L. P. S. says: In a factory a § inch pipe was placed against the wall, and above a tank in which acids were kept for dipping the bronze work. The pipe wa covered with the finer portions of the boxwood sawdust used for drying the work after being dipped. On re moving some woodwork, I found the dust on the pipe at a bright red heat. I questioned the workmen to ascertain whether there had been a lamp or fire in any form used there, and found there had been nothing of the kind; but the men had found fire there before. I then brushed the burning dust from the pipe, and soon after on a blow being struck on the woodwork, more dust fell; aud lodging on the pipe, it ignited immediately and be-came incandescent. I thought that perhaps the fumes of the acids affected this dust and converted it into xyloidin, but the very slow combustion rather precludes such a theory. The gages at the time alluded to indicated between 60 and 65 lbs. pressure, and the steam must have passed through 20 or 30 feet of pipe afterleaving the boiler. A. The supposition that there was a gradual conversion of the woody fiber into nitro cellulose, by the continued action of the acid fumes, under the circumstances narrated, is a conjecture both in genious and probable.

C. Y.—Your boat seems to be well proportioned. Your engine should make from 250 to 300 revolutions per minute, giving a speed of from 8 to 10 miles an hour.

G. B. M. asks: 1. How can oxygen gas be generated, and can it be kept for inhalation? A. There are several methods of preparing oxygen. The safest way for an amateur is to heat good commercial binoxide of manganese to redness in an iron retort. 2. Is there any way to produce and keep up a succession of electrical sparks? A. A good electrical machine will give a succession of sparks to the knuckle or a metallic object held near the prime conductor, se long as the plate or cylinder is kept in motion. 3. How is aqua ammonia made? A. On the small scale by heating a mixture of sal ammonia cand lime and receiving the gas in to cold water. 4. What is carbolic acid? Is it poisonous? A. Carbolic is made from coal tar and is poisonous. Its chemical formula is $C_{12}H_5O,HO_{\bullet}$

A. S. asks: In testing milk, what is the relative proportion of cream and milk? If I pour 5 inches of milk into a test tube and let it remain in a moderately warm place till the cream all rises to the top, how thick ought the cream to be? From the thick, ness of cream in a watered sample of milk, how am I to draw correct conclusions as to the amount of water added by the milkman who sells it? A. The thickness of the cream would depend somewhat on the length of time the milk had stood in the milkman's can, and whether it was taken from the top or bottom of thecan, also on the diet of the cattle and the condition when yielded. You must determine the thickness of cream from milk you know to be good, and then compare with the unknown sample. No rule expressed in fractions of an inch can be given.

J. P. H. asks: If a siphon whose vertex is 50feetabove the level of a reservoir be closed at each arm with a stopcock, and both branches be then filled with water at its vertex, after which it be made airtight and both ends be opened, will the water flow through the siphon, or will the formation of a vacuum be made of its vertex? A. The siphon will not work.

G. R. J. says: 1. When a light is applied to a perforatedcork in a bottle containing oxygen and hydrogen gases, an explosion takes place, driving the cork with great force out of the bottle. When the two gases form water, is there not a vacuum in the bottle? A. It no air be allowed to enterafter the explosion, a partial vacuum will be left. 2. If a vacuum is produced in the bottle, why does not the external air force the cork in? A. It would, if the cork could be prevented from blowing out. 3. What forces the cork out? A. The great expansion of the gases, due to the heat generated from chemical combination of the hydrogen and oxygen.

