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tise in gross and detall for large cuttomers in a betterand cheaper mode than they can do it themselves. This we
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whole alie rates, and because of ther intimate and co
 ledge of advertising styles and of rates, we would employ
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 in good order. Address Shearman \& Hilles, 45 Cortlandt
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Brass Gear Wheels, for Models, \&c., on hand and
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adelphina Pa, (List free.) Sure cure for Slipping Belts-Sutton's patent
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ne Union Stone Co.. Boston, Mass, for ircular. Hydraulic Preses and Jackg, new and geoon
and. Latnes and Machinery for Polishning and Buffing Metals. E LYon 40 Grand streer Now York.
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enta.
 Ittle buttons on the desks of the managearas signalis are sent to persons in the varlous departments of the establish-
nent. Cheap and effective. Splendid for shopa, offlces
 Temples and Oilloans. Draper, Hopedale, Mase For 13, 15,16 and 18 inch Swing Engine Lathes,
adiress Star Tool Co., Providence, R. I. Spinning Ringe of a Superior Quallty-Wulting
vile spinning Ring Co., whitunville, Mass. For best Presses, Dies, and Fruit Can Tools, Bils
 lithograph, \&c.
 A. K. will find a recipe for water glass on ving a sun dial on p. 409 , rol. 29.-F. J. C. will find directions for making colored glass on p. 390, vo 30.-J.N. will fin a recipe for blackboard compo-
sition on p. 91 vol. s1--J. N. can utilize the tin o 319, vol. 31
(1) J. H. asks: How can I make pure chlo States gold coin? A. Dissolve the coin in a limite quantity of a warm (not hot) mixture consisting of one part nitric and three parts hydrochloric acid. When solution is complete, filter from the
white residue of chloride of silver; dilute largely with distilled water, and add a filtered aqueous so ution of common sulphate of iron (6 parts to 10 free from copper; redissolve in aqua regia as at irst, and evaporate to dryness on a water bat
Place the filter paper containing the chloride o silver, along with a quantity of borax, in a small
Hessian crucible, and heat strongly until the silver is separated and rests as a small button on the bot
tom of the crucible; remove from the fire, cover and allow to cool. Then separate the silver from and allow to cool. Then separate the silver from
the borax by means of hoiling water ; dissolve in nieric
bath.
Whe
What chemicals will act as a bleaching agent when exposed to sunlight? A. Moisture, chlorin gas, chlori
(2) M.
(2) M. H. K. asks: What is the green subearthenware drinking vessel? Does it come from the water inside, or from the atmosphere? It wash es off readily, and resembles the green slume of
stagnant waters. A. It is probably due to the quantity of organic mater rissolved in the water,
which, on evaporating, teavesit behind in the form you mention. Test a little of the clear water by coloring it slightly with permanganate of potash If, after standing for some time, the color disap
pears, the water is unfit for drinkling purposes.
(3) S. D. G. says: I have a steam whistle which sounds well at 100 lbs . steam. If 1 no raise steam to 1,000 lbs. What effect will it have ou
the whistle? Can it be heard so much farther, or will it fail tosound at all? A. It is problematica Whether the expansion of the metal would not altogether alte
the whistle.
(4) W. M. J. says: The boiler of a thrashing machine engine recently exploced at Lexing-
ton, Md. On examination it was found that the safety valve was stuck fast in the guide, it being
light
globe valve with light globe valve with a stem about $31 /$ inches long, off, being a close itt. I am under the impression that the hand had gone once clear around and up to the 65 los., as the sheets do not show any signs of having been over beated. A. The safety valve stem being fast totally impaired the efficiency of the boiler, and it is possible that the needle of the
pressure gage (if the construction of the gage pressure gage (if the construction of the gage
would permit) bad made more than an entire revolution. The pressure in such case is an unknown quantity ; hence the explosion.
(5) J. C. asks: Is it possible to plane a piece
of hardened steel? A. It is impracticable, would be, if it could be done, disadyantageous.
