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STERS SPONDENTS 2

F. R. will find directions for repairing rub-ber boots on p. 155, vol. 26.—V. E. H. will find the aquari-um cement described on p. 202, vol. 28, a good one.— J. H. D. should read the directions for tempering drills on p. 186, vol. 26.—F. G. V. will find the description of a storm glass on pp. 123 and 234, vol, 29.—D. H. T. should we the directions for French putty on p. 53, vol. 27.W. L. C. C.'s query as to a tug and sailing ship was answered on p. 96, vol. 29.-L. D. is right: D. N. is wrong.
-G. W. B. will find a recipe for dyeing black on p. 10, vol. 27.-R. B. should use balloon varnish, as described on p. 136, vol. 28.-W. H. R. should see p. 368, vol. 26, for parchment paperrecipe.-Mrs. J. B. K. should use Paris green according to the directions on p. 413, vol. 26.-G. J. B. D. and W. A. R. can blue small steel articles by the process described on p. 107, vol. 26.—B. can stop the on p. 340, vol. 25. See p. 332, vol. 29, for rat poison. -M. can make fusible metalby the recipe given on p vol. 27, (for meerschaum) for repairing his broken coral. -G. C. will find the directions for tempering mill picks on p. 170, vol. 25.-W. B. R.'s proposed combined rock ing chair and cradle is an old idea. See p. 70, vol. 23, J. C. C. can coat gray iron castings with zinc by the pro-cess described on p. 59, vol. 24, -G. H. E. T. is informed that we published on p. 289, vol. 29, all the informa-tion that we possess concerning Abbé Fiehel's battery. -J. A. DeM. can temper springs by the process described on p. 314, vol. 28.

C. M. A. says: I have lately set up a Ger-man study lamp. The fiame, instead of being a remark-ably steady one. as I supposed it would be, fickers and sputters a good deal, except when turned down very low. Can you inform me as to the cause, and suggest a remedy? Answer: We think it quite probable that you have not a proper chimney. We have often experi-enced a trouble similar to your own from this cause.

E. G. A. asks: 1. Can carbonic acid be liq-uified; if so, how? 2. Can the carbon be separated from the oxygen by electricity? Answers: 1. Carbonic acid can be liquefied by applying a pressure of about 420 lbs. persquare inch. It is decomposed by plants, but the manner in which this takes place is not known

R. L. H. asks: 1. Is there such a material as nickel steel? If so, for what purpose is it used and where is it made? 2. Are not the nickel mines in Pennsylvania the only ones in the United States? 3. Is nickel employed in the manufacture of ware of any kind, exceptfor the purpose of plating? Answers: 1. We think not. 2. We believe they are. 3. Its principal use, besides as a material for plating, is in the manufacture of German silver.

S. S. K.—At the equinoxes, the sun rises and sets at 6 o'clock. The sun requires 22 minutes and 23 seconds longer to return to the same star than he does to return to the same equinox.

M. G. C. says: In graduating a safety value lever, the rule is that the length of the fever divided by thedistance from the fulcrum to the weight, multiplied by the weight of the ball in pounds, gives the pressure at the valve that the ball will counterbalance. The formu-

la is $\frac{Pp}{w} = W$. But I wish to know how the weight of the

lever acts, and if it cannot be introduced in the above equation. Must not the weight of the valve and pin be taken into consideration? If so, how? Answer: In all correct formulas relating to safety valves, the weights of all the parts are considered. See Box's formula on p. 363, vol. 29.

H. T. asks: Can I make a boiler, for an en gine of about 1/2 horse power, of cast iron, and would 3/2 inch be thick enough to stand501bs. pressure? Answer It would probably be better to make it at least % of an inch in thickness. You might get a section, sufficient for your purpose, from some manufacturer of cast iron boilers, or you might arrange a few shells with suitable connections.

D. R. B.—You can probably carry out your plan by arranging proper connections and mouth pleces.

C. O. asks: Why is it that, of two locomo-tive engines, one having a small driver and the other a large one, the weight or traction being the same and the length of stroke the same in each, the one with a small driver will draw the most load? And will the same explanation apply to ascending heavy grades? Answer: It is on account of the difference in the throw of the crank and the radius of the driving wheel; so that the tractive force, other things being equal, is greater in the case of the small driver.

