## Wusiness and expunt.

The Charge for Insertion under this head is One Dollar Mechanical Working Drawings a Specialty Portable and Stationary Engines; Boilers of all kinds
 Gold after crushed, separately. Joshua
ore bimestone-
divided
Address
Davis
ville, $\mathbf{P a}$.
Boilers \& Engines cheap. Lovegrove \& Co., Phila., Pa Alcott's Turbine received the Centennial Medal. Vertical Scientific Grain Mills. A.W Straub \& Coo, Phila. 35 ft . Bement \& Son Lathe; 8 ft . over bed; turns 16
ft.; self-actingcarriage. F. M. Swegan, 287 Water St. \$8.-Morton's Number One Scroll Saw; stand, treadle motion, bevel table, etc. Send for circular. J.D. Foot
Colorless Lacquer. H. H. Hempler, Washington, D.C Wanted--Hydraulic Pump, duplex or single, fill a cylinder 15 in. diameter, $20 \mathrm{ft}$. a minute, 500 ib
Hinckley, 321 Dartmouth St., Boston, Mass.
For Sale.-Patent on an article of general utility Wanted.-Addresses of Lamp Burner and Camp Cha Manufacturers. C. M. Lungren, 708 Lexington St., Balimore, Ma.
For Small Engine Castings, address Whi. D. Rich,
123 Exchange Place, Philadelphia, Pa. Union Eyelet Company, Providence, R. I, Manufacurers of Patented Novelties.
A rare opportunity for a Moulder or Machinist with a small capital to invest in a good business. For particu-
lars, apply to or address $\mathbf{W}$. B. McKeldin, Athens, E . Tenn.
An American gentleman, established over 18 years in ent or special industry. Best references fiven and re-
quired. Adress J. Getz, 5 Petit Carreau Paris, France.

Foundry and Machine Shop for sale. Now ruming an in good order. For particulars address Cofran \& Broich, Topeka, Kansas.
Wanted.-2dhand Fan for Cupola. E.L.Black,Gann,O. Entire outfit of Nail Mill, 4, 6, 8, and 10 p., costing over $\$ 3,000$, we offer for $\$ 650$ to close an account. Apply
quick, must be sold. Forsaith \& Co., Manchester, N. H.

## Improved Wood-workingMachinery made by Walk

ros., 73 and 75 Laurel 8t., Philadelphia, P
Skinner Portable Engine Improved, 2 1-2 to 10 H. P. self-Feling Unt
Self-Feeding Upright Drilling Machine, of superio construction; drills holes from 36 to $\%$ inch in d
ter. Pratt \& Whitney Company, Hartford, Conn.
Lansdell's Steam Siphon pumps sandy and gritty wa-
Machine Cut Brass Gear Wheels for Models, etc. (New
List.) D. Gilbert \& Son., 212 Chester St., Phila., Pa. Mill Stone Dressing Diqmonds Simple, effective, durable. J. Dickinson, 64 Nassau St., N. Y.
Bolt Forging Machine \& Power Hammers a specialty More than twelve thousand crank shafts made by use proves them stronger and more durable than wrought ron. See advertisement, page 206.
Galvanized Iron Cornice Machines.-The most Improved, Straight and Circular. Prices redueced. Calvin
Carr, Cleveland, O.. \& Hewes Machine Wks.,Newark, N.J.
For the best Bone Mill and Mineral Crushing Ma chines-five sizes, great variety of work-address Baug
Best Turbine Water Wheel, Alcott's, Mt. Holly, N. J.
Wanted.-A frrst-class business man with $\$ 10,000$ to
invest, and capable of assuming the general manageinvest, and capable of assuming the general manageda. Shop now in operation; connections frst-class; an

