for women, with especial reference to their duties in the household and the raising and care of children, are prominently treated in this book; there is a chapter on bread and butter, with analysis of processes of digestion; hygiene and ventilation are discussed, and the rights and education of children, etc.

A BACHELOR'S TALKS ABOUT MARRIED LIFE AND THINGS ADJACENT. By William Aikman, M.D. Fowler & Wells, New York.

This is a pleasant volume on social life, that cannot be out of place on any drawing room table, where its happy thoughts and cheerful spirit will contribute to the home comforts that the bachelor is always supposed to be in want of.

THE WINE PRESS AND THE CELLAR. By E. H. Rixford. D. Van Nostrand, New York.

This volume is the result of the researches of a practical man investigating the subject for his own benefit as a wine maker, and so deals but lightly with anything touching the theoretical side of the business, while affording a valuable collection of facts from his own experience and from the writings of various authors in the English and foreign languages. The author is evidently familiar with the commencement and progress of the business of grape culture and wine making in California, and his book, while showing some of the errors they have heretofore made, is itself an evidence that a much better understanding now prevails of what is needful for success in this line,

HYGIENE AND SANITARY SCIENCE. A hand book. By George Wilson, M.D., F.R.S.E. P. Blakiston, Son & Co., Philadelphia.

The author of this book, which has now reached its fifth edition, is a medical officer of health for the Mid-Warwickshire sanitary district, England. The scope of the work is very comprehensive, embracing analyses of water and food, examinations as to warming and ventilation, hospital management, removal of sewage, disinfection, etc., with a chapter on vital statistics, and a synopsis of the most important English laws and regulations of health boards. Works of this character are valuable public educators in a direction to which attention cannot be too frequently directed.

HEALTH IN THE HOUSEHOLD, OR HYGIENIC COOKING. By Susanna W. Dodd, M.D. Fowler & Wells, New York.

Many useful hints and recipes are here given for "hygienic" cooking. The book cannot fail to be of great value in every household, to those who intelligently appreciate the author's standpoint. The great majority of people will probably differ widely from many of the ideas advanced, but there are few of those who differ most positively therefrom but will, on careful consideration, concede that it would be a public benefit if our people generally were better informed as to the healthful mode of living the author contends for.

ELECTRICITY, MAGNETISM, AND ELECTRIC TELEGRAPHY. By Thomas D. Lockwood. D. Van Nostrand, New York.

This book the author does not claim to be more than a hand book, a carefully arranged elementary work, leading the learner up to the higher problems of the science, yet it covers a wide range of topics, the language is simple and direct, and the author has evidently given us here the results of careful investigations, gone into solely from practical motives. The text is in the form of questions and answers throughout, a mode of giving information best calculated to eliminate vagueness of statement and hold the mind to a closer analysis of the severally succeeding topics, which is of primary importance with all beginners in the very complex science which the present state of electrical development affords.

ABORIGINAL AMERICAN AUTHORS AND THEIR PRODUCTIONS. By Daniel G. Brinton, A.M., M.D., Philadelphia.

The vivid imaginations of the Indians, their love of story telling and appreciation of style, coupled with language of much power and resource, produced a literature of much quaintness and in some cases brilliancy. The native admiration of eloquence is clearly discernible in their deep seated reverence for the orator. The book shows the aboriginal authors and their works, and is divided into the literary faculty of the native mind, and narrative, didactic, oratorical, poetical, and dramatic literature.

THE ART OF BOOK BINDING. H. P. Du Bois. Bradstreet Press, New York.

This is an historical essay of the art of book binding, from the earliest times, and will be of most value and interest to pronounced bibliophiles.

THE steam pumping machinery of Messrs. Guild & Garrison, of Brooklyn, N. Y., is illustrated in an elaborate catalogue which the firm are sending out at the beginning of the year.

A SHOE AND LEATHER TRADES DIRECTORY, with statistics of the business and record of the most important news in that industry for 1883, makes a handsome volume just issued by the *Shoe and Leather Reporter*, for free distribution to its subscribers. The book distinguishes the manufacturers, tanners, and curriers from those who are only dealers, and notes the several specialties of each. Pennsylvania has 831 tanners and leather dealers, a decrease of 71 from the number in the business in 1882; New York State has 434 tanners and curriers, which is noted as 101 less than the number in 1882.

