## gucimes and eersonal.

The Charge for Insertion under this head is one Dollar a linefor each insertion, about eight words to a line.
Advertisements must be recived at publication office as early as Thursday morning to appear in next issue.

The best results are obtained by the Imp. Eureka Turbine Wheel and Barber's Pat.Fulverizing Mills, Send for
descriptive pamphlets to Barber $\&$ Son, Allentown. Pa.

Wanted-The address of Manufacturers of Friction llutches. Adaress Wask st., Chicago, ill.
Steam Hammers,Improved Hydraulic Jacks, and Tube Expanders. R. Duageon, 24 Columbia St., New Y.
Patent Steam Cranes. See illus. adv., page 158.
Wanted-An offer to furnish Paper Tape for printing telegraph instruments in large quantities. Apply by
letter to Wm. H. Deane, 196 Fifteenth St., B'klyn, N. Y.
The Secret Key to Health-The Science of Life, or Self-Preservation, 300 pages. Price, only \$1. Contains fifty valuable prescriptions, either one of which is worth
more than ten times the price of the book. Illustrate sample seut on receipt of $\mathbf{6}$ cents for postage. Addres
Dr. W. H. Parker, 4 Bulfinch St., Boston, Mass. A well equipped Machine Shop desire to manufacture
special machinery. Address T. H. Muller, care of P. O. special machinery. Address T. H. Muller, care of P. O.
Box 532 , New York.
The Baker Blower runs the largest sand blast in the worla. Wilbraham Bros., 2318 Frankford Ave., Phila.,Pa.
Cut Gears for Models, etc. (list free). Models, working machinery, experimental work, tools, etc., to order.
D. Gibert \& Son, 212 Chester St., Philadelphia, Pa.
Wanted.-A first-class Machinist or Millwright familiar with hard wood working machinery; one who has
had charge of men preferred. Give age, nativity, and had charge of men preferred. Give age, nativity, and
experience. Address, with reference, Cincinnati Cooper age Company, Cincinnati, 0 .
Magnets, Insulated Wire, etc. Catalogue free. Good
Inexhaustible Beds of Kaolin or Clay.-Wanted ex
punk, and yellow kaolin beds. Digging and shipping on
cars will cost 50 cents per ton. M. J. Dobschutz, Belle
cars will cost 50
ville, Ill., Agent.
Forsaith \& Co., Manchester, N. H., \& 213 Center St., N. Y. Bolt Forging Machines, Power Hammers, Comb'd ery. Send stamp for illus. cat. State just what you want.
Wright's Patent Steam Engine, with automatic cutoff. The best engine made. For prices, ad
Wright, Manufacturer, Newburgh, N. Y.
For Solid Wrought Iron Beams, etc., see advertise
ment. Address Union Iron Mills, Pittsburgh, Pa., for ment. Address
lithograph, etc.
H. Prentiss \& Co., 14 Dey St., New York, Manufs,
Taps, Dies, Screw Plates, Reamers, etc. Send for list. The Horton Lathe Chucks; prices reduced 30 per cent.
Address The E. Horton \& Son Co., Windsor Locks, Conn. Presses, Dies, and Tools for working Sheet Metal, etc. Linen Hose.-Sizes: 131 in ., 20 c ; 2 in., 25 c ; 21 j in. 29c. per foot, subject to large discount. For price list
of all sizes, also rubber linea linen hose, address Eureka
Fire Hose Company, No. 13 Barclay St., New York.
Hydraulic Presses and Jacks, new and second hand. Lathes and Aachinery for Polishing and Butfing Metals.
E. Lyon $\&$ Co.,470 Grand St.. N. Y.
Steam Yacht for sale. G. F. Shedd, Waltham, Mass.
Diamond Tools. J. Dickinson, 64 Nassau St., N. Y.
$\$ 300$ Vertical Engine, 25 H. P. See illus. adv., p. 158 . Eclipse Portable Engine. See illustrated adv., p. 157. Bradley's cushioned helve hammers. See illus. ad. p. 142 , Band Saws a specialty. F. H. Clement, Rochester, N.Y.
Sheet Metal Presses, Ferracute Co., Bridgeton, N. J. Split Pulleys at low prices, and of same strength and appearrance as Whole Pulleys. Yocom \& Son's Shafting
Works, Drinker St., Philadelphia, Pa.
Noise-Quieting Nozzles for Locomotives and Steamboats. 50 different varieties, adapted to every class of
engine. T. Shaw, 915 Ridge Avenue, Philadelphia, Pa. Stave, Barrel, Keg, and Hogshead Machinery a spo cialty, by E. \& B.
Solid Emcry Vulcanite Wheels-The Solid Original
Emery Wheel -other kinds imitations and inferior Emery Wheel - other kinds imitations and inferior.
Caution.-Our name is stamped in full on all our best Caution.-Our name is stamped in full on all our best
Standard Belting, Packing, and Hose. Buy that only.
'The best is the cheapest. New York Belting and PacbThe best is the cheapest. New York Be
ing Company, 37 and 38 Park Row, N. Y.
New 83/g foot Boring and Turning Mill for sale cheap.
The New Economizer, the only Agricultural Engine with return fil
Co., page 8.
Sawyer's Own Book, Illustrated. Over 100 pages of valuable information. How to straighten saws, etc.
Sent free by mail to any part of the world. Send your
full address to Emerson, Smith full address to Emerson, Smith \& Co., Beaver Falls, Pa. Fuller \& Stillman, Chemical Engineers and Assayers,
Tight and Slack Barrel machinery a specialty. John The genuine Asbestos Rooofng forms the lightest and most economical roof in use. It can be easily applied
by any one. H. W. Johns M'f'g Co., 87 Maiden Lane, No gum! No grit! No a
No gum! No grit! No acid! Anti-Corrosive Cylin.
der ©il is the best in the world, and the first and der oil is the best in the world. and the first and
only oil that perfectly lubricates a railroad loco-
motive cylinder. doing it with half the quantity motive cylinder. doing it with half the quantity
requifed of best lard or tallow, giving increased
power and less wear to machinery, with entire freepower and less wear to machinery, with entire freeit is equally superior for all steam cylinders or
it and
heavy work where body or cooling qualities are heavy work where body or cooling qualities are
indispensable. A fair trial insures its continued
use. Address E. H. Kellogg, sole manufacturer, 17