H. C., H. E. W. and others: You need enter-tain no doubt as to the possibility of making sugar and sirup from sawdust, rags, and paper. In order to effect this change, shreds of linen, paper, or sawdust are submitted to the action of strong sulphuric acid in the cold. After a certain time the acid is diluted with water and boiled for some hours, and the free acid finally neutralized with chalk. The flue is then filtered, evaporated to a sirup, and set aside to crystalize. Sugar sirup is now made on the large scale in Europe from starch and di lute sulphuric acid. But this chemical sugar is glucose it is not so sweet, nor does it crystalize so readily as the sweet natural cane sugar. Nevertheless it is imported into this country and used more extensively perhaps than many suppose. But if it be properly made and pu rified, there need be no alarm in using it, as it is identi-cal in composition with the sweet principle of fruits. Chemists have not yet discovered how to manufacture cane sugar artificially. A cheap process that would con vert grape sugar or glucose, which we have been con-sidering, into cane sugar would be of great value. There is little doubt that considerable quantities of ar tificial glucose or grape sugar are used in the shape of sirup, either alone or mixed with natural sirup. The dail stain sometimes seen is caused by iron, which may have arisen in the manufacture. The correspondent who speaks of feeding a decociton of muriatic acid and old rags to his cillidren iounder a misapprehension. No muriatic acid is used; and if old rags are employed, they are no longer rags when converted into sugar

E. C. H. asks: 1. Which has the greatest driving power, a balance wheel 3 feet in diameter orone 4 feet in diameter, the weight being the same in each wheel? A. Precisely allke, other things being the same. 2. Did the trilobite have feet or legs? A. No

distance of 5 or 6 feet, the effect was lost, the fuel burning more flercely than before, from the fact of the stream of gas spreading and carrying with it so much oxygen from the air.

H. S. asks: 1. What will force the beard to row? A. Nature and time are the most powerful aux iliaries. Frequent shaving seems to stimulate the growth to some extent. 2. How can I make nitrate of A. Saturate nitric acid diluted with three ammonia ? or four times its weight of water with sesquicarbonate of ammonia, evaporate by a gentle heatand crystallize When not required crystallized, the salt is evaporated to dryness at 212º Fah.; and the heat being then carefully raised to about 250° Fah., the melted salt is poure a polished slab of iron or stone, and when solidified ta ken up and put into bottles. 3. How can I make Greek fire? A. The ancient Greek fire was a compound of sulphur, hitumen, and pitch. The name has also been given to substances that will ignice on the surface of or under water. If a glass bottle containing benzole and a small piece of potassium be broken on the surface of water, the benzole will take fire. 4. How can I combine phosphorus and chlorate of potash? A. The phos horus is made into an emulsion with warm glue or gum and the fine chlorate afterwards incorporated by stirring. 5. What danger is there in making phosphide of calcium? A. Phosphorus requires to be handled with great caution, therefore there is danger in inexperinced hands in experimenting with it, owing to its ready infiammability. 6. How can I make a cheap galvanic battery? A. Insulate a cylinder of zinc in a copper ves sel containing a solution of sulphate of copper. The zinc is one pole and the copper the other. 7. How can I make from 5 to 10 lbs. of ice at one time at a cost of from ½ to 1 cent per lb. ? A. Small machines are made in France for this purpose, invented by Carré.

W. H. S. asks: 1. At what cut-off does an engine give the most power? A. At full stroke. 2. Which gives themost power, a short or a long stroke engine, both using the same amount of steam? A. Theoretically both give the same, with similar piston speed. 3. How do engineers tell how large to make steam pipes? A. There are definite rules, depending upon piston speed, length, and form of connection.etc. 4. If I have a column of water above a boller and the weight of water is greater than the pressure of steam, will the steam escape up through the water? A. Yes, if there is no valve between.

T. C. O'B. asks: How can a straight avenue of fifteenyards wide and two hundred yards long best be lighted up brightly? We have tried some glass reflectors, but they are entirely inadequate. Would a lens of the Fresnel kind answer the purpose? What is the best manner to adjust a lens? We have gas on the premises. A. The best lens will be of little use, if you do not have a good light. By forcing air into the flame of your gas, and directing the jet upon chalk, you can obtain quite a brilliant light.

M. E. D. says, in reply to our correspondents who asked as to washing fannels: Take soft water, as warm as you can bear your hands in. Make a strong suds, well blued. In washing fine fannels, wet but one piece at a time; soap the dirty spots and rub with the hands, as washboards full the fannels. When half clean, add three times as much blue as for cotton clothes. Use plenty of soap. When clean, have ready a rinse of the same temperature as the suds, rinse well, wring tight, shake briskly for a few minutes, hang outin a gentle breeze. When nearly dry, roll smooth and tight for an hour or two. Press with a moderately hot iron. If embroidered, press on the wrong side. Fiannels washed in this way will look better than when new.

