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W. H. N. will find directions for hardening steel tools on p. 75, vol. 88. Steel points are sometimes used for scratching glass.—H. E. B. and L. C. F. will find directions for producing a polish on shirt fronts etc., on p. 114, vol. 24.-C. L. C. can make tracing paper by the process described on p. 241, vol. 28.-E. will flud practical directions for constructing and fixing light-ning rods on ip. 248, vol. 26. Read Noad's "Student's Manual of Electricity."-S. L. S. will find directions for preserving crayon drawings on p. 53, vol. 27. As to the other question, apply to a stationer.—C.D.will find explanations of sirup turning tea black on p. 171, vol. 80.-C.H. will find a recipe for a cement for glass letters on p vol. 27.-H. P. S. will find descriptions of magnets on p. 41,26, vol. 24. - D. W.S. will find directions, for coating iron with copper without a battery on p. 155, vol. 26.-J.McE. can try to temper saw blades for cutting iron by follow ing the instructions on p. 16, vol. 24.-D. S. will find re cipes for all kinds of solder on p. 251, vol. 28. Walnut wood can be stained by the process described on p. 314, vol. 25. Browning gun barrels is fully detailed on pp. 154, 266, vol. 26.-E.A. C. will find instructionsfor skeletonizingleaves on p. 267, vol. 25, and for stuffing birds and other animals on p. 369, vol. 27.-F. R. B. should consult our advertising columns for booksellers' ad-dresscs.—A. S. H. will find a recipe for waterproof glue on p. 202.vol.28.-M.A.H.is informed that the difference between 12 inches square and 12 square inches is 132 souare inches.-A. B. D. will find explanations of the mock sun phenomens on pp. 133, 171, vol. 28.-L. C. will ind directions for cleaning inking rollers on p.348, vol.

W. asks: In what manner does the mode of propelling boats, described in your issue of January 24 as the invention of Mr. J. T. Bowman, of Texas, dif fer from that tried in the British navy, and which was sohighly thought of by the late Admiral Farragut? It was applied, if I remember rightly, to a boat named the Waterwitch, and in principle, as I think, was the same method as Mr. Bowman's. A. Judging from the description, Mr. Bowman's plan only differs, from that fit ted in the Waterwitch, by having three openings for the discharge of water instead of two, a difference which is probably unimportant.

G. S.G. asks: Does the steamboat law compel me to have a registering steam gage, lock valve life preservers, axes, hose, and all the other appliances and licenses for engineer and captain, on a small steam launch 21 feet long, used on a river? I claim that a boat too small to register, used only for the owner's pleasure, is not expected to comply with the law. Am I correct? A. We think that you are right.

A. C. asks: 1. How large and how long a stroke, and what size bore would be the best proportions for a small slide valve engine for a boiler 13 inches in length x 14 inches in diameter, with 5 two inch flues, made of iron of sufficient strength to stand a working pressure of 50 lbs. to the square inch? The sides of the furnace are sheet iron tanks, so that the feed water will be boiling hot when injected. What horse power would ithave at 15 revolutions per minute? A.You can make a evlinder about 4 inches diameter and of 6 inches stroke and under the conditions mentioned, it will develope about 3-16 of a horse power. 2. I have heard it stated that the mouth of the Mississippi river was actually 300 feet higher than its source, the centrifugal motion of the earth's rotation forcing the water towards the equator. Is this so? A. The mouth of the Mississippi is further from the geographical center of the earth than the source is, so that in this aspect the river runs up hill. The mouth, however, is below the surface of ouilibrium due to the rotation of the earth, so that the water flows from the source to the mouth, to fill up to the proper level.

N. C. O. asks: If a boat with enormous paddle wheels were anchored in a strong stream, would not aforesaid stream put the paddles and some machinery in motion? Is this an old idea, or worth a patent? A. The device is very old. See p. 229, vol. 29.

W. J. asks: 1. Why is it that a forked witch, held with crotch up, will in the hands of some persons turn down in crossing certain places, while with others it will not turn? A. It will not do it. 2. Is there any means or instrument by which one can tell without digging where there is a vein of water in the earth? A. No.

F. A. R. says: On p. 28, vol. 30, I saw a re-performaking a deep black ink. So I procured the articles as named, but could not get the Aleppo galls. 1 got instead nut galls, the same quantity, but the ink is not so black as expected. Would a larger quantity of the same be necessary, or will they not answer the pur-pose at all? A. The percentage of tannic acid, which is the substance contained in nut galls that is essential to making ink, varies in nut galls, and those you ob tained are probably inferior to Aleppo galls. But a larger quantity ought in this case to yield more tannic acid and a better ink.

J.H.G.asks: What are the chemical symbols for the following: Lard, white wax, camphor, borax alkanet root, rose oil, heliotrope oil, orange flower oll? A. Lard consists of olein  $C_{114}$   $H_{104}$   $O_{12}$ , margarin  $C_{108}$   $H_{104}$   $O_{12}$ , and stearin,  $C_{114}$   $H_{110}$   $O_{12}$ . White wax: C108 H108 O4. Borneo camphor: C20 H18 O2. Laurel camphor:  $C_{20}$  H<sub>16</sub> O<sub>2</sub>. Borax: NaO, 2BO<sub>3</sub>+10HO. Alkanet root, rose oil, heliotrope oil, and orange flower oil are each composed of a number of substances, and have no chem cal formulæ of their own.

J. H. C. asks: Will you tell me how to prepare bones to make charcoal, suitable for sugar refiners fliters, etc. > A. The bones are treated with sulphide of carbon, which dissolves the fat to the amount of 5 or 6 per cent of the weight of the bones. This fat may be recovered from the sulphide of carbon, and the latter used over again.

E. G. A. asks: 1. How can I make a silver solution for plating with a galvanic battery? A. Dis-solve 2 parts of cyanide of silver and 3 parts of cyanide of potassium in 250 parts of water. 2. What length of time should a watch case be left in the solution to re ceive a coating sufficient to wear for two years? A. The time depends upon the strength of the galvanic current. 3. How should the wire be connected with the battery and the article to be plated? A. The watch is to be connected with the zinc plate by a wire dipping into the solution, and opposite to it a small strip of silver connected with the carbon plate.

J. E. H. says: I have been trying to make a flexible non-elastic airtight bag to hold 15 or 20 lbs. pressure to the square inch. I made a bag of strong, closely woven cotton, putting the seams together with rubber coment, and then coated it 2 or 8 times with pure rubber dissolved in naphtha, but it was not entirely A. No. 2. How thick do you think the rubber ought to be to hold 20 lbs. pressure, provided the stuff is strong enough to keep it from bursting? It is very desirable to have itas light as possible. A. One twelfth of an would serve the purpose better? A. No. 4. Would the heat or perspiration of the body have any effect on rubber in the course of time? A. Probably it would.

W. L. C. aska: Will kerosene oil dissolv

I. R. M. says: I have found quite a differ-ence in the weights of hard burned and soft burned bricks, the hard burned bricks being the heavier. is this? A. They have probably taken up more foreign matter from the fire to which they were exposed.

S. S. F. asks: Can a hole be made through pane of glass by means of the sand blast, without breaking the glass? A. Yes.

A. S. asks: 1. How can I make models for small castings? A. Use fine sand or plaster of Paris. 2. How can I prepare a metal that will polish and can be melted over a charcoal fire? A. Brass composition will answer.

C. Bros. ask: What is the matter with our iler? We have a 45 flue boiler, 14 feet long, running a boiler? 30 horse power engine. Having been in use some eight years, we recently took out all the flues, and cleaned and replaced them, washing out the bolier with soft soap and water, and, as we supposed, thoroughly clean-ing it with clear water. When we fired up again, we hadlittle trouble in raising steam for 4 days, when we were unable to raise over 24 lbs., the engine not running; and on opening throttle, it immediately all van-ished. All this time we had a heavy coal fire under boiler. Will foaming in boiler cause this difficulty? Is it impossible to raise much steam from some kinds of water? A. It may be that the soap was not removed, and formed a scale. If this bethe case, by blowing outa considerable quantity of water twice a day, you may remedy the trouble. You will understand that this is only a surmise on our part, and we think it would be better for you to refer the matter to a reliable engineer who can make an examination.

G. U. asks: How are boxwood rules and steel standards marked? By what mechanical means is the accuracy obtained? A. They are graduated by means of a dividing engine, the divisions being made with a suitable tool.

