## Moterequmpirs.

## 

 greater or hess general interast. The questions are simplepreerer to elicit tractical answeers rrom our readers.]
1.- India Robber Belts.-Can an endless gum belt be made uniform in thickness and strength throughout?
inches wide and 125 feet in length is wanted. - S. s. s.
2.-Dimensions of Air Pomp.-How large an air pump do I want, and at what rate of speed should Irunit, to produce a pressure of
:00 pounds per inch, the air to be discharged through a three e eighth in :oo pounds per inch, the air to be discharged hrough a three eighth incl
pipe and the disharke pipe to be open all the whlle? How arge an ait
chamber or receiver shoup to $I$ want? How much power would it take to chamber or recei ver should
drive such a pump ?-0. O . W .
3.-Future Hunting Prospects.-Can any one tell me What the West will be fifty years hence? Will there be plenty of game out
there and could a man make a living by his riffe? Also, if a person had a at would use both cartridge and bose ammuntition?-0. к.
4.-Welding Steel.-What is the proper flux to use for this purpose?-I. A. c.
5.-Oxygen in Solphuric Acid.- What number of cubic feet of oxygen gas does it take to oxidize one ounce of sulphur to form sul.
6.-Slowly Drying Glue-I am doing some joiner's work Which requires the glue to set or dry very slowly. Can any of ofourcorres.
pondents tell me how to make titdo so without injuring its strength? -H .
7.-Transferring Pencli Drawings.-How can I trans fer a pencil drawing on paper to box wood or type metal for engraving?
8.-ACETIC Acid.-Will some correspondent inform a sub criber how to make good acetic acid on a small scale ?-F. O. R.
9.-Flavoring Extracts.-Will some one tell me how tracts of vanilla and lemon are made ?-E. R. T.
10.-Power of Head of Water.-I have a fall of 19 or 30 feet water, only 12 bv 2 inches; on a 20 foot wheel, what power will it give build a stone dam ; how thick should the wall be? The stones are small. I the escape of any water? Please tell me how to begin and flnish the dam.
11.-Mounting Prints.-I wish to know if wetting (as much as will be required for the purpose of backing in map style) will in
jure the color of a common lithographic print? If so, is there any othe jure the color or a common lithographic print? If so, is there any othe
cheap method of preserving it? What is the most pliant and best material cheap method of preserving it? What is the most pliant and best material
tor backing? What is a good varnish for the face of the print? Will soak in blur common ink writing? Ifso, is there anything with which either or a lithograph may be treated to fix the colors? I have two lithographs
and another paper, with considerable writing on it, which I desire to back and mount in map style.-E. B. W.

Tasturct to Carresparlents.
SPECIAL NOT L.-This column ts destgned for the qeneralinterest and in.
structionof our readers, ngt for gratuitous replices to questions of \& purely structionof our readers, ngt for gratuitous rephies to questions of a pureli
business or personal nature. We woil publish such inquistes, hoveover,
vnen pata for as advertisements at 1 1.00 a line, under the nead \&o "Businese 2onen pady for
and Personal.

Tempering Miners' Pices.-J. A. C. will find full direc Staining Gun Barrels.-To S. "G.-We have recently given full information on this subject. See pages 217 and 260 of the cur rent volume.
Tempering Steel Sipinor,-To L. G.-Your question has been answered by "ecver correspondents during the last few months.
See pages 200, , 49 an an 313 of the current volume. J. C., of W. Va.-The fineral you send is mica schist, of no W. O. H., of Miss., says: I enclose you an insect picked up what it is. Answer: The "insect" appears to be the puparium of a gay
colored fly, whose "at tailed" larva has a long respiratory tube. The colored Ay, whose "at tailed"l
species is $A$ feroce"bardus (Say).
