ator previous to
tion on the car.
Hoor Skirr.-Lonis Fel: heimer, Nee York cily.-This invention te tie manufacture of hoop ssirits and particularly. to the nucthoc of fastening the tape to the stece e pring. and it consstst in pasing the etcel spring
transversiy tlirough one eyelete and thon clmching or passing down the

## ner end of the eyelet on to the steel.

Bolt Trimmer.-Henry Howe, Oneorita, N. Y.-Thisinvention relates to a a cutter sliding wich bolts, rivets and otber suitaole articles, and consist is flush with the under side of the plate. Reciprocating motion is imparte oy means of an oseillating cam, working on the said plate, and by means of spring catch projecting tronn the rear end of the cutter. The cutter is sup ported in the plate oy having beveled edges which rest upon the similar
slaped inner edges of the slot in the plate. The cutting edge of the tool and shaped inmer edges of the slot in the plate. The cutting edge of the tool an inz cut is produced on a reciprocatug cutter.
Lock.-John G.Spathlef, Sandusky, Ohto.-This invention relates to cer tain improvements which are applicable to door locks, safe locks, trunk
lock', spring locks, pad locks, aud all other kinds of locks.

Wood Sawing Ma oifine.-Henry A. Daniels, Thomaston, Conn.-This in vention consists in arranging the bearings of the crank shaft in the same
slide to which the slide to which the swinging saw frame is pivotect, so that the distance be-
ween the working and swinging centers cannot be varied. The invention ween the working and swinging centers cannot be viried. The invention
alsoconsistsin the use of a reciprocating block, which turns loose on the
wrist pin of the crank and whicl shdes between two parallel bars thatform part of the swinging frane.
Coffer Roaster. - Freiderich Max Bode, Vienna, Austria.-This invention efates to a now coffec roaster. which consists of a spherical shell bung in a semis.spherical jacket, its one axis being hollow and serving as a filling avid
discharge opening. The slecll can be revolved by means of a handle atdischarge opening. The slecll can be revolved by means of a handle attached to the cover of the aforesaid hollow axis, whic
Carriage Clif.--Themas MicCreary, Matteawan. N. Y.-This invention re ates to a new devicc for connecting the shaft of a carrage with the front axle of the same by meaus of a pivot which will not rattle, which canno to be tiken of: The invention consists in s curmg the pivot to the end of the slaft and not to the clip, as usual, and in then langing it loose in
ot the clip gnd in locking it to the same by means of a eping cateh. Sewing Maching--Stephen French, Orange, Mass.-This invention re-
lates to a new shuttle sewing machine, and conisists in so combining with lates io a ncw shuttle sewing machine, and conisists in so combining with
each other anl osciilatug sluttle driver, a double cain reed motion, and a slotted plate for moviris the needle up and down; that in one machine the main advantagesol inany different slads of sewing macbines are contained construction can be obtained.
Hand P'enci.-J.D. Higgins, Greenville, Conn.-This invention consists in arranging a slding tubnlar punch in an arm that is parallel with, and projects $y$ against the upper or pressumg jaw. When the punch is to be used it is t eupicr jaw force toward the lower one. but is at the sarne time almay puided in th.
maciene for Driving Frnce Posts.-Isaac J. Parker, Buffle Grove
owa.-This invention relates to a machine for driving fence posts and is despgned to be placed upon a wagon or any suitable frame mounted on
Fviliells; the device being constructed in such a manner that it may be oper and
ated whe on the wagon and, drawn from place to place where the posts are o be driven.
Switce Lock.-Join V. Chamberlain, Cincinnati, Ohio.-Thts invention
relates to a loek for railroadswitc hes, and it consistsin a novel construction and arrangement of parts, whereby the lock is rendered self locking and a ery simple and darable loct obtained; all s
Liquid Measore.- Ward Sprague, Sandy Creck, N. Y.-This invenlon is thick viscid liquids, such for instanceas molasses, sirups, etc, etc.; and to
this end thic invention eonsists in constractiog the measure with double this end the invention eonsists in constrncting the measure with double
walls with $a$ apace allowed berween to receive water or other suitable fluid walls with $: 2$ apace allowed between to receive watcr or other sutane
while, ly placing the measure on a stove it is kept warm and whenevcr the mcasure is used the heat radiatel from the walls of the
the contents of the same sufticiently fludd to flow readily.
flattening and betiding Rods for chain lings.-Peter Hendricks, Trenton, N. Y.-Tb:s invelition relates to a machine for fattening and bendecially f:r mit ing purposes. Tue invention consists in a peculiar eonstruc ton and arrangement of parts whereby the two different sized links re quired for the manufacture ofeach chain may have the rods of whicn they re ton med, flattened and bent on one and the same machine
Centrring Laties.-Benjamin F. Bee, Harwick, Mass.-This inventiou re
lates to anew centering lathe designced for centering articles, that lates to a new centcring lathe designed for centering articles, that 1s, ad-
justug the ir endscentraly in linc with the oit of the latic so that the artiasting their endscentrally in line with the oit or the lathe so that the artiends in order tlaat they may befitted eentrally in a turning lathe.
AvGuk for--H. D. Pennoyer, Athens, N. Y.- This invention relates to upper end of the auger shank and receive the handle. said top-piece being composed of two parts and provided respectively with pawls and a ratcliet,
whereby the auger may be turned and boles bored in close proximity to whereby the auger may be turned and boles bored in close proximity to lany vertical tixtures where an ordinary fixed bandle cannot he turned, and
at the same tine adinit of the handle being adjusted and turncd as usua at the same time aduit of the handle bet.
in places where therc is room to allow it.
Soliky Plow.-Benj. Slusser Sidiey, Olio.-The object of this invention is to simplify the construction of sulky plows so as greatly to reduce the; cost, while yet enabling them to be capable of casy operation, of

