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## The Chargefor Insertion under this head is One Dollar a line for each insertion

 a line for tach insertion; about eight words to a line. asearly as Thursday morning to appear in next issue.See Baker's Telephone adv., p. 44, last number. The Berryman Feed Water Heater and Purifier and
Feed Pump. I. B. Davis' Patent. See illus. adv, p. 44 . Light and Fine Machinery and Tools to Order. Lathe catalogue for stamp. E. O. Chase, Newark, N.J Manufacturers of Drain Tile Machinery will
send address to C. G. Metzler, Columbus, Kan.
end address to C. G. Metzler, Columbus, Kan.
For Machinists and Apprentices.-The Student's Illustrated Guide to Practical Draughting. Sent on receipt of
\$1. T.P.Pemberton, 142 Greenwich St.
P.O.Box 3083, N.Y. Our goods speak for themselves, and a trial will con-
vince the most skeptical cf their superiority over all vince the most skeptical cf their superiority over all
others. Lehigh Valley Emery Wheel Co., Lehighton, Pa. Wanted.-A Second-hand Bicycle, about 46 in
Address, with price, Box 31, Phoenix, Arizona. Caution to Manufacturers and Others.-The attention of those interested is called to the fact that materials
for covering hot air and steam pipes, boilers, etc., which for covering bot air and steam pipes, boilers, etc., which W. Johns. 87 Maiden Lane, N. Y.. Who is the inventor
and patentee of genuine asbestos materials, comprising paints, roofing, steam packing, millboard sheathings, etc Chemist's Pocket Book.-For Chemical Manuracturers, Metallurgists, Dyers, Distillers. Brewers, Sugar Re-
fneers, Photographers, etc. By Thomas Bayley. \$2, mail Patent Wanted-I want to buy whole or part interest,
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Manu
Manufacturers, Steam Boiler Owners. Towns aud
cities desiring pure water, send for circular to the Cities desiring pure water, send for circular to the
Dewark Filtering Co., Newark. N. J. For Sale Cheap-6 Lathes, 2 Planers, 5 Upright Drills, For Sale Cheap-6 Lathes, 2 Planers. 5 Upright Drills,
Fowler Press. All on hand. York \& Smith, Clevel'd, 0 . Malleable and Gray lron Castings to
City Malleable Iron Co., Albany, N. Y.
Electric Lights.-Thomson Houston System of the Arc
type. Estimates given and contracts made. 631 Arch,Phil. For Power \& Economy, Alcott's Turbine, Mt.Holly, N. J Combination Roll and Rubber Co., 27 Barclay St.
N. Y. Wringer Rolls and Moulded Goods Specialties. Lightning Screw Plates and Labor-saving Tools, p. 30. Send for Pamphlet of Compilation of Tests of Turbine List of Machinists compiled : price, $\$ 10$. A. C. Farley \& Co., Pbiladelphia. Presses \& Dies (fruit cans) Ayar Mach.Wks., Salem, N.J. Latest Improved Diamond Drills. Send for circu
to M. C. Bullock, 80 to 88 Market St., Chicago, Ill. Wood Working Machinery of Improved Design and The Medart Pat. Wrought Rim Pulley. See adv., p. 44. Abbe Bolt Forging Machines and Palmer Po ver Ham-
mers a specialty. S. C. Forsaith \& Co... Manchester, N. H. For Belt Studs, Belt Hooks, Belt Couplers, Belt PunThe Sweetland Chuck. See illus. adv, p. 450. "How to Keep Boilers Clean," and other valuable formation for steam users and engineers. Book of sixty-fort. pages, published by Jas. F. Hotch 4 to 40 H. P. Steam. Engines. See adv. p. 382. Supplement Catalogue.- Persons in pursuit of infor-
nation on any special engineering. mechanical, or scienmation on any special engineering. mechanical, or scienentific american suppliamint sent to them free.
The SUPpicmext contains lengthy articles embracing The sUPpligneve contains lengthy articles embracing cal science. Address Munn \& CO.. Publisbers, New York. Rollstone Mac. Co.'s Wood WorkingMach'y ad. p. 12. Split Pulleys at low prices, and of same strength and
appearince as Whole Pulleys. Yocom \& Son's Shafting apperrance as Whole Pulleys. Yocom
Works. Drinker St., 'hiladelphia. Pa.
See Bentel, Margedant \& Co.'s adv., page 46. Malleable and Gray Iron Castings, all descriptions, by Presses \& Dies. Ferracute Mach.Co., Bridgeton, N. J. Corrugated Wrought Iron for Tires on Traction Engines, etc. Sole mfrs., H. Lloyd, son \& Co.., Pittsb's, Pa. Presses, Dies, Tools for working Sheet Metals, etc.
Fruit and other ('an Tools. E. W. Bliss. Brooklyn, N. $\mathbf{Y}$. Cope \& Maxwell M'f'g Co.'s Pump adv., page 45. C. B. Rogers \& Co., Norwich, Conn.. Wood Working
Machinery of every kind. See adv Machinery of every kind. See adv., pake 412. Saw Mill Machinery. Stearns Mfg. Co. See p. 29. List 27.-Description of 3,000 new and second-hand
Machines, now ready for distribution. Send stamp for Machines, now ready for distribution. Send stamp for
same. S.C.Forsaith \& Co.,Manchester,N.H., and N.Y.city. Supplee Steam Engine. See adv. p. 30.
Machine Knives for Wood-working Machinery, Book Binders, and Paper Mills. Also manufacturers of Solo-
man's 'arallel Vise. Taylor. Stiles \&Co.,Riegelsville.N.J Peck's Patent Drop Press. See adv., page 30. Diamond Tools. J. Dickinson, 64 Nassau St., N. Y. Kxpanders. R. Dudgeon, 24 Columbia St., New York. 50,000 Sawyers wanted. Your full address for Emer-
son's Hand Book of Saws (free). Over 100 illustrations and pages of valuable information. How to straighten
saws, etc. Emerson, Smith \& Co., Beaver Falls, Pa. Telegraph, Telephone, Elec. LightSupplies. See p. 46. For Pat. Safety Elevators, Hoisting Engines, Friction Clutch P ulleys, Cut-off Coupling, see Frisbie's ad. p. 45.
Eagle Anvils, 10 cents per pound. Fully warranted. Peerless Colors for Mortar. French, Richards \& Co., 10 Callowhill St., Philadelphia, Pa.
Gear Wheeis for Models (list free); Experimental Gould \& Eberhardt's Machinists' Tools. See adv., p. 45 . Elurators, Freirht aud Passenger, Shafting, Yulleys
and IIangers. J. S. Graves \& Son. Rochester, N. Y. For Leather, Rubher, or Cotton Belting. Linen Hose Satety Boilers. See Harrison Boiler Works advr., p. 4