W. J. says: On p. 123, vol. 30: "Is there any instrument that will detect the presence of a metal in the earth?" You answer: No. I think you are mistaken, or at least a gentleman in this county professes to find lead, silver, and gold with an instrument. A. We are aware that there are individuals who profess the possession of such instruments. The presence of iron ore beneaththe ground may in some cases be detected by the seof the magnetic needle. But as for gold, silver, lead, and other metals, no instrument capable of indicating their presence is known to science

J. P. asks: What is the best pump for a well of 40 feet depth? Will a chain pump answer for that depth? A. Yes.

C. R. asks: What is hydrochlorate of ani-line? A. It is made by combining aniline with muriatic acid. Your specimen did not come to hand.

W. G. asks: I. What is the elastic hand tamp made of? A. Rubber. 2. Is there a book published on all kinds of dyeing, weaving, and dressing cloth? A. You will find such books described in the eatalogue of a scientific publisher. 3. Is there a journal on woolen machinery and manufacturing of wool, etc.? A. No. 4. I have a circular saw for sawing logs 44 inches in dismeter and running 450 revolutions per minute, from a40 inch double turbine water wheel, under 12 feet head and fall. I contend that, if I double the revolutions per minute of the saw, I shall double its force. Doyou thinkthat I shall gain any power? If so, how much? A. If the wheel is powerful enough, th sawshould do double the work under these circum stances. 5. A schoolmaster took thin writing paper and dipped it into a yellow liquid; he placed a card with a picture on its surface against the saturated writing paper,and then put them between a couple of panes of windowglars, and placed the whole in the sunbeams. In a few minutes, the picture was beautifully copied on the yellow paper. What was the liquid? A. A solution of bichromate or potash, probably.

H. L. G. asks: 1. How can I construct a cheap electrical machine? A. By using a large glass bottle for the cylinder of the machine, and coating the prime conductor with tin foil. 2. How are the batteries used by physicians made? A. Some are made of plates of zinc and carbon immersed in dilute sulphuric acid.

J. B. asks: What will be the result of the constant meteoric accumulations on the surface of the earth ? The weight and bulk of our planets are being constantly increased, and if things go on as at present the doubling of the earth's weight and bulk is only a question of time. A. The moon would fall to the earth and the earth reach the sun in a shorter time. Mr. Proctor estimates the earth's present supply of meteorites at one inch in depth in 400,000 years.

A. asks: 1. Can you give me a plan for constructing a cheap telescope, consisting of two dou bleconvex lenses with a power of 36 times, without using an achromatic lens? Could I use a double con vex lens, 5 inches in diameter with a focus of 72 inches and aneyeglass 1 inch in diameter with a focus of 2 inch es? A. Cheap telescope tubes may be made in four ways: 1. By rolling pasteboard, covered with paste or glue.ona wooden mandrel; remove to dry, and varnish insideand out. 2. By gluing together wooden strips an inch wide overhoops. 8. Rolltightly, with glue upon a mandrel, strips of second quality veneering. Each layer must bekept in place, as glued, by a cover of canvas strapped very tight. 4. Use sheet or tinned iron, the best method. The fittings for the object glass cell and eyepiece tube are turned brass castings. A six inch crown lens was used by Zöllner for observing solar protuberauces. For other objects, such a lens cannot

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2d.-F. P. D. willfind a recipe for black finish on optical instruments on thispage.-N. B.D. and Q.H.B. will find directions for waterproofing canvas on p. 122, vol. 27.-E. A. R. will find a recipeforfine blacking on p. 73, vol. 26.-G. W. C. should apply to a maker of emery wheels. -P. K. will find a recipe for bronze dip on p. 58, vol. 26. -J. R. C. and J. K. M. will find the needed particulars of the Australian fever tree on p. 103, vol. 30.-J. N.1s informed that we have no record of any finer spinning than the one he mentions.

C. P. T. says: I have a steam boiler of 100 borse power, with pipes from cistern 10 feet, deep dou-ble valve in pump, check valve near boiler, and direct valve between check and boiler. I find that, after stonping every night, if the direct valve is not closed, the boiler will fill itself full of water. Will you please tell me the cause? A. The steam in the boiler condenses and a vacuum being formed, the water is drawn up. Leave a gage cock open at night, if it is not convenient to close the direct valve.

G.W.L. asks: What is the difference been coal and wood in the amount of steam furnished? A. A tun of coal is supposed to be equal to 1% cords of good wood. As regards the steaming capacity, it will depend considerably on the construction of the furnace So far as we know, the boiler mentioned is a fair specigen of thesectionalvariety.

or soften the ordinary rubber packing after any length of time? A. It probably will.

A. asks: 1. In the present theory ht considered a non-elastic fluid? A. Lightis is light considered a non-elastic fuid? A. Light is sup-posed to be a wave-like motion of a subtle elastic substance which fills all space, termed ether. 2. What is the best way to remove superfluous hair? A. By pulling. S. Can it be permanently removed? A. Yes. by the application of substances that will burn or remove the hairy surface of the skin.

T. L. S. asks: How can I make a wash or paste which I could dip dried beef into, to keep it from the air and files? It must be something that will not injure the meat for eating, and that will not dissolve by moisture or slight heat, and that will not crack off. A. Tryimmersing the beef for a very short time in a bath of melted parafin,

F. G. K. asks: What is the cause of the variation of the sun's rays as they strike any meridian? Why is the sun not in a plane with the meridian at 12 o'clock noon at all times in the year? A. The difference is caused by the eccentricity of the earth's orbit, the oblighty of the ecliptic, and the perturbations due to the moon and planets. For the Nautical Almanac, write to UnitedStates Observatory, Washington, D. C.

be used to advantage.

O. says: What are the astronomical names and probable distances from our globe of three fixed stars, familiarly called the triple twins? They arrive over the meridian line at about 8 o'clock P. M., and about 45° above horizon, preserving equal distance apart and in a right line. A. The three stars you mention are Delta, Epsilon, and Zeta, in the belt of Orion. They are about the second magnitude; Delta and Epsilon are double stars, while Zeta is triple.

C. A. C. asks: 1. Can alcohol be frozen? A. Alcohol has never been frozen, though, when cooled to atemperature of 166° below zero, it becomes viscid. 2. Is there any premium offered by any government or exposition for a varnish that will prevent wire from rust ingand will not crack off while being bent? A. We neverheard of such a reward.

G. R. E. asks: Is there anything that I can throw into a privy vault that will remove the offensive-ness? I would like to use the soil as manure. If the upper part is filled with dry earth, would it settle and answer the purpose? A. The dryearth would fill up the well, but would be offensive. Copperas r. ixed with half its weight of lime would perhaps answer your purpose of removing the odor and permitting the product to be afterwards used as a manure.

H. W. S. asks: 1. How can I plate brass or copper with silver without a battery? A. Mix chloride of silver 1 part, pearlash 2 parts, common salt 1½ parts and whiting 1 part. Rub the mixture well on the sur face o, the brass or copper (previously well cleaned) with a piece of soft leather, or cork moistened with wa-ter and dipped into the powder. When silvered, wash the metal in hot water slightly alkalized and wipe dry. 2. With what solution can I clean the articles before plating or galvanizing? A. In silver plating, the arti cles to be plated are first carefully freed from grease by boiling in a solution of potash, then quickly dipped in rednitrousacid to remove any oxide, and afterwards well washed in water to remove all traces of acid. If the surface be amalgamated, the adhesion of the silver will be promoted. In galvanizing, the iron is first dipped in dilute sulphuric acid to remove the oxide on the surface.

M. E.says: 1. A friend informs me that ice brought from Boston, exposed in the sunlight, will last one third longer than southern ice. Is this so? Does the ice absorb cold after freezing? A. Trials have been made of natural ice and that frozen artificially by va ious ice machines, with reference to their lasting qualities, and the latter were found to take longer time to melt. This is probably due to the fact that artificial ice has been frozen at and reduced to a lower temperature than the natural material. The crystallizationmay also at a long continue low temperature. be more compact and render the ice more firm, as what is known as snow ice is very perishable. After water has congealed at  $32^{\circ}$ , the ice formed may be reduced like any other solid to any low degree of temperature; and ice being a bad conductor of hea!, it (compared with some other solids) takes a long time for the mass to receive an ac cession of heat from without. These remarks may serve to explain the difference between Boston and southern ice, the former being probably frozen at a low er temperature than the latter.