(6) C. W. M. asks: 1 . If I make an engine
of brass, it will turn blue when heated. Will the color change if I plate it with nickel? A. No. 2 How large a copper boiler should I have for an How large a copper boner should inave hor
engine $11 / 233$ inches, and how thick should the
sell shell be? A . Size of boiler about 8 inches diame-
ter and 15 inches long; stell $1 / 6$ inch thick for moderate pressure. 8. Should it be brazed or riveted?
A. It should be brazed and riveted. 4. Will ports $1 / 8 \mathrm{x} 8 \mathrm{8}$ inches be large enough for a $11 / 2 \mathrm{x} 3$ inch cylinder? A. You will find a rule for size of ports in No. 16, etc., of Practical Mechanism.
(7) W. E. S. says: A Ariend of mine asserts.
that, in a eommon bucket pump the only water lifted by the bucket is that which is above the
bucket. Is he right? $A$. Yes.
(8) A. D. T. says: In my daily experience in the use of twist drills, I have remarked one im-
provement which a manufacturer might make. It is this : Flaten three sides of the shank; this
will do away with all slipping. Also put, center tn the shank. All this can be done at very
faction. A. Twist drills $3 / 4$ inch and over in diame er usually have a tappr shank, and a feather o
he end which effectually holds them. Those be ow that size, and those having parallel shanks may be held sufficiently firm in an ordinary chuck.
would be difficult to make triangular holed would be dife.
(9) A. C. T. says: I have seen an article in relation to a certain alloy of metals, which when melted was of the required degree of heat for
tempering edge tools. What is it? A. We know tempering eige tools. What is it A. Ae know
of no special alloy for that purpose. Common lead is sometimes used, the work being greased before immersion.
(13) L. H. R. asks: 1. I have two shaft belt 68 inches long. How can I find the diamete of two pulless, both to be the same size, on which
this belt will fit tight? A. Subtract twice the disthis belt will fit tight? A. Subtract twice the dis-
tance betweenthe centers of the shafts from the tance between the centers of the shafts from the
length of the belt, and divide the remainder by length of the bett, and divide the reemainder by
B.146; tbe quotient will be the required diameter of each pulley. 2 . Under similar circumstances the size of one pulley being given, how can I as certain the correct diameter of the second? A
To twice the distance between the centers of the To twice the distance between the centers of the shafts, add balf the circumference of the given
pulley, and subtract their sum from the length of pulley, and subtract their sum from the length of
the belt: the remainder, multiplied by 2 and divided b.
pulles.
(11) G. D.-It is likely that the law of your State, forbidding the sale of goods manufacture be enforced; but by a number of judicial decisions, you are at liberty to travel in any State or Territory and sell rights to manufacture under
your patent, and no State legislation can legally your patent, and no State legislation can legalis
(12) H. M. says: We are putting up a hori-
zontal engine. Please give us your method of getzontal engine. Please eive us your method of geting out the template, and the lines and rightange
ine for back box, distance, etc. A. The cylinder and crosshead guides are set true horizontally and parallel with the bed frame. The crank shaf is set by running a line, true with the bore of the cylinder, the full length of the bed, and setting th crank shaft at a right angle to it, keeping all par
硅
(13) A. M. B. ask s: What kind of steel from a square bar of soft machins steel of not too from a square
(14) J. N. P. asks: What is the rule fo calculating the strength of boilers, steam pipes riveted steam boiler, multiply the internal diame ter of the boiler in inches by the pressure of stea in lbs. per square inch, and divide the product by 8.900. The quotient is the proper thickness of the (1) $A$. D : Wo
(15) A. H. D. says: Wo turn our axle nuts in soda and quinine, and putthem away without to keep them from rusting without much expense or labor? A. Coat them witt boiled oil and white ead, mixed to a thick paint.
(16) C. P. asks: 1. Is the temperature in purposes, enough to make steam? Yes, generalls, 2. My house is heated by steam, but not satisfac torily, and Ithought of putting in a furnace with a boiler inclosed in the air chamber, believing that I should get the heat of the furnace for the lowe toors, and make steam enough for the upper stor-
ies. Would it work? A. This plan will answer if properly constructed
(17) J. G. asks: 1. Could I have a bras cylinder, $2 x 4$ inches, made, that would be equal to
 boat be fixed so that the wheel can be propelled with one oglinder? A. Yes.