Engines, 10 to 50 H. P. $\$ 250$ to $\$ 500$. See adv., p. 46.
Metallic Letters and Figures to put on Foundry PatMetallic Letters and Figures to put on Foundry
terns, all sizes. H. W. Knight, Seneca Falls, N. y.
Pays well on small investment. - Stereopticons, Magic Lanterns, and Views illustrating every subject for public exhionions. Lanterns for colleges, sunday schools, and
home amusement. 116 page ilustrated catalogue free.
McAllister, Manufacturing Optician, 49 N assau St., N. $\mathbf{Y}$. Barrel, Key, Hugshead, Stave Mach'y. See adv. p. 45. Upright Self-feeding Hand Drilling Machine. Excelent construction. Pratt \& Whitney Co., Hartford,Conn. Mineral Lands Prospected, Artesian Wells Bored, by
Pa. Diamond Drill Co. Box 423 . Pottsville, Pa. see p. 45 . Catechism of the Locomotive, 625 pages, 250 engrav ings. The most accurate, complete. and easily under-
stood book on the Locomotive. Price $\$ 2.50$. Send for Broadway, New York.
For best low price Planer and Matcher. and latest
improved Sash, Door, and Blin 1 Machinery, Send for catalogue to Rowley \& Hermance. Williamsport, Pa. Improved Skinner Portable Engines. Erie, Pa. The Porter-Allen High Speed Steam Engine. SouthThe only economical and practical Gas Engine in the market is the new "Otto" Silent, built by Schletcher.
Schumm \& Co., Philadelphia. Pa. Send for circular. Ore Breaker, Crusher, and Pulverizer. Smaller sizes Portable Prill For Heavy Punches, etc., see illustrated advertisement of Hilles \& Jones, on page 4.6

## NEW BOOKS AND PUBLICATIONS.

Second Anntal Report of the State Charity of Massachusetts. 1880 Supplement containing Report and
Paperson Public Health.
Boston. 1881. The general report is brief, the bulk on. 1881. being given to special papers on the Pollution of Deerfield River and Miller's River; the Separate System of Sewage; Intermittent Fever in Massachusetts; School,
house Sanitation; and the Health of Towns, with special reference to the Epidemic at Adams and the Sanitary Condition of Holyoke
Mechanical Industries Explained. By
Alexander Watt. Edinburgh: W. \& A Alexander W
K. Johnston.
A scrappy sort of book for "the rising youth of both sexes," describing briefly a number of industrial pro-
cesses, chiefiy mechamical. The information is Car as it goes, but the author's style, though less techmical than in his "chemical industries," is not particularly well suited for juvenile reading.
Dangers to Health: a Pictorial Guide
to Domestic Sanitary Defects. By T. Pridgin

A modelbook for its purpose. Indeed it is safe to understood illustrations of sanitary defects in house drains, sewer connections, and the rest, will do more to open the eyes of householders, plumbers, and builders,
to dangers to health through dishonest and ignorant to dangers to health through dishonest and ignorant work in sanitary appliances, than months of study of
ordinary treatises on sanitary engineering and domestic ordinary treatises on sanitary engineering and domestic
economy. It is a book worthy of the widest circula tion.
Practical Lessons in Architectural
Drawing. 33 full page plates and 33 Drawing. 33 full page plates and 33
woodcuts. By Wm. B. Tuthill. New
York: William T. Comstock.
on the part of the learner, the author shows, by examples in several classes of construction, how to make
working drawings and write the specifications for buiddings. The examples give plans, elevations, sectio a New System of Ventilation. By Hen New System of Ventilation. By Henry
A. Gouge. New York: D. Van Nos. trand: amount of useful information and suggestion touching the necessity of ventilation and the vital value of fresh
President Garfield and Education. Hiram College Memorial. By B. A. ton: James R Osgood \& Co. ton: James R. Osgood \& Co.
Enew Mr. Garfield as schoolmate, teacher, and towns-
Tre Open Fire Place in all Ages. By J. Pickcring Putnam. Boston.: James
R. Osgood Co. Quarto, cloth. \$4. An enlarged and very handsome edition of Mr. Putnam's volume published last year. The illustrations
have been increased to over 300, comprising many conhave been increased to over 300 , comprising many con-
tributions of specially fine and artistic work richitects as well as selections from the best work of earlier builders.
Steam Heating for Buildings, or Hints to Steam Fitters. By William J.
Baldwin. New York: Johri Wiley \& Sons.
A straightforward, $p$,
the young steam fitter.
The Ironmonger's Diary and Text Boo Or 1882. London: Office of the Iron-

