RECENTLY PATENTED INVENTIONS.

## Railway Appliances.

Car Seal.-Benjamin J. Sturtevant, St. Paul, Minn. This seal is formed of a flexible shackle to which is detachably secured a hook having a
spring-pressed arm, a locket made of earthenware, spring-pressed arm, a locket made of earthenware, a shoulder to engage the arm of the hook. The devic affords an inexpensive seal, which must necessarily be
broken if the door is opened, thus indıcating that the broken if the door is opened, thus indıcating that th
car has been tampered with, while it may easily be ap plied aud removed without the use of special tools, but cannot be opened except by breaking the shackle of the locket.
Car Coupling.-Francis A. Johnson, Black Rock, Ark. The drawhead of this coupler has a transveree partition in the front end of its central
opening, spring-pressed plates sliding transversely in the rear of the partition, pivoted arms being connected with the plates and a cam actuating the arms to ope the plates, while rods are pivotally connected with an arm on the shaft of the cam, hooks engaging the rod
to lock them in place. The device is an improvemen on a former patented invention of the same inventor, and the essential working parts are inclosed in the drawhead, to be fully protected from rain, snow, ice,
dirt, etc., thus insuring the proper working of the device at all times.
Car Coupling. - Oliver M. Brimingham, Victoria, Texas. This invention provides a draw-
head to which is attached a guiding block in which works a vertically movable sliding frame, the pin being convected with the frame and having a guiding tongne
working in the guiding block. The improvement afworking in the guiding block. The improvement af-
fords means for elevating, holding and releasing the fords means for elevating, holding and releasing the
coupling pin, while the drawhead is vertically adjustable in a convenient manner either before, during, or after coupling. The device is designed to be arranged to be operated from either side of the car. [For information
relative to this patent address R. Brackin, Inez, Texas.]
Drill. - Wanton C. Barber, Villisca Iowa. This is a portable drill of simple and durable
construction, especially adapted for use in drilling railconstruction, especially adapted for use in drilling rail-
road rails, while capable of satisfactory use on many portions of a locomotive or upon stationary engines. The bed has guides and a shifting lever, a frame sliding on the bed holding a mandrel carrying a drill, while a
driving mechanism and feed device are connected with the drill mandrel. Arms extending from the bed have hooks adapted to clamp the tread of a rail, when the web of the rail is to be drilled, and the frame is fed
forward by manipulating a lever, and when the drill is forward by manipulating a lever, and when the drill is
in operation it is automatically fed forward while being revolved by the driving mechanism.

## Mechanical Appliances.

Nail Machine. - Joseph S. Black burn and Frank G. Bartholomew, Salem, Ohio. This machine has the usual fixed anvil or die, on which
operates the hammer fitted to slide in the usual manner in the frame, but combined with the movable hamme is a spring-pressed arm rivoted on the machine and extending at its free end to the hammer, the latter actuat-
ing the arm. With this improvement. after the nail is ing the arm. With this improvement. after the nail
formed with a head and cut by the knives, it is readily broken off the wire and discharged.
Core Saw. - Edwin B. Roberts, Emporia, Kansas. The body of this saw consists of a
cylinder adapted to be clamped to the nead of a vertica shaft, the inner faces of the teeth being flash with the interior wall of the body, and each tooth being cut
away beneath its gouge-like point from its outer face nward, an inner wall being formed to prevent chips entering the interior of the body, while there are spiral ribs or bands on the outer side of the body flush with
the outer sides of the teeth, the upper or working edge the outer sides of the teeth, the upper or working edge
of the body being beveled between the teeth. The saw is designed to be driven rapiAlly for any desired distance into the wood without clogging, the chips passing
through recesses of the teeth and head and the spiral bands carrying them to the bottom of the saw.
Ore Crushing Mill. - William H. Coward, Bath, England. This invention provides im-
provements in a formerly patented mill in which an provements in a formerly patented mill in which an
edge runner rolls within a revolving drum furnished edge runner rolls within a revolving drum furnished
with cups, hy which the material is repeatedly brought under the action of the edge runner, the efficiency of the mill being increased by an improved mode of
mounting the drum, more effectually exposing the mounting the drum, more effectually exposing the
crushed material to the winnowing action of the air may de dispensed with over the exhaust aperture, the sieves being liable to become clogged by light particles invoperating on micaceous ores.

