and nitrogen in steel. It is entirely theoretical, and does not exist in a free state. Ammonium cyanide is a crystalline salt, and can be obtained of any druggist. It may be that you have confounded the latter with your cyanogen of ammonia.

(31) C. G. asks how to make new whisky barrels look old? A. By washing the barrels with a solution of iron sulphate (green copperas), the wood will become darker.

(32) J. M. K. asks: How the oiling process on black walnut furniture is done? A. For fine oil coat on black walnut, first make what the varnishers call a filler, of whiting and burnt umber in proportion to make the color correspond with the color of the wood. Rub these up with boiled linseed oil and with it about one-tenth the quantity of whiting and umber, of litharge as a drier. Make mass of consistence of paint. Rub this into the surface of the wall—not with a rag—and allow it to dry. One coat will probably be enough. Then rub the surface with boiled oil. After this is dry, if a higher finish is required a French polish rub will answer most wants.

(33) J. L. asks: How to make a paste to stick pasteboard together that will not be affected by dampness, and at the same time be pliable, so it will not break when the board is bent? A. Use the following: gum shellac 3 parts, caoutchouc (India rubber) 1 part, by weight. Dissolve the rubber and shellac in separate vessels in ether free from alcohol, applying a gentle heat. When thoroughly dissolved, mix the two solutions, and keep in a bottle tightly stoppered.

(34) G. and V. L. ask: What is the present value of bar aluminum? Is there much demand for it? Where is the principal market to dispose of it? A. Bar and sheet aluminum is now on sale in New York at $1.50 per ounce. The price in Paris and London is from 75 cents to $1.00 per ounce. There is very little used except for experimental purposes. Jewelry, mathematical and optical instruments are made of it and its alloys, as aluminum bronze. There would be a large demand if it could be made cheaper.

(35) H. H. requests: Let me know how to soften an oilstone, and what oil is best to use on it. And are the tops and bottoms of violins curved by pressing, or are they gouged out? A. Oilstones cannot be softened; there are different grades of oilstones hard and soft. The best oil to use on an oilstone is kerosene; water is better on a hard stone. The best violins have their tops and bottoms cut out to swell, by hand, from boards from five-eighths of an inch thick to three-quarters of an inch thick. Cheap violin tops and bottoms are pressed from thin wood.

(36) C. M. writes: 1. Do you know of any place where files are made by the "sand blast" process? A. No. Files are generally cut, tooth by tooth, by means of hammer and cold chisel. Files are cleaned and sharpened by means of the sand blast. See SCIENTIFIC AMERICAN, March 3, 1883, "Resharpening Files." 2. Also do you know of any concern that cleans stove castings by same process? A. No. Cleaning stove castings by the sand blast would be an expensive process compared with the present means of the pickle tub and wire brush.

(37) H. W. S. asks: Which are the best, machine or hand riveted boilers? A. Hand riveted boilers.

(38) J. H. writes: Please inform me what kind of solder is used for soldering band saws. I have tried it with tinsmith's soft solder, but it seems it is too hard; as soon as I bend the saw, the weld separates, otherwise the weld is better than the usual way with silver. A. The usual solder is spelter, but good tinman's solder is effectual—composition, two of lead and one of tin by weight. But the metals should be pure. The saw should be cleaned with the file and washed with the usual saturated solution of zinc and muriatic acid. Then apply the solder, and grasp the joint with a hot tongs to keep the solder fused until the saw is heated.

(39) J. K. says: You will please give me a receipt for making a mixture of acids, to make bright again tarnished brass and copper. I have seen it used by men who wished to make bright the small brass bells, such as are used on masquerade suits. I wish to use it for the same purpose. The bells were first dipped into the acid, then into clear water, and then put into fine sawdust to dry; when taken out, they had a bright shine. A. Clean the brass by warming it and dipping in water charged with washing soda, then into clear water to remove the grease. Then dip in a bath of one part by measure of sulphuric acid, one part sal ammoniac, two parts nitric acid, and four parts water. Dip for a moment, then dip in clear water, and dry in hot sawdust.

(40) A. S. P. asks how the name, etc., is stamped on books in gold? A. Gilding on book covers is done by means of engraved brass or electrotyped patterns, heated and pressed on the substance over the gold leaf, which is fixed by an albuminous size—white of eggs. 2. How lead pencils are stamped in gold? A. The gilding on lead pencil wood is done in a similar manner by a stamp. In both cases white of eggs for size, gold leaf for material, heat and pressure for means are used.

(41) L. D. writes: Having tried several methods, but without success, of removing a letter in stipple, printed with aniline blue mixed with what is known as Boston drier upon a costly piece of muslin, I would be pleased to be informed by you what could be used to remove the same without injury to the fabric. A. Hydrogen peroxide is probably as good a reagent as you can use for this purpose. See description of its properties in SCIENTIFIC AMERICAN SUPPLEMENT 339.

(42) J. M. D. writes: Please inform me how to make solder that will stand from 800° to 1,000° F. without fusing? A. Silver solder will stand more than 1,000° F. Or a solder of silver 2 oz., antimony 1 oz., will stand more than 800° F.

(43) C. B. W. writes: There are two boilers in every respect identically the same, excepting crown sheets, one being circular, the other flat. I think that the former (crowned) boiler generates more rapidly than the other. If right or wrong, please give reasons? A. We think the difference will be scarcely appreciable, as there will be more heating surface exposed with the flat crown, but the circular crown is stronger and gives better circulation.

