### Business and Lersonal.

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ment of Trevor & Co., Lockport, N. Y To Clean Boiler Tubes—Use National Steel Tube Cleaner, tempered and strong. Chalmers Spence Co., N.Y

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Skinner Portable Engine Improved, 2 1-2 to 10 H. P. Skinner & Wood, Erie, Pa.



C. H. W. will find a description of Sir William Thomson's compass on p. 908, Scientific Ameri-CAN SUPPLEMENT .- J. E. H. will find something as to the strains on threads of gas pipes on p. 1, vol. 34.-F. D. S. is informed that it is not probable that lard oil can be purified by adding extract of nutgalls.-D. W. S. will find that the speed of circular saws is given on p. 163, vol. 34. As to speeds of pulleys, see p. 138, vol. 34. -F. B. will find directions for japanning on tin on p. 132, vol. 24.-C. C. will find directions for preparing solubleacid chromate of lime on p. 123, vol. 36.-H. P. C., Jr., will find directions for exterminating cockroaches on p. 303, vol. 35.-F. C. W. will find something on deodorizing kerosene oil on p. 203, vol. 36.-J. D. K. will find articles on Professor Barff's method of preventing iron rust on p. 232, vol. 36, and on p. 1041 Scientific AMERICAN SUPPLEMENT.—A. B. will find a description of a waterproof cement for stone on p. 138, vol. 31.-H. H. L. will find on reference that the ink described on p. 361, vol. 34, is mentioned as an indelible ink. It will do for stamping .- E. A. D. will find a description of hy draulic cement on p. 138, vol. 31,-W. J. T. will find directions for preparing xanthogenate of potassium on p. 275, vol. 36.-J. McM. will find on p. 119, vol. 30, directions for purifying rancid butter.—A. C. W. will find a description of a steam engine indicator and its use on p. 64, vol. 30.-W. J. K. will find in No. 19 of the Scien-TIFIC AMERICAN SUPPLEMENT directions for making an electric engine.—C. H. K. will find a recipe for a good cement for china on p. 379, vol. 31,-E. J. McQ. can calculate the horse power of engines by the formula on p. 33, vol. 33.—W.D. can ascertain the power of his springs glycerin until the desired shade is reached; let stand for only by experiment.—J. V. B. will find on p. 250, vol. 36, something as to the time used in electric telegraph- before using. Although the aniline colors are for the

ing.-C. C. M., of Innsbruck, Tyrol, will find directions for making cotton cloth uninfiammable on p. 103, vol. 34.-H. C. G. will find directions for kalsomining on p. 133, vol. 34.—A. H. B. will find onp. 251, vol. 31, a recipe for cement for filling millstones.—E. W. M. will find on p. 204, vol. 28, directions for preserving natural flowers. Back numbers of the Scientific American can be furnished if not out of print,-A, R, W. will find the recipe for cold in the head, from the Lancet, on p. 351, vol. -S. N. O'H, will find a recipe for furniture polish on p. 315, vol. 30. A cure for corns is described on p. 202, vol. 34.—A. J. W., E. L., C. P., J. S., F. W. C., A. C., R. J. W., N.F., M. R. S., J. N. P., W. D., and others, who ask us to recommend books on industrial and scientific subjects, should address the booksellers who advertise in our columns, all of whom are trustworthy firms, for catalogues.

(1) J. P. G. says: E. B. K. can saw firebrick with a strip of sheet iron, with teeth cut in it.

(2) D. C. S. says, in reply to D. W.'s query as to the welding of the foot of a spindle to the step or plate under it: A few years ago my 4 foot burr appeared to run heavily, the foot of the spindle got very hot, and the mill was stopped. I examined it, and found the plate of steel that was under the spindle welded fast to the point. The point of spindle was about 11/4 inches in diameter, and the plate under it was 1/2 inch thick and 2 inches square. I took the point out, and tried to drive the plate off with a hammer, but could not. I then cut it off, and found the weld as perfect as any other part of the steel. I refitted it and started the mill again, and it ran for several weeks, and then welded as before. This time I took the point out and trimmed the corners off the plate, dressed it up true with the balance of the point, and retempered it. I have been using it ever since and it is as solid and good as any. There was plenty of oil in the step each time, but it was of a very inferior quality; and I now keep a good supply of good oil, and it never gets warm. It is my opinion that the welding was accomplished by the parts being thoroughly ground together under pressure.

(3) A. Y. K. asks: In using the telephone, loes the battery require to be stronger or weaker than that used in ordinary telegraphy? A. The battery may be comparatively light: we believe the apparatus is also made to work without any battery, simply by induced currents.

Is there an instrument for measuring the focus of spectacle lenses? If so, what is its character? A. You can determine the focus of a lens by holding it to the light before a fiat surface: its distance from the surface. then external objects are clearly defined on the same, is its focal length.

(4) L. N. L. asks: 1. Is there any method known by which frictional electricity, when generated, can be stored up or accumulated, and made serviceable in working telegraph lines? A. No; not as ordinarily worked. 2. In the report of the Michigan State Board of Agriculture for 1871, there is an allusion to Andrew Cross, an Englishman, who owned to having made crystals of quartz, carbonate of lime, lead, copper, and many other artificial minerals by electricity. Can you tell me where I can find a detailed account of his experi-A. Many of Mr. Cross' experiments are described in Noad's "Manual of Electricity."

