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$\mathrm{W}_{\mathrm{m}}$. Sellers \& Co., Phila., have intro
Wm. Sellers \& Co., Phila., have introduced a new Dead Pulleys, that stop the running of Loose Pulleys and Belts, taking the strain from Line Shaft when MaFor Sale Cheap.--One Horizontal Engine, 18 in. x 36 n.; one plant Hoisting Engines, four drums; and two
H. P. Vertical Engines. Apply to $W \mathrm{~m}$. Taylor \&

##  <br> (1) W. M. J. asks: 1. Are the white fum

 ially condensed. 2 . Is there any kind of steam visible there any kind of stcam invisible? A. Dry steam is(2) F. N. Y. asks: 1. Can I get sufficient depth by the bichromate and gelatin process to make a could for making pictures similar to lamp shades made reelain? A. Yes.
(3) J. N. B. writes : I have some small castings (iron), and there are some blowholes in them. Can you inform me how I can fill them, and what with p A.
It would be best to drill out the holes and plug them It would be best to drill out the holes and plug the
with iron; howevcr, you may plug them with a namalga of tin, zinc, and mercury, or with fusible metal.
(4) J. P. W. asks how to make harness soap. I want to use soap and put in scmething to make it leather. I have experimented some with black, but the lye in the soap has a badeffect on it and turns it out more of a brown color. A. Resin soap, 2 lbs.; sperm
oill, 3 l lb . Digest the soap with a quantity of boiling water just suffictent to thoroughly soften it, when it may be triturated with the warm oil and a sufficient quantity of fine boneblack until a uniform paste is ob-
tained. ( 5 ) E. V. asks: 1. Is stenography a good business for these times? A. Stenography is never a
good business except to a few who are by nature spegood business except to a few who are by nature spe-
cially fitted for it. 2. What is the largest number of
words that has been written in a minute? A. 200 words per minute may bc reported, but not fully written out. 50 to 250 words.
In answer to your last query we advise you to consult
(6) P. C. M. asks how a schoolroom can be warmed comfortably. A. Cause the fresh air supply to enter under the stoves; close all openings for the escape of hot air from the upper part of the room; ventilate
by means of openings in the floor, the escape pipes by means of openings in the foor, the escape pipes
leading to the chimneys or through them, to secure an up draught.
(7) C. F. L. asks why the heating of an iron sphere to ncarly the melting point (as noted in jour paper of Septem. A. It is only by the gradation of light and highly heated sphere shows no such gradations.
(8) J. G. S. writes : I have some wine that is too sour for wine and not sour enough for vinegar.
What shall 1 do to it to make it sour? A. The souring of wine is due to the conversion of the alcohol into acetic acid. This is very common, and may result from too small a proportion of alcohol, too high a tempera-
ture of the cellars, or exposure to the atmosphere. The wint, if too far soured, is fit only for making vinegar but slight cascs can be remedied by an addition of sugar. To convert your wine into vinegar the wine sbould not contain more than 10, nor less than 3 pe
 $36^{\circ}$. nor below $10^{\circ} \mathrm{C}$. A plentiful supply of air to the
wine and an intimate contact between the two. The ad dition of a small amount of vincgar, or still better some of the so-called vinegar plant (mother) Mycoder $m a$ aceti. This method is very generally employed $\mathrm{f}^{\prime}$ ) making wine vinegar. Geıerally a " souring" vessel or mother" vessel, made of oak wood, is employed; this boiling water, and when thereby the extractive matter of the wood is exhausted, the veasel is filled with boil ing hot vinegar; when the wood is soaked with vinegar,
there is poured into the vessel 20 gallons of wine, and after eight days again 2 gallons of vine are added and this operation continued wrekly until the vessel is two thirds filled. About fourteen days afterthe last ad dition of the wine the whole of the contents will have become converted into vinegar. Half this quantity is
withdrawn from the souring vessel and carried to the store; to the remainder more wine is added, and the preparation of vinegar continued uninterruptedly.
(9) F. D. W. asks for a preparation that ach feathers and horsehair without injuring them A. You may tryexposing them the vapor of burning
(10) J. G. E. asks: What ingredients do they use in pressing plugs of smoking and chewing to
bacco to make the leaves adhere together, and also to
favor it? A. Molasses, licorice paste, glycerin, salt,
and anise are frequently employed
and anise are frequently employed.
What sized cylinder and what sized boiler would be
required to drive a 6 crew 16 inches pressure of steam at 100 lbs . to the square inch, and the speed she would be likely to run at? A. Cylinder $21 / 2 \times 4$, boiler 20 inches diameter, 3 feet high, revolu tions 300 to 400
(11) Constant Reader: What is the most suitabie metal for working upon a foot lathe by hand $\boldsymbol{q}$ I
wish something which can be turned and bored with ease. Can you tell me of an alloy which will meltata moderately low temperature, butwouldbe tough enough to be turned down without clogging on a small foot
lathe? Would this alloy be hard enough to be used for making the cylinder and side valves of a small engine the cylinder being about 2 x 4 inches. If not, for what parts could it be used? Could you give me the composition of several alloys of different degrees of hardness What should be the size of boiler, and what pressure he cylinder of which is of the size above named? What is the pitch of a propeller? In what proportion is it to the diameter? Is therc any rule by which to calculate the diameter and width of llades, etc., of a propeller,
the length, width, and draught of the boat being known? Is there any by which the proper depth of a small steam launch can be calculated, the length and width being given? A.Brass would be the best alloy for the purpose. You can make a builer 10 in . in dameter and 15 in . high, and carry a steam pressure of 30 Ibs. per square
inch. The pitch ol times the diameter. The other rules you desire could not be given in this limited space, but you can propor-
tion small screws and hulls from samples of larger tion small screws and hulls from samples of larger
ones, many of which have been described in our col-
(12) N. E. S.-The washing compound con
ists chiefly of eal soda, lime, and resin soap.
(13) J. B. F. writes: At our factory we are using soft iron for all the castings we make, but find
we will have to use some very much harder than we have been able to produce by adding a small quantity to what is in the furnace after ordinary work is poured. I Lave thought we might accomplish what we wish by hardening the iron in the ladle. Is there any way in
which this can be done? A. We know of nothing that
(14) We the desired result in the manner suggested
(14) W. P. K. asks: 1. Is spun glass flex iblep A. Yes. 2. How fine can it be madef A. The
thrcads are often drawn as fineas a single hair. 3.What are its constituentsp A. Of a soft glass variously col
ored by metallic oxides. The glass without the coloring matter usually has the composition: Silica 75 , pot abh 5 , soda 10 , lime 10 .
(15) D. M. P. asks if there are not fire en without the aid of horses? If so, whowas the invento hereof, and wben did they frst come in voguc; moreover, are they in use at the present time? A. There are, we believe, at preseat four self-propelling steam fire engines in use in this city. They were built by the Amoskeag Manufacturing Company, but tbe principal de-
tails of the self-propeling apparatus have long been ails of the self-propelling apparatus have
(16) R. W. S. asks: 1. Has frost any effect upon epiral springs that are in constant use out of doors?
A. Tuey sometimes become more brittle. 2. What is the best material for springs for hard usages A. Steel . Which is the best spring to use where the diameter is of large wire wound small or a double spring of smaller wire, and which is apt to set the most P A. Thcre is observed in the two cases
(17) V. E. C. writes: Can you tell me what metal and at what heat it will melt that will allow
me to handle it in the melted state? A. The experiment is often performed with mercury, and with Rose's fusible metal-lead 3 parts, tin 2 parts, bismuth 5 parts
melts at $196^{\circ}$ Fah.
(18) J. C. C. asks: Is there a process to retore the steel fire sheets of oil stills after crystallization by ove
think not.
(19) E. M. asks where be can learn the prouires casting rubber type and stereotype, and if it re
ne AMerican Supplem ent.
(20) C. A. P. asks: I have a meerscheum pipe, and by accident the stem broke off close to the
owl. What is the best cement to fasten it together A. Slake pure caustic lime with a little boiling water, and mix the dry powder with the white of an egg to
orm a thin paste. This should be used in small quan orm a thin paste. This should be used in small quanty, immewately, as it soon set
(21) A. M.: What is the easiest and most effcacious way to destroy roaches (Blatta)? I have
tried arsenic, poke root, and borax to no effect. A. A tried arsenic, poke root, and borax to no effect. A. A a clo: h to the woodwork, and injected into the cracks in the vicinity of their hiding places, is usually quite ef
(22) H. S. asks: Can a body be petrificd by laying the same in a solution of silicate of soda? Or con entirely petrify the whole body? A. We believe esperiments in this direction have
essfu
Minerals, etc.-Specimens have been received from the following correspondents, and examined, with the results stated
J. B. W.-Green trap containing marcasite-iron sul-
hide -W. M.-An indurated clay containing much sand, iron oxide, and lime.-T. F.-It is magnetitemagnetic oxide of iron, loadstone.-W. S -Not infusorial earth. Consists of lime, carbonate silica, and nuch organic matter. The sample contains a little pot ash and traces of phosphoric acid. The material may
prove of some valne as a fertilizer.-H. S. Sillicious
clay containing much irnn sulphide. Js not necessarily
idicative of the proxinity of metallic ores or coal.