(44) S. H. asks: 1. Is there any particular proportion between the amount of rags and sulphuric acid used in making glucose, and what is it? A. First extract the starch from the rags, and boil the solution containing the same down to a density of 5° to 10° Baume, then use the acid in the proportion of 5 lb. to 100 gal. solution. 2. What is the best thing to use to neutralize effectually muriatic acid, so that the neutral compound shall be insoluble in water? Chalk does not seem to kill the acid completely, as soda carbonate still produces effervescence no matter how much chalk is added. A. Try silver oxide; silver chloride is the only insoluble chloride in water. 3. How does nature supply the constant drain on her store of oxygen? Is it being steadily reduced, so that it is only a question of time when the air we breathe will no longer support life? A. The supply of oxygen is obtained from plants, which exhale oxygen. The composition of the air is practically constant, and any diminution of oxygen is not appreciable. 4. Does a bullet partake of the motion of the rifle if discharged as the hunter is following the game with his gun, when the animal crosses his line of sight at a right angle? A. The bullet will have the motion of the rifle added to its own movement.

(45) C. B. H. asks: What number of cubic feet of compressed air under a pressure of from 80 to 100 pounds per square inch will be required to drive a 10 horse power engine 10 hours? A. At 100 pounds pressure it will require 200 cubic feet per hour for 10 horse power. This will require 2,400 feet of air to be compressed to 200 cubic feet of about 8 volumes into 1, each hour.

(46) A. P. asks in regard to drying wood with superheated steam. Can it be successfully done? Would it be as likely to check as when dried with hot air? What is the better plan of superheating steam? A. Superheated steam may enable you to make a hotter drying room. We do not know that it has many advantages and is liable to cause trouble. Eighty pounds boiler pressure with sufficient pipe will enable you to boil the sap out of the wood. The best way to prevent checking is to heat the wood in steam for a short time or until the wood gets thoroughly heated through, and then ventilate slowly, keeping up the heat in the dry room.

(47) J. R. M.—The following is a description of the apparatus and process of manufacturing birch oil: "The apparatus consists of a furnace, a boiler, a tin pipe, a trough into which water is continuously brought from a mountain brook, a barrel, and a glass jar. The furnace is made of loose stones, so arranged that the fuel is put in at one end and the smoke goes out at the other, through an old piece of stove pipe. Over the furnace is the boiler, which is merely a wooden box, about three feet wide, four long, and three deep, with the bottom covered with sheet iron to prevent burning. The boiler has a wooden lid, so that it can be tightly closed, and from the top leads the tin pipe. This pipe runs into the water trough and through it, so that the water always surrounds and cools it. The end of the pipe, after coming out of the trough, opens over a barrel, and in this barrel, exactly under the end of the pipe, is placed the glass jar. This constitutes all the plant." The boiler is filled about a third deep with water; the birch bark and twigs are shoveled in until it is full; the lid is placed, and the fire started in the furnace. For hours the fire must be carefully watched, and fresh fuel continually furnished. The material in the boiler becomes heated, the oil in the twigs extracted and mixed with the water. At boiling heat, the steam arising from the water and oil passes through the tin pipe and becomes chilled by the water in the trough; a condensed liquid is the result; and this mixture of oil and water escapes from the pipe, when it naturally separates. It drips into a glass jar placed over a barrel; the heavy oil sinks to the bottom of the jar, while the water flows over and is saved in the barrel, to be again reboiled the next day. The oily substance saved in the jar is the oil "pure and undefiled."

(48) E. H. asks how to color finished wrought iron articles without heating them, so as to make the articles have a blue black color? A. Finished wrought iron cannot be colored blue black without heating. It may be varnished or painted. It may be oxidized by acids to retain a brown, but a permanent blue black must be induced by oxidation by heat.

(49) C. M. H. & Co., ask: 1. Is there any advantage in distance between the point of application of the power and any resistance that it is proposed to overcome, provided that the medium through which the power is transmitted be devoid of elasticity and exactly parallel to the direction of motion, the power acting in the same line? A. None whatever. 2. Does this or does it not apply to a case where a horse is hitched to a vehicle, the trace being fastened to the hame at exactly the same level as it is attached to the vehicle, the road being always perfectly level? A. We think the draught is easier under the conditions named. We do not see the parallel between the two questions, however.

(50) E. B. K. asks: From which will I get the best results—a 7 in. silvered glass reflector, or a 3 in. achromatic objective? Wishing to construct a telescope with the 3 in. objective, using two lenses, eye and field, what focal distance should they have, and what power would such a telescope have? A. The 7 in. silvered glass reflector will give the best results and the most light, always provided that both are of equal class in the perfection of finish and definition. The 7 in. reflector should be 7 ft. focus with a small plane reflector for the Newtonian form, which gives the best results as to image, but sacrifices a part of the light; such a telescope, if first class, should bear a power of 300. The 3 in. refractor should be from 40 in. to 45 in. focus, and if first class should bear a power of 250.

(51) K. B. asks: 1. Can tar bone be rendered fluid merely by action of steam or heat? A. By boiling in water—and the effect of steam is similar—bone is converted into gelatine and dissolves, forming a solution clouded by suspended fat and vascular tissue, and solidifying in a jelly on cooling. 2. Bone, being an organic matter, ought to be soluble like hair, hide, or wood fiber. Do you know of any process or chemicals effecting it? A. The bone cartilage is likewise soluble in hydrochloric acid. 3. Of what is celluloid composed? A. For description of celluloid see page 3617 of SCIENTIFIC AMERICAN SUPPLEMENT, No. 227.