(5) T. H. S. says: I wish to produce the sensitive fiame with common gas. I can make the harmonicon, but it will not emit a note unless I lower a tube to a certain point over the fiame. Can I produce the sensitive fiame responding to a certain tone without employinghydrogen? A. Coal gas willanswer. You may use an ordinary Bunsen burner, having a large tube, with the airports closed tightly. Or take a glass tube about ½ inch in diameter and 4 inches long, stop one end of it with a perforated cork through which the gas delivery tube just enters. The aperture of the delivery tube should be about  $\frac{1}{10}$  inch diameter. When the flow of gas is properly adjusted, this will give you a very sen-

(6) F. I. asks: How can I make gold and silver inks? A. These are usually prepared by grinding gold or silver leaf with a little honey until the foils are converted into an impalpable powder, which is retained by the honey. The honey is then dissolved out with warm water, and the gold or silver powder mixed with a little gum water. Bronze powders mixed with gum water are often employed by artists as a substitute for the gold or silver.

(7) T. B. asks: 1. Can xanthogenate of potassium be purchased? A. It has not yet been commercially manufactured in this country. 2. What are the quantities necessary to the gallon of carbonatecharged birch beer, to prevent it from souring? A. Unless the salt were very pure it would be liable to give a somewhat disagreeable flavor to such beer. About 5 or 10 grains to the gallon would perhaps suffice. 3. Can salicylic acid be used for the purpose? A. Yes. Use from 30 to 50 grains of it to each gallon of beer.

(8) E. F. says: In picture frame polishing, I find trouble in getting the shellac darkenough in color. We cut our gum (orange) shellac and mix with imitation shellac, using about 5 gallons per day. As a coloring, I am using Vandyke brown mixed with alcohol for the dark polish. But the trouble with it is that it settles like mud at the bottom of the can in which I mix it; and when carefully poured off, it leaves the alcohol so slightly colored that it is almost useless, unless stirred up before mixing with the shellac. Is there anything that you can recommend for coloring shellac that will be clear from sediments when ready for use? A. The trouble with your Vandyke brown is probably due to the fact that you do not grind it fine enough. If this is attended to, it will not settle. Umber is sometimes used in the varnish instead of Vandyke brown.

(9) R. S. N. asks: Can you give me a formula or recipe for making an aniline ink which will answer for printing from stencil plates with? A. These inks are prepared by dissolving ordinary aniline red, violet, etc., in warm glycerin. The colors may be ground to a fine powder, and a little at a time stirred into the a day or so and strain through a small piece of fine silk

most part quite expensive, their tinctorial power is so great that a very minute quantity will ordinarily suffice. These inks can therefore be made nearly as cheaply as ordinary printing ink, as only crude glycerin need be

(10) A. B.—The blue or purple dyestuff known by the different names of archil, litmus, cudbear. and tournesol, is fabricated from several species of lich ens by grinding them into a paste with ammonia water, and occasionally stirring until, by the action of the air all of the orsellic acid contained in them is converted into orcine, when the mixture assumes a bright purple color. Further exposure to the air turns it blue. Lime and plaster of Paris is then added to give bulk and consistence, and the whole is dried. This forms commercial litmus. Acids decompose the blue compound with lime or ammonia, and set free the red orcine. Acid salts also redden litmus solutions. The water you used may have contained acids, or, what is more probable, the litmus contained foreign organic bodies, which by fermentation produced the results noted. This is not uncom-

(11) J. L. says, on the welding of a spindle to its step: We also had a similar thing happen to us, The stone was a 30 inch corn burr, and was running at a high speed, when all at once the burr stopped, the belt slipped on the pulley, and we stopped the engine to examine whether there was anything in the burr or not. We soon found there was nothing unusual in the burrs, so we took them apart, took the spindle out, and found that the spindle had welded to the steel plate. We then tried to knock the plate off the spindle, but could not. We then took it to the blacksmith, who had to cut the

(12) C. B. says: I have about 100 lbs. of a compound composed of about 2 parts lead, 2 tin, and 1 antimony. Is there any method by which I can separate them entirely, or, if not entirely, one from the other two? A. The metals may be separated, but not so as to repay you for the trouble and expense incurred in so doing.

(13) W. V. asks: 1. What chemical will rim of the cast iron wheel. prevent the decomposition of glue used in moulds for plaster of Paris castings? A. Alum water, lime, and chloride of zinc are occasionally used for this purpose 2. Is there anything that will prevent shrinkage of the moulds? A. The shrinkage is due to the loss of water, Glycerin will prevent this; it may be mixed in with the glue, or applied to the surface of the mould. The former is the better way.

Is there any chemical that will prevent water containing certain animal substances from becoming stagnant? A. Salt, creosote, salicylic acid, and other antiseptics will retard or prevent putrefaction. The addition of a few crystals of permanganate of potassa to such water will purify it by oxidizing the organic matter which it

(14) E. C. H. asks: How can I pour a solid box of Babbitt metal in a boss around a shaft, and afterwards get the shaft loose? I have tried putting paper around the journal, but fail very frequently to get the shaft loose without breaking the casting. The journal is 1¼ x 2½ inches. A. We know of no better plan than oiling the shaft and putting a piece of paper around it.