Notes & Queries

HINTS TO CORRESPONDENTS.

No attention will be paid to communications unless accompanied with the full name and address of the writer.

Names and addresses of correspondents will not be given to inquirers.

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.

Correspondents whose inquiries do not appear after a reasonable time should repeat them. If not then published, they may conclude that, for good reasons, the Editor declines them.

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.

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

Correspondents sending samples of minerals, etc., for examination, should be careful to distinctly mark or label their specimens so as to avoid error in their indentification.

(1) M. G. M. asks how peanut oil is purified and deodorized? A. In European mills the nuts are firstcleaned,thendecorticated, and winnowed, by which the kernels are left perfectly clean. These are crushed like any other oil seed, and put into bags which are introduced into cold presses; the expressed oil is refined by passing through filter bags. The residual cake is ground very fine and pressed under three tons to the inch in the presence of steam heat; this affords a second quality of oil inferior to the cold pressed. The usual product is one gallon of oil from one bushel of nuts by the cold process, besides the extra yield by the hot pressing. In France, where the oil is most largely prepared, three expressions are adopted: the first gives about eighteen per cent of superfine oil, fit for alimentary purposes; the second, after moistening with cold water, affords six per cent of a fine oil suitable for lighting and for woolen dressing; the third, after treating with hot water, yields six per cent of oil applicable only to soap making. The cold pressed oil is almost colorless, of agreeable odor, and bland olive-like flavor. On the European market large quantities of it are passed off as olive oil.

(2) J. H. M. asks: 1. How to render a piece of muslin non-combustible? A. See article on "Incombustible Tissues," SCIENTIFIC AMERICAN SUPPLEMENT, No. 245. 2. How is sherry wine made? A. The juice is deposited in butts of 108 gallons each, and after the first fermentation is racked from the lees, each butt receiving from two to ten gallons of spirit, according to the quality of the wine, the inferior sorts requiring most re-enforcement. The wine is subsequently flavored with a liqueur called *dulce*, made from the must of over-ripe grapes, the fermentation of which has been checked by the addition of overproof spirit, and colored by an admixture of *vins de color*, which is simply must boiled until it is reduced to one-fifth of its bulk and has acquired the consistency of treacle. It is deep reddish-brown, and has a harsh and bitter flavor. By means of this agent all the popular shades of color are given to the sherry.

(3) D. R. P. asks for a receipt for bluing revolvers and gun barrels, also the mode of employing same? A. The bluing of revolvers is done by first finishing every part to an even polish, and then heating in a muffler till the desired color is obtained. For a blue finish, clean every part to an even color finish, and apply nitric acid, 1 part, diluted with 10 parts water until a blue film is produced upon the surface. Then wash with warm water, dry, and wipe with linseed oil.

(4) W. H. L. asks for the quickest way to dry large oak hubs and avoid cracking. Does steaming affect the solidity of the wood? How soon after steaming can it be made to assume its former solidity? A. To dry oak hubs, pile them in a drying oven so that there will be room for circulation of steam and air between the blocks. Turn steam into the oven so as to moisten the surface of the blocks, and also steam into coil for heating. Close the oven tight; keep it closed until the blocks are heated thoroughly, so as to boil the water out from the interior, which will take four to six hours. Continue the steam in the heating coil, and shut off the steam from the wood for a few hours more with a little ventilation, when they will be found thoroughly dry without cracking or checking.

(5) R. H. B. asks: What material to use to make a hone surface on wood, such as is put on razor strops, and how proceed? A. Levigated oxide of tin, prepared putty powder, 1 oz.; powdered oxalic acid, ¼ oz.; powdered gum, 20 grains; make into a stiff paste with water, and evenly and thinly spread it over the strop. This is said to give a fine edge to the razor. If it cannot be used as it is, we recommend that it be mixed with sufficient glue to cause it to adhere to the wood.

(6) W. J. P. asks: Does the height of a balance wheel affect its running, as regards the atmospheric obstructions it may meet? A. Practically, no. 2. Or will a wheel run as easily under a machine, close to the floor, as above it? A. Yes; as easily, if the atmosphere around the wheel be not confined.