The fourteenth issue of the diary carries, in addition o its record pages and usual freight of advertisements, a summary of the British ceusus of last year and an
illustrated review (not altogether impartial) of some of the prominent systems of electric lighting.
The Photographic Amateur. By J. Traill
Taylor. New York: Scoville Maunfacturing Company.
The author's editorial experiencē in connection with
vice in the preparation of this mannal. He tells what he has tosay with rommendabl) directness,andinterms
which the amateur student of the art cannot fail to readily understand. Special attention is given to dry plate photography.
El Mal del Pinto. Por Gustavo Ruiz y Sandoval, Medico de la Escuela de Mexico. Mexico 1881.
In this very important contribution to medical
science, which has been honored by a prize from the science, which has been honored by a prize from the
Mexican Academy of Medicine, the author gives a very Mexican Academy of Medicine, the author gives a very
exhaustive study of a peculiar skin disease, which, although usually regarded as confined to Mexico, is here stated to be also prevalent in several parts of Central and South America. 'The disease (mal del pinto, or "blue stain," as it has been called in English is a
contagious one, and manifests itself in the form of contagious one, and manifests itself in the form of
white, blue, or red patches on the feet, hands, and face, white, blue, or red patches on the feet, hands, and face,
forming paimful ulcerations, and giving the patient, as we should judge from the colored plates accompanylng the memoir, a very unsightly appearance. In the more advanced stages the affection is accompanied by a sickening odor, the digestive faculty becomes impaired, the patient loses fiesh and strength, and betakes himself to his hed, not to sleep, however, for extreme wakefulness is one of the symptoms of this stage. The cause of the Dr. Ruiz in the work before us shows pretty conclu Dr. Ruiz in the work before us shows pretty conclu
sively from his microscopic examinations that it belongs to the category of zymotic diseases, and is produced by a fungus which he names microsporum hidalgoense. The affection appears to have no limit to its duration, and is cured only after long treatment by internal and topical remedies, leaving its traces then in the form of whitish cicatrices. As a prophylactic the
doctor recommends that greater attention be paid to doctor recommends that greater attention be paid to
matters of cleanliness, public and private, and that certain forms of vegetable food, such as maize (which he believes harbors the fungus), should be strictly avoided. The memoir is finely illustrated, and is accompani
Boletin de la Sociedad de Geografia Estadistica. Mexico. 1881.
The number before us of the Mexican Geographical Society's Bulletin, comprising parts 7, $, 9,10$, and 11
of vol. v., contains several papers of more than ordinary value and interest, chief among which may be mentioned an important archæological memoir by Sr .
Jose Ma. Reyes, wherein is traced the history of the immigration of the Pueblos to the American conlinent, and especially to the territory now occupied by the
Republic of Mexico. The paper is well illustrated, and gives evidence of great painstaking research on the part of its author. The otber papers are: "A Synoptical View of the S:ate of San Luis Potosi," with various historical, geographical, statistical, and governmental data, by Sr. Rafael del Castillo; and an elaborate "History of the Bene
by Sr. Juan de D. Peza.
The American Chemical Journal. Edited
by Professor Ira Remsen, of the Johns Hopkins University, B
This ably-conducted journal, now in its third volume, of chemistry from its very beginning. Each number of chemistry from its very beginning. Each number foreign chemists, reviews of works relating to chemical science, reports of progress in the various departments of chemistry, and items of general interest to chemists. The journal is a model of typographical excellence, and is published in numbers of from 64 to 80 pages, six
(\%) HINIS TO CORRESPONDENTS.
No attention will be paid to communications unless accompanied with the full name and address of the
writer. writer.
Name
Names and addresses of correspondents will not be
given to inquirers. 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 pub-
lished, thes may conclude that, for good reasons, the lished, thes may concl
Editor declines them.
Persons desiring special information which is purely of a personal character, should remit from $\$ 1$ to $\$$ t, according to the subject,
as we cannol be expected to spend time and lahor to as we cannol be expected to spend time and lal. Any numbers of the Scientipic American Supple MENT referred to in these col
offce. Price 10 cents each.
oftre. Price 10 cents each
Correspondents sending
for examination, should be careful to distinctly mark label their specimens so as to avoid error in their identification.
(1) E. C. B. asks: 1. Can I put anything on wood to prevent it from becoming water soaked without changing the natural color of the wood more than varnish would? If so, what and how done $\wp$ A.
You can try the following process: Digest the wood or twenty-four hours or more in a hot solution comgallons of soft water, and then for several hours in a solution of $21 / \mathrm{g}$ pounds of alum in 2 gallons of water. Finally rinse in running water and dry. 2. If I boil
articles made of wood in linseed oil can I put a finish on it, or will the oil prevent me? A. You may eucounter some difflculty in polishing wood that has been boiled in oil as proposed.
(2) J. C. S. writes: Will you please give me your opinion in regard to this new preservative
"ozone," adverused in the papers? A. See answer to "ozone," advertised in the papers?