Do you use oil in tapping brass? A. Yes. (15) J. M. says: 1. I have 5 gallons of fish oil for hardening springs which has lost its tempering property. How can I restore it? A. Add to your fish oil a piece of cyanide of potash about the size of a walnut, crushed to a fine powder, and 1/2 lb. tallow. 2. Can I use the same oil for hardening surgical instruments?

A. Yes.

(16) A. H. B. asks: 1. How fast can I run worm in a 12 inch worm gear with good results? A. About 200 revolutions per minute. 2. At what speed should a 41/2 inch screw run to get the best results in screwing brass? A. About 150 feet per minute.

Is bone dust as good after using once, if it is not put into water? A. For polishing, yes.

(17) W. G. asks: Is there any way of polishing brass penholders, etc., better than buffing on a wheel? A. No.

(18) L. R. F. asks: What metal or combination of metalscan I use, that will be harder than or as hard as cast iron, and that will not shrink in cooling? A. We know of none.

(19) J. J. H. says: I am building a small foot lathe. How can I harden the spindle that goes in the cone wheel without putting it in the fire? A. You cannot harden it without heating it.

(20) J. W. H. asks: Is there any tool made to file hand saws and set them at the same time? A.We know of no such device.

(21) A. S. T. asks: Is there a practical work on electric phenomena and the laws governing the same in regard to lightning rods? A. We are not aware of any work devoted especially to the subject of lightning rods, but the principles are to be found in almost any of the treatises on electricity. The principal points to be attended to are good conductors and earth connections; as a general thing, almost all of the rods offered for sale are reasonably good, but in the majority of cases they are put up without much regard to the earth connections. The rod should be fastened to the building directly, and not insulated.

(22) D. F. H. asks: Can an engine be made on the hydraulic principle, so that a large power can be had from a small power steam engine? A. No.

What kind of oil is used in tempering carriage springs A. Fish oil.

Were the wires of the East River bridge put up before or after the wood work was fastened to them? A. Be

(23) F. R. says: A friend of mine told me that I could not make a cast steel T square that would always remain true. I hold that if the steel be properly annealed, and is once true, it will always remain so, pro vided that it receives no rough usage. A. A cast steel square will remain true under equal conditions longer than a square made of any other metal.

(24) W. P. asks: 1. Is a plate of steel 5x10 feet, and 1/4 inch thick, less or more likely to be perfect sound do the receiving? A. No return wire is required.

throughout than one of iron the same size 1 inch thicker? A. There is no practical difference, 2. Which would make the best upright tubular boiler, 30x60 inches, the heads, tubes, and firebox being iron in both cases? A. The 1/4 inch thick one.

(25) J. E. H. asks: How is brass springempered? A. By cold rolling or hammering.

(26) H. O. T. asks: How can I clean coper tea kettles, water tanks, etc.? A. Use salt and sand, with water.

(27) X. Y. B. asks: Can tin or copper be manufactured in tubes, the joint being seamless and smooth? A. No; but solid drawn brass tubing is made of certain sizes.

(28) A. P. T. says: I have frequently oberved when using a new14inch crosscut coarse file upon wrought iron, particularly upon sheet iron, that the very first stroke causes its destruction. The file, as it comes from the cutler's, is evidently too hard for immediate use. I am acquainted with the process of drawing the temper in the case of ordinary tools, but cannot see how it is applicable to the case of a file. At the same time, I feel confident that there must be a remedy for the evil in question. A. A new file should not be used upon a narrow surface, as the grip of the teeth is in that case so great as to break the points of the teeth off. A file cannot be made too hard. The most economical usage of a file is to use it on brass or cast iron at first, and upon as broad surfaces as possible.

(29) C. G. L. asks: If the cast iron master wheel in a horse power is banded with a wrought iron band from 1/2 to 1 inch thick, shrunk on, will it strengthen or prevent the cast iron wheel from breaking when it is strained or subjected to a sudden jar during work? I claim that the cast and wrought iron are of different textures; and that when extra strain is put on the cast iron cogs or rim, it would break before the shrunk wrought iron band gets a chance to bear any strain or to ssist it. A. A wrought iron band would strengthen the

(30) F. S. J. asks: 1. What is it in a loconotive that occasions a terrible roar? It is heard only occasionally, and makes everything tremble for a distance around. A. It is the steam escaping from the safety valve. 2. Will a locomotive go faster with the reversing lever, hooked up, or slower, and why? A. It depends upon the lap and travel of the slide valves. As a rule, the engine will go faster when hooked up.

(31) C. M. G. asks: What can be used as a convenient and inexpensive substitute for gas in an amateur mechanic's workshop, for hardening and tempering small drills, taps, etc., and for small jobs of solder-ing? Can petroleum or gasoline be utilized for that purpose? If so, how? A. Special lamps are made to burn kerosene for the purposes mentioned.