Differentiation of Foci.-How should the lenses of portrat camera tube be set so that the chemical focus and the light focus
will be coincildent? Can a tube that has these fociat different distances be remedied? And how? I noticed a few days since'that, in taking a view
of a house with a portrait lens, using a stop three inches in diameter, when the plate was developed there was a circle in the center of about posit of silver than over the rest of the plate. How can this be prevent-
ed? Is there any combination of lenses that will present the inage on
the plate in the camera in its true position, that is, that will form a nonreversed picture? If so, what is the combination?-X. P. M. Answer cal focus and the light focus will coincide; if they are not truly achro matic, or are so only in name, by the:defective relations of the curves of
the filint and crown glass, they cannot possibly be made to coincide. This is entirely the business of the maker of the lenses; you cannot cor rect this by setting. All that you can do is to find out how far the chem-
fcal focusis in front of or behind tbe light focus, and when you have foor backward. In some cameras, the maker has done this by means of
difference in the position of the ground glass and the plate holder, and you may correct your camera box in.the same way. The new excellent
landscape lenses of Lindmayer of Philadelphia, and many German lenses the two foci coincide, but the picture is made in the chemical focus. The spot in the center of your picture, which you so admirably describe, is well known among photographers and called "the ghost;" it ts a common
defect in the lenses and cannot be prevented; all that you can do is to modify thingsso as to make yourghost asslight as possible. When the There are combinations for making a non-reversed picture, namely, metallic reflector (in front of your lenses, placed at an angle of $45^{\circ}$ with
the axis of your camera tube), the so-called prism with total reflection, or a mirror inside the camera box, etc. In chemistry as Scheele's green. It is an arsenite of copper, and is made
by dissolving one part ot common white arsenic (arsenious acid) and by dissolving one part of common white arsenic (arsenious acid) and
three parts ot carbonate of potassium in fourteen parts of water and add Ing the mixture to a boiling solution or The Paris green is precipitapp L. L.-F. G., of Маве.

Cleaning Instruments.-To H. O. M., query 19, page 297 -If the lacquering is badly spotted, clean it off with strong alcohol, and of flannel and alittle water, and polish off with clean chamois leather or cotton cloth and a iittle whitening, after which you might revarnish with shellac dissolved in alcohol, colored with a little dragon's blood, which
can be got from any apothecary: Soft soap, 3 ounces; sweet oil, $y$ ounce can be got from any apothecary: Soft soap, 3 ounces; sweet oil, 2, ounce
turpentine, $1 / 4$ ounce ; powdered rotten stone, 4 ounces; finest flour emerv turpentine, $1 / 4$ ounce; powdered rotten stone, 4 ounces; finest flour emerv
1 ounce ; fine powdered crocus of ahtimony, $1 / 2$ ounce. Melt the soap, oil paste, and mix well.-E. H. H., of Mass,
Concrete Walls.-T. D. D., query 13, page 297.-Boil lin seedoilover a fre for two or more hours until it forms on cooiling painted over the walls, I think you will find your trouble relieved, phe composition will form a perfect waterproof coating. In bolling the
oil take care that the fumes do not catch fre; but if they do, put a sheet oil take care that the fumes do not catch tre; but if they do, put a shee
iron or tin or a thick wet mat or piece of carpet over your pot; so shut Be provided and ready for the emergency.-E. H. H., of Mass. Bengal Signal Light.-Query 2, page 313.-A white Ben gal light, very powerful, is composed of saltpeter, 33 parts, sulph
parts, antimony, 3 parts, and slacked lime, 4 parts.-A. V., of Mass. Sulphate of Mercury.-F. G. V., query 1, páge 297, ma dissolve the metal in diluted nitric acid, and précipitate the sulphat Galfanized Iron Vessels for Milk.-W. P. T., query 7 page 297. Will find that the lactic acid in the soured milk or cream wil
act upon the zinc surface of the vessels, thus rendering the fluid poisonous. Earthen or enameled fron pans are every way better (exceptin the liability to breakage) than zinc or tin. Polished iron is not so easil acted upon as the two former metals.-E. H. H., of Mass,