Low.water indioatob.-T. G. Eiswald, Providenee, R. I.-The object of this invention is to furnish a neat and convenient instrument, which, being
atuachce to the head of a steam boiler, will conable the engincer at any time to try the condition of the water in the boiler, and will, of itself, sound an to try the condition of the water in the boiler, and
Combined Low-water indicatorand Try Cock.-T. G. Eiswald, Provi ence, R. 1.-This invention relates to that class of 1 Ww -water. indicators 10 ice by which the interior of such indicators can be kept clear from the accumulation of dirt, sediment, or scale, and by which, when such foreign substances have accumulated in the indicator, they may be blown out at any
time and the interior of the indicator left perfectly cleau and free. The de viec bv wlichthese important objects are attained, can at ot her times be em-

- Wals

Clotues Wringrr.-P. Cramer, Providence, R. I.-Tbis invention re
lates to a new clothes wringer, which conslists of four rollers, one of which is an clastic roller, held loose het ween the three other rigid rollers, The elasan elastic roller, held loose het ween the three other rigid rollers, The elas
tic roller is not hung in bearings, and nced therefore not be formed on a me-
tallic or wooden or otler axle, bnt will be soft and clastiet troughout.

Winnow Wiper.-B. F. Burgees, Bostor,Mass.-This Invention relates to a
new and improved method of cleaning windows, and it consists in arranging a a handle, of any desired length, a revolving trame made of tin or other uitalle material, and attaching rollers thereto cu which wiping or washicg
pail Eas.-Geo. F Eation
Pail Ear.-Geo. E. Eastinan, New Aarttord, N. Y.-Tlisinvention relates to an improvement in bail ears for pails or buccets, and for other vessels of a
pimilar construction, whereby they are rendered much more durable than the ordinary bail ear, and the menention consists in torming the ear with a branch exterior stay and and an interior stay, which are connected with the mam plate of the car, whereby the main plate is guarded snd protected from
DJarious lateral strain and rendered strong and durable.