For Town and Village use, comb'd Hand Fire Engin The Cameron Steam Pump mounted in Phosphor Friction Clutches warranted to drive Circular Log Saws direct on the arbor; Upright Mill spindles, which can be stopped instantly; Safety Elevators, and H
Cachinery. D. Frisbie \& Co., New Haven, Conn.
Sperm Oil, Pure. Wm. F. Nye, New Bedford, Mass For Solid Wrought Iron Beams, etc., see advertise-
ment. Address Union Iron Mills, Pittsburgh, Pa., for ment. Addre
Walrath's Improved Portable Engines hest in market;
For book on Lubricants, R. J.Chard, 134 M.Lane,N.Y
John T. Noye \& Son, Buffalo, N. Y., are Manufactur rs of Burr Mill stones and Flour Mill Machinery of all kinds, and dealers in Dufour \& C
Send for large illustrated catalogue.
Power \& Foot Presses, Ferracute Co., Bridgeton, N. J. Solid Emery Vulcanite Wheels-The Solid Original
Emery Wheel - other kinds imitations and inferior. 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. B
Ing Company, 37 and 38 Park Row, N. Y.
1,000 $2 d$ hand machines for sale. Send stamp for de
scriptive price list. Forsaith \& Co., Manchester. N. H.
Steel Castingsfrom one lb. to five thousand lbs. In-
valuable for strength and durability. Circulars free aluable for strength and durability. Circ
Pittsburgh Steel Casting $\mathbf{C} 0 .$, Pittsburgh, Pa.
For Best Presses, Dies, and Fruit Can Tools, Bliss \&
Hydraulic Presses and Jacks, new and second hand.
Lathes and Machinery for Polishing and Buffing metal
E. LJon \& Co., 470 Grand St., N. Y
Wanted-Second-hand Gun Stocking, and other Gu Machinery.
Haven, Conn.
For Power\&Economy,Alcott's Turbine,Mt.Holly,N.J.

