## batuess and 23 exsmal.

The Charge.for Insertion under this head is One Dollar a line fon each insertion: about eight words to a line. Advertisements must be received at publication office
aseal 1 y as Thursday monning to appear in next issue. To Ramway Companies and Others, requiring data concerning Water, Steam, Air, or OH1, in Pipes, or other reservoirs, when under pressure, also Records or
SPEED of Machinery, Railway trains, Dynamos, etc., etc. Edson's Speed and Pressure recording Gauge, Appliance for securing greater safety to human life.
The SPRED APPARATUS connected underneath the "time and pressure recording and alarm gauge. is spe cially adapted for factories. mills, etc, where the mainon Railways and Steamboats where Economy, safety Time, and Speed should receive special supervision, and
where every possible protection is demanded by the enwhere every possible protection is demanded by the en
tire community against the resuits of ignorance, careless-
ness, and reckessness, such a sleepless watchman as this ingentous device is. is practically indispensable. It is
 tinn of machinery, and whereon the deyrees of stean
pressure carried are also written, and which defne the ciock time occupied for any plven performance, offer a combination of evidence at once innartial and exception-
ally complete and fucontroverible; and must in all ally complete and frcontroverible; and must in all
future time be of great practical value to inspectors and owners of boilers, travelers, and the public in gene-
ral. The "Records" may be secured against tampering by a band and lock when desired. The apparatus, paented in America and England, is the invention of Mr.
M. B. Edson, 77 Liberty Street, New York, whots the sole manufacturer, and to wbom applications for information or pamphlets must be made.
For Sale.-The rights for foreign patents in a first rate
proftable new invention. Patent allowed here. Thoproftable new invention. Patent allowed here. Tho-
mas Hill, 48 Railroad Avenue, Jersey City, N. J. mas Hill, 48 Railroad A You can buy a good Patent for Hop Growers, reass
ble. Address Jacob Engle, Jr., Sharon Center, N. Y. For Sale.-One-half or whole interest in Candian pa-
tent that has netted inventors with 8500 capital $\$ 50000$ in six years in the U. S. Regson for selling, no time to de velop Canada. To verify above statement, books open
for examination. Address, with references, Edward for examination. Address,
Taggart, Grand Rapids, Mich.
Wonders in Electricity, 168 pp . $\$ 2$. Latest and best
book. All electrical books. College Electrical Emg.. N. Y. Best Popular Science Works, 15 cents each. Catalogue Wanted.-Boat builders or capitalists to apply and M. Marquis, Bellefontaine, o.

Am. Twist Drill Co.,Meredith, N.H., make Pat. Chuck Jaws,Emery Wheels,Grinders,automatic Knife Grinders American FruitDrier. Free Pamphlet. See ad., p. 30. Brass \& Copper in sheets,wire \& blanks. See ad.p. 30 . The Chester Steel Castings Co.. office 407 Lihrary St., Philadelphia, Pa.. can prove by 20,000 Crank Shafts and
15,000 Gear Wheels. now in use, the superiority of thei
Castings over all others. Circular and price list free.
The Improved Hydraulic Jacks. Punches, and Tube
Expanders. R. Dudgeon. 24 Columbia St. New York. Gear Wheeis for Models (list free); Experimental Tight and Slack Barrel Machinery a specialty. John CottonBelting, Rubber Belting, Leather Belting, Linen Hose, Rubber Hose. Greene, Tweed \& Co.. New York. Our goods speak for themselves, and a trial will convince the most skeptical of their superiority over all
others. Lehigh Valley Emery Wheel Co.. Lehighton, Pa. Fine Taps and Dies in Cases for Jewelers, Dentists, 20,000 Duc Spherical Elevator Buckets, sizes 31/2 to 17 T. F. Rowland, sole manufacturer, Brooklyn, N.Y. First Class Engine Lathes, 20 inch swing, 8 foot b Steam Pumps. See adv. Smith, Vaile \& Co., p. 30 Straight Line Engine Co., Syracuse, N. Y. See p. 29 Contracts taken to manuf. small goods in sheet or cast brass, steel, or iron. Estimates given on receipt o
model. H. C. Goodrich, 66 to 72 Ogden Place, Chicago. Brush Electric Arc Lights and Storage Batteries. Twenty thousand Arc Lights already sold. Our largest machtne pives. 65 Arc Lights with 35 horse power. Our Storage Battery is the only pract
Brush Electric Co., Cleveland, 0 .
Engines, 10 to 50 horse power, complete, with govern-
or, $\$ 250$ to $\$ 550$. Satisfaction guaranteed. More eight hundred in use. For circular address Heald $\&$ Morris (Drawer 127), Baldwinsville, N. y.
Best Squaring Shears, Tiuners', and Canners' Tools
at Niitgara Stamping and Tool Company, Buffalo, N. Y. Lathes 14 in. swing, with and without back gears and
Five foot planers, with modern impravesucn:s. Geo. The Best.-The Dueber Watch Case
If an invention has not been patented in the United Canada. Cost for Canadian patent, \$40. Ye patented in foreign patents may also be obtained. For instructions
address Munn \& Co., Scievtific American Patent address Munn \& Co... Scientific American Patent
Agency, 261 Broadway, New York.
Agency, 261 Brawn.
Farley's Directories of the Metal Workers, Hardware
Trade, and Mines Trade, and Mines of the United States. Price $\$ 3.00$
each. Farley, Paul \& Baker, 530 Market Street, Phill. Guild \& Garrison's Steam Pump Works, Brooklyn, N. Y. Steam Pumping Machinery of every description. Send for catalogue.
Nickel Plating.-Sole manufaciurers cast nickel an-
odes, pure nickel salts. polishing compositions. etc. Complete outfft for plating, etc. Hanson \& Van Winkle. Newark, N. J., and 92 and Liberty St.. New York. Lists $29,30 \& 31$, describing 4,000 newand $2 d$-hand Ma-
chines, ready for distribution. State just what machines chines, ready for distribution. State just what machines
wanted. Forsaith \& Co., Manchester, N. H., \& N. Y. city. For Power \& Economy, Alcot's Turhine, Mt. Holly, N. J.
"Abbe" Bolt Forging Machines and " Palmer" Power "Abbe" Bolt Forging Machines and "Palmer" Power
Hammers a speciality. Forsaith \& Co., Manchester,N.H.