Combined Window and Blind Fastrning.-Wm. L. Barnes. Irvington,
V. Y. -This invention consists in adevice by which the blind and sash of a
whindow can securely be fastened on the inside by combining the two fast whindo
cnings.
Oil CUP.-Sylvester Charntey, Portage City, Wis.-This invention consists Orl Cup.-Sylvester Charntey, Portage City, Wis.-This invention consists
n so arranging a valve in an oil cuo that it can be raised by the motion of in so arranging a valve in an ol cud that it can be raised by the motion of
the part to whieh the cup is atlached and closed by its own gravity, so that the disclarge of the oil will depend upon the rapidity of the motion up and down.
Extension Ladder.-Jobn A. Smith, Lacon, ill.-This invention has for is object to Curnish an improved extension ladder, designed especially for
remen, painters, and tinners' use, but wbich slall be equally applicable for iremen, paintcrs, and tinners' use, but which slall be equally applicable for ther uses, which slall be simp
Door Mat.-Wm. Young, Franklin, Mass.-This invention has for its object turnish a simple, cheap, and serviceable door mat, whicb may be mad worn, maybe refilled with little troable and at trifing expense.
Ev P orator.-N. Evinger, Terre. Haute, Ind.-Tlis invention has forits obct to furvish an improved apparatusfor evaporating cane or other saccha rine Juice for the manufacture of molasses and sugar.
Tracr Clearer.-John Callaghan, St. Louis, Mo.-This invention has for its object to furnish an improved device for attachment to street railroad cars, by means of which the cars may be made to clear the track for them
Tablibcutlebty.-Wm. Clayton, Bristol, Conn.-This invention relates to new manner of attaching the bolsters to the shanks and handles of knives d forks, and consists in allaching a wronght or cast metal holster to the part of the bolster. The shank is perforated, and the uppcr edges of the lot is formed are reeessed, as wellas the luwer edge of the bolster, so that caeit; its the ister tirmly together, and to the banale
'Tanners' hóos.-James Hoffman, Belvidere, N. J.-Tbis invention has its object to turnish an improved hook for tanners' use in handinn 2 dides without in juring theirgrain.
apparatus for Clarifying Cane Juick.-Wm. Dill, Houma, la.-The ract of this invention is to prov
raining and clarifying cane juice.
Crayon Holdee,-Rufus Wright Brooklyn, N. Y - Thither oimprovements m the cases or holders tor crayons which are nsed indrawing hy artists, :and in schools and institations of learuing for demonstrating roblems on the blickboa
GIb and Self.Orler.-Cyrus B. White, Port Richmond, N. Y.-This invenan relates to animprovemenc in selflluoricating gibsfor steam engines, and ov. 19,1867. The object of the invention is to avoid the waste of ofl caused y the motion of the cross head, and while elfecting this end to obtain a per Bar foring at all times of the friction roller against the Raidc. Back- Band Hook.-Charles Waek, Evansville, Ind.-This in vention relates
harnesses used on horses for plowing and other orming the hook in sucl a manuer that the chain which it supports is searcly bept in place when in use.
Corn Shellee.-A. C. Mills, Oaktown, Ind.-This invention has ct to furnith a simple, convenient, and effective instrument for shelling corn, and which shall at the same time be durable and cheap.
Boots and Shobs.-Willism Smith, Whitehall, Bridesburg,Pa.-This in-
 wear, and to admit of sald material betng readily withdrawn or detached om the fole when, from wear or othercauses, it becomes necessary to have领 ones atrached. The obloct of the invention is to protect the sle of all conspicnous even when applied to lightor "dress" boots and shoes. Smut Machine.-E. McLane, Young America, ill.-This invention relates a machine fordeprivinggrain of smut andother impurities, and it consists in a securing device of peculiar construction and a uovel arrangement of a
suction blast, whereby a very powerful and eflicient blast is obtained withont wasting or blowing away the grain, and the grain secured in the most tho gh manner by a very compact device
Machinf eor Dressing Slatr Frambs.-W. F. Mosser, Allentown, Pa. This invention has for its object to so improve the constractlon of slate frame
machines that each slate may be automatically fed from a pilc, eorners ronnded off and their edges dressel, and may then be fed corner wise to the revolving planers by which both sides of the frame are dressed, so that the slates may come from the machine completely dressed.
Cylininical Filterina Press.--Pierre du Rieux and Edouard Roettafer nostruction and arrangement of the parts of oltering presses, designed reciallv for uss in sugar houses, whereby a more efficient working is obtained and all danger of the machine exploding under pressure is avorded andthe operations of oltering the liquid parts and casking the solid parts
semi-liquids may be conducted with more speed, regularity, and efficiency.

