the employment of a thicker celluloid film for negatives prevent the same from stretching and losing its true flat surface? A. Yes, but it would be more costly. Carbutt's films are thicker than others.

(2842) M. B. asks: 1. Can you develop dry plates after night by a ruby light in a small room, just the same as in a closet or dark room in davlight? A. Yes. 2. After fixing the negative and rinsing in water, can the plates be exposed to the light while drying, or must they be left in the dark room until perfectly dry? A. Day light will not hurt them. 3. In rectly dry? A. Day light will not nurt them. 3. In producing a positive, can you print from the negative without the raws of the sun? If no in what way? A tight, or be poisonous. A. Gum arabic with enough without the rays of the sun? If so, in what way? A. Yes; by using bromide paper and a kerosene light.

(2843) J. H. asks: 1. Could you give formula for a ferrotype varnish which would dry very glossy when applied to the finished tintype cold or warm? A. A varnish may be made as follows:

Alcohol (95 per cent strong)......50 parts.

To which add a few drops of oil of lavender. 2. There is a certain varnish sold as celluloid varnish, which smells strongly of hananas; could you give approximative formula of it? Would this last celluloid varnish not answer the purpose for tintype varnish? A. We think it is largely composed of pyroxyline and a solvent. It can be used on ferrotypes without heat, and should give a good gloss. The varnish is made by the Frederick Crane Chemical Company, Short Bills, N.J. 3. Please give a description of how to make the simplest constructed developing rocking machine, that will rock for at least half an hour. A. Suspend a pendulum rod three feet long from a bench, with a heavy weight attached to the lower end. Arrange a flat plate at upper end, on which rest the developing dish. Pushing the pendulum once in a while will keep it in motion, or a clock movement can be attached to do it.

(2844) F. A. H. asks how to prepare views for the magic lantern. A. Use the Eastman or Carbutt lantern slide plates, to be had from dealers in photo. materials. Consult Ellerslie Wallace's book "The Amateur Photographer," price \$1.

(2845) J. W. F. asks: 1. How to dissolve crude or virgin rubber so it will be perfectly pliable and absorb all waste gold around a finisher's bench in a book bindery. A. You need what artists use under the name of burned rubber. Its manufacture is described in "Rubber Hand Stamps and the Manipulation of Rubber." \$1 by mail. 2. How are the water marks made in sik? A. By hot calendering between engraved

(2846) C. R. M. says: I have a camera the bellows of which leaks light very badly. What application can I use which would afford an impervious coating, to repair the damage? A. Dissolve some shellac in alcohol, add lamp black till it is black, then apply with a brush until the holes are filled. If this does not answer, paste strips of thin rubber over damaged parts with rubber cement.

(2847) C. M. W. asks: Is the using of condensed steam in a boiler injurious to the boiler? Some claim that It eats the flues out more rapidly after having been condensed, that the acids from animal oil subricants is the cause, and that mineral oil !ubrication es not leave any injurious acid. Others claim it is some natural property of the condensed steam that causes the trouble, and not the fatty acids. Please state whether it is true that condensed steam reused in a boiler is injurious, and if so, please give fully the cause. A. The water from condensed steam does no harm to boilers. If the engine oil or tallow is carried in with the water, it is a damage to the boilers. It collects dirt and scale and forms an oil cake that may lodge on the shell over the fire or on the tubes and cause them to burn or bulge. The acids of fat lubricants are injurious to boiler tubes. If it is necessary to use the exhaust steam, it should be condensed and run into a separating tank, where the oil could be skimmed off.

(2848) M. E. M. writes I want to use an incandescent lamp of one candle power at night to see what time it is on my watch by pressing a button, lam pnot to be lighted any more than a minute at a time. A. Use two cells of Leclanche battery. If used for no other purpose, the battery should work well for at least six months without attention.

(2849) T. D. W., Jr., asks: Can you give me any information or any book in which I can find how to place a photograph on a brick so as to use it as a paperweight? I have a brick from an old church that has been pulled down, and the lot sold. On this brick I wish to place a photograph so that it can be easily seen. Would it be possible to make it smooth enough to put a film on it, as in the wet plate process, and if so how could the brick be made smooth enough to do this? A. See Scientific American Supplement, No. 382. Get some stone cutter to polish the surface of the brick, brush over it a silicate of soda solution: when dry brush over a solution of gelatine 5 grains dissolved in water 10 ounces. Then make a positive print of the picture on Eastman's transferrotype bromide paper, and squeegee it on to the brick. After removing the paper and drying, protect with a coating of diamond varnish.

(2850) W. H. writes: You sent me a recipe for a magnesium compound composed as follows: Chlorate of potash.....3 paris.

Perchlorate ".......3"

Magnesium powder4 " Now I have tried to obtain perchlorate of potash at all the largest chemical places in Boston, without success One chemist said he could make me some, but it would immediately be converted into chlorate upon exposure to the air. A. It is made by projecting powdered chlorate of potash into warm nitric acid, and on standing, or if necessary after evaporation, the crystals separate, as it is not very soluble. It can be prepared by any competent chemist and will not decompose as stated in

(2851) J. R. W. asks how a deposit of copper deposited from a bath of copper sulphate may be made to adhere permanently to a red of soft iron, It will deposit rapidly, but is easily washed off. A. You

matic, two sections in front and rear. 5. Would not can only produce adherence of a thin coating by simple Carding machines, flat supporting device for, J. immersion. To get a thick one you must use a battery and preferably a cyanide solution of copper. See our SUPPLEMENT, No. 310, for details, etc.

> (2852) W. H. asks: Which is the poorer conductor of heat, glass, china, stone, or earthenware, and can they be modeled in any shape or form? A. We should think there would be little difference. Almost any shape can be given them.

> (2853) R. M. L. asks in what numbers of SCIENTIFIC AMERICAN he can find good paste solutions oil of cloves to give a slight perfume is excellent. See SCIENTIFIC AMERICAN, vol. 53, No. 15. We have many times published postage mucilage in the queries. Tight sticking is considered desirable.