Galvanized Iron Pipes.-B., query 11, page 297, would be less liable to occasion zinc polsoning if the lead and brass connections
were out of the way, for they in fact will act as the other element of galvanic battery, tho water forming the electrolyte and taking up the $z$ inc. The amount of action of the water upon the zinc will depend partly the water by the zinc will be almost impossible, but constant changing
will lessen the evil. Antidote for zinc poisoning: Clear the stomach by an emetic the Antiote fortion in ten grain doses.-E. H. H., of Mass,
Preparing Fabrics for Paint.-To F. O. L., query 21 page 208.-Paint the cloth with thin flour paste, and allow to dry. I Grove's Battery.-Query 10, page 313.-The zinc cylin ders of a Grove's battery should be amalgamated with mercury. All
thatis necessary is to clean them by immersing them in dilute sulphuric that is necessary is to coean them by immersing them in dilute sulphuri
acid of the same proportion as that used in the battery (eight parts water and one of acid is good), and then pour over them mercury, keeping them constantly wet with the acid. Sometimes a little rubbing with
coarse rag will hasten the amalgamation. When once coated, a little mercury kept in the cup with the zinc will keep them bright. The zin cylnder should have about twenty-four times the area of the platinum. J. C. G. Will need for his arrangement a strip of platinum 8 inches lon
and $3 /$ inch wide, if his acid touches only the inside of the $z$ inc, and twic as wide if it touches both sides. To give needed strength, however, the platinum should be at least $\%$ inch wide, and should extend nearly to the bottom of the porous cup. The porous cup should be as large as can b
Preservation of Telegraph Poles.-H. R. R., query 9 page 313.-I have for some time been paying attention to this; and my opinionds that nether tarring nor charring them is done with satisfactory results. The best Toode of preserving them is coating their ends with
soluble glass. This method is not very expensive, and is proof againgt worms, as they cannot make their way through the glass; it is also proo against the decomposition of wood by moisture, as soluble glass does no melt at any ordinary temperature. If H. R. R. were to try this method Ithink he would find it answer. Any ch
preparing soluble glass.-C. A. s., of 0 .
trove's Battery.-Query 10, page 313.-J. C. G. is entirely wrong in supposing that the amalgamated zinc for a Grove battery is
mixture of zinc and mercury. The zinc is merely coated with mercury mixture of zinc and mercury. The zinc is merely coated with mercury
to prevent rapid and uneven action of the acid upon the zinc. Plunge the zinc in a bath of dilute sulphuric acid, dip it into a vessel containing mercury and water-so that the mercury may cover the whole zine; then,
with a stiff brush remove all superfuous mercury. "This is amalgamate With a stiff brush remove all superfluous mercury. . This is amalgamated
zinc. His zinc cylinder should be open at both ends. The porous cup need not be larger than twoinchesin diameter for the size of zinc named. Platinum a quarter of an inch wide, thick as ordinary m ke paper, H., of Ala.

## 

Dader thes headino we shall puelish
nent home and forsion vatents.
Apparatus for suple inso Locomotive Tenders with Forl.-Hent
Land, of gav:andyhe, Miss.-This consists of a platform or frame . hand, of canch or coal is placed. To its lower side, at or near its centra line, is pivoted the upper end of a frame, by which the platform is sup.
ported. The lower end of this frame is pivoted to a base frame or other ported. The lower end of this frame is pivoted to a base frame or other suitable supports. Inclined rods are pivoted to the forward part of the
lower side of the platform. The lower ends of the inclined rods are pivoted to the base frame, a little in the rear of the lower end of the
pivoted frame, so as, when the frame and platform are swung forward, inp or incline the platiorm and discharge the fuel into the tender. A strong pright frame is rigidly attached to the base frame just in the rear of the winging frame, and by various appliances attached to the former the paced at the side of the railroad track in such a position that the fuel may bedischarged from the platform directly into the telder standing upon the track.