## Butwers to convespomidts.

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all ref erence to bo.ck numbers shoula be ov nolume and pade
J. A., of N. Y., asks : 1st, Whether a weak solution of carbolic acid applied with a watering pot to garden walks will be an effectual mode of preventing the growth of weeds. 2d, Whats should be the strength
the solution. 3d, In what form can the article be procured. 4th, Is there anything in the nature of the sabstance requiring precaution in usin it. Answer, ist, It will.: 2d, The solution most be very we:ak, 1 part carbo
ic aciic in 1,000 to 2,000 parts of water. 3d, It may be procured pure in Ic aciid in 1,000 to 2,000 parts of water. 3d, It may be procured pure, in the
form of white crystals, very fnstble by a slight heat, and very volatile. It may also he had impure and much cheaper, as a solution'coutaminated with hydrocarbon oils and naphthalin, which however are no objection to the use proposed, for these last substances are not soluble in water, and theretore easily separated when dissolving the acid. 4ib, Pure carbolic acid is a vir ulent poison. When appliedinintoo strong a solution larger plants may suffer;
very weak solutions destroy only very small plants and animals as parr sites, miasma. Even fles and mueketoes avold its odor and may be driven

## away by it.

L. J. S., of Mass.-There is at present no book published on the details of the subject you inquire about, it being guite new. Chemists with a volatile base as carbonate of ammonia. The pure liquid carbonic aeid is a most intractable sabstance. as it requires some 40 atmospheres pressure to prevent its volatilization, and when this pressure is removed it volatilizes so rapidly that tbe remaining liquid solidifite.
W. G., and T. S. H., of Ill.-A reference to the ordinary treatises on physics will enable you to answer for yourselves the ques-
tions you ask. We do not wish to burden our colamns with answers to questions which have no practical utlity and answers to wbich may be foand
A. W. H.. of Pa.-We cannot recommend any process for E. P., of N. Y.-1st, Leather can be covered with a film of India rubber varnisli, and still retain its strength and pliability. Such leather tuay be lad in this market. It is perfectly waterproof at the side
where the varnish Is applied. 2d, Pens of hard rubber or vulcanitc have becn made. They are tolerably good, but they wear oat too soon. Lately they bave been improved with gold and irridium points. We use such pens, and they give great satisfaction. Thoseof gutta perchado not keep ; they W. W., of Mass., sends us some fine specimens of iron pyrites in cubic crystals and asks their value. Their marsetable value lo
nothing; as mineralogical specimens some may esteem them.
G. M., of Ill., thinks there may be something in the electrical theory or steam boier explosion because there have been a ereatnamb about the at about the same time. He believes there is yet some unknown cause or We belic re a boiler constructed oncorrect princtples, of gond material with good workmanship, and managed by a competent person is as safe fron explosion by " mysterious "causes as a cooking stove. But let us
have the facts of these mysterious explosions, The mystery generally dispears wen the facts attending an explosif
tion.
T. B., of Pa., sends a diagram and explanation of the relative positions of crank and piston of stcam engines. His problem is tion is "free from the usual objectionable intricacs of algebratc mathenatics." Our meehanics generally understand more of algebra than of trigonometry, We think our explanation on page 20, current volume, pre. . S. R., of Pa., writes of a " perpetual motion" (more cor rectly designated a " self-mover)" which is running in his neighborhood,
it being a "combination oit heels, levers, and rolling balls," aund is a puz$t$ being a "combination it "heels, levers, and rolling balls," and is a puz zle to all mechanics who have seen it. He wants some competent expert ing balls" will generate and develop power we shall be glad to " make note on
P. J., of N. Y.-We cannot give a recipe 'for a preventive and def ence against musketoes. A remcdy for the pain of the stingls aquaammonia. The preventives used are various. Hunters and ishers in the
woods of Maine and the wilds of the Adirondacks make a smudge," smoke of birch and ticmlock bark, etc., in which they sit and into which he winged pests dare not ventare; or, they smear their faces and hands ized society. Some persons bave iwith in their windows and doors; others use spearmint, in the berbor as an ex tract-oll or essence. We have no sure preventive but "grln and bear it." . P. B., of Mass., says, "I am a machinist of a dozen years' Ithe same dimensions even when the pieces are of exactly the same not Changed when one piece is the hen out of the point of the turning tool of exactly the same length, the taper on both will he the same. The best course is to keep the point of the toolesactly at the center. Thls can be one-by testing the point by the points of the centers of the "live" and or grinding and replacing. In ordinarytarting the point of the cutter may be above the center, but not in turning a taper.
E. A. B., of Conn.-Will air be exhausted from an air cham by water running nnder a heavy head? Ans.. Itwill. Is there any anto
matic devieefor replacing it when thas exhausted ? Ans., We tbink not,
S. H. E., of Ill.-" Will anything except the limestone now uscd prevent the slag from sticking to the sides of cupolas?" Fluor 8par marine shells and of