J. D.-You do not send sufficient data, bu you can readily make the calculation for yourself, on the supposition that you will have to supply about 450 cubic feet of water per minute.- E. M.- We do not recommend special manufactures in these columns.-M. Percy's "Refractory Materials and Fuel," and Svede lius' "Handbook for Charcoal Burners."-B. L. D.-
Wrought iron weighs about 480 lbs. per cubic foot From this you can make your calculations cubic foot. See Scientific American, vol. 36, p. 203, and p. 155 (25), March 9, 1878.-A.L.--See Scientific American
November 10, 18\%, p. 299 (8).-W. K. L. - See Scientin IC American March 29 (8).-W9 (23) -A.-See ScIENT1 TIFIO American, March 16, 1878, p. 171.-W. H. A.-It would depend upon the system adopted, and the special circumstances of the case. You should refer the matter to an engineer--J. R.-See Scientific American,
pp. 33 and 225 , vol. 33 .-R. K. S.-See Scientific Am pp. 33 and 225 , vol. 33.-R. K. S.-See Scientific Am-
ERICAN, December $2 \pi$, 1873. You will also find a good method described in Trautwine's "Engineer's Pocket scribed by you has been tried many times with numerous variations; and, it is unnecessary to add, with
equal want of success. Consult Dircks' " Perpetuum Mobile."-J. G.-See description of leaching process in Percy's "Metallurgy."-P. P.-Address the inspecgarding qualifications necessary for obtaining a license. -M. \& Co.-There have been many boilers set in the manner described, and operated successfully when the SUPPLEMENT, October R8, 1876.-L. D.- See answerNo. 45, p. 268 , of Scientific American of October $27,187 \%$.
-W. S. described and that to which you refer.-F. W.-Sample of oil not received.-B. G. N.-See Scientific Amer
Can of August 23 1873.-C. R.- You will find a good annmary of the art of tanning in the American Cyclo pr ia, and for fuller information you may consult Dus. sauce's " Treatise on Tanning.
(1) J. H. asks: 1. How may sulphuric acid pected vin in vinegar? A. Add to a sample of the sustilled or rain water); if a white precipitate forms, or hydrochloric acid, sulphuric acid is present. It is better to evaporate the sample of vinegar to be tested the concentrated fuid into a test tube partially filled with the solution of the barium salt. 2. How is the
strength of vinegar commercially determined, and what is meant by "proof," "overproof," etc.? A. A
sample of the vinegar is saturated, by agitation, with pure slaked lime, the clear liquor filtered off, and tested with an acetometer, an instrument resembling the hy phical instruments. Proof vinegar contains 5 per cent of acetic acid, and will saturate $143 / 6$ grains of crystallized sodium carbonate
What is the quicksilver alloy used on mirrors? An amalgam of mercury and tin.
(2) J. D. C. writes: I have a 5 -cell Daniell battery for medical use. 1. Can the current be utilized or illuminating purposes, and how? A. Your battery that would be of use for purposes of illumination. Use a battery of 50 Grove's cells. 2. Of what should the points for giving off light be made, so as not to be coninch square strip or pencil of gas retort carbon, which you may procure
(3) J. D. writes: I consume an immense mount of coal every crop at my sugar estate, nearly which finds its way through the grate bars. 1. Ho could I burn the dust and not expose myself to such loss? A. See p. 12295 of Supplement, No. 82, vol. 4. 2.
Which is the best and cheapest coal for producing team? A. Anthracite nut coal is generally preferred steam forthe work to be done. ensity of Baumé? A. $10: 28$ (or $10{ }_{2}^{7}$ ) lbs, avoirdupois at $62^{\circ}$ Fah.
(4) L. G. asks: Do the engines on the Pennsylvania Railroad fill their tanks while running, without stopping for water? They did in 18\%6; do they
at present? A. The engines drawing some of the rains do.
(5) C. W. B. asks: Can an engine supply and by letting thuficient to run it by the useof leverage How much surplus power can be obtained? The leverage may be any practical length from the engine to the
air pump. A. As we understand your meaning air pump.
think not.
(6) P. R. asks for a recipe for making Soak to pure glue in water until it is soft; then dissolve in the smallest pers an proof spirit by th 0grains of gumammoniacum, and whilestill liquid add half a drachm of mastic dissolved in 3 drachms of re tified spirit. Stir well and keep the cement liquefied in a covered vessel over a hot water bath. It is essentialls a solution of glue in mastic varnish. 2. Shellac, 4 ozs .,
borax, 1 oz.; boil in a little water until dissolved, and concentrate by heat to a paste
(7) W.S. J. asks: What is the cause of color blindness, and is there any cure forit? I cannot green looking just the same. A red light or red flag never attracts my notice, though a blue fiag or light in bow, and always call light brown or buff green. there is any remedy for the disease I should be glad to
know it. A. Dr. Young, adopting apparently the tion of Darwin, that the retina is active, not passive, in
vision, regarded it as the simplest explanation of this vision, regarded it as the simplest explanation of this
defect to suppose that those fibers of the retina which are calculated to perceive red are absent or paralyzed. The followers of Gall and Spurzheim maintain that the faculty of distinguishing colors does not depend on the give the name of the organ of color, and that the de fect lies in this organ and not in the eye. On whateve cause a partial or complete insensibility to color debe slight means of cure. Consult McKenzie "On th
p. 368, vol. 35 , Scientific America