(52) P. A. S. asks for a receipt for making the percussion powder for metallic cartridges? A. The priming used in percussion caps is made by triturating 100 grains fulminating mercury with a wooden muller on marble with 30 grains water and 60 grains gunpowder. A solution of gum mastic in turpentine is used as a medium for attaching the fulminate to the cap.

(53) C. S. B. and F. H. T.—For cleaning buckskin you might try the following: Make a solution of weak soda and warm water, rub plenty of soft soap into the leather, and let it remain in soak for two hours, then rub well until quite clean. Rinse thoroughly in a weak solution of soda and yellow soap in warm water, but not in water only, else it dries hard. After rinsing, wring it well in a rough towel and dry quickly, then pull it about and crush it well until soft. Your best plan, however, is to have them cleaned at a professional dyer's.

(54) N. E. L. asks the proper size of the ports of a cylinder 3 x 5 in., speed 200 revolutions per minute? A. Steam opening, $\frac{1}{16}$ x 2⅜ in.; exhaust, ¾ in. x 2⅜ in.

(55) T. N. H. asks how to apply French polish to inlaid woodwork? A. Lay on a coat of fine shellac varnish. When dry rub it down with fine emery paper and lay on another coat. Repeat until you have a fine, smooth surface, then with a flat camel's hairbrush lay on a final coat of fine furniture varnish. The following gives good results: Take of rather thick shellac varnish and boiled linseed oil equal parts. Shake it thoroughly whenever used. Apply sparingly with a cloth and rub briskly until the desired polish is secured.

(56) J. T. T. says: In making a one-sixteenth in. cut lengthwise through a seamless brass tube 1½ in. diameter by 12 in. long, it springs open about three-sixteenths in. Can you tell me how to prevent it? If tube was cast brass, would it spring as much when cut open? A. Before splitting the tube anneal it by heating red hot and slowly cooling. Drawn brass tubes are hard. Cast brass tube will not spring open.

(57) G. S. asks: 1. Do you think a good, strong cask would be strong enough to generate steam for an engine 1½ in. bore, 3 in. stroke, if connected with a coil of pipe placed in a stove near by the cask, having double heads and braced? A. No; do not risk it. 2. I saw something about using mercury flasks for boilers for small engines (as above); is it possible to use them as such? A. Yes. You will find in the SCIENTIFIC AMERICAN SUPPLEMENT for June 28, 1879, a cut of a boiler so made. 3. How are Pharaoh's serpent eggs made? A. See SCIENTIFIC AMERICAN, vol. xliv., No. 4, and vol. xlviii., No. 6.

(58) J. P. P. asks concerning Connelsville coke—how made, from what, etc.? A. The Connelsville coke derives its value from a very rich seam of bituminous coal in Western Pennsylvania, said to be the purest vein of bituminous coal in the United States, and very similar in quality to the Durham vein in England, which is also famous for its coke producing qualities. The coking is done by burning off the volatile matter or hydrocarbon gas in large ovens.

(59) J. F.—Wheel No. 2 will give from 10 to 15 per cent the most power, and is an improvement over No. 1. Both plans are old. You will get better results from No. 1 by reducing the number of chutes.

(60) S. N. G. writes: Say two rubber bags, sixty gallons capacity, as used for oxyhydrogen light, be placed one on top of the other under 250 pounds pressure, will the gases be forced from each tube with same power as if the bags were separate under same pressure? A. The pressure would be same in both cases. The plan you suggest is in common use, and is preferred on account of the facility with which both gases can be put under exactly the same pressure. Of course there will be the difference of the weight of the upper bag, but this is so slight as to be of no account.

(61) R. W. G. asks: 1. Could a steel sphere or spheroid be permanently magnetized? A. Yes, but if perfectly symmetrical and homogeneous it would not exhibit polarity until fractured. 2. If so, what would determine the position of the magnetic axis? A. It would not be determined so long as the sphere remained perfect. 3. Do the variations of the needle in an electric storm indicate an increase or a decrease in the earth's magnetism? A. Probably neither. The needle is affected by electric currents. 4. Does the number of sun spots sensibly diminish its heating power on the earth? A. It is generally believed to make no material difference. 5. What kind of an eye piece would be best, and of how high a power, for a telescope having a meniscus lens of about 36 in. focus, with a diameter of 2½ in., as an object glass? A. Low power. 6. Would it be best to use this with full aperture, or to diaphragm it down with diaphragms in the tube or over the glass? A. Full aperture on nebulæ and faint objects. Use a diaphragm outside of the objective for the planets and a very small aperture for the sun.

(62) F. B. J. says: I have a brick house with stone foundation for cellar; the stone portion is constantly damp; and in time of great thaws from snow and ice, as also from rains, a portion of the north side leaks or oozes water under the foundation into the floor. How can I prevent it? The cellar is otherwise dry, except at this place; 5½ feet of walls are under ground. A. Where water comes under walls five feet below the surface, it will be difficult to keep a cellar dry. In some wet locations in New York city, cellars are made with bottoms somewhat on the flat-boat bottom shape, and heavily cemented on the under side, and with a drain for carrying off the water.

