## ENGINEERING INVENTIONS

## A friction coupling for shafts, toothed

 Braun, and pulleys bas been patented by Mr. Franz Braun, of Berlin, Germany. The invention provides shafts can be coupled and uncoupled very easily and rapidly, without causing stoppage of work or lateral pressure on bearings.A noiseless steam nozzle bas been patented by Mr. Carleton W. Nason, of Montclair, N. J. It has slotted tube surrounded by a perfora ed casing paci the steam must go through this fiber in passing in water, whereby all noises or water hammering is pre
A railway signal has been patented by Mr William Hadden, of Brooklyn, N. Y. The invention makes a novel arrangement of the circuit in the "block" system by which the signais are operated on a closed
circuit, and worked with equal facility from either end of the section automatically, or from any part of the A car coupling has been patented by Mr. John C. Bryan, of Holly Sprines, Ark. It combines, in cornection with the drawhead, and a frame carrying ing spring, making a novel mechanism forcar coupling automatic in its operation, and that may be actuated

A railroad switch stand has been patented by Mr. Charles H. Talmage, of Atcbison, Kas. It is an mprovement for what is known as the "three throw split switch," and there are gears connecting the two witch shafts with the shaft of an operating lever by a rated by the same hand lever, thus eimplifying the apparatus and lessening the cost.

## mechanical inventions.

A machine for making wire or other solder has been patented by Messrs. Edmund $L$. Young and Lucius Dyer, of Millbridge, Me. In running or casting into grooves on a revolving mould and cooler, and is picked up therefrom and afterward reeled or otherwi

A machine for making coiled wire ferrules has been patented by Mr. Joseph Crowfoot, of Brialgeport, Conn. It has a mandrel revolved by suitable mechanism within a stationary band having an ${ }^{\star}$ inclined
upper edge to raise the wire as it is coiled and form a upper edge to raise the wire as it is coiled and form a
space for the next coil, with a jacket for supplying solder, and novel arrangement and construction to keep the mandrel cool and do rapid and efficient work.

## agricultural inventions.

A cultivator has been patented by Mr. Frederick L. Hilsabeck, of Shelbyville, Ill. This invention is designed to improve cultivators used for working on both sides of a row of plants, and has a run-
ner device on which the cultivator may ride to carry the

A cotton seed planter and fertilizer distributer has been patented by Mr. Ge Hu Port, of Seven th
District, Coweta County, Ga. It has a peculiar District, Coweta County, Ga. It has a peculiar ar rangement and construction of parts, so that the drive wheel rocks a feed wbeel, and the bottom of the feed
box is loose, so that a smaller or larger box is loose, so that a smalle
he arranged for as desired.
A straw stacker has been patented by $\mathrm{Mr}_{1}$ Thomas Major, of Jackson Township, Clinton County
Ind. The object of the invention is to facilitate the Ind. The object of the invention is to facilitate the ad promote efflciency in their working, the straw being re ceived from the thrasher or separator upon the lowe part of the carrier and discharged from the upper end upon the stack, the carrier being conveniently arranged for the increasing height of the stack, and the stacker turbing laterally through nearly the are of a semicircle.