> (2854) G. F. C. asks: 1. If I place a lighted lamp (oil or spirit) or a candle in a jar or vessel and immediately hermetically seal it, when the light is extinguished, what will the vessel contain? What will the pressure on the inside of the vessel be? Or what fraction of a vacuum will I obtain? A. The pressure will be slightly reduced on cooling, so as to produce a slight vacuum of perhaps one or two pounds to the square inch less than atmospheric pressure. 2. Can I ignite an oil or spirit lamp with a battery? If so, what number of cells will I require? A. You can by arranging a fine platinum wire across the wick, and heating it to white heat. Three or four bichromate cells should suffice. It is not a very practical method. 3. What material could I substitute for a lamp which would readily ignite and take up the oxygen? A. Phosphorus will absorb oxygen without igniting. Nitric oxide and water will do the same. A hydrogen flame will be effectual also. 4. Can a vacuum or partial vacuum he obtained by means of a battery? A. A rod or filament of carbon made incandescent will combine with the oxygen of the air and form carbonic acid gas. If a little caustic sods or lime is in the vessel, this will shsorb the gas in question, and on cooling there will be a reduction of pressure of about 3 lb. to the square inch.

> (2855) H. B. L. asks: What to put into silver polish paste mixed with water to keep it from drying up. A. Glycerine.

TO INVENTORS.

An experience of forty years, and the preparation of more than one hundred thousand applications for pa-tents at home and abroad, enable us to understand the is we and practice on both continents, and to possess unsynopsis of the patent laws of the United States and all foreign countries may be had on application, and persons contemplating the securing of patents, either at home or abroad, are invited to write to this office for prices, which are low, in accordance with the times and tensive facilities for conducting the business. Address MUNN & CO., office SCIENTIFIC AMERICAN, 361 Broad-

INDEX OF INVENTIONS

For which Letters Patent of the United States were Granted

February 10, 1891,

AND EACH BEARING THAT DATE.

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

١,		j	ł
1	Acid, apparatus for making sulphuric, E. & J. Delplace	أ	i
١	Delplace	446,060	9
١	V. Popp	446.014	č
١	Alloy, aluminum, J. A. Jeancon	446.351	,
:	Arc light, R. H. Mather	446,109	ì
:	Arc light system, C. J. Schwarze	446.298	9
ı	Axles, device for securing wheels to, L. Faris	446. 335	ì
.	Axles, dust guard for car, W. McKenzie	446.003	(
1	Baling Press, J. W. Brown	446.128	ò
1	Baling press, H. L. Whitman.	446,311	9
٠	Bathtub, separable, M. Doelle	446,164	ì
٠	Bearings, lubricant lining for friction, W. Friend,	445,989 [9
١Į	Belt gearing, M. Masters	146,467	ì
	Bench. See Shoemaker's bench.	418 101	,
ı	Delpiace Air systems, automatic separator for compressed, V. Popp. Alloy, aluminum, J. A. Jeanoon. Animal trap, G. R. Smith. Arc light. R. H. Mather. Arc light R. H. Mather. Arc light system, C. J. Schwarze. Atomizer. E. T. Kassel. Azles, device for securing wheels to, L. Faris. Azles, dust guard for car, W. McKenzie. Bake pan, A. J. Iden. Baling press, J. W. Brown Baling press, H. L. Whitman. Barrel stand and truck, tilting, R. K. Curtis. Bathtub. separable, M. Doelle. Bearings, lubricant lining for friction, W. Friend, Belt, H. Leck Bearings, lubricant lining for friction, W. Friend, Belt, H. Leck Belt gearing, M. Masters Bench. See Shoemaker's bench. Bicycle, S. A. Brown Bicycle, H. Kane. Bicycle, J. H. Kane. Bicycle crank, W. Blakely. Bicycle crank, W. Blakely. Bicycle seat, J. A. Lamplush. Binding strap, L. L. Tower. Blast furnace, S. Parker Block. See Lubricant block. Board. See Game board. Ironing board.	446,090	(
٠l	Bicycle, J. H. Kane	446,354	9
	Bicycle crank, W Blakely	416,280	ì
ľ	Bicycle seat, J. A. Lamplugh	446.355	Ì
1	Blast furnace, S. Parker	446.168	•
1	Block. See Lubricant block.	,	1
1	Board. See Game board. Ironing board. Boiler. See Gas fired boiler. Paper pulp boiler. Steam boiler.		i
1	Steam boiler.	440.00	į
١	Bolt or rou cutter, E. A. Munson	446.281	ļ
1	Book protector, Becker & Suggese	446,052	į
1	Book stand, adjustable, A. H. Edgren	446.331	1
٠	Boots or shoes, blacking and burnishing, W. W.	10,001	1
.	Boring machine, A. M. Jewell	446 959	
,	Bottle cap, ejecting, G. P. Yule	446.314	i
ı	Steam boiler. Bolt or rod cutter, E. A. Munson. Bolts, dye for making, T. J. Bush. Book protector, Becker & Sa greee. Book rest or support, adjustable, C. W. Becannon Book stand, adjustable, A. H. Edgren. Boots or shoes, blacking and burnishing, W. W. Crooker (r). Boring machine, A. M. Jewell	446,319	1
ا د	Botile, nursing, Balston & Rose	446,091	
ı	Bottle, nursing, Balston & Rose. Bottle, nursing, J. E. Monroe. Box. See Jonnal box. Letter box. Match box.	446,116	
r	Multiple call box.		į
	Brake, See Car Drake. Brake mechanism, su tomatic, W. R. King	446.386	1
	Brick machine, C. V. Hemenway	446,064	į
•	F. E. Frev	446.338	١.
:	Bridge, M. C. Frits	446,339	
	Bridge, Sugpension, E. E. Runyon	446,209 448 393	1
	Buckboard spring, W. H. Sparks	446. 845	į
	Brake. See Car brake. Brake mechanism, automatic, W. R. King. Brick machine, C. V. Hemenway Brick or tile machines, cutting table for, J. A. & F. E. Frey. Bridge. M. C. Frits. Bridge. sugpension. E. B. Runyou. Brosh, blacking, W. J. Scott. Buckboard spring, W. H. Sparks. Bullet mould, J. H. Barlow. Burner, See Gas or hydrocarbon vapor burner. Button fastener, J. H. Vinton. Cable lifter, automatic, J. B. French. Camera. See Photographic camera.	446.1/8]
l	Button fastener, J. H. Vinton	446,089	ı
	Camera. See Photographic camera. Can for paint, etc. C. F. & C. F. Stites. Car brake, cable, J. F. Waite. Car coupling, W. Joanson. Car coupling W. I. & J. E. Lankford. Car coupling, P. H. Lewis. Car coupling, W. J. Walker. Car coupling, W. J. Walker. Car fender and brake, combined street, G. T. Hall.	64 0,347	1
1	Can for paint, etc. C. F. & C. F. Stites	446.084	ı
е	Car coupling. W. Joanson	446,805	1
1	Car coupling W. I. & J. E. Lankford	446,356	
-	Car coupling, W. J. Walker.	446,239	
	Car coupling, G. W. Weller	446,240	1
7	Car render and brake, combined street, G. T.	446,227	1
,	Car, railway, B. S. Henning	446.065	ĺ
	Car roofing, A. W. Zimmerman	446,070	١
	Car sarety platform. railway, S. L. Davis	446.129	Į į
f	Car. sleeping. E. G. Allen	.448,107 448,315	L
y	Car track cleaner, oscillating, J. E. Chambers	446,326	ľ
•	Schoen Plate for platform, C. T.	446,204	1
1	Car fender and brake, combined street, G. T. Hall Car, railway, B. S. Henning Car, railway, H. Marshal Car roofins, A. W. Zimmerman Car sanety platform. railway, S. L. Davis. Car seal, C. L. Wheeler Car, sleeping, E. G. Allen. Cartrack cleaner, accillating, J. E. Chambers, Cartack cleaner, accillating, J. E. Chambers, Card, center bearing plate for platform, C. T. Schoen. Cardor ticket case, A. A. Low.	446,069	' ;