J. M. E. asks: 1. Are any of the processes the New York Artificial Butter Company covered by patents? 2. Does the suet in the process of warming come in contact with the colled tube in the tank? 3. Is the butter fit for the market as soon as manufactured? 4. Is it possible to get a detailed description of the ma-chinery and the workings of the concern? 5. Would the company object to an examination of their factory, and the working in the different departments thereof? Answers: 1. We do not believe that there are any particular secrets connected with this manufacture, that ordi-nary skill in manipulation cannot overcome. We understand that the manufacture as described is patented. 2. Live steam is admitted into the suet at the bottom of the tank. 3. The butter is fit for the market as soon a made. 4. Amore detailed description would probably be found in the specification of the patents. We would advise you to communicate directly with the company for information as to machinery, and the working of the process if our description is not detailed enough for your purpose. 5. We think the company would decidedly object to any examination of their factory unless by disinterested parties, or those intending to work under their patents.

F. C. asks: 1. How can I make a white por celain (or something resembling it) not over one six teenth of an inch in thickness, capable of being molded in plaster of Paris molds? 2. The books on astronomy tell vs that the tides, or rather the tidal wave, lags behind the moon. How is it that every time we have a full moon in the year 1872, the high tide (as the almanac informs us) comes between 11 and 12 o'clock? Answers: 1. Use hot cast porcelain, a glass made from Greenland cryolite. It may be had of any dealer in photographic materials, and may be pressed and annealed. 2. The highest point of the tide wave is usually 46°, or three hours east of the moon, and about 50 minutes later each day. In a landlocked estuary, as at the port of New York, it is not usually high tide until 8 or 9 hours after the moon has passed the meridian.

J. L. G. says: I have lately seen a new kind of wheat, imported from Africa, which, it is claimed, will produce a yield of more than one hundred thousand fold from the seed, or at least six hundred bushels per acre. A gentleman received one grain of this wheat and grew one stock, which yielded fully one half gallon of perfectly clean pure wheat. Is this a humbug? Answer: It would be impossible to give an opinion on the value of this wheat, from the small sample sent, without an expensive analysis. It may be that the plant has all the good qualities that are claimed for it, and still will be of little value. It frequently happens that imported seeds give great first yields, while the second crop is very small, because the plant cannot adapt itself to the change of climate.

W. M. asks: How can a mechanic construct a cheap telescope powerful enough to show Jupiter's moons, Saturn's belts, etc.? Answer: The difficulty and expense of making a powerful telescope lies in the glasses, which must be perfectly ground and free from flaws. We fear it will be some time before useful astro-nomical telescopes will be accessible to persons of small means.

G. M. R. asks for a rule for calculating the power required to lift 1,000lbs. with a differential pulley, and forcalculating the weight required to support 1,000 lbs. suspendedfrom a horizontal cord running over a pulley. Answers: Disregarding friction and rigidity of cordage, the power required in either case equals the ley. weight multitiplied by the distance that it is raised, and divided by the distance that the power moves in raising the weight.

O. asks: Is there no law in regard to in-competent engineers? We have a small pleasure boat which is managed by a boy about sixteen years of age. Now that boy maybe a genius; but it does not seem right to see the lives of from ten to thirty persons placed in the hands of a youth who is not fully competent to conto the immense power of a steam boller. If there is no law to keep such children out of the engine room, there ought to be, and it should be enforced. Answer: Most States have local laws relating to the use of steam boilers, and there is a United States law in reference to ocean and river steamers. Either the laws or the man-nerin which they are enforced seem to be defective, so that improper persons are often placed in charge of steam machinery. We have frequently called attention to the matter, and are always glad to receive communiations giving details of neglect or mismanagement.