(32) K. B. asks: How can I find the correct shape of the teeth of wheels, also the length and thickess of the teeth, when pitch is given? A. The subject of drawing teeth for wheels is too extensive for these columns. Consult Willis on the "Teeth of Wheels."

How can a keg which contained dry American vermilion or other lead paint be cleansed so that it will be pure from the poison? A. Let a strong stream of cold water

(33) B. & Co. say: We have a 4 horse power ealoric engine which we would like to run with oil instead of hard coal. Which would be the best method to feed and distribute the oil in the furnace? A. The burning of petroleum in a furnace is a difficult problem, at present engaging the attention of engineers

(34) F. B. M. says: How can I drill copper? A. Keep your drill thin at the point, grind it keen, and

(35) J. E. F. says: 1. I am building a lathe for foot power. I have a largeiron wheel about 6 feet in diameter, weighing about 150 lbs. Would it be any advantage to mount it on a countershaft, and use it as a balance wheel? If so, would it not be better to hang it in centers? A. It would be of no advantage. Either of the forms of treadle which you suggest will do. 2. What size of drive wheel will do? A. About 26 to 28 inches in diameter. 3. Would it not be better to have both it and the pulleys of iron? A. Yes.

(36) H. R. H. says: 1. I have a small circular saw, which I run by foot power. The large wheel is 36 inches and the pulley on the mandrel 3 inches in diameter. Are these proportions correct? A. Yes. 2, What is the best motor by which I can run it, to saw 1 inch pine wood? A. A small steam engine will answer

(37) W. H. R. asks: How can German steel be hardened? I have repaired some parts of machines that needed hardening, and what I supposed was steel would not harden. Upon inquiry I was informed that it was German steel, A.Your steel may be case-hardened as llows: Powder prussiate of nota steel to cherry red, rub on the potash until it fuses and runs over the steel, put the latter in the fire again, reheat to cherry red, and quench in cold water.

How can I make pieces of wire 2 feet long perfectly straight? A. Straighten your wire as nearly as possible with a hammer and a level block, then beat it and roll it between two fiat iron plates.

(38) G. E. Y. asks: 1. In reference to Professor Bell's telephone, what size wire and how much is wrapped on the ends of the horseshoe magnet, and is it wrapped in the same way as an electro-magnet? A. For shortcircuits an ordinary telegraph sounder coil will do. 2. Of what thickness is the steel plate, and how is it fast ened to the sounding box? A. It should be very thin for weak currents. The system is explained in Prescott's 'Electricity and the Electric Telegraph."

(39) T. M. P. says: 1. In Professor Bell's telephone, what is the thickness of the plate, and is it of a uniform thickness? A. For the transmitters, the plates should be thin to get the best effect; the instruments, however, are made of various forms, 2. Does Professor Bell use a return wire or the ground both ends, and does the instrument used for sending the

A good receiving instrument may be made of a tubular magnet and single helix, the latter being surrounded by an external soft iron case upon which the plate may be laid loosely. 3. About what size and quantity of wire is required for electro-magnets, and what is the length of the permanent magnets? A. An ordinary sounder Letters Patent of the United States were helix will answer for a short circuit.

(40) W. E. says: Is there anything besides water that will cut Russian isinglass, and keep it in liquid form? A. It is soluble also in warm wine spirit. in strong acetic acid, and in diluted muriatic and nitric acids.

What kind of leather should I get for a polishing belt for lathe use? A. We believe that skeepskin is usually employed for fine work. There are dealers who make a please state the number and date of the patent desired, specialty of such materials.

(41) L. T. D. asks: What is the best substance for the hands for those using the horizontal bar and trapeze? A. Pulverized rosin is, we think, given the preference.

(42) G. H. S. says, in reply to a correspondent who asked if coal oil (kerosene) will make the hair grow: I can say truthfully that it will. I am now 37 years of age; and about 8 years ago my hair gradually commenced to fall out, and in one year I was almost entirely bald. I wore a wig for about 2 hours a day for 3 years, that is, whenever I had occasion to 30 out. I used various preparations; the hair would grow a little, and then drop out; so that I almost despaired of having it grow any more. An engineer recommended me to try kerosene oil, as a relative of his had used it with success. I first had it tried on a dog. I found it did not injure his hair in the least; I next tried it on my arms and legs (for I was afraid of it), and I found that it strengthened the hair and new hair formed after four months' use, once a week. I next tried it on my head, cautiously: and it was not a great while before new hair or fuzz began to grow; and at the present time I have a pretty good head of hair. As soon as my head begins to get any dandruff, I wash it with oil.

(43) A. B. and others who ask as to perspiration of the feet: The unpleasant odor you mention is caused primarily by the impregnation of the leather with putrescible organic exhalations, various ammonia salts, acetic acid, etc., from the excessive perspiration of the feet within, or moisture without, and from the more or less imperfect fixing of the gelatin contained in the hide by the process of tanning. Under such continued conditions, of heat, moisture, etc., the leather, if not properly cared for, will suffer a species of slow de-cay, hence the odor. This may be obviated in great part by a frequentchange of underclothing for the feet, and by keeping the leather as dry as possible, and well oiled. An unpleasant odor from shoes is often occasioned by the use of poor blacking.

