## Fusiness and zersonal.

 The Charge for Ineertion under then nead s 81 a 1 une.

 C. C. Tully \& Co...s5 Dey st., New York.
 Wanted-A Eentleman capable of assuming the Amert can Engitieer, Batumore, Md.
Ame. K. D. Elevator-Send description to C. H.
Smith, Madison, Ind. Wanted-2nd hand Matcher. C. Devilbiss, Shells-
burg, Iowa.
 mostly engine and mill work. References required.
Apply to P. O. Box 89, Galt, ontario, Canada.
During the past seven years, we have been adverDuring the past seven years, we have been adver-
tising constantly, and at times very largely, for Mesers tising constantly, and at times very largely, for Messrs.
Geo. P. Rowell \& Co., Advertising Agents, No. . P1 Park
Row, New York, and have found them prompt, reliable, and honorable in all their business transactions. While trons, they are fair with publishers. Such frms succeed
best in the end, as Messrs. Rowell \& Co. have fully aem-onstrated.- [8t. Cloud (Minn.) Journal.]

## 





 $\$ 90 ; 16 \mathrm{in} ., 12 \mathrm{in} .$, and 15 in . Westcott Chucks, $\$ 25, \$ 12$,
and $\$ 50 ;$ Power Trip Hammer, 7 ft. helve, $\$ 150$. For full
descriptive lists,address Forsaith \& Co., Manchester, N.H.

 Engines and Boilers: One upright Chubbuck Engine, 50
h.p.. $\$ 1,400 ; 80 \mathrm{~h} . \mathrm{p}$. hor. Boiler, 81,$00 ; 45 \mathrm{~h} . \mathrm{p}$. hor.
Boiler, $\$ 700 ; 20 \mathrm{h.p}$. up. Boiler, $\$ 225 ; 12 \mathrm{~h} . \mathrm{p}$. up. Boiler,
 $25 \mathrm{~h} . \mathrm{p}$. hor. Engine, $\$ 625 ; 21 / \mathrm{h}$.p. hor. Engineand Boiler,
$\$ 200 ; 3 \mathrm{~h}, \mathrm{p}$. Roper or Hot Air Enine, $\$ 250,1 \mathrm{in}$. Jodson
Governor, $\$ 19$. For full descriptivelist, address Forsaith WCo., Manchester, N. H.
Wood-Working Machinery, 2'd hand, for Sale,
good order: 25 ft. CIrcular Saw Mill, set works, 3 saws,

 $\$ 240 ; 24 \mathrm{in}$. Planer, $8170 ; 2$ in. Planer, 875 ; Rogers No. 2
Molder, 8325 ; No 3,24 in. Planer and Matcher, $\$ 000$ New


 Iron Screw Blocks, $\$ 16$ each: 49 in. Hoe inserted Tooth
Saw, $80 ;$; 49 in., 46 in., and 43 in. Saww, $\$ 35$, , 85 , and $\$ 20$. Shoe Peg Machinery, Sawing and Heading Machine,
Baldwin Pointer, Baldwin Splitter, Boring Lathe, Bleach-
tng Furnace and Big Furnace and Fan, Stam Dryer and Fixtures,
Screens-all 8740 . Sell separately, if desired. For full
lists, address Forsaith \& Co., Manchester, N. H.

 One Run Feed Stones,
Co., Manchester, N. H.
Co., Manchester, N. H.
Miscellaneous Machinery, 2'd hand, for Sale:
No. 4 Bluke Steam Pump, $\$ 2200$ No. NEarle Steam Pump,
$\$ 100 ; 5 \mathrm{ft}$. Bluke Water $\mathbf{W h e e l}$, shafting and gears, $\$ 375$; No. 4 Bluke Steam Pump, $\$ 220 ;$ No. 2 Earle Steam Pump,
$\$ 100 ; 5 \mathrm{ft}$. Bluke Water Wheel, , hatting and gears, $\$ 375$;
5 ft . Whitney Water Water Wheel, shafting and gears, 5 ft . Whitney Water Water Wheel, shafting and gears,
$\$ 40$; Wheeler, Melisk \& Co., Horse Power, with wood
sawingattachment complete, $\$ 165$; Double Emery Arbor
 Iron Pulleys, bored, turned, balanced, and set
screwed, for Sale, per $1 \mathrm{l} .12 \mathrm{ft} . \mathrm{f}^{25}$ in., $4 \mathrm{c} . ; 9 \mathrm{ftt.x20}$ in.,