## Vertical and Horizontal Engines M'f'd by Nadig \&

Renshaw's Ratchet (short spindle) uses taper and
square shank drills. Pratt

Deoxidized Bronze. Patent for machine and
ournals. Philadelphia Smelting Co., Phila., Pa.
Improved Steel Castings; stiff and durable; as soft
and easily worked as wrought iron; tensile strength not less than 65,000 lbs. to sq. in. Circulars
Steel Casting Company, Pittsburg, Pa.
The new "Otto" Silent Gas Engine is simple in construction, easy of management, and the cheapest motor
known for intermittent work. Schleicher, Schumm Co., Philadelphia, Pa.
Machines for cutting and threading wrought iron pipe speclalty. D. Saunders' Sons, Yonkers, N.
Steam Engines, Automatic and Slide Valve; also Boil-
ers. Woodbury, Booth \& Pryor. Rochester, N. Y. See

NEW BOOKS AND PUBLICATIONS.
cientific Horseshoeing. By William
Russell, Cincinnati: Robert Clarke \& Russell, Cincinnati: Robert C
Co. 8vo, pp. 144. Price $\$ 1.00$. An unpretenang yet superior treatise on this imporant art, embodying the results of over 40 years of study manufacturer of horse shoes for general and special use. The anatomy, functions, and proper management of the horse's foot are described in a plain, straightforward manner, with fifty engravings showing the hoof in and kindred matters of value to farriers and horse

Intemperance the Great Source of
Crine. By A. B. Richmond, Esq.
Meadville, Pa.: H. M. Richmond. Price $\$ 1.50$.
These "Leaves from the Diary of an Old Lawyer," as the sub-title describes them, embody an uncommonly cogent argument against the license system. The manly tone and temperate style are somewhat exceptional in "temperance" literature.
The Silk Goods of America. By Wm. C.
Wyckoff. New York: D. Van Nostrand There is no industry that is rising more steadily or There is no industry that is rising more steadily or
more deservedly in popular favor than American silk more deservedy in popular favor than American silk manufacture. Mr. Wymorsements and advances of this ort in the United States is well calculated to help on the good
work by showing the conditions which have determine work by showing the conditions which have determine
the superiorityof American silk goods. In addition to a dozen chapters on the manufacture and special characteristics,of the several sorts of silk goods, the volume contains the Seventh Annual Report of the Silk Associa-
tion of America, summarizing the progress made during the past year, and a directory of American silk manufacturers
Journal of the Cincinnati Society of
RNal of The Cincinnati Soci
Nat
With the present number, this excellent periodical-
the organ of one of our most energetic natural history the organ of one of our most energetic natural history
societies-enters upon its second volume. Its contents, as usual, are of great scientific interest, especialiprominence being given, as in former numbers, to the sub-
ject of silurian paleontology. Professor A.
A. ject of silurian palæontology. Professor A. G.
Wetherby remarks at some length on the genus plerotocrinus; Mr. E. O. Ulrich describes three new
geriera and twenty-eight new species of fossils from the lower silurian about Cincinnati ; Mr. S. A. Miller remarksupon the Kaskaskia group, and describesfournew species of fossils from Pulaski county, Ky.; the vicinity of Cincinnati. The latter is rendereddoubly valuable from the fact of its containing a reproduction of Lea's list of Cincinnati fungi, which has been long out of print. Considering the number of botanists in
the United States who have entered, or are entering, upon the study of mycology, the Cincinnati Society supplement this bare list of fungi by a reprint of the descriptions of new species as given by Mr. Berkeley in the now inaccessible Lea catalogue. We know of but a single copy of the latter rare pamphlet in New York city, and that is buried in a volume with other papers, where it would never be found by a student unless by