(44) W. J. B. asks: How can I polish malleable iron castings after they have been nickel-plated? A. Use a buffing wheel.

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

A. H. F. & Co. - The shells have not been received .-R. S. N.-Judging from the small sample you send, the paper is impregnated with an insoluble lead soap, probably by saturating the paper with a strong soap solution and then immersing in a solution of sugar of lead.—M. P.B.—It is a slag from some iron furnace. The small red crystals are cyano-nitride of titanium.-H. A. S .-Some of the enamels from cooking utensils contain antimony; but in the powder which you send us, which consists principally of organic matters, we found no indications of the metal.—P. A. L.—It is a granitic rock containing small crystals or iron pyrites (sulphide of iron) and chalcopyrite (sulphide of copper), also a considerable quantity of oxide and carbonate of iron.-C. L. V.—The large piece is magnesian limestone, the smaller, red-colored fragment is jasper. The piece of an arrowhead is of flint.

L. D. asks: How is Florida water made?— J. McM. asks: What is the best way to break down butter from rolls to tubs, and from tubs to rolls? What is the best method of salting and coloring butter?

# 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 Madstone. By W. On a Perpetual Motion. By C. E. N. On the Planet Vulcan. By A. F. G. Also inquiries and answers from the following: L. W. S.-C. A. H.-B. A. J.-E. J. W.-J. I.-W. W. -A. A. I.—M. M. H.—J. T. B.—L. D. D.—L. S. B.— C. W.-G. E. D. B.-C. W. C.-R. W., Jr.-C. R.-B. & W.-W. J. B.-S. M. L.-E. V. B.-W. R. McC.-

# HINTS TO CORRESPONDENTS.

P. W. W.—H. A. P.

Correspondents whose inquiries fail to appear should repeat them. If not then published, they may conclude that, for good reasons, the Editor declines them. The address of the writer should always be given.

Inquiries relating to patents, or to the patentability of inventions, assignments, etc., will not be published here. All such questions, when initials only are given, are thrown into the waste basket, as it would fill half of our paper to print them all; but we generally take pleasure in answering briefly by mail, if the writer's address

Hundreds of inquiries analogous to the following are sent: "Who makes cheap achromatic microscopes? Who sells telephones, and what do they cost? Who sells galvanic bands or belts, for medical purposes? Who sells incubators, and what do they cost? makes the best pony planer and the best saw table?" All such personal inquiries are printed, as will be observed, in the column of "Business and Personal," which is specially set apart for that purpose, subject to the charge mentioned at the head of that column. Almost any desired information can in this way be

#### OFFICIAL

#### INDEX OF INVENTIONS

Granted in the Week Ending April 17, 1877,

AND EACH BEARING THAT DATE. [Those marked (r) are reissued patents.]

A complete copy of any patent in the annexed list including both the specifications and drawings, will be

İ	please state the number and date of the patent d and remit to Munn & Co., 37 Park Row, New York	
	Aerated beverage flavor, J. Matthews	
	Anchor, F. A. Buck	189,684
	Bale ties, twisting, E. E. & I. A. Kilmer	189,748 189,559
	Bed bottom, spring, J. H. Frizelle	189,553
	Beer barrel, vent, F. Schultz	189,795
	Beer faucet, P. Lyons	189,666
	Boot and shoe, W. J. Watkins	189,708
	Boots, cementing rubber, R. S. Woodford Bottle stopper, J. Slim	189,801
l	Bottle stopper, valve nozzle, C. Cristadoro Bottle washer, E. Turbeville	
l	Brick, T. F. Adams	189,676
İ	Burglar alarm, W. J. Smith	189,803
	Butter worker, H. A. Clow	189,608
	Button, B. Bailey	189,689
	Car coupling, C. C. Dow	189,614
	Car coupling, J. Lips	
	Car heater, T. Keech	
i	C rriage shaft, J. A. J. Sawyer	189,657
	Chains, link for, J. J Freeman	189,619
İ	Chair seats, J. Lemman	189,580
	Chamber case, G. Vorrath	189.802
	Chuck for gas fittings, etc., J. Powell	189,685
	Churn dasher, W. M. Landreth	189,631
	Clamp, J. G. Mole Clamp for making frames, J. Zimmerman	189, 767
ı	Clothes pounder, Roberts, Rowe & Lane	189,577
	Coin detecter, W. Painter (r) Confectionery, putting up, H. H. Snow	7,620
:	Copy book, Requa & Dunn Corn planter, H. W. Mayerhoff.	189,574
İ	Corn planter, dropper and marker, Silisbee $\it et~al$	189,581
	Corn sheller, J. E. Lewis (r)	189,777
	Corset, E. S. Weldon	189,815
	Crimping pin, hair, A. M. Smith	189,792
	Curtain fixtures, A. B. Shaw189,660,	
	Cutter head, oscillating, J. R. Locke  Dental foil condenser, Hood & Reynolds	189,635 189,735
	Desk, C. H. King	189,749 189,647
	Door checks, C. S. Whipple189,822, 189,823, 189,824, Dredging machine, J. W. Philbrick	189,825
	Drying and cooling, C. H. Hersey	
	Electro-magnetic engine, M. Egger	189,714
,	Fan, J. G. Schmidt	189,793
1	File, P. Heffernan	189,733
	Fire bar, furnace, E. & G. E. Rowland	189,789
	Flower stand, folding, S. R. Pay	189,571
	Flue ditcher, W. W. Snyder  Fluting iron, B. B. Bignall	189,667
	Fly fan, W. R. Fowler (r)	7,613
	Fog horn, P. Thompson	189,746
	Fruit jar, self-sealing, Earle & Perry	189,778
	Galvanic battery, M. W. Parrish	189,575
	Gas, producing, B. F. Greenough	189,724
	Gas key, A. G. Buzby	189,695 189,576
	Gas regulator, J. Bassemir	189,745
	Gate, C. Pool	189,814
	Gate, farm, O. F. Fuller	189,620
	Glass, manufacture of, F. Siemens	
	Grain separator, A. A. Balat	189,680
	Grapnel for submerged piles, Bogert & Holmes	189,688
	Grate, M. G. Bell	
•	Harness connection, F. Leclere	189,755
	Harvester elevator, Coddington & Kennedy Harvester reel, C. W. & W. W. Marsh	189, 701
	Harvester, self-rake, I. N. & R. N. Cherry	189,605
!	Hay press, W. Kelly	189,626
	Heater, molasses, etc., B. F. Harper Hinge for iron vessels, F. G. Neidringhaus <i>et al</i>	189,639
	Hoists, M. Pennypacker	189,649 189,561
	Horse hay rake, M. P. Denney	189,707
	Horseshoe, J. C. Brightman	189,718
	Horseshoe nails, finishing, Mortimer et al	189,589
	Horseshoe nails, making, I. C. Tate Hose, watertight, R. Cowen	189,586   189,610
	Hot water, heating, S. & J. Bennett	189.687

