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## Whingex

J.P.S. can utilize old rubber as described on p.369,vol. 26. Galvanizing castings is described on $p$. 346, vol. 31. $-\boldsymbol{\Lambda}$. L. and others will tind a recipe for
blackboard composition on p. 91, vol. $3 \mathrm{C} .-\mathrm{S}$. H. will find a formula for proportioning cone pulleys on p. 100, vol. $25 .-$ F. P. can keep moths out of clothing by the process given on p. 225, vol. 27. Inkstains can be removed by the method given on
p. 139, vol. 29.-T. \& L. will find directions for purifying rancid butter on p. 119, vol. 30.-J. D. V. Jr. 331 , va recipe for bronzing brass and copper on p. 331 , vol. 29.-S. M. can bleach cane juice for sugar
by the method given on p. $3 \pi$, vol. $311 .-0$. K. will find directions for making rubber stamps on p. 156,
vol. 31.-S. A. T. can fasten paper to brass by painting the brass with oil paint,letting it dry, and using ceadily run into plaster molds. A recipe for a is dering liquid is given on p .43 , vol. $31 \cdots$ W.S.will find directions for galvanizing iron on p . 12 , yol. 346 . Rubber can be fastened to wood with glue. $-\mathrm{T} . \mathrm{R}$. B. will find a recipe for transparent varnish on $p$.
11 , vol. 31 , which will do for making eloth airproof 11, vol. 31, which will do for making eloth airproof. -S. M. E. will find a formula for the dimensions of
a safety valve on p. 10ĩ, vol. 31.-A. E. A. can each skeletonized laves by the process given on ing wood by steaming on p. 26, vol. 31.- $\Lambda$. M. J. and others are informed that no preventive for boiler scale can be recommended unless the nature
of the mineral deposit is known.- W. M. ought not try and remove canceling ink from postage stamps, as it may lead to fraud.-J. F. H. will find a recipe for Babbitt metal on p. 364, vol. 29.-E.T. D. will find a description of artificial pearls on p.
250 , vol. 33.-J. H. R. should consult a dictionary as to the meaning of words in common use. $-\Lambda$. $\Lambda$. will find a rule for calculating gears on p. 187, vol. 29.-L. K. Y. will find full descriptions of solder of all kinds in our last three issues.-P. S. can join his
water spouts with waterproof glue; see p. 91, (1) S
(1) S. A. T. asks: How can I cement a
orcelain mortar? A. Use a mixture of black japan varnish and white lead.
(2) W. B. B. asks: Having a good violin, to improve it I removed all polish and paint with al-
cohol, which spoilt the tone. How can I restore cohol, which spoilt the tone. How can I restore
it? $\Lambda$. Take coarsely powdered copal and glass, each 4 oaza., alcohol ( 64 over proof) 1 pint, camphor ooz; heat in a water bath, stirring frequently
nntil the solutionis complete. When cold, decant the clear portion. This is an excellent varnish for any musical instrument of the violin species.
(3) J. J. D. asks: What is meant by slack coal? A. Coal dust. The term is commonly ap-
plied to the dust formed in cutting out coal in the mine, which is frequently piled in heaps at the pit's mouth.
(4) F. O. asks: What metal is best for making candy moldis?
quickly. A. Tin molds are commonly used. Dust hem with powdered sugar to prevent the adher ence of the candy.
(5) C. F. F. asks: Which is the front side of
(6) D. . K. asks: How can I prepare coach varnish? $\boldsymbol{\Lambda}$. Fuse 8 lbs. fine $\Delta$ frican gum copal, quite stringy. Mix with $3 \%$ gallonsturpentine, and tralne
(7) P. H. K. asks: Can you give me a rule
to measure corn in a crib? of the corn in inches by the length and width of
the crib in inches, and divide by $2150 \cdot 42$. The quothe crib in inches, and divide by $2150 \cdot 42$. The quo
(8) M. A. B. says: The best thing for ta-
king dirt andgrease off the hands withoutinjury is bicarbonate of soda, used in place of soap.
(9) I. R. M. asks: How can I calculate the speed of a train of pulleys? $\boldsymbol{\Lambda}$. Proceed as in vul gar fractions, placing the number of the revolutions of the prime mover as the numerator of a
compound fraction, and the diameter of cach of thedriving whecls in inches also as numerators and the diameters of each of the pulleys in ionators, and proceed by cancelation.
(10) A.E. S. asks: How can I paste newspaper clippings ints a scrap book without the arabic musilage with some refined sugar dissolved in it.
(11) A. B. L. asks : How can I make a washing crystal? A. The soda ash and soda crystals of not make them on a small scale to advantage.
(12) C. asks: Is there an animal general$y$ known as the sea otter? $\boldsymbol{\Lambda}$. Yes. It is found in the Northern Pacific.