## Agricultural.

Cultivator. - Adam F. Rinehart, near Uniopnlis, Auglaize County, Ohio. Pivotally con-
nected at its rear end with the main frame of this nected at its rear end with the main frame of this
cultivator is a swinging frame, with which is connected a lever imparting a lateral movement to the front portion of the frame, while a blade or tooth beam also has
a pivotal connection with the swinging frame. Various a pivotal connection with the swinging frame. Various
other novel features are embodied in the invention, other novel features are embodied in the invention,
forming an implement of simple, strong and inexpenforming an implement of simple, strong and inexpen-
sive construction, and of light draught, which can be managed to plow to a uniform depth. The cultivator driver, and.may be ad justed both vertically and laterally driver, and.may be adjuste
Cultivator.-Dillyard Hicks, Waldo, Fla. This implement is adapted to have attached thereto plows of any make, such as scooters, shovels,
sweeps etc.,., and is designed to be economically
manufactured. Two parallel cross beams exterd manufactured. Two parallel cross beams exterd
diagonally across and are secured to the draught beam, one of them carrying cultivator blades, while from the rear one curved braces project forwardly and downwardly, engaging at their lower ends the supports of
the cultivator blades. Vertical brace bars are provided whereby the cross beams fare sustained against lateral
strain and the main connections between the cross beams Hay Loader. - Henry Briscoe, Mor risonville, Ill. This machine, besides the carriage and
framing, has an elevator with a rake frame held in inframing, has an elevator with a rake frame hove forward
clined position, so that as the machine moves he teeth rake up the hay, which is delivered into a a transverse carrier into a wagon moving alongside of the machine. The rake teeth may be conveniently
raised or lowered, and the carrier has a hinged outer section which can be readily adjusted as desired.

## Miscellaneous.

Galvanic Battery.-Fernaud Gend on, Bordeaux, France. This is an improved primary battery, so formed that the output of the battery is
egulated automatically according to the work demande of it, to the greatest amount of work the battery will do It consists of a series of cells containing exciting and epolarizing liquids in combination with an electric pumps driven by the motor producing a circulation trough the cells, while there is an automatic regulator of the number of cells in use. The battery is preferably formed in three tiers, comprising six tanks for
liquids and twenty-four elements, the nature of the liquids and twenty-four elements, the nature of the
elements having no bearing on the invention provided elements having no bearing on the invention provided
the exciting liquid and the depolarizing liquid be emated from one another in the celle
Cash Recorder. - Milo L. Morgan, New York City. This is a device for ase in connection
with a cash drawer and the top of a table or desk, a ape from a roll of paper having a section exposed fn entry may be made thereon each time a sale is effected The paper is held at all times stretched smooth in position for use, there being a rigid connection between trip lever actuated by the drawer and the feed wheel,
the device affording the means of readily making up counts at the end of a business day.
Spectacle Case Fastening. Fredric W. Steadley, Carthage, Mo. This device iormed with a plate having a central aperture in which turns and slides the rigid member of a saffety pin, for fastening the device to the clothing. The fastening i designed to readily adjust itself to the body of the
wearer when bending over, etooping, etc., the secarin pin having a free movement relative to the case.
Can Cover. - Orson D. Phillips and George H. Litllewood, Lisle, N. Y. This improvement
provides a locking device, especially adapted for use with milk cans, etc., and adapted as a fixture to the can body, which may be engaged with the lid to quickly and conveniently clanp the body of the lid to the body
of the can, and hold them locked together. The device of the can, and hold them locked together. The device
is preferably made of spring wire, bent in essentially circular shape, but with a c cil, eyes, and loops, with placed if desired, the link serving as a lever to draw the ends of the device together and as a bolt to maintain

Load Binder. - Harry M. Bradley Canon City, Col. This device consists of a bar having
teeth on its upper und lower edges and provided at one teeth on its upper ind lower edges and provided at one end with means for attaching a cord or wire thereto, a
slotted lever receiving the ratchet bar being provided slotted lever receiving the ratchet bar being provided
with a bolt extending through the slot to engage one with a bolt extending through the slot to engage one
set of teeth of the bar and a pawl engaging the other set of teeth, while a hook is provided to receive a cord, wire, or cable. The device is designed to afford
simple, cheap, and efficient means by which a load any kind may be tightly bound, while it is also well adapted for use as a wire tightener, post puller, lifting jack or wagon jack, etc.
Vehicle Spring.-Thomas S. King, Cincinnati, Ohio. This spriug is made from a single
strip of metal, bent to the desired shape, and joined at its ends in the flat portion of the spring by riveting or are integral, fut ening. The upier and lower sections form rounded ends, the drawn-in portions of which come together when the spring is much compressed, whereby the spring is shortened and stiffened, although when a light load is on, the entire length of the sections and the end portions are in full play.
Stove Pipe Drum. - Moses P. Farnham, Germantown, Cal. This is an end-closed stove
or furnace pipe drum having upright partitions of dif ferent heights establishing flues between them, with a central through draught pipe having upper and lower the lower head of the drum has a soot or ash clearance hole exterior of one side of the through draught pipe, and a door is arranged to form a clearance outlet for two adjacent flues. The invention is an improvement on a former patented invention of the same inventor,
the drum being adapted to facilitate various heating