Hydraulic press, F. S. Kinney	189,70
Illuminating sign, C. H. Seawell	189, 820
Ironing board, R. W. Hargrave	189,62
Ladder, N. S. Boynton	189,690
Lamp, N. L. Rigby  Lamp extinguisher, W. T. Wood  Lamp, hydrocarbon gas, R. W. Park	189,820 189,780
Lamp lighter, H. W. P. Colson Lath, board, A. A. Smith	189,66
Lath machine, E. C. Dicey  Leaf turner, A. L. Clark  Leather cutting gage, G. F. Lindsay	189,65
Lock, seal, J. N. Smith Locomotive engine, A. M. Cumming	189,582 189,704
Loom shuttle, C. Lewando	189,665 189,635
Lubricator, J. C. Lamb	189,75
Lubricator for steam engines, J. Powell  Malt kiln, H. Altenbrand  Mechanical movement, E. C. Hopping	189,67
Mechanical movement, J. E. Lewis (r)	7,61
Millpick, J. Norman  Moulding machine, A. W. Stossmeister	189,77
Moulding sand sifter, J. Stackpole	7,60
Mower, Douglas & Wemple	189,54
Musical key board, G. N. Carozzi	189,69
Nut lock, G. Neilson	189,64
Ore separator, W. Hooper	189, 73 189,55
Organ reed, L. K. Fuller	189,59
Paper boxes, inserting staples in, H. R. Heyl (r)  Paper collar, S. S. Gray	189,726
Paper pulp engine, J. S. Warren  Pattern, metallic composition, J. Habermehl	189,67
Pencil sharpener, G. Agnew Piano stringing device, G. Morgan	189,59
Picture exhibitor, F. Prince	189,784 189,598
Pipe tongs or wrench, E. R. Girvin	189,62 189,61
Pipe wrench, E. R. Mathews	
Plow, J. M. Looker	189,636
Potato digger, J. P. Maull Printing roller, litho, W. H. Woodcock	188,568
Printing, colors for, C. H. O. Radde	189,654 189,728
Propeller, steering, J. H. Carpenter	
Pulley, screw hoisting, L. T. Pyott (r)	189,670
Pump valve, W. E. WorthenPump, elastic bucket, T. KenyonPumps, driving.ship's, Gordon & Baxter	189,629
Punching sheet metal, T. Rowan	189,656
Reflector, etc., A . Pudigon	7,610
Rice huller, E. H., L. L., & F. A. Graves	189.725
Ropeway grip, A. S. Hallidie (r).	7,607
Sad iron, S. J. Bugh	7,607 189,602 189,560
Sad iron, S. J. Bugh	7,607 189,602 189,560 189,646
Sad iron, S. J. Bugh	7,607 189,602 189,560 189,646 189,736 189,628 189,628
Sad iron, S. J. Bugh. Sash cord fastener, N. Holmes. Saw filing machine, S. V. Pattillo. Saw set, C. B. Hopkins. Sawing machine, W. F. & I. Barnes. Sawing machine, G. J. Kautz. Sawing shingles, H. J. Morton. Scales, platform, I. Rigdon. Screws, threading, J. A. Sheldon.	7,607 189,602 189,560 189,646 189,736 189,628 189,638 189,786 189,661
Sad iron, S. J. Bugh	7,607 189,602 189,646 189,736 189,638 189,638 189,638 189,786 189,786 189,754
Sad iron, S. J. Bugh Sash cord fastener, N. Holmes Saw filing machine, S. V. Pattillo Saw set, C. B. Hopkins Sawing machine, W. F. & I. Barnes Sawing machine, G. J. Kautz Sawing shingles, H. J. Morton Scales, platform, I. Rigdon Screws, threading, J. A. Sheldon Screws, threading, H. S. ansdell Scythe fastening, F. Ludden Seed drill and harrow, T. J. Whitecar Seeding machine, J. C. Baker	7,607 189,602 189,646 189,736 189,638 189,638 189,736 189,754 189,565 189,565 189,821 189,675
Sad iron, S. J. Bugh	7,607 189,602 189,560 189,646 189,638 189,638 189,638 189,638 189,565 189,565 189,565 189,675 189,705 189,705
Sad iron, S. J. Bugh	7,607 189,602 189,560 189,636 189,632 189,632 189,633 189,754 189,565 189,752 189,705 189,705 189,624 189,599 7,616
Sad iron, S. J. Bugh	7,607 189,602 189,646 189,646 189,631 189,632 189,632 189,675 189,675 189,705 189,705 189,705 189,624 189,529 7,611 189,780