J. W. H says: I have a common wooden pump with its valve bucket about six feet below the level of the ground, being attached to the pump handle by a rod nearly nine feet long. During cold weather, the water in this pump froze, and I have reason to be-lieve that the pump was full of solid ice from the spout down to the valve bucket, which is about eight feet. I first tried to thaw it out with hot water, but found that made but little impression; so I poured in about one quart of hard coarse salt. I soon found the ice was melted down about two feet below the spout. Twelve hours afterwards, it had melted nearly four feet, and the next day the pump was all free of ice and works as well as ever. Nearly all the time the mercury has been below zero. Will you inform me why cold salt will meltice in cold weather? What chemical action, if any, takes place with the salt and icc? A. Whenever a solid body passes into the liquid state it absorbs heat. and the heat which is thus absorbed is called latent or hidden heat. When it passes back again from the itquid to the solid state, this heat is again given out and called sensible beat. The particles of salt find their way into the 'pores of the ice; and since the point of freezing of a mixture of ice and salt is many degrees below that of ice alone, the mixture becomes liquid and in passing from the solid to the liquid state must absorb heat. Finding no source to take it from, its temperature falls until the liquid is 32° colder than the solid ice and salt.

A. R. W. asks: To how many degrees of heat mustiron be raised to weld it? A. According to Siemens, the welding heat of iron is 2,700° F.

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

E. L. F.-Iron pyrites, with rounded pebbles of quartz.

J. W .- Carnelian, but are not brightly enough colored to be of value.

H. B. S.-Magnetic iron ore, and is good for making iron.

R. J. L .- Your material is clay, which might prove use ful in the potter's art.

W. R. E.-Your specimen is not black lead, but sulphuret of lead, and is distributed througa quartz,

N. D. M. Iron pyrites .- It does not indicate coal, al though it is sometimes found with coal.

J. P. D. asks: What will soften copper wire so as to work as readily as lead? Can 1 soften the wire to any degree of temper ?-J. F. H. asks: How can 1 make bungs, cut across the grain of the wood ?-W. E. C. asks : What are the ingreatents used to increase the adhesive properties of sugar or molasses in making popcorn balls, and what is the process of making the same ?- J. C. asks: What is the best bait for enticing rats into a trap? Is there any chemical preparation that will draw them?-J. B. G. asks: Is there any way to prevent the slacking of stone coal? We lay in fuel in the fall, in good sized lumps; before spring much of it is useless - J. O. T. asks How can I prevent an ivor flute head from cracking, and how can I stop the crack ing after it has commenced?-S. asks: How is a steel luster given to the surface of black glass? I have see polished black glass, with a very thin coat (of platinum or bismuth, I think) which nitric or muriatic acid dee not affect. Fluoric acid raises it from the surface i hubbles. It is not an enamel burnt in, as that would destroy the facets on the glass, which show the polish ingmarks through this thin cost .- M. S. W. asks: 1 is contraction of a horse's hoof produced? 2. Ho can I prevent contraction of the hoof? 3. On what

On the Northern Lights. By J. R. On Wood Engraving. By H. C. F. On the Non-Actinic Rays of Light. By E, J. H.

On Glue as a Healing Remedy. By E. P. On a New Breech Blight. By J. S. On Coal Oil on Railroads. By G. H. K. On Mental Arithmetic. By J. P.

Also enquiries from the following :

W. F.-J. T.-A. C. G.-W. E.-J. R. & Co.-H. W. T. -P. W. L.-J. B. G.-P. M.

Correspondents in different parts of the country ask Who makes steel bars, to be used instead of bells? Who sells horse clipping machines? Who makes micros copes, sufficiently powerful to detect the animalcula in water? Who sells a rubber preparation in imitation of mahogany and rose wood? Who buys potato flour? Who sells hair cloth? Makers of the above ar ticles will probably promote their interests by advertising, in reply, in the SCIENTIFIC AMERICAN.

Correspondents who write toask the address of certain manufacturers, or where specified articles are to be had, also those having goods for sale, or who want to find partners, 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** FOR WHICH Letters Patent of the United States

WERE GRANTED IN THE WEEK ENDING

February 17, 1874, AND EACH BEARING THAT DATE.