(18) W. S. S. says: If 1 place $t$ wo cylinders, pipe, atop cocks, etc, and attach to the pipe a small engine, clinder 222 inches, and if I fill cylinder No. 1 with compressed air, 200 lbs. to the square
inch, and cylinder No. 2 is empty, and if the air inch, and cylinder No. 2 is empty, and if the air
from No. 1 is liberated through pipe and engine to No. 2 , and I keep the pressure to a minimum of 200 bs. per square inch until all the air is forced into
No. 2: What power will I obtain and how long will it take to empty No. 1 into No. 2, and so on, alternately? A. Yourpower willdependupon the point of cut-off and the speed of the engine, and
would gradually decrease, as the air entering cylwould gradually decrease, as the air entering cylinder No. 2 would create a constanty increasing
back pressure upon the engine which would pre vent cylinder No. 1 from ever becoming empts. The time necessary to bring the engine to a standstill in consequence of the above back pressure of course depends upon the size of cylinder No. 1.
(19) C. E. K. Jr. asks: For vulcanizing rub ber plates I have a small boiler, 41/2x5y/2 inches,
which $I$ heat up to $320^{\circ}$. I fill it about $1 / 4$ full of water, and then put in the flask, which makes the
boiler about half full. Is all the water converted boiler about half full. Is all the water converted
into steam at a temperature of $320^{\circ}$ ? If not, what into steam at a temperature of $320^{\circ}$ ? If not, what
temperature would it take to convert it into steam, and Only a small portion of the water
have? A. Onl converted into steam, and it would not be practicable, with an ordinary
all in the closed space.
(20) J. T. says: I send you a piece of scale scale, and what will take it off? A. A good feed venting further denoibly be eftcacousin pre annate of soda will loosen what is already formed
( 21 T T. McG. asks: What welding mixture used on vises to weld the faces on the
For welding steel to iron, borax will do.
(22) F.M. asks: Please tell me of a remed
or cold feet. A. A fast walk of $21 / 2$ miles, morn (23) H L S sers: 1 I (ab) H. L. S. says: . . have an engine $1+\mathrm{x}$ Would it be large enough to run a skiff 10 fee long and 2 feet wide, with a pressure of 40 or 50 team pressure of 100 or 125 lbs. per square inch . What size of boiler would it takee A. Make oiler with from 200 square feet of effectiv that amount of power, using gasoline as fuel? A Unless you have had experience in the use of gas oline as fuel, it would be better to depend upo
(24) H. M. N. asks: Which will be the most coonomical way of feeding a boiler, by a steam pump driven by an engine, or by an injector? A The pump driven by the engine will be the mos
economical in general, but not the most conveni economical in general, but not
(25) W. J. N. says: I have a small boiler 8 nches in diameter and 2 feet long, and propose to having whan a baving a water space of 2 inches between th
kins. The shell is to be 3 feet high, with an out side diameter of 16 inches, and an inside diamete of 12 inches. Inside of this, $\tau$ intend to suspen my old boiler, connecting the walls and steam spaces by $1 / 2$ inch pipes. I will make the lowe part of the sbell act as a firebox, fitting a door at
one side and putting in four cross tubes througb ne side and putting in four cross tubes throug
the furnace one inch in diameter. Is this a practicable plan? A. If you make the connections so hation, there is no reaso
(26) J. W. S. asks : How can I melt German it is full of scales. A. Do not add the zinc until the copper and nickel are fused together, and pu in a little borax with the zinc.