(13) S. says: I read an article on the beneficial effects of glycerin in boilcrs. I tried the ex-
periment, and the result was the reverse of beneperiment, and the result was the reverse of bene-
ficial. We got rid of most of the earthy matter by using a surface blower, but the glycerin had the effect of depositing the carthy matter in a har the boiler. $\Lambda$. The use of glyeerin, as a solvent for the salts in impure matters, has been recommended for cleaning woolen fabrics, but your expcriment of its use in steam boilers is the first of which we
have heard. $I t$ is possible that, by blowing off have heard. It is possible that, by blowing off
from the bottom, you might get rid of the deposit. We shall be glad to hear further on this matter from any of our readers who can communicate

## (14) J. K ask

(14) J. K. asks: What constitutes a yard of (1.5) J. B. S. asks: What is the best way of polish
nish.
$(16)$
(16) J. H. asks: Is the Pacific Occan higher than the $\Delta$ tlantic at the point whereit is proposed o connect them by a canal? $\mathbf{\Lambda}$. No.
(17) W. R. B. says: In Dick's " Practical Astronomer" is a description of Rogers' achromaa small compound lens of flint and crown glass in a small part of the cone of rays of a large crown glass objective, and thus correcting the rays, enabling a person to use a large crown glass objec-
tive and making it achromatic by the small compound one. 1. I have a good crown glass double convex lens, of 5 inches diameter and about 100 nebes ocus. What should be the size, shape, and
focus of each of the lenses forming the compound one,to produce the proper correction for the above mentioned lens? A. Plano concave of double us, and flint, of $24 / 4$ ine'res diameter, $3 \%$ inches radius, and plano-convex of plate glass same dimen-
sions. $2 . \Delta t$ what distance should the given compound lens be placed from the object glass? $A$ bout 60 inches. 3. With the compound lens adjusted, what would be the entire focus of the in acquainted with any telescope on the above plan, and is it satisfactory? A. An inch dialyte, by
(18) S. S. asks: If the daily motion of the carth were to cease, would all the loosc bodics n the surface fall into space? $\boldsymbol{\Lambda}$. No.
(19) J. C. C. asks: Where is the best place atmosphere? A. If it is desired to know the temperatire of the surrounding atmosphere, the instrument should be placed in some shady spot, protected alike from the direct rays of the sun and diation of the sun, the instrument itsclf will become overbeated (the materials of which it is composed being better absorbers than the surrounding air), and the consequence will be that the thermometer will indicate the temperature of the materi-
als composing it and not that of the air. The indications of cheap thermometers are never abso
(20) P. E. R. asks : How can I cement glass together, to withstand the action of electro-plating
solutions? $\Lambda$. Try a solution of shellac in alcohol, solutions? N . Try a solution of shellac in alcohol
(21) G. A. N. says: I want a small engine, to run a sewing machine or snall lathe. Would a $34 \times 11 / 2$ inches cylinder, 20 or 33 lbs . pressure, and
300 or 400 revolutions per minute, be large enough 30 or 400 revolutions per mi
for the purpose? A. Yes.
(22) II. S. P. asks: 1. What would be the inches bore by 6 inches stroke, running at 300 ntrokes per minute, with $\% 0 \mathrm{lbs}$. of steam? $\boldsymbol{\Lambda}$. It would develope from 4 or 5 horsepower. 2. Would
it do to run a circular sav 15 inches in diamete through two inch oak plank? $\Lambda$. Yes. 3. How large a boiler would this engine require? $\Lambda$. Make boiler with 60 or 70 square fect of heating surface. 4. Will an upright boiler last as long as a horizon-
tal one? A. Upright boilers, when well made, are quite serviceable.
(23) P. B. asks: 1. What is the average great variety, an average example being somewhat great variety, an average example being somewhat
as follows: Weight, 60,000 lbs. 2. What is the diameter of the drive wheels? $\Lambda$. Five feet. 3.What is the length of the stroke? A. Two feet. 4. What is the diameter of the cylinder? A.Sixteen inches
5. What is the weight of an averagefreight car? . Eight tuns.
(24) IV. P. asks: 1. What size of eng ine
ould it take to run a boat 15 feet long at the rate of 8 miles per hour? $\Lambda$. Make the cylinder $2 \% / 2 x$. 2. I have a boiler 36 inches high $x 15$ inches diameter, carrying frou 40 lbs. to 50 lbs. pressure per
square inch. Would it be large enough? $A$. The square inch. Would it be large
boiler is too small for the speed.
(2̃) H. J. asks: 1. Will an engine having a cylinder $3 \times 6$ inches, steam pressure of 60 lbs., run-
ning at 3010 revolutions per minute, with a cut-otf at $3 / 3$ stroke, do to run a circular saw 6 inches in diameter with? The ty whecl of the engine is $2 \dagger$ inches, and the mandrel pulley 6 inches, in diame-
ter. $\Lambda$. The engine is quite large enough. $2 . M_{y}$ ter. $\Lambda$. The engine is quite large enough. 2. My boiler is 13 inches in diameter by 5 feet in length, plain cylinder in form. Is it big enough? A. No.