## 3usiness and 2ergonal.

Furniture factory for sale.--Is in perfect running order and can be purchased eheap. Shipping advantages excellent. Power, st,am. For particulars adaces Wa. Weslow, Reru,
Troy.--Broughton's lubricators have been in use three years. hicy have prove superior to all others. Over 1000 arc ia use in this city.

Wanted-to negotiate for philosophical apparatus. Send J. R. Ray,S

For circular of best baling press ior hay or cotton, or any other purpos
Manufacturers of, and wholesale dealers in, notions, fancy goods, etc., may find a customer by addressing (witb card, etc.,) box 499 Wanted-a second-lanil 30 -horse power engine and boiler, Peck's patent drop press. Milo Peck \& Co., New Haven, Ct. Send for description of Huntoon governor on entirely new principles. 103 State st., Boston, or 79 Liberty st., New York.
Bolt-heading machine just finished and ready for operation. Broughton's double-bottom oilers are the cheapest and best. For descriptive circular of the best grate bar in use, address Hutchinson \& Laurence, No. 8 Dey st., New Yंork
Wanted-breech-loading shot guns made on contract, royalty, or shares. Address Box 786, Washington, D. C.
Millstone-dressing diamond machine, simple, effective, and durable. Also, Glazier's diamonds, diamond drllls, tools formini Lug, and
other purposes. Send stamp for circular. J. Dickinson, 44 Nassau st.,N.Y. Prang's American chromos for sale at all respectable art tores. Catalogues maled free by L Prang \& Co., Boston

For breech-loading shot guns, address C. Parker, Meriden, C t. Winans' boiler powder (11 Wall st., N. Y.,) 12 years a stand| ara tatiole or |
| :--- |
| tence a sents. |

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## Improved Self-Acting Gate

The gate which the engravings illustrate has no springs or similar mechanical devices, but opens and closes simply by its own gravity. The main peculiaritg is its method of hanging, not depending, from hinges placed in a vertical line, but from two points considerably removed from the vertical, in their relations one to the other. The foot is pivoted to a ring or staple fixed in the lower end of a post, and the top of the gate to the arm of an upright crank, as at A. This crank turns in staples secured to the post, the lower one a little out of the perpendicular. It will be seen that the lower gate linge is at the back of the upright, and the upper at the front. The lower end of the upright crank has a horizontal foot, B, to which is pivoted two horizortal rods connected with two double right-angled cranks, C, one on each side of the gate. When one of these cranks is in a horizon tal position the other is up right. The elevation or de pression of one or the other partially rotates the upright crank at the gate post, ele vates the forward or latch end of the gate, and throw the top of the hinge end o the gate at an angle toward
the direction in which the gate will swing This change of position changes the cen ter of gravity, and the gate swings swiftly by its own weight to place, where it is held by a latch, shown en larged in Fig. 2. This latch is without rivet, and closes by a simple flat spring, which having very little action and having very little action and
being concealed in the gate being concealed in the gat
upright, is not liable to derangement. A diagonal brace extending, from the lower front of the gate to the upper part of the rear upright serves, by means of nut and screw, to keep the gate in position if it should at any time tend to sag. In the engraving, for convenience of illustration, the lower hinge and the rods connecting it with the light-angled cranks are shown above the surface; but, in fact, they are below the ground, the rods be ing inclosed in gas pipe so that no water can reach them, and the lower pivot is guarded by a suitable casing of cast iron. The double cranks are operated by the wheels of a carriage or the pressure of the pedeotrian's foot, and are placed at a sufficient distance from the gate to permit it to swing without interfering with the team.
An adaptation of the principle of the gate may be used, by which the gate is operated by means of handles or levers on posts connected to the operating crank by stout wires, the handles being touched by the rider in passing. Small hand gates, hung in the same manner, may be constructed to be opened by a latch in the ordinary way.
Patented July 9, 1867. All applications for rights, gates, etc., should be addressed to the American Gate Company, 225 Superior st., or box 2,156, Cleveland, Ohio.