M. C. says: 1. I had charge of a canal boat boat, of which the engine was an upright, with link motion, and connected directly to the main shaft. We never could get her to exhaust properly. On the lower center she would exhaust very shortly and quickly, and on the upper surface very slowly and laboriously. The valve was all right, and had just as much leadon one end as on the other. 2. Our boller was an upright tubular, 12 feet by 36 inches shell; furnace within the boiler. It had a very good draft, but for all that we could not make steam enough at times. The chimney was connected directly to the upper end of the boller, and the exhaust steam passed through it. What was the trouble in these cases? Answers: 1. We think you must be mistaken with regard to the valve being set similarly at the two ends of the stroke. Even if the valve has the same steam lead on each end, it by no means follows that the exaust lap and lead are the same, 2. We suppose that the boiler was too small.

F. E. H. asks: How can the perspiration tains be removed from light kid gloves? Answer: Where the coloring matter of dyed gloves has been af fected, we know of no method of renewal except re-dye ing. Where benzine fails to remove the dirt, you can try the following French invention: Curd soap (in small shavings) 1 part, water 3 parts; mix with heat and stir in essence of citron 1 part. The glove is stretched on wooden hand of appropriate size and the compound rubbedover the glove (with a piece of flannel.always in one direction) until it is sufficiently clean.

J. E. G. says: I have a door opening toward the east; twice a year the sun shines through the key hole and strikes the wall on the opposite side of the room, making a spot about the size of a quarter of a dollar. It appears an hour after sunrise for a few days only I think in June and November. Will the spot be seen in exactly the same place in spring as in fall? Can you give the time in spring if the time in fall is November 10 7.15 A. M.? Answer: To solve this problem, we find the right ascension and decl'nation of the sun at the time given, namely, November 10. Sixmonthsfrom this time the earth will have accomplished half a revolution, or thesun have moved apparently through 180° of longi tude. The sun at this time, though in an opposite quarspect to the aperture, relatively as at first. This time will be in the following spring on May 8, a few minutes later, in the morning. The time by the clock being 15 minutes after 7 o'clock, November 10, add the equation of time (orthedifference between solar and true clock time), 3 m. 42 s., making the time at which the phenome non will take place in the spring 18 m. 42 s. after 7 A. M. The right ascension and declination of the sun not varying greatly each day, the spot will probably be seen in about the same place for a few; days

R. R. R. asks: Can you give me a conveni-ent formula for finding the elevation of a place above the level of the sea by means of a harometer? Answer For the convenient calculation of hights from barome tical observations, it is necessary to have tables, if great accuracy is required, as the reductions are quite tedious Below is given an approximate formula. Difference of level = $60360 \times$ [(logarithm of barometrical reading at ower station — logarithm of barometrical reading at upper station) - 0.000044 imes (reading of lower attached thermometer - reading of upper attached thermometer)] \times [1 + (reading of lower detached thermometer + reading of upper detached thermometer -64) ÷ 986]. Example: The following observations were taken by Professor Guyot, in 1851, to determine the hight of Mount Washington :

Difference of level = $60360 \times [1.4664524 - 1.3807538 0.000044 \times (707 - 5452)] \times [1 + (72.05 + 5054 - 64) + 986] = 5484.15$ feet. Calculated by Laplace's formula, the

difference of level, as given by these observations, is 5465[,]39 feet

H. J. L. says: I have about 1,000 tuns coal piled up in a yard so as to be exposed both to heat and cold. About two weeks after it was put in yard, it commenced smoking in two places, some 10 feet apart. I could smell sulphur, and the smoke was very light. It was on a very rainy day. After digging down in the places where the smoke came from, the coal did not appear heated, and in a few hours stopped smoking. What was the cause of this? Will coal piled in this way in the open air, without any protection, heat enough to cause spontaneous combustion? Answer: We do not think that this was a case of spontaneous combustion. The rain soaking into the pile, and becoming heated, was probably vaporized, and we have an idea that you saw vaporinstead of smoke.

J. R. R. asks: Will a glass journal and an ironahafteut or wear to any great extent when run up to a speed of 300 revolutions per minute? Answer: We think not, if the bearing is properly lubricated.