(3) W. St. asks: Is there any apparatus by which pieces of mineral or other substance of pea size from $280^{\circ}$ to $350^{\circ}$ Fah. $?^{\circ}$ A. An apparatus for heating and employing hot air in the way proposed could be constructed without diffculty. It might resemble in blast "iron smelting furnaces. We think of no similar apparatus in use.
(4) E. C. B. asks: Please give me the cheapest process of japanning or blacking coppered posure. Can it be done by did in an oven? A. The wire can be japanned in the way
you propose. See "Japanning and Japans," in Suprle(an propose. No. 316 .
(5) S. P. C. asks: Will you please state the difference, if any, between "malvanisecd," "mar-
blized," and "granite" ware? Are these safe and wholesome to be use for cooking purposes? A. Galvanized iron, so-called, is iron that has been coated with zinc by immersing the clear iron in the melted zinc. "Mariron ware that has been coated with a vitrified porce. lain-like composition of certain earthy silicates-the vitrification being accomplished by heating the coated
articles in a muffle furnace or kiln. These latter wares articles in a muffe furnace or kiln. These latter wares
are, as now manufactured, unobjectionable. 'The gal. are, as now manufactured, unobjectionable. The gal-
vanized ware is not fit for culinary purposes.
(6) R. A. C. asks: Has double refraction, as xhibited by Iceland spar, ever been explained ? I am mable to find the explanation in any of the treatises on optics which I have seen. I can explain and demon-
strate it in several ways. A. The cause of double restrate it in several ways. A. The cause of double re-
fraction is not a mystery. You will find the matter explained on page 325, vol. xlv., "The Nature, Formaexplained on page and Uses of the Nicol Prism.'
tion
(7) S. E. W. writes: I am running a circular saw mill with $2:$ horse power engine, 14 inches stroke maining 16 Grevolutions per minie Would like to oband speeding up engine sufficiently to keep up same relative speed of saw. Can I with safety increase speed of engine 20 to 25 revolutions per minute? Have already increased speed of engine about 20 revolutions, all about 180 revolutions. A Fes if well balanced and all about 180 revolutions.
fly wheel not too large.
(8) L. D. writes: We have a boiler, 6 feet diameter, 12 feet long, with 1323 -inch fiues; the grate surface is 4 feet long by 4 feet 6 inches wide, and 22
inches fromboiler;bridge wall 12 inches from boiler; rear or back wall is 14 inches from end of boiler. We have brick chimney, 85 feet high by 40 inches square inside, in which is a damper 24 feet up from floor, or about 10 feet above bridging, which we can close to any desired opening. Now, if we burn coal we burn about $5,500 \mathrm{lb}$. per day, and then we use only about one-thirdof the
power of engine; if we burn shavings from planing mapower of engine; if we burn shavings from planing ma-
chines and sawdust from our factory, which is a sash, door, and blind factory, and a general woodworker, we can keep steam easier. Our fireman some way or another heft the front doors open, and found the steam go up in would burn a good less fuel by leaving the furnace doors open. He then told me about it, and I examined it and found it as he stated. Our engine is 20x30 each. Now please holes below grates are two, $143 / 2 \times 18$ nothing particularly wrong, though we think you would do better with either wood shavings or coal by re-
ducing the throat of the fiue at the back end of the ducing the throat of the flue at the back end of the boiler from 12 inches height to 8 inches. You do not
get air enough to the gases of your fuel. Yut a lining get air enough to the gases of your fuel. Y'ut a lining
plate to your furnace door; then drill in the door about plate to your furnace door; then drill in the door about
eight holes, 1 inch diameter, and thelining with as many five-sixteenths inch or three-eighths inch holes as you can well put in
the door open
(9) D. D. D. writes: I am sinking a shaft through rock prospecting, and the water tothers me a great deal coming up through the holes we bore to blast some cheap method of blasting so the water would not trouble? Can you inform me where I can get glycerine
cartridges? A. Cartridges of dynamite or nitroglycartridges? A. Cartridges of dynamite or nitrogly-
cerine are waterproof, and are generally employed for cerine are waterproof, and are generally employed for
such purposes. See our advertising columns for resses of manufacturers of these explosives.
(10) J. M. writes: 1. By putting iron and copper in contact, and allowing these metals to remain either corrode sooner, or otherwise? A. Under such conditions, if exposed to moisture, the metals form a galvanic pair, and the copper would in a measnre be protected fromcorrosion at the expense of the iron: in other words, the iron would corrode faster than if not in contact with the copper. 2. In the event of zinc intervening would there be any change in the result? A.
The zinc being the more positive of the series would be The zinc being the more positive of ene senily oxidized, the other metals being to cermore rapialy oxidized, the
(11) J. J. writes: Turtles may he kept for four or five months headed in a cask three parts filled with salt water if the bung is left out. A bout a quarter
of the salt water should be drawn off and replaced by fresh salt water once every month or two, if in the
tropics. One which was treated in this way in a $250-$ gallon cask was pronounced by a turtle dealer in London to be as fine and fat a turtle as he had ever seen.
It realized one shilling and two pence per pound live weight.
(12) C. H. L. asks: 1 . What oil or substance conld I use to mix with asphalt (Trinidad) to make a paint he used cola, which could dry or evapoit would not run or soften under influence of enn's rays? Naphtha and turpentine are not satisfactory. Would resin oil answer? Am not familiar with its qualities. A. Common asphaltum contains moisture \%Ad volatile substances which must be eliminated before a good
paint or varnish can be prepared with it. For the pre-