 1n., $\$ 8$ each. Addr
Manchester, N.H.
Bolt Headers (both power and foot) and Power
Hammers a specialty. Forsaith \& Co., Manchester,N.H. Entire Stock of Tools of a Foundry and Machine
Shop for Sale. List sent on application. Address P. A responsible American Firm, having a Branch
ofice in London, would accept the European Agency for saleable mechanical articles. Address Machinery, Box
2620, New York Post Office. 2620, New York Post Office.
$\$ 17$ Foot Lathes
\$17 Foot Lathes. Geo. F. Shedd, Waltham, Ms. A Self-Acting Trap, to rid out all Rat and Ani-
mal Creation. Agents wanted. No trouble to eell. For
Traps, \&c.,., address John Dildine, Limestoneville, Mon-
tour CC., Pa. Scale in Boilers Removed-No pay till the work
1s done. Send for 34 page pamphlet. George $W$. Lord,
Phlladelpha, Pa.
Philadelphia, Pa.
1,2, \& 3 H.P. Engines. Geo.F.Shedd,Waltham,Ms. For Sale, at Great Bargains-One $18 \times 36$ second
hand Green's Patent Automatic Cut-off Engine, also one $18 \times 36$ Slide Valve; both in perfect order. Apply to Todd
For Sale-Large lot second hand Machinists'
Tools, cheap. Send for 1 sts.
andt Street, New York. Shearman, 45 Cort-
Foot Lathes-Wm. E. Lewis, Cleveland, Ohio.

See N. F. Burnham's Turbine Water Wheel ad
vertsement. next week, on page 141. Speed Indicator-Every mech hnic needs one; can
carry in vest pocket. Satisfaction guaranteed. By mail, For Tri-nitrogly $\&$ corn, M, Mica Blasting Powder,
Frictional Eiectric Batteries, Eleetric Hese Gutta Percha Insulated Leading Wires, etc.. etc., etc. result of seven years' expertence at Hoosac
address Geo. M. Mowbray, North Adams, Mass.
Wrought Iron Pipe-For water, gas, or steam,
Prices low. Send for list. Balley, Farrell \& Co., Pitts
ourgh, Pa
Hotchkiss \& Ball, West Meriden, Conn, Foun on royalty any Patented articles of merti.
For best Bolt Cutter, at greatly reduced prices,
adress H. B. Brown \& Co., New Haven Conn. "Lehigh"- For informationabout Emery Wheels
Ec., address L.
V. Emery
Wheel Co., Weissport, Pa. American Metaline Co., 61 Warren St., N.Y. City Smail Tools and Gear Wheels for Models. Lis.
tree. Goodinow W Wightman, 23 Cornhlli. Boston, Mase. Peck's Patent Drop Pres. Still the best in use.
address Milo Peek. New Haven conn

 Oo, New Orleans. La.
Genume Concord $\Delta x$ les-Brown,Fisherville, N. H Temples and Oilcains. Draper, Hopedale, Mses.

 צiving alarms, and varlons other purposes. Can be put II
peration by any lad. Includes battery, key, and wires. tratrive. F. C. Beach \& Coo. 246 Canal St., New York.
In For 13, 15, 16 and 18 inch Swing Engine Lathes,
adress star Tool Co., Providence, R. I.
 For best Presses, Dies, and Fruit Can
For beat Presses, Dies, and Fruit Can Tools, Blis
Willame, cor. or Plymouth and Jay, Brokivn, N. $\mathbf{Y}$. For Solid Wrougt-iron Beame, etc, see adver-
Hisement. Address Unon Iron Mills, PIttbburgh, Pa.
tor Ithograph, \&c.
All Fruit-can
For Solid Emery Wheels . For Solid Emery, Wheels and Machinery, send to
 Small Gray ion con castings made to order. Hotch-
ksiss \& Ball, Founarymen, West Mertien, Conn. Reciprocity! Warted: Machinery to hull, clean
and pollsh suo or 40 ib ce per hour In the best possible style. state full partic ars to E. Lindemann, Wailua, Barry Capping Machine for Canning Establish-
ments. T. R. Bailey \& Vall. The "Scientific Amencean" Offlee, New York, is
atted with the Miniature Electric Telegraph. By touching
 co persong in the various departments of the establish-
ment. Cheap and effective. Spplenald for tor bops, offlces, dwellinge. Works for any distance. Price 88. with good