Method of Locking the Nuts of Fish Plates.
Frequent jarring will rapidly loosen nuts however tightly they may be screwed up. Ordinary check or outside nuts are not proof against it under usual circumstances ; but the jarring of the rails on a road over which frequent trains pass, is a harder trial than that of any ordinary machinery. Nuts holding the bolts of fish-plates on rails are continually requiring adjustcontinu
The improvement herewith illustrated provides blocks placed between the nuts which effectu-
ally prevent them from turning. The letters, A, represent the adjacent ends of two contiguous rails, held in place by the fish plates, B. These are secured on the sides of the rails, b bolts, C , which pass through them and the web of the raile, and are held by the nuts, D. Blocks, $\cdot \mathrm{E}$, of wood or other suitable material, are made of suitable size and shape to fit into the space between the opposite sides of the two adjacent nuts to be locked. The block or locking piece is held in place by a rivet headed screw or nail, $F$, which may pass through the fish-plate its head being between the fish-plate and the rail, and should have a small nut screw on its outer end, which end should then be slightly riveted down on the nut. In case old fish-plates are used, a plate, $G$, of wrought or cast iron may be placed on the outside of the fish-plate, through which the bolts, C, and the screws, F, pass, the head of the screw being between the plate, $G$, and the outer side of the fish-plate. These explanations may. be readily understood by reference to the sections, Figs. 2 and 3.
Patented through the Scientific American Patent Agency, July 7, 1868, by Samuel Garber, who may be addressed a Greenville, Mercer County, Pa. [See advertisement on back page.]

## PERSEVERANCE ONE GREAT ELEMENT OF success.

It may be doubted if the statement, too commonly accept ed as truth, that "success is the real evidence of ability" $i$
just ; yet it must be conceded that, generally, success attends welldirected and persistent endeavor, and that the qualities of
discretion, prudence, and perseverance are proofs of ability in their possessor. That a "rolling stone gathers no moss" is correct in fact, and the sentiment, properly applied, is also true. Not only does human experience in these days teach the necessity of "sticking to one's business," the fact that vacillation and irresolution, and want of perseverance are ruinous to success, but the Scriptures teach the same truth Jacob said of Reuben: "Unstable as water, thou shalt not excel." St. Pstul said: "To them who by patient continuance in well-doing, seek for glory, and honor, and immortalityGod will render-eternal life." If a young man has decided upon the business he intends to follow through life and serves


NICHOLSON'S PATENT AUTOMATIC GATE.
an apprenticeship to it, he should consider carefully before allows a brilliant offer to embark in some other business to move him. His road to success lies through the routine of and this fosiness. Life is too short, even in this fast age success in two or more branches of business. Exceptions there are, of course, but they only prove, from the prominence given them in the public prints, that they are excep tional. The case is very well stated in the following, cut frcm an exchange. Many who have been close observers life can recall instances similar in kind if not degree:
"I am writing a plas," said an intimate friend to us one day years ago.
". 1 'd like son to bear it, sou bave had some expertence in ifterary matters." " 1 'd like yon to bear it, sou bave had some expertence in 1 iterary matters."
We fonand the play in an anfinished condition, but so far as it was in a form We found the play in an onflnished condition, but so far as it was in a for
to be heard, it was very interesting and sufflciently witty. [te:wrlter had onto be beard, it .
doubted tale:t.
"How comes on the play?" we assed as wemet our frlend, four week from that time. "Pretty well; but, by the way, come around to my room this afternoon; I bave a plan to talk over." The play was not brought ou hat afternoon. Its mriter calked mediciae to us an hour or two. He had a certain cure for rhenmatism and consumption, scarlet fever and bore throat. Oneman in England,an M.D., had introduced it there. He knew its secret, and would probably sell it to him at a low fgure. He intended to start for England directly.
"When do you go a way ?", we asked, not many weeks after this. "Away Where?"" "To England." "Oh-yes-l'm not going just now-by the way

