- V. R. H. asks: How can I make india rubervious to kerosene oil? Answer: You cannot pra-kerosene attacking india rubber where it comes in ct contact with it. Still good rubber, well vulcan-, ought to last long enough to make its renewal at rvals not very expensive.
- l. A. H. asks: Is nickel plating a success general thing, and can zinc be successfully plated nickel? Answer: Nickel plating is a success, but e 14 no known method of plating zinc. The acid used is an obstacle, the acids attacking the zinc at
- P. G. asks if the dry heat of the Turkish is less penetrating than moist heat. Answer: The an body can withstand for some time a heat far e that of the Turkish bath, 220° Fahr., 11 the medium ιat of hot dry air. The rapid evaporation from the ιce of the body prevents the internal heating of the 1. If the air be moist, however, or the medium of be steam, a temperature considerably below 212° would be sufficient to, in a short time, effectually
- . F. A. asks: 1. How can I melt old compo-a printers' rollers, so as to pour into molds for cast-daster in? 2. What are the exact proportions of ngredients used in making the composition rollers in use? 3. Can you inform me how the composition by decorators for looking glass frames, etc., is ? Answers: 1. You can melt composition rollers acing them in a vessel surrounded tyboiling water, the ordinary glue pot. When melted, you can pour o molds. 2. Dissolve, in two pounds of molasses a) at heat not above that of boiling water, one dof good glue, previously soaked over night in vater. 3. Decorators use for gilding, what isknown nosaic gold", a bisulphuret of tin. This is mixed varnish and applied to wood.
- . S. B. asks how to recover diamonds from obres of a fire. Answer: You can get rid of plaster me, or any substance that will remain for a length ne suspended in water, by the following means: de a large tank, fitted with a stirrer at the bottom. stream of water enter the tank at the bottom; and the taik is full of water and the stirrer in motion, re debris in as fine powder as possible. Let a pipe off the surplus water at the top of the tank 'ay, with plenty of water, you can wash free fro.n
- E would like to know the rule for finde speed of shafts or pulleys. Suppose a 22inch pulmaking 420 revolutions perminate with a belt runna 10 inch one; what would be the number of itions of the small one? What is the rule for such Answer: The speeds of two pulleys, under such ustances, are inversely proportional to their diam-In the case men ioned, the speed of the smaller , if the belt did not slip, would be $420 \times 22 + 10 = 924$
- . H. D. asks: 1. Is an engine shop the lace in which to learn the maniferial trude? 2 what manufacture would you recommend? 3: lyou recommend me to work at what my mind sartis set upon, in preference to anything else? ers: 1. Probably a large machine shop would be or acquiring a general knowledge of the work, on at of the great variety of machinery constructed haplace. 2 We cannot recommend any particuablishment. Try and get in a shop where themen couraged by the owners to study and improve elves. 3. If you are so stitlated that you can fol-jur favorite pursuit, by all means do so. That is the greatest steps towards success in life.
- S. I. F. says: Can you refer me to any hat will tell me how to ascertain the exact power take to force water up 250 feet high, at the rate of tons per minute? Answer: See article on "Fric-Water in Pipes," on page 43 of our current vol-The power required in your case will be that used ng the water, and overcoming the resistance dae
- C. C. asks how to take off window glass luish appearance said to be caused by using creo nd sulphur. It makes its appearance while the going through the flattening process. Answer: uish appearance on your glassis probably caused to defect in its mode of manufacture. Too much would be apt to cause it. If only on the surface, eil with whiting and rub off with a linen cloth.
- R. C. asks: Will a railway head, cond to runa section of six cards, run a section of rds without alteration? Answer: It will probaaccessary to change the trough and gearing.
- O. S. says: I have a small sailing boat sh to convert it into a steamer. She is 22 feet id of 8 feet beam. What number of horsepower intto run her 12 or 15 miles an hour? What be thesize of wheels and what the length, width, mber of buckets? Answer: See & imensions pub-n Scientific American for May 10, 1873.
- . O says: We had a new engine cylin-in this spring, 14 by 24 inches, with circular valve w pattern. The supply pipe and governor are 3% In diameter, or about 10 inches area, and the steam is between the ports and cylinder are about 9% area, but the passages above the ports are only as area, and still the designer of the valve persists ig that the valve and passages are exactly right. 70 pounds of steam and run 96 revolutions per I claim that the steam is wire drawn, and that not obtain the full power of engine. Please say live is properly constructed. Answer: We think its are sufficiently large, and that the cylinder ave more area than is absolutely necessary to wire drawing.
- . I asks: What is the effective power by 24 inches cylinder stationary engine, running volutions per minute with \$0 pounds steam pressvoiler as shown by gage? By effective power, I he power that would be available for driving achinery after deducting that necessary to run ine itself. Answer: We could not answer this n otherwise than approximately without a pracst, but we think the engine would develope from horse power.
- E. says: The joint between the cylinder we jacket of my engine is badly eaten away, I am unable to make a tight joint with rubber I have tried red lead and iron borings, but it will it a short time. It appears to be eaten away by m or tallow. How can I make a joint that will Answer: You can probably make a permanent utting a groove and driving a rust joint; but it lifficult to break the connection if this is done. ish to make a joint that can be readily broken. parts filed off. If you think the tallow causes tle, trysome other lubricant: but we have an t, if you will get the joint perfectly tight, you e no farther trouble.