293 (17), vol. xlv. Resin oil can be used in conrectio with the bitumen, but a diluent, such as turpentine or
naphtha, will be necessary. 2. After painting a roof, say with asphalt or coal tar, what wash (cheap white erred) could I use over the asphalt, etc., to absorb the sun's rays? Wish some article in powdered form (so to
be handily transported) which can be mized with water as reeded for use. A. As we understand you, fin chaik or potter's clay could be used. 3. I also inclose sampit ot saturated felt or paper. Would like to know
if passible. with what substance the felt is saturated if possible. with what substance the felt is saturated
A. The felt is saturated with crude coal tar from gas distillation.
(13) N. L. writes: I made the induction (13) N. L. writes: I made the induction coildescribed in tbe SCIENTFIO A Mericas
No. 160 , and it proves very satisfactory. Now I want ight? What kind of regulator can I use? Can I use the Brush electric light regulator, described in Stipplement. No. 162? How many of the copper and zinc batterie nust I use? A. You cannot produce an electric ligh of any power with an induction coil. Use a dynamo
uachine or battery. For a description of these and of aachine or battery. For a description of these and Nos. 157, 158, 159, 162. 222, 224, and 225. Also "Simple Nos. $157,158,159,162.222,224$, and 22
Electric Light Apparatus," in No. 149
(14) F. H. N. asks: 1. Where will I find or electro plating and for electric light? electric machine PLEMENT, No. 161. 2. I have a gravity battery, tie cells plement, No. 157. 2. I have a gravity battery, tine cells I put in them? A. Put in $11 / 2 \mathrm{lb}$. of sulphate of copper and fll the cell with water. 3. Could a tank be made of any very close grained hard wood for silver solution?
A. No; wood of any kind gradually reacts on silver solutions and reduces them. See "Silver Plating" in Stp plement, No. 810.
(15) J. T. G. writes: My trouble is that my files rust after lying wrapped up in papers for some
ime. My methor of putting them through after ening is as follows: They are first put in dilute muriati acid, then scrubbed with sand and water, then rinsed in clean running water and put in strong lime water, rinsed well in this and put before a fre to dry; the drying
takes one minute to the one pound weight. A fter being takes one minute to the one pound weight. After being
dried the lime is brushed out of the teeth and they are will rust no mytter which oil we use, and they turn brown after coming out of the lime, or before getting o the lime, although they are put through as quick as possible. What I want to know: is muriatic ac d the best for cleaning files, and is there anything I can put in the lime that will destroy the acid and keep them clean and not liable to rust after being put through. Or can yougive a better method of putting them through give.through your valuable paper,theScIEN TIFIC AMERICan, will be tbankfully received by me. A. Rinse off heacid (muriatic) quickly in running water before putting in the lime water. Have the lime water boiling. The heated metal will dry spontaneously on removing it from this dip. Uselard, paraffine, or mineral sperm oils, or a misture of these. If the oil is put
cover and keep the metal clean longer.
(16) G. B. writes: Is ozone made cheap enough to sell as an article of merchandise, and in wbat form is it best adapted to arrest all forms of decay?
A. No;-qzone or allotropic oxygen has only been obA. No; ozone or allotropic oxygen has only been ob-
served as a gas. It has never been obtained in a concentrated form. The substance sold in the market as
ozone appears to be sulphurous acid, or rather a preozone appears to be sulphurous acid, or rather a pre-
paration readily yielding that substance under favor-
(17) J. G. D. asks for a receipt for making a glue joint for wood work that is insoluble in water.
A. You will find several good receipts for waterproof glue or cements under "Cements," in Suprlement, No.
(18) R. S. asks: 1. Is it as hard to fire on some ocean steamers as on a locomotive? What is the
difference? A. Yes; and in hot weather, worse. 2. In arge passenger steamers and merchant steamers what ally,for long voyages,four hours on duty and eight hours off. On shorter routes, the "watch" is generally the ength of the san. 3. What pay,and are they in the same standing as the crew or sailors? A. From $\$ 30$ to $\$ 40$ per month. Firemen generally rate above deck hands
(19) J. B. R. asks: Which is right: to blow the whistle, thenstart the machinery, in a manufactory
or start the engine first and then blow the whistle? A or start the engine first and then blow the whistlee A.
Blow your whistle after your engine is in full operation. . A says that the diameter of a worm being larger or smaller increases or diminishes tbe speed of the worm
gear the same as in spur gears or pulleys. B says it is
(20) J. H. F. asks: Has any substitute been used with advantage for the lims cylinders in the oxyhydrogen light? How would magnesite answer? be employed instead of lime, but the cylinder so pre pared would not stand the mechanical action of the flame as well as clear hard burned lime.
(?1) A. P. S. asks: Will you let me know if there is any way to mend a crack in the face of radiator? A. Try the iron cem.
page 2510, Supplement No. 158.
(22) C P. K. asks for the best method of drying and sifting gravel for polishing sand. A. If
large quanties are to be operated upon, a revolving large quanties are to be operated upon, a revolving
cylinder over a fire, like a coffee roaster, would be good for the drying process. To this cylinder, laid at
an augle and to its lowest end, attach wire gauze an augle and to its lowest end, attach wire gauze
or gratng, with sections of different gize mesh-the finest mesh next the drying cylinder-and unde
sections place pans to catch what falls through.
(23) H. A. S. asks: 1. At what speed should a No. 4 blower be driven for a twentr-six inch How far should it be praced from the cupola, and why?
A. You may place it any convenient distance, say from