(8) J. H. B. writes: 1. I have a relay with two spools $11 / 2$ by $31 /$ inches. If $I$ should unwind them using all of the wire, would there be any difference in the sound? Would the short spools produce a heavier sound, or would they be the same as the longer ones?
A. The difference in the sound produced by the alterA. The difference in the sound produced by the alter-
tion you mention would be slight. See answer N . 4, p. 155, Scientific American, March 9,1878 . 4, p. 155, SCIENTIFIC AMERICAN, March 9, 1878. 2 . ouder sound than one of two spool of the bout the wire used in the relay.
Please give me a recipe for a cheap varnish for brass
steam throttles? A. Use a thin solution of shellac in
(9) H. M. writes: I have a magnetic machine, intended for medical purposes, which I wish Your instrument produces an intense current of elecshocks quantity current of low intensity. Although it is pos. sible to produce an electrotype with the instrument,
you would find it more convenient to use a battery. Which is the front end of a steam engine? In b find it always given as the end farthest from the end through which the piston rod passes. A. This is imply a technicality, and depends somewhat on the style of engine. If youregard as correct the latter in. terpretation which you mention, it would not generally apply to locomotive engines.
(10) W. G. L. asks: How can I polish cow's horn by hand? I wish to polish a handsome horn without using wheels or machinery of any kind. A. We think you can polish it by careful scraping with
the edge of a piece of broken glass, and then rubbing with some smooth, hard substance.
(11) C. B. desires instructions for making lime kiln on a small scale, in which to burn oyster
shells. Will some of our correspondents enlighten shells. Will some of our correspondents enlighten
him?
(12) H. W. B. asks: 1 . What size wire is best for connecting telephones? Will No. 40 insulated cuits, but it is easily broken; for house service cir about No. 19 copper wire insulated with cotton, and soaked in paraffin. 2. How should connecting wire be put up from one room to auother (in the same house) may be laid in the recesses possibleoves of the bas board moulding, or tucked under the edge of the
(13) S. R. asks: 1. What is the rule for nding the capacity of air pumps for jet and surface number of revolutions of the pump per minute, divide wice the number of cubic feet to be removed per min ate by the speed of the pump piston in feet per min Whe. The quotient will be the area of the piston. 2 for simple rund for finding the capacity of condenser or simple and compound engines? A. A common practice isto make the cooling surface from two third
to three quarters the boiler heating surface. 3 . What is the rule for finding the position of the piston in the cylinder, when the crank is at half stroke, for different strokes and different lengths of connecting rod? A. If $c$ is the length of the connecting rod, and $r$ the length
of crank, the piston is at a distance from mid-stroke equal to $c-v\left(c^{2}-r^{2}\right)$.
(14) W. T. H. asks: What horse power bas an engine having a $6 \times 9$ inch cylinder, rumning 300 square inch, cut off half way? A. You might get between 40 and 45 effective
(15) J. D. B. O. writes: Please give me plan for a smail fountain having a perpendicular jet, over again without mechanical force of any kind, omething on the plan of the siphon. A. We doun designed.
(16) W. J. writes: Wishing to tin some 6 inch round iron hooks, I pickled them for 24 hours n a strong sulphuric acid and water mixture, without success in removing the scale. It costs too much to doubtful if you can clean them sufficiently without (17) L. C. S. writes: I have a common to bacco press, and desire to know the amount of pressur obtain by pushing 100 lbs. on the end of a 9 foo inch, threads. A. Neglecting friction, the force applied is to the pressure produced, as the distance traveled
where the pressure is applied is to the distance traveled by the force in the same time.
(18) L. A. W. asks: Can a spiral spring, made of good steel wire, be tempered so that it will re-
tain its elasticity when subjected to constant bard usage? A. All spiral springs are apt to set in course of time. For mode of tempering, see Supplement, Nos.
(19) S. B. G. asks: Where did the rive ordan discharge its waters, before Sodom and Gomor
theory of travelers is that the Jordan always dis-
charged into the Dead Sea, and that the "Cities of the
Plain" were situated on the southern border of the Plain" were situated on the southern border of the
sea. Some suppose that the Jordan at one time fowed sea. Some suppose that the Jordan at one time fiowed er valley by a geological change.
(20) J. H. R. asks: Will it do to use the ell telephone in circuit with the Morse telegraph? A. ne and has great resistance, it should be connected so as to be in a partial or split circuit with the main line. See answer No. 19, p. 155, Scientific American of
(21) V. \& G. write: Our grate bars are 16 ches below our boiler. Would we gain anything by sing them? We burn slack (soft) coal. A. No.
(22) C. S. M. writes: If I wish to ascertain the exact amount of rain which falls on a certain pot, say on a steep hillside, should the top of the
gane horizontal, or should it incline as the hillside does? A. Hurizontal, generally
(23) J. F. W. writes: When a locomotive drifting backward and you throw the reverse bar Thare, it will fly back if not secured in the quadrant. Where does it get its leverage from? A . If the action
(24) F. S. L. writes: A vessel is going at a ertain speed, and it is desired to double its speed. tio is not rown. By the cosed A . The exal