Railway and Machine Shop Equipmen
Send for Montaly Machinery List the George Place Machinery Compa 121 Chambers and 103 Reade Streets, New York. $25 \prime^{\prime \prime}$ Lathes of the best design. G. A. Oht \& Co,
East Newark, N. J. "How to Keep Boilers Clean." Book sent free by James F. Hotchriss, 84 John St.. New York Wanted--Patented articles or machinery to make
and introduce. Gaynor \& Fitzgerald, New Haven. Conn. Water purified for all purposes, from household supplies to those of largest citles, , by the improved filters
manutactured by the Newark Fitering Co., 177 Commanufactured by the
merce St. Newark, N. J.
Latest Improved Diamond Drills. Send for circular M. C. Bullock MIg. Co.. 80 to 88 Market St., Chicago, IM. Ice Making Machines and Machines for Cooling Breweries, etc. P'ictet Artiticial Ice Co. (Limited
Greenwich Street. P. O. Box 3083 , New York city.
Presses \& Dies. Ferracute Mach. Co., Bridgeton.
Machinery for Light Manufacturing, on hand and built to order. E. E. Garvin \& Co., 139 Center St., N. Y Split Pullegs at iow כrices, and of amme stretwh aut Forbs, Drinker wht, l'hiladelphin, '’
Supplement Catalogne.--Persons in pursuit of infortifle subject, can have catalogue of contents of the SclENTIFIC AMERICAN SUPPLLMMT Sent to them free The SUPPrimient contains lengthy articles embracing the whole range of engineering, mechanics, and physi-
cal science. Address Munn \&Co . Publishers, New York C. B. Rogers \& Co Norwich, Conn., Wood Working C. B. Rogers \& Co., Norwich, Conn.. Wood
Machinery of every kind. See adv., page 397.

Curtis Pressure Regulator and Steam Trap. See p.12. For Pat. Safety Elevators, Hoisting Engines. Friction Clutch Puleys, Cut-off Coupling. see Frisbie's ad. p. 14. For Mill Mach's \& Mill Furnishing. see illus. adv. p.12. Mineral Lands Prospected, Artesian Wells Bored, by
Pa. Diamond Drill Co. Box 423. Pottsville. Ea. See p. 14 . LightningScrew Plates, Labor-saving Tools, p. 14. Soupstone Packing, Empire Gum Core, and all kind
of Engine Packing. Greene, Tweed \& Co.. New York.

## NEW BOOKS AND PUBLICATIONS

## By Edward Shippen. J. C. McCurdy

 By Edward Shippen. J\& Co., Philadelphia, Pa.
This is a large octavo of more than 700 pages and containing a large number of illustrations. In a pre face the compiler says that the collection is intended to present, in a popular form, an account of many of the
important naval battles of all times, as well as some important naval battles of all times, as well as some
combats of squadrons and single ships. In most inand the results of these encounters, and no statement has been knowingly made for which authority cannot be found.