Carding machines, flat supporting device for, J. B. Prest	Jar holder, fruit, H. A. Post
B. Prest	Joint. See Rail Joint. Journal box, automatically compensating, K. A. Johansson. Keyboard instrument, transposing, A. Holmstrom. Keyboard instrument, transposing, A. Holmstrom. Kit belts, Joining, B. L. Stowe. Ladder, W. M. Dollar. Ladder, W. M. Dollar. Lamp, W. A. Wright. Lamp, electric arc, K. H. Mather. Lamp, electric arc, C. J. Sch warze. Lampe, extensible bracket for electric, J. E. Titus.
Case. See Bottle case. Card or ticket case. Lock case. Cash indicator and register, J. F. Goodridge 446.343	Ladder, W. M. Dollar 445,950 Lamp, W. A. Wright 446,400 Lamp, electric arc, R. H. Mather 446,108
Cash indicator and register, J. F. Goodridge	Lamp, electric arc, C. J. Schwarze
Ceiling, metallic, W. K. Kinnear 440,121 Chair. See Reclining chair. Tilting chair, Chair, J. W. Craig 46,248 Cheek hook K. 62 Borels 46,527	Lamps, lens for signal or other, Thorne & Burr 446,304
Check hook, K. G. Bareis 44.277 Churn, J. McBride 446.263 Churn closure, S. D. Palmer 446.263 Churn closure, S. D. Palmer 446.263 Churn operating device, W. J. Knox 446.068 Cigar mould, A. Jaenicke 445.000 Cigar or cigar extension 445.000	Martin 446.142 Lathe, pivot, J. Schweizer 446.211 Letter box, house door, I. G. Lane 446.2-5
Cigar mould, A. Jaenicke	Letter box, street, I. G. Lane. 446,257 Level, S. J. Townsend 446,038 Lifter, See Cable lifter. Pan lifter.
Cigar or cigarette holder, E. B. Burr 446,377 Closet. See Crematory closet. Closet. See Crematory closet. Clothes drier, M. L. W. Martinot. Clothes drier, M. A. Newman. 466,322 Clothes drier, W. A. Newman. 466,322 Clothes line, H. E. Percival. 466,007 Clothes line, H. E. Percival. 466,007 Cock, cylinder, W. L. & W. C. Dodge. 445,973 Cock for mixing gas and air, R. Goehde. 445,973 Collar fastening, horse, Johnson & Reichert. 446,008 Colord impressions, producing, R. Schorr. 446,008 Colord impressions, producing, R. Schorr. 446,008 Cooking apparatus, electric, J. O'Meara. 446,108 Cotton stalk puller, L. L. Womack. 447,277 Cotton stalk puller, L. L. Womack. 447,277 Countershaft, A. D. Pentz. 446,088 Canae, countershaft, A. D. Pentz. 446,088 Canae, countershaft, A. A. Weiner 446,088 Canae, countershaft, A. A. Weiner 446,088	Lightning rod, G. W. Downey
Clothes line, H. E. Percival. 46,000 Clothes line, pinless, H. E. Percival. 46,000 Cook cylinder, W. L. & W. C. Dodge 445,979	tion lock. Lock H. Ludwig
Cock for mixing gas and air, R. Goehde 446.34 Coin holder and package, J. Hock 446.185 Collar fastening, horse, Johnson & Reichert 46.099	Lock H. Ludwig. 446,101 Lock G. W. Wooley. 446,375 Lock case C. H. Beebe. 446,246 Locomotive, ejectric, G. R. Baldwin. 446,245 Locomotive stopping and signaling mechanism.
Colored impressions, producing, R. Schorr	J. C. Gross
Cotton stalk puller, L. L. Womack. 446,276 Cotton, storage of, L. Smith. 446,026 Countershaft, A. D. Pentz 446,138	Webb. 446,177 Loom for weaving tufted pile fabrifs, Wyman & 446,402 Clark. 446,402
Thill coupling. See Car coupling. Shart coupling. Trans. coupling. Crans. counterbalanced jib, P. L. & A. A. Weiner 446,043 Crate. E. H. Flory	Loom, Jacquard mechanism, A. Turkington
Creaming machine, D. M. Weston 448.20 Crematory closet, ventilated W. L. Fuller 448.30 Crupper fastening, G. H. Davis 446.38 Crushing machines, elevator and screen for, W. 46.31 H. Baxter 46.31	Looms for weaving wire, take-up and let-off mechanism for. C. S. Strowbridge
Crushing machines, elevator and screen for, W. H. Baxter	Lounge, R. S. Wright
Culinary purposes, time alarm for, W. E. Groves 446,226 Cultivator, balanced, J. M. W. Long	Man holder, W. F. Semple 446,021 Map holder, W. F. Semple 446,021 Match box and holding frame therefor, J. For-
table cutter. Paper cutter. Vegetable cut- ter. Cuff. shirt, W. E. Simonds	Loom weft fork, P. Ensling. Lake-up and let-off mechanism for, C. S. Strowbridge. 446,035 Loop and clamp, suspension, P. A. Harris. 446,206 Loong R. S. Wright. 446,206 Lounge, R. S. Wright. 446,206 Lubricant block, W. Friend. 445, 889 Lubricator, J. Wood. 446,049 Manhole cover, R. Munroe. 447,151 Map holder, W. F. Semple. J. 446,021 Match box and holding frame therefor, J. Forshaw. 446,036 Mattress, woven wire, W. S. Seymour. 446,036 Measuring vessel, H. W. Laun. 446,229 Meas tholder, R. W. Randle. 446,288 Medicine, cough remedy, W. J. Corey. 446,036 Metal planers, attachment for, C. H. Myers. 446,037 Milk liquidizing machine, G. Roth. 446,330 Milk liquidizing machine, G. Roth. 446,037 Milk refrigerating and transporting can, P. M. 446,047
Cuff, shirt, W. E. Simonds. 446,387 Cylinder lock, Sargent & Page. 446,187 Cylinder lock, J. H. Shaw. 446,177 Davit, boat, G. F. Lawley. 446,372 Disinfecting paving composition, J. Fottrell. 446,323 Door check, L. E. Caldwell. 446,322 Door check, F. L. Habilston. 445,322 Door hanger track, A. L. & A. H. Scranton. 446,103 Doors neguratic superstus for operating. C. A.	Mechanical movement, G. W. Baker
Disinfecting paying composition, J. Fottrell. 446:282 Door check, L. E. Caldwell. 446:322 Door check, F. L. Habilston. 445:492	Milk individual and transporting can, P. M. Milk refrigerating and transporting can, P. M.
Doors, pneumatic apparatus for operating, C. A. Tucker	F Off C81Cf 990,409
Drill See Grein drill	Minerala machine for culting or alicing W R
Drilling device, track, B. F. Smith. 446,023 Dust collector, H. Bittinger. 466,023 Dust pan C. I. Bellamy. 467,225 Dye, yellow, W. Pfitzinger. 466,003 Dyeitzraw goods, etc., apparatus for. J. A. 46,003 446,003	Sperry 446.030 Moistening and sealing devices, fountain feed for, P. J. Schrei ber 446,081
Young Young 446,050 446,050 446,050 446,051 Electric cubies, laying, C. H. Wilson 446,214 Electric currents, automatic potential regulator for, A. L. Ellis. 446,284	Motor, J. R. G. Huffman
Electric machine and electric motor, dynamo, E. & Brown	Moistening and sealing devices, fountain feed for, P. J. Schrei ber
Electric machine and electric motor, dynamo, E.	Neckscarf, L. Eschner. 446,255 Nut and pipe wrench, combined, D. H. Carpenter 46,324 Oil cup. W. A. Downes. 446,250
Elevator, C. E. Ongley 446,187 Klevator, A. Sundh 446,397 Elevators, holsting drum for, P. L. & A. A. 446,001	Oil, lubricating, R. R. Graf. 446,334 Oiler, F. P. Noera. 46,136 Oiling device, windmill, W. R. Wright. 46,401