## MISCELLANEOUS INVENTIONS.

An improved swamp and grab hook has been patented by Mr. Albert M. Millard, of Wausau, Wis. It is a special form of hook for rolling logs on to
crotches in the forests, and for grabbing and pulling cains, skids, and other object
A game resister and trump indicator has been patented by Mr. George W. Hyatt, of New York
city. This invention provides a convenient keeping the score in games, and the points of each game, while at the same time indicating the trump of the game in progress.
An improved harness bas been patented by Mr. Green Thompson, of New Salem, Ind. The object is specially to improve harness for working hay carriers and hoisting gear, and a rigid bar trace is provid
ed which, with the other parts, wholly does away wit the falling of the whiffetree.
An improved apparatus for utilizing wave power has been patented by Mr. Thomas Mayes, of Al bany, N. Y. It is strong and simple, consisting of
dashboard suspended in a frame, and having a connect ing rod for imparting motion either directly or by ing rod for imparting motion
A receiving telephone has been patented by Mr.Lyman W. Sution, Jr., of Newton, N. J. The in veniion covers a magneto electric telephone consisting at both ends, a magnet, and a helix, all in inductive $r$ lation to each other
A folding baby carriage has been patented by Mr. Harry A. Jackson, of Brooklyn, N. Y. It is of pactly when notin use, and has a canopy attachment or improved device for holding a sunshade in any die-
sired position. sired position.
An improved bilge water alarm bas been patented by Mr. George W. Gilmore, of Webster, Pa
The invention consists principally of a float and attach
ed weight and screw for moving a drop wrisht or other object, to give an alarm
ises above a certain level.
An improved fire escape has been patented by Messrs. Otis G. Moore and Morris H. Marcus, of Edinburgh, Pa. It provides for a chute of flexible material extending from a window to the ground, down
which persons slide in escaping from fire, and the chute is made in sections to give it rather a zigzag shape.
An improved crutch has been patented b Mr. William H. D. Ludlow, of La Porte City, Iowa. This invention provides for an extensible prod connect ed to the hand hold, so that, by a rotary adjustment
there, the prod may be projected as a safeguard against slipping, or withdrawn when it is no longer required.
A folding egg case has been patented by Mr . Jesse J. De Berry, of Smithville, Mo. It ocrupies but little space when not in use, or when being returned to the shipper, as it can be compactly folded, but by th
use of hinged side and end boards, and tolding parti tions, a practical case for shipping eggs and other art cles to market is readily set up.
A screw driving mechanism for baling presses and other uses has been patented by Mr. Patrick Slattery, of Charleston, S. C. It is made with a bos through which passes a screw with two nuts connected
by two sets of gear wheels with an intermediate gear wheel, to whici power is applied by a ratchet pawl
A composition of matter for mouldin
A composition of matter for moulding
fruits, fancy topped tables, birds, etc., has been patent fruits, fancy topped tables, birds, etc., has been patent
ed by Elmina Brady, of Portlandvile, N. Y. It consists of hard stene, common sand, slate stone, white
sand, clam shells, common brick, charcoal, blue clay, water, and linseed oil, in certain proportions, prepared after a specific manner.
A road cart has been patented by Mr. Heny Hortop, of Rutherford, Cal. It has springs above and below the forward ends of the side bars, kept in place by staples attached to the thills, guide eyes on the
side bars and yokes, so the unpleasant motion of the side bars and yokes, so the unpleasant motion of the cart is prevented, and the c
fora large or small horse.
A button fly clamp bas been patented by Mr. Isidor Felber, of Nyack, N. Y. It facilitates the labor of scalloping shoe button laps or flies, and avoids
the necessity of making nail holes in the stock, there the necessity of making nail holes in the stock, there
being a clamp and plate swiveled to an operating screw with pins for gniding the plate, cushions for protecting
An improved artificial stone has been pa tented by Mr. William Howell, of Philadelphia, Pa The stone is adapted to be used for building, pave composed of a special preparation and combinations of muriatic acid, flour of sulphur, molasses, iron scale
A machine for stretching and removing fence wires has been patented by Mr. John N. Killough, of Aurora, Texas. It is a cheaply made and durable ing wires along the fence posts, straining them tau ng them in resetting the fence.
A machine for cutting out garments has een patented by Mr. Solomon Rich, of Joplin, Mo. In knife belt, against which belt cutter the material is ad vanced as it is cut, under a pressing roller to keep the
material free from wrinkles or plaits, so that several A
A watch regulator has been patented by Messrs. Ernest J. Roux and Louis U. Fatio, of Geneva,
Switzerland. It is an improved device for adjusting Switzerland. It is an improved device for adjusting
the hair spring regulator very finely and accurately, for by turning a wheel the distance of one tooth the pointer is moved a distance so minute that it could not be imilarly adjusted by hand.
A saw back has been patented by Mr . omas Beard, of Kokomo, Ind. The invention relates bucks to hold the wood flrmly; plates are provided with coarse saw-shaped teeth secured to the saw buck, in combination with a toothed lever pivoted thereto, pro vided with springs and a foot treadle.
A permutation lock has been patented by Messrs. William B. Atkinson and John H. Foster, of
Franklin, Ky. This invention relates to an improvement on a part of a lock patented by Mr. Atkinson in the tumbler to throw it in and out of engagement with

A dinner pail has been patented by Mr. William H. Carbangh, of Columbus, 0 . The invention parts, by which coffee may be kept in a tight pot, in a nobjectionable position, or can be removed for heating without leaving the pailuncovered; there is also a pan hat may be used to hold or for heating food.
A fire escape and alarm has been patented by Mr. William S. French, of Jackson, Mich. A drum
or roll is to be arranged in the cornice brackets for or roll is to be arranged in the cornice brackets for
winding up a chain or similar ladder, the drum being eld by a wheel and pawl, from which cords or wires ne in case of fire, when an alarm will be sounded and the ladder let down.
An improved trunk has been patented by Mr. August Kroesing, of Berlin, Germany, assignor tor
Mr. E. Gustav Eschenhorn, 17 Neu Kolm, the same city. It is waterproof, and has buoyant wings to in-
crease its buoyancy and stability, with eyes or rings for crease its buoyancy and stability, with eyes or rings for the joints, and angle plates overlapping the cover and
A cut-out for telephones has been patented by Messrs. Austin Williams and Joseph M. Gannon, of Negaunee. Mich. It provides for a swinging board or
strip with a series of metal strips connected with the strip with a series of metal strips connected with the
line wires, the board so adjustable that its metal strips close the circuit between the line wires, or between those and the ground wires, so all lines may
cut out and grounded simultaneously.