## Madextampris <br> HINTS TO CORRESPONDENTS

No attention will be paid to communications unless
accompanied with the full name and address of the writer.
Namesand addresses of correspondents will not be given to inquirers.
We renew our re
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 reasonable time should repeat 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 cannol beexpected to spend time and lathen
obtain such information without remuneration.
Any numbers of the SciENTIFIC American Suppleoffice. Price 10 cents each.
(1) W. B. C. asks: Is there anything that will remove tincture of iron from clothes? A. Try pure
hydrochloric acid diluted with its own volume of water and rinse with plenty of wath its own volume of water, small quantity of dilute ammonia water
(2) A. D. E. asks: Do you consider crude petroleum of any benefit in keeping a boiler clean where
hard water is used? If good to use, how often and in hard water is used If good to use, how often and in
what quantities and in what manner shonld it be used? A. In moderate quantity, and when properly used, petion of hard incrustations in boilers. See p. 18, current tion of hard incrustations in boilers. See p. 18, current
volume, Scientific American.
(3) S. W. O. asks (1) if there is anything better than camphor for preserving insects, butterfies, and moths. I have been using camphor for three years,
and it is collecting on the insects so fast that in another three years they will be white with it. A. See p. 11
(40), Vol. 38, ScIENTIFIC American. 2. The brass part of iny microscope has become rusty; how can I get it off? A. Remove the lacquer with caustic soda, clean with emery flour, and relacquer. 3. What is the best
cement for mending a large china fruit bowl which is broken across the middle? A. Use one of the receipt (4) G. C. R. writes: I desire to cement in a brass frame a glass tube through which kerosene oi flows. Can you inform me of a cement which can be
used for the purpose, which is impervious to the oil, and which is not affected by it? A. Borax, 1 part; shellac, 4 parts; boiling water, sumcient to form a thin
paste. Thicken with whiting and use hot. A small quantity of glue is sometimes added.
(5) C. M. D. asks (1) for a method of separating the copper from the settlings of a gravity battery, I wish to obtain the copper pure. A. Wash the copper in hot water and fuse it in a blacklead crucible. suitable to light a voom $12 \times 15$, and the best battery for thepurpose and number of cells needed. A. Use a bat-
tery of 30 bichromate cells. There are a number of tery of 30 bichromate cells. There ar
suitable regulator lamps in the market.
(6) $\mathfrak{J}$ H. M. asks (1) how washing bluing (powdered) is prepared. A. There are several wash altramarine, and neutralized sulphindigotic acid. Se p. 969, No. 61, Scientific American Supplement. 2.
How is stove polish made in cakes How is stove polish made in cakes? A. The best stove
blacking consists of pure graphite or plumbago, reduced oa fine powder
ure while moist.
(7) J. H. H. asks (1) whether a Holtz elecin machine can be used instead of the induction coil given in Supplement No. 189 A. Yes, but the elec tric discharges are less frequent and less controllable thau where the induction coil is used. 2. How large a
coil will be necessary for the experiments on a small coil will be necessary for the experiments on a small
scale; that is, not before an audience, but in a laboratorys A. A coil that yields from 1 to $13 /$ inch spark. eighth English edition, capable of forming a vacuum of the exhaustion required, or are there better methods of creating a vacuum? A. The Sprengel pump, or some modification of it, will produce as perfect a vacuum as
(8) K. P. M. writes: I have a well and spring water, and analyzed them according to instructions from Scientific American, and found in the well
water a strong trace of chloride of sodium, in fact it water a strong trace of chloride of sodium, in fact it
turned milky, and it lost its color under permanganate test. The spring water has no trace of chlorides; it keeps its color under permanganate test, but there is considerable sediment in the bottom. Now, is the
spring water fit to use? A. Probably, but we cannot judge fairly from your statements.
(9) W. F. J. asks what is applejack, and how is it made. A. A high spirit made chiefly f
cider by distillation. A brandy made from apples.
(10) F. F. S. asks how to remove plaster tains from a cherry and maplew ood floor. The floor dropped on it struck through. A. Try rubbing the spot with a little dilute hydrochloric acid. Dry thoroughly and oil.
(11) G. W. M. writes: 1. I notice that some of the leather I have used for valves and plungers for wooden pumps, in a year or two grows hard and
stiff. What kind of leather should I nse that will remain soft kind of leather should 1 use that wirated with lard oil will retain its flexibility indefinitely under the circumstances. 2. Is there anything not
poisonous with which tin pipe may be coated inside that will prevent its rusting for six or eight years? Would varnish. Soluble glass will not answer
(12) C. M. asks how the beautiful blue black color on the guards and heelplates of some guns, have tried pulverized charcoal and heated sand, but the color is either blue with a reddish cast or a light green. Can it not be done with sulphur somehow? A. It is
done by first heating the articles until they become blue and then gray, and then allowing then to cool; they
are afterward heated until they again become blue.