## COMMUNICATIONS RECEIVED.

 The Editur ur tuc scientipic Aserican acknowledgeswith much pleasure the receipt of original papers and contributions on the following subjects:
The Consumption of Natural Gas. By T. B. Mcc. Jupiter. By R D. S.

## [OFFICIAL. 1

INDEX OF INVENTIONS
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 [Those marked (r) are reissued patents.]A complete copy of any patent in the annexed list, including both the specifcations and drawings, will be
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|  |  | Bottle stopper fastener, T. H. Shahan. .... 208,200

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rake shoe clamp, c. Helnen
 Budge truss, G. W. Cooley....
Burklar alarm, J. K. Johnston


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Can for oil and other liqui
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Cultivator. F. M. Cropp....
Cultivator, cotton.IV. W. Harvey.
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Door Recurer, W. A. Ingals.
Dredge bottle, iv. Sellers.
Dredke bottle, W. Sellers......................
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Elevator, M. V. B. Wright.
Engine, dummy, J. P. Thomas
Eyeleting machine, W oodward
Felting machine, W. Keenan...
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Fence, portable, w. McLaughlln
Filter, J. \& R. Bean..
Firearm, breech-loading, C. E. \& R. Green Firearm, magazine, F. W. Tiesing.
Fire extingursher, car stove, P. P. Fire extinguisher, car stove, P. P. Quackenboss
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Fruit picker, G. C. Hawkins.
Furnace, gas retort,
Furnace, hot air, J. W. Crary (r).
Furnace, steam boiler, C. D. Smi
Furnace, steam bo.Ner, C
Gas regulator, J . Adams
Gas retorts, $\mathbf{J}$. Slade (r)
Gas retorts, J. Slade (r) .......
Governor for engines, B. Brazelle.
Governor, steam engine, B. Br
Grain binder, J. F. Appleby. ..
Grain separator, A. J. Humphrey
Grate, hot air, A. H. Buckhout
Grate, hot air, A. H. Buckhou
Grate, shaking, A. McDonald. Gun. machine, F. E. Schultze... Gun, spring air, C. Herzfeldt.Jr.
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