(7) H. C. A. asks: 1. How to make a good imitation of snow? A. This depends upon your object. Scraps of paper are used in theaters; negatives are spattered so as to produce this effect. Salt is likewise used by photographers. 2. I have a large lithograph and would like to put a gloss to it—will it do to varnish it? A. Float the lithograph in varnish.

(8) S. H. J. writes: I have a piece of apparatus used to register the number of vibrations per second of a wire by means of an electric current. The current is broken and closed by the wire. What solution is there, if in which paper is soaked and then drawn between the ends of the conducting wires, a mark will be made? I have tried iodide of starch paper, but the mark made is not instantaneous, which is necessary.

A. Iodide potassium ..... ½ lb.
Bromide " ..... 2 lb.
Dextrine or starch ..... 1 oz.
Distilled water ..... 1 gal.
You might also try:
Nitrate ammonia ..... 2 lb.
Muriate " ..... 2 lb.
Ferricyan. potassium ..... 1 oz.
Water ..... 1 gal.

(9) J. A. S. asks: 1. Could I generate enough steam in a boiler 4 in. square by 12 in. high to propel a machine at the rate of 50 revolutions per minute that requires the foot power of one man to propel? A. We think not. 2. Also, would plates one-eighth in. thick be thick enough to withhold the pressure? A. One-eighth inch thick is sufficient for wrought iron plates if the boiler is cylindrical, but not if square, whether it be wrought or cast iron. 3. What kind of oil would be best to heat with? A. Your question is rather indefinite, but for a stove heated with oil we think you will find good kerosene as good as anything.

(10) I. P. S. asks: 1. How to prepare a cement to mend broken alabaster ornaments? A. Use glue sold by druggists for cementing china and glass ornaments. 2. Why are not steam engines with oscillating cylinders more generally used? A. The oscillating steam engine in the present advanced practice of engine building cannot compare with other forms of engine.

(11) T. H. R. asks: What is the best method of getting rid of the quality of stickiness in boiled linseed oils? How can such stickiness in canvas or calico cloth dressed with such oil be overcome? A. The stickiness of linseed oil is one of the properties of the oil in question, and cannot be got rid of unless decomposition takes place. For your special purpose we would recommend that the articles coated be thoroughly exposed to the air, and the oil oxidized. By this means it will harden, and the condition sought for will be to a great extent accomplished.

(12) E. F. writes: I have a large sheep skin mat on my floor which has troubled me for some time back by seemingly sweating. The carpet on which it lies is perfectly dry and distant from any damp spot. The skin becomes very wet, necessitating drying every few days. Please explain the cause of this and any remedy I may apply to prevent it. A. The sheep skin mat is probably cured with salt or salt and glycerine. When the air is moist, these ingredients absorb the moisture from the air. The remedy is to wash and redress with borax water and dry in the sun. Stretch the skin while drying.

(13) W. B.—For information on English railroad building you had better refer to some work on the subject. Speed of ordinary trains about the same as in the United States, 30 to 35 miles per hour. First class trains, 40 to 60 miles per hour. The humming noise along the telegraph lines is caused by the wind blowing across the wire, setting the line into vibration in the manner of an Æolian harp, the poles acting as a sounding board. Do not know of any better way of preventing the noise than to use covered wire near the offices. Do not anchor the main line to the office or building—come into the office with a slack copper wire covered and dipped in paraffine.

(14) L. L. writes: 1. Two steam boilers are supposed to be in a vacuum, and both made of material exactly the same in thickness, strength, etc. The diameter of the second boiler is say one hundred times greater than that of the first. Both boilers and their contents are deprived of all weight. No flues are supposed to be used. A pressure of one hundred pounds of steam to the square inch is all the first boiler will stand. Will the second boiler stand the same steam pressure (viz. one hundred pounds to the square inch)? A. No. The strength of the boiler will be inversely as the diameter. 2. Two circular iron water tanks are presumed to be in a vacuum, and are also made of material the same in thickness and strength. The diameter of the second tank is say one thousand times greater than that of the first. The depth of both tanks is exactly the same. We deprive both tanks of the weight of the material of which they are made. Both tanks are full of water in a state of perfect tranquillity. The pressure against the side of the first tank is all it will stand. Will the water in the second tank burst the side of the tank? In the above questions only pressure is to be considered. A. Yes.