(63) H. L. asks: 1. For a solution for making the yellow oiled clothing that teamsters wear instead of rubber coats and pants? A. Dissolve 1 oz. of beeswax in 1 pint of the best boiled linseed oil over a gentle fire, applying when cold with a piece of rag, rubbing it well in, and afterward hanging up to dry, which will take about 4 days. 2. Also a solution for making aprons that are used in slaughter houses; they are soft and pliable, black on one side, and show the canvas color on other side, but will not let water soak through. By giving me above information through your paper you will greatly oblige a reader. A. Let 4 oz. of India rubber in small pieces be softened in 8 oz. of oil of turpentine, then add 2 lb. of boiled oil, and boil for two hours over a slow fire. When dissolved add 6 lb. boiled linseed oil and 1 lb. of litharge, and boil until an even liquid is obtained. Apply warm.

(64) G. S. S. writes: We build our row boats by commencing at the keel with strips one-half by seven-eighths inch in size, nailing one to another until we reach the top. What is the best material to put in the joints as we build? A. Cotton cloth saturated with thick white lead paint.

MINERALS, ETC.—Specimens have been received from the following correspondents, and examined, with the results stated:

R. McW.—The mineral is pyrite (iron sulphide), and may carry gold. An assay will be necessary to determine its value, the expense of which will be $5.00.

INDEX OF INVENTIONS

For which Letters Patent of the United States were Granted

March 11, 1884,

AND EACH BEARING THAT DATE.

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

Abrading machine, F. W. Coy 294,766
Alarm. See Fog alarm.
Anchor, H. M. Schmeelk 294,813
Animal trap, H. B. Sargent 295,056
Awning, H. B. Coyle 294,767
Bagasse drier, R. H. Yale 294,836
Baling press, D. B. Hendricks 295,122
Baling press, J. P. McDonald 294,897
Baling press, N. W. Speers, Sr. 294,818
Baling press, C. E. Whitman 295,089
Barrels, rack for holding, W. Walter 295,085
Bedstead, sofa, J. Baggs 294,954
Beer cooler, C. L. Krum 294,884
Belt hinge, E. Smith 294,923
Bevel and T-square, combined, S. H. Bellows 295,100
Binder, temporary, W. E. Elam 294,775
Bit. See Bridle bit.
Bit brace, ratchet, W. R. Clarkson 294,762
Boiler. See Steam boiler. Tubular boiler.
Boiler furnace, J. J. Hall 294,998
Boiler furnace, steam, J. B. Smith *et al.* 294,924
Boiler support, J. C. Haag 294,871
Boiler water purifier, G. M. Brauninger 294,754
Book and pad, memorandum, S. J. Silberman 294,920
Boot cleaner, J. Wolf 294,884
Boots or shoes, manufacture of rubber, E. Stout 295,062
Bosom boards, neck band shaping device for, D. G. Norris, 2d 294,180
Bottle cap, mustard, F. Wolff 294,835
Bottle filling device, P. J. Hogan 295,009
Bottle holding clamp, J. B. Wilson 294,946
Bottle stopper, internal, H. Benson 294,102
Box. See Match box. Packing box.
Box fastener, Ford & Spencer 294,778
Brace. See Bit brace.
Bracelet, C. R. Bugbee 295,108
Brake. See Car brake. Vehicle brake. Wagon brake.
Brick cutting machine, T. M. Bannister 295,097
Brick drying kiln, B. G. Lockett *et al.* 295,026
Brick for building purposes, dovetailed grooved, G. E. Stearns 295,067
Brick machine, L. B. Kennedy 295,019
Bridges, guard fence for draw, A. Bosch 295,104
Bridle bit, L. S. Longcor 295,028
Brushes and brooms, process of and apparatus for preparing fiber for the manufacture of, F. Kunz 295,021
Bucket, well, F. E. Miller 295,038
Buckle for harness, loop, J. A. Park 295,044
Buckle, suspender, W. E. T. Merrill 295,035
Buckle, trace, Wetstein & Dyckman 294,942
Button, W. H. Matthews 295,032
Cabinet lock, F. W. Mix (r) 10,460
Can. See Paint can.
Can machine, J. Hogg 294,783
Cane mill, D. A. Mullane 294,902
Car brake, E. E. Baker 295,096
Car brake, W. Hacklander 294,999
Car brake, W. B. Turner 294,939
Car coupling, S. D. Antle 295,092
Car coupling, Fraser & Rice 294,984
Car coupling, G. B. Gano 294,987
Car coupling, G. W. Laraway 294,797
Car coupling, J. Low 295,029
Car coupling, A. F. Morey 294,801
Car coupling, E. J. Roberts 294,810
Car coupling, J. White 294,831
Car sand box, street, Bookman & Bingham 294,846
Car wheel, A. Atwood 294,750
Car wheel, J. A. Hagan ..... 295,995 to 295,997
Car wheel, W. I. Lindsay 294,890
Carbureter, Gairing & Lehmann 294,863
Card sharpening apparatus, J. Brierley 294,962
Carpet stretcher, J. C. Kellsey 295,018
Carriage seat, G. A. Sears 294,916
Carriage top, T. J. Reed 294,912
Carriages, canopy standard for children's, G. A. Ellis 295,116
Carrrier. See Wire carrier.
Cartridge decapper, recapper, and reloader, F. Giffard 294,865
Cartridge implement, J. H. Barlow 294,955
Case. See Folding case.
Chain, S. Ryder 294,812
Chain, ornamental, J. Etzensperger 295,117
Chandelier, extension, J. C. Knight 295,020
Check or water book, T. Garrick 294,864
Chuck for drilling machines, etc., C. A. Brenzinger 294,755
Cithern, F. F. Wichard 294,832
Clamp. See Bottle holding clamp.
Cleaner. See Boot cleaner. Seed cleaner. Steam boiler cleaner.
Cocks for water and gas pipes. Case for operating stop, E. L. Abbott 294,749
Coke oven door, Blythe & Henderson 294,845
Collar pad, horse, D. Curtis 294,769
Compasses, F. S. Sevenson 295,076
Cooking apparatus, steam, G. W. Williams 294,945
Cooler. See Beer cooler. Ice machine cooler. Liquid cooler. Sirup cooler.
Core barrel, Mobberley & Taylor 295,039