[Those marked (r) are reissued patents.]	Kaleidoscope, J. Collicott	Wrench, L. F. Smith 147,699
Air forcing and exhausting W I Filis 147 899	Kiln, drying, G. I. Weigęlin 147,718	ADDI ICATIONS FOR EXTENSIONS
Apple parer. F. W. Hudson	Knife-sharpening steel, O. W. Taft 147,705	AFFLICATIONS FOR EATENSIONS.
Apron supporter and page, W. H. Chipley 147,479	Knitting burrs, oiling, J. Maxwell 147,672	Applications have been duly nied and are now pending
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Car, sleeping, J. Woodruft       147,53         Car stove, railroad, J. Wilson       147,72         Car wheels, etc., annealing, J. Matthews       147,56         Cars, heating, W. Thamm       147,70         Cars upon inclines, propelling, T. Shaw       147,57	Pump barrels, etc., coupling for, J. S. Barden 147,545         Purifier, fiour and middlings, G. W. Brown 147,565         Purifier, middlings, D. S. Mackey	SCHEDULE OF PATENT FEES. On each Caveat
Car, sleeping, J. Woodruft       147,53         Car stove, railroad, J. Wilson       147,72         Car wheels, etc., annealing, J. Matthews       147,56         Cars, heating, W. Thamm       147,70         Cars upon inclines, propelling, T. Shaw       147,57         Carboys, emptying, H. R. F. Koechling       147,65	Pump barrels, etc., coupling for, J. S. Barden 147,545         Purifier, flour and middlings, G. W. Brown 147,595         Purifier, middlings, D. S. Mackey	SCHEDULE OF PATENT FEES.           On each Cavcat.         \$10           On each Trade Mark.         \$25           On filing esch application for a Patent (17 years).         \$15           On issuing each original Patent.         \$20           On spicel to Examiners in Chief.         \$10
Car, sleeping, J. Woodruft       147,53         Car stove, railroad, J. Wilson       147,72         Car wheels, etc., annealing, J. Matthews       147,72         Cars wheels, etc., annealing, J. Matthews       147,70         Cars, heating, W. Thamm       147,70         Cars upon inclines, propelling, T. Shaw       147,65         Carriage axles, turning, McKenzie & Coulter       147,65         Carriage axles, turning, McKenzie & Coulter       147,65	Pump barrels, etc., coupling for, J. S. Barden 147,545         Purifier, flour and middlings, G. W. Brown 147,595         Purifier, middlings, D. S. Mackey	SCHEDULE OF PATENT FEES.           On each Caveat.         \$10           On each Trade Mark.         \$25           On filing each application for a Patent (17 years).         \$13           On spuest to Examiners.in. Chtef.         \$20           On appeal to Commissioner of Patents.         \$20
Car, sleeping, J. Woodruft       147,53         Car stove, railroad, J. Wilson       147,53         Car wheels, etc., annealing, J. Matthews       147,56         Cars, heating, W. Thamm       147,70         Cars upon inclines, propelling, T. Shaw       147,75         Carboys, emptying, H. R. F. Koechling       147,65         Carriage saxles, turning, McKenzie & Coulter       147,65         Carriage seat, W. Rall       147,65         Carriage seat, W. Rall       147,65	Pump barrels, etc., coupling for, J. S. Barden 147,545         Purifier, flour and middlings, G. W. Brown	SCHEDULE OF PATENT FEES. On each Caveat
Car, sleeping, J. Woodruft       147,53         Car stove, railroad, J. Wilson       147,53         Car wheels, etc., annealing, J. Matthews       147,56         Cars, heating, W. Thamm       147,70         Cars upon inclines, propelling, T. Sbaw       147,57         Carboys, emptying, H. R. F. Koechling       147,65         Carriage axles, turning, McKenzie & Coulter       147,65         Carriage seat, J. Burt (r)       5,76         Carsinge chilled mold boards W. Ball       147,65	Pump barrels, etc., coupling for, J. S. Barden 147,545         Purifier, fiour and middlings, G. W. Brown	SCHEDULE OF PATENT FEES. On each Caveat
Car, sleeping, J. Woodruft       147,53         Car stove, railroad, J. Wilson       147,53         Car wheels, etc., annealing, J. Matthews       147,56         Cars, heating, W. Thamm       147,70         Cars upon inclines, propelling, T. Sbaw       147,57         Carboys, emptying, H. R. F. Koechling       147,57         Cartage axles, turning, McKenzle & Coulter       147,67         Carriage seat, W. Rall       147,67         Cartiage seat, J. Burt (r)       5,76         Casting chilled mold boards, W. Rall       147,68         Chafing chilled mold boards, W. Rall       147,69	Pump barrels, etc., coupling for, J. S. Barden 147,545         Purifier, fiour and middlings, G. W. Brown	SCHEDULE OF PATENT FEES.         On each Caveat.       \$10         On each Trade Mark.       \$25         On filing each application for a Patent (17 years).       \$15         On appeal to Examiners in Chief.       \$20         On appeal to Examiners in Chief.       \$10         On appeal to Examiners in Chief.       \$20         On application for Beissue.       \$30         On application for Extension of Patent.       \$30         On application for Extension of Patent.       \$50         On granting the Extension.       \$50         On chief.       \$50
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Car, sleeping, J. Woodruft       147,53         Car atove, railroad, J. Wilson       147,72         Car wheels, etc., annealing, J. Matthews       147,52         Cars upon inclines, propelling, T. Sbaw       147,57         Carboys, emptying, H. R. F. Koechling       147,65         Carriage szles, turning, McKenzie & Coulter       147,65         Carriage seat, W. Rall       147,68         Carting chilled mold boards, W. Rall       147,68         Chafing instrument, anti-, J. M. Merrill       147,68         Chafir, folding, J. J. Baer       147,58         Chair, seat, T. W. Moore       147,68	Pump barrels, etc., coupling for, J. S. Barden 147,545         Purifier, fiour and middlings, G. W. Brown	SCHEDULE OF PATENT FEES.         On each Caveat.       \$10         On each Trade Mark.       \$25         On filing each application for a Patent (17 years).       \$15         On spicel to Examiners in Chief.       \$20         On applesi to Commissioner of Patents.       \$20         On application for Reissue.       \$30         On application for Batension of Patents.       \$50         On filing a Disolatimer.       \$50         On an application for Design (3½ years).       \$10         On an application for Design (3½ years).       \$15         On an application for Design (3½ years).       \$16
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Car, sleeping, J. Woodruft       147,53         Car stove, railroad, J. Wilson       147,53         Car wheels, etc., annealing, J. Matthews       147,56         Cars upon inclines, propelling, T. Shaw       147,57         Carboys, emptying, H. R. F. Koechling       147,65         Carriage saxles, turning, McKenzie & Coulter       147,65         Carriage saxles, turning, McKenzie & Coulter       147,65         Carriage saxles, turning, McKenzie & Coulter       147,65         Carriage seat, J. Burt (r)       576         Chaing instrument, anti-, J. M. Merrill       147,65         Chair, folding, J. J. Baer       147,65         Chair, settee, etc., W. Chase       147,66         Churn dasher, reciprocating. W. T. Wright       147,66         Clock, watchman's check. F. H. Piaget       147,66         Clock, watchman's check. F. H. Piaget       147,66         Cloth winding roll, C. A. & S. W. Young       147,66         Cloth winding roll, C. A. & S. W. Young       147,66         Cloth winding roll, R. A. & S. W. Young       147,66         Cloth Winding roll, C. A. & S. W. Young       147,66         Cloth Winding roll, R. A. & S. W. Young       147,66         Cloth Winding roll, R. A. & S. W. Young       147,66         Cloth Winding roll, R. A. & S. W. Young	Pump barrels, etc., coupling for, J. S. Barden 147,545         Purifier, fiour and middlings, G. W. Brown	SCHEDULE OF PATENT FEES.         On each Caveat
Car, sleeping, J. Woodruft       147,53         Car stove, railroad, J. Wilson       147,53         Car wheels, etc., annealing, J. Matthews       147,56         Cars upon inclines, propelling, T. Sbaw       147,57         Carboys, emptying, H. R. F. Koechling       147,65         Carriage saxles, turning, McKenzie & Coulter       147,65         Carriage saxles, turning, McKenzie & Coulter       147,65         Carriage saxles, turning, McKenzie & Coulter       147,65         Carriage seat, J. Burt (r)       5,76         Casting chilled mold boards, W. Rail       147,65         Chaing instrument, anti-, J. M. Merrill       147,65         Chair, folding, J. J. Baer       147,65         Chair seat, T. W. Moore       147,66         Chair settee, etc., W. Chase       147,66         Churn dasher, reciprocating. W. T. Wright       147,66         Clock, watchman's check, F. H. Plaget       147,66         Cloth winding roll, C. A. & S. W. Young       147,56         Corpse cooler, H. Kerster       147,65         Corpse cooler, H. Kerster       147,56         Corpse cooler, H. Kerster       147,56         Corpse cooler, H. J. Waterman       147,57	Pump barrels, etc., coupling for, J. S. Barden 147,545         Purifier, fiour and middlings, G. W. Brown	SCHEDULE OF PATENT FEES.         On each Caveat
Car, sleeping, J. Woodruft       147,53         Car stove, railroad, J. Wilson       147,53         Car wheels, etc., annealing, J. Matthews       147,56         Car wheels, etc., annealing, J. Matthews       147,56         Cars, heating, W. Thamm       147,70         Cars upon inclines, propelling, T. Sbaw       147,57         Carboys, emptying, H. R. F. Koechling       147,67         Carriage azies, turning, McKenzie & Coulter       147,67         Carriage seat, J. Burt (r)       5,76         Casting chilled mold boards, W. Rall       147,68         Chair ge still, J. J. Baer       147,67         Chair seat, T. W. Moore       147,67         Chair seat, T. W. Moore       147,68         Chair seat, T. W. Moore       147,68         Chair seat, T. W. Moore       147,68         Chair seat, reciprocating. W. T. Wright       147,58         Cigar mold, N. Dubrul       147,56         Clock, watchman's check. F. H. Plaget       147,56         Corpse cooler, H. Kerster       147,69         Corset and bustle, J. Waterman       147,69         Corset and bustle, J. Waterman       147,69         Corset and bustle, J. Waterman       147,69         Cot, spring bottom, Lord & Blanchard       147,69	Pump barrels, etc., coupling for, J. S. Barden 147,545           Purifier, fiour and middlings, G. W. Brown	SCHEDULE OF PATENT FEES.         On each Caveat