(15) O. C. writes: 1. I am using a projecting lantern with an oil lamp, but I desire a better light. For what little I use it I cannot afford the oxyhydrogen or electric light. In looking over the back numbers of the SCIENTIFIC AMERICAN I find in vol. xlvi., No. 25, a description of Dr. Regnard's incandescent lamp, and would like to ask a few questions about it. 1. Is it practical? 2. Is it safe? A. 1 and 2. We think both practical and safe. 3. Is there such a piece of apparatus in the market, and if so, where can it be obtained? A. It is not for sale in this market. 4. If not, will you please give full directions so that I can make one. Also where I can get the necessary material? A. We have published all the information we have on the subject. 5. If this is not practical, can you suggest any improvement on the common oil lamp for intensity of light? A. Although the light referred to would probably answer your purpose, we would suggest that you use a lamp with a wide wick turned edgewise toward the object. Place a concave reflector behind it, and between the lamp and the slide, place a good condenser composed of two or three plano convex lenses. A lantern arranged in this way ought to give good results. An oxyhydrogen light would not be very expensive, and would be preferable to anything else.

(16) W. K. writes: 1. I see in your reference book that neither zinc nor steel are marked as conductors of electricity; would like to know if they are conductors or not? A. They are both conductors of electricity. 2. At what distance will an electro magnet attract iron, causing it to move, provided the iron is not too large for the magnet to move? A. The attraction of a magnet for its armature is inversely as the square of the distance. The greatest distance depends on the strength of the magnet, but in any case it is not very great. 3. Is chemically pure zinc better to make a voltaic pile with than ordinary sheet zinc? A. Yes.

(17) W. A. asks: 1. If perpetual motion has ever been invented? A. No. 2. What is the exact meaning of such a machine? A. A machine to produce force out of nothing. 3. Was there ever a premium, or is there still one offered for its invention? A. No.

(18) G. W. M.—Scotch pig iron as given by Thurston is as follows:

Carbon, combined	3·00	3·40	per cent.
Carbon, graphitic	0·28	0·46	"
Silicon	3·50	2·93	"
Phosphorus	0·98	0·75	"
Sulphur	0·02	0·04	"
Manganese	1·58	1·62	"
Copper	0·10	0·07	"
Iron and loss	90·54	90·73	"
	100 00	100·00	per cent.

(19) J. G. T. asks if there is a powder made for removing ink blots, etc., from paper, and if so, of what is it composed? Also if there is a liquid for the same use, and what it is composed of? A. We know of no powder that is really effective in removing ink; but of solutions there are several. A solution of chloride of lime and acetic acid is often used. Oxalic and citric acids are employed for this purpose. See article on inks, SCIENTIFIC AMERICAN SUPPLEMENT, No. 157.

(20) C. S. writes: In a planer to dress staves, which is the best velocity to give to the cutter, also to the speed, and how do I determine, or what is the proportion of the speed of feed to that of the cutters. A. The question in regard to speed of stave machines is very indefinite. The kind of staves, hard or soft wood, and the condition of the lumber, whether there is much or little to come off, should regulate the speed of the feed—half foot per second may be the average speed. The cutters may have from 1,000 to 1,500 turns per minute. A trial with good judgment is worth more to you than the advice of those that are not acquainted with your machine or lumber.

(21) S. C. T. asks: How can I remove grease from painted machinery (a Campbell printing press) without removing the paint or polish? Also, what will keep the polished steel and castings from rusting? Also, what will loosen the parts, when gummed with oil? A. Benzine or naphtha will remove grease without removing the paint if used quickly and carefully. A slight film of good sperm or lard oil is as good as anything for preventing rust. Kerosene oil injected into a gummed joint will loosen it. Use good oil, and you will not be troubled with gumming.