Cornstalk rake, G. A. Runyan..... 295,054
Corset, I. Newman..... 295,041
Corset busk, A. Taylor, Jr..... 294,933
Counter, portable, J. T. Perry..... 224,907
Coupling. See Car coupling. Hose coupling.
Crate, folding, L. & C. Krieckhaus..... 294,789
Crate, knockdown, W. M. Baker..... 294,751
Cuff holder, C. M. Alexander..... 294,091
Cultivator, C. W. Post..... 294,806
Cultivator, A. C. & J. D. Tower..... 295,080
Cultivator and drill, spring tooth, C. La Dow..... 294,791
Cultivator, wheel, N. Trowbridge..... 295,082
Cut off governor for engines, P. Pistor..... 295,131
Cut off valve, Davis & Shepard..... 294,857
Cutlery handles, manufacture of, Jeralds & Lawton..... 295,016
Cutting double pile fabrics, machine for, C. Coupland..... 294,970
Cutting double pile fabrics, spindle and bearing for rotary cutters of machines for, C. Coupland..... 294,969
Damper, ventilating, J. P. Dorr..... 294,773
Desiccating eggs, etc., method and apparatus for, L. J. Cadwell..... 294,849
Die press, G. E. Merriman (r)..... 10,461
Dish, butter, A. J. Chase..... 295,111
Disinfectant, C. A. Catlin..... 294,758, 294,759
Domino, J. L. Law..... 295,023
Door check, L. A. Davis..... 294 972
Door check, pneumatic, G. S. Perkins..... 294,905
Door pull, electric, C. Beile..... 294,842
Doorspring, W. W. Jackson..... 294,785
Doors of buildings, mechanism for operating, H. J. Shaw..... 294,917
Drier. See Bagasse drier.
Drill. See Rock drill. Well drill.
Easel, E. Werner..... 294,941
Electric cable, compound, R. S. Waring..... 295,086
Electric cables, branching, R. S. Waring (r)..... 10459
Electric cables, uniting, R. S. Waring (r)..... 10,458
Electric conductor system, underground, T. J. Perrin..... 294,906
Electric conductor tip, Childs & Shaw..... 294,851
Electric light regulator and cut out, R. J. Sheehy. 295,058
Electric machine, dynamo, C. M. Lungren..... 294,892
Electric machine, dynamo, C. Richter..... 294,913
Electric wire connector, T. S. Stevenson..... 294,928
Electrical haulage, system of, Ayrton & Perry..... 295,094
Elevator. See Saw elevator.
Elevator, F. J. Schupp..... 294,815
Elevator, T. Williams *et al*..... 295,135
End gate, automatic, T. S. Stewart..... 295,072
End gate, wagon, G. Becker..... 295,099
Engine. See Traction engine.
Excavator and embankment builder, earth, Mulvihill & Tinney..... 265,128
Excavator, separator, and assorter, sand and gravel, N. W. Godfrey..... 294,867
Fare registero r recorder, R. M. Rose..... 295,051
Feed water heating and purifying apparatus, N. A. T. Jones..... 294,786
Fence, barbed, W. E. Brock..... 294,963
Fence wire, machine for making barbed, A. J. Upham..... 295,134
Fence wires, device for connecting and stretching, H. Darlington..... 295,114
Fifth wheel, M. J. Rogers..... 294,915
Fire arm, magazine, W. Mason..... 295,031
Fire arm shield, J. Hunter..... 295,013
Fire arm sighting attachment, H. C. Cushing..... 294,770
Fire escape, R. A. Bush..... 294,849
Fire escape, J. M. Chesnut..... 295,112
Fire escape, E. Dye..... 294,860
Fire escape, E. R. Johnson..... 294,879
Fire escape, T. P. Letton..... 294,887
Fire escape, W. M. Miller..... 295,127
Fire escape, R. B. Parrott..... 295,047
Fire escape, E. A. C. Petersen..... 294,908
Fire escape, bed spring, M. E. Jones..... 294,882
Fishing fly book, C. G. Levison..... 294,888
Flour bolt brush, T. McCudden..... 294,896
Fluids and oils, treating volatile and inflammable, S. M. Eiseman..... 294,978
Fog alarm, A. H. Sherman..... 294,918
Folding case, A. Traver..... 294,938
Form, adjustable clothing, W. Leigh..... 284,025
Fruit basket fastener, C. H. Johnson..... 295,017
Furnace. See Boiler furnace. Gas producing furnace. Ore roasting furnace.
Gaff support for vessels, G. I. Field..... 294,980
Gage attachment for boring bits, etc., J. Fuller, Sr..... 294,985
Gas apparatus, A. O. Granger..... 295,118
Gas generator, hydrocarbon, J. Flannery..... 294,862
Gas lighter, electric, E. L. Shute..... 295,059
Gas producing furnace, N. M. Langdon..... 294,796
Gate. See End gate. Railway crossing gate.
Gate, D. Collins..... 294,853
Gate, G. M. Custer..... 294,971
Gate, Eastman & Finkbeiner..... 294,861
Gate, F. X. Schullian..... 294,814
Gate, W. P. & C. E. Teeter..... 294,823
Gear, combined friction and cog, N. W. Speers, Sr. 294,819
Gear cutter, bevel, H. Bilgram..... 294,844
Generator. See Gas generator.
Governor, water wheel, C. J. Shuttleworth..... 295,060
Grate, J. G. Smith..... 295,063
Grinding mill, J. H. Bear..... 294,956
Grinding mill, G. & A. Raymond..... 295,049
Grindstone dressing machine, F. Trier..... 295,081
Guns, barrel lock for breakdown, N. R. Davis..... 294,772
Hame, J. W. Hudson..... 295,012
Hand press, H. F. Osborne..... 294,802
Handle for trunks, etc., G. S. Gates..... 294,988
Harrow, I. Lemon..... 295,124
Harrow or cultivator, C. La Dow..... 294,792
Harvesting machine, C. Young..... 294,837
Hat, ventilated, E. M. Lebkicher..... 295,024
Hay and straw stacker, M. B. Fitts..... 294,981
Hay stacker, A. Cooley..... 294,768
Heating; method of and apparatus for steam, M. S. Foote..... 294,982
Heating water, etc., for domestic and other purposes, apparatus for, W. A. Goodyear..... 294,992
Hinge, blind, J. B. Merriam..... 295,034
Hinge, double, C. C. Richmond..... 294,809