A coal cleaner has been palented by Mr William H. Shepherd, of Pittston, Pa. It is designed to separate slate from coal as the latter passes down
the chutes from the gradiug screens, for which purpose tationary grate bars are placed in an opening in the chute body, alternated with movable grate bars, connerted by cross hars with sliding rods, also connected
with a rock shaft driven from a rotary crank shaft. An improvement in rubber clothing bas been patented by Mr. George Platt, of Butte, Montana Ter. The object is to provide a complete suit that can be easily put on and off, and fit neatly and keep out the
wet. The boots and trousers are combined, the latter having inner and outer flies, while the coatalso has two ets of flies, with properly arranged buckles
A process of making sirup and su
orghum cane has been patented by sugar from Adamsom, of Sabetha. Kas, It consists in first roast ing the cane to help eliminate green vegetable matter, etting expressing the juice and filtering and boiling, thus Seting a much purer sirup than by the usual method, ne thal will n
orghum taste.
A carriage spring has been patented by Mr . Benjamin P. Morrison, of Abingdon, Va. The spring in an ordinary blacksmith's shop, its design being such in an ordinary blacksmith's shop, its design beng such will depress the body alike from end to end, or the bars press the connected that a
A combined shovel and shield has been paThe blade is delachable Holland, of New Orleans, La. The blade is delachable for use as a shield, the handle is formed in hollow sections, adapting it for the recep-
tion of smallimplements, a sling pouch is also provided for carrying the dismembered sections, and the whole
is capable of quick and interchangeable adjustmeuts
An improved pipe coupling or joint bas been patented by Mr. Robert M. Reilly, of Balti-
more, Md. It provides for horseshoe pieces, each with g and pins, inserted ben collars opposite eac other on the male portion of the pipe, and secured to
he female portion by bolts through a flange, the whole of facilitale the turning of the pipe, for branch counec tion or pitch, without impairing the joints.
A single cable track railway bas been patented by Mr. Joseph J. Clisham, of San Diego, Cal. It provides for a single wire, loosely bung between spool; cords from the ends of the axis connect with a cord attached to a balloon or kite, which the wind moves along, the basket or parcels to be carried to be
atiached to the spool.
A press for moulding glass bas been patented by Messrs. Adrien A. and Leon A. Appert, of
Paris, France. It is intended to use compressed air, or Paris, France. It is intended to use compressed air, or
other suitable means, the system giving as strong a pressure as desired, acting rapidly or slowly as desired, giving regular pressure with shock, doing the work rapidly, and not calling for more than one workman whatever the pressure and size of the piece.
A compressor for compressing bran and Mr. Geury A. Chapman, of Strawberry Point, Iowa Ry this invention hran may be compreṣsed.so its weight will be greater than that of an equal cubic measure of
grain, but the strain in compression in no way comes grain, but the strain in compression in no way comes
on the sides or bottom of the sack, and the cover may he made fast while the bran is under compression.
An improved calf weaner bas been patent ed by Mr. Max J. Ahlgrim, of Rose Lawn, Ind. The invention consists of a half muzzle, made of wire or
other light material, which is hung over the calf's nose on pivots fastened in a halter at the checks. There are arms connected with the muzzle which extend down below the jaw, and these carry a weight which a little overbalances the muzzle ahove. The weaner is automuzzle will swing above its nose and so not interfere with its feeding, hut when the calf raises its head up to suck its nose will move in the muzzle, which is also hold of theteat. It is at ached and detached by simply unbuczlinge the halter.

## NEW books and pubilcations.

The " Art Age,'" is the title of a handsomely gotten up and beautifully printed monthly publication, issued by Arlhur B. Turnure, 132 Nassau Street, New York city. It is designed to place before the trade advance of what has yet been done in the way of artis tic printing and hook binding. As a contemporary says of it, Art Age is designed to become the organ of of printing and bookmaking.
Suggestions to China Painters. B Miss M. Louise McLau
Clark \& Co., Cincinnati.
The chapters on "Colors," "Preparing gold and silver for the decoration of porcelain," and "The
use of metallic paints" are especially worth atten tion as giving a good deal of information in but few words. The book is illustrated with simple and artistic
designs for plaques, vases, cups, etc., drawn by the au thor, accompanied by instructions as to colors to b used, treatment, etc.
A "Retail Druggist's Diary and Want Book," published by Frederick Stearns \& Jompany, manufacturing pharmacists, of Detroit, Mich., contains a great deal of information in very convenient
form for daily use in the drug store. It dius also, be form for daily use in the drug store. It las also, be-
sides diary pages, a pharmaceutical catalogue of over 14,000
cines.
A "Caemists' and Druggists' Diari," published by the Chemist and Druggist, of London, in that business, besides being a convenient diary for use in the store besides being a convenient diary fo