What will take the stains of varnish or paint off marble? A Try ap arbic: A. Try a
Where is the best place to put exhaust steam in smoke stack, at top or bottom? A. The top.
(196) S.E. P. asks: How can I remore rus piece of wood. This also answers S.A.T.
(27) W. W. says: I have a small upright engine, cylinder 4 inches diameter by 6 inches
stroke. Would it do to run an ordinary row boat: How fast would she go, and what would be the best kind of propeller wheel to use? What kind of boiler would be best? Would it be necessary to
have a counterbalance on the crank? A. Your engine is large enough for a boat $2 \overline{5}$ feet long, with a propeller 30 inches in diameter and a boiler from
30 to 35 inches in diameter. Some slight counterbalance may be fut on, but it is not a matter of any great importance.
(28) G. asks: What amount of sulphuric acid will it require to entirely dissolve 1 lb . zinc? A. For its complete conversion into sulphate of zine, 1 lb . of pure zine requires $11 / 2 \mathrm{lbs}$. of sul-
phuric acid of specificgravity $1.94=6.5^{\circ}$ Bauméat $66^{\circ}$ Fah. 2. What volume of bydrogen gas will the mixture give off? A. One pound of pure zine, by
its reaction with hydrated sulphuric acid, will liberate about 40 gallons of hydrogen.
(29) C. S. R. asks: What is the cause of the bursting of waty. There las wo such aecidents oc circulating pipes, so that the stearn which was formed could not escape. Under such circum formed could not escape. ender such circum-
stances, fire should never be permitted in a range (30) K. K. asks : What would be the difference between the pressure necessary to explode a steam boiler from the inside, and that necessary to
crush or flatten it from the outside? $\boldsymbol{\Lambda}$. In the crush or flatten it from the outside? $\Lambda$. In the
case of a wrought iron boiler, perfectly cylindricase of a wrought iron boiler, perfectly cylindri-
cal, the internal pressure that would rupture it is cal, the internal pressure that would rupture it is
thickness in inches<tensile strength in lbs. per crushing force is: $111,000 \times$ (thickness in externa diancter in inches $\times$ length in fect.
(31) B. R. asks: Can ice lee torn off a dam by powder? The ice is 18 inches thick and the
water 12 or 13 feet deep. A. We advise you not to attempt this kind of blasting, unless you have had some previous experience.
(32) J. H. asks: 1. ỉow are red mortar and black mortar made, for laying face bricks in? $\Lambda$. Mortar is made red by mixing therewith a certain black, but neither is sufficiently permanent to lo satisfactory. 2. Is fresh water better than salt fo making mortar in winter? A. Pure water is bet any weather
(33) H. says: The atmosphere in a certain building is raised from $0^{\circ}$ to $\pi 5^{\circ}$ by water at $212^{\circ}$,
passing through coils of iron pipc. Suppose this passing through coils of iron pipc. Suppose this
operation should be reversed, and an attempt made to cool the atmosphere at $90^{\circ}$ by cold water at a temperature of $33^{\circ}$, provided the circulation were kept up, to what degree of temperature could the
atmosphere be reduced? $\boldsymbol{A}$. This question canot be answered except by experiment
(34) J. S. asks: How much water can bo boiled away in 10 hours in a vat, 5 by 12 fect, with $11 / 4$ inch pipes laid close together over the bottom
of the vat, with steam at 60 or $\pi 0$ lbs. per inch? $A$. It will depend upon the arrangement whether you have steam culate to evaporate $\frac{3}{3}$ of a gallon of watcr in the vat for
boiler.
(35) S. G. says: Suppose a water tank, $8 \times 10$ $x 5$ fect deep, is placed on top of a house, 1, co 0 feet from an engine house, what kind of an indicator the tank? $\boldsymbol{M}$. Put up a stand pipe, say one inch in diameter, in the engine house, and connect it a the tank. Enlarge the running from the pump to on a level with the tank, so as to introduce a float connect this float by a cord over a pulley, with an indicator in the engine room below. As the wate in this pipe will stand higher, when pumping, than in the tank, it will be necessary to stop the pump find the true hight.
(36) F. S. says : 1. Please give me a rule for finding the strength of a boiler when diameter of shell and thickness of iron are given. A. For a
ingle riveted iron boiler, the safe working strain in pounds per square inch, may be found by multiing the product by in inches by 1, , 0 , and aiviincbes. Would it make any diftere boiler in working of an engine which end of the boiler I took the steam from, or at which end I let in the feed water? A. Ordinarily, no
Are large mill saws tempered after they are
made? A. Yes.
(i3) S. D. K. cays: We have a large hall, built of brick, 30 fect square and 20 feet high. The reverberation is so great as to make it very disa-
greeable to speak in, causing confusion of sound. greeable to speak in, causing confision of sound.
What is the best remedy? Will wires do, and how