## 

## HIN'IS 'TO CORRESPONDENTS

No attention will be paid to communications uniess writer. given to inquirers.
We renew our request that correspondents, in referring 10 former answers or articles, will be kind enough to name the date of the paper and the page, or the number of the question.
Correspondents whose inquiries do not appear after lished, they may conclude that, for good reasons, the Editor declines them.
Personsdesiring specialinformation which is purely of a personal character, and not of general interest, should remit from $\$ 1$ to $\$ 5$, according to the subject, as we cannol be expecterd to spend time and Any numbers of the Scien ruic amprion
ment referred to in these columns may be had supple office Price 10 cents each.
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 identi
fication. fication.
(1) J. R. M. Writes: I am about to make some experiments in screw propulsion, and would like information on the following: 1. All other things being
equal, which has shown the best results, a two, three, or four bladed screw? A. The choice must depend upon size of propeller, velocity at which it is run, and the fineness of model of the vessel. 2. Is there any rule
governing the proportion of the pitch to the diameter? governing the proportion of the pitch to the diameter?
A. No. 3. Who is the inventor of the screw most in use? A. There have been many inventors and im-
provers. Smith, Ericsson, Grifiths, Stevens, etc. 4. provers. Smith, Eriesson, Grifiths, Stevens, etc.
What is the best way of making a screw for a model What is the best way of making a screw for a model
boat, say a screw of 3 inch diameter? A. You may cast (2) H. M. P asks: 1 Will inceasing the (2) H. M. P. asks: 1. Will increasing the
speed of a thrashing engine from 130 revolutions per minute to 175, by enlarging separator pulley, increase power of engine, and will it save fuel? Engine $7 \times 12$, rated 10 horse. A. It will increase the power of the en-
gine carry ing the same steam, but will burn more fuel. . Is there any black paint for a boiler that will not injure the irons A. Black
wood "smoke stack paint.
(3) A. S. To make one gallon of the paint for a blackboard, take 10 oz. of pulverized and sifted
pumice stone, 6 oz. powdered rotton stone (or infusorial silica), $3 / 4 \mathrm{lb}$. of good lampblack, and alcohol enough to form with these a thick paste, which must be well
rubbed and ground together. Then dissolve 14 oz. of
shellac in the remuiuder of the gallon of alcohol by
digestion and agitation, and finally mix this varnish and the paste together. It is applied to the board with a brush care being taken to keep the paint well stirred so that the pumice stone will not settle. 'Two coats are usually necessary. The first should be allowed to dry
thoroughly before the second is put on. The second thoroughly before the second is put on. The second
coat should beapplied so as not to disturb or rub off coat should be applied so as not to disturb or rub off
any portion of the first. One gallion of this paint will any portion of the first. One galion of this paint will
ordinarily furnish two coats for sixty square yards of blackboard. When the paint is to be put on plastered size-glue, 1 shour er, 1 galion; lampblack, q. s. color; put on hot.
(4) A. J. T. asks bow to reproduce faded photographs? A. The following method is simple and in until the paper print may be removed from the card backing without in jury. Hang up the paper in a warm place until perfectly dry, and then immerse it in a quan-
tity of melted white wax. As soon as it has become tity of melted white wax. As soon as it has become
thoroughly impregnated with the wax it is pressed under a hot iron to remove excess of the latterand rabbed willh a tuft of cotton. This operation deenens the conpreviously invisible, the yellowish whites being render ed more tranoparent, whilo the haur tones and suadows
retain their brown opaque character. The picture thus prepared may then be used in preparing a negative (5) E. P. asks bow to produce various bronze tints (or bronzes) on iron, zinc, copper, and brase? A. Dissolve 4 oz . hyposulphite of soda in 11 pints water, and add a solution of 1 oz . lead acetate in 136 pints of water. The metals to be colored are place in this liquid, which is then gradually heated to the boil ing point. This treatment produces on clean iron a
light steel blue color, zinc becomes bronze, and copper light steel blue color, zinc becomes bronze, and copper
or brans becomes successively red, scarlet, deep blue, of red This dip has little effect on white with a tinge placing the acetate of lead in the solution by sulphate of copper, brass becomes firstof a rosytint, then green, and Anally an iridescent brown color. Zinc does not color in this liquid; it reduces and precipitates the cop-
per as a dark brown sponge, but if boiled in a dip conper as a dark brown sponge, but if boiled in a dip con-
taining both the lead and copper salts, it becomes covered with a black adherent crust, which may be improved by coating with a thin was lacquer. Sometimes applied to the plates wJth a brush to form designs, etc. and the plates are then heated to $212^{\circ}$ Fah., and rinsed or plunged into one of the hot baths, by which a variety
of effect is produced. $f$ effect is produced
(6) A. Y. F. writes: Please inform me how Asphaltum.
Boiled oil..
Turpentine
Turpentine.
Benzine.
Benzine.
Melt the as
150 parts.
Melt the asphatum in th.................
(7) A. W. H.-Otto of reses is thinners. distillation. The process is described very thoroughly ment, No 58 , also of Scientific American Supple CAN SUPPLEMENT, No. 275 .
(8) C. P. writes: I bave a tin roof, and would like to know if it would be best to paint it. If so, with red oxide of iron, or Prince's metallic paint and boiled linseed oil. No turpentine. It is a strong, dura-
(9) J. H. M. asks: Will you please tell me through the Scientific American what paper lagging is put on to iron pulleys with? A. Roughen the surface (10) J. G a salt into a solid mass. A. Melt it, and pour it in suitable forms when in a molten condition. Salt melts at a red heat and is best heated in a covered vessel; and as it volatilizes at a higher temperature, there will proba(11) G. J. E. asks: How can I cement glass and metal? A. Mis 2 ounces of thick solution of glue ounce Venice twe penine; boil them to-ther them until they mix as thoroughly as possible stirring pieces cemented should be tied together for two or three days. This cement will fif
substance to glass or porcelain.