(27) J. B. R. says: Your paper of August contained an article referring to paper suitable kr copying purposes. I enclose a sample of an il I saw th, originated by me a few years ago. Un ested my new paper for copping purposes. think I have reason to be satisfied with the result You will see that the copyirg is as distinct as
done with the best Japanese tissue paper; and thi has been accomplished with paper that was man factured for ordinary newepaper printing. The strength of this paper is such as to adapt it for copying important documents, legal papers, etc While there is no doubt that the paper may b madestin tistinct (ifies. which this paper would be well adapted would be in the manufacture of vegetable parchment. A The paper you send is a fine specimen of exceed ing toughness, and is, we think, the strongest un iized paper we have ever seen. It is an admirable u sugges
(28) F. C. W. asks: What is the best metal (29) M. R. says: 1. I send a sample of stuf found in a reservoir for condensed steam from a engine. We run steam through 650 feet of pip the last 100 feet of which is perpendicular) to steam pump, the $y$, between the engine and the pump, making it ne cessary to clean it out every six months. There has not been any grease in the pipe. I should like to know what tit is. A. In resembles the material piston. Examine the piston of your engine and charcoal-like substance, that can be readily cut with a knife. 3. I have had a discussion a bout the distancethat water can be raised with a siphon. One claims it could be raised any distance, proclaimed that it could not be raised more than 34 et. Which is right? A. You are
(30) M. W.asks: Will you explain in your run around a curve, the outside rail of the track on the curve being longer than the inside rail, and the wheels, of the same size, being keyed on the
axle at both ends? A. Under the circumstances, the wheels would slide on one of the track
(31) W. P. asks : 1. Is there more pressure on the top side of a boiler than on the lower side, a little more at the bottom. 2. What is the rule for calculating the
(32) R. M. says: We want some black paint解smoke stacks that are heated nearly red hot. that will stand such a temperature
(33) R. F. H. says: I have a coarse half round file, 6 inches long, which has been in use netized, with the south pole at the tip and the north pole at the tang. Is not this unusual? A Such an example as you notice is interesting, and not at all usual. Perhaps some of our readers may have observed similar instances.
(34) G. W. I. asks : 1. What practical gain would result from the use of a feathering wheel
instead of the ordinary paddle wheel, in the propulsion of steamboats? A. Increase of speed or diminution of power required. 2. Does the float or paddle exert the most force as it enters the
wateror as it leaves it? A. There is very little
diference.
(35) J. W. W. ask s: Will paraffin in nitric A. Paraffin is not suitable for this purpose.
(36) W. A. says, in reply to W. H. P., who
asked how a solution of ammonio-sulphate of copper may be rendered colorless and still retain all the copper in solution : Add potassic cyanide. The
composition of the solution is altered, but the copcomposition of the solution is altered, but the cop-
per is all there. It may appear dark brown when per is all there. It may appear dark brown when
fresh, but this is due to a little iron in the copper fresh, but this is due to a little iron in
sulphate, aud will subside on standing
(37) M. W. W. saps, in answer to the question : Shall we attach a horse to his load at a high point or alow? If the load is light and is to be
propelled at considerable speed, it perhaps makes butlittle difference. Possibly it might be advantageous to put it level with the point of draft, (see your reply to K. C. \& Co., No. 40, July 10, 1875 would seem to be your opinion. But if the load is
 fully, not ouly advantageous, but frequently ab hat he mary to make the attachment so lo propelling force; and the rationale of this is tha the animal has not weight enough to keep him from pushing his feet back wards instead of pull ing his load forward, and he requires to be sup. plied with it from some other source. I have see
a horse pull a load with a man on his back that $h$ was unab e to move without ; and any person wh has not tried it will be surprised to see how ligh a load will stall a team when the attachment is such that it is required to exert some downwar pulling force. This consideration is also implica ed seriously in the practical operation of tractiv engiaes, and their efficiency would be greatly in be given the beneftof a portion of the load to hold it to the ground or track, preventing slippin and carrying unnecessary weight.
(38) M. W. W. says, in reply to several in quiries in regard to the draft of high and low wheeled vehicles: A high wheel will be more easily drawn over any small obstruction in the road (such mud; but whether this is the case on an ascend ing grade is a question not easily determiued. I has been asserted that a man will draw a heavier than on a large wheeled one, and the theory for is that a perpendicular line drawn from the center of the axle falis nearer to the point of contact be tween the wheel and floor; this is equivalent to the short end of a lever, the distancefrom the axle to the point of contact being the long end. A first this might seem plausible, but an examina
tion of the accompanying engraving will show

that the long ends of the levers, A C. are length ened or shortened in the same proportion as the gained by that means. We must, therefore, look for some other explanation, and perhaps the read ers of the Scientific american can clear up the
(39) E. D. R. says : If E. B. W. would mix trong infusion of quassia with his ink, he would lines.