(22) W. B. asks if there are any patent ovens used in baking japanned work, or how to construct a good one, and what are the materials used in japanning and how to prepare them, or is there any work published on japanning? A. There are no patent ovens required to bake japan varnish. Any room suitable for the quantity of work required to be baked at one time, so arranged as to be safe from fire, and to be heated to 250°, will do the work. We would not recommend you to attempt to make the varnish; it is a peculiar business. Buy the varnishes of the colors that you require. You have varnish agencies in St. Louis. We know of no work treating especially upon this subject.

(23) C. J. H. asks how sugar is made from Indian corn, also if it is possible to make sirup from old rags, paper, etc.? A. For the manufacture of sugar or glucose from corn, see a full account in the SCIENTIFIC AMERICAN SUPPLEMENT, Nos. 98, 259, and 260. Jelly has been made from old rags, paper, and old boots, but this system has not usurped the public favor over the old.

(24) T. J. M. asks: 1. Can the ink used by copper plate printers be bought ready for use, and where? A. Yes. Write dealers in printing ink who advertise in our columns. 2. How is it applied to the plate? A. It is rubbed into the lines, and the surplus wiped off with a cloth and a little whiting. 3. How many impressions will each application of ink be likely to give? A. One. 4. Can I get a book of instruction on "copper plate" and "relief" printing? A. Write any of our industrial book publishers.

(25) C. E. B. asks: 1. How to make a cheap and easily made vulcanizer to vulcanize rubber for hand stamps? A. For this information we refer you to the article on "The India Rubber and Gutta-percha Industries," SCIENTIFIC AMERICAN SUPPLEMENT, Nos. 249 and 251, especially the latter, where vulcanizers are described on page 3992. 2. What is the difference between the setting of the type for the first Polyglot Bible and that of other type setting? A. The setting of the type for a Polyglot Bible is different and more complex than other type setting, because of the text being represented in several languages. The *Complutensian* or first was printed in four languages; *Hutter's Polyglot* in twelve languages. Some of the editions contained the *Hebrew, Syriac, Chaldee*, and *Samaritan* texts, with their *Latin* versions.

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

J. M. G.—The mineral is pyrite (iron sulphide), and may carry gold. An assay costing $5.00 would determine this.—J. T. C.—The shiny particles of mineral are small plates of mica. We do not think the mineral contains gold. An assay costing $5.00 would determine the presence of precious metals.—J. A. R.—The mineral is one of the varieties of feldspar, and may carry a little zinc with it. In order to ascertain this it would be necessary to have it assayed. The expense of this would be $5.00.

INDEX OF INVENTIONS

For which Letters Patent of the United States were Granted

January 15, 1884,

AND EACH BEARING THAT DATE.

[See note at end of list about copies of these patents.]