G. E. W. asks: 1. How many feet per mile does the line marking the earth's periphery fall down? 2. Upon the ocean two ships are coursing, each toward the other. Fifty feet up in the rigging of each, a man is situated. One man is making, with the naked eye, observations upon his neighbor's surroundings. The other is viewing his neighbor's accompaniments through a glass of twenty degrees of space-penetrating power. Can the unaided eye catch sight of the small upper portion of the rigging, before it can of the larger hull approaching? 3. Can the eye with the lens, at the same time, see any farther down the ship which moves in its direction? Has the assisted organ descried its object before the other has its object? If so, is the interval of time in proportion to the difference in visual capacity? Answers: The following table, giving average depression of a level surface on the earth, will probably serve as a sufficient answer to all your questions.

Distance	Depression	Distance	Depression
in yards.	in feet.	in miles.	in feet.
100	$0\ 00215$	1	0.667
200	0.00861	$\overline{2}$	2.669
300	0.01938	3	6 06
400	0.03445	4	10.677
500	0.02383	5	16.683
600	0.0222	6	24 024
700	0.10551	7	32 609
800	0.13781	8	42.799
900	0 17441	9	54 054
1000	0.512.3	10	66 733
1100	0.26055	11	80 747
1209	0.31008	12	96 095
1200	0 36390	13	112.779
1400	0.42202	14	130.796
1500	0.48449	15	150 150
1600	0 55124	16	170.836

G. L. W. asks: 1. Would a steam cylinder of 8 inches diameter by 2 feet stroke, connected to an airpump, furnish motive power (the air to be worked in a cylinder of increased dimensions) equal to or superior to a steam cylinder supplying the air? 2. Woold the power be increased if the compressed air were heat-ed before entering the air engine? 3. Would such an ar rangement be feasible, and has anything of the kin dever been used? Answers: 1. The power furnished by the air would generally be less than that required to compressit. 2. There would be a gain by heating the air. But usually the heat developed by compression is so great that the sir requires to be cooled to avoid burning out the working parts of the air cylinder. 3. Air com-pressors, for use in mines and tunnels, are quite common.

J. H. asks: 1. How can I prevent a survey-or's transit from becoming wet when taken down in a mine, where the temperature is from 15° to 30° warmer than on the surface? It takes me a considerable time. wiping and drying the lenses, before I can see through them. Will it hurt them and the cross hairs to have them wet so often? 2. Is the diurnal variation of the needle the same underground as on the surface? An swers: 1. Perhaps if you dry the instrument thorough ly and warm it slightly, before taking it down, you will no longer experience the trouble. 2. We do not know of any observations on this subject. You could readily determine the matter by experiment.

N. S. says: I'am constructing a glass spec-ulum on the following plan: The curvatures of the con-cave and convex surfaces are unequal; so that the rays of lightreflected from the concave surface (as no glass transmits all the rays of light) may come to a focus be fore those reflected from the convex surface come to focus. The object in thus constructing the speculum is to destroy the secondary image formed by the rays of light reflected from the concave surface. For if the curvatures of the speculum be equal, the images reflected (one from the exterior and the other from the interior surface) will appear near each other, and thus pre vent distinct vision. The diameter of the speculum is 10 inches. The focal length of the convex surface is five feet, while the focal length of the concave surface s four feet. 1. Is the above plan a correct one? 2. How high a magnifying power will the above speculum bear for astronomical purposes? 3. What should be the diameter of an eve glass % of an inch in focel length? 4. What should be the diameter and focal length of the object glass, to a microscope magnifying 400 diameters; also what should be the diameter and focal length of the eye glass? 5. Is there any work published on the construction of optical instruments? Answers: 1. We think your idea is original, but such construction is not necessary, as a glass speculum is ordinarily silvered on the concave surface. There is a good essay upon the relative merits of metallic and glass specula in the Philosophical Transactions for 1869. We could not answer your other enquiries satisfactorily in our limited space, and would advise you to read up some treatise on the construction of optical instruments. We can recommend the works on physics by Silliman, Ganot and Deschanel,

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W. F. C. asks: How can I ascertain the horse power of a steam engine? Answer: Multiply the area of the piston in square inches by the mean effective ressure of steam per square inchduring the stroke, also by twice the length of the stroke in feet, and by the number of revolutionsper minute, and divide the pro duct by 33,000.

