F.D. H. asks: 1. How many Grove's cup

 hrough a plece of platinum wire one quarter of an inc
ong and willheat it to reaneess. 2. Quantity
In. M. W. asks: If gunpow der be enclosed hen exploded, would (provided the tube did not burst)
all the powder explode? If it did, would the resulting gases remain as such, or would they be changer in explo-
solid? In short, what would be the result of the ex
sion? Answer: We think this experiment has never been tried. If there were no waste space and no air in gunpowder contains in itself a quantity of oxygen suf ficient for its combustion, the gases thereby produced nust have room for expansion in order to produce an
explosion. A patent was once taken in England for explosion. A patent was once taken in England for
transporting gunpowder safely by placing it in airtight transporting gunpowder safely by placing it in airtight
vessels filled with some neutral gas like carbonic actid, whicl does not support combustion. But this was a
useless device. To scertain the resultants from the useless device. To scertain the resultants from the
explosion of a giver quantity of gunpowder, the latter explosion of a giver quantity of gunpowder, the latter
1s commonly suspended within an iron globe several tnes larger than the charge, and the air is then exhaust-
ed. The powder is now fired by electricty, and the chemist ascertains the nat:re and quantity of the gase-
ous and solid products. The solids are mainly carbonate and sulphate of potash; the gases, nitrogen and
carbonic acthat The sudenhea ting and expansion of the carbonic acid. The euddenheating and expansion of the
J. K. asks (1) how to straighten a circular aaw when it gets sprung. 2. Is there a chemical prepa-
cation to sharpen worn out flles? Answers: 1 . No inne can be given. It is an art only attainable by pra tice. 2. There are various processes of using acids for
sharpening tiles. Itave tested three of them, but my The cheapest way, all worn out fles and buy new ones. It will not pay even
to get them recut, for filing tempered steel.-J. E. E., to get them recut, for flling tempered steel.-J. E. E.,
of Pa.
J. B. asks: What factory turns out the great
est number of locomotives? Answer: The Baldwin est number of locomo
works, Philadelphia. Pa.
C. G. D. asks: 1 . Does the law offering the
reward for the improved canal boat for use on the Erie canal require the wheels and apparatus to be so con-
tructed that the banks shall not be washed? 2 . What does boat cost, exclusive of engine andneeessary machiners? 3. Is it probable that this season will decide the ques-
ion? Answers: 1. A device that would injure the banks of the canal would not be likely to take the State reward of $\$ 100,000.2$. A common canal boat costs, we
believe, about $\$ 1,000$. 3 . This season will probably deE. McD. asks: Is there such a blessing as a Answer: Yes, any quantity of temem. Makers will d
well to advertise them in the ScIENTIFIC American.
. H. asks: If I make the cores of a com of the spools in front, will the magnetism be as strong at the poles, when a current excites the cores, as though
thecores were not extended? Answer : No, the maghecores were not extended?
netic force will be a trifie les
C. Ht H. asks for a method of covering pulof glue should be used? Answer: Ordinary belt leather ley with small belt rivets. For information as to the process lately described in the Scientific American,
address the pante
J. O. E. says: 1 . An engine pumpis 6 inches
in diameter and $11 / 2$ feet stroke. The sucker is $s$ flat one. pipes, asif it was going to break everything to pieces. 2. Whatis the besc solution to make solder adhere to
竍 old copper pipes and to tin? Answers: 1. We cannot
answer this, as we do not know what our correspondent neans by the air being shut off. 2. For soldering copper
pipes, use sal ammoniac or chloride of zinc. For tin, resin or chloride of $z$ inc.
W. E. F. says: We use 8 cords of pine (Je can be delivered at $\$$ r.25 a ton. Whichis cheaper? An If your furnsce is so constructed that you can burn wood or coal without change, you might try the experi-
ment. General results sometimes fall to be realized in special cases; and wheneverthe test of experiment can
$\underset{\text { regarding the relative power of the same machine with }}{\text { J. E. W. }}$ either a 20 inch or 10 inch driving pulley at the same sur-
face speed, did you not lose sight of the extra friction produced in the journals by the necessarily closer hug the same power? Answer: In each case the belt is
transmitting the same amount of power, and conse-
Buesty has the samestrain, as its speed is unchanged. about 95 pounds. Will some one state the number of ubicfeet per tun of the various sizes in common use,
"nut,"" stove," egg," etc.? By measuring the coal
bin, we can then decide whether we have full wetght or not. Answer: From the average weights of a great va riety of coals, we obtain as a mesn result, for broken
coal of almost any size: Anthracite, 385 , and bituminous, 40 , cubic feet per tun of 2,000 pounds. Probably
many of our readers may have made observations on
weight and bulk of different kinds of coal, and if they will send us their figures, specifying kind of coal, size, and weight in pounds per cubic foot, we will tabulate
them, and publish them in our columns. If a sufficient number of replies are received, we shall be enabled to