Embroidering machine, H. Hochreutener. 446,134 End gate, wagon, B. S. Kearney. 446,232 Engine. See Rotary engine, Engines, governing the movement of pistons in	Ore concentrator, M. Castelnau. 446,055 Packing, rod, E. F. Peacock 446,344 Pad. See Stair pad.
Engines, governing the movement of pistons in steam, R. Hill	Paint from residuum of vegetable oils, G. W. Scollay. 446.018 Paint, making, G. W. Scollay. 446.019
Engines, governing the movement of pistons in steam, K. Hill. 446.18* Envelope machine, D. Rau. 446.12* Extractor. 50.00 Extractor. 446.12* Extractor. 446.20* Fan, automatic, T. R. Evans. 446.20* Fanning mill, Felser & Werel. 446.13* Fastening, W. S. Richardson. 446.13* Fence and band cutter, Clark & Greenies 445.11* Fence, pood. Casselman & Fletcher 445.11* Fence machine, Cline & Detwiler 446.12* Fence, portable farm, Claussen & Jones. 446.12* Fencing machine, slat and wire, R. Hoover 446.25* Fender. See Car fender.	Scollay
Feeder and band cutter, Clark & Greenies. 445.97 Fence, flood. Casselman & Fletcher. 446.11 Fence machine. Cline & Detwiler. 446.32	Paper holder and cutter, roll, L. Ehrlich 46, 82 Paper holder and cutter, roll, S. M. Friede 45,967 Paper holder and cutter, roll, C. K. Friedes. 45,967
Fence, portable farm, Claussen & Jones	446,010 to 446,012, 446,336 Paper machines, stuff regulating apparatus for, W. C. Edwards
Fertilizer, nitrogenous, J. Van Ruymbeke	Paper machines, stuff regulating apparatus for W. C. Edwards.
Filter, H. Goodacre 446,32 Filter, J. B. Rooke 446,13 Fire armor, Finn & Pappa 446,13 Fire escape, G. Muller 446,03 Fire escape, F. Schoell, Gr. 446,32	Phosphate and making the same, J. Van Ruym- beke. <u>446.087</u> Photographic camera, F. Whitney
Fire indicator and extinguishing system, S. Broichgans	46,368, 446,369, 416,372, 446,374
Flour bolt, C. A. Schied	Photographic plate holder, C. Whitney 446,570, 446,371 Piano damper, J. W. Granger 446,097 Plane, bench. J. Siegley 446,194
Fire escape, F. Schoell, 9r. 446,2x Fire indicator and extinguishing system, S. Broichgans 446,32 Fishing reel, J. B. Moscrop. 446,18 Fishing reel, J. B. Moscrop. 446,18 Flour bolt, C. A. Schied. 446,18 Food storing and preserving apparatus, L. Smith. 46,024, 446,022 Freezing apparatus, J. Erny et al. 446,224 Fruit and vegetable cutter, C. H. Dana. 446,325 Furinace. See Blast furnace. Hot alr furnace. Game board, Brown & Crosby.	Photographic cameras, supply case for roll holders. C. Whitney. 446,373 Photographic plate holder, C. Whitney 446,370, 446,371 Pland damper, J. W. Granger 446,070 Plane, bench. J. Siegley 446,194 Planter, corn, J. D. Schoffeld 446,118 Planter, potato, F. Storck 446,271 Plastering, composition for, R. G. Farnham 446,382 Plow and fertilizer distributer, combined. S. 446,389
Game board, Brown & Crosby 446,320 Garment supporter, S. C. Scantlebury. 446,320 Gas, apparatus for the reduction of petroleum into, F. Durr. 445,985 Gas fixed boiler, E. C. Jones 445,985 Gas mixing machine, J. Tayler 446,985 Gate, See Knd gate. Hailwood 446,385 Gate, See Knd gate. Hailwood 446,385 Gate, R. C. Cash 446,385 Gate, R. S. Taylor 446,385 Gearing mechanism, back, B. G. Luther 446,325 Generator See Steam generator 446,325	McLean. 446.389 Pneumatic elevator and storage station, L. Smith 446.029 Pole safety attachment, vehicle, H. W. Roberts. 446,269 Press. See Baling press, Hay press,
Gas fired boiler, E. C. Jones	Priess. See Baling press, Hay press, Printing and adding numbers, apparatus for, G. B. Massey
Gate. See End gate. Railway crossing gate. Gate, F. C. Cash	Printing carpet yarns, apparatus for, W. Shaw 446,299 Protector. See Book protector. Puller. See Cotton stalk puller.
Gearing mechanism, back, B. G. Luther	Pump operating mechanism, C. A. Frost
Grain apron. J. E. Vanhorn 446,04 Grain drill, W. F. Hoyt 446,23 Grain silo. floating. L. Smith 446,62	Quilting, D. H. Coles
pueumatic, L. Smith	Railway and contact device therefor, electric, E. M. Bentley. 446 376 Railway brake shoe, P. Reilly. 466 286
Gearing mechanism, back, B. G. Luther. 446.23 Generator. See Steam generator Glass beveling machine, P. Wiederer. 446.14 Grain apron, J. E. Vanhorn 446.04 Grain alto, foating, L. Smith. 446.23 Grain silo, foating, L. Smith. 446.23 Grain silo, foating, L. Smith. 446.09 Grain transfer, storage, and preservation station, pneumatic, L. Smith 46.09 Grease, process of and apparatus for purifying, Grace Grace and polishing machine, B. E. Sperry. 446.17 Grinding and polishing machine, B. E. Sperry. 446.17 Grinding mill, J. & J. Jones. 446.21 Guard. See Railway cattle guard.	Puller. See Cotton stalk puller. Puller. See Cotton stalk puller. 446.283 Pump force, F. F. Danaher
Guard. See Railwa y cattle guard. Guns, safety device for breech-loading, F. A. Hollenbeck	Railway, elevated, J. N. Valley
Harrow, M. J. Todd Harrow and pulyerizer, sulky, C. D. Roberts. 446,69	Railway track, L Chilson 446,408 Railway track, L Chilson 446,405 Railway track, L Chilson 446,161
Harvesting machine, A. Rank, Sr	Railway tie, metallic. K. D. De Clements. 46,405 Railway track, L. Chilson 46,106 Railways, electric signal system for, E. C. Wiley. 46,313 Ruke. See Hay rake. Raichet wrench and boring bit, combined, C. H.
Hat making machines, expansiols cone for, F. M. Starr	Myers 446.075 Ratchet wrench and drill, C. H. Myers 446.073 Ratchet wrench and screwdriver, combined, C. H. Myers 446.072
Starr. 446.39 Hay press, J. B. Boresman 45.59 Hay rake, Size et & Liun 46.16 Heat regulating apparatus, G. L. Shorey 46.16 Heat regulating systems, switch board for, C. W. Brieder 445.97 Heater See Hot air, steam, and hot water heater. Water heater 418.00	tatchet wrench and screwdriver, combined, U. H. Myers
Heel making machine, Fahnley & Taylor	Roller. See Land Toller.
I. Wright	1000ng paper, H. Cunningnam 40, 48, 48, 46, 217 12 13 10 10 10 10 10 10 10
Hook. See Check hook.	Salts, treating Stassfurt, B. Peitzsch.
Horse checking device, Wardwell & White	
Kent 446,00 Hot air furnace, P. C. Hoyt 446,22 Hot air steam, and hotwater heater combined.	Rover
W. H. Denslow	Screen. See Gas pipe screen. Window screen.
lee tongs. J. Brinkerhoff 446.11 incubator. C. E. Von Culin 446.14 incubator, A. P. Hasard. Indicator. See Cash indicator. Fire indicator. Station indicator.	mann
Insulating coupling block and cut-out, Bergmann & Klein	Shoe tip, A. Han en
Insulator, electric, J. R. Branch. 445,% Iron bars or beams, machine for curving, B. F. Haugh 446,18 Ironing board, A. Sommerfeld 446,18	Shutter fastener, R. J. Berdan
Jack. See Pegging Jack. Truck Jack.	Meinicke