C.F.S. asks: 1, How can I melt iron in quantities of not more than a pound? 2. What should f make a crucible of? 3. Would clay do for molds? Should I have a small bellows? 4. Would charcoal do for fuel? 5. At what temperature Fahrenheit does iron melt? 6. Also copper? Answers: 1. Probably you can do it in a common blacksmith's fire. 2. Plumbago cru cibles will be the best. 3. Yes. For fine castings you may do better with plaster of Paris. 4. Yes, but blacksmith's coal would probably be better. 5,6. Cast iron melts at about 2,800° Fah. copper at about 1,950°.

C. E. H. says: How can I construct a simple form of superheater to place in the furnace or the stack? Answer: Probably the cheapest mode of construction will be with short pieces of pipe and elbows Secure it with rods in any desired position, and make a connection with the steam space of the boiler.

A. C. asks: What is the meaning of the word crith, in chemistry? Abswer: In referring the specific gravity of a solid body to hydrogen, its value is first reduced to the water standard and then multiplied by 0.0000896 grammes (if the volume of the body be in cubic centimeters), which is the specific gravity of hydrogen referred to water. In order to avoid this long fraction, Hoffman introduced into chemistry the unit crith: which is the weight of 1 cubic decimeter or liter (1.76138 pints) of hydrogen at the standard temperature and pressure.



B. says: I have lots of boiled bones and an-imal matter, and I think of employing them in making fertilizers. How can I make superphosphates, bone dust and bone manure? What other material shall 1 mix with the bones, and what kind of a mill is used for crushing and grinding the stuff? Answer: Your best plan is to grind the bones and mix the bone dust with ashes or ordinary manure. This forms an excellent fertilizer. There are many mills in the marketforgrinding and crushing, and an advertisementfor the mill younced would probably bring you the information.

W. P. B. says, in reply to a correspondent who complains of a gummy substance which exudes from his boots: It is not the wax from the thread, but comesfrom poor oil used in finishing the leather. Cod oil (the proper article) was so scarce a few years since that other oils, particularly menhaden or porgy, were used instead of and to adulterate it, so that it became almost impossible to get a true cod oil. I have seen hundreds of sides of leather stuck together in the roll so as to need two men to separate them. It has now become possible to get good oil, and there is little dan-ger of gum on leather from any responsible tanner.

F. N. says, in reply to G. W. C., that the largest wheeled locomotive would reach the foot of the hill first, for she would have the advantage of the other both in gravity and friction.

L. S. F. says: Let S. M. S. kill his roaches by making a mixture of Paris green and flour in equal parts. Then pour enough water upon the floor, in the place which the roach frequents, to form a little puddle, and form a circle of the mixture around it. They will run over it to drink, and thus bedaub their legs with the poison. In making their toilets, they lick their legs, and so eat the poison, which so on despatches them.

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

M. W. H.-Your specimens are particles of galena dis seminated in sand.

W. A. D.-Blende, sulphide of zinc.

E. A. W.-Grains of quartz.

G. O. H.-It is an alloy of copper, but a chemical analysis will be necessary to determine the constituents. L.S.--No.1 is bituminous shale. No. 2 resembles oxide

of iron. E. E.-Galena (sulphide of lead) in limestone.

R. C.-Your mineral is crystallized sulphate of lime known to mineralogists as selenite.

P. S.-Nos. 1 and 2 are iron pyrites. No. 3 is galena, No. 4 resembles oxide of iron in quartz.

C. H. C.—Carbonate of lime. Dilute hydrochloric acid will rapidly dissolve it, and will not materially injure iron pipes, if not kept too long in contact with the metal.

W. K.-Barvtes, sulphate of barvta.

J. H. S.-Sandstone.

R. F. S.-1. Blende. 2. Blende with barytes. 3 and 4. Blende (sulphide of zinc). 5. Arragonite, a form of car-bonate of lime. 6. Quartz and oxide of iron. Read Dana's "Mineralogy."