15 to 60 feet. 8. Does it make any difference if the
blower is on the floor above the cupola and run the blower is on the floor above the cupola and run the
flues down? A. The blower shouid not be above the cupola, but rather below it, so that in case of stopping (24) C. F. D. asks: 1. Is there any differ ence between one hundred pounds to square inch pressure? A. No. 2. If any difference, which tries the strength of boiler most? A. There is no difference,
but it is generally admitted that the boiler is stronge at the temperature of the steam than when cold. 3. What is the difference. and why is there a difference?
What cold water pressure should a boiler stand to be safe at 100 pounds steam? A. By government rule it
(25) J. B. P. asks: What is the average net proft on tanning a hide, the hemlock bark costing kip. and calf require different amounts of bark. A. It covering so greata business, extending all over the country. During the war, $\$ 1$ a hide was made in some instances on sole leather tanining, but for the last year leather bas been a very close one, many orid houses claiming that it has been done at a loss; while latterly. sole-leather tanneries are making but the smalest ma gin of profit. The business is not one to embark in at any time with a view to speculative profts, in any locality, any more than is that of farming, and $\$ 6$ is n cities.
(26) W. D. S. asks: 1. What is the highest working pressure it would be safc to carry on a boiler tific American Supplement, no 182. A. If pro perly connected, we think 200 pounds safely; but when
complete they should be tested by water pressure to 50 complete they shoula be tested by water pressure to 50
per cent more than the greatest steam pressure you intend to use. 2. Could salt water be used in such a five dollars for a license if $I$ used it in a boat sixteen o eighteen feet long? A. Yes; you would have to under
(27) J. A. asks: Will you please inform me how to repair a bell that is cracked? Can I saw
down the crack and fill with copper or brass, and make it hold and ring all right? It is a large bell, and is Iracked a bout eight inches long. Please inform me what pose. The only thing to be done is to drill a hole at the end of the crack, and cut down the crack to the hole with a saw, so that the edres of the crack wlll not touch ach other in vibrating. This will enable the
ing, but it will not restore its original sound.
(28) C. H. asks: How much pressure will boiler stand, 20 inches long by 8 inches diameter,made ut of galvanized iron one-thirty-second of an inch
thick, without any flues? A. By government rule 115 pounds per square inch; but as galvanized iron of this thickness is generally inferior quality, would not
dvise more than 50 to 90 pounds.
29) J. E. K 1 W
ler shall I . .1. What size screw pro engine $23 / 9$ ? 18 to launch 16 feet long, $51 / 2$ beam, have to pay the twenty-five dollars for license if I r he boat formy own use? A. Your boat must be regularly inspected and the fees paid, same as any other
steamboat.
(30) A. P. J. writes: I am speeding up a circular saw, 20 inches in diameter, to be run by hand inches in diameter, weighing 80 pounds, to go on saw mandrel 3 feet long. How many revolutions shou.d the saw make, and what the size of mandrel? A. If
driven by power the saw might make 1.600 to 1.800 revo driven by power the sa.w might make 1.600 to 1.800 revo-
lutions per minute. If you drive at any such speed you want no flywheel on the saw mandrel. The size of eye of the saw will give size of the mandrel.
(31) R. W. D. asks (1) what the scale on of; and how often it should be removed. A. It is rot monly composed of zinc, iron, and copper oxides. 2 magnet wire per 1,000 feet? A. About 210 ohms In your answer to S. S. MPg. C. (4), page 11, current
volume, should not ferrocyanide of potas., read ferr volume, should not ferrocyanide of potas., read ferri-
cyanide of potas., or does the former act as well as the latter? A. Either will answer, but the ferrocyanide preferred by many.
(32) C. S. G. writes: I have a number of easy plan of tanning them with the fur on for making carriage robe. A. Wash the skins in water, and cleanse them thoroughly by scraping or rubbing. Then rub
wellintothe flesh side of the skin the following mixture Alum, powdered, $2 / 2$ pounds; salt and coarse wheat meal, each one pound; sour milk, q s. to form a thin
pasie. When the skin will absorb no more of this pre paration, spread a layer of the latter over it (on the flesh side), and fold up the skin with the flesh surfaces rogether and put it away in a cool place for a day. Repeat this pasting and rubbing each day for a week washing out and hali drying the skin every third day.
Finally, thoroughly wash the skin in running water, raint brush over it (flesh side) a strong solution softened by rolling and pounding it with mallet or rub bing and stretching it with a flexible tool. It is com-
monly finished by rubbing down the flesh side with
(33) A. B. writes: Please give me a recip for coloring chip straw black. I have tried several receipts, but instead of the braid being a nice black it ported goods. Thisbraid is used in the manufacture ing can I consalts A. Use a small quantity of water containing 214 pounds bogwood extract, 1 pound iton sulphate,and two-fifths pound verdigris. Put the straw
into the boiling liquid for half an hour and then expose to the air for a like length of time, repeating this treat-
ment for several hours, or $u$ ntil, on rinsing the straw is found to have developed a suitable blacs. The color deepens considerably when the dyed straw is exposed moist for several hours to the air. See practical dyeing receipts in Supplements, Nos. 249, 207, 185, 228, 231,
and 53.
(34) W. J. W. asks how to bronze zinc ret ret work. A. Coat the metal with very thin gola size, of red bronze (bronze powder) dry, and burnish. Bronze powders of almost any shade are procurable in the mar-
(35) F. B. L. asks: 1 . What is the cause
of the snapping and cracking in steam pipes? A. Condensation of steam in the pipes. 2. What books are
there published devoted wholly or principally to steam fiting? A. See "Roper's Engineer's Hand Book." Also " Bald win's Steam Heating.
(36) A. S. writes: The statement has been made that the piston speed of engines, large and small, is now, or has been until lately, practically the same; this has been disputed. Will you please give the facts in the case, givving limits of speed of engines, sà 8 inches
by 16 inches. axd 48 inches, by 96 inches or larger, and by 16 inches, axd 48 inches, by 96 inches or larger, and
also state whether or not the tendency is to increase the piston speed in all engines up to 36 inch stroke verformer practices A. The tendency of late years speed of piston was about 300 feet; it is now probably not less than 450 feet. Of course the speeds are gen-
erally suited to the work. Some run up to 700 feet and not fess than 450 feet. Of course the speeds are gen-
erally suited to the work. Some run up to 700 feet and
even more per minute.
communication Received. On the Ocean Packet Line. By J. W. N.
[OFFICIAL.]
INDEX OF INVENTIONS
Letters Patent of the United States wer Granted in the week Ending January 3, 1881 ,