## 2animess and zersana.

The Chargeforor Insertion under this head is one Dolla


Parchment.-Drawing and tracing papers, used to ad-


As there is an international agreement abont the
 tied by all nations that the tobacco of the Golden Belt
of Noorth carolina is is par excellence the tobacoco or the
the pipe or ciparette. In Blackwell's Durham Long Cut it is
seen at its best. That brand preserves this seen at its best. That brand preserves this celebrated
tobacco in its natural purity, all its fiavors and fratobacco
grances
Parties having original ideas in specialties and novelYork agents or to have same manufactured and placed York agents or to have same manufactured and placed
successfully on the market, write or call upon H. J. \& Co., 17 Bond Street, N.
Best in the world. Patent chuck jaws, emery wheel machinery, and automatic machines to grind straigh plate, cottonseed and other long knives. Am.Twist Drill pate, cottonseed and other long knives.
Coredith, $\mathrm{N} . \mathrm{H}$. (Established 1865.)
Telescopes,
Camden, N.J.
Quinn's device for stopping leaks in boiler tube Nickel plating ouffits $\$ 10.00$ upward, full directions G. Ford. Ottawa. In.

How to Keep Boilers Clean." Book sent free by Iron Planer, Lathe, Drill, and other machine tools of odale Pumps-Hand \& Power, Boiler Pumps. The Goulds Fox's Coneca Falls, N. Y., \& 15 Park Place, New York, Fox's Corrugated Boiler Furnace, illus. p. 354. Hart-
mann.Le Doux \& Maecker, sole a a ents, 134 Pearl St., N.Y. For Freight and Passenger Elevators send to L. S Rochester $\mathbb{N}$.
Best Squaring Shears, Tinuers', and Canners' T'ools Lathes 14 in. swing, wilh and without back gears and rew. J. Birkenhead, Mansfield, Mass,
The Best.-The Dueber Watch Case
If an invention has not been patented in the United States formore than one year, it may still be patented in
Canada. Cost for Canadian pitent sio Various Conadi. Cost for canadian patents mayalso be obtained. For instructions address Munn $\&$ Co., Scientific American Paten Agency, 261 Broad way, New York.
Guild \& Garrison's Steam Pump Works, Brooklyn,
N. Y. Steam Pumping Machinery of N. Y. Steam Pumping
tion. Send for catalogue.

Nickel $P^{3}$ lating.-Sole manufact urers cast nickel an odes, purenickt salts, polishing compositions. etc. Complete outfit for plating, etc. Hanson \& Van Winkle
Newark, N. J., and 92 and 94 Liberty St, New York.
Lists $29,30 \& 31$, describing 4,000 new and 2 d -hand Ma chines, ready for distribution. State just what machines
wanted. Forsaitb \& Co., Manchester, N. H., \& N. Y. city. For Power \& Economy, Alcott's'Turbine, Mt.Holly, N. J. "Abbe" Bolt Forging Machines and "Palmer" Power

Railway and Machine Shop Equipment.
Send for Monthly Machinery List
Ito the George Place Machinery Company,
121 Chambers and 103 Reade Streets, New York.
Wanted.-Patented articles or machinery to make Water purified for all purposes, from household supplies to those of largest citles, by the improved filter
manufactured by the Newark Filtering Co., 177 Com merce St.. Newark, N. J.
Presses \& Dies. Ferracute Mach. Co., Bridgeton, N.J. Split Polleys at low prices, and of same strength and
pperrance as Whole Pulleys. Yocom \& Son's Shaftin Works. Drinker St., Philadelphia.
Supplement Catalogue.-Persons in pursuit of infor
mation on any special engineering mation on any special engineering. mechanical, or scien tifc subject, can bave catalogue of contents of the Sci-
entific Amirrican Supplem wnt sent to them free ENTIFIC AMLIIICAN SUPPLEMENT Bent to them free
The SUPEr,emENT contains lengthy articles embracing
the whole range of engineering, mechanics, and physi. the whole range of enslineering, mechanics, and physiMachibery for Light Manufacturing, on hand and Co., 139 Center st., N. Y Fossil Meal Composition, the leading non-conducting Straight boners, pipes, etc. See aav., p. 62 . Straight Line Engine Co., Syracuse, N. Y. Best in Curtis Pressure Regulator and Steam Trap. See p. 14. Woodwork'g Mach'y. Rollstone Mach. Co. Adv., p. 14.
. B. Rogers \& Co.. Norwich, Conn., Wood Working Lightning Screw Plates, Labor-saving. Tools, p. 12. Ajax Metal Company, Phila. Clamer's A jax Metals for ailroad. rolling mill, engine bearings, cocks, and valves. SteamHammers,Improved Hydraulic Jacks, and Tube
Expanders. R. Dudgeon, 24 Columbia St.. New York. Emerson's 18840 Book of Saws. New matter 75,000 Hoisting Engines. Friction Clutch Pulleys, Cut-off Hoisting Engines. Friction Clutch Pulleys, Cut-off
Couplings. D. Frisbie \& Co.. Philadelphia, Pa. Gould \& Eberhardt's Machinists' Tools. See adv.,p. 46. Railroad and Manufacturer's Supplies. Send for 1884解 and discounts, Greene, Tweed \& Co.. New Fork. For Mill Macb'y \& Mill Furnishing. see illus. adv. p. 44. Barrel, Keg, Hogshead, stave Mach'y. See ad., p. 46. Diamond Drills, J. Dickinson, 64 Nassau St., N. Y. Magic Lanterns and Stereopticons of all kinds and prices. Views illustrating every subject for public ex-
ibitions.Sunday schools, colleges, and home entertainment. 116 page illustrated catalogue free. McAllister ment. 116 page illustrated catalogue free. McAllist
Manufacturing Optician, 49 Nassau St., New York.