Car, sleeping, J. Woodruft       147,53         Car stove, railroad, J. Wilson       147,53         Car wheels, etc., annealing, J. Matthews       147,56         Cars, heating, W. Thamm       147,70         Cars upon Inclines, propelling, T. Sbaw       147,57         Carboys, emptying, H. R. F. Koechling       147,57         Cariage axles, turning, McKenzie & Coulter       147,67         Carriage seat, W. Rall       147,68         Carriage seat, J. Burt (r)       5,76         Chaing chilled mold boards, W. Rall       147,68         Chair ge instrument, anti, J. M. Merrill       147,58         Chair seat, T. W. Moore       147,68         Chair, settee, etc., W. Chase       147,69         Chair, settee, etc., W. Chase       147,68         Clock, watchman's check, F. H. Plaget       147,68         Clock, watchman's check, F. H. Plaget       147,64         Corset and bustle, J. Waterman       147,64         Corset and bustle, J. Waterman       147,64         Corset and bustle, J. Waterman       147,64         Corset and bustle, J. Sourfee       147,64	Pump barrels, etc., coupling for, J. S. Barden 147,545         Purifier, fiour and middlings, G. W. Brown	SCHEDULE OF PATENT FEES.         On each Caveat.       \$10         On each Trade Mark.       \$25         On filug each application for a Patent (17 years).       \$15         On appeal to Examiners-in-Chief.       \$10         On application for Relayed.       \$30         On application for Relayed.       \$30         On application for Relayed.       \$30         On application for Extension of Patent.       \$30         On application for Extension of Patent.       \$50         On filug a Disclatmer.       \$10         On application for Design (3½ years).       \$13         On application for Design (1 years).       \$14         On application for Design (1 years).       \$15         On application for Design (1 years).       \$30         [Specially reported for the Scientific American.]       \$30         [Specially reported for the Scientific American.]       \$30         LIST OF PATENTS GRANTED IN CANADA,       FEBRUARY 20, 1874.
Car, sleeping, J. Woodruft       147,53         Car stove, railroad, J. Wilson       147,53         Car wheels, etc., annealing, J. Matthews       147,56         Cars upon inclines, propelling, T. Shaw       147,70         Carsa upon inclines, propelling, T. Shaw       147,65         Carsupon inclines, propelling, T. Shaw       147,65         Carsupon inclines, propelling, T. Shaw       147,65         Carsinge axies, turning, McKenzie & Coulter       147,65         Carriage seat, J. Burt (r)       576         Catriage instrument, anti-, J. M. Merrill       147,65         Chafing instrument, anti-, J. M. Merrill       147,65         Chafir, folding, J. J. Baer       147,65         Chair, settee, etc., W. Chase       147,66         Clock, watchman's check, F. H. Piaget       147,66         Clock, watchman's check, F. H. Piaget       147,66         Cloth winding roll, C. A. & S. W. Young       147,66         Clots winding roll, C. A. & S. W. Young       147,66         Clots winding roll, C. M. & S. W. Young       147,67         Corpse cooler, H. Kerster       147,66         Cot, spring bottom, Lord & Blanchard       147,67         Cot, spring bottom, Lord & Blanchard       147,67         Croquet apparatus, Bogta & Zimmerman       147,47	Pump barrels, etc., coupling for, J. S. Barden 147,545           Purifier, fiour and middlings, G. W. Brown	SCHEDULE OF PATENT FEES.         On each Cavest
Car, sleeping, J. Woodruft       147,53         Car stove, railroad, J. Wilson       147,53         Car wheels, etc., annealing, J. Matthews       147,56         Cars upon inclines, propelling, T. Sbaw       147,57         Carboys, emptying, H. R. F. Koechling       147,65         Carriage sailes, turning, McKenzie & Coulter       147,65         Carriage seat, W. Rall       147,65         Carriage seat, J. Burt (r)       5,76         Chaing instrument, anti-, J. M. Merrill       147,65         Chair, settee, etc., W. Chase       147,65         Chair, settee, etc., W. Chase       147,65         Churn dasher, reciprocating. W. T. Wright       147,65         Clott winding roll, C. A. & S. W. Young.       147,65         Corpse cooler, H. Kerster.       147,65         Cott, spring bottom, Lord & Blanchard.       147,66         Crane, foundry, Z. S. Durfee       147,66         Croute apparatus, Bogia & Zimmerman.       147,67         Cortal sparatus, Bogia & Zimmerman.       147,67         Cortan to apparatus, J. Waterman.       147,67         Clott winding roll, C. A. & S. W. Young.       147,67         Cortan to able, J. Waterman.       147,67         Cott, spring bottom, Lord & Blanchard.       147,67         Crane tapparatus, B	Pump barrels, etc., coupling for, J. S. Barden 147,545         Purifier, fiour and middlings, G. W. Brown	SCHEDULE OF PATENT FEES.         On each Caveat
Car, sleeping, J. Woodruft       147,53         Car stove, railroad, J. Wilson       147,53         Car wheels, etc., annealing, J. Matthews       147,53         Car wheels, etc., annealing, J. Matthews       147,53         Cars upon inclines, propelling, T. Sbaw       147,57         Carsoys, emptying, H. R. F. Koechling       147,65         Carriage axies, turning, McKenzie & Coulter       147,65         Carriage seat, J. Burt (r)       5,76         Casting chilled mold boards, W. Rail       147,65         Chair ge seat, J. Burt (r)       5,76         Chairing instrument, anti., J. M. Merrill       147,67         Chair seat, T. W. Moore       147,68         Cloar watchmar's check, F. H. Plaget       147,67         Clow watchman's check, F. H. Plaget       147,67         Cloth winding roll, C. A. & S. W. Young       147,67         Corpse cooler, H. Kerster       147,67         Corset and bustle, J. Waterman       147,67         Coroget apparatus, Bogia & Zimmerman       147,57         Croarte, foundry, Z. S. Durfee       147,67         Corunet, G. Frantz       147,57	Pump barrels, etc., coupling for, J. S. Barden 147,545           Purifier, fiour and middlings, G. W. Brown	SCHEDULE OF PATENT FEES.         On each Caveat
Car, sleeping, J. Woodruft       147,53         Car stove, railroad, J. Wilson       147,53         Car wheels, etc., annealing, J. Matthews       147,56         Car wheels, etc., annealing, J. Matthews       147,56         Cars, heating, W. Thamm       147,70         Cars upon inclines, propelling, T. Sbaw       147,57         Carboys, emptying, H. R. F. Koechling       147,67         Carriage sailes, turning, McKenzie & Coulter       147,68         Carriage seat, J. Burt (r)       5,76         Casting chilled mold boards, W. Rall       147,68         Casting chilled mold boards, W. Rall       147,68         Chafn ginstrument, anti, J. M. Merrill       147,68         Chair, folding, J. J. Baer       147,68         Chair seat, T. W. Moore       147,69         Chair settee, etc., W. Chase       147,69         Chair settee, etc., W. Chase       147,69         Clock, watchman's check, F. H. Piaget       147,69         Corpse cooler, H. Kerster       147,64         Corset and bustle, J. Waterman       147,64         Coroquet apparatus, Bogia & Zimmerman       147,64         Crouct, G. Frantz       147,64         Cultivator, S. D. Douthit       147,64         Cultivator, S. D. Douthit       147,64	Pump barrels, etc., coupling for, J. S. Barden 147,545         Purifier, fiour and middlings, G. W. Brown	SCHEDULE OF PATENT FEES.         On each Caveat
Car, sleeping, J. Woodruft       147,53         Car stove, railroad, J. Wilson       147,53         Car wheels, etc., annealing, J. Matthews       147,56         Car wheels, etc., annealing, J. Matthews       147,57         Cars upon inclines, propelling, T. Sbaw.       147,57         Carshoys, emptying, H. R. F. Koechling       147,57         Carsing azles, turning, McKenzie & Coulter       147,67         Carriage seat, W. Rall       147,68         Carsing chilled mold boards, W. Rall       147,68         Carsing chilled mold boards, W. Rall       147,68         Chair ge instrument, anti, J. M. Merrill       147,68         Chair, folding, J. J. Baer.       147,68         Chair, settee, etc., W. Chase       147,68         Chair, settee, etc., W. Chase       147,68         Clock, watchman's check, F. H. Piaget       147,68         Clock, watchman's check, F. H. Piaget       147,64         Corset and bustle, J. Waterman       147,64         Croquet apparatus, Bogia & Zimmerman       147,64         Croquet apparatus, Bogia & Zimmerman       147,64         Cultivator, S. D. Douthit       147,65         Cultivator, S. D. Douthit       147,65         Cultivator, S. D. Douthit       147,65         Cultivator, S. D. Douthit	Pump barrels, etc., coupling for, J. S. Barden 147,545         Purifier, fiour and middlings, G. W. Brown	SCHEDULE OF PATENT FEES.         On each Caveat
Car, sleeping, J. Woodruft       147,53         Car stove, railroad, J. Wilson       147,53         Car wheels, etc., annealing, J. Matthews       147,56         Cars upon inclines, propelling, T. Shaw       147,70         Cars upon inclines, propelling, T. Shaw       147,75         Carboys, emptying, H. R. F. Koechling       147,65         Carriage axies, turning, McKenzie & Coulter       147,65         Carriage seat, J. Burt (r)       576         Caaring chilled mold boards, W. Rall       147,65         Chaing instrument, anti-, J. M. Merrill       147,65         Chair, folding, J. J. Baer       147,65         Chair, settee, etc., W. Chass       147,66         Churn dasher, reciprocating. W. T. Wright       147,66         Clock, watchman's check. F. H. Piaget       147,66         Clots winding roll, C. A. & S. W. Young       147,66         Clots winding roll, C. A. & S. W. Young       147,66         Clota sparstus, Bogia & Zimmerman       147,67         Crostet and bustle, J. Waterman       147,66         Crouge tapparatus, Bogia & Zimmerman       147,67         Crouge tapparatus, Bogia & Zimmerman       147,67         Crouge tapparatus, Bogia & Zimmerman       147,67         Cultivator, S. D. Douthit       147,67         C	Pump barrels, etc., coupling for, J. S. Barden 147,545         Purifier, fiour and middlings, G. W. Brown	SCHEDULE OF PATENT FEES.         On each Caveat