## AND EACH BEARING THAT DA'IE

## [Those marked (r) are reissued patents.]

A printed copy of the specification and drawing of any acent in the annexed list, also of any patent issued In ord 866 , will be furnished from this office for 25 cents. In ordering please state the number and date of the patent desired and remit to Munn \& Co., 37 lark Row,
New York city. We also furnish copies of paten granted prior to 1866; but at increased cost, as the spec:fications not being printed, must be copied by hand.

## Acids, remo V. Pool

Adding machine, M. Bouchet ....................... Advertising apparatus, $\mathrm{E} . \mathrm{M}$.
Album clasp, H. Landsberg.
Amalgamator, W. Moller
Atomizer, R. Lockwood...........
Axle box, car, G. F. Godiley.
Axle box Jack, car, E. Robin
Bagasse furnace, W. Littlejohn (r).................
Bagasse, plants, etc., etracting juices from
Collier.........................................
Baling press, P. K. Dederick
Basin plug, J.C. Ludwig
Basin plug, J. C. Ludwig......
Battery. See Electric batter
Bed, sofa, J. K. Stockton
Bed sprin, c. H. Mt Creery
Bed, spring. A. B. Ramey.
Belting, machine for stretching, J. Brady
Block. See Tackle block. Toy building blo
Block. See Tackle block. Toy building blocis.
Board. See Vehicle spring board. Wash board
Boat detaching apparatus, M. Bourke.
Boiler. See Marine boiler.
Boiler furnace, steam, G. E. Palmer...
Bolt. See Flour bo!t.
Book, blank, A. J. Maxwell (r). .....
1300k, portfolio scrap. A. L. Colton.
Boot, moccasin, J. L. Coombs
Boring machine, B. F. Allen...
Bottle cooler, C. H. Laufkotter
Bottle sitopper, J. B. Crawford
Bottle stopper, J. B. Crawford
Bottle stopper, G. F. Hoeffer.
Bottle stopper, s. S. Newton.
Bottie stopper, O. Redmond.
......... 25
Bottle stopper, self-closing, D. Berry ..........................251,819 Brace. See Shoulder brac
Brake. See Car brake.
Bridge lock and signal, turn, F. W. Coolbaugh...
Brushes, paint, whitewash, and other, J. A. Brushes, pain
D. Read..
Burner. See Hydrocarbon burner. Vapor....................................

## Cables. apparatus for taking in, stopoing, and stowing wire and other rope, J . Taylor.......

Can. See Oil can.
Car, combined. Martel.... ...................... 251,722
Car coupling, A. N. Armstrong. ................. 251.811

Car coupling, H. P. Dals................................................... 251
Car coupling, Pratt \& Syllivan.......
Car coupling. H. Wells...
Car. railway, J. P. Maber...
Car spring, Scott \& schoen
Car. spock. G. D. Burton..
Car ventiation, J. Shepherd ......................
disconnecting, w. Norr ${ }^{2}$ 3.............
251,927
251,106
$.251,965$
251,704
Carriage shifting tail, J. W. Sutphin
Carrier. See Hose carrier.
Case. See Organ case. Shot case.
Casting shovel blanks, mould for, $\mathbf{t . S \text { Sith }}$


Chair, C. Gallup............................... 2
Chart for draught!nz ladies' and children's gar-
ments, M. A. Start................................
Chopper. See Cotton choppe
Churn, Soggs \& Rittenhouse.......................... 251,802
Clasp. See Album clasp. Hat clasp.
Clasp reel for ribboos. etc.. S . A. Hale ............ 251,871
Cleaner. See Grain cleaner.
Coffee mill, S. H. Fountain.
Coffee mill, S. H. Fountain .... ..................................251.860
Coffee pot, E. B. Chamness