- J. H. H. says: I am using a horizontal cyl-inder boiler. 4 feet in diameter, 12 feet long, with mud drum across back end, 22 inches diameter. Said boiler drives a compound engine, working high pressure in up percylinder and condensing in lower. Feed water is taken from condenser for boiler. The inside of mud drum deteriorates by something eating holes in the surface, some of which are large enough to place theend of a finger in, and the bolts which protrude into drum from check valve, blow-off, etc., are eaten off. The boiler makes a moderate amount of scale which becomes mostly detached when about 1% inch thick. Pressure of steam 40 pounds. Please give your opinion as to the cause of this corrosion or deterioration of mud drum. An swer: We have known cases of this kind in which the trouble was caused by the lub icating material used in the cylinder, which passed into the condenser and thence into the boiler. We cannot say positively that the corrosion in your boiler occurs in this way, but it is
- T E C asks: How much resistance is re quired to stop an ordinary full steam car going at 30 miles an hour? 2. Which is the best patented steam ear brake, the cost of the same, and the cost of keeping it in running order? 3. In how short a space of times can a car running at the rate of 30 miles an hour be stopped by the best brake? Answeis: 1. The moving force of the car can be ascertained by multiplying its weight by the square of its velocity, in feet per second, and dividing by 64.4. Suppose a car, moving 30 miles an hour, weight 48,000 pounds. A speed of 30 miles an hour cor responds to 44 feet per second, and the power required to stop the car will be sufficient to raise $[48,000\times(44)^2]$ + 64-4-1,442,981 pounds one foot high. 2. With so many eompetitors for public favor, it would be out of place for us to name any one as the best. We advise you to correspond with the different manufacturers. 3. In about 10 seconds.
- A. W. I. says: I differ from J. E. E. in his reply to H. B., concerning the power required for differ ent sized circular saws. He says that "a saw just large enough to cut through a board will require less power than a saw larger, the number of teeth, speed and thickness being equal in each." Now I am running three saws, one 48 inches with 43 teeth, one 52 inches with 43 teeth, and one 64 inches with 56 teeth, all 8 gage in thickness; and I find the 64 inches saw will cut through a 12 or 14 inches cut with less power than either of the others. I differ with him concerning the saw with few teeth cutting the easiest, as my 52 inches saw with 42 teeth takesmore power than either of the others; and I run the same hook in the teeth, and file them all exactly altke. My engine is small and timber large, so that I have every facility for finding out which cuts with
- W. E. H. says, in reply to S. N. G., who asked for a recipe for crystal gold for dental uses: Take any gold, the purer the better, roll into thin ribbans and dissolve in aqua reg a, or 1 part mire acid and 3 parts hydrochloric acid, by measure. After action has ceased, pour off into a deep glass jar, leaving the silver alloy in form of a chloride. Dilute the clear solution of gold with an equal quantity of water, and slowly add a satu rated solution o protosulphate of iron in water, which precipitates the gold as a brown powder. Pour off the water, etc., wash the powder with several waters, dry it and amalgamate it with mercury to the consistency of thick cream. Wash out the oxide found during amaigamation with alcohol or salt water, and put the mixture into pure nitric acid, setting the dish into a hot sand bath. The acid dissolves the mercury, leaving the gold in form of a sponge, which wash with water and anneal ara red heat for half an hour to expel any traces of acid or mercury. The porosity will depend on the thickness of the amaigam. The softer the amaigam, the lighter the sponge. There are difficulties attending the process, owing to impurity of chemicals, mercury, etc., which are so great as to make it impracticable for an amateur to make the gold as cheaply as he can buy it in the market: but the above directions are reltable, as the wri er has made several lots from this formula.
- A. M. asks for a_{th} explanation of the word "penny" as used to describe the size of nails. Answer: In the early history of our country, all nails were wrought (forged by hand); our currency then was pounds, shillings, pence and farthings. Each sized nails were sold by so many pennies per hundred. The usual way was to ask for fourpenny nails, sixpenny, tenpenny, etc. Hence in mercantile circles, the sizes are designa ted by the price in pennies per hundred. When cut nails were introduced, the sizes were still designated by pennies; and this has been continued and in all probability will be, as long as nails are used .- J. E. E., of Pa.
- C. F B says: In filing hand saws, the majority of mechanics file toward the handle: that leaves the teeth with more bevel on the back side than on the front, which is caused by the taper of the file. A few persons file their saws towards the point, which gives more bevel to the front or cutting side of the teeth. I think that the back side of the teeth should he filed nearly square across; the saw will cut equally well and remain sharp much longer. The front side of the teeth should be beveled to suit the timber; soft wood requires more bevel than hard wood. Answer: The correspondent is perfecily correct in his idea of filing a hand saw, as it is only intended to cut one way.—J. E. E.