L. M. R. says, in answer to J. B. V., who asks how he may remove green moss from his brown stone stoop: Carbolic acid will effectually accomplish it. A solution containing one per cent of the acid in watershould be applied to the plants, which will kill them, although it will not alter their appearance. After a few hours they may be washed off clean from the brick or stone.

C. W. Y. says, in reply to F. O. C. H., who asked as to patching a boiler: Take off all warped and twisted parts of the boilerplate; have your patch large enough to cover the hole nicely, then bolt it on firmly with boiler bolts, bevel the patch on the outer corner, or, in other words, thin the patch; then, with a calking tool, upset the iron all around the patch close to the boiler. This, if properly done, will make a perfectly water and steam tight joint without cement of any kind. I have calked up leaky rivets in boilers with a calking tool, so that they were tight under any press-

A. W. W. says: C. W. B. asks, on p. 202, if there is any better way to make a house warmer than the usual weatherboarding and plastering, except to Ill in with brick between the boarding and plastering. Let me give him my ideas of how a frame house should he huilt. After the frame is up, cover the outside with rough one inch boards, then put on a covering of tar roofing felt (which will not cost over twelve or fifteen dollars for a medium sized house) and put the clap oards on top of that, then go inside and laya course of brick on the underpinning up to a level with the top of the sills; this will make the cellar much warmer now take some strips about one inch square and saw them off to a length of the distance between the stude nail them on to the outsideboarding between the studs lath on to them, letting the lath run up and down, then put on a good thick rough coat of plaster; then lath and plaster the inner wall as usual. The plastering be etude will only ac house, probably not more than 60 or 75 dollars to a me dium sized house. The rooms will be very much warm erin winter and cooler in summer, and the walls will al ways be dry, for the wind, frost, or dampness will neve get beyond the first coat of plaster.

G. W. says, in answer to C. W. B., who asked for a cheap and efficient method of building a house, which will make it warmer and drier than any other plan in use: Put the studs one foot apart, and board perpendicularly (outside and inside) with 12 inch stock boards, making the joints on the center of the studs. Then put siding or battens on the outside, and fur with lath over the cracks on the inside, before lathing and plastering. Blocks should be nailed between the studs on a level with the chamber floor to prevent the upward escape of warm air, and it is better if a course of bricks is laid on these before the inside sheathing is put on. A tall house should never be bat tened, forit will make it look out of proportion; for a similar reason, a low house appears better with perpendicular battens.

M. G. P. asks: How can I render a pair of buckskin gauntiets impervious to water?-A.D. asks: How can I prepare gelatin for molds to cast plaster of Parls undercut work?-A. B. asks for a formula for obtaining the force of the wind at different velocities.-F. H. S. asks: Of what metal can I make rivets for leather, which can be coated with a black color?-C.L. C. asks: How can I make a cheap barometer or instrument of any kind to foretell a storm by pressure? "I think those influenced by molsture are worthless, as of. ten a damp night will change them as much as a storm."

COMMUNICATIONS RECEIVED.

The Editor of the SCIENTIFIC AMERICAN acknowledges, with much pleasure, the re ceipt of original papers and contributions upon the following subjects:

On the Regulation of Patent Monopolies. By G. H. K.

On a Mathematical Problem. By H. M. On Polishing a Parabolic Mirror. By W.B.C.

On Reclaiming the Colorado Desert. By R. d'H.

On Steam Engines and Turbine Wheels. By J. H.

On Drying Lumber by Steam. By H. G. B. Also enquiries and answers from the follow-

ing: A. W. M.-F. G. H.-F. R.-E.B.W.-C. J. T.-N.A.W. -J. P. F.

Correspondents in different parts of the country ask : Who makes milking apparatus? Who sells leather splitting machines? Makers of the above articles will probably promote their interests by advertising, in reply, in the SCIENTIFIC AMERICAN.

Several correspondents request us to publish replies to their enquiries about the patentability of their inventions, etc. Such enquiries will only be answered by letter, and the parties should give their addresses.