Minerals, etc.-Specimens have been re ceived from the following correspondents, and examined, with the resulte stated
E. G. A.-No. lis magnetic oxide of iron. No. s probably an alloy of tin and lead; but the sampe too small for a decisive report. No. 3 is a vaiety of bituminous coal containing considerable riety of porcelain. M. B. J. It is a poor va iron, containing an unusual amount of earth material.-C. G.-It is quartz, inclosing particle of iron pyrites. It is of no value as an ore.-R. It consists of felspar and calcite, inclosing mica in. It crystals of garnet.-S. G. R.-Itis refine was undoubtedly left native as you found it, an H. T.-It is a formation of variegated clay upo hale. It has been hardened by exposure - Wp B H. - No. 1 consists principally of antimony. No. is galena. No. 3 is impure galena. No. 4 is a fine of an ore it isnecessary to $b$ of an ore, it inalysis made.

HINTS TO CORRESPONDENTS.
Correspondents whose inquiries fail to appear
should repeat them. If not then published, they should repeat them. If not then published, they may oonclude that, for good reasons, the Editor always be given.
always be given.
Enquiries relating to patents, or to the patentability of inventions, assignments, etc., will not be published here. All such questions, when initials only are given, are thrown into the waste basket as it would flll half of our paper to print them all, but we generally takepleasure in answering briefly by mail, if the writer's address is given.
He sent: "Who sells nitro-glycerin? Who owing are sent: "Who sells nitro-glycerin? Who make
canvas tents? Who buys corundum in lump ? Who sells al minum in sheetand wire?" All suc personal inquiries are printed, as will be observed, in the column of "Business and Personal," which Is specially set apart for that purpose, subject to Almost any deaired information can in this way be expeditiously obtalned.
[OFFICIAL
INDEX OF INVENTIONS
Loers Eatent of wiun ranted in August 17, 1875.
and each bearing that dat Those marked ( $\mathbf{r}$ ) are relisued patents.

Acld, making salicylic, w. E. Graf...... 166,962, 166,863 Alarm, burglar, E. Hand........
Animal poke, H. Watton............ Rable te jumper. R. W. Cald Barrel heads, sawing, E. and B. Holmes Bed, spring, J. Johnson..
Beds ${ }^{2}$ ad, knock down, $\mathbf{W}$. Bed t ad, sofa, J. Petry. ..
Boots propelling, w. Ascug,
Body weight and hand power, Boller cleaner, т. o. Kemp Boller heads, turning flanges on, R. C.
Boller, rotary steam, $\mathrm{c} . \mathrm{w}$. Pierce. Boot toe blank, N. R. Packard
Boot heel trion boot heel trimmer, Gliddon and Siumons Bronzing machine, D , T. E. Dante
 Butter, tempering. J. c. Rorick.............. Calendar, D. J. Miller
Cap. A. Schwarz.......
Car brase, A. T. Rlley.
Car coupling, W. Lannan.
Car coupling, G. R. Owen
Car seat. railway, N. N. Hort
Car,
Careeping, whe . E. Lucas.
Car wheel, A. Schrock.....
Carriages, shititing rail for, E. P. Stedma
Casting, mold for, B. Harris
Chair, folding rockini, A. W. Stewart
Chair, folding rocking, o. E. Vail Chimney top and vent . H. Hildreta Chinch bugs, destroying, H. F. Rice Churn, J. Butler.
Churn, w. Redheffe
Claw bar, A Shaw..
Coal hod, J. Cochre
Compass. mariuer's. E. s. Ritchie
Corn sheller, Creekmore and McMillin
Corr shenler, Hall and
Corn sheller, s . willams
ryptography, A. L.
Cryptography, A. L. Flamm..... ........
C ishion cleaning machine, . R. Barry.
Dental cement, M. T. Labbe........... Dental engine, electro-magnetic, J. Bishop. Dental pluggers,automatic, G. w. Levin. 166, $\because 09$ Drill holes, charging, R. G. Baldwin............. Eaves trough hanger, H. K. and
Electric 11 ght , S. A. Kosloff......