COMMUNICATIONS RECEIVED.

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

On Steam and Compressed Air. By-On Retrogression of the Sun. By J. A. B. On the Patent Right Question. By R. H. A., by M. J., by T. W., and by L. G. J.

On a New Motive Power. By H. P. J. On the Nebular Hypothesis. By E. H. P. On a Shocking Accident. By J. E. E. On the Case of Stearns, Hill, & Co. By J. F. On a Diagram of the Months. By E. B. W. On the Multiplex Telegraph. By J. T.

On Steam on the Canals. By S. W. H. Also enquiries from the following: F. J. H. Jr.-R. D. L.-P. A. M.-M. P. J.-Z. S.-P. R.

-Y. Z.-E. B.-J. L. McL.-P. A. S.-T. P. P. Correspondents who write to ask the address of certain manufacturers, or where specified articles are to be had also those having goods for sale, or who want to find partners, should send with their communications an amountsufficient to cover the cost of publication under

the head of "Business and Personal," Which is specially

devoted to such enquiries.

[OFFICIAL.]

of Inventions Index

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Stove gipe drum, A. W. Foote. Strap, shawl, F. H. Willis. Stump extractor, T. Herbig. Sugar, manufacture of, J. A. Morrell Telegraph, printing, G. M. Phelps Thrashing machine, R. H. Martindale. Top, spinning, J. Spencer Toy, R. G. Messinger Truck, F. H. Abeel Tuck marker, F. L. Tileston Twisting machine stop mechanism, A. J. Milstead Umbrella, C. C. Lusby. Valve, stop, G. W. Eddy Vehicle wheel, C. Anderegg. Vehicle wheel, J. Q. Bryer. Vessels, camel for raising sunken, H. H. Siebe Vest supporter, Martin & Mapes. Washing machine, J. Glines. Washing machine, H. C. Grover. Washing machine, W. R. Walton Watch, calendar, D. J. Mozart W. tch cases, spring jointfor, J. Gordon Watch, push top for, J. C. Dueber	140,996 141 (242 141,140 141,067 141,158 141,086 141,098 141,098 141,098 141,098 141,098 141,098 141,098 141,098 141,098 141,099 141,111 141,086 141,121 141,141 141,141 141,141 141,141 141,141 141,141 141,141 141,141 141,141 141,141 141,141 141,141 141,141 141,141 141,141 141,141 141,141 141,141 141,141
Stove gipe drum, A. W. Foote. Strap, shawl, F. H. Willis. Stump extractor, T. Herbig. Sugar, manufacture of, J. A. Morrell Telegraph, printing, G. M. Phelps Thrashing machine, R. H. Martindale. Top, spinning, J. Spencer Toy, R. G. Messinger Truck, F. H. Abeel Tuck marker, F. L. Tileston Twisting machine stop mechanism, A. J. Milstead Umbrella, C. C. Lusby. Valve, stop, G. W. Eddy Vehicle wheel, C. Anderegg. Vehicle wheel, J. Q. Bryer. Vessels, camel for raising sunken, H. H. Siebe Vest supporter, Martin & Mapes. Washing machine, J. Glines. Washing machine, H. C. Grover. Washing machine, W. R. Walton Watch, calendar, D. J. Mozart W. tch cases, spring jointfor, J. Gordon Watch, push top for, J. C. Dueber	140,996 141 (242 141,140 141,067 141,158 141,086 141,098 141,098 141,098 141,098 141,098 141,098 141,098 141,098 141,098 141,099 141,111 141,086 141,121 141,141 141,141 141,141 141,141 141,141 141,141 141,141 141,141 141,141 141,141 141,141 141,141 141,141 141,141 141,141 141,141 141,141 141,141 141,141
Stove gipe drum, A. W. Foote. Strap, shawl, F. H. Willis. Stump extractor, T. Herbig. Sugar, manufacture of, J. A. Morrell. Telegraph, printing, G. M. Phelps. Thrashing machine, R. H. Martindale. Top, spinning, J. Spencer. Toy, R. G. Messinger Truck, F. H. Abeel Tuck marker, F. L. Tileston Twisting machine stop mechanism, A. J.Milstead Umbrella, C. C. Lusby. Valve, stop, G. W. Eddy Vehicle wheel, C. Anderegg. Vehicle wheel, C. Anderegg. Vessels, camel for raising sunken, H. H. Siebe. Vest supporter, Martin & Mapes. Washing machine, J. Glines. Washing machine, J. Glines. Washing machine, W. R. Walton Watch, calendar, D. J. Mozart W. tch cases, spring jointfor, J. Gordon Watch, push top for, J. C. Dueber Water closet disinfecting, J. M. B. Baker.	140,994 141,024 141,141,040 141,076 141,076 141,086 141,086 141,086 141,086 141,086 141,086 141,086 141,086 141,086 141,086 141,086 141,161 141,041 141,161 141,041 141,041 141,041 141,041 141,041 141,041 141,041 141,041 141,041