Game Board.-Jacob M. Henriquez, Coro, Veneznela. This is a board adapted for playing
a variety of games. The base of the board is divided into compartmente, and there is in it a tilting table which actuates a rockiug slide board, there being a ver-
tical tubular conduit on the base, with branch receiving pipes at its upper end and branch deiivery pipes at its lower end, and a central vertical diaphragm in the conduit at the junction of the delivory pipes. Balle dropped through the upper branch pipes are designer
to tip the tilting table and dislodge a counter from the to tip the tilting table and dislodge a counter from the
Toy Puzzle. - Hans I. F. Schulze, New York City. This toy is designed to exemplify the problem of standing an egg on end, and consists of an
egg-like hollow body formed in two sections, its chamber divided into two compartments by a horizonta partition, there being another apertured horlzonal par-
tition in the lower chamber, and the body contalning a movable weight. By properly manipnlating the to
the pointed lower end, when the egg-like body will be balanced upon this en
Nore.-Copies of any of the above patents be will
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send name of the patentee, title of invention and date send name of
of this paper.

## NEW BOOKS AND PUBLICATIONS.

The Lumberman's Handbook of In-
Spection and Grading. By $\mathbf{W}$. R. Judson. Chicago: The Lumberman 1891. Pp. 263

This excellent work covers the ground of quality and nspection of lumber in different parts of the United States, with many useful notes on dimensions, cutting
ap of lumber, and other allied topics. The book repreup of lumber, and other allied topics. The book repre
sents the fourth edition. It will be very acceptable to sents the fourth edition. It will be very acc
all those concerned with wood and lumber.
The Phosphates of America. By Francis W yatt, Ph.D. Second
Edition. New York: The Scientific
Publishing Co. 1891. Pp. 187. IlPublishing Co. 1891.
Much interest has been created in the subject of phosphates by the recent discoveries of the phosphate beds of Florida. Dr. Wyatt, in this very elegantly made
volume, treats of phosphates from the mine to the farm. volume, treats of phosphates from the mine to the farm.
Their extraction, chemical treatment, analysis and the Their extraction, chemical treatment, analysis and the
alliedindustries recelve due consideration. The illustrations, many by process fromoricinal photographs, are exceedingly attractive and add greatly to the value of edition, it is destitute of a table of contents. It has however, an excellent index.
Modern A merican Rifles. By A. C.
Gould ("Ralph Greenwood"). IllusGould ("Ralph Greenwood"). Illus1892. Pp. xii, 338. Price \$2.

This excellent book goes over the whole range ifle practice, hunting and target practice, both civilian
match and military shooting. The different forms of rifle sighte, the general construction of the piece, the rifling, projectiles, cartridges, and ammunition, are all elaborately treated with many illustrations. Even to those who use the arm but little, the practical diecus-
sion of its many points possesses much interest, and we believe that this work will be widely appreciated.

## SCIENTIFIC AMERICAN

BUILDINGEDITION.
FEBRUARY NUMBER.-(No. 76.