ake about 8 times the power.
(25) W. F. U. asks: If three men are to arry a 30 foot iron rail, where must the hand stick be
placed so that each man will have an equal load, one man being placed at one end? A. $73 / 2$ feet from the other end, if the weight of the hand stick is disre-
(26) F. V. C. asks: Can a steamboat ascend as steep a grade as a locomotive drawing a train of cars, and what is the steepest practicable grade a steamboat can ascend and descend. the water being,
ay, 2 feet decp? A. The locomotive would have the advantage overthe steamer. If you find the velocity of the water in the rapid to be 20 miles an hour, the thing more than this, and the practical limits are de ermined by the possible speed of the steamer
(27) A. M. A. writes: One night I left a pail of water on a stone well box. The next morning I
found it frozen over, and in the center was a spike of ce about 6 inches long and sharp at the top. What was the cause? A. Without knowing all the circumstances, we may not be able to explain the matter correctly, but we presume it was due to the expansion in freezing, if there were no outside interference. Perhaps other readers have observed similar phenomena
on which they have reasoned. If so, we would be glad on which they have
(28) J. W. K. writes: We have a 3 horse power engine and boiler, fed from a tank which holds about
ive barrels, lined throughout with zinc, and made steam tight by soldering all joints. The tank has been in use 10 months. We use soft waterfrom a tin roof painted with yellow ocher. The exhaust is blown directly into the tank at one end, and passes the length of the tank over the water, and what does not condense is carried off through a large tin conductor pipe 15 feet long, arranged so as to carry back all
steam condensed before it reaches the outlet, thus using the water over several times. The water is nearly boiling hot when thrown into the boiler. An examination shows the zinc around the top of the tank and near the exhaust pipe to be badly corroded and
crumbled. (Sample inclosed.) Will the water that has been in contact with this corroded zinc damage he boiler; and, if so, what will be the effect? A. We do not think the boiler will be injured by the zinc; but
rom the sample sent we are inclined to think that scale may be deposited in the boiler. It would be well o examine.
(29) W. B. asks: Does soda ash prevent scale from forming in boilers? Will it cause foaming? Is it injurious to the boiler? A. It has been recommended
for preventing scale, and does not generally cause any for preventing scale, and does not generally cause any
(30) W. H. A. writes: A metallic pipe is standing vertically, supported so thatthelower end is free from the ground. At the lower end is a valve
which opens downward. The area of valve surface is 5 inches. Air is excluded from the pipe. What depth of water in the pipe will open the valve, the pipe being water? A. The height of the column of water will be water? A. Th
about35 feet.
(31) F. B. S. asks: 1. Would it injure the steel in small tools to heat them red hot in a melting the coal contains sulphur? Should the ladle or box be covered? A. It would be better to cover the tools with
charcoal to preventdecarbonization. 2 . How are small charcoal to preventdecarbonization. 2. How are small
tools usually heated for hardening? A. In a charcoal tools usually heated for hardening? A. In a charcoal
or coal fire in which the gas is burnt out of the coal The most recent practice for a quantity of tools is to The most recent practice for a quantity of tools is cyanide.
(32) P. M. asks: What is the difference in power between running a 60 saw cotton gin with 80 feet pulley-with the proper shafting and pulleys in the two cases? A. As we understand the question, we do not think there will be much difference.
(33) J. F. W. writes: I have been firing a locomotive engine about a year, and never had any
rouble in keeping steam up to the standard until with in the last three months. The engme is cared for pr
ind cisely as before, 1 use the same kind of coal, and annot see any difference in the way the fire burns What is the difflculty? A. It may be caused by incrus-
tations on the heating surfaces, which prevent the tations on the heating surfaces, which prevent the
transmission of heat to the water to a considerable extent. From your account this seems probable.
(34) E. H. R. suggests that if J. D. B. (p 1555 current volume) should make his elevator pit of
cast iron, the trouble about leakage would be ended. (35) A. W. asks: How can green cherry lumber be seasoned without checking? A. If it is sea voned by immersion in water, the diffculty you speak
of will probably be avoided. Some of the patented processes of seasoning may perhaps be applied to ad-
(36) J. W. writes: Am I right in under standing that bearings should always be softer than the spincles which run in them? Is that only necessary in
case of the oil being forced out? I use hardened stee spinderes running in Babbitt bozese (woodworking ma-
chinery). As I use refined blacklead and oil as a lubrichinery). As I use refined blacklead and oil as a lubri-
cant, which does not answer so well with soft metals, cant, which does not answer so well with soft metals, 1 am desirous of employing iron or steel in future for
bearings. What kind of iron or steel should I use for his purpose? A. Tbe condition you lay down is by no means a necessary one. Cast iron makes a good bear ing if plenty of surface is exposed to the pressure.