Sad iron, S. J. Bugh  Sash cord fastener, N. Holmes  Saw filing machine, S. V. Pattillo  Saw set, C. B. Hopkins  Sawing machine, W. F. & I. Barnes  Sawing machine, G. J. Kautz  Sawing shingles, H. J. Morton  Scales, platform, I. Rigdon  Screws, threading, J. A. Sheldon  Screws, threading, H. S. ansdell  Scythe fastening, F. Ludden  Sced drill and harrow, T. J. Whitecar  Seeding machine, J. C. Baker  Sewing machine braider, G. H. W. Curtis  Sewing machine braider, G. H. Eyh  Sewing machine hotor, Haworth & Newell  Sewing machine, shoe, J. Bond, Jr  Sewing machine shuttle, R. H. St. John (r)  Shade fixture, spring, P. W. Phillips  Shade holder and gas burner, F. S. Shirley  Sirup and sugar filter, etc., W. J. Allen  Skate, parlor, J. W. Post	7,607 189,602 189,646 189,736 189,631 189,628 189,736 189,756 189,756 189,706 189,706 189,761 189,781 189,781 189,781
Sad iron, S. J. Bugh	7,600 189,560 189,646 189,732 189,681 189,628 189,636 189,636 189,636 189,636 189,565 189,675 189,675 189,624 189,566 189,566 189,567 189,624 189,569 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716 189,716
Sad iron, S. J. Bugh	7,607 189,566 189,646 189,732 189,638 189,638 189,638 189,754 189,566 189,754 189,567 189,754 189,675 189,796 189,796 189,796 189,796 189,796 189,796 189,796 189,796 189,797 189,641 189,641
Sad iron, S. J. Bugh	7,600 189,560 189,562 189,562 189,583 189,622 189,563 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754
Sad iron, S. J. Bugh	7,602 189,502 189,504 189,502 189,504 189,502 189,622 189,632 189,632 189,632 189,632 189,632 189,632 189,633 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734 189,734
Sad iron, S. J. Bugh	7,602 189,502 189,564 189,782 189,583 189,622 189,583 189,622 189,583 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762 189,762
Sad iron, S. J. Bugh  Saw fling machine, S. V. Pattillo.  Saw set, C. B. Hopkins  Sawing machine, W. F. & I. Barnes.  Sawing machine, Q. J. Kautz  Sawing shingles, H. J. Morton.  Scales, platform, I. Rigdon.  Screws, threading, J. A. Sheldon.  Screws, threading, H. S. ansdell.  Scythe fastening, F. Ludden.  Seed drill and harrow, T. J. Whitecar.  Seeding machine, J. C. Baker.  Sewing machine braider, G. H. W. Curtis.  Sewing machine braider, G. H. W. Curtis.  Sewing machine braider, G. H. Sewing machine shuttle, R. H. St. John (r).  Shade fixture, spring, P. W. Phillips.  Shade holder and gas burner, F. S. Shirley.  Sirup and sugar filter, etc., W. J. Allen.  Skate, parlor, J. W. Post  Skid for handling boxes, A. Day.  Sleigh knee, A. A. Abbott.  Spouts and strainers, F. G. Neidringhaus 189,640,  Station indicator, J. P. Schmitz.  Steam trap, C. H. Yeager.  Stench trap, P. F. Morey.  Stench trap, P. F. Morey.  Stove, and gass, polishing, A. Vogeley.  Stove, gas and heating, S. Rothschild, Jr  Stove, safety car, S. & G. R. Swartz.	7,602 189,562 189,562 189,562 189,562 189,562 189,562 189,562 189,562 189,562 189,562 189,562 189,562 189,562 189,562 189,562 189,562 189,562 189,562 189,562 189,562 189,562 189,562 189,562 189,562 189,562 189,562 189,563 189,563 189,563 189,563 189,563 189,563 189,563 189,563 189,563
Sad iron, S. J. Bugh	7,600 189,560 189,562 189,562 189,562 189,563 189,563 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,754 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764
Sad iron, S. J. Bugh	7,60,000 189,644 189,502 189,564 189,584 189,585 189,653 189,653 189,653 189,653 189,653 189,653 189,653 189,653 189,653 189,564 189,764 189,784 189,784 189,785 189,565 189,565 189,565 189,565 189,565 189,565 189,565 189,565 189,565 189,565 189,565 189,565 189,576 189,576 189,576 189,576 189,576 189,576 189,576 189,576 189,576 189,576 189,576 189,576 189,576 189,576 189,576 189,576 189,576 189,576 189,576 189,576 189,576 189,576 189,576 189,576 189,585 189,577 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,585 189,5