Piorlif and Crofer Stand.-Thomas Leach, Taunton, Mass.- 1 st. Thein-
vention consists in a new pickle stand, provided with a hollow seat f pickle vessels, attached to pickle stand, provided with a also with a horizontal flange on which is fastened a vertical handle tha
traddles said hollow seat diametrically; 2ndly, in extending the sat traddles said hollow seat diametrically; 2ndly, in extending the sal
horizontal flange, and recessing the extension so as to form a compound pickle and cruet stand; and 3rdly, in combining, in one article of table rurniure, a pickle and cruet stand.
Washing Machink.-William G. Knowles, Jamestown, R.I. - This inven tion relates to a new washing machine in which a reciprocating slotted washboard $s$ arranged to move on spring ralls under and against irictio in the washboard into the suds, and are drawn through the washing the slo us by the friction exerted against the rollers by the reciprocating wash oards.
Window Blind SLat.-Alois Kohler, Williamsburg, N. Y.-This inven
tion relates to the peculiar form of the slat. It may be made with any suit tion relates to the peculiar form of the slat. It may be made with any suit able molding upon its face. In cross section, the lower side of the slat pre-
sents a curved groove in front aud a projection or heel in the rear; the and will ft into each other when the slats are placed one over the othe forming a perfect joint.
 or river steamers, canal boats, and other vessels, and has for its object to prevent their sinking in case of a dangerous leak, and to cause their sub. mersion in case of fre. It consists in the arrangement of vertical slides, which extend through the bottom of the vessel and are let down to serve as supportsfor the same on the ground whenever there is danger of the
vessel sinking, also in the combination of these elevators with gates vessel sinking, also in the combination of these elevators with gate
which, when opened, let water into the vessel to sink it in case of fire. armorrd Can.-William F. Thompson, of Toledo, Ohio. -This improve ment consists, first, in armoring sheet metal cans with wood to protect the
thin metal from injury in handling and ansporting, by fastening side, ottom, and top pieces, or boards to the can by means of clamp plates, oldered or otherwise fastened to the corners of the can, and the ends
bent over the edges of the boards after they are applied, whereby much is aved in the cost of the wood case or protecting armor, which up to this saved in the cost of the wood case or protecting armor, which up to this.
time, has been first made into a box, into which the can was placed and in-
closed fis a cover ; and, secondly, it consists of an arrangement of the zzzle in one corner of the can, which is sloped off to make anging it so that the top will not rise higher tha r
Tobacoo Drying Hovsk.-John C. Streeter, of Hinsdale, N. H. -This in vention relates to the process of drying tobacco and other articles, and
consists in the provision made for suspending the article to be dried and in the use of metallic supports, connected with the building frame. Th uspending wire is bent round the rod so as to enclose it in a loop, and the wo ends of the wire are passed around the tobacco and again bent at an laced at proper distances apart, and other, so that they support the framein each direction.
Grain Sorern.-David D. Schamp, of Pleasant Run, N. J.-This inven Hon has for its object to improve the construction of the delivery spouts of
thrashers and grain separators, so as to more thoroughly clean the grain efore it is delivered into the receiving box or half bushel, and which shal be simple in construction and convenient in use. The spout is made with
ganges along the upper edges of its sides to adapt it to be slipped into a roove formed for it the shoe of the m and with the shoe. The bottom of the spout is made of wire cloth or pe orated sheet metal, to form a screen through which the dust and fine seed oay escape, while the grain passes down the screen and escapes from the outer end of the spout. Il whe spout were left open, the part of the grain emedy this a plate is placed, in the upper part of the spout near its lowe end, to receive the grain and guide it to the upper part of the screen, so that it may pass over a longer portion of the screen. The outer end of the spout is extended forteeninches and a a screen formed in or altached to the through, whule the straws, heads, etc., which may be in the grain will slide over the screen and will drop from the outer end of the spout.