## January 26, 1884.$]$

Scientific Amrrican.

Walrus Leather, Emery, Nickel $\Delta$ nodes, Nickel Salts, Fine Taps and Dies in Cases for Jewelers, Dentists, mateurs. The Pratt \& Whitney Co. Hart ford, Conn. Mineral Lands Prospected, Artesian Wells Bored, by For best low price Planer and Matcher, and latest improved Sash, Door, and Blint Machinery, Send Steam Pamps. See adv. Suititı, Vaile \& Co., p. 46 Improved Skinner Portable Engines. Erie, Pa . Catalogues free.-Scientific Books, 100 pages; ElectriThe Porter-Allen High Speed Steam Engine. South-

## 

LINIS TO CORRESPONDENTS.
No attention will be paid to communcations unless
writer.
Names and addre
given to inquirers.
ven to inquirers.
We renew our request that correspondents, in referring
to former answers or articles, will be kind enough to name tire date of the paper and the page, or the numbe of the question
Correspondents wiose inquiries do not appear after lished, they may conclude that, for good reasons, the Editor declines them. Persons desiring
of a personal chg special information which is purely should remit from $\$ 1$ to $\$ \overline{5}$, according to the subjec as we cannot be expecterd to speud time and labor to obtain such information wiliout remuneration. Any numbers of the Scientific American Suppleyent referred to in these col
office. Price 11 cents each.
offlce. Price 11 cents each.
Correspondents sending samples of minerals, etc., Correspondents sending samples of minerals, etc.,
for examination, should be careful to distinctly mark or label their specimens so as to avoid error in their indentification.
(1) G. E. asks: Can I cast a zinc plate $8 \times 8$ in., $\frac{3}{10}$ in. thick, in a plaster of Paris mould? How can
sputtering of the metal, when poured in the mould, be prevented, and how can I get a smooth casting? Could a small furnace, say 4 in . inside diameter, 8 in . high, be
made of fire brick, to produce suffcient heat for smelting small quantities of brass, lead, copper, or even iron, to be heated with small hard coal and a blast from hellows? A. You may possibly make a zinc casting in a
plaster mould smooth byoiling the mould withlinseed oil. A better way is to cast in monlding sand, such as bras foundries use. You may melt a few ounces of brass or copper in
mention.
(2) C. E. B. writes: 1. I want to know the best way to make a small steam engine, one rating from one-half to one horse power? A The inverted vertical
engine is as good as any. For plans, dimensions, etc., engine is as good as any. For plans, dimensions, etc. closed rough sketch for connecting the piston to the crank on a good and mechanical principle, and will it do its work as'easily as the common slide (pillow) block con-
nection? A. It cannot he used as sketched; cheremust be a guide on the outer end of rod. The called, will bave more friction than a crank pin box,
and unless the yoke and connections are very stiff, will have a tendency to spring when in operation. A connecting rod is preferable. 3. What is the cause of the when it is connected by a wire to the base of the key? Is there any appliance which I can put on the instru ment to obtain any power? A. An intermittent con tact of the wire with the base. A small motor mightbe
made to work on a similar principle, but there are bet ter ways of obtaini
(3) J. C., Jr., asks: 1. Where is the castor oil bean most extensively raised? A. The castor bean is largely grown in Illinois, Missouri, and California,
where it is made into oil. Large oil works in Jersey City, N. J., are purchasers of the beans from all parts. The bean is, as we understand, largely culti-
vated in Texas. If the large seed is used which best suited to Southern soil, a hundred bushels to th acre may be produced. 2. By what means is it eather ed-hand or machinery? A. Hand pickıng is usua ed-hand or machinery? A. Hand picking is usual
3. How many gallons of oil does it yield per acre? A. We do not know the yield of oil per bushel or acre. Does it take expensive machinery to extract the oil?
A. It requires a mill and a press. The price is suited to A. It requires a mill and a press. The price is suited to
the quantity of work to be done. Four hundred dollars the quantity of work to be done. Four hundred dollar
to eight hundred dollars would probably set up a small to eight hy
(4) A. W. H.-Most of the so-called bear' grease is prepared as follows: Take of washed hog,
lard (dry) $11 / 4 \mathrm{lb}$. avoirdupois; melt it hy the heat of water bath, add of halsam of Pern 2 drachms; flowers of benzoin and palm oil (bright), of each, 1 drachm; stir vigorouslyfor a few minutes to promote solution. Then
remove the pan from the bath, and after repose for a short time, pouroff the clear portion from the sedimen and stir the liquid mass until it begins to cool. 2. For articese on imitation coral see Parkesine, Cellulcid, (5) J. F. A.-Your question is so indefinite That we cannot give you any eatisfactory answer. The from cost of the trees, but from the differences in quali ty of the different gums, these being quite arbitrary. (6) G. A. H.-For removing printer's ink from paper use a solntion of chlorinated soda, called by
some chemists Larabeqes solution. Use as directed on (7) A. and E. ask for directions for tempering coiled aprings the best way, so as to get the most
of coiled springs requires much judgment, based upon experience with the particular kind of epring that you wish to temper. A coiled spring does not give us the