(37) J. S. S. writes: 1. I have a $10 \frac{1}{2} \times 36$ engine with a 10 foot fly wheel; boiler 3 feet diame eie ler. With this, how much Alabama pine ought I to sa in 10 hours? A. With a frst class saw mill you might cut from 8,000 to 10,000 feet of inch boards if the logs are of good size. 2. How much corn ought Ito grind in 10 hours with wood fuel, and $3 \%$. 0 . oot Esopus stones?
A. When the millstones are sharp you should grind A. When the millstones are sharp y
(38) G. S. writes: 1. I wish to put up some telegraph wire. Will common unannealed wir magnet? A. It will do. We have not heard of its having a noticeable tendency to act in the way you mention. 2. Would not a 10 gallon jar, with zinc and opper to correspond, give as much electricity as 10 on ty cells? A. It would be apt to givea greater quanthy of electricity, but the tension or the electerly he tension of electricity produced by the batter formed of 10 one gallon jars
(39) T. C. wishes to stretch a 1 inch iron wire rope a distance of 400 feet, allowing but 10 feet sag in the middle, and carrying on the rope a weight of from 1,500 to 1,800 Ibs. With these conditions he de-
sires to know what will be the strain on the rope. A. sires to know what win be the strain on the rope. A.
According to Mr. Trautwine's tables, the strain $=5.03$
suspended weight)
(40) E. M. asks: What is the best material for a flat roof for a machine shop and foundry? A. Tin patented materials are also frequently used.
(41) W. C. asks: 1. How are ocean cables epaired? A. The ends are hanled up and united. We are not aware of any diver having reached a dept ee are not aware
over 170 feet.
(42) C. E. S. asks: 1. In making an Eolian arp, what kind of strings is preferable catgut orwire
Ordinary violin or guitar strings A. Ordinary violin or guitar strings answer very well.
2. How many strings are used? A. There is no partic ular limit to the number
(43) M. J. C. writes: Please explain to me the difference between brace, stay, and gusset, and also
what is meant by crow-foot? A. A brace supports parts in compression, and a stay, parts in tension. A gusse is an angle piece in a structure, used to stiffen it, and a crow.foot is a casting with three or more feet, used to
secure from the outside, covers to holes that bear on secure from the ote
(44) H. N. L. asks: How much counter balance must be put in a crank arm to make an engine
fun without vibration? A. The vibration cannot be prevented under all circumstances. You will find th principles of counterbalancing clearly laid down in principles of counterbalancing clear),
Rankines's "Machinery and Millwork."
(45) T. W. W. asks: 1. Is it practicable to rind common oats into meal or fiour suitable for brea on an ordinary country mill? A. They must first be
kiln-dried. 2 . What is the best dress for 30 inch granit tones, which are intended to grind wheat and corn . Furrows of moderate dept
(46) St. C. asks: 1. What thickness of stee is necessary to resist a bullet fired from an army re oiver? A . We think a plate from one eighth to three Il, steel or iron, presents the strongest resistance to leaden balls? A. Steel, generally. 3. Would a plate
formed by riveting several sheets of steel together be formed by riveting several sheets of steel together b
stronger than a solid piece of the same thickness?
(47) W. T. W. asks: Is it possible to mak horizontal engine reversible using only one eccentric and thata fixed one? A. Yes
(48) C. B. asks: Who was the engineer in charge of the co
Thomas Doane.
Thomas Doane
ead of a young penc falling out or hair from the head or a young person who is otherwise in perfect
health? A. It is sometimes beneficial to cut the hair.
Consult a physician.
(49) G. J. B. asks: What is the best way tosorten thin portions of chil
drillthem? A. Anneal them.
(50) F. B. asks for instructions for making ood rowboat, and put in just as large an engine an hoiler as you can conveniently carry. See SUPPLEMENT Tos. 69 and 81 .
(51) J. S. writes: I have one of Landis domestic steam engines, of $11 / 2$ horse power; apright boiler, 18 inches in diameter and 32 inches high, with 15 one-inch flues, full length of boiler. I am using about 60 lbs. of coal and 1 barrel of water per day of,
say. 10 working hours. Can I conomically substitne gas for coal, and if so, how should the gas be applicd?
economical that its ase is advisable, unless. there is
some other special reason for heating by gas. In case gas is used, some one of the patent heaters in the market might be applied to advantage.
Minerals, etc.-Specimens have been re eived from the following correspondents, and examined, with the results stated:
J. H. P.-The fragment contains a little coppe
blende, pyrites, and lead sulphideblende, pyrites, and lead sulphide.-A. R. B.-It is
crystal of smoky quartz, the angles of which have bee oounded by attrition.-D. N. LaB.-It is fine asbestos of some value.-C. W. S. T. - No. 1. Clay containin much carbonaceous matter, iron, and alkaline earths which renders it quite fusible. It may be used with other clays for earthenware, etc., and (pressed) fo some decorative purposes. No..2. Clay containing much
sand. Tempered with other clay it it sand. Tempered with other clay it might be employed
n brickmaking. No. 3. Similar to No. 2. If washed in brickmaking. No. 3. Similar to No. 2. If washe
might perhaps be used by paper makers. Clay slate. Cay slate. No. 5. An ocherous clay, suitable for a
heap pigment if burned and ground. No. 6. Sand tone. No. 7 It is is a valuable copper ore-chalcop
then ite, etc. Nos. 8 and 9 are chacleedony, of some value.
No. 10 is barytes - sulphate of baryta of good quality.