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3. A residence at Portland, Me. Cost, $\$ 11,000$ complete
in every respect. Floor plans, perspective elevain every re
tion, etc.
4. The very attractive residence of E.T. Burrows, Esq at Portland, Me. Cost, $\$ 9,500$ com
spective elevation, floor plans, etc.
5. A dwelling at Augusta, Me., erected at a cost o $\$ 3,200$ complete. Floor plans and perspectiv elevation.
6. A handsome dwelling at Carthage, Ill., designed in the style of modern Roman
Perspective and floor plans.
A residence colonial in treatment and recently erected at Belle Haven, Greenwich, Conn., for Mr.
Chas. A. Moore, at a cost of $\$ 14$, evo complete Two perspective elevations, floor plans, etc.
colonial residence recently erected at Brookline, Mase, at a cost of $\$ 18,000$ complete. Wm. T.
Seare, architect, Boston, Mass. Perspectlve elevation and floor plans
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ing room, together with ground plan. A ing room, together with ground plan. A
thoroughly cozy, comfortable, and
complete thoroughly
dwelling.
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Referenees to former articles or answers should Referenees to farmer articles or answers should
give date of paper and pageor number of question.
Inquiries not answered in reasonable time should
Terepeated; correspondents will bear in mind tbat some answers require not a littie research, and,
though we endeavorto reply to all either by letter
or in this department. eech must take his turn. or in this department. each must take his turn.
Spect al Writen Information on maters of
personal rather than general interest cannot be
 Books referred to promptly supplied on receipt of
mince.
marked sent for examination should be distinctly
mated.
(3987) C. W. L. writes: In your issue of December 26 you give a translation of a method of
cutting a five-pointed star, taken from L'Ilustration There is an error in the method as indicated which will There is an error in the method as indicated which wil cutting line should not run to point $E$, as there given, but to point, B, falling on line C E. The greatest economy of paper will result when the paper has the proportion of about one to two, and the point, B, is made to be on the upper edge, A , the other conditions remaining as
(3988) L. A. J. asks: Two bullets of same weight, fired with the same charge of powder ou from, and in the direction of, a train moving at the rate of 40 miles an hour; the other from the rffle when stationary: 1. Will either bullet be carried further than
the other? A. Yes. 2. If so, which one? A. The one the other? A. Yes.
from moving car.
(3989) H. M. C. asks: 1. Which one of the following batteries is the best for running small motors-the Edison-Lalande, the Fuller, or the bi-
chromate plunge? Is there any one better than these? chromate plunge? Is there any one better than these?
A. Where compacticos and portability are required, the A. Where compacticos and portability are required, the cells would be required to run a six volt one-sixth cells would be required to run a six volt one-sixth good sized cells. 3. Abont how fast would such a motor drive a sixteen foot boat, rather lightly built? What would be the proper size propeller? A. Probably three vo four miles per hour. 4. Is there any action in the
Fuller battery when the circuit is open? A. Practically
(3990) C. A. Z. says: 1. I have noticed that different coins have not the same initials inscribed on them. Some have the letter 0 , others the letter C C, and again the letters $\mathbf{S} \mathbf{S}$ are found on otbers Could you tell me to what cities these letters refer? A The coinage of the Philadelphia mint has no designat
ing letter. O is New Orleans mint; C C, Carson Cit mint: S, San Fraucisco; C and D on old coinge mint: S, San Fraucisco; C and D on old coinage i
Charlotte and Dahloneg mint, now discontinued. Could you tell me the value of a cent of 1802 and of
a dollar of 1804? Also, how mavy dollars were coined
in the year 1844? A. Address Superintendent of the in the year 1844? A. Address Superintendent of the
Mint, Philadelphia, in regard to value and coinage. (3991) G. M. W. says: 1. I want metal that I can heat mercury or quicksilver in, to
about $500^{\circ}$ or $600^{\circ} \mathrm{F}$., that the mercary will not injare or that will not injure the mercury. Will steel do A. Steel or wrought iron tubing is the best to hold mercury, requiring no preparation. There is no re action by either metal on the other. 2. How much preesure would a fiueabout three-eighths inch inside and five-eighths inch outside stand before it would collapse? The fiue to be made of steel or whatever other meta you advise using. I want one that will stand the great ent possible pressure. A. Free-eghths inch gas pipe pounds to the square inch, and three-cighths inch extra srong is good for $6,000 \mathrm{lb}$. per square inch. 3. How thick would I require the metal of a cylinder 6 inches diameter uside to be, to stand same pressure? A Six inch wrought irun pipe should be equal to a work to $3,000 \mathrm{lb}$. For these working prossures, the pipe should be tested to 50 per cent higher presaur lease tell me how much mercury expands with heat Say 100 cubic inches at $0^{\circ} \mathrm{F}$. How much would there mercury at zerobecomes 10256 at $300^{\circ} \mathrm{F}$. and 1.0313 at
(3992) B. E. W., Antonio, Kans., writes: I want to make for my own use a four or five inch astronomical telescope, with eyepiece for terrestrial use. fine and close bench work; have good eyesight and for me to grind and polish the lens, would ask as lows: 1. Where can I get the roughly ground glas castinge for same, and at what price (for achromatic lens)? 2. Where can I get the material and gauges for hinding and polishing, and at what price? 3. Would it be better to buy eyepieces (celestial and terrestrial) round lens and make thems 4 What separate read on the subject could I get that would aid me? on the subject could I get that would aid me? A.
There are large possibilities for amateurs with patience and perseverance. You can obtain the optical crown Street, New York, cost about $\$ 2.50$ per pound. You must make your own gauges and laps. You can buy
eyepiecescheaper than to make them. You will find full instructions for grinding and polishing lenses, with the curves and kind of glass for telescope object glas8es, 581, 582, 583. Also illustrations and construction of parious eyepieces, in Scientific American Supple MRNT, No. 399,10 cents each mailed. Byrne's " Hand
Book for the Mechanic and Artisan "contains much informatio
(3993) S. E. asks: 1., Can you inform me what the capacity is of the largest air pumpd, no of their cylinders? A. The largest air pumps are the blowing engines of blast furnaces, with cylinders 6 to 8 feet dameter and 10 feet stroke, used in Pennsylvania 2. Also have we any examples of suspension bridge piers; if not, what is the first most eerious objection (if any), or has this plan never been agitated? A. The sus pensionaqueduct at Pittsburg has seven spans. There