(13) T. McD. asks if copper wire (for an induction coil) can be insulated as perfectly by long
strips of silk as by the usual way, the silk to be about $1 / 2$ inch wide and any number of feet long, and to be put on lengthways of course. A. This method of insulation is not practicable, as the ribbon would take a great deal of oom and would be troublesome to apply. Better make
an apparatus like that shown on p. 124, current volume of Scientific American, and cover your wire with
(14) S. A. B. writes: 1 . Of two similar pressed air to 300 lb . per square inch, and the second acting as boiler and generating steam to 75 lb . per square inch, wbich will explode with the most violent and disastrousresults, and under what conditions? Which is
the safer? A. Compressed air is safer; it does not scald When a steam boiler explodes a portion of the water
expands into steam, thereby greatly increasing the expands into steam, thereby greatly increasing the
volume of steam. This accounts for thepowerful effects volume of steam. This accounts for thepowerful effects
of boiler explosions
2. How long will the vessel con of boiler explosions $\begin{aligned} & \text { 2. How long will the vessel con } \\ & \text { taining compressed air (say capacity }=3 \text { cubic feet) sup- }\end{aligned}$ ply 20 cubic inches of air at a uniform pressure of 50 lb . per square inch? A We cannot answer this without
knowing pressure of the compressed air. 3 . What is the knowing pressure of the compressed air. 3. What is the capacity and what pressure compressed air vessels
us corry? A. Pressure 200 to 400 lb ., capacity to suit purpose. 4. At what point in the cylinder will the right angle with piston rod? A. Depends upon length
(15) J. S. asks: What is the best way to contract? A. Dip them in turpentiue or chloroform.
(16) H. B. writes: In your issue of 12 th
 larger than those of the heaviest ox, had evidently been broken to extract the marrow." Query: Do birds have
marrow in their bones? A. Some of the bones of birds marrow in their bones? A. som
have large marrowless spaces.
(17) G. L. asks how to make sand paper. zes. Class under a rumner and sift it into about six glue and dust the pulverized glass over it. Sometimes wo coats of glue and glass are thus applied to the paper.
(18) J. S. B. asks (1) how to find out the uantity of water a pump will furnish, at 40 strokes per A. 40 strokes perminute is 2400 per hour, and 22 ose hunredths of a gallon per stroke, $2,400 \times 0 \cdot 22=528$ gallons per hour. 2. I copy the $0 \cdot 22$ gallons per stroke from the cir-
cular advertising the pump. Does it signify $2 \%-100$ of a allar advertising the pump. Does it signify
A. 0.22 gallon $=22-100$ of a gallon.
(19) D. W. M. asks how to arrange an elecric bell with a telegraph circuit so that when the circuit is broken it will close a local battery and ring the
bell. A. Arrange a relay so that when the armature alll. Arrange a relay so that when the armature
falls away from the magnet it will close the local cir-
(20) A. B. P. asks (1) how a current of electricity is generated in the wire around a permanent mag-
in in the Bell telephone? A. The vibrations of the dianet in the Bell telephone? A. The vibrations of the dia-
phragm in front of the magnet disturbs the normal condition of the magnet; any change of magnetism in this enerates electrical currents in the surrounding helix. Does the wire touch the magnet or membrane? A.
No. 3. Is it necessary that the membrane be metal: would it not be better to make it out of thin sheet It should be poft iron. metal glued to it in the center? nent magnet to revolve an armature close to it? A. No. 5. Can I change the pole of the electro-magnet so
that it will attract and then repel? I want to make an lectric engine. A. Yes.
(21) C. A. P. writes: 1. We have put up a sphon in our mines to take out the water according to escription on page 315, No. 20 , Vol. 36 (25), Sci-
Entific Amenican. The length of it is nearly 1,000 feet; about 800 feet runs through a tunnel on a grade of 6 inches to the 100 feet. Diameter of pipe $11 / \mathrm{inch}$.
We have three pet cocks tapped in the pipe at intervals We bave three pet cocks tapped in the pipe at intervals
of 150 feet in the tunnel to let out the air when we prime . We havealso an automatic air valve on the apex and check valve in the suction end. After we started it, it would run afull stream for a short time, then diminish gradually until it stopped altogether. We tried it several times with no better result. We then fastened a piece of an inch pipe on the discharge end and let it
project through the side of a barrel sunk in the project through the side of a barrel sunk in the soupe,
so that thereis 6 inches of water over the mouth of the so that there is 6 inches of water over the mouth of the
pipe. It is running in a continual stream since we made pipe. It is running in a continual stream since we made
the change, but it will not keep the water low enough in the mines at this rate. How can we remedy it? A. We infer from gour description that the head upon the disinfer from your description that the head upon the dis-
chargeopening or end is so great that, with the length of pipe and friction, the water cannot be supplied fast enough to keep your discharge opening full; probably if you use a 2 inch pipe and put to it a $11 / 2$ in. dischargenoz-
zle you will accomplish your object.
2. The pipe runs zle you will accomplish your object. 2. The pipe runs
from the mouth of the tunnel down a slope on a grade from the mouth of the tunnel down a slope on a grade