faintest idea of its form, size, length, thickness, kind of steel, or wether itie a clock spring or car spring, al ment. As a general rule, springs that are slender and iable to lose shape in a common fire, should be heated in an oveu or muffle, and hardened in water or oil.
The temper should be drawn in boiling linseed oil Springs that have stiffness, like car springs, may b heated in a covered forge fire to good advantage, and hardened in l
burning off.
(8) W. C. J. asks: 1. What are the physical causes of yawning? A. Yawning is supposed to aris from a reflex action of the nerves, caused hy weariness,
and is kindred to many other kinds of involuntary mo tions, that are prohably derived from the nerve ceuters 2. What is the chemical reason that bicarbonate of soda ellipter a burn? A. We presume that it is by neutral-
izing the acid products of decomposition arising from he burn. 3. What is the distinction between a fruit and a vegetable? $\mathbf{A}$. There is no absolate distinction between fruit and vegetable, fruit. being that part of th veyetahle kingdom found growing upon stalks or trees,
and containing the seeds and sometimes being the seei and containing the seeds and sometimes belng the see
itself. Whereas all organic nature not animal i said to be vegetable. In common parlance our soil grown products for culinary use are called vegetables The terms overlay so much by customary nomenclatur that distinctions hecome difflcult. 4. Can you instanc an artesian well where the water is perfectly soft? A We know of no artesian wells that produce water a
(9) G. R. P. asks: 1. Is it advantageous to shellac the plates of a Boltz electrical machine? A. Yes It prevents the accumulation of moisture. 2. Why are
two carbons used in the Grenet potassium bichromate hattery? $A$ The quantity of current is somewhat in creased by the additional carhon plate. 3. How may distinguish gutta-percha articles, as butions, from chose made of horn, vulcanite, etc.? A. By the odor develop
(10) H. M. D. writes: 1. Should I have return wire on a telephone line three hundred feet long?
A. You may use either a return wire or a ground connection. 2. Can I have as many turns as I wish on the line? A. Yes. 3. Can I use two gravity batteries hould I use?
hoper
core.
(11) W. S. G. writes: I am desirous of be ming an electricion What or me to study on the subject to learn it thoroughly . Begin with Ganot's "Physics," then study Gor city and the Electric Telegraph,"" "Electric Batteries," by Niaudet, "Electric Illumination," by Jarnes Dredge. As you continue your study, other works will sugges
(12) W. W. R. asks: Will you please ex plain the phenomenon of electrical currents as employground wires at the termini a direct currentis formed round wires, which communicates the electricity gene rated in the batteries to a general body of fluid which is supposed to permeate the earth? A. It has been de monsirated by the experiments of Wheatstone, Caseli, tricity, and that currents flowing to the earth are dissi
(13) R. W. R. asks: Will you please inform me how to make the induction coil, as described in
SUPPLEMENT, No. 160, vol. vii., Jan. 25 , 1879 , so that I an regulate the current to give strong or weak slocks? . Make the bundle of iron wires forming the core of drawn from the coil.
(14) W. P. B. writes: Referring to SuppleUENT, No. 159, Jan. 18, 1879, in article on batteries, i quicksilver battery, protosulphate of mercury should quicksiver in theform of a paste. I would like to know What substance is used with the mercury to form the paste, and in what proportions, respectively? A.
Water. 2. Is protosulphate of mercury the same as the sulphate of mercury sold by dealers in chemicals? Will such a battery be suitable for silver plating in a mall way? A. It can be used in that way, but a Bunsen
(15) J. A. B
(1) off polis asks: W would take th scale off polished cast iron, the scale being caused by
continuous heat for several hours? A. Use, by volume, one part sulphuric acid, one part nitric acid, two parts water, applied warm-either the acid or cast iron. Better, by far, remove t
abrading substances.
(16) G. W. D. sends us the following remey for stopping the singing in bass violin strings caus ed by shrinkage of the gut. Release the string some-
what and place some olive oil on a woolen cloth, rub it up and down the length of the string; the oil will penetrate through the wire epaces and on to the gut, and will in a short time cause the gut
origiual size, and thus stop the singing.
(17) W. J. asks: Would you please inform me through your paper what would be the bes desired thickness? I wish a constant battery, which would require no attention for a couple of months. A. Daniell'sor the gravity ba tery would probably answe making nickel electrotypes of any desired thickness? A. We know of no method of making nickel electro types. Yon can make copper electrotypes and after
(18) A. W. H. writes: in your Scientific American Supplement. you published a description battery. We would hee to know if a 5 sell gravity battery would do, or if a gravity battery would do at all?
A. No. It would require a large number of gravity cells to do the same work. 2. Can you send us prices Carbon plates are not very expensive. The price depends upon the size. Any of our dealers in electrical
(19) F. W. D. asks for a good varnish to ap ply to designs printed in fine gold bronze on thin leather, something which will protect the bronze withoat coloroz.; borax and will dry quickly? A. Pale shellac, boiling point, until dissolved, then strain. Equal to the more costly spirit varnish for many purposes; it is an excellent vehic