 Engine cylinder port. W. C. Chureh............... Engine, reciprocating, G. B. Dixwe
Engine, steam, E. D. Leavitt, Jr...
Excavator, T.
Explosive compound, R. Cahuc
Fare box, w. c. McG111
Fare register, D. Eldr
Faucet, E. Whison.....
Feed rack, M. Ralph
Felting machine, Hooperand Crate portable. T. L. Davidson
File, J. Haptonstall...............
Flour bolting machine, W. F. Co
Fuel, apparatus for economizing, C........
Furnace for brick kilns, w. s. Colwell Furnace for burning edgings, etc... I. O. Smith ( Grnace for melting me
Game board, A. Herzog
Garden trellis, I. Goodspe
Gas apparatus, A. Glatchet........
Gear cutting attachaent,
Genator, steam, J. Goulding.
Grain drill, W. Aldric
Grain drill tooth, G. L..... 1 ves.
Grain drills, force
Hair picker, C. A. Teal.
Hame fastener, S. Spic
Harness saddle tree, A. Teas
Harness trace carrier,
Hat stiffening machine,
Hatchway guara, J. C. Foster
Heating and ventlatich
Heating and ventilating device, A. H. Thorp
Heeling machine, Elliott et al.
Hoisting apparatus, J. Hofman (r)...........
Hoisting macnine or elevator, E. Schlenker.
Hook, hat and coac, c. Schoenbetn.
Horseshoe, A. C. Snowden
Hose nozzle, C. Oyston.
Hosiery seams, sewing, w Pearson
Hub boring machine, J. Lee........ H. stileman Ice manufacture, Negley
Ice breaker, J. T. martin.
nhaler, C. R. Syke
jjector, s. Fowden.
Ironing board, o. s. Pride.
Knitting machine, weft
Ladder, A. S. Miller..........
Linp, ursery, c. I. Gorham
atch, locking, G. J. Dickso
Latch, locking, A. Worster...
Lathe tool holder. W. Krutsc
Leather, waterproofing, J. Clunan.
Lotter box, C. S. Newcomer..........
Locomotives, steam brake for, L. B. Salisbur
Loom for weaving hair cloth, J. Turple.

Mechanical movement, P. Broadbroo
Medical composition, L. Corfman....
Medical composition, N. Sullivan........
Metal punching machine, J. R. Lindsay.
Milling machine. W. Krutzsch.............
Millstone, counterbalancing, H. Klinkerma Milistone, counterbalanclng, H. Klinkermann...
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Photographs, washing, J. .... Cay........
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Plow, w.

Propelling mechanism fo
Pump, A. \& M. K necht.
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Separator, grain, w. E. Torley ....... .....
Separator, sand and gravel, N. J. Keller (r)..
Sewing machine, T. J. Harper...........
Sewing machine, T. J. Harper....
Sewing machine, C. Hodgking (r)
Sewing button holes, W. Randel....
Sewing machine corder, w. Wilson ( $r$ )
Sewing machine treadle, R. F. Wilcox ( $\mathbf{r}$ ). Shade holder, T. Moran....
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Watch, etc., stem winding, L. Eahn...
Watercooler, L. B. Woolfolk..........
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Water cooler stand, c. B. Porter
Water wheel, Campbell
Welding compound, J., Jr. \& A.S. Scott.
Whalebone, etc.,
Whip socket clasp, E. W. Scott.
Wind wheel, H. J. Brimhall, Jr.
Wind wheel, H. J. Brimhall,
Wrench,P. Samuel..................................
designs patented.

8,567.-Hiater.-P. Rolliaus, Jr. Brooklyn. N. Y. 8,568.-RANGEs.-W. Whitman, Bangor, Me.
8,570.- Gonn Handlbs.-H. Miller, New York city.

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CANADIAN PATENTS.