of about 30 degrees; at the bottom the pipe discharges of about 30 degrees; at the bottom the pipe discharges
horizontally. Will it work any better by running the pipe on a trestle the same grade as in tunnel, that is, 6 pipe on a trestle the same grade as in tunnel, that is, 6
inches to 100 feet, until it will be over the present dis. charging point, then run the pipe down near the ground so the discharge end will be perpendicular? A. We do not think this
(22) C. T. M. writes Some time ago, Vol. Will you please answer the following questions in the Scientific Americans 1. If I use a vinegar barrel as generator, how far apartshould the holes in which the pack thread is inserted be: A. From 2 to 3 inches
2. How many and what size glass air vents should be 2. How many and what size glass air vents should be
placed in the shelf? A. Use 8 2/-inch tuives. 3. What placed in the shelf? A. Use $8 \frac{2}{2}$-inch tuves. 3. What
sized air holes should those near the bottom be? A. From $⿻$ y to 1 inch. 4. How much of each of alcohol, 80 per cent alcohol, are used for the mixture? A. 1 part honey. 5. Please give a recipe for making a self shin. ing liquid shoe polish? A. Soft water, 1 gallon; extract of logwood, 6 oz .; dissolve by aid of heat. Soft water, 1
gallon; borax, 6 oz.; shellac, $1 \not 1 / 2 \mathrm{oz}$.; boil, stir, and add bichromateof potash, 38 oz., dissolved $\frac{1}{2} \frac{1}{2}$ p pint of water. Mix all together, warm, and add ammonia water, 3 oz. with directions for plating insects, etc., with gold, silver, etc. A. See p. 91 (10), Vol. 41, and pp. $477_{2} 248$, hiver, etc. A. See p. 380 (39), Vol. 35, ScIENTIFic American.
(23) J. A. C. asks (1) what will remove coal oil from a wool carpet without taking up the carpet.
A. Moisten the spot with benzole, cover it with a piece A. Moisten the spot with benzole, cover it with a piece
of dry flannel, and pass a hot iron over it. Repeat of dry flannel, and pass a hot iron over it. Repeat
with clean flannel if necessary. 2. How can I calculate the horse power of a stream, the cross section of stream plainly as possible. A It will depend upon the quantity of water you deliver at the outlet, and as this will determine the amount of head lost by friction, it be-
comes an important element in determining the availcomes an important element in determining the avail-
able power. If there is no waste at the outlet, the head able power. If there is no waste at the outlet, the head
there would be equal to 22 feet, but it is evident that the more rapidly the water is drawn at the outlets, the greater must be the difference of head there and at the source, overcome the friction through the pipe.
(24) J. H. M. asks if there can be made a steel blade or chisel one eighth of an inch thick driven
by a wheel and crank which will penetrate a bar of iron without breaking. A. If we understand your query, without breaking. A. If we understand your query,
(25) J C. asks: What is the amount horse power claimed for the steamer Great Eastern?
(26) C. C. D. asks: 1. Can you tell me how to bend spring steel wire 17 size? Ifind in trying to bend the same that it most always breaks,and cannot get it in the proper shape that I wish. A. If you use a good quality wire makes an excellent spring and requires it. Piano wire makes an excellent spring and requires no temper
ing. 2. After the temper has been taken out how can retemper it to itsformer stiffness? A. Springs made of ordinary steel wire are hardened by heating them to a cherry red and plunging them into cold oil. They are tempered by heating them in a flame until the oil blazes. They should be turned constantly to insure an even temper throughout. In some cases it is necessary to "blaze them off "more than once. 3. How to nickel plate the same: will a battery be req
Vol. 38, Scientipic A mericin
(27) H. B. asks (1) how to make a solution for battery of 1 zinc plate $3 \times 4$ inches, and 2 carbon plates $3 \times 41 / 2$ inches. A. Dissolve two parts of bichromate of
potash in twenty parts of warm water. When cool add one part of snlyhuric acid. 2. How far apart should the plates be? A. About $3 / 8$ inch.
(28) J. C. H. asks how precipitated chalk is made'to ad here to form balls such as druggists keep for sale, for the face. A. By subjecting it to heavy press-
(29) J C. writes In your issue of July 26, page 59, question $26, \mathrm{~J}$. D. asks. [See his question and your answer]: Assuming 306 cubic feet to be discharged
under $3 \%$ foot head, and 347 feet with same apertures under $4 \times$ foot head, flowing on a $131 / 2$ foot overshot wheel in both cases, you state the power of the
wheel will be 11.8 and 134 horse power respectively; wheel will be $11 \cdot 8$ and 134 horse power respectively;
if I read the questions and answers correctly is this so? I make it $\frac{306 \times 62 \cdot 5 \times 13 \cdot 5}{33000}=7 \cdot 82 \times 75=5 \cdot 76+$ actual H. P. and $\quad \stackrel{347 \times 62 \cdot 5 \times 13.5}{33000}=8.87 \times \cdot 75=6.65+$
Assuming the duty of the wheel to be 75 per cent the value of the water. A. You are right. The error, whatever it was, evidently affected proportionately both
calcnlations. $\quad$ 2. Is 306 and 347 horse power the actual discharge under the above conditions (aperture $11 / 2$ by 48 inch)? A. Very nearly; in practice probably 5 per ing and friction. 3. What is the best recorded of duty of overshot wheels? A. Bresse records 80 per cent, Daubisson, very large wheels, 83 per cent, and Morin claims to have obtained experimentally 90 per cent. 4. What is the average duty of engines and boilers per pound of coal per horse power per hour, in New Eng10 years-approximately? A. We are not aware of any experiments to determine the duty of the class of engines you mention. 5. What is the best coating for a turbine