Snow plow, A. Gardiner	440 900
Goldering irons houting F & Pohimon	446 154
Roldering much me can A D Colorian	446 162
Sole trimmer, rotary, W. Polley	446.013
Spinning spindle support, J. W. Parkin	44ti,207
Spirals, apparatus for forming, H. H. Warren	446,042
Spring. See Buckboard spring. Vehicle spring.	
Stair pad, T. S. Sperry	446,213
Stamps, device for moistening and affixing post-	
age, w. w. Hamilton	440.553
Stanchiou, J. McBride,	440,204
Stand. Se Barrelstand. Book stand.	446 1:10
steam holler Clark & King	446.093
Steam engine, R. W. Basom	445.367
Steam generator and flusher, Koetzner & Living-	
Steam kenerator and nusher, Koetzner & Living- ston Step, folding, Jordan & Eller. Stereopticon, A. T. Thompson, Stoker, mechanicai, J. B. Ward Stove shelf, A. A. Gaston Streetsweeper, A. J. Whittier Stump extractor, B. Montross, Supporter, See Garment supporter, Supporter, See Garment supporter, Suppostory, E. G. Kherbardt	446,223 446,385 446,238 446,274
Step, folding. Jordan & Eller	446,385
Stereopticon. A. T. Thompson	416,238
Stoker, mechanical, J. B. Ward	446,274
Stove shell. A. A. Gaston	446,115 446,046
Street 8 weeper, A. J. Whittier	446 994
Supporter See Corment supporter	446,224
Supporter. See Garment Supporter.	445.984
Switch. See Electric switch.	230100-
Switch and signal apparatus, Westinghouse, Jr.,	
& Schreuder	446,159
Syr nice, E. Schirmer	46 ,25
Telegraphs, electro-mechanical indicator for fire-	
alarm, T. F. Gaynor	445,991
Tollurion W. H. shore	440,100
Supporter. See Garment supporter. Suppository, E.G. Eberhardt Switch. See Electric switch. Switch and signal apparatus, Westinghouse, Jr., & Schreuder. Syr rike, E. Schirmer. Telegraphs, electro-mechanical indicator for fire- alarm. T. F. Gaynor. Telephone transmission, J. W. McDonough Tellurian, W. H. Shera. Thermometer, clinical, J. Wall Thill coupling, C. E. Carpenter.	446 140
Theil coupling, C. E. Carpenter Thill coupling, A. Paul Thill couplings, anti-rattler for, A. H. Terry. Thrashing machine, E. McDonald. Tide motor, G. M. Copeland. Tie. See Railway tie. Titles loves for illuminating P. H. luckson	410, 50-1
Thill counling A Poul	446 005
Thill couplings anti-rattler for, A. H. Terry	446.036
Thrashing machine, E. McDonald	446,234
Tide motor, G. M. Copeland	446,057
Tie. See Railway tie.	
Tiles, lens for illuminating, P. H. Jackson	446,350
Tobucco approxing machine I T Carter	446 047
Tobacco stringer R S Kenrney	416.231
Tongue attachment. O. J. Snyder	446.237
Tongue support, W D. Napier	446,152
Tool, compound, J. Caldwell	445,972
Tool handles, device for securing, M. Daily	44.5.976
Toy gun, C. A. Ellis.	446,333
Toy, musical, A. L. Brown	446,201
Trun See Animal trun Hog tran	330,003
Tie. See Railway tie. Tiles, lens for illuminating, P. H. Jackson. Tilting chair, W. Schrage Tobacco stringer, B. S. Kearney Tobacco stringer, B. S. Kearney Tongue attachment, O. J. Snyder Tongue attachment, O. J. Snyder Tool compound, J. Caldwell Tool handles, device for securing, M. Daily Toy gun, C. A. Ellis Toy, musical, A. L. Brown Toy or game, E. J. Bond Trap. See Animal trap. Hog trap. Trimmer. See Sole trimmer. Truck, car, H. F. Probert Truck jack, railway, J. C. Carbine Tub. See Bath tub. Tug, shaft, G. C. Paine Turbines, water conductor for, J. Graham Type distributing machine, J. Patten Trougits of the product of the properties of the product	
Truck, car, H. F. Probert	446.332
Truck jack, railway, J. C. Carbine	446,378
Tub. See Bath tub.	446 200
Turbines weter conductor for I Graham	446,390 446,287 446,235
Turbines, water conductor for, J. Graham. Type distributing machine, J. Patten. Typewriters, blankbook for, J. H. Fitzgerald. Typewriting machine, W. S. Dodge. Typewriting machine, S. J. Seifried. Urinals, discharge pipe for, L. J. Griffin. Valve, W. H. Crawford. Valve, back pressure. J. H. McGowan. Valve for steam engines, oscillating, J. Cheek. Valve gear. M. Greenwood.	446 235
Typewriters, blankbook for, J. H. Fitzgerald	446.095
Typewriting machine, W. S. Dodge	446,381
Typewriting machine, S. J. Seifried	446.394
Urinals, discharge pipe for, L. J. Griffin	446.345
Valve, W. H. Crawford	446,059
Valve, back pressure. J. H. McGowan	440,002
Valve for steam engines, oscillating, J. Cheek	440,000
Variateble outt r A C & W 1 Kylo	446 167
Vehicle Coonse & Harris	446 172
Vehicle spring, E., Cook	445,974
Vehicle spring support, Cochennour & Remy	446,203
Velocipede saddle, J. A. Little	446.387
valve for steam engines, oscilating, J. Cheek Valve gear, M. Greenwood Vegetable cutt r. A. G. & E. J. Kyle Vehicle, Coonse & Ilarris Vehicle spring, F., Cook Vehicle spring support, Cochennour & Remy Velocipede saddle, J. A. Little Vending machine, C. L. Wickham Vending machines, coin chute for, C. H. Thompson	446,047
vending machines, coin chute for, C. H. Thomp-	110 7700
Vice blacksmithic A & Hothemen	446 040
Vise nine R R Rouse	446 029
Vulcanizing apparatus, R. W. Barney	44:216
Wagon, dumping, J. T. Dougine	445,981
Vise, pipe, R. R. Rouse. Vulcanizing apparatus, R. W. Barney Wagon, dumping, J. T. Dougine. Wagon, dumping, W. E. Welch. Waistband, F. Spitz. Wall and ceiling polish, T. J. Neavitt.	446,308
Waistband, F. Spitz	446,270
Wall and ceiling polish, T. J. Neavitt	446,265
Water bester T F Spancer	440,141
Washing machine, J. Schrib. Water heater, T. E. Spencer. Waterproof material, preparing, H. A. Schles-	440,001
inger	446,294
Water purifler and scale arrester. B. F. Field (r)	11,143
water purifier and scale arrester. B. F. Field (r) Weighing and picking machine, automatic, J. A.	440.000
Ustenberg	440,266
Whifferen W. H. Chell	446,189
Windmil C O Waidman	416 202
Window, screen, rolling, L. T. Wilson	446.242
Ostenberg	
wrench.	
Wrench, P. W. Lownes	446,220
wrench. P. W. Lownes. Wrench, J. Mattan. Wrench, W. J. Pugh.	446,143
MICHOR WING FURTI	110,491
	