## INDEX OF INVENTIONS

For which letters Patent of the United

## January 8, 1884

## ND EACH BEARING THAT DATH

[See note at end ot list about copies of these patents.]

## coordion supporter,

Accordion. E. Schreyer .....
Alarm. See Bilge water alarm
niminum, obtaining, F. J. Seymo
strol power, L. C. Strong.
Axle journals, bearing for car, G.W. Stewart. Bag. See Mail bag.
ton.... ...........................
Bale band tightener, R. I. Willis.
Baling presses,
P. Slattery
andage, suspensory, L. P. Griffin.
Barrel hooping machine, Duff \& Allan...........
Battery. See secondary battery. Storage ba
tery.
Bier or coffin stool, J. N. Knox.
Rilge water alarm. G. W. Gilmore...
Hillard cue tip, Easthope \& Schneid


## $\operatorname{man}^{\text {\& }}$ Alaire

Boot, wood \& Bond
Boot or shoe stitching
Boots and shoes, exhibiting, c............... Higgins
Boots and shoes, manufacture of, E. L. Spra
Bottle and stopper, J. Story..
Bottle stopper, glass, J. Story
Box. See File box. Paper box.
Bracelet safety appliance, E. Jones
Brake. See car brake. Wagon brake.
Breastpin, D. F. Adams
Bricks, tiles, etc., manufacture of, A. Dimpfl
Bridle, M. M. Hitt..
Buckle, I. Hartmann
Buckle guard, harness, F. G. Harrison
Buckie, trace, D. Schoenthale
Buffing wheel, H. E. Fowler..
Burial windlass, J. P. McDonal
Button hole, F. Beiermes.
Button hole stitching machine, D. W. G. Hu
phrey..................................
Buttons, attaching, W. H. Wood....
Can. See Packing can.
Can flling machine, J. Stevens.....
Can opener, H. Bentham...
Canning device, fruit, F. Deplanty
Car brake, S. Fairman.
Car coupling, J. C. Bryan.
Car coupling,
c. Devlin.
Car coupling, P. Madsen
Car dumper, T. S. Stewart.........
Car, railway passenger. E. P. Osg
Car, railway passenger. E. P. Osgood.
Car, railway passenger, W.
Car Paige.
Car starter and brake, G. M.
Car wheel, G. W. Miltimore
.
Car wheel, H. G. Taylor....
Carpet stretcher, N. A. Veline
Carriage spring, B. P. Morrison
Carrier. See Ilay carrie

## Cart, road, J. W. Bree

Cartridgering, extractor, J. Murph
Case. See Erg case. Show case.
Caster, furniture, G. D. Clark....
Checkrower wires, machine for forming, G.
Cigar eutter, Gratz \& Hagedorn.

Clamp. See Rope clamp.
Clocks, device for removing mainsprings from
Coal cleaner, w. H. Shepherd
Coal drilling nachine, J. M. \& J. W. D
Cock. stop and waste, H. Taylor
mpressor for compresing bran, etc. , Into pack
ages, G. A. Chapman..
ooler. See Water coole
Cooler for uniting oils in the manufacture of lar
etc..
etc.. S.H. Cochran............................
cotton elevator and cleaner, seed, W.T. Taylor
coupling. Shaft friction coupling. Thill coup
ling.
rutch,
Crutch, w. B. D. Ludlow
Cultivator, N. Coleman.
Curtain fixtures, spring roller for, J. B. Finch.
Cutter. See Cigar cutter
Cutting out garments.machine for, s. Rich
Dental engme hand piece, A. W. Br
Die shaping. Chamberlain \& Martin
Die shaping. Chamberlain \& M Mrtin.............
291.803
291.74
291.744
291,578
291,808

291,683

21,692

291,750
291,577
291,730
291,502
291,776

Ditching machine, tile. Hoehn \& Hilbur
Draft regulator. w. F. Grassler 291,511
291.733 Draft regulitor. IV. F. Grassler....
Drill. See Grain dril. Rock drill.
and dumping, Q A. A. Flsk .......
Egg case, folding, J. D. De Berry.
Elastıc fabric circuit closer, c. J. Van Depoele
Electric conductor
Electric circuit closer, C. J. Van Depoele...... $\dddot{\text { Electric }}$.
Starr
Stearr................ .............................
F. Bainchine regulator, dgnamo or magneto.