wheel when the water has the effect to rust it and form tubercles on the buckets? A. We think if well painted with brown oxide, ground in pure linseed oil, it would
(30) "Operator" asks• 1. How can I make a small, cheap furnace to melt brass, zinc, etc., say
from an ounce to one half pound, and what fuel should be nsed to get heat enough? A. A common cylindrica coal stove connected with a chimney having a zood
draught, may be used for this purpose. Use anthracite coal for fuel. 2. Can a person make an article (patif $I$ should makn use without infringhis, for $m \mathrm{y}$ use would it be infringing? A. See Rights of Investigators, p. 128, Vol. 39, of Scientific American.
(31) R. B. N. writes: I have a set of German silver drawing instruments, but from bad management
the steel has rusted and the siver dulled; will you please inform me through your "Notes and Queries" how I can make both bright again? A. The only remedy is to
repolish by means of emery and crocus wheels or by hand, using fineemery paper and finishing with crocus oth
(32) F. G. will probably find the following tonic for the hair as good as any he can use: Take one ounce of sage and steep it in boling water for ten quarter ounce of powdered borax, one quarter ounce rides, bergamot sufficient to perfume. Apply twice a
week with the hand, and rub thoroughly in. It will remove dandruff and strengthen the growth. Itwill also it is said, prevent gray hairs.
(33) C. S. Y. writes: 1. I wish to make a battery like one described on page 91 , current volume of Scientific american. How is the battery fluid made?
A. Dissolve two ounces bichromate of potash in one A. Dint of warm water. When cold, add slowly two ounces sulphuric acid. 2. How can I fasten a wire to the flat surace of he carbon so as no to be eaten of by the acia. A. Drina smaist it tightly into the taper Heat the carbon plate so that it will just melt paraffine, and apply a little paraffine to the carbon around the wire. After it has soaked throngh, allow it to cool, and place a drop of melted paraffine over the lower end of the wire. Care must be taken to avoid saturating too much of the carbon with paramne, as this renders the carbon useless. 3. How is a Bunsen battery made? A. For full instructions for making batteries of various the name of the metallinclose and what is it ued for? I have a piece the size of a chestnut. It was found in Peru about 22 years ago. A. It is an amalgam of silver and mercury, containing also lead, antimony, copper, and a trace of gold-probably not of natural occurrence.
(34) Q. E. D. asks: 1. Please to tell me how I can make a common electric call bell ring when the
circuit is open. I want to connect it with a door, so that when the door is opened the bell will ring. A. A single stroke bell may be made to strike on opening the circuit by employing the magnet to hold the hammer away from the bell, and providing a spring, or its equivalent, to carry the hammer against the bell when released
by the magnet. You might operate a vibrating bell by
employing a local battery and a relay; but an open cir
cuit battery like the Leclanche or the Fullerwould b far better. If such were used, you would need to arrange your door fixtures so that the circuit would be close are there in a pound? A. There are about 22 feet of No. 10 iron wire in a pound. 3. Do old battery zincs that have not been used for some time have to be amal gamated again before they will work? A. If the zinc have not a coating
(35) C. E. G. asks the proportion of mag nesia, zinc, etc., for makingimitation meerschaum, and
how it is prepared. A. To a hot concentrated sirupy thick paste, which should be moulded into form quickly as possible, and afterbaking at as high orm a as it will permit without injury, cover it with powdered caustic lime and let it cool slowly.
(36) O. D. writes: 1. I have often seen umac quoted in the New York market. Is it the kind ion is used and how is it prepared for shipping? A Yes; see p. 199, vol. 36, and 204 (67), vol. 37, ScIENTIFT ambrican. 2. What kind of a crucible is required fo using iron, and where are they to be found? A. Use a blacklead (graphite) crucible. See "Business and Per onal "column. 3. I see no advertisement in your co mins of minerals. Where can tungsten, silver, nicke btain them for you.
(37) E. I. B. asks for the name of som ood book on the assaying of gold and silver ores ol. Consult Rickett's "Notes on Ahal is pract
Minerals, etc.-Specimens have been re ceived from the following correspondents, and examined, with the results stated
S.L.-Marcasite-sulphide of iron.-H.M. H.-Sample appears to contain a gold telluride, but the amoun vailable was too small for confirmatory tests.- M. B.-
The ore is an argentiferous (silver bearing) galenalead sulphide. If the sample is a fair representative of would body the property is valuable. A series of assays mpure ferruginous clay orocher containing a sufficient quantity of iron oxide to, if properly washed and roasted be nsed as the basis of a cheap paint for iron work, etc - M. E. S. - The ore contains nearly 20 p . c. of copper. The value of the propertywill depend somewhat upo its location.-M. Bros.-The rocks cortain shell lime
tone and a semi-decomposed feldspathic. The former stone and a semi-decomposed feldspathic. The former, if properly kilned, will make a good agricultural hme, dressing for some crops.--Correspondents who sen