TRADE MARKS.	
Alcohol species of wood, Hansen & Smith	76387803142 625023
mann & Meyer 1838 Fringes, Kampmann & Meyer 1839 Garment called an ulster, outside, Standard Clothing Company 18,99 Hams, shoulders, sides, and bacon, Silberhorn Company 18,99 Hooks for machine belting, W. O. Talcott 18,97 Lard, Silberhorn Company 18,58 Medicinal purposes, liquid preparation for, H. M.	5
Jonnson 19,00 Minersi water, Panacea Springs and Hotel Company 18,90 Porcelain, crockery, earthenware, glass, and faience, E. Gerard, Dufraisseix & Morel 18,90 Remedy for catarrh and hay fever. Dalrymple.	09 50 93
Sheet ron, tin, and terne plates, and lead coated sheets, E. P. & W. Buldwin	67 54 51
Tin and terne plates and black plates of Bessemer steel, A. Baldwin & Company,	66 15 08 03
Tin plates, Cwmfelin Tinplate Company 19.0 Tin plates, Rnight & Crowther 18.9 Tin plates, Phillips, Nunes & Co 18.9 Tin plates, R. Rosser, Son & Co 18.9 Tin plates, Webb, Shakspeare & Williams, 18.9 18.9 Tin plates, Webb, Shakspeare & Williams, 18.9 18.9	14 79 81 94
Whisky, G. S. Fleming 16,301, 16,301 to 16.3 Whisky, Rheinstrom Bros 18,3 Whisky, P. Van Schaack & Sons 18,3 Wines and liquors, Metzer & Seligmann 18,3 Yeast cakes, Henninger Bros 18,8	52 83 61 55 68
DESIGNS.	
Badge, L. E. Stilz. 20.5 Box, W. C. Estes. 20.5 Brooch or similar article, E. P. Beach. 20.5 Button, E. Harrington. 20.5 Button, E. Harrington. 20.5 Handle for spoons, etc., W. B. Junes. 20.5 Searf pin, E. P. Beach. 20.5 Spoon, W. L. Wilks. 20.5 Type, font of printing, Hazlett & West. 20.5 Type, font of printing, Schmohl & Lauschke, 20.515, 20.5	119 119 118 117 113 109 108 114
Zotoro, wote	_