W. C. B. asks: What is the best varnish to use on a water color drawing, that will not blotch or crack off afterwards?-T. F. asks: If the sum of two squares be given, can science determine the two partic ular squares which compose the sum?-F. C. says: We put up fruit in airtight jars, and never put a jar away until we had taken off the iron clamp and found that the jars were tight enough to be lifted up by the cover. Not-withstanding this, three of the jars burst. As they white standing this, there of the jars offset. As the were airtight, how could they ferment?—F. A. asks for a remedy for a feversore, which breaks out on the slight-est exertion.—J.~C. H. asks for a cheap indelible color-ing matter, or paint, which could be used with a brush in marking the horns of cattle.—H. B. asks: How can I T. B. J. asks: What is the composition of the ink used on hand stamps and for saturating ribbon for ribbon stamps?-J. E. E. says: In a suit now in the San Francisco courts, against a sea captain for alleged cruelty to a seaman, it is shown by the witnesses that it is a com-mon practice on shipboard to hang sailors up by the wrists as a punishment. Will some one scientifically explain the physical effect of this punishment upon the system ?- J. A. McK. asks: What two metals, gases, or other substances are the most subject to expansion and contraction by heat and cold?—S. S. R. asks : Can you inform me what variation occurs in the time of sunrise and sunset on the same day of the same month, in the same place, but in different years?

COMMUNICATIONS RECEIVED.

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

On the Coal 'Tar Interest. By H. C. F. On Treatment of Cancer. By O. W. B. On a Cheap Fertilizer. By G. W. B. On Mysterious Boiler Explosions, etc. By

On Fireless Engines. By I. P.

Jr.

Als

el. By C. C.

Scientific American. [OFFICIAL.] of Inventions Index FOR WHICH Letters Patent of the United States WERE GRANTED FOR THE WEEK ENDING

November 11, 1873, AND EACH BEARING THAT DATE.

[Those marked (r) are reissued patents.]

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5	APPLICATIONS FOR EXTENSION	NS
-		

Applications have been dulyfiled and are now pending for the extension of the following Letters Patent. Hearings upon the respective applications are appointed for the days hereinafter mentioned: 27,094.—CARTRID ME MACHINE CASE.—E. Allen. Jan. 28. 27,185,—SUGAR CUTTER.—C. Kinzler et al. Jan. 28. 27,139.—HANGING RUDDER.—J. P. Manton et al. Jan. 28. 27,179.— RKING GAGE.—C. D. Wheeler. Jan. 28.

EXTENSIONS GRAN'TED, RN PLANTER.-E. C. Allen. 26.00 26,028,- MANUFACTURE OF GAS.-L. D. Gale. 26,056 - MANUFACTURE OF GAS.-L. D. Gale. 26,060.- MARINE BOX JOINTS.-J. Simpson. 26,090.- YAPER FOLDINE MACHINE.-C. Chambers, Jr. 144,585 26,097.-ELECTROMANNETIC TELEGRAPH.-M. G. Farmer.

[DECEMBER 13, 1873.

.854 Ongranting the Extension..... VALDE OF PATENTS, And How to Obtain Them. Practical Hints to Inventors. ROBABLY no investment of a small sum

of money brings a greater return than the expense incurred in obtaining a patent, even when the invention is but asmallone. Large inventions are found to pay correspondingly well. The names of Blanchard, Morse, Bigelow, Colt, Ericsson, Howe, McCormick, Hoe and others, who have amassed immense for tunes from their inventions, are well known. And there are thousands of others who have ${\bf realized}$ large sums from their patents.

More than FIFTY THOUSAND inventors have availed themselves of the services of MUNN & Co. during the TWENTY-SIX years they have acted as solicitors and Publishers of the SCIENTIFIC AMERICAN. They stand at the head in this class of business; and their large corps of assistants, mostly selected from the ranks of the Patent Office : men capable of rendering the best service to the inventor, from the experience pracucally obtained while examiners in the Patent Office: enables MUNN & Co. to do everything appertaining to patents BETTER and CHEAPER than any other reliable agency.