## COMMUNICATIONS RECEIVED.

## On Many Ported Slide Valve. By F. G. N.

 On the New Optical Delusion. By P.J., W. G. S. List of Exports from Augsburg to the United State M. O.n Compressed Air Theory. M. R. C
On Local Government. R. P. P
[OFFICIAL.]

INDEX OF INVENTIONS

Letters Patent of the United States wer Granted in the Week Ending August 12, 1879 ,
AND EACH BEARING THAT DATE. [Those marked (r) are reissued patents.]


| Commode, J. W. Sprint <br> Cooker and drier, steam feed, T. E. Daniels Cop tube, A. Ball <br> Copies of writings, producing, E. Du Zuccato <br> Corset steel, P. Laflin. |
| :---: |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |

Corset steel, P. Lafin.....

Cultivator, J. L. Buskett.........................
Cultivator, C. Hardgrave .......................................................
Cultivator, o. Olson....... Cultivator, R. B. Robbins.
Cultivator, . Stephens. Curd cutter, H. H. Potter................
 E. P. Walling........................
Draught equalizer, A. J. F. Ehrich
Dredging machine shovel, J. Canan Drying house, J. Kennedy ...........
Drring house, fruit, . . W. Craven..
Egg crate, J. L. Stevens..........

## Egg crate, J. L. Stevens Egg tester, J. G. Halsey



Gevatorgate, automatic, J. F.Newhall.
Feed water heater and condenser for steam boil

## ers, R. Llewellyn.... Fence, barbed, G. M. Fi

Fence, barbed, G. M. Fish.........
Fence wire, barbed, J. A. Duncan
Filter, water, I. Brach.
Finger nail cutter, A. McDo........
Fire extinguisher, C. L. Delmage
Fire extinguish er, automatic, H. s. .Parmelee....
Fire extinguisher automatic valve, F. Grinnell.
Fire extinguisher automatic valve, F. Grinnell...
Fires on shipboard, etc., apparatus for extinguish
ing, J. H. \& $\boldsymbol{\&}$ T. E. Connelly...................
Flue boilers, cleaner for vertical, Flue boilers, thimble for vertical, c. . . Miller. Fluid propeller or motor, J. B. Vliet.
Folding chair, J. Weber
Fountain, F. C. Boswel
Furnaces, construction of domes or crowns of gas
and other, W. Smith.
urnaces used in the manufacture of iron and
steel, lining of cupola, reverberatory, Bessesteel, lining of cupola, rever
mer, and other, G. J. Snelus.
Garment stiffener, A.
Gas, scrubber or purifier for illuminating, A. W
Gas washing machinery, т. к. Lees (r)
Gate, J M. N. Fone.
Governor and self-adjusting cut-off, c. B. Cook.....................................
Grain drill, F. M. Steves...
Grain elevator, pneumatic, J. B. Stoner...
Grain meter, J. B. Stoner ...
Grain separator, L. W. Hasselman ........
Grapes, restoring moisture to, C. J. Renz
Grass, paper, etc., cutter,
Grate, J. B. Geyser ...................
Gun, magazine, Tiesing $\boldsymbol{x}$ Kennedy
ymnastic apparatus, W.C Shimone
Hame fastening, J. L. Tilly
Harness, C. . St Stanhope
Harrow and plow, combination, C. J. J. Danie......
Harvester, M L. Gorham
Hat shade, D. C. T. Davi
Hat shade, D. C. T. Davis.
Hat and capsweat band, $T$.
Hat and capsweat band, T. W. Brache
Hats, finishing, D. Wh.
Hinge, W. H. Hart..
Hinge, gate, T. Crane ....................
Horse detaching device, E. Stevens.
Horse toe weight, H. Redmon, Jr
Hydrant, P. H. Baermann ......................
Inhaler, vaporizer, and douche, J. B. Haight Injector, steam boiler, D. Fergus...................
Jugs, etc., attaching tops to molasses, A. A.A dams

## 

Knitting machine, B. F. Shaw .
Knitting machines, web holding mechanism for
Lamp, C. F. Spencer.
Lamp, electric. J. B. Fuller.............
Lamp reflector holder, F. A. Dunning.
Lamp stand, J. Robison, Sr..........
Lemon squeezer, S. D. Samu
Life ereserver, . Vaugha
Lumber drier. J. J. Curran (r) ................................
Magneto-electric machine, Z. T. Gramme ......
Medical compound for catarrh, M. Tremblay.
Metal can, hermetically sealed, J. Broughton
Middlings separator, R J 8kinner
Middlings separator, R J Skinner.
Milk cooler. D. Van Hovenberg .....
Milk, vessel for setting, M. C. Wel
Mining machine, S F Lechner..
Mirror, hand, C. E. Page ......
Motion transmitter, S. Dennis
Motion transmitter, S . Den
Motor, w. C. Reicheneker
Mower, ,. H. Jones........
Muffle furnace, J. R. Clark.
Nut, top prop, F. A Bradley ..............
Ore separator, revolving, H F. Kemnedy
Ore separator, revolving, H
Paper box, C. E Bolchini ..........................
Paper, making water and freproof, H. s. Lucas
Papier mache articles, making, J. w. Bryant.
Paring, coring, and quartering apples, machin
Pen, stylographic fountain, C. H
Permutation lock, J. McCaskey.
Permutation lock, J. McCask
Pianoforte, E. Kaps........
Piano lock, E. L. Gaylord (r)
Piano lock, E. L. Gaylord (r) .................
Ptchers, hoodyear
Plow, A. Good, A. Newsom
low, A. Newsom
Plow, sulky, I. R. Gilbert.
Pocketbook recording device, H. C. Baker
Polishing apparatus, E. Ford ...........................
lishing powder from coal
making, B. F. Hugh son..
Printer's composing stick, $w$. . H. Price
rinting press, cylinder, J L. C
ropelier, screw E. A. Heath.
Pulp machine, wood, J. Taylor (r)
Pump and windlass. ship's, L. H. Lyon
218,589

| Pump, steam, J. Gates. |
| :--- | :--- |
| Pump valve, steam, G. W. Dixo |


Railway crossing gate, Meehan
Rallway frog, M. McAleenan...
Rallway frog, M. McAleenan..
Railway frog, J. T. Richardson
Railway gate, automatic, McAne
Railway, portable, T. E. Allison
Raising and moving heavy bodies, machine for
T. That
T. Thayer ..... ..........