E O. W. asks what is the best substitute namite is a good substitute for, or aratherera safer means
of using, nitro-glycerin. If you want a powerful and of using, nitro-glycerin. If you want a powerful an
dangerous explosive, use picrate of potashi, ether alon or combined with an equal quantity of saltpeter
M. M, W. asks: How many pounds pressure does the water, (comingfrom the reservoir in your
city exert at the outlet of a half inch faucet? Answer : This depends upon the amount of water in the reservoir,
the part of the city, and thenightof faucetfromground. It varies every hour in the day. The fact that Croton water is often able to rise, in pipes, to the fifth floor of a house will enable you to get somedidea of the pressure,
remembering that a column of water 33 feet 9 inches
J. C. asks how many revolutions per min power? Answer: The speed at which you can run the
engine, provided you have sufficient boiler power, de pends upon how well the running parts are balanced.
If the engine is well designed in this respect, 100 revolu ions will not be too fast.
J. P. L. asks how to tin small brass articles. Answer: The process employed in tinning small brass lution of one part cream of tartar, 2 parts alum, and parts common salt, in 12 parts of water. In this bath is placed a suffcient quantity of granulated tin. They can
afterwards be polished with sawdust or bran and tow. A. P. asks: 1 . Is there any cheap substance
known which, mixed with water, will make the same evaporate more rapidly, at the ordinary temperature than the water would of itself? 2. Has any one metal
the property of making water evaporate from its surface more rapidly than another? Answer: We shoulladialise
you to employ vacuum pans or some other method of diminishing thacuum pans or some other method of he used. If not, keep the air in rapid ctrculation. If he quantity is small, place it under a recelver, and near the quantity is large, try the German method with brine,
R. F. says, in reply to R. A. C., who asked or a remedy for bleeding at the nose: I will give on it is a vigorous motion of the jaws, as if in the act of
mastication. He advised us, in the case of a child, to maise a wad of paper, put it into the child's mouth, and need the paper. It is the motion of the jawa that stop the flow of blood. This remedy is so sinuplethatpeople ometimes laugh when Irecommend it, but Ihave never somet
known
cases.

Minerals.-Specimens have been received from the following correspondents, and exam ined with the results stated:
felspar. It has no value.
J. R.-We think it is corundum
G. S. K.-Iron pyrites. Their only use is in makin il of vitriol.
C. D. M.-Copper pyrites.
D. Van B.-Tourmaline.
J. McM.-Quartz; of no especial value. Perhaps agates
suitable for mounting as ornaments, may be tound that locality.
J. J. F.-The rock you send contains some pyrites,
rron, alumina, silica, etc. An assay will cost $\$ 10$ or $\$ 15$. J. D. A.-Limestone.