## 

O. K. will find descriptions of wire rope
transportation on p. 370, vol. 31.-H. D. will find transportation on p. 370, vol. $31-\mathrm{H}$. D. Will find
formulas for calculating the friction of water in formulas for calculating the friction of water
pipes on p. 48, vol. 29.-J. D. will find full instruc-
tion ions for making ace tic acid on p. 58 , vol. 30 , p. T. To
vol. 31 , and p. 106, vol. $32 .-$ J. will find direction for getting rid of fesh worms on p. 233, vol. 31.-
H. W. should consult a physician.-C. F. B. will find a recipe for birdlime on p. 347, vol. 28.-G. P D. will find a recipe for blue black ink on p. 42
vol. 33 -P. E. D. will find description of 9 pant vol. 33.-P.E. D. Will ind a description or a panta-
graph on pp. 99, 179, vol. 28. $-M . J$. W. Will find di-
rections for flling walnut wood - B. w. will find directions for grinding and polish ing glass specula on p. 276, vol. 30.-C. D. A. can mold rubber by the process described on p. 283
vol. 29.-L. G. G. will find a recipe for filling for fireproof safes on p. Th, val. 32.-A. M. can pre-
serve specimens of fruit oy the process describe-
 find directions for making potato starch on p. 315 vol. 31.-H. T. W. Will find a a recipe for a e ement
for glass on p. 379, vol. 31.-G. W. I. will find dir for glass on p. 379, vol. 31.-G. W. I. Will find dir-
ections for obtaining sulphur from the ore on 295, vol. 31.-J. J. L. . will find directions for ce menting cellar fioors on p. 50 , vol. $32 .-$ W. G.
will find directions for polishing walnut on vol. 30.-G. . cean make mica varnish by following the directious on p. 241, vol. 32.-J. E. W.
stould consult a physician. - N. B. W. should con sult the " Text Book of Metals," by Bloxam.-E A. R. will find a full description of the motion of
crank on p. 112, vol. 31.-J. J. R. can cement leathe crank on p. 112, vol. 31.-J. J. .R. cat cement leatber
to rubber by using the preparation described on p. M19, vol. 28. - H. G. M. w. will tind directions fo B. L. will tind a recipe for tine backing on p. 45,
vol. 31. The proper length of a spring can be vol. 31. The proper length of a spring can be
properly settled by experiment only.-E. J. can clean silver articles by the method described on
p. 129. vol. 28. $\rightarrow$ N. E. B. should consult a physician. p. 129. Vor. 28- N. N.E. B. s. soould consult a phasician.
-. L. . . will find! full directions for hardening or bronzing on brass on p, 283, vol. 31.-C.A. P.G. will find a recipe for pomade on p. 347, vol. 32 . (1) R. B. asks: Can you tell me how to take
broken glass stoppers out of bottles?
A. Warm he neck of the bottle in a gas Hame.
(2) C. H. asks: How can I make bone black
suitable for sugar refiners' use? A. In the preparation of bone black, the bones are first boiled in water to remove all the adhering grease (which is
otherwise utilized), or, what is perhaps a better
method, exhausting them of all grease, etce, by
means of bisulphide of carbon. The bones are then thrown into a large retort and subjected to destructive distillation. At first there passes over
a large quantity of a fetid gaseous matter, accoma large quantity of a fetid gaseous matter, accom-
panied by a considerable quantity of carbonate panied by a considerable quantity of carbonate
of ammonia, and other volatile alkalies. formed on the type of ammonia. These gases and sublimates are passed through a large washer, which retain
the ammonia and other salts accompanying the gas after which the latter is conducted into the ffr nace and burned beneath the retort. As the dis-
tillation proceeds, a quantity of tarry matter and oil comes over. After the operation is finished,th residue remaining in the retort constitutes the an imal charcoal. The washing apparatus may con
sist of a large iron tank, half flled with water and having a tightly fitting cup through which two pipes pass, one of which -the one leading immedi ately from the retort-passes down below the sur face of the water. The gas, in its passage from the retort, is thus caused to bubbe up through the
water, and thence it is conveyed by the sec water, and thence it in conveyed by whe sec
ond pipe into the furnace, where it is burned. The water in the washer may be ased several times, of
until it becomes nearly saturated with the salts it should then be drawn off through faucets ar ranged in the side of the tank, and the salts crys.
talized out by evaporation, dried, and prepared talized out by evaporation, dried, and prepared
for market. The tar and oily water remaining in for market. The tar and oily water remaining io
the tank, which are used for the preparation of lamp black, may be draw
(3) T. B. asks: Is it best to go to college and perfect oneself in architectural science, or enter an oftice at once, after graduating at an
academy? There is a special course of architecture laid out at the college. A. Enter as a studen into the office of an architect of large practice where there is an extensivelibrary of architectura and scientific works.
(4) T. P. asks: What is the cause of the fetid smell of perspiration, and is there any per manent cure for it? A. Do not try to preven