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Stove gipe drum, A. W. Foote. Strap, shawl, F. H. Willis. Stump extractor, T. Herbig. Sugar, manufacture of, J. A. Morrell Telegraph, printing, G. M. Phelps Thrashing machine, R. H. Martindale Top, spinning, J. Spencer Toy, R. G. Messinger Truck, F. H. Abeel Tuck marker, F. L. Tileston Twisting machine stop mecbanism, A. J. Milstead Umbrella, C. C. Lusby. Valve, stop, G. W. Eddy Vehicle wheel, C. Anderegg Vehicle wheel, J. Q. Bryer. Vessels, camel for raising sunken, H. H. Siebe Vessels, camel for raising sunken, H. H. Siebe Vest supporter, Martin & Mapes. Washing machine, J. Glines Washing machine, W. R. Walton Watch, calendar, D. J. Mozart W. tch cases, spring jointfor, J. Gordon Watch, push top for, J. C. Dueber Water wheel, E. R. Percy. Weatter strip, F. Siering Well points, perforating drive, C. L. Travis.	140,999 141,024 141,141,141,067 141,152 141,152 141,152 141,099 141,099 141,099 141,099 141,099 141,091 141,01
Stove gipe drum, A. W. Foote. Strap, shawl, F. H. Willis. Stump extractor, T. Herbig. Sugar, manufacture of, J. A. Morrell. Telegraph, printing, G. M. Phelps. Thrashing machine, R. H. Martindale. Top, spinning, J. Spencer. Toy, R. G. Messinger Truck, F. H. Abeel Tuck marker, F. L. Tileston Twisting machine stop mechanism, A. J.Milstead Umbrella, C. C. Lusby. Valve, stop, G. W. Eddy Vehicle wheel, C. Anderegg. Vehicle wheel, C. Anderegg. Vessels, camel for raising sunken, H. H. Siebe. Vess supporter, Martin & Mapes. Washing machine, J. Glines. Washing machine, J. Glines. Washing machine, J. Glines. Washing machine, W. R. Walton Watch, calendar, D. J. Mozart W. tch cases, spring jointfor, J. Gordon Watch, push top for, J. C. Dueber Water closet disinfecting, J. M. B. Baker. Water wheel, E. R. Percy. Weather strip, F. Siering Well points, perforating drive, C. L. Travis. Windmill, C. A. Tayjor	140,996 141,124 141,141 141,141 141,158 141,059 141,158 141,059 141,158 141,158 141,158 141,158 141,168 141,168 141,168 141,168 141,168 141,168 141,168 141,168 141,168 141,168 141,168 141,168 141,168 141,168 141,168 141,168 141,168 141,168
Stove gipe drum, A. W. Foote. Strap, shawl, F. H. Willis. Stump extractor, T. Herbig. Sugar, manufacture of, J. A. Morrell Telegraph, printing, G. M. Phelps Thrashing machine, R. H. Martindale Top, spinning, J. Spencer Toy, R. G. Messinger Truck, F. H. Abeel Tuck marker, F. L. Tileston Twisting machine stop mecbanism, A. J. Milstead Umbrella, C. C. Lusby. Valve, stop, G. W. Eddy Vehicle wheel, C. Anderegg Vehicle wheel, J. Q. Bryer. Vessels, camel for raising sunken, H. H. Siebe Vessels, camel for raising sunken, H. H. Siebe Vest supporter, Martin & Mapes. Washing machine, J. Glines Washing machine, W. R. Walton Watch, calendar, D. J. Mozart W. tch cases, spring jointfor, J. Gordon Watch, push top for, J. C. Dueber Water wheel, E. R. Percy. Weatter strip, F. Siering Well points, perforating drive, C. L. Travis.	140,996 141,124 141,141 141,141 141,158 141,059 141,158 141,059 141,158 141,158 141,158 141,158 141,168 141,168 141,168 141,168 141,168 141,168 141,168 141,168 141,168 141,168 141,168 141,168 141,168 141,168 141,168 141,168 141,168 141,168
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Applications have been duly filed, and arenow pendingfor the extension of the following Letters Patent. Hearrgs upon the respective applications are appointed for the days hereinafter mentioned:

25,874.—Bronzing Machine.—G. H. Babcock. Oct. 8. 25 883.—Glass Coffin.—J. R. Caunon. Oct. 8. 25,978.—Tackle Block —I. E. Palmer. Oct. 15. 25,984.-BIT STOCK.-N. Spofford. Oct. 15.

EXTENSIONS GRANTED. 24,963.—FLOUR PACKER.—S. Taggart.

41.915 -CASTING COPPER CYLINDERS .- F. Adams. 24.923.-ELEVATOR.-A. Betteley 24,952. -MEAT CUTTER .- J. G. Perry.

DISCLAIMERS. 24,963.-FLOUR PACKER.-S. Taggart.

DESIGNS PATENTED.

6,776 to 6,778.—Nubias.—H. Boot, Philadelphia, Pa.

6.79.—HANDLE TIP.—G. W. Bunnell, West Meriden, Ct. 6.780.—HAND BELL.—E. G. Cone, East Hampton, Ct. 6.781 to 6.785.—CHAIN S.—V. Draper, N. Attleboro', Mass 6.784.—CARPET.—J. Powell, Kidderminster, England.

TRADE MARKS REGISTERED.

1,371.—Saws.—E. C. Atkins & Co., Indianapolis, Ind. 1,572.—SCARFS, ETC.—Brownson Bros., Chicago, III. 1,373.—Medicine.—D. Dick., ? ew York (ity. 1,374.—Mineral Water.—C. & E. E. Dundar, Waukesha

Wis. 1,375.—Stove Polish.—Fletcher & Co., Lynn, Mass. 1,873.—Brandy.—H. Imhorst, New York city. 1,377.—Steel and Iron —Leng & Ogden,New York city 1,378. - Tobacco.-Loewenthal & Co., Chicago, Ill. 1,379.—SOAPSTONE PACKING.—Sellers Blos., Phila, Pa. 1,380.—STEELAND IRON.—Sweet & Co., Syracuse, N. Y 1,381.—HEATERS.—Geld Heating Co., New York City. 1,382.—Steam Gage.—Utica Steam Gage Co., N. Y.

SCHEDULE OF PATENT FEES: On each Cavest. \$10 Un each Trade-Mark. \$25 on filing each application for a Patent (17 years)...\$15 On issuingeach original Patent.....\$20 On appeal to Commissioner of Patents..... On granting the Extension..... On an application for Design (7 years)..... Paper stock, fiberous, T. Routledge.......141,016 On an application for Design (14 years).............530