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## 5,066.-H. E. Casgrain, chine. August 19, 1875 . <br> Quebec. Illuminating gas machine. August 19, 1875. 5,077.-E. V. Wingard. Pit bricke. August $24,1875$. <br> bricks. August 24, 1875 . <br> 5.078.- J. And and stone breaker. August 24,1875 . S. Ore crusher and stone breaker. August 24, 1875. 5, or9.-A. N ye. Jr., Boston, Mass., U. S. Telescopic feed bag. August $24,1875$. 5,080.-J. Steger, New York <br> August $24,1875$. $5,081 .-E$ E. H. Gratiot, Plattsville. Wis., U. S. Wheat <br> s.o.e. Auger. August 24.1875. s,o82.-G. R. Moore, Westf. <br> 5, peller. August 24,1875 . per <br> Su8.-G. Isles, Montreal, P. Q. Differential compass, August 24,1875 . <br> 5, ©s4.-T. Saunders et all. Toronto, Ont. Burglar and fire proof safe. August 24, 1875. <br> fre proof safe. August 24, , 1875. 085.-D. M. Kelley, Athelston, P. Q. Bolt and rivet 085.-D. M. Kelley, Athel trimmer. August 24,1875 . <br> 5,086.-C. G. Force, Jr., Cleveland, Ohio, U. S. Device forexcavations for sewers. etc. August 5, 087 , 1877 . W. Lightfoot et al., Toronto, Ont. Lawn sprinkforexcavations for se wers. etc. Augst 5,087 -W. Lightfoot et al., Toronto, Ont. Lawn sprink ler. August 24 . 1875 . ler. August 24 , 187, f,088. -T. H. Marsh, <br> 24, 1875 . 5,089-E. A. Calanan, Brooklyn, N. Y., U. S. Signa and alarm telegraph. August 24, 875 . and alarm telegraph. August $24,1875$. 5, .a90. - W. Jonnston, Shelby, N. Y., U. S. Door hanger August 24 . 1875 . $\underset{\text { August } 24,1875 .}{\text { 5,091.-J. Gerhardt }}$ <br> 5,091.-J. Gerhardt et al., Montreal, sawing gang saw. August 24, 1875. 5,092.-P. M. Thompson. Derbey, <br> wrench. August 24, 1875 . <br> cess. August 24, , 875 . ch, Ont. Meat-preserving pro <br> 5,034.- J. J. Curran et al., Chicago., I11., U. S. Lum- ber dryer. August 24, 1875 . <br> 5,095.-P. C. St. Marie, Montreal, P. Q. Screw wind- lass for vessels. August 26,1875 . 5,096.-J. J. Stewart, Sargentville, Me., U. s. Pegging <br> 5, 096.-J. J. Stewart, Sargentville, Me., U. S. Pegging Jack. August 26. 1875. 5,097.-F. Van Doren, Adrian, Mis8., U. s. Corn plant-,097.-F. Van Doren, A er. August 26, 1875 . <br> er. August 26, 1875. $5,998 .-$ H. sprague, Churchville, N. Y., U. S. Wagon <br> August $26,1875$. 5,099. D. P. Shard, Ithaca, N. Y., U. s. Horse rake. August 26, 1875. <br> August 26, 1875. 5, 100 . J. and F. A. Bailey, Farmington, Mass., U. S Frutt pickler. August 26, 1875. 5,101-J. Clay et al., Montreal, P. Q. Fire lighter August 26, 1875 . August 26, 1875 . Jack. August 26,1875 . , 103. - M. and W. Ftt machine. August 26, 1875 . s.104.-J. Benson, South burner. August $26,1875$. 5.105.-J. C. Moore et al <br> .105.-J. C. Moore et al., Philadelphia, Pa., U. S. Cans forshipplag olls. etc. August 26, 1875. 5,106- N. Silverthorn, Toronto, Ont. machine August 26,1875 . 5,107-W. W. And Prson, Clevela flue cleaner. August 26. 1875. <br> $5,108 .-$ S. Ballerchey, Eld heel. <br> hee.. August 26. 1875. s.109.-s. Mitchell, Lima, N. Y., U. s. Carriage hub. August 26, 1875 . <br> August 26, 1875 . 5,110. J. T. Burns, Springhill, Ont. Root cutter. Aug. ust $26,1875$. $5,111 .-$ R. Sadle <br> shovel. August 26, 18 ,12..J. W <br> er. August 26, 1874. <br> toe shoe. August 26, 1865. <br> Aagust 26, 1875 .

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