are other suspension bridges of more than two sus pending piers. We do not recall their names. Ther pendingpiers. We do not recall their names. Ther two piers, if proper truseing is used to prevent undula-
tion.
(3994) A. M. says: Assuming that the wood is steamed and bent when green, and allowed
timefor the wood to be thoroughly seasoned and set in the bend, would it be inclined to lose the shape of process of rendering the wood damp-proof? A. Bent ood tends to resume its original shape when ex poeed to damp or becomes wet. The only way to pre to pre changes in its hygrometric condition,
(3995) J. H. G. asks what to use to wash brass or copper to give it a silver coating. I used and rain water, but have forgotten the proportions. A. The process is to dissolve a small quantity of mercury in a solution of one part nitric acid to fou solution, and to an ounce of the solution add a few rops of hydrochloric acid diluted with four parts water until a bright piece of copper is whitened by being dipped. Then dip any article, or rub the solu(3996) D. R. C. says: I wish to paint the brick walls of a composing room, used for setting with some white substance that will not scale off and sall into the type. Please state in the Scientipic Ambrican what compooition would be best for thig purpose. We can recommend $s$ whitewash made in the pro portion of one-half a bushel of best lime slaked in ho water, eight a ceoxf salt dissolved in hot water, $21 / \mathrm{lb}$ ponnd white giue previourly dissolved and one-hal a pound clear whiting. Add the salt brine to the laked lime and ther the cther ingredients. Keep hot while using. Use a whitewash brush. Woodwork
should be thorongluy cleaned from dust before apply
(39int.
(397) W. P. a.sfks : How can I harden the tips or points of og wheels, say to a depth of not
more than one sifiteenth of an inch? Said wheels are about, 4 inefes in dianeter by half inch wide (or thick). Theid material is cracible cast steel. A. We provefs ieat, and to quich'ty bring a jet of water to bear perninate. Have the jethalf an inch diameter, and
ander 20 or 30 lb . pressure. This will harden the teeth
only. Steel should be as low in carbon as is comonly. Steel should be as low in carbon as is com-
patible with hardening, to prevent cracking of the (3998)
(3998) Reader asks:1. In what Supple ENTS are the directions for making dynamos, motor Nos. 161, 600, 720, 793, for dynamos; to Nos. 641, 75, 767, 783, for motors; and to Nos. 142, 163, 250, for tele phones. 2. What are the formulas (chemical) for catting copper and zinc? A. Use nitric acid fo opper. Sulphuric, hydrochloric or nitric acid wi issolve zinc. 3. Is there any way 1 can get a cata directlys A. You might make known your each on dvertisiug 4. In wrapping an induction coil 336 inch he primary layers are to the secondary as $3: 10$. What the ratio for coils increasing an inch each time aing wire 18 and 22 A. The E.M.F. of the secondary to that of the primary as the number of turns in primary, while the amperage in the secondary is in yerse proportion to the E.M.F. For an answer
our medical guery we advise you to consult
(3999) J. M. M. asks : How much does bar of railroad trac nd how mach space ought to be hetween the ends joints? A. Rails vary in length by the extreme temeratures in the United States, about one-quarter of a nch, so the 10 lid ch, so that rails laid at ume of mean temperature he Northern States should have half the above space Rail laid in summer in the Southern States may hav n allowance of 1-16 inch in 20 feet rails, and 3-16 inc
(4000) M. C. A. C. asks: 1. How t eep linoleum bright. A. Wash with equal quantitie nseed oil or a weak solution of beeswax in spirits of urpentine may be used. 2. How are face powders per umed 1 . Use few drops of some essential oil,
(4001) F. E. W. asks: 1. Of what mate ial are graphite bearings made, so that they require no wind engine (or mill) is the most serviceable-with o columne for a rearing? A. Cons
(4002) M. R. asks: Will you please tell if a common battery of blue vitriol and water, with a copper and zinc, will light a two, three, or four inand where could I get the lamps, or what kind of a battery does it take? A. A gravity battery is of no use in electric lighting. It is sometimes employed for charging secondary batteries, and the latter are use
for operating lamps. The secondary battery is the or lighting purposes.
(4003) F. V. C. asks : 1. Is there any eries? A. Nothing very efficient. Try flower pots with the holes corked up. 2. What kind of bateryis best for a motor? What for a storage bat terys A. Storage battery for motors, and gravity bat
tharging the storage batteries. 3. Tell how oo make the principal parts of a storage battery, and its dimensions, whenused for lighting. A. For this in f. Describe sitiontific American, vol. Iil., page power of 30 lb . per square inch from a small water pipe A. A small compressed air motor is substantially the same as a steam engine. 5. What acid is used to reduce aoft wood to pulp? Can it then be brought back proper treatment the wood is converted into cellulose, hich is explosive. It can be dissolved in a mixture (4004) W. T. says : Can you inform m about what per cent or heat contained in anthracite loal, burninto a soove, made can you telll me whether the is necessarily a lose of 50 per cent or under the most favorable conditions? A. The loss of heat in common stoves may be a s great a a 50 per cent, but with
he best stoves, provided with large absorbingand radiating surface, the loss should not be greater than 25 ing the stovepipe, so as to utilize all the heat, save lost by opening stove doors for ventilation.
(4005) W. L. J. asks : Would a 500 lb . will, say, fired from a gun in a perpendicular position, sayfive miles, retarn to the earth with the same velocity with which it starteds A. It would not. The friction the arr materialy relards to velocity, due to gravity.
(4006) H. H. S. says : 1. I have a 2 inch pipe, 1 foot under ground, 75 yards in length, which with something that obstructs the fiow of water. Give me a solution to clean it. A. If the pipe is foul from
the drainage matter, use a strong solution of caustic pot ash, not soda, in boillng hot water. If uecessary, stop the end of the pipe while the hot lye is running, fill the pipe, and let it remain over night. 2. I want to know plices that is, ought the end of the splice or lap butt the face of the pulley? A. The belt ends should be butted together and laced to make a smooth surface. If put together with hooks, the butts should turn out. A. A dry battery cannot be charge rrom a dynamo.
by a dynamo.