Holder. See Cuff holder. Lead and crayon holder.
Hook. See Whiffletree hook.
Horseshoe, G. C. Goodloe..... 294,990
Hose coupling, W. H. Bulcroft..... 295,109
Hose patch, G. W. Towle, Jr..... 294,937
Ice creeper, F. M. West..... 294,829
Ice machine cooler or refrigerator, W. Eberhardt. 294,977
Ice making apparatus, condenser for ammonia, M. S. Conly..... 294,763
Ice making machine, Taylor & Pearson..... 294,935
Ice tongs, W. Dimond..... 294,975
Inking pad, C. W. Crustsinger..... 294,856
Iron, manufacture of wrought, C. Zug..... 294,949
Jack. See Lifting jack. Wagon jack.
Kitchen cabinet, H. Hanna..... 295,120
Knitted or woven wear, article of, W. Goddard.. 294,779
Knitting machine, W. H. Hollen..... 294,784
Knob attachment, O. Stoddard..... 294,822
Knob spindle attachment, H. K. Jones..... 294,881
Lace fastening, H. H. Porter..... 294,908
Ladder chair, step, F. Reindel..... 294,808
Lamp, electric, A. Welsh..... 295,088
Lamps, holder for the carbons of incandescing electric, A. Welsh..... 295,087
Lead and crayon holder, C. W. Brown..... 294,756
Lifting jack, M. Brown..... 295,105
Liquid cooler, H. Lindenberg..... 294,889
Lock. See Cabinet lock. Oar lock. Safe lock.
Lock, D. Morris..... 294,901
Lock, F. S. Svenson..... 294,077
Lock trimming, E. T. Taylor..... 294,934
Loom for weaving double pile fabrics, C. Coupland..... 294,967, 294,968
Looms for weaving double pile fabrics, mechanism for delivering pile warps in, F. Charcot... 294,965
Lubricating compound, B. F. Bartlett..... 294,840
Mail bag cord fastener and label holder combined, H. E. & C. L. Lundy..... 294,799
Mash, etc., apparatus for cooling, T. Hayes..... 295,005
Mashing apparatus, grain, T. Hayes..... 295,004
Match box, J. C. Bauer..... 295,098
Mechanical motor, D. C. Camp..... 294,850
Mill. See Cane mill. Grinding mill. Roller flour mill.
Millstone dress, G. W. Prior..... 294,911
Mine draining apparatus, G. W. Dickie..... 294,859
Motion, converting, J. W. Cheney..... 294,761
Motor, J. A. Hart *et al*..... 295,121
Mowing machine, J. E. Mendenhall..... 295,126
Musical instruments, tuning peg for, M. E. Patterson..... 295,048
Necktie fastener, O. M. Graves..... 294,869
Nest, hen's, I. B. Dillon..... 294,974
Nut, divided screw, G. S. Hilts..... 294,781
Nut lock, W. L. Moore..... 294,900
Oar lock, T. Marshall..... 294,893
Oil for lubricating, etc., composite, G. W. Banker. 295,752
Oils and fats from fish, extracting, P. C. Vogelius..... 294,940
Oiler, valve, S. D. Mershon..... 294,898
Ointment for tetter, M. Huggins..... 294,876
Ore roasting furnace, N. M. Langdon..... 294,795
Ores, pulverizing, desulphurizing, and otherwise treating metalliferous, F. A. Luckenbach..... 295,125
Packing box, reshipping, Parker & Baker..... 295,046
Packing condenser tubes, J. Wilson..... 295,136
Pad. See Inking pad.
Paint can, W. Kuehn..... 294,790
Paintings and other analogous works of art, carrier for, C. Marot..... 295,030
Panel, R. A. Adams..... 294,838
Paper wrapper, D. Dick..... 294,858
Pelts, method of and apparatus for treating, Ritchel & Doolittle..... 295,050
Picture exhibitor, A. J. Dworsky *et al*..... 294,976
Pin. See Safety pin.
Pipe. See Tobacco pipe.
Plane, bench, J. Siegley..... 294,919
Plane, bench, J. A. Traut..... 294,825
Planing machine, J. A. Roberts..... 294,914
Planing machine jointing attachment, E. Benjamin..... 295,101
Planer and fertilizer distributer, walking corn, A. Runstetler..... 295,132
Planter, check row corn, C. W. Babcock..... 294,839
Planter, check rower corn, G. W. Brown..... 294,964
Planter, seed, A. J. Madra..... 294,800
Plate holder, T. H. Blair..... 294,959
Plow, D. A. & J. L. Funderburk..... 294,986
Plow, G. Steudel..... 295,069
Pneumatic dispatch apparatus or mechanism, G. Miles..... 294,899
Poultry fountain, J. C. Tappeiner..... 294,932
Press. See Baling press. Die press. Hand press.
Pressure gauge testing apparatus, C. E. Ashcroft. 295,093
Primer, T. G. Bennett..... 294,957
Printing machine, stop cylinder, W. Scott..... 295,057
Punch, Goodman & Hunt..... 294,991
Punch, R. M. Rose..... 295,052
Punching metal tubes, device for, G. W. Whitman..... 295,090
Radiator, steam, C. Comstock..... 294,854
Radiator, steam, Morgan & Robb..... 295,040
Railway carriage, marine, Hunter & Hargitt..... 295,014
Railway crossing gate, J. Coty..... 294,765
Railway signal, H. Johnson..... 294,880
Railway switch, W. W. Pennell..... 294,904
Railway ties, wear plate for, D. Servis..... 294,816
Railways, friction drum for inclined plane cable, E. C. Bacon..... 294,953
Railways, gripping mechanism for traction cable, J. W. Young..... 294,948
Rake. See Corn stalk rake.
Rake, S. Booker..... 295,103
Razor strop, J. H. White..... 294,830
Razor strop attachment, E. F. Wiegleb..... 294,944
Reclining chair, I. Deppen..... 294,973
Refrigerator, J. Burke..... 295,110
Register. See Fare register,
Remedy for hernia, E. C. Thatcher..... 295,078
Retouching machine, C. H. Shaffer..... 294,817
Reversible seat, F. H. Henry..... 294,874
Revolver, J. T. Smith..... 295,064
Revolvers, cylinder stop for, F. H. Allen..... 294,950
Rivet, A. Eppler, Jr..... 294,979
Rock drill, steam, F. A. Halsey..... 294,999 to 295,001
Rock drill valve gear, F. A. Halsey..... 295,002, 295,003
Roller flour mill, A. N. Wolf..... 294,947