HOW TO PATENTS OBTAIN

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This is the closing inquiry in nearly eve-

144,470 ry letter, describing some invention which comes to this 144,451 office. A positive answer can only be had by presenting 144,528 a complete application for a patent to the Commissioner 144,522 of Patents. An application consists of a Model, Draw-ings, Petition, Oath, and full Specification. Various 144.383 144,482 officialrules and formalities must also be observed. The 144,480 efforts of the inventor to do all this business himself are 144,395 generally without success. After great perplexity and delay, he is usually glad to seek the aid of persons expe-144,466 144,574 rienced in patent business, and have all the work done over again. The best plan is to solicit proper advice at 5,650 144.488 the beginning. If the parties consulted are honorable men, the inventor may safely confide his ideas to them: 144,481 144,499 they will advise whether the improvement is probably 144.401 144,582 patentable, and will give him all the directions needful to protect his rights. 144.491

144,398 How Can I Best Secure My Invention? 144,441 This is an inquiry which one inventor naturally asks 144,461 another, who has had some experience in obtaining pat-ents. His answer generally is as follows, and correct : 144,469

144,424 Construct a neat model, not over a foot in any dimen-sion-smaller if possible-and send by express, prepaid, 144,418 144.585 addressed to MUNN & Co., 37 Park Row, together with a description of its operation and merits. On receipt 144,411 144,497 144,558 thereof, they will examine the invention carefully, and advise you as to its patentability, free of charge. Or, if 144,420 you have not time, or the means at hand, to construct a model, make as good a pen and ink sketch of the im-144,503 144,525 provement as possible and send by mail. An answer as 144,449 to the prospect of a patent will be received, usually, by 144,571 return of mail. It is sometimes best to have a search made at the Patent Office; such a measure often saves the cost of an application for a patent. 144,450 144,458

Preliminary Examination. In order to have such search, make out a written de-144,551 144,418 scription of the invention, in your own words, and a pencil, or pen and ink, sketch. Send these, with the fee 5 658 144.448 of \$5, by mail, addressed to MUNN & Co., 37 Park Row, and in due time you will receive an acknowledgment 144,429 144,492 thereof, followed by a written report in regard to the patentability of your improvement. This special search 144,426 is made with great care, among the models and patents 144,547 144,498 at Washington, to ascertain whether the improvement presented is patentable. 5,654

> To Make an Application for a Patent, The applicant for a patent should furnish a model of his invention if susceptible of one, although sometimes itmaybe dispensed with; or, if the invention be a chem-ical production, he must furnish samples of the ingredients of which his composition consists. These should

> be securely packed, the inventor's name marked on them, and sent by express, prepaid. Small models, from a dis tance, can otten be sent cheaper by mail. The safest way to remit money is by a draft, or postal order, on New York, payable to theorder of MUNN & Co. Persons who live in remote parts of the country can usually purchase drafts from their merchants on their New York correspondents.

Foreign Patents.

The population of Great Britain is \$1.000.000: of France. 87,000,000; Belgium, 5,000,000; Austria, 36,000,000; Prussia, 40,000,000, and Russia, 70,000,000. Patents may be secured by American citizens in all of these countries. Now is the time, when business is dull at home, to take advantage of these immense foreign fields. Mechanical improvements never be a better time than the present to take patents abroad. We have reliable business connections with the principal capitals of Europe. A large share of all the natents secured in foreign countries by Americans are obtained through our Agency. Address MUNN & Co., 37 Park Row, New York. Circulars with full information on foreign patents, furnished free.