perspiration. It is one of the requirements of healthy body. Closing up the pores of the skin b the use of certain washes or powders to preven "Che perspiratory glands of the skin are scattered everswhere throughout the integument, being most abundant on the anterior portions of the
body. They consist each of a slender tube, about $\frac{1}{4} \frac{1}{5}$ of an inch in diameter, lined with glandular
epithelium, which penetrates nearly through the epithelium, which penetrates nearly through the
entire thickness of the skin, and terminates below in a globular coil, very similar in appearance to glands are very abundant in some parts. On the posterior portion of the trumb, the cheeks, and the Skin of the thigh and leg, there are, according to
Krause, about 500 to the squareinch: : the anterior part of the trunk, the forehead, the fore arm square inch : and on the sole of the foot and palm of the hand about 2,700 in the same space. The less than $2,300,000$, and the length of each tubula coil, when unraveled, about 1 of of an inch. The
entire length must be not less than 155,000 inche entire length must be not less than 133,000 inches
or about two miles and a half. The fuid derived from this extensive apparaters line persiration tinct acid reaction. Its constitution is as follows Water 995:00, chloride of sodium $2: 23$, chloride o potassium 0.24 , sulphate of soda and potassa 0.01 ,
salts of organic acids with soda and potassa $2: 02$ Total. 1,000.00. -Dalton.
(5) F. L. B-The soheme which you gug-
gest for a convention of inventors, to be held during the Centennal year, is theoretically good but such meetings have been proposed before, and
whenever they have been held they have resulted whenever they have
in no practical benefit.
(6) O. W. I. says:I have a galvanic batter of my own construction; and as $I$ do not under ask your advice as to charging the battery. It composed of $t$ wo zinc plates and one copper plate and I want to ascertain the right amount of vitrio to be used.
(テ) W. N. W. asks: How can muslin be its color, or injuring its pliability? A. We know
and of nothing that will satisfactorily answer all you
(8) S. \& C. say: We raised from the grave few weeks ago the body of a man who had bee fin; and on removing the iron plate over the glass, corpse) twoliving common bouse files. The body was in a good state of preservation, and there was fies. How did theyg get in? A. We can give no explanation.
(9) O. R. says: It is claimed that a spar will not. I claim that, by blowing a fame on it gunpowder will be exploded. Which is right?
The action of either a fiame or spark der is to cuuse asli ght decomposition of the salt peter, and at the same time to Ignite the combustible carbon and sulphur, which burn at the expens of the oxygen of the saltpeter.
(10) N. \& G. ask: Is there such a thing a racted by gold or silver? A. The magnetic pro perties of these metals yet remain to be discovered
Th so-called divining rod has never existed. It Tha so-called divining rod has never existed.
a common way of imposing on the credulous.
(11) J. D. W. asks: 1 . Is it true that the
riction of a wheel or shaft does not increase with velocity, but only with pressure e A. Yes. 2. In
a dyamometer, in which weight and speed are a dynamometer, in which weight and speed are
both taken into account to decide, by friction, the
power of a machine, if a spring were substituted
for the weight, would not an incresse of velocity affect the spring more? A. No. 3. Will a spira spring be contorted or twisted more if it runsat high than at a low speed? A. Yes. 4. Will a
spring of steel or brass, working in steam of ordispring of steel or brass, working in steam of ordi-
ary heat, lose its elasticity? A. Yes, in course of sary
naime.
(12) Y. E. says: 1 . I have built an engine, $11 / 2$ by 3 inches, and $I$ want a light and strung boile
or it. Would a piece of 10 or 12 inch boiler flue or it. Woula a piece of $1 k$ or 12 inch boiler flue,
say 2 feet long, do to make a plain cylinder boile of? A. Such a boiler as you speak of might answer, but you would not obtain very good results,
How can I make a furnace around it? A. The oiler must be set either in brick or some othe suitable material, with the furnace beneath. Would such an engine and boiler be large enoug arge enough to acommodate 4 or 5 persons? A You do not give sufficient data. 4. Are ports $1, x x$ $1 / 2$ inch largeenough for a $11 /$ by 3 engine? A.The
ports will answer, but it would be no harm to have ports will answer,
hem a litte larger
(13) J. G. L. says: I had an anvil of cast
ron 7 inches. wide 12 inches long, and 10 inches high, and tried to put a chilled face on it. The arden, remaining as sof was the cause of it? A. It was due to the qualit of the iron.
(14) C. T. A. says: 1. If air is taken at at mospheric pressure and at any given temperature,
nd is compressed to anygiven pressure persquare nch, what would be the resultant tepperature The following formulas are applicable to such cases, provided there is no loss of heat by radia ir before cuction: $T=$ absolute tenperature of air after compression ; $\mathrm{V}=$ volume of air beio compression; $v=$ volume of air after compression $\mathrm{P}=$ pressure of air before compression $; \underset{t}{p=\text { press }}$