Car, sleeping, J. Woodruft       147,53         Car stove, railroad, J. Wilson       147,53         Car wheels, etc., annealing, J. Matthews       147,56         Cars upon inclines, propelling, T. Sbaw       147,57         Carsoys, emptying, H. R. F. Koechling       147,65         Carriage axies, turning, McKenzie & Coulter       147,65         Carriage axies, turning, McKenzie & Coulter       147,65         Carriage seat, W. Rall       147,65         Carriage seat, J. Burt (r)       5,76         Chaing instrument, anti-, J. M. Merrill       147,65         Chair, gothiled mold boards, W. Rall       147,66         Chair, settee, etc., W. Chase       147,66         Churn dasher, reciprocating. W. T. Wright       147,66         Cloth winding roll, C. A. & S. W. Young       147,66         Cloth winding roll, C. A. & S. W. Young       147,66         Corpse cooler, H. Kerster       147,66         Corpse cooler, H. Kerster       147,66         Cot, spring bottom, Lord & Blanchard       147,67         Culinary vessel, H. Van Altens       147,67         Culitvator, S. D. Douthit       147,67         Culitvator, S. D. Douthit       147,67         Culitvator and plow, J. B. Lucas       147,67         Culitvator and plow sweep, E. Hatima	Pump barrels, etc., coupling for, J. S. Barden 147,545         Purifier, fiour and middlings, G. W. Brown	SCHEDULE OF PATENT FEES.         On each Caveat
Car, sleeping, J. Woodruft147,53Car stove, railroad, J. Wilson147,53Car wheels, etc., annealing, J. Matthews147,55Cars upon inclines, propelling, T. Sbaw147,55Cars upon inclines, propelling, T. Sbaw147,57Carboys, emptying, H. R. F. Koechling147,65Carriage saies, turning, McKenzie & Coulter147,65Cartiage saies, turning, McKenzie & Coulter147,67Cartiage seat, J. Burt (r)5,76Chaing instrument, anti., J. M. Merrill147,67Chair, settee, etc., W. Chass147,67Chair, settee, etc., W. Chass147,67Clock watchman's check, F. H. Plaget147,67Cloth winding roll, C. A. & S. W. Young147,57Corset and bustle, J. Waterman147,57Corset and bustle, J. Waterman147,57Corset and bustle, J. Waterman147,57Cultivator, S. D. Douthit147,57Cultivator and plow, J. B. Lucas147,57Cultivator and plow, J. B. Lucas147,57<	Pump barrels, etc., coupling for, J. S. Barden 147,545           Purifier, fiour and middlings, G. W. Brown	SCHEDULE OF PATENT FEES.         On each Caveat
Car, sleeping, J. Woodruft       147,53         Car stove, railroad, J. Wilson       147,53         Car wheels, etc., annealing, J. Matthews       147,53         Car wheels, etc., annealing, J. Matthews       147,53         Car wheels, etc., annealing, J. Matthews       147,53         Cars, heating, W. Thamm       147,03         Cars upon inclines, propelling, T. Sbaw       147,57         Carboys, emptying, H. R. F. Koechling       147,67         Carriage seat, W. Rall       147,68         Carriage seat, J. Burt (r)       5,7         Carsing chilled mold boards, W. Rall       147,68         Casting chilled mold boards, W. Rall       147,68         Chair seat, T. W. Moore       147,69         Chair, folding, J. J. Baer.       147,68         Chair seat, T. W. Moore       147,69         Chair settee, etc., W. Chase       147,69         Cloar mold, N. Dubrul       147,61         Clock, watchman's check, F. H. Plaget       147,62         Corpae cooler, H. Kerster       147,63         Cot, spring bottom, Lord & Blanchard       147,64         Croquet apparatus, Bogia & Zimmerman       147,64         Cultivator salk cutter, S. Crossley       147,64         Cultivator and plow, J. B. Lucas       147,66	Pump barrels, etc., coupling for, J. S. Barden 147,545           Purifier, fiour and middlings, G. W. Brown	SCHEDULE OF PATENT FEES.         On each Caveat
Car, sleeping, J. Woodruft147,53Car stove, railroad, J. Wilson147,53Car wheels, etc., annealing, J. Matthews147,56Cars, heating, W. Thamm147,70Cars upon inclines, propelling, T. Sbaw.147,57Carboys, emptying, H. R. F. Koechling147,67Carriage sates, turning, McKenzie & Coulter147,68Cartiage seat, W. Rall147,68Cartiage seat, J. Burt (r)5,76Chafing instrument, anti, J. M. Merrill147,68Chafing instrument, anti, J. M. Merrill147,68Chair, seate, t. W. Moore147,68Chair, settee, etc., W. Chase147,68Clock, watchman's check, F. H. Piaget147,68Clock, watchman's check, F. H. Piaget147,68Corpse cooler, H. Kerster147,64Coroge cooler, H. Kerster147,64Croquet apparatus, Bogia & Zimmerman147,64Croquet apparatus, Bogia & Zimmerman147,64Cultivator, S. D. Douthit147,65Cultivator and plow, J. B. Lucas147,64Cultivator stalk cutter, S. Crossley147,64Cultivator stalk cutter, S. Crossley147,65Cultivator stalk cutter, S. Crossley1	Pump barrels, etc., coupling for, J. S. Barden 147,545Purifier, fiour and middlings, G. W. Brown	SCHEDULE OF PATENT FEES.         On each Caveat
Car, sleeping, J. Woodruft       147,53         Car stove, railroad, J. Wilson       147,53         Car wheels, etc., annealing, J. Matthews       147,53         Cars upon inclines, propelling, T. Sbaw       147,53         Cars upon inclines, propelling, T. Sbaw       147,53         Cars upon inclines, propelling, T. Sbaw       147,55         Cars upon inclines, propelling, T. Sbaw       147,57         Carboys, emptying, H. R. F. Koechling       147,65         Carriage saits, turning, McKenzie & Coulter       147,65         Carriage seat, J. Burt (r)       5,76         Casting instrument, anti-, J. M. Merrill       147,65         Chair, folding, J. J. Baer       147,66         Chair, settee, etc., W. Chase       147,66         Churn dasher, reciprocating. W. T. Wright       147,66         Clock, watchman's check. F. H. Plaget       147,66         Cloth winding roll, C. A. & S. W. Young       147,66         Cloth winding roll, C. A. & S. W. Young       147,66         Corpse cooler, H. Kerster       147,66         Corpse cooler, H. Kerster       147,66         Cot, spring bottom, Lord & Blanchard       147,66         Cultivator, S. D. Douthit       147,67         Cultivator, S. D. Douthit       147,66         Cultivator and plo	Pump barrels, etc., coupling for, J. S. Barden 147,545         Purifier, fiour and middlings, G. W. Brown	SCHEDULE OF PATENT FEES.         On each Caveat
Car, sleeping, J. Woodruft       147,53         Car stove, railroad, J. Wilson       147,53         Car wheels, etc., annealing, J. Matthews       147,56         Cars upon inclines, propelling, T. Sbaw       147,57         Carsoys, emptying, H. R. F. Koechling       147,65         Carriage axies, turning, McKenzie & Coulter       147,65         Carriage seat, W. Rall       147,65         Carriage seat, J. Burt (r)       5,76         Casting chilled mold boards, W. Rall       147,65         Cartage seat, J. Burt (r)       5,76         Casting chilled mold boards, W. Rall       147,66         Chaing instrument, anti-, J. M. Merrill       147,67         Chair, folding, J. J. Baer       147,66         Chair seat, T. W. Moore       147,66         Chair seat, T. W. Moore       147,67         Chair seat, reciprocating. W. T. Wright       147,66         Clotk watchman's check, F. H. Plaget       147,67         Corpse cooler, H. Kerster       147,66         Corpse cooler, H. Kerster       147,67         Cot, spring bottom, Lord & Blanchard       147,67         Cultary casel, H. Van Altens       147,67         Cultary casel, H. Van Altens       147,67         Cultary cand plow, J. B. Lucas       147,67      C	Pump barrels, etc., coupling for, J. S. Barden 147,545         Purifier, fiour and middlings, G. W. Brown	SCHEDULE OF PATENT FEES.         On each Caveat
Car, sleeping, J. Woodruft       147,53         Car stove, railroad, J. Wilson       147,53         Car wheels, etc., annealing, J. Matthews       147,53         Car wheels, etc., annealing, J. Matthews       147,53         Cars upon inclines, propelling, T. Sbaw       147,57         Carboys, emptying, H. R. F. Koechling       147,65         Carriage axies, turning, McKenzie & Coulter       147,65         Carriage seat, J. Burt (r)       5,76         Casting chilled mold boards, W. Rall       147,66         Casting chilled mold boards, W. Rall       147,67         Chair ge seat, J. J. Burt (r)       5,76         Chair ge seat, J. J. Baer       147,66         Chair, folding, J. J. Baer       147,67         Chair seat, T. W. Moore       147,67         Chair seat, T. W. Moore       147,67         Chair seat, T. W. Moore       147,67         Clock watchman's check, F. H. Plaget       147,67         Clock watchman's check, F. H. Plaget       147,67         Corset and bustle, J. Waterman       147,67         Cultivator and plow, J. S. Durfee       147,67         Cultivator and plow, J. B. Lucas       147,67         Cultivator and plow, J. B. Lucas       147,67         Cultivator and plow, J. B. Lucas       147,67	Pump barrels, etc., coupling for, J. S. Barden 147,545Purifier, fiour and middlings, G. W. Brown	SCHEDULE OF PATENT FEES.         On each Caveat
Car, sleeping, J. Woodruft       147,53         Car stove, railroad, J. Wilson       147,53         Car wheels, etc., annealing, J. Matthews       147,53         Car wheels, etc., annealing, J. Matthews       147,53         Car upon inclines, propelling, T. Sbaw       147,57         Carboys, emptying, H. R. F. Koechling       147,65         Carriage azies, turning, McKenzie & Coulter       147,65         Carriage seat, J. Burt (r)       5,76         Casting chilled mold boards, W. Rall       147,66         Casting chilled mold boards, W. Rall       147,66         Chair seat, J. J. Burt (r)       5,76         Chair seat, T. W. Moore       147,66         Chair, folding, J. J. Baer.       147,66         Chair seat, T. W. Moore       147,67         Chair seat, reciprocating. W. T. Wright       147,57         Cigar mold, N. Dubrul       147,68         Clock, watchman's check, F. H. Plaget       147,69         Corpae cooler, H. Kerster       147,69         Corset and bustle, J. Waterman       147,69         Croquet apparatus, Bogia & Zimmerman       147,57         Cultivator salk cutter, S. Crossley       147,69         Cultivator and plow, J. B. Lucas       147,69         Cultivator stalk cutter, S. Crossley       147,60<	Pump barrels, etc., coupling for, J. S. Barden 147,545Purifier, fiour and middlings, G. W. Brown	SCHEDULE OF PATENT FEES.         On each Caveat