Correspondents who write to ask the address of certain manufacturers, or where specified articles are to be had, also those having goods for sale, or who want to find parthers, should send with their communications an amount sufficient to cover the cost of publication under the head of "Business and Personal," which is specially devoted to such enquiries.

[OFFICIAL.] Index of Inventions

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Pump, steam vacuum, W. E. Prall (r) Punch, conductor's, J. Sangster Purifier, middlings, G. W. Dellinger Railway cattle guard, Cleveland & Beal Rail joints, fastening, Tift & Cobb Rake, horse hay, L. Litchfield Razor strop, C. C. Reeves Respirator, S. Barton Rivet holder, fiange, M. Adler Roof, fireproof, M. H. Fowler Saddle tree, gig, H. H. Hedrick Sadole, safety stirrup for, T. Harris	. 148,809 . 5,804 . 148,819 . 5,809 . 148,939 . 148,9376 . 148,9376 . 148,9374 . 149,402 . 148,946 . 148,848 . 148,848 . 148,944 . 143,933 . 148,944 . 143,933 . 148,944 . 143,933 . 148,944 . 148,944

same. 2. Did the trilobite have feet or legs? A. No traces of habs have been discovered. 3. How are cod lish and cocoa nuts desiccated? A. The water is exhausted from them, and they are then pressed.

C. says: Will carbonic acid gas completely extinguish fire when it exists at a dead red heat, or are its virtues confined simply to a blaze? A. We once tried some experiments with carbonic acid gas as a fire extinguisher with the following results: The gas used was compressed in an iron reservoir, to from 200 to 300 lbs. per square inch, so that a stream of gas of any de-sired force could be obtained. When a current of carbonic acid gas was directed upon burning shavings at bottom of a barrel, the flame was instantly extinguished, but was rekindled after a few minutes. The shavings had been saturated with kerosene and allowed to burn some time before applying the gas. A series of experiments in this way showed that carbonic acid gas will instantly extinguish fiame. When the shavings had become a mass of incandescent fuel, the gas dire had become a mass of incandescent fuel, the gas, direct ed against it, destroyed combustion at the surface, but the interior heat of the mass soon rekindled the blackened surface. The interior fire; and heat were not removed, though an atmosphere of carbonic acid lay above the fuelfor some time. When a strong current of gas under high pressure was directed upon fiame at

J. H. W. says, in answer to M. V. D.'s question as to condensation: I will say that a worm 4 feet of in diameter, s colls deep, and 2½ inches diameter of pipe, if kept cool by a continuous stream of cold water, will condense easily 2,000 gallons of preof spirit per day. A worm of ½ inch pipe and colled 1 footin diameter, 8 colls deep, will condense 1½ gallons proof spirit per hour, if the coll of pipe or worm is kept cool as above stated. This would make the latter condenser (worm) 24 feet long; the former one would be 96 feet.

H. W. G. replies to W. P. S. P.'s query as to the areavisible from an elevation of 400 feet: The hightyou mention gives a range of 20-25 miles all around giving a surface of, in round numbers, 1,230 square miles.

H. W. G. replies to R. H. D's query as to D the sinking of the 1,000 feet tower: A sinking of % inch on one side would throw it out of perpendicular 4.50 Dr inches at top. Settling % inch on one side and raising % on the other would throw it998 inches away at top.