- 've got aplan. When I was in Caba I baw how, this sugar businese was convet aplan. When I was in Caba I saw how, this sugar business was
conducted-do you know there are immense profts ln it? I have a triend who salls between here and the Island. I'm golng to get him to buy some
spite of the many obstacles to be overcome. The nature of these may be estimated from the fact that the cutting is not only very deep, but also so narrow that that the space between the sides and the cars, when passing, does not exceed twenty inches. This stone has been widened so as to erect masonry. The widening isdone by small blasts, in order that no great mass of rock may be thrown on the track, and thus delay the constantly paseing trains. A portion of the space excavated is used for building the walls, while the arch is constructed of five layers of brick placed side by side. Shafts will be placed at intervals for ventilation and the escape of smoke. These will rise ten feet above the grade of Fourth avenue, and have a light iron cover to prevent anything falling through. On account of the want of space below, all the stone blasted out has to be hoisted up by derricks to the level of the street, cut into shape, and then lowered when needed in the erection of the wall. About 830 linear feet of mason work has already been completed, leaving 270 feet more to be built. The total length will be 1,600 feet, including the solid rock section between Ninety-second and Ninety-fourth streets. This last will be the most difficult portion of the whole, as the work will all have to be done from below with scarcely any means for removing the debris.-Sun.


## The Chemistry of Sunstroke

The effects and the treatment of sunstroke are well under tood in this country, where the malady is one of frequent occurrence-more frequent, probably, in the hottest months, than in any other parts of the world. But the cause of the

tery. The intense hea merely as heat) of the sola raye is not the agent of mischief. Thehuman body may be exposed to th Turkish bath of $140^{\circ}$, and emain in it for an hourd without injury. This is a much higher range of heat than that of the atmos
phere at which sunstroke of ten occurs, viz.; from $100^{\circ}$ to 110 (in the sun). Men working in zinc furnaces or iron foundries are subjected to a heat above $120^{\circ}$, but they are not prostrated o the ground with the phenomena of the sunstroke. The human organization is fitted to endure a much higher pitch of heat than any we have named. Experiments are recorded of men sitting quite comfortable in ovens while chickens were lowly browning by their side. How does it happen, then that at a temperature of the open air, comparatively so low men melt away (as the popular saying is) with heat?
A writer in the Journal of Commerce says, the reason must be looked for in the character of the sun's rays. The heat of the sun differs from every other heat, as the light of the sun differs from every other kind of light. This is a fact so well known as to need no demonstration. The effect of the sun's heat upon plants-as contrasted with artificial heat-is the most familiar, and, perhaps, the most striking illustration at band. All animate and inanimate things are subject to precisely the same great laws of nature; and the solar heat which makes the flowers droop and close their petals, as if to hut out the dazzling rays, is not without its marvelous chemical effect upon the sensitive brain of man. The effect, we say, is chemical-just like the effect of poison. Strychnine, cyanide of potassium, arsenic, morphine, and the other deadly drugs do not work more marked organic changes in the system than a sunstroke. The countenance of the vic tim is dark-clouded and injected with blood, and a post mortem ex amination discloses congestion of the brain, lungs, and heart. These are the effects, varging in degree, of the administration of poisons The chances of recovery from poioning are far better, if remedie are seasonably applied, than from sunstroke. The latter is almost always fatal with persons of delicate health or full habit.
As to remedies, there is no im provement on the old ones. I'he application of ice to the head and under the armpits, brandy and
water, or other stimulants, administered internally, a mus tard plaster on the stomach, vigorous chafing of the body and especially the hands and feet, fanning, and plenty of ai -these are restoratives efficacious where anything is of -thes

## Bleaching and Granulating Sugars

In No. 4, current volume, we illustrated on the first page a device for purifying and bleaching cane juice. Since then we have received some specimens of the sugar purified by that process which seem to be of very excellent quality, even in ferior cane delivering superior juice which granulates easily and makes a good quality of sugar. The process is well worthy attention by those interested in the manufacture of sugar. The address of the inventor was incorrectly given in sugar. The address of the inventor was incorrectly given in
our description of the illustrations; it should havebeen Evan Skelly, Plaquemine, Iberville Parish, La.

Toronto has produced a traction engine for drawing wagons over common roads, and it is said to work well. Brazil also puts in an appearance with a traction engine which run easily on Macadamized roads, dragging a loaded omnibus up a steep hill with ease and speed, a nd the Emperor uses it for


[^0]:    Inventions Patented in England by Americans. PROVISIONAL PROTECTION FOR SIX MONTHS.
    
    
    