Car, sleeping, J. Woodruft       147,53         Car stove, railroad, J. Wilson       147,53         Car wheels, etc., annealing, J. Matthews       147,53         Cars upon inclines, propelling, T. Shaw       147,53         Cars upon inclines, propelling, T. Shaw       147,53         Cars age axies, turning, McKenzie & Coulter       147,65         Carriage saies, turning, McKenzie & Coulter       147,65         Carriage saies, J. Burt (r)       5,76         Casting chilled mold boards, W. Rall       147,65         Chaing instrument, anti-, J. M. Merrill       147,65         Chair, folding, J. J. Baer       147,65         Chair, settee, etc., W. Chass       147,66         Churn dasher, reciprocating. W. T. Wright       147,66         Clock, watchman's check. F. H. Piaget       147,66         Clots winding roll, C. A. & S. W. Young       147,66         Corpse cooler, H. Kerster       147,66         Crouge apparatus, Bogia & Zimmerman       147,67         Cultivator, S. D. Douthit       147,68         Cultivator, S. D. Douthit       147,66         Cultivator salk cutter, S. Crossley       147,67         Cultivator salk cutter, S. Crossley       147,67         Cultivator salk cutter, S. Crossley       147,67         Cultivator san	Pump barrels, etc., coupling for, J. S. Barden 147,545Purifier, fiour and middlings, G. W. Brown	SCHEDULE OF PATENT FEES.         On each Caveat
Car, sleeping, J. Woodruft       147,53         Car stove, railroad, J. Wilson       147,53         Car wheels, etc., annealing, J. Matthews       147,53         Cars upon inclines, propelling, T. Sbaw       147,53         Cars upon inclines, propelling, T. Sbaw       147,55         Cars upon inclines, propelling, T. Sbaw       147,57         Carboys, emptying, H. R. F. Koechling       147,65         Carriage sails, turning, McKenzie & Coulter       147,65         Carriage seat, J. Burt (r)       5,76         Casting chilled mold boards, W. Rall       147,65         Chair, gothled mold boards, W. Rall       147,66         Chair, folding, J. J. Baer       147,66         Chair, settee, etc., W. Chase       147,66         Chair seat, T. W. Moore       147,66         Chair sette, etc., W. Chase       147,66         Chair settee, etc., W. Chase       147,66         Churn dasher, reciprocating. W. T. Wright       147,66         Clott winding roll, C. A. & S. W. Young       147,66         Corpse cooler, H. Kerster       147,66         Corpse cooler, H. Kerster       147,66         Corpse cooler, H. Kerster       147,66         Cotta spring bottom, Lord & Blanchard       147,66         Culinary vessel, H. Van Altena       14	Pump barrels, etc., coupling for, J. S. Barden 147,545         Purifier, fiour and middlings, G. W. Brown	SCHEDULE OF PATENT FEES.         On each Caveat
Car, sleeping, J. Woodruft       147,53         Car stove, railroad, J. Wilson       147,53         Car wheels, etc., annealing, J. Matthews       147,56         Cars, heating, W. Thamm       147,57         Cars upon inclines, propelling, T. Sbaw       147,56         Cars upon inclines, propelling, T. Sbaw       147,57         Carboys, emptying, H. R. F. Koechling       147,67         Carriage sailes, turning, McKenzie & Coulter       147,67         Carriage seat, J. Burt (r)       5,76         Casting chilled mold boards, W. Rail       147,68         Casting chilled mold boards, W. Rail       147,66         Chair, folding, J. J. Baer       147,67         Chair, settee, etc., W. Chase       147,66         Chair seat, T. W. Moore       147,66         Chair seat, T. W. Moore       147,67         Chair settee, etc., W. Chase       147,66         Chair seat, reciprocating. W. T. Wright       147,67         Clotk watchman's check, F. H. Plaget       147,67         Corset and bustle, J. Waterman       147,67         Cultary corsel, H. Van Altens       147,67 </td <td>Pump barrels, etc., coupling for, J. S. Barden 147,545Purifier, fiour and middlings, G. W. Brown</td> <td>SCHEDULE OF PATENT FEES.         On each Caveat</td>	Pump barrels, etc., coupling for, J. S. Barden 147,545Purifier, fiour and middlings, G. W. Brown	SCHEDULE OF PATENT FEES.         On each Caveat
Car, sleeping, J. Woodruft       147,53         Car stove, railroad, J. Wilson       147,53         Car wheels, etc., annealing, J. Matthews       147,53         Car wheels, etc., annealing, J. Matthews       147,53         Cars upon inclines, propelling, T. Sbaw       147,57         Carboys, emptying, H. R. F. Koechling       147,65         Carriage axies, turning, McKenzie & Coulter       147,67         Carriage seat, J. Burt (r)       5,76         Casting chilled mold boards, W. Rail.       147,68         Casting chilled mold boards, W. Rail.       147,67         Chair seat, J. Burt (r)       5,76         Chair, Settee, etc., W. Chase       147,67         Chair seat, T. W. Moore       147,68         Chair, settee, etc., W. Chase       147,67         Clock watchman's check, F. H. Plaget       147,67         Clow watchmar's check, F. H. Plaget       147,67         Corset and bustle, J. Waterman       147,67         Corset and bustle, J. Waterman       147,67         Cultvator, G. Frantz       147,67         Cultvator and plow, J. B. Lucas       147,67         Cultvator and plow, J. B. Lucas       147,67         Cultvator and plow, W. P. Haimen       147,67         Cultvator and plow, W. P. Haimen       147,57	Pump barrels, etc., coupling for, J. S. Barden 147,545Purifier, fiour and middlings, G. W. Brown	SCHEDULE OF PATENT FEES.         On each Caveat
Car, sleeping, J. Woodruft       147,53         Car stove, railroad, J. Wilson       147,53         Car wheels, etc., annealing, J. Matthews       147,53         Car wheels, etc., annealing, J. Matthews       147,53         Cars, heating, W. Thamm       147,53         Cars upon inclines, propelling, T. Sbaw       147,57         Carboys, emptying, H. R. F. Koechling       147,65         Carriage sailes, turning, McKenzie & Coulter       147,65         Carriage seat, J. Burt (r)       5,76         Casting chilled mold boards, W. Rall       147,66         Chair ge seat, J. J. Burt (r)       5,76         Chair, folding, J. J. Baer.       147,66         Chair seat, T. W. Moore       147,67         Chair, settee, etc., W. Chase       147,67         Cligar mold, N. Dubrul       147,68         Clock, watchman's check, F. H. Plaget       147,67         Corpse cooler, H. Kerster       147,68         Corpse cooler, H. Kerster       147,69         Corpact and bustle, J. Waterman       147,67         Cultivator stalk cutter, S. Crossley       147,46         Cultivator stalk cutter, S. Crossley       147,67         Cultivator stalk cutter, S. Crossley       147,67         Cultivator stalk cutter, S. Crossley       147,67	Pump barrels, etc., coupling for, J. S. Barden 147,545Purifier, fiour and middlings, G. W. Brown	SCHEDULE OF PATENT FEES.         On each Caveat
Car, sleeping, J. Woodruft       147,53         Car stove, railroad, J. Wilson       147,53         Car wheels, etc., annealing, J. Matthews       147,53         Cars upon inclines, propelling, T. Shaw       147,53         Cars upon inclines, propelling, T. Shaw       147,55         Cars upon inclines, propelling, T. Shaw       147,55         Cars upon inclines, propelling, T. Shaw       147,57         Carboys, emptying, H. R. F. Koechling       147,65         Carriage sate, turning, McKenzie & Coulter       147,65         Carriage seat, J. Burt (r)       5,76         Casting chilled mold boards, W. Rall       147,65         Chair, folding, J. J. Baer       147,66         Chair, settee, etc., W. Chass       147,66         Churn dasher, reciprocating. W. T. Wright       147,66         Clotk watchman's check. F. H. Plaget       147,66         Clots watchman's check. F. H. Plaget       147,66         Clots winding roll, C. A. & S. W. Young       147,67         Corse cooler, H. Kerster       147,66         Coropse cooler, H. Kerster       147,66         Cot, spring bottom, Lord & Blanchard       147,67         Cultivator, S. D. Duthti       147,67         Cultivator sand plow, J. B. Lucas       147,67         Cultivator sand plow	Pump barrels, etc., coupling for, J. S. Barden 147,545         Purifier, fiour and middlings, G. W. Brown	SCHEDULE OF PATENT FEES.         On each Caveat
Car, sleeping, J. Woodruft       147,53         Car stove, railroad, J. Wilson       147,53         Car wheels, etc., annealing, J. Matthews       147,53         Cars upon inclines, propelling, T. Sbaw       147,55         Cars upon inclines, propelling, T. Sbaw       147,57         Carsinge axies, turning, McKenzie & Coulter       147,65         Carriage seat, W. Rall       147,65         Carriage seat, J. Burt (r)       5,76         Chaing instrument, anti-, J. M. Merrill       147,65         Chair, settee, etc., W. Chase       147,65         Chair seat, T. W. Moore       147,66         Chair seat, T. W. Moore       147,67         Chair seat, T. W. Moore       147,66         Chair seat, T. W. Moore       147,66         Chair seat, T. W. Moore       147,67         Clost watchman's check, F. H. Plaget       147,66         Clott winding roll, C. A. & S. W. Young       147,67         Corpse cooler, H. Kerster       147,64         Corpse cooler, H. Kerster       147,64         Corpse cooler, H. Kerster       147,64         Cout apparatus, Bogia & Zimmerman       147,54         Culturator salk cutter, S. Crossley       147,64         Culturator salk cutter, S. Crossley       147,45         Cultu	Pump barrels, etc., coupling for, J. S. Barden 147,545         Purifier, fiour and middlings, G. W. Brown	SCHEDULE OF PATENT FEES.         On each Caveat
Car, sleeping, J. Woodruft       147,53         Car stove, railroad, J. Wilson       147,53         Car wheels, etc., annealing, J. Matthews       147,53         Cars upon inclines, propelling, T. Sbaw       147,55         Cars upon inclines, propelling, T. Sbaw       147,55         Cars upon inclines, propelling, T. Sbaw       147,57         Carboys, emptying, H. R. F. Koechling       147,67         Carriage sailes, turning, McKenzie & Coulter       147,67         Carriage seat, J. Burt (r)       5,76         Casting chilled mold boards, W. Rail       147,68         Casting chilled mold boards, W. Rail       147,66         Chair, folding, J. J. Baer       147,67         Chair seat, T. W. Moore       147,67         Chair seat, T. W. Moore       147,66         Chair seat, T. W. Moore       147,67         Chair seat, reciprocating. W. T. Wright       147,67         Clotw watchman's check, F. H. Plaget       147,67         Corset and bustle, J. Waterman       147,67         Cultaroor, S. D. Douthit       147,67	Pump barrels, etc., coupling for, J. S. Barden 147,545Purifier, fiour and middlings, G. W. Brown	SCHEDULE OF PATENT FEES.         On each Caveat