Table, tailor's, A. Warth 149,015
Telegraph, student's, W. Humans 148,956
Telegraph, fac simile, F. De Hondt 148,938
Telegraph, printing, M. Gally 148,946
Telegraph wires, coating, A. Wilkinson 148,910
Tobacco, etc., stripping, J. F. Tygh 149,006
Tool holder, R. E. Kidder 148,838
Umbrella, folding, O. Heinrich 148,883
Valve, balance slide, R. Witty 149,019
Valve, slide, C. O. Farciot 148,941
Valve, stop, B. F. Cleminshaw 148,930
Vault cover, J. Ryer 148,852
Vehicle hub, J. D. Old 148,973
Vehicle hub, D. B. Platt 148,932
Vehicle spring, G. B. Hamlin 148,949
Vehicle wheel, S. C. Gardner 148,980
Vehicle wheels, hub for, T. T. Lucas 148,967
Vessels, fender for, J. B. Treadwell 148,904
Washing machine, C. B. Hunting 148,827
Washing machine, W. G. Jeffery 148,958
Water closet, ventilating, F. Hainsworth (r) 5,807
Water wheel, D. P. Blackstone 148,869
Water wheel, turbine, T. B. Coursey 148,935
Wheels, machine for planing, M. L. Sanders 148,988
Windmill, J. E. Chapin 148,927
Winnower, reciprocating, E. W. Tilton 149,003
Wire rolling machine, H. B. Comer 148,811
Wool dryer, B. Rathbone 148,985
Wrench, A. E. Lindsley 148,965
APPLICATIONS FOR EXTENSION

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APPLICATIONS FOR EXTENSION.

Applications have been duly filed and are now pending for the extension of the following Letters Patent, Hearings upon the respective applications are appointed for the days hereinafter mentioned:

28,852,-PEGGING MACHINE.-J. J. Greenough. June 10 28,874.—Post Hole Diggee.—J. Lee. June 10. 28,941.—Skeleton Skiet.—S. S. Sherwood. June 10.

EXTENSIONS GRANTED. 27,609 .- WRINGING MACHINE.-S. A. Bailey. 27,627.-CULTIVATOR.-C. M. Hall et al. 27.641 .- HARVESTER .- F. T. Lomont et al. 7,656.-HORSESHOE MACHINE.-W. Tallman

DESIGNS PATENTED.

7,251,-CLOCK CASE SASH -G. Blakesley et al., Bristol, Ct 7,252 & 7,253. — TYPE. — J. M. Conner, Greenville, N. J. 7,254. — JEWELRY BASE.— S. Cottle, New York city. 7,255. — CARPET. — J. C. Johnson, Scarborough, N. Y. 7,255.-GAREAT.-S. C. Sonnson, Scatolugh, A. T. 7,256.-GLASSWARE.-T. C. Pears, Pittsburgh, Pa. 7,257.-GATE HINGE.-A. B. Tanner, New Haven, Gonn 7,258.—CADDY.—G. B. Wheeler, Brooklyn, N. Y., et al. 7,259.—COOK STOVE.—R. Wheeler, Utica, N. Y. 7.260.-ORGAN CASE.-J. R. Lomas, New Haven, Conn.

TRADE MARKS REGISTERED. 1,682.-FLOUR BAGS.-L. D. Benner, Boston, Mass. 1.683.-UMBRELLA STRETCHERS.-Dawes et al., N.Y.city 1,684.-MOTH POWDER.-G. F. Gantz & Co., N. Y. city. 1,685.-ALE.-T. McMullen, New York city. 1,686.-GINGER ALE.-A. S. Miles & Co., Baltimore, Md 1.687.-BUTTONS.-N. Y. Button Co., New York city 1,688.—STOVES, ETC.-J. Keynolds & Son, Philadelphia, Pa 1,689.—WIRE CLOTH.—Wood & Co., Lowell, Mass. 1,690.-PERFUMERY.-Young & Co., New York city. 1,691.-SHIRTS.-Marr Bros., Boston, Mass. 1,692 .- YARNS .- Thames Worsted Co., Norwich, Conn 1,693 .- NEEDLE THREADER, ETC. -H. Weels, Woburn, Ms

SCHEDULE OF PATENT FEES.

On each Caveat	810
On each Trade Mark	.82
On filing each application for a Patent (17 years).	81
On issuing each original Patent	820
On appeal to Examiners-in-Chief	810
On appeal to Commissioner of Patents	.820
On application for Reissue	.83
On application for Extension of Patent	.850
Ongranting the Extension	.850
On filing a Disclaimer	.81
On an application for Design (3% years)	
Onapplication for Design (7 years)	
On application for Design (14 years)	

CANADIAN PATENTS.

LIST OF PATENTS GRANTED IN CANADA Макси 27, 1874.