## COMMUNICATIONS RECEIVED

The Editor of the Scientific American acknowledges
with much pleasure the receipt of original papers and contributions on the following subjects Telephonic Phenomena. By W. E. A Brilliant Meteor. By G. W. Power Required for Velocipedes. F. S

Nickel Plating. By w. H. F.
Darwinian Theory. By E. S. M
Treatment of Inebriates. By T. P.
Perpetual Motion. By E. R. M.
Calculation of Horse Power. By T. J. L
A Leech Barometer. By E. s.

HINTS TO CORRESPONDENTS
We renew our request that correspondents, in referring
to former answers or articles, will be kind enough to ame the date of the paper and thepage, or the numbe of the question.
Correspondents whose inquiries fail to appear should hat, for good reasons, the Editor declines them. ddress of the writer should always be given.
Inquiries relating to patents, or to the patentability of inventions, assignments, etc., will not be publishe here. All such questions, when initials only are given, re thrown into the waste basket, as it would fill half of or paper to print them all; but we generally take plea is given.

## official

INDEX OF INVENTIONS or which
etters Paten Granted in the Week Ending February 19, 1878,

## AND EACH BEARING THAT DATE

 [Those marked (r) are reissued patents.]A complete copy of any patent in the annexed lis ncluding both the specifications and drawings, will be please state the number and date of the patent ordering nd remit to Munn \& Co.. 37 Park Row, New York
Annunciator, electric, T. L. Reed .................. 200,569
Axle box, A. A. Freeman ................... 20,385

Axle box, A. A. Freeman ..........................
Axle box, J. Stephenson (r)......8,844, 8,085, 8,086 , Bale tie, J. R. Blossom
Bale tie, J. J. Hagins (r).
Bale tie, W. E. Borst .......
Ballot box, M. D. Williams
Ballot box, M. D. Williams
Barrel, J. D. McEachren ..
Bed bottom, E. A. Jeffery.................
edstend, invalid, J. Kaylor.
Bee teeding device, E. Carter
Belting, w. H. Curtiss
Binder, H. E. Thompson,
 Book rack, A. R. Sherman.
Boot tree, J. T. Flynn........
Bottle register, W. S. Lynn
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Hinge for moulders' flasks, A. Barker
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Horse power, W. W. Dingee..
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Lamp, F. Carrier
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Lamps, globe for street, F. L. Senour
Leather boarding and graining, L.Townsend ( $r$.
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ock, C. C. Coleman
Loom, E. Howard ........

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Mill spindle bush and tram, E. G. Cushing... Motor, J. K. Cummings
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Organ, H. F. Graetzel.
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Signaling apparatus, D. H. Iseminger
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Soldering device, F. B. Davis............
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-

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|  | Wells, steam heater for oil, J. Harris |
|  | Wheel, car. E. Kaselowsk |
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Glove fastener.-G. Havell, Newark, N. J,
Horseshoe.-J. Russelle $\begin{aligned} & \text { al, Newark, N. J. }\end{aligned}$,
Intrenching tool.-J. L. Buskett, St. Louis, Mo Lamp.-C. Chinnock, Brooklyn. N. Y.
N. Y.
Gineral waters, etc.-G. D. Dows, Boston, Mass,

Mineral waters, etc.-G. D. Dows, Boston, Mass.
Mining machine. - F. M. Lechner. Columbus, 0 .
Oil stove.-E. B. Cox, Brooklyn, N. Y.
Railway brake,-A. K. Hadley et al., New York city.
Refrigerator. J. Lorillard, New York city.
Refrigerator. J. Lorillard, New York city.
Revolver.-O. Jones, Philadelphia, Pa.
Rock drill.-A. A. Elliott, New York city.
Ship armor.--E. W. Serrell, New York city
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