Baling Press.-Commodore J. Barney, of Rockport, Ind.-This inven tion has for itsobject to furnish an improved press for baling hay, straw,
cotton, and other substances required to be put up in bales, and which shall be simple in construchoa, convenlent io use, and enective in operation, nabling the work to be done much quicker and consequently much chea r than when an ordinary beling press is used. The upright frames, whic the doors for the removal of the bale are placed. Two followers work up
and down toward and from each other in the baling box. $\cdot$ To their oute ides are $p$ which are pivoted to levers. The outer ends of these levers are pivoted ends are connected by a rope arranged with suitable machinery for pressing them. By this arrangement the levers operate upon the followers in the manner of a toggle joint, the bars, coming nearer and nearer to a ver-
tical position, and thus acting with more and more power $\alpha$ the baile be tical position, and thus acting with
comes more and more compressed
Punce and dir for Finibeing Uybralla Staff Collar.-Robert the hand labor now required to finish umbrella staff collars in the lathe and to secure their being made to a standard size, which is accomplished by anishing the exterior of the casting in dies, and sizing the hole by means of a painted mandrel rising through the lower die.
Spade.-Teremy Lake and Andrew W. Elliott, of North Easton, Mass.greater ease than thosenow in use. A notch is cut into the blade of the and ter U . Its lower cutting edges may be slightly rounded, or stralght. A spade thus made will, with less difficulty, cut through the ground, and will rnmble the soil with less effort than the full bladed spades, though it hax Solen Soldrring TooL.-John A. Tillery and Samuel A. Ewalt, Baltimore,
Md.-The invention consists: 1st, in making a soldering tool adjustable radially irom a hinge joint, in order to adapt the same tool to be used with ying size; 2adly, in moving said tool out and in, and fixing it at the same time, at any point of adjustment, by means of a loop headed
screw through which passes the holder. The advantages of thistool consist: 1 1st, in the arc shape by which it can be seen at a glance what point has
been left unsoldered or imperfectly soldered. 2ndly, in the facility with been left unsoldered or imperfectly soldered. 2ndly, in the facility with
which such defects can be remedied without removing the tool; 3dly in the option that it allows of using either wire solder, or the cheaper drop solder, thereby saving one half the expense.
Illuminator.-Chas. F. Jacobsen, New York city.-The invention consists in combining glass plates, a flanged metallic case, a tanged metallic
im, two concave reflectors and a pair of burners, so as to form a new rim, two concave reflectors and a pair of burners; so as to form a new
double night sign. By this construction the name of the business man and is special occupation or class of goods are displayed with great clearness nd te
 which connects the axle with the seed sllde of a plafter, by which the number of hills planted may be indicated on a dial with which it is combined. This implement is quite ingenious, but cannot be fully explained without an engraving and lengthy descriptio
Cotron Plantzr.-John A. Pope and William L. D. Pope, of Charlotte, planting cotton seed, distributing planting cotton seed, distributing guano or other fne fertilizers, which
shall be simple in construction, convenient in use, and effective in opera. tion. Its principal features are the combination of a perforated platform, plates and feeder within the hopper, together with a stirrer, by which the
seed or fertilizer is stirred up and made to pass through the holes in the plates on its way to the discharge spout. The seed is covered by adjustable covering plows.
Reversible Shade Fixture. - William b. Hazzard, of Philadelphia, Pa. neither directis invention isto permit the adjustment of window shades window wherever it may be required. The invention is more particularly useful for photographic establishments, hothouses, etc., where the rays of light are to be controlled with great exactness. It consists in the arrange-
ment of a sliding spring roller supported on wire tracks and connected with a cord, whereby it can be drawn up, while the lower and of the shade has another cord, whereby it can be drawn down.
Calenndar.-Robert C. Ogden, of New York city.-Thls invention relates fastened together hand to the back, so that any onemonth may be exhibited to view by dropping that or another leaf, sheet, or tablet down; and it consists in forming the hinge or connectingdevice of a single wire, bent at the ends into loops of a peculiar torm standing at right angles to the wire. By hung up, and the sheets can be attached and moved much easier than it plain rings were used.