Delita sends us a specimen of chrome red (American vermilion) and asks how it can be prepared. Answer Liebig and Wöhler state that it is best prepared by fus
ing together, at a very low red heat, equal parts of tassium and sodium nitrates, gradually pouring into the fused salt small quantities of chemically pure yellow redis washed and Aried. It is then a magnificently col-
ored, cinnabar-like crystaline powder. Professor Ing prepares chrome red by precipitating a solution of acetate of lead with a solution of chromate ot potassa to which caustic potassa has been added. Variousshades
from deepest to palest vermilion red are caused by the diffierence in size of thecons1 tuentcrystallineparticle
According to Dr. Duflos, its formula is $2 \mathrm{PbO}, \mathrm{CrO}_{3}$.

## COMMUNICATIONS RECEIVED.

The Editor of the Scientific American acknowledges, with much pleasure, the recipon of original papers and
On an Auroral Phenomenon. By J. D. B. On Pressure Gages and Safety Valves. By E. D. S.

On the Natural Rights of Inventors. By On Iron Steam Yachts. By J. H
On Retardation of the Earth's Rotation By. H.
On Fresh Water Crayfish. By J. S
On the Patent Discussion. By E. A. B., by M. J. and by M. J. D

On Embryology. By J. L.
On Mechanical Elements. By F. M. McM
On the Roper Engine. By H. S. W.
Also enquiries from the following
T. R. J.-

Correspondents who write to ask the address of certain
manufacturers, or where specified a artucles are to be be had,
also those having goods for sale, or who want to find also those having goods for sale, or who want to find
partners, shoula send with their communications a amountsumflient to cover the cost of publication under the head of "Business and Personal," which is specially
devoted to such enquiries.

## rofficial.]

Index of Inventions
FOR which
Letters Patent of the United States were granted for the week ending June 24, 1873,
and each bearing that date. [Those marked (r) are retissued patents.].

Adding machine. G. Linderoos...................... 140,146
Air from cans, etc., exhausing, L. C. Cooley..... 140,247 Air with hydrocarbon, charging, E. H. Covell (r) Alarm, burglar, E. M. Hendrickson...
Annunciator, electric hotel, w. W.F Auger, earth, Long \& Bollman Bale tie, cotton, F. Cook.