Engine valve. steam. J. D. Bown...... 147.736 File. circular. B. D. Whitney..... 147,535 Forge, smith's, Case et al..... 147,602 Fuel, mixing and molding artificial. E. B. Loiseau 147,665 Fuel, making artificial, E. F. Loiseau.....147,664, 147,667 Gas apparatus, portable, C. J. Eames...... 147.619 Grate cleaning attachment, A. Tiensch...... 147,711 Hanger and loose pulley, adjustable, Thayer et al. 147,52 
 Harness hame, J. Letchworth
 147,507

 Harp, G. D. Reed
 147,689

 Harvester cutter, Blood et al.
 147,549
 Harvester rake, A. Wemple...... 147,583 Heater, boiler feed, E. P. Fenn..... 147,624 Hinge, lock, F. Walker..... 147,715 Horse power, D. Landes...... 147,659 Journal and bearing, O. B. Morse...... 147,678

Spool box, B. F. Carpenter..... 147.60 Stair hand rails, joint for, W. Leduc...... 147,659 Stamps, canceling, Goff & Hursy..... 147,630 Telegraph, duplex, G. D'Infreville...... 147,487 Telegraph, duplex, J. B. Stearns...... 147,524 Tobacco cutting machine, J. F. Kelley..... 147,562 

 Toy and constic, G. W. Brown
 147,475

 Toy dancer, automatic, W. Brown
 147,475

 Toy dancer, automatic, W. L. Hubbell
 147,575

 Toy iocomotive, E. C. Phelps
 147,721

 Tubes, pile for rolled, E. Wheeler
 147,721

 Umbrella, Hurrison & Pearson
 147,626

 Valve seats, refitting, W. W. Allmand...... 147,586 Valve, steam engine, J. D. Bown...... 147,736 147,468 Water closet for vessels, A. B. Sands...... 147,575 Water closet regulator, J. Marquis...... 147,510 Windmill, M. J. Kauffmann..... 147,687 Window screen, A. L. Fuller..... 147,494 ing earfor .**Y**. 88. y. . Y. lty. Pa Ε. n**n**. .Pa nes ,Pa 10 25115 120 810 820 830 850 150 810 \$10 115 830

part of the horse's leg does contracted hoof operate, t make the horse lame?-W.H. G. asks: Can you giv me directions for the treatment of green moss, to propare it as an article of commerce? There are two diff ent processes, one in which the moss is soaked in wate until it is sufficiently rotted, and another in which th result is secured by the use of chemicals.-L. F. S.ask How did B. N. C. (see yourissue of January 24) arrang his pulley to carry power from the drum on main line his lathe? How was the pulley thrown out of gean Could such a friction gear carry as much as 25 hors power?

## COMMUNICATIONS RECEIVED.

The Editor of the SCIENTIFIC AMERICAN acknowledges, with much pleasure, the receipt of original papers and contribution upon the following subjects:

On East Tennessee Industries. By H. E. C. On the Centralization of Matter. By J. P On a Steam Buggy. By F. G. W. On Poisonous Aniline Dyes. By J. E. On Ventilation. By G. N.