Electric motor, ... W. Stock... .i. ................... 291.566
Electric motors, current regulator for, C.J. Van
Depsele............................... 291,650
Electric safety cut out. C. J. Van Depoele....... 291,649
Flectric conductor, underground, Greives \& 291.715

Water elevator.
Flevator Beroud \& Walsh .........................291,835
Elevator, Berouad 291,835
291,888
Engine. See Steam engine.
Engine,S. N. Siver.................... ....... 291,543

Extractor. See Cartridge ring extractor.
Eyelet stitchtng machne, C. J. A. Sjoberg
Fan, blast or exhaust, Capell \& Macbean.
Faucet, self-closing, S. \& S. L. Barker.
Faucet socket, Kinc:iid \& Chaq
Feed water heater, w. Rollar
Fente wires, machine 291,855
291,493
291,68
291,608

Ferrules.machine for making coiled wire, J. Crow
291,743

Filter, J. Toland........
Fire escape, C. Kehr.
Fire escape, Moore \& Marcu
Fire escape, D. C. Pierce...........
Fire escape, permanent, T. Clarke Fire escape, portable, T. Clarke........................
Fire escape protector and supporter, H.
Flanging machine, ..................
Fioor jinck. T. L. Wilber.
Flour packing machine, A. C. Hartzoke.
Flue and pipe welder and fitter, Fleck \& Herring.
Folding table, N. H. Long.........
Fruit picker, G. A. Smith..
Furnace. See Hydrocarbon furnace.
Furnace mouth, T. O'Brien.......................
Furnaces, pig carrier for blast, F.W. Gordon.....
Gage. See Plow gage. Saw mill gage. Stean

Gage. See Plow gage. Saw minl gage. Steam
gage.
Gas, apparatusfor manufscturing, J. I. Stewart

Gate, W. J. Hamilton.......
Gate, Wil iams \& Preston.
恠
trolytic and amalgamating processes, proces
of and apparatus for obtaining, M. Body..... 291.670
291,497
201

Grain binder, E. M. Deane. ........................ 291,497
Grain breaker and grinding mill, J. M. Speer, Jr.. 291,634
Grain drill, H. P. Tenant. .................... $2.1,809$
Grain drill, H. P. Tenant. ........................... 291,80
Grinding machine, J. в. H. Leonard........... 291.60
Grinding machine, J. H. Reed................ 291,35
Grinding machine, J. H. Reed.....
Guard. See Buck le guard.
Harness, G. Thompson....
Harrow, rotary, J. H. Hoof.
Harrow, spring tooth, E. C. Comstock........
Harvester and husker, corn, J. w. Terman.
Hat hanging attachment, w. H. Barry
Hat hanging attachment, W. H. Barry.
Hat Ironing machine, N. B. Hooper....
Hat ironing machine, N. B. Hooper.
Hat lining. C. Raymond. $2 \mathrm{~d} . . .$.
Hat lining and cover, J. H. Canning.
Hat lining and cover, J. H. Canning................
phreys, self-opening and closing, D. Hum-
phreys..................
Hay carrier,, . A. Meyers.
Hay elevator, P. Werum.
Hay stacker, J. Coombs
Hay stacker, J. Coombs . . ........................ 291,8292
Heater. See Feed water heater
Heating apparatus, steam. F. Tudur............... 291,818
Heel burnishing and milling machine, P. J. Lap-

Heel plate, E. Hoxie................................. 291,599
Hides and skins, tawing. A. Schultz........291,84, 291.185
Hobby horse, J. R. Wharry................... 291657
Hobby horse, J. R. Wharry........................... 291657
Hoe, weeding, , Gates.............. $\ldots$ 21.504
Holder. See Knife holder. Lead and crayon
holder. Paper holder. Paper bag holder. Pen
holder. Sash holder. Tool holder.
Horse detacher, N. R. Shealy........................ 291,787
House. See Sheep house.
Hydrocarbonfurnace, R. B. Avery.................. 29, 29
lce cream freezer, v. Clad..................... 291.68
Ice cream freezer, V. Clad............................ 291.6
\& Allen...........................................
Indicator. See Electrical indicator. Latitude
indicator.
nnsstand, T. B. Knowles. ...........................
nsuiating connection for electric light fixtures,
C. H. Hinds............................................ ${ }^{291,731}$

Jack.
Knife holder and package, G. F. Felch.............. 291,7\%
Knob attachment, w. .. Gonne. .............. $29 ., 12$

21,
291,730
290ck. See Transom lifter.
291,502
Lock. St
291.571
291,682
Lock, A. B. Toda.............. ........................ 291,646
Loom shut lubricator, c. B. © C. H. Hodges.... 291,847
Loo