3,228.-William Sharp, Portland, Cumberland county Me., U.S. Improvements in preparing and preserving fish, called "Sharp's Improvements in Preparing and Preserving Fish." March 27, 1874.

8,229.-I. D. Spang, Dayton, Montgomery county, O., U.S. Improvements on portable toy race track for field and parlor amusement, called "Spang's Toy Race Track." March 27. 1874. \$,230.-A. R. Thomas and L. C. Thomas, assignees of E

- G. Thomas, Huntington, Huntington county, Ind. Improvements on cut-off valves and link motions "Thomas's Cut-off Valve and Link Motion." called March 27, 1874.
- \$,231.-W. F. Barnes, Rockford, Winnebago county, Ill. Improvements on mechanical combinations for con verting motion, called "Barnes' Mechanical Move ment." March 27, 1874.
- \$,232.—H. J. P. Whipple, Meriden, New Haven county, Conn. Improvements on attaching knobs to spindles called "Whipple's Improved Knob Fastening." March 3,233.-T. Whitwell, Thornaby Iron Works, Stockton-
- on-Tees, Durhamcounty, England. Improvements on fireplaces and stoves, called "Whitwell's Ventilating

,015 3,241.-H. E. Wells, Van Wert, Van Wert county, O. Improvements on lumber-drying houses, called "Wells's Lumber Dryer." March 27, 1874. 3,242.-G. A. Kittson, Quebec, P. Q. Improvements on

overshoe and boot fastenings, called "Kittson's Over-shoe Fastener." March 27, 1874. 3.243 .- H. W. Carr and M. Turnbull, Hamilton, Went-

worth county, Ont. Improvement in tool boxes and cutters, called " Carr & Turnbull's Improved Tool Box for Iron Planers." March 27, 1874.

3,244.-R. Smith, Sherbrooke, P. Q. Improvements on air furnaces, called "Smith's Improved Hot Air Furnace." March 27, 1874.

3,245.-F. Tarrant and I. P. Conkling, Saratoga Springs Saratoga county, N. Y. Improvements on stove pipe thimbles, called " Tarrant's Stove Pipe Thimble.' March 27, 1874.

3,246, -J. H. Thorp, Chicago, Cook county, Ill., assigned of J. P. Thorp, Southington, Hartford county, Conn. Improvements on thill couplings, called "Thorp's Thill Coupling." March 27, 1874.

3,247.—A. Ungerer, Simmering, Vienna, Austria. Im-provements on the process for preparing paper pulp. etc., called "Ungerer's Paper Pulp-making Process." March 27, 1874.

3.248.-W. Glen and W. H. Lynch, Shipton Township P. Q. Machine for grinding, polishing, and finishing slate or other stone, called "Glen's Slate or Stone Finisher." March 27, 1874.

3,249.-L. A. Canteau, Borough of Léonville, France Improvements in self-acting machinery for sowing potatoes, called" Canteau's Potato Sowing Machine. March 27, 1874.

,250.-S. P. Willeby, Philadelphia, Philadelphia county Pa. Improvements on keels for vessels, called "Willeby's Safety Keels'." March 27, 1874.

3,251.-T. A. Davies, New York city, U. S. Improvements on signal hand lanterns, called "Davies' Signal Lan tern."

n." March 27, 1874. -G. H. Davis, Boston, Mass. Improvement on up right planofortes, called "The Soprano." March 27

8,253.-R. Smith, Sherbrooke, P. Q. Improvement on the art or process of reducing wood or other kindred substances to fibrous pulp, called "Smith's Patent Super heater," March 27, 1874.

3,254.-W. C. Hobs, London, Ont. Improvement in me tallic pipe bedsteads, called "Hob's Folding Pipe Bed-stead." March 27, 1874.

3,255.-T. H. Carroll, Erie, Pa., U. S. Improvements on a machine for sawing lumber into strips, called "Carroll's Improved Sawing Machine." March 27, 1874. 3,256,-T. Alexander, Glenwilliams Village, Ont. Im-

provement on wagons, called "Alexander's Improve-ments on Wagons." March 27, 1874.

Advertisements.