Acid, apparatus for making sulphuric, J. S. Rigby. 292,054
Alarm lock, R. Zinsmaier 292,088
Anchor, H. C. Chester 291,983
Attrition mill, T. L. Sturtevant 291,954
Auger, earth, F. Brown 291,977
Axle repairing tool, F. S. Packard 292,039
Bale tie fastener, C. S. Garrigus 292,004
Ball trap, J. C. Parmerlee 292,043
Balloon propeller, K. D. Davis 291,990
Battery. See Galvanic battery. Secondary battery.
Bed bottom, E. S. Field 291,888
Bell, sleigh, C. M. Theberath 291,957
Bellows attachment for insect powder, etc., T. Woodason 292,085
Bench. See Work bench.
Blind, G. W. Morstatt 291,924
Boat, N. C. Jessup 291,909
Boots or shoes, manufacture of, G. W. Day 291,992
Bottle stopper lock, J. D. Mattison 291,920
Box. See Dry goods box. Letter box.
Brace. See Corner brace.
Bracelet, J. C. Harrington 291,900
Bracket, J. Herrmann 292,011
Broom support, W. T. Shaffer 292,062
Bucket, galvanized or metal coated, J. Hill 291,904
Buildings of artificial stone, constructing, T. W. Tyrer 292,149
Bullet patch, metallic, Fosbery & Pieper 291,891
Button card, H. A. Buttner 291,982
Button fastener, G. W. Prentice 291,935
Buttons, machine for making, Ilsley & Fernald 291,907
Calendar, J. Cussons 292,106
Can. See Oil can. Shipping can.
Can for kerosene, etc., P. Babcock, Jr 291,862
Canning apparatus, R. Wheeler 292,080
Capsules, machine for cutting off gelatine, F. A. Hubel (r) 10,437
Car coupling, W. H. Jones 291,911
Car coupling, T. J. Miller 292,126
Car coupling, M. R. Thurber 291,960
Car coupling, C. Uebinger 292,074
Carriage, child's, H. Spooner 291,949
Carriage, convertible, A. K. Felton 292,001
Carriage shade holder, N. M. Guillow 292,112
Carriage wrench, D. True 291,961
Carrier. See Cash and parcel carrier. Hay carrier.
Case. See Needle case. Pen and pencil case.
Cash and parcel carrier, Grant, Jr. & Lawrence 291,895
Center board for vessels, adjustable, Mills & Gordon 292,081
Chair. See Child's chair. Nursery chair.
Check rower, W. & J. Erdwiss 292,109
Child's chair, A. B. Stevens 292,067, 292,068
Churn, R. T. Henderson 299,901
Churn, H. C. Nee 292,133
Cleaner. See Grain cleaner.
Clock dial, H. J. Davies 291,989
Clock, self-winding, A. Dardenne 292,108
Clothes drier, R. R. Richardson 292,052
Clutch, friction, T. Scheffler 292,140
Cock and tank for drawing fluids of varying temperatures, J. Byrne 292,094
Coffee and tea pot, F. Rosebrook 291,941
Coffee pot, J. A. Ashley 292,089
Concentrator and amalgamator, G. R. Evans 291,997
Corner brace, W. C. Garretson 292,083
Convertible chair, A. B. Stevens 291,952
Core box, P. Cowing 292,102
Cotton press, Faison & Newell 292,000
Coupling. See Car coupling. Shaft or roll coupling. Whiffletree coupling.
Court plaster, preparing medicated, C. L. Morey 291,922
Cover, crock, D. W. Frost 292,110
Cranes, shaft bearing for traveling, C. J. Appleby. 291,861
Crank, J. E. Atwood 291,972
Cultivator, P. Beeler 292,091
Cultivator, W. H. Parlin 291,980
Cultivator, H. D. Terrell 292,070
Curtain fixture, Page & Weber 291,928
Dadoing machine, J. K. Benway 291,865
Dash board, W. E. Minshall 292,082
Die and die stock, C. Elterich 291,884
Disinfecting tank for the disposal of sewage, J. J. Powers 292,046
Draft equalizer, J. Bowers 291,976
Draft equalizer, G. W. Harrington 291,899
Drier. See Clothes drier.
Drilling machine, R. K. Carpenter 291,876
Dry goods box, shipper's, L. Smith 292,066
Easel, D. K. Woodward 292,086
Egg beater, W. G. Flanders 291,890
Electric cut out, W. M. Thomas 291,958
Electric machine, dynamo, C. E. Ball 291,973
Electric machine, dynamo, Knowles & Idell 292,121
Electric machine, dynamo, Schuyler & Waterhouse 291,944
Electric machine, dynamo, J. Wenström 292,079
Electrical conduits, apparatus for molding the sections of, D. H. Dorsett *et al* 291,996
Embroidery frame, G. A. Brackett 291,870
Engine reversing link, W. E. Karns 292,018
Excavating machine, hydraulic, S. M. Mansfield 292,024
Eyeglasses, D. L. Tice 292,073
Farm gate, C. J. Doane 291,994
Faucet, J. H. Dorgan 291,883
Fence, J. L. Manlove 292,023
Fence machine, barb, C. C. Hill 291,902
Fence, portable, F. C. Renner 292,138
Fence post, F. S. Smith 292,141
Fence wire, manufacturing barbed, C. C. Hill 291,903
Filter, W. Ball 291,863
Filter for water coolers, A. Fiske 291,889
Fire arm, breech loading, W. E. Budd 291,980
Fire escape, J. A. Johnson 291,910
Fire escape, S. Norris 292,134
Fire escape, Travis & Stibolt 292,148
Fire escape and self-preserver, J. B. Robertson 291,940
Fireproof sheet, J. Nagel 292,087
Fish, live box for, R. A. Lindsay 291,123
Frame. See Embroidery frame.