INDEX OF INVENTIONS
For which Letters Patent of the United
July 3, 1883,
AND EACH HRARING THATE DATE.
[See note atend of list about copies of these patents.]

```
West........ .. ..........................
Animal trap, G. B. Wood...................
Animal trap, G. B. Wood.................
Automatic lubricator, W. S. Germeyer
Axle bearing, vehicle, A. . . Wallace....
Axle bearing, vehicle, A. E. Wallace.
Axle cater tor car, A B \& N. H. Da
Bag. See Mail bag.
Bale tie, cotton, T.H. Dodge
Bling tastening. E. S. Leroz
Bar and pipe cutter C. W.
Bath. See Vapor bath.
Bed pan, F. Dickinson
Bed, spring. W. Price
Bedstead, Winterbottom \& Murray
Beehive, , H. Bernheim
Beer cooler. swimming, J. Schathaus
Bell, call. A. H.Jones.
Bell, gong. G. H. Jones.
Bicycle, J. Beale...
Zit stock, F. Grant.
```

${ }_{280,336}^{280431}$

Boilelep, G. C. Morgan
Bolt. See Flour bolt.
280,392
Bolting reel, J. M. Van Slyke........................ 280,69

Boot, T. T. If. Buckingham.
Boring tool, J. Wade.....
Bottle and nipple, nursing, J. A. Morris. Bottle stopper, S. S. Ne.
Box fastener, F. Kley..
Brake, See Sled brake.
Bran or fiourpacker, A. L. Stephens............... 280,77
Brocess of and apparatus for packing,
Hunter $\&$ Ste and
Bread or cheese cutter, A. Jelinek.................
Brieas, implement for cutting, F. \& E. . . . P. P'..........
Buggy seat. shifting rail. Parker \& Deveny...... 280.478
280,480
280,667
28,660

Burglar alarm and door securer. combined, H.
\& C. E. Moore...................................
Burglar alarm attachment for automatic signa
ing apparatus, electric, W. F. Chester..... Burglar alarm. electric, O. A. H elman.....
Bush for bungholes, metallic, C. H. Brady. Bushing for faucets, C. H. Brady..
Bustle. C. A. Allen.
Button, W. Hu ger.
Button, W. S. Rogers
Button fastener. C. L. Farnsworth.......
Button setting instrument, F. A. Smith, Jr
Calculator. percenter
Calculator. percentage, Tucker \& Kelly.
Calipers, micrometer
Calipers, micrometer, M. M. Barn
Can filling machine, $\mathrm{I} \mathrm{H} . \mathrm{Smith}$.
Can filling machine, I H. H.
Can opener, J. McWilliams.
Candle mould, J. Brelive
Cane mill, J. F. Wood...
Car brake, E. W. Lippincott.
Car coupling, w.
Car coupling, w. H. Castle
Car coupling
Car coupling. X. E. Hawk....
Car couplin, G. W. Knapp..
Car coupling, O. P. Mossgrove
Car coupling, o. P. Mossgrove
Car coupling, A. W. Robinson
Car door, grain, B. E. Teal
Car draw bar, railway, S. P. Tallman...
Car dumper, T. B. Wire......
Car
Car
Car. duming, L. Hetfield...
Car for rail way trains, signal, J. Schofield
Car roof, A. P. Le Gro
Car roof, A. P. Le Gro
Car starter, H. Clark.
Car starter, Hewett \& Millen.:
Carventilator, J. M. J. A. P.D
Car wbeel, W. J. Willits................................ ${ }_{280,720}^{280,74}$