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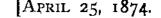


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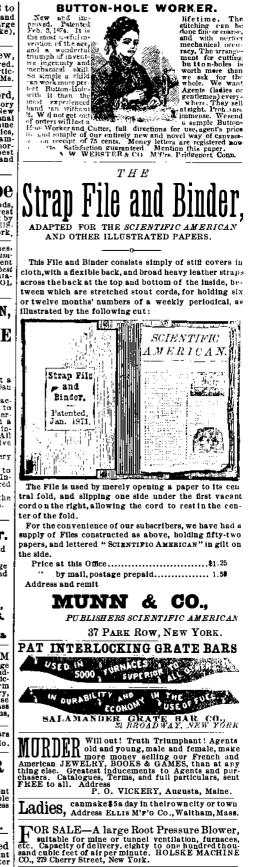
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Stove." March 27, 1874.

\$,234.-Jas. T. Bustin, St. John, St. John county, N. B Machine for putting the paste on room or wall paper, called "Bustin's Self-acting Wall Paper Paster." March 27, 1874.

- 3.235 .- S. P. Barnum, Thurlow, Hastings county, Ont. Improvements on a machine for fastening cords and ropes, called "Barnum's Cord and Rope Fastener." March 27, 1874.
- 3,236 .- A. J. Somerville, Toronto, York county, Ont. Improvements in paint cans, called "Somerville's m-proved Paint Can." March 27, 1874.
- 3.237 .- T. Hall, Florence, township of Northampton, Hampshire county, Mass. Mechanical device for a bench vise or clamp, called "Hall's Improved Bench Vise or Clamp." March 27, 1874.
- 8,238.-H. A. White, Hamilton, Wentworth county, Ont Improvements in dampers for stove pipes and fur-naces, called "The Excelsior Compression Damper." March 27, 1874.

3,239.-B. G. Devoe and W. L. Walker, Kenton, Hardin county, O. Improvements on fron fences, called Walker & Devoe's Iron Fence." March 27, 1874. 5,240.-L. Miller, Jarvis, Haldimand county, Ont. Im. provements on moldboards for plows, called "Miller's Improved Moldboard," March 27, 1874.

J. W. STOCKWELL & CO., PORTLAND, ME. port, \$5. Trade Marks - The necessary naners for securing WODD AND IRON WORKING MACHIN-ERY-Specialties from new and important pat-terns. Planing and Matching Machines, Rotary Bed, ranei, Buzz and Daniels Planers, Saw Benches. Band Saws. BUSS & BRADLEY, 59 Sudbury St., Boston, Mass. protection to manufacturers and merchants in this country and abroad are prepared at this office. Design Patents, for protecting artists and designers of any new ornamental work, are quickly and cheaply obtained through this office. E. 11.MINGWORTH, Neville St. Foun bis 20-inch Swing Lathes. All parts are inter changeable, being made in duplicate, by patent machine-ry, thus ensuring Accuracy and Excellence of Workman-E. ILLINGWORTH, Neville St. Foun Copyrights obtained. Foreign Patents are solicited in all countries where patent laws exist. Pamphlets, containing the cost and full particulars, mailed on application. ry,the Canada Patents .- Canada is one of the best countries for patents. The cost depends upon the length of time 10 for which a patent is desired. Full particulars by mail on application. We shall be happy to confer with inventors, examine 10-20 AL 12-01 their models and drawings, and advise with them as to obtaining patents without consultation fee. For every For price and Photo, write direct kind of information pertaining to patents, at home of **Little Giant" Injectors** FOR LOCOMOTIVES & STATIONARY BOILERS. Simple and ReMode. PHILIP S. JUSTICE, 14 North 5th St., Philadelphia-42 Cliff St., New York. abroad. Send for pamphlet, 110 pages, containing laws and full irections for obtaining patents. Address MUNN & CO., Publishers SCIENTIFIC AMERICAN, 37 Park Row, N. Y. BRANCH OFFICE-Corner F and 7th Streets, A LL KINDS OF IRON AND STEEL DROP FORGINGS made to order. NEW ENGLAND MOTOR AND MOWER CO., Danbury, Conn. Washngton, D. C.

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