Roller mill feed mechanism, B. F. Ortman..... 295,043
Rowlock, S. H. Haas..... 294,993
Ruler, M. Green..... 294,870
Saddle, pack, Smith & Hunter..... 294,925
Safe lock, E. Stockwell..... 294,821
Safety pin, F. Meyers..... 295,036
Sash fastener, F. Eberlein..... 294,774
Sash fastener, E. Kempshall..... 294,787
Sausage stuffing machine, hydraulic, F. W. Tuerk, Jr..... 294,826
Saw elevator, drag, W. J. Perkins..... 294,804
Saw filing and setting machine, Detrick & Smith.. 295,115
Saw filing machine, W. Tucker..... 295,133
Screw driver, A. D. Wallen..... 294,828
Seat. See Reversible seat.
Seed cleaner, flax, G. Beal..... 294,841
Sewing machine cord attachment, J. S. Sackett... 295,055
Sewing machine guide, W. B. Thayer..... 295,079
Sewing machine treadle, Lockwood & Orrill..... 295,027
Sewing machines, signature presenting mechanism for book, E. S. Boynton..... 294,961
Shaft and its bearings, machine, G. S. Gates..... 294,989
Shearing machine, H. B. Chess..... 294,966
Shingle machine, Hewitt & James..... 295,006
Ships, shaft for steam, S. B. Jerome..... 294,878
Shirt, J. Simon..... 294,921
Shoe heel, W. & L. Rossheim..... 295,053
Shutter bower and fastener, W. P. Marshall..... 294,894
Siding and ceiling for buildings, G. W. Crawford.. 294,855
Sign, watchmaker's, E. C. Miller..... 295,037
Signal. See Railway signal.
Sirup cooler, cold air blast centrifugal, A. B. Smith..... 294,922
Sled, bob, J. H. Kirk..... 294,883
Speed of driven shafts, regulating, J. W. Cheney. 294,760
Spoon, W. Praddex..... 294,910
Spring. See Door spring. Watch hair spring.
Steam boiler, J. Stevens..... 294,927
Steam boiler cleaner, R. Stewart..... 295,070
Steam boiler covering, H. F. Allen..... 294,951
Steam boilers, etc., covering for, G. C. Hicks..... 294,780
Steering apparatus, R. M. G. Brown..... 295,106
Stirrup, saddle, S. A. Nolen..... 295,129
Stone dressing machine, Gilfillan & McKelvey... 294,866
Stove pipe thimble, L. Russell..... 294,811
Stoves, heating and ventilating drum for, J. F. Davis..... 294,771
Sugar liquor from the scum and mechanical impurities contained therein, process of and apparatus for separating raw, S. M. Lillie..... 294,798
Swing, I. N. Forrester..... 294,983
T-plates, manufacture of, H. G. Brown..... 294,757
Tag holder, E. H. Tannehill..... 294,931
Table. See Writing table.
Table, E. R. Hinman..... 295,007
Tablet, perforated paper, W. O'Shea..... 294,803
Tablet, writing, R. C. Wittmann..... 295,137
Telegraph wire supporter, R. C. Stone..... 295,073
Telegraphic transmitter, R. C, Stone..... 295,074, 295,075
Tile laying machine, Graves & Belt..... 295,119
Timber and lumber stamp, Thrush & Wilson..... 294,936
Tire tightener and jack combined, McCloskey & Tozier..... 294,895
Tobacco pipe, G. W. Smoot..... 295,066
Toy, A. Trunk..... 295,083
Toy, J. W. Worcester..... 295,138
Toy doll, H. A. Goffe..... 294,868
Trace carrier, L. T. Anderson..... 294,952
Traction engine, S. E. Jarvis..... 294,877
Traction engine, F. F. Landis..... 294,794
Traction engine, L. C. Taber..... 294,930
Traction engine bearing, F. F. Landis..... 294,793
Tricycle, A. Brown..... 294,753
Trimming fabrics, device for, A. Wright..... 295,139
Trunks, portmanteaus, etc., manufacturing material for making, O. Jacobi..... 295,015
Tub trussing machine, M. Corcoran..... 294,764
Tubular boiler, upright, Henry & Taylor..... 294,875
Tug, harness, S. H. Hass..... 294,872
Umbrella, carriage, E. Wright..... 295,140
Umbrella frames, device for attaching the ribs and braces of, M. Nial..... 295,042
Valve, check, J. H. Blessing..... 294,960
Valve gear, J. T. Halsey..... 294,873
Valve gear, reversing, E. D. McLean..... 295,033
Valves of steam cylinders, operating, E. L. Reese 294,807
Vehicle body, H. P. Colby..... 294,852
Vehicle brake, J. C. Herman..... 295,123
Vehicle shifting rail, J. Knapp..... 294,788
Vehicle top prop, E. N. Pelzer..... 294,903
Vehicle, two wheeled, Starkey & Crowther..... 294,926
Vehicle wheel sand band, J. W. Hitchcock..... 294,782
Ventilating mining shafts and tunnels, W. Phillips 294,805
Ventilation, M. B. Stafford..... 294,820
Ventilator, J. G. Slater..... 295,061
Wagon brake, J. Hocking..... 295,008
Wagon, buckboard, W. Lockwood..... 294,891
Wagon, dumping, T. S. Stewart..... 295,071
Wagon for transporting sugar cane, T. Bueno, Jr. 295,107
Wagon jack, G. La Rock..... 295,009
Wagon, road, M. G. Hubbard..... 295,011
Washing machine, R. Smith..... 295,065
Watch hair spring, C. A. Wilms..... 294,833
Water closet, S. M. Howard..... 295,010
Waterproof, substance for rendering fabrics, L. P. Converse..... 295,113
Water wheel, turbine, E. W. Stubbs..... 295,929
Weather strip, J. R. Fogg..... 294,776
Weigher and register, grain, G. D. Baird..... 295,095
Well drill, F. D. Parker..... 295,045
Wheel. See Car wheel. Fifth wheel.
Whiffletree hook, W. H. Best..... 294,958
Whip socket, J. L. Thomson..... 294,824
Windmill, H. M. Underwood..... 295,084
Windmill, C. W. White..... 294,943
Wire, barbed, A. J. Upham..... 294,827
Wire carrier, G. W. Belford..... 294,843
Wire cleaning machine, T. H. Burridge..... 294,847
Wire machine, barb, G. H. Lasar..... 294,885
Wire, machine for making barb, J. S. Stephen.... 295,068
Wood worker's dog, J. Forbes..... 294,777
Writing table, M. E. Lenrill..... 294,886