Carding engines, mechanism for stripping the top
flats of, H. Woodman
Carpet sweeper, G. W. Zeigler
Carriage, child's, J. A. Crandall.
Carriage curtatn fastening, J. Logan
Car driving detector, F. S. Twomble
Car driving detector, F. S. Twomb
Carriage seat. F. W. Pendergast..
Case. See Watch case.
Castingvises, metal mould for, w. E. Snediker.
Celluloid.
Celluloid, etc., press or mould for coating articles
with. J. W... Hyatt.

Chair support, adjustable, w. Farmer............. 280,593
Caandelier suspension hook, w. E. Hammond.... 280611
Check, baggage, W. W. Wilcox...................... 280.427
Cider and wine press, S. M. Brown................... 280.57
Clasp. See Shoe clasp.
Clock system, electric, C. $\mathbf{E}$. Buell............
Clock system, electric, C. E. Buell.... .......... . 280.715
Clocks, gravity escapement for, J. H. Gerry... ... 280.63
Clod crusher, E. S. Reed...................... 280.513
Color tints, apparatus for indicating and classify-
Combination lock, H. Lemmon.
Convertible chack, E. H. H. Bolgano......
Cooking utensillifter, J. B. Fitzpatrit
Cooking utensil lifter, J. B. Fitzpatrick.................... $280.120,596$
Cooking vessel steam, J. Ebbert ... ...
Corkscrew. J. W. White.
Corset, M. P. Bray
Corset, M. P. Bray.....
Crset, M. F. Linquist
Cotton gin rib, W. Merritt................................... $280,56 \mathbf{N}_{20,38}^{280,498}$
Coupling. See Car coupling. Harrow coupling.
Railwayrail coupling.
Railwayrail coupling.
Cranberry scren,
C. F. Hammond. .............. 280,372
Cultivator. onion. J. P. Turner.. ........................... 280,416
280,436
Cultivator, wheel, J. S. Andrews............
Cup. See Feed cup.
Cups bottles, ett., removable lip for, J. Rhoads... 280,
Cups bottles, etc., removable lip for, J. Rhoad
Cutter. See Axle cutter. Bar and pipe cutt
Breaa or cheese cutter. Stalk cutter.
Breaã or cheese cutter. Stalk cutter.
Damper. J. Spear...
Dash board, E. Hox
280,411
280,388
Herrington....asportation, system of, G. H. ${ }_{280,620}^{280,10}$
Detector. See Carriage driving detector.
Ditching machine, E. H. Lancaster..................280.631
Dividers or compasses, W. H. Mitchell.............. 280,390
Door hanger, W. F. Berry.................... 280342
Do.
Door hanger. W. F. Berry......................
Doors. device for ajusting roses to, G. Watkins.
Dough raiser, A. P. Gross.
Drawer. J. Stephens...
$\begin{array}{r}280,539 \\ 203970 \\ .280 .412 \\ \\ \hline 20,422\end{array}$
Drawing apparatus, W. S. Worden........ .........
Drier. See Lumber drier.
Drying material of extensive superficial area, o.
Lumpp............ ............................... 280,490
Drill. See Rock drill.
Duster, feather, 'raylor \& Flfers .................... 280
Dyeing skeins of yarn. machine for, W. Mc Allister 280.644
Ear ring fastener. W. R. Duter
Earthenware vessel, J. Pech
Eaves trough, J. P. Gould.....
Ejector and injector. L. B. Fult
Electric cable, w. H. Sawyer. ..
Electric cable or conductor, L. A. F. Herrmann.. 280,474
Electric cables, machine for making, E. E.
Electric cables, machine for making, E. E. \& E.
G. Rafer


280,518
280,677
280,708

Elevator. See Hay elevator.
Elevator. Reynolds \& Tewksb
Elevator safety attachment, F. w. Voerde............ 280,6719
Enkine. See Rotary engine. Steam engine. Trac-
tion engine.
Ensilage in silos, method of and device for pre-
serving, s. M. Colcord.......................... 280.352
Evaborator, $\mathrm{v} . \mathrm{H}$. Reed.................... 20 514