## (p) <br> This equation can be most readily solve

## mas, thus: $\log .\left(\frac{t}{\mathrm{~T}}\right)$

:(7)
rease as the volume decresses? A. Yes.
(15) H. C. J. asks: 1. Will water coming with force through a large pipe have power to
empty a waste water chamber at lower end of empty a waste water chamber at lower end o
small tube placed concentrically with the large mall tube placed concentrically with the larg
ne? A. Yes, under certain conditions. That is orce of the current through the large pip Wust be graduated to the length of making perfor ations below the nozzle of the small pipe to admit
jets of water and force out air or water? A. No, jets of water and 1
(16) J. L. asks: What is the best work on sawmills? A. There is no work that we know of
devoted entirely to sawmill management. Any tandard work on millwork will assist you, , so abled to build any kind of a mill.
(17) J. C. L. says: I wish to color a shingle ame, so as to resemble red slate. If I paint it amassured, the shingles will rot very soon, as tho
moisture that is drawn up by capillary attractio between the shingles will be prevented from es caping by the paint. Is there any wash, of th lead paint that will not be washed off by rain, an yetwill allow the water absorbed by the shingle o dry out? A. Lime wash will preserve th shingles and can be colored any tint you desire by mixing dry color with it.

1. What causes theclosetin which I keep woole
lankets to turn black? It is painted with lead. The prese of light is more or lead. A. The presence of light is more or less
necessary to preserve the purity of white paint. But in your case the discoloration may arise from the escape of gas, either from a gas pipe or an or dinary waste pipe. 2. If I paint the aforesaid closet with white zinc, will the difficuly
died? A. It is not likely that it will.
(18) G.W. asks: Is there a substance which will intercept magnetic force when placed be (19) G.R.McK. says: 1.1 wish to face a mi am, 20 feet high, above and below with roug tube of iron or brick through which the wate will pass to the wheel. The abutment of the wall are to be 1 foot thick. How thick should the abut ments be at the base to withstand the pressure of the earth between them? A. Six feet. 2. Would lime water answer to lay the stone in, and the A. No; cement should be used in the wall.
(20) L. W. H. asks: Will a double belt in what proportion? A. Yes, other things being (21) J. S. says: I have a large hollow apple ree which has been filled with large black ants for the last three or four years. How can I getrid of them? A. Try the application to the inside of
the tree of a weak solution of chloride of lime. This may be applied expeditiously by means of large syringe
(22) E. R. K. says: In a recent issue, you give a formula for calculating the solidity of the
frustum of a pyramid. Will the same formula pply to the calculation of ear arcavation: pendicular distance between, will the formua fo the frustum of a pyramid give a correct result f not, what method must be emplosed? A. I will only answer for special cases. Generally
some other rules are emploged. You will find them fully explained in any good treatise on the en fully explained