Bells to harness, attaching sleigh, B. E.
Belt shifter and tightener, B. O. Bryan Billiard table, L. C. Prindle........... Blinds, corner support for, G. W. Day
Boiler, agricultural, H. A. Mears Bofler, wash, S. W. Bartholomew Boilers, electrical protection for, A. T. Hay. Boiler:heater and feeder, J. Pilkington...........
Boilers, preventing incrustation in, R. A. Fish Bonnet wires, covering, E. H. Tyler. Book cover, A. H. Jocelyn
Book, scrap, , L. L. Clemens
Book stand, J. B. Anni
Boot jack, H. Ar Cot.......
Brick machine, C . Murray
Brick machines, die or mouth, C. H. Murray. Bridge switch and signal draw, E. H. Tobey.. Bridge, truss, D. C.
Brom, J. D. Bell
Bruah,
Brush, marking, S. W.
Bush, pant, s. Stadis
ruilding block, DeWit Building mater:al, elevating, J. H. Co Burner, argana, c. E. Ball.. Butter, package, B. P. Adams (r)
Button cuff, F. McCarthy..
Cable stopper, J. M. Kilne
Cable stopper, J. M. Kinner
Calendar catch, R. C. Ogden
Car axles with boxes,
Car brake, W. Ebbitt.
Car coupling, M. Disney
ar coupling, J. A. Gale
Car starter, A. A.
Carding madi, G. F. Gachnoes, combs of,
Carpet sweeper, w. Mille
Caster wheel, furniture, C. B. ...........
Caster wheel, furniture, C. B. Sheldon.
Churn, reciprocating, L. B. Kee
Churn, rotary, Brand \& Puder
Cigar, E. B. Mead
Cigar
Cigar trimmer, A. Cra
Clamp, Holt \& Leach
Clasp, metallic, C. Marshal
Clothes dryer, A. Graves..........................
Clothes 1ine fastener, J. G. © P. A. Ames
Clothes wringer, Corbin \& Albrecht
lutch, Knight \& Lewis
Cooking apparatus, M. J. De Leon
Coop, chicken, W. J. H. Kappe.
Cotton gin knife roller, Rushton \& Dob......
Crimping or futing machine, P . Werner
Curtain tassel clip, F. Muller.
Drill carriage, rock, Thomas \& Evan
Electrical stop motion, E. Maerten
Elevators, safety platform for, R. Dunbar Engine circulating valve, fire, C.A. Hague
Engine valve gear,
Envelope, s. Kuh.
Exercisine device, J. E. Austin
Faucet, self-closing, A. Brinckma
Fence, portable, 0. Huffman
Fence, wire, J. A. Little
Fibers, separating vegetable, W. E. Wood bridge.
Fire arms, cartridge for, T. T. s. Laidley
Fluting and plaiting machine, wilson \& Pe
Gage, reading, R. S. Hildreth
Gaslighting torch, E. P. Gleas
Gas, manufacture of illuminating, C. Gearing Gas pipe and fixtures, J. \& T. D. Richardson Governor for heating apparatus, S. J. Olsson Gums, production of waterproof, D. M. Lamb Gums from flax seed, etc., D. M. Lamb...........
Harness, attaching sleigh bells to, B. E. Dexter Harness, attaching sleigh bells to, B. E. Dexter.
Harrow and seeder. combined wheel, F. Brame Harrow teeth, reversible, G. W. Hurst Hs. rvester, corn, E. W. Quinc
Hat press, R. Eickemeyer
Hemp brake, J. C. Matherby
Hoe, E. W. McLendon ....
Knitted fabrics, napping, etc., C. \& I. Tompkins.
Ladder, fruit, A. \& J. B. Longcor............
Lamp chimney supporter, Mears \& Davies.
Lamp, street, J. F. Marsh
Lap board, E. J. Sprague.........
Lasting machine, C. W. Glidien.
Latch door
Latch door, O. B. Rand...............
Leather, etc., artificial, T. J. Mayal
Leather, etc., artificial, T. J.
Lock, trunk, T. L. Rivers....
Locomotive fire box crown, H. C. Darby...........
Locomotives, lotting links for, w. H. Denney... Malt, machine for polishing, C. Stoll................
Mandrel for holding tapered rings, G. E. Brettell. Mandrel for holaing taperearings, G.E
Masher and strainer,potato, R. Lebille. Medical compound, A. Field...
Medical compound, $H$. Pruden. Medical compound, . P. Praden.....
Medical compound, W. H. H. Whit Mill cases, fabric for smut, H. S. Jewell Mill pick, J. Cummings.
Mitering machine, F. D.
Mixing machine, J. W. Stockw
Mortising machine, J. Driver
Needles, manufacture of latch, T. J. Mayne
Nut lock, E. Czarniecki. Ore, treating fron, E. Peckha
Ore stamp feeder, Cusenbary \& Mar Ore stamps, sectional cam for, J. M. Thomps.......
Oven and range combined, baker's, J. Williams. Oven and range combined, baker's, J. Williams.
Packing, piston, J. W. Carey................... Pantaloons, F. T. Hoyt...
Pantaloons tree, M. Taine..................
Paper cutting machine, G. A. Walker (r).
Paper machinerepairing knotter of
Paper machine,repairing knotter of, J. Robertion
Pen, ruling, W. O. Hickik...............
Pistons to rods, securing, J. Wheelock
Pitcher, molasses, T. B. Atterbury.
Pitman connection, J. A. Shepard...
Planing machine, J. Atkins...
Planter, corn, G. J. Carpenter..
Planter and cultivator, corn, G. De Vany, Jr.
Planter, potato, F. W. Wo
Plow, C. Potter........
Plow, potato, H. T. Basye.
Printing press, chromatic, Burridge e Kershaw Quilting frame, H. Hudson
Railway frog, $J$. Wood....
Rallway frog, J. Woodville.
Railway signal, Johnson \& Layton

Railways, self-feeding tank for, B. D. Moody