On the Science of Iron and Steel, By C. C.	Gage. alarm. etc., electrical. C. Heisler	96 195 - PORTARIE PENE W T. VORG
Jr.	Gas, making hydrogen, W. L. Imlay	26,135.—I ONTABLE I UMP.— W. I. VOSC.
	Gas retorts, etc., charging, W. Foulis, 144,526	20,130.—MODE OF ADVERTISING.—E. WIEDE.
On Railway Religion. By J. E. E.	Gas seal etc. R. M. Caffall 144 504	26,189.—PUMP.—W. Wright.
Also enquiries from the following :	Gas works by-pass. P. Munzinger 144,408	26,145WATER CLOSET COCKD. Wellington.
	Generator, vapor, W. Wells 144,581	
DWW ODU FD IF FOM IMO	Grain cleaner, W. Houghton	DESIGNS PATENTED.
D. W. WS. B. HF. DJ. FE. C. MJ. M. S. Jr _F. N	Grain conveying apparatus, H. G. Yates 144,589	6,987DRINKING GLASSES, ETCT. G. Cook, Phila., Pa.
	Grain weigher, automatic, J. W. Hill 144,541	6,988COLLARETTEA. S. Ellison, New York city.
Correspondents in different parts of the country ask :	Grave mound cover. B. Hunter	6,989 & 6,990PRINTING TYPEH. Ilenburg, N. Y. city.
Who makes a carpet stretcher with a magnet in it to	Harvester finger. A. Hughes 144,457	6,991 to 6,994OIL CLOTHSH. Kagy, Philadelphia, Pa.
noid the tacks? who makes coal-cutting machinery?	Hatchway guard, Berry & Pingree	6.995PICTURE FRAMESJ. Nonnenbacher, N.Y. city.
who makes pea shellers? Who makes the best steam	Head block, P. M. Cummings 144,388	
washing machinery? Who makes plaster fuses? Who	Heater car J H Weihel. 144 425	TRADE MARKS REGISTERED
makes transplanters? Who sells horse power potato	Heater steam W M Fuller 144 597	IRADE MARKS REGISTERED.
diggers? Whosells machines for pearlingbarley? Who	Heating and illuminating I. Ruel 144 414	1,522.—GOLD PENS.—C. M. Fisher, New York city.
makes small lithographic presses for a mateuruse? Who	Heating drum O. D. Prolding 144 579	1,523-CLOTHES WRINGERHaley & Co., Boston, Mass.
makes small steam engines for running jig saws, etc.?	Heating urum, O. D. Spatning	1,524.—ICE.—Knickerbocker Ice Co., New York city.
Where can apparatusf or burning petroleum be obtained?	Horseshoe, U. Shyder	1,525.—THERMOMETER TUBES.—Dental Mfg.Co.,Buff.N.Y.
Who makes diamond drills? Makers of the above arti-	Hose rest, garden, C. Kyder 144,415	1,526WATCHESNational Watch Co., Flgin, Ill.
cles will probably promote their interests by adver-	100 making, etc., A. H. Tait 144,577	·-····
tising, in reply, in the SCIENTIFIC AMERICAN.	Iron, etc. with alloys, coating, C. Marshall 144,403	SCHEDULE OF PATENT FEES.
	Jewel case, C. Beck 144,431	On each Caveat
Correspondents who write to ask the address of certain	Kaleidoscope, C. G. Bush, (r) 5,649	On each Trade Mark\$25
manufacturers, or where specified articles are to be had,	Key board instrument cap, J. P. Lord 144,399	On filing each application for a Patent (17 years)\$15
also those having goods for sale, or who want to find	Kiln, lime, L. Montgomery 144,555	On issuing each original Patent
partners, should send with their communications an	Lantern, signal, S. H. Miller 144,554	On appeal to Examiners-in-Chief
amountsufficient to cover the cost of publication under	Lawn seat, H. H. Gratz 144,538	On appeal to Commissioner of Patents
the head of "Business and Personal" Which is specially	Leather, tanning, R. Blake 144,500	On aunification for Reissue
devoted to such enquiries.	Leather, treating tanned, B. H. Lightfoot (r) 5,652	On application for Extension of Patent

Caveats,

Persons desiring to file a caveat can have the papers prepared in the shortest time, by sending a sketch and description of the invention. The Government fee for a caveat is \$10. A pamphlet of advice regarding applications for patents and caveats is furnished gratis, on application by mail. Address MUNN & Co. 37 Park Row, New York

Value of Extended Patents.

Did patentees realize the fact that their inventions are likely to be more productive of profit during the seven years of extension than the first full term for which their patents were granted, we think more wouldavail themselves of the extension privilege. Patents granted prior **S25** to 1881 may be extended for seven years, for the benefit **S15** of the inventor, or of his heirs in case of the decease of fomer, by due application to the Patent Office, ninety time inures to the benefit of the inventor, the assignees