Reflector, Bryant \& Russell ....................... 218,48
Reverberating furnace, H. C. Kriete..........
Rocket C M
Rocket, C. Morris.......................................................218,391
Sash holder, I. B. Xeagley.........
Scraper, J. A. Peek .............
Screw cutting die, J. F. C. Ride
Scythe, C. Roby:
Scythe, C. Roby ...............
Sewing machine, D. M. Legat.
Sewing machine case, A.
Sewing machine, case, A. Steward ............................ 2188.38
218,48
Sewing machine, wax thread, s. W. Wardwell, Jr. 218,464
Sewing straw braid, machine for, C. H. Wilcox...
Sewing straw braid, machine for, C. H. Wilcox
Sheep shears, E. Wilkinson.
Sheet metal can, Follett \& Fellow
Sheet metal vessel, M. Campbell..
Shoe fastening, W. C. Egan. .
Shoe stiffening, N. J. Simonds
Shot grading machine, lead, Granniss \& Tracy
Shot screening machine, Granniss \& Tracy...
Shot screening machine, Granniss \& Tracy ...
Side stick and quoin, G T
Sled brake, P. C. Doyle..
Sounding board, L. Chase.
Spear, eel, C. M. Knowles
Sprinkler, M. H. Campion
Spear, eel, C. M. Knowles.
Sprinkler, M. H. Campion.
Sprinkler, J. H. O'Connor.
Stage, carpenter's and painter's, J. S. Schenck
stall, cattle, J. B. Greenh
staple maker, T. Tracy
Ster
Steam boiler attachment, F. W. Kremer........... 218,6012
Steam boiler, vertical, V. Pendred................ 218,397
Steam boiler, vertical, V. Pendred.................... 218,39
Steam engine, compound, M. B. Harven ....... 218,52
ply of steam to, Koch \& Durbam ............... 218,541
Steam enenerator, C. M. Grannis.............. 28.521
Stilts, J. F. Schultheis.......................... 28.457

Stove, s. H. Bingman...
Stove, w. C. Davis..
Stove, gas and vapor, W. Bliesne
Stove, cooking, T. S. Mitchell.
Sto
Straw burner boiler, H. Gillett......................... 218, 218,
Sta
Sugar in centrifugal machines, apparatus for

218,519
218,499
Cummings. ..................................... 218,4
218,44
STringe, water bag, M. Mattson. ...........
TTa, H.C Baincider
Tag, H. C. Bainbridge............................... 2818,
Tag, merchandise, H. M. Reis............................ 218,
Tanner, hide and skin, G. King.........
Telephone and microphone switch, Anderson \&
Telephone and microphone switch, A nderson \&
Briggs.................................................318,
Telephone, electric, S. H. Short ....
Tellurian, S. D. Engle .............
Tether. animal, J. W. R
Time lock, Kook \& Hall.
Toy, pistol, J. L. William
Tramway, C. A Edge...
Tramway rail fastening, H. T. McNeale...
Tramways, permanent way for, S . Nicholls
Truck for moving houses, B. Sperry.... .......
Umbrella drip cup, W. H. Ellis.
Ubrella arip cup,
Valve. F. Grinnell ...
Valve, stop, E. C. P.
Valve, stop, E. C. Post.....
Vehicle rub iron, A. Palm..
Vehicle wheel, F. W. Kueh
Vehicle wheeel, D. Muluck (r)..........
Wagon, buckboard, c. W. Saladee
Wagon, spring road, D. H. Emery ..................... 218, 218
W alls and ornaments. composition for, J. B. King 2188,538
Wash board, E. M. Stevens (r).................... 8,844
Washins machine, J. Meek...............................................218,
Washing machine, H. Smoot........
Waste pipe connection for wash basins, etc., G.E.
Waste pipe connection for wash basins, etc., G.E
Potter............................................
Watch and clock safety pinion, Moseley Bitner
. 218,400
Watch and clock safety pinion, Moseley \& Bitner 2818,556
Watch stem fastener, G. F. Dobiecki............. 288,502
Watch winding device, Zinn \& Porter.......... 218,613
Watch winding device, Zinn \& Porter..............
Water way for street washers and houses, M. A
Penn....................................
Penn.
218,567
Whip socket attach..................................... 28,5818
Wire splicer and twister, H. P. Wilson........ .... 218,414
TRADE MARKS.
Articles of stationary, E. A. Gray.

Cigars, cigarettes, and smoking tobacco, straiton \&
Storm........................................
Chewing and smoking tobacco and cigarettes,
Allen $\&$ Co....
Coal tar dyes or coloring matters, A. 7 . Poirrier ...
Coffee, A. L. \& B. L. Ackermann, Jr................
Liquid preparation for the complexion, ................
Polishing fluid and paste, Baxter \& Hughson ....
Preparations of ground coffee, J. B. Carriere.
Punch, C. H. Graves \& Sons
Rivets, , burrs, and chains, Holmeses \& Co.....
Sarsaparilla or blood purifier, G.
Sarsaparilla or blood purifier, G. L. Carrol.............. 7,585


DESIGNS
Basket rack brackets, C. P. Howard ................. 11,
Caster bottles, J. B. Beach...........................11,
Center piece, H. Berger ................326 to 11,


English Patents Issued to Americans.
From August 1 to August 5, inclusive.
Bed linings, W. N. Blakeman, Jr, New York city.
Feather machinery, M. S. Heymann et al." N. Y. city
Imitation feathers, M. S. Heymann et al., N. Y. city.
Imitation feathers, M. S. Heymann
Letter file, J. S. Shannon, Downer', Grove. II.
Railway brake, O. B. Kendall, Buffalo, N. Y.
Railway brake, O. B. Kendall, BuIfalo, N. Y.
Sewing machine, L. .. Miller et al.. Elizabeth, N. J.
Vaginal syringe, R. H. Wood ward, New York city.