Cork, bottle, T. R. Lowerre.......................... 251,998
Cork protector, F. Hollender... ................. 251,780
Cork protector, F. Hollender........................................................781,735
Corset, J. K. Ross ...................
Corsets, apparatus for forming and shaping, J. A.
House. .........................................884
Cotton chopper, J. H. Bethune ................ 251,820

Srackers, machine f(cr packing, H. . C. Chessman.. 251.697
Cream of tartar, manufacture of, G. Schnitzer (r). 10,004
Cream of tartar, manufacture of, G. Schnitzer (r). 10,004
Cream, portable case for transporting, J. G. Cherry
Crucible, M. H. Knapp......................... 251,719
Crucible, M. H. Knapp..............
Crusher. See Rock and ore crusher.
Crushing and grinding machine, G. Duryee......... 251,848
Cultivator, smith \& steinke ........................ 251,961
Cultivator, corn and cotton, B. Lindsey.............. 251,784
 251754
Dish holder, E. O. Wires............................. 251.754
ratus for, J. D. Nietscke......... .. ..........
Door check, L. C. Norton 251,925
$211, \% 90$
21,729
Door checck, F. V. Phillips..................................... 251,332
Drawings and designs, reproducing, M. Tilhet.... 251,746
Drill. See Grain drill. Rock drill.
Drying apparatus, G. w. Rawson................ 251
Drying starch refuse and other substances, ma-
chine for, W. Duryea........................ 251.845
Electric battery, polarization or secondary, C. A.
Faure..................................................
Electric block signaling apparatus, o. Gassett.... 215,867
Electric block signaling apparatus, O. Gassett..... 251,867
Electric light systems, automatic regulator for,
w. L. Voelker.....
Electric wires and lamps in cities, support for,
W.C. Allison (r) ...........................
Electrical purposes. coating and insulating wire

Engine. See Mining engine. Pumping engine,
Rotary engine. Steam engine.
Eyes, device for protecting the, J. Story..
Eyes, device for protecting the, J. Story....
Fasteningdriving machine. E. Woodward
Fasteningdriving machine, E. Woodward......... ${ }^{251,7436}$
Faucet, J. B. Gathright .......................... ${ }_{20}$
251,775
Faucet, A. Ruehe............................................ 251,9753
Fence, picket, R. H. McGinty (r)............... 10,602
Fibers of leaves, machine for cleaning and sepa-
Fibers of leaves, machine
ratung the, E . Beovide...
Firearm, magazine, A. Burgess ....................... 251.1694
Firearm, revolving. J. H. Wesson...................... 251,6750
Flax bolls, machine for crushing, (3. Brown....... 251,691
Fountail, C. Schacht. .
Fountain. See Ink fountain.
Frame. See Window frame.
Furnace. See Bagasse furnace. Boiler furnaee
Hydrocarbon furnace. Puddling furn
Furnace, J. Flannery. ...................... 251,856
Fura
Furnace for burning the enameling on porcelain,
etc., portable, s. Bevington... $. . . . . . . . . . . . . .281,281$
Furnace grate, G. E Palmer et al. .............. 251,792
Furnaces, apparatus for injecting air and steam
into, A. J. simmons...................... 251,740
Furnaces. mechanism for feeding air and steam
to, D. Renshaw.... ...................... 251,797
Gas governor, $\mathrm{N}: \mathrm{M}$. Garland..................................... 251,864
Gas regulator, L. P. Blair.... ......................... 251,822
Gate. See Automatie gate.
Glass to imimatate wood, ornamerital.,................. 251,728
Battershall.... ................ . ... ......... ...
Gold from quartz and rock tallings, apparatus for
separating, A. E. Jones
Governor an a indicator for tluid pressure brakes,
electric, E. S. Batcbelor....................... ${ }^{251,991}$
Governor for cotton gins, L. D. Forbes.... ...... 251,859
Governor for cotton gins, L. D. Forbes ............ 251,859
Grader for arains, G. F. W. Harris.............. 251,873
Grain binder, D. McPherson (r)

Grain cleaner, W. Morris.... ........................
Grand drill, , C.
Grinding grain, roller mill for, C. G. Burkhardt
Grinding grain, roller m
Hair pin, M. T. Foote. ...

Harrow. sulky, C. La Dow
Harvester, W. A. Wood...

Baglin, making and uniting bats to, W. A.
Hat clasp, W. Ewing
Head rest, passenger, E. Scharpe. .................. 251.798
Heater. See Water heater

Hook. See Snap hook. Whiffletree hook.

Hub, wheel. R. W. \& D. Davis..................... 251810
Hydrocarbon burner, E. A. Edwards.......
Hydrocer
251.849

bleday.......... holder, combined, A. Dou-
bleday............ ........................... 251,705
Inlaying horn, etc., with pigment colors, F. A.
Nikerson.................................
Jack. See Axle box jack. Lasting jack. Wagon
or lifting jack.
Joint. See Pipe joint.
Kint. see Pipe joint.
Kntle, steam jacket. E. Whiteley.................. 251,751
Knnb attachment. J. W. Young.................. 251.988
Label band for dry goods packages, B. E. Kin@m
Lader attachment, J. D. \& L. M. Norton.......
Lamp, M. Cziner.
Lamp. E. Köhter.
Lamp. E. Kuhter.
Lamp, C. Rōle
Lamp, C. Royle............
Lamp, blow, R. T. Bishop.
Lamp, electric, S. L. Fox.


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