Movertisements.

Inside Page, each insertion - - - 75 cents a line. Back Page. each insertion - - - \$1.00 a line. The above are charges per agate line-about eight words per line. This notice shows the width of the line, and is set in sgate type. Engravings may head advertisements at the same rate per agate line, by measurement, as the letter press. Advertisements must be received at publication office as early as Thursday morning to appear in next issue.

USE ADAMANT WALL PLASTER



It is Hard, Dense, and Adbest ve, Does not check or crack.

It is impervious to wind, water, rand disease germs. It dries in a few hours. It can be applied in any kind of weather. It is in general use. Licenses granted for the maxing using, and selling.

Address ADAMANT MFG. CO. 309 E. Geneseo at., Syrucuse, N. Y.

STEREOTYPING; THE PLASTER AND Paper Processes.—Composition and preparation of the mould, the best alloys of metal and proper degree of heat, trim ming and mending the plate, etc. A minute description of both processes, with numerous illustrations. A paper of great interest to every printer. By Thomas Bolas, F.C.S., F.I.C. SCIENTIFIC AMERICAN SUPPLEMENTS, 773 and 774. 10 cents each.



"Star"
Foot Lathe
Swings
9x2b in.

Screw Cutting Automatic Cross
Feed, etc. LATHE Scroll Sawa, Catalogue Free Sawa, Lather Machinery.

Seneca Falls Mfg. Co., 695 Water St., Seneca Falls, N. Y.

The Sebastian-May Co. Improved Screw Cutting Drill Presses, Chucks, Drills, Dogs, and Machinists' and Amateurs' Outlits. Lathes on trial, Catalogues mailed on application. logues mailed on application. 165 to 167 Highland Ave., SIDNEY, OHIO.

ROCK DRILL AIR COMPRESSORS,

MINING AND QUARRYING MACHINERY, Ingersoll-Sergeant Drill Co.

No. 10 PARK PLACE, NEW YORK,

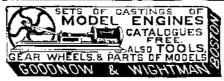


ICE-BOATS - THEIR CONSTRUCTION andmanagement. With working drawings, details, and directions in full. Four engravings, showing mode of construction. Views of the two fastest lee-salling boats used on the Hudson river in winter. By H.A. Horsfal, M.E. Contained in SCIENTIFIC AMERICAN SUPPLEMENT, L. The same number also contains the rules and regulations for the formation of ice-boat clubs, the salling and management of ice-boats. Price 10 cents.

Fine Taps, Dies, Reamers, Etc.

Lightning and Green River Screw Plates.
BoltCutters. Hand and Power Drilling Machines, Punch
ing Presses, Tire Benders, Tire Upsetters, and other Labor Saving Tools. Send for Price List. WILEY & RUSSELL MFG. CO., Greenfield, Mass. New York Office, 126 Liberty Street.

\$3 PRINTING PRESS. Do all your own printing. Save money. Catalogue for two stamps. Kelsey & Co., Meriden, Conn.



VELOCITY OF ICE BOATS. A COLLECion of interesting letters to the editor of the SCIENTIFIC AMERICAN on the question of the speed of fee boats, desmonstrating how and why it is that these craft sail faster than the wind which propels them. Illustrated with 10 explanatory diagrams. Contained in SCIENTIFIC AMERICAN SUPPLEMENT, No. 214. Price 10 cents. To be had at this office and from all newsdealers.



CLARE'S Ventilating and Drying FANS.

Light Running, Adjustable Blades, Self-Oiling Bearings. 24-page catalogue free. Also Rubber Press Rolls for Wool

GEO. P. CLARK, Manuf.