DESIGNS.

Carpet, W. J. Gadsby..... 14,867
Carpet, Halliday & McCallum..... 14,882
Carpet, O. Heinigke..... 14,868 to 14,873
Carpet, W. L. Jacobs..... 14,874 to 14,881
Lantern, F. Billingham..... 14,865
Watch case, J. F. Boyer..... 14,866

TRADE MARKS.

Banjos, banjo cases and strings, and other trimmings, J. F. Stratton..... 11,009
Brandy, cognac, J. Denis *etal*..... 10,989
Cigars, C. C. Saums..... 11,008
Crackers, biscuits, wafers, and cakes, F. A. Kennedy Company..... 11,007
Gunpowder, Curtis's & Harvey..... 11,006
Medicines, certain proprietary, United States Medicine Co..... 10,997
Melissa water, H. Renouard & Co..... 10,995, 10,996
Metal articles, certain embossed, Massé & Anglade 10,993
Pellets, liver, H. E. Peters..... 10,994
Preparation for disguising the bitterness of quinine etc., Academic Pharmaceutic Company..... 10,986
Tobacco, cigars, and cigarettes, plug, twist, and smoking, A. Cameron & Co..... 10,998 to 11,005
Tobacco, cigars, and cigarettes, smoking and chewing, J. G. Butler & Co..... 10,988
Tobacco plug, C. L. Adams..... 10,987
Tobacco, smoking, B. Leidersdorf & Co..... 10,992
Tobacco, smoking and chewing, Gail & Ax..... 10,990, 10,991

A printed copy of the specification and drawing of any patent in the foregoing list, also of any patent issued since 1866, will be furnished from this office for 25 cents. In ordering please state the number and date of the patent desired, and remit to Munn & Co., 261 Broadway, New York. We also furnish copies of patents granted prior to 1866; but at increased cost, as the specifications, not being printed, must be copied by hand.

Canadian Patents may now be obtained by the inventors for any of the inventions named in the forse going list, at a cost of $40 each. **For full instruction address Munn & Co., 261 Broadway, New York. Other foreign patents may also be obtained.**

Watches, jewel support for the balance staffs of,