## Replies to Enquiries.

The following replies relate toenquiries recently pub-
(3842) Referring to Scientific AmeriCAN of January 9,1882 , question 3842,C. B. can clean his
brass rife or shot shells by immersing them in strong
cider vinegar, and heat to a boil. Then rinse them woolen cloth. If the vinegar is good, the shells will be clean and will remain so.-G. E. K.
M. T. D. aske how to pickle beef, tongues, etc.-A P. asks how to make invisible or sympathetic ink.
C. A . W. asks for a corn salve.-w. harness grease.-E. S. S. asks for a shoe blacking or polish.-R. W. S. asks how to make a hektograph or asks (1) for a recipt for making a cement which in tick leather to metal. 2. How to estimate horse powe H. S. a how to remove tattoon -H. F. C. asks how to make birdime.-Y. M. C. mentsand metals.
Answers to all of the above queries will be found in
"Scientiflc American Cyclopedia of Receipts, Notes and Queries," to which our correspondents are referred.
The advertisement of this book is printed in another column. A new circular is now ready.

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nore than one hundred thousand applications for more than one hundred thousand applications for pa-
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MUNN \& CO., office Scientific AMERICAN, 361 Broad way, New York.

INDEX OF INVENTIONS For which Letters Patent of th January 26, 1892, AND EACH BEARING THAT DATE


And