BUSINESS MEN

Handle for spoons, etc., W. B. Jones. 20,508
Spoon, W. L. Wilks. 20,506
Spoon, W. L. Wilks. 20,506
Type, font of printing, Schmohl & Lauschke, 20,515
20,515, 20,516
A Printed copy of the specification and drawing of any patent in the foregoing list or any patent in printissued since 1833, will be turnished from this office for 25 cents. In ordering please state the name and number of the patent desired. And conting way, New York.

Canadian Patents may now be obtained by the inventors for any of the inventions named in the foregoing list, provided they are simple, at a cost of \$40 cach. If complicated, the cost will be a little more. For full instructions address Munn & Co., 351 Broadway, New York. Other foreign patents may also be obtained.

LIST OF BOOKS

Engineering and Mechanics

Engineer's Hourly Log Book. Arranged to record for each hour of the twelve or twenty-four, totals and averages of the following: Boiler pressure, Fuel fired, Ashes and unconsumed combustible, Uptake temperature, Feed temperature, Turns per minute, Throttle Opening, etc. Oblook boards. N.Y., 1889.....................50

cloth. London, 1889. Steam Engineer's Guide. In the Design Construction and Management of American Stationary, Portable, and Steam Fire Engines, Steam Pumps, Boilers, Injectors, Governors, Indicators, Pistons and Rings, Safety Valves and Steam Gauges. For the Use of Engineers, Firemen, and Steam Users. By Emory Edwards. Illustrated by 119 Engravings. Third Edition, revised and corrected. 420 pp. 1200...\$2.50

tion. Fractical Handbook on Direc -Acting 123 pages, with 20 plates. P. R. Bjorling. 12mo, cloth. 1889... \$2.00

Steam Boilers, their Managementand Working on Land and Sea. By James Peattie. 220 pages and 3d diagrams. N. Y., 1888... \$2.00

Steam Boiler Catechism. A Practical Book for Stem Engineers, and for Firenen, Owners and Makers of Boilers of any kind, covering the Properties of Steam and of Fuels, and the Theory and Practice of Design and and of Fuels, and the Theory and Practice of Design and Repairing. By Robert Grimshaw, M.E. Profasely livustrated. N. Y., 1883... \$2.00

Water Supply. Notes on Water Supply in New Countries. By T. W. Stone, Assoc. M. Inst., C.E., author of "Simple Hydraulic Formulæ," 1889... \$3.00

Water Supply, Drainage, and Sanitary A pollances of Residences, including Lifting Machinery, Lighting and Cooking Apparatus, etc. By Frederick Colver. 1889

Thermodynamics of the Steam Engine and other Heat Engines. C. H. Peabody. 470 pages, 8vo. cloth, 1889... \$3.00

Thermodynamics, Heat Motors, and Refrigerating Machines. By De Volson Wood. N. Y., 1889. O. cloth... \$4.00

The Young Mechanic. Practical Carpentry. Containing Directions for the Use of all kinds of Tools, and for the construction of Steam Engines and Mechanical By John Lukin. Illustrated. 12mo... \$1.75

The Complete Practical Machinist. Embracing Lathe Work Vise Work, Drills and Drilling, Taps and

MUNN & CO.,
Publishers of the "Scientific American,"
361 Broadway, New York. Send for our Newand ent free to any address.

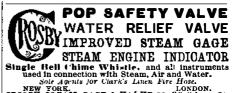
PARABOLON MAGIC LANTERN

Price \$45.00.

Particularly suitable for making Bromide Enlargements and projecting Lanten Transparanties.

We make several other styles singly and in pairs, for use with Oil or Lime light. Our Ozy-Hydrogen-fets and Oil Lamps are interchangeable on all our lanterns. Special facilities on the premises for the production of Apparatus and Lantern Slides. Mr. F. B. Mytinger, formerly of Museum of Natural History, has charge of our Skide Coloring. Slides to order from Amateum Negatives. Correspondence solicited. J. B. COLT & Cit. 18

A HYDRAULIC OR JET-PROPELLED Steam Lifeboat. Description of a naval lifeboat propelled by a jet of water, with full details and account of the main features of construction and of the trials made of it for maneuvering power. With 4 illustrations. Contained in Scientific American Supplement, No. 270. Price ill cents. To be had at this office and from all newsdealers.



CROSBY STEAM GAGE & VALVE CO. Be on the st.



ICE-HOUSE AND COLD ROOM.—BY R. G. Hatfield. With directions for construction. Four engravings. Contained in SCIENTIFIC AMERICAN SUPPLEMENT, 59. Price 10 cents. To be had at this office and of all newsdealers.





LITTLE HERCULES DRILL CHUCK
Has eccentric rotating, seri-grinning tages centric rotating, self-gripping laws, which tuild stringest when work-which tuild stringest when work-which tuild stringest when work has been and the drill, the more powerful the drill, the more powerful accurate, and durable chuck in the market.

ONEIDA MFC. CO. ONEIDA, N. Y., U. S. A.

CHUCK AND MICROMETER STOP for Amateurs.—By C. D. Parkhurst. Description of a simple and easily constructed chuck for use with a dividing machine, and the micrometer stop that is used to regulate the depth of the cut in the graduation of circles, etc. With 9 figure Contained in "OIENTIFIC AMERICAN SUPPLEMENT, NO. 272. Price II cents. To be had at this office and from all newsdealers.

GATES ROCK & ORE BREAKER



Capacity up to 200 tons per hour. Has produced more ballast, road metal, and broken more ore than all other Breakers combined. Builders of High Grade Mining Machinery. Send for Catalogues.

CATES IRON WORKS, 50 C So. Clinton St., Chicago 215 Franklin St., Boston, Mass.

AIR BRUSH AIR BRUSH Highest sware by Franklin Institute at a text time at Art Tool. Invaluation fabre to crayon and water color portrast artists and draughtsmen. Saves time, gives misst technical effects.

AIR BRUSH MFR. CO., 67 Nassau St., Rockford, In.

STEVENS PATENT FINE ADJUSTING AND TRANSFER OUTSIDE CALIPER.

THE PHONOGRAPH.—A DETAILED description of the new and improved form of the phonograph just brought out by Edison. With 8 engravings. Contained in SCIN-TIFIC AMERICAN SUPPLEMENT, No. 622. Price 10 cents. To be had at this office and from all newsdealers.