Sad iron, S. J. Bugh	7,600 189,560 189,564 189,752 189,562 189,563 189,622 189,563 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,767 189,564 189,576 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567 189,567
Sad iron, S. J. Bugh  Saw fling machine, S. V. Pattillo.  Saw set, C. B. Hopkins  Sawing machine, W. F. & I. Barnes  Sawing machine, W. F. & I. Barnes  Sawing machine, G. J. Kautz  Sawing shingles, H. J. Morton  Scales, platform, I. Rigdon  Screws, threading, J. A. Sheldon  Screws, threading, H. S. ansdell  Scythe fastening, F. Ludden  Sced drill and harrow, T. J. Whitecar  Seeding machine, J. C. Baker  Sewing machine braider, G. H. W. Curtis  Sewing machine braider, G. H. W. Curtis  Sewing machine braider, G. H. St. John (r)  Sewing machine shuttle, R. H. St. John (r)  Shade fixture, spring, P. W. Phillips  Shade holder and gas burner, F. S. Shirley  Sirup and sugar filter, etc., W. J. Allen  Skate, parlor, J. W. Post  Skid for handling boxes, A. Day  Sleigh knee, A. A. Abbott  Spouts and strainers, F. G. Neidringhaus 189,640,  Station indicator, J. P. Schmitz.  Steam trap, C. H. Yeager  Stench trap, P. F. Morey  Stench trap, P. F. Morey  Stench trap, H. W. Clapp  Stove, gas and heating, S. Rothschild, Jr  Stove, gas and heating, S. Rothschild, Jr  Stove, gas and heating, S. Rothschild, Jr  Stove, safety car, S. & G. R. Swartz  Table easel, C. Fisher  Table easel, C. Fisher  Tap and die, J. Flower  Tee and coffee pot, E. B. Manning  Telegraph, printing, Pope & Edison (r).  Telegraph signal box, S. D. Field  Ten pin ball, W. Woods	7,602 189,562 189,562 189,563 189,662 189,663 189,663 189,663 189,754 189,762 189,764 189,762 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764
Sad iron, S. J. Bugh	7,602 189,562 189,564 189,562 189,563 189,684 189,582 189,682 189,683 189,683 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,776 189,776
Sad iron, S. J. Bugh	7,602 189,622 189,526 189,646 189,846 189,846 189,846 189,828 189,622 189,622 189,623 189,623 189,623 189,623 189,623 189,623 189,623 189,623 189,623 189,623 189,623 189,623 189,623 189,623 189,623 189,623 189,623 189,623 189,623 189,623 189,623 189,623 189,623 189,623 189,623 189,623 189,623 189,623 189,623 189,623 189,623 189,623 189,623 189,623 189,623 189,623 189,623 189,623 189,623 189,623 189,623 189,623 189,623 189,623 189,623 189,623 189,623 189,623 189,623 189,623 189,623 189,623 189,623 189,623 189,623 189,623 189,623 189,623 189,623 189,623 189,623 189,623 189,623 189,623 189,623 189,623 189,623 189,623 189,623
Sad iron, S. J. Bugh	7,602 189,562 189,564 189,762 189,562 189,563 189,662 189,563 189,764 189,762 189,562 189,563 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,764 189,767 189,767 189,767 189,767 189,767 189,767 189,767 189,767 189,767 189,767 189,767 189,767 189,767 189,767 189,767 189,767 189,767 189,767 189,767 189,767 189,767 189,767 189,767 189,767 189,768 189,776 189,776 189,776 189,776 189,776 189,776 189,776 189,776 189,776 189,776 189,776 189,776 189,776 189,776 189,776 189,776 189,776 189,776 189,776 189,776 189,776 189,776 189,776 189,776 189,776 189,776 189,776 189,776 189,776 189,776 189,776 189,776 189,776 189,776 189,776 189,776 189,776 189,776 189,776 189,776 189,776 189,776 189,776
Sad iron, S. J. Bugh	7,602 189,562 189,564 189,562 189,563 189,564 189,562 189,563 189,563 189,563 189,563 189,563 189,564 189,563 189,564 189,564 189,564 189,564 189,564 189,564 189,564 189,564 189,564 189,564 189,564 189,564 189,564 189,564 189,564 189,564 189,564 189,564 189,564 189,564 189,564 189,564 189,564 189,564 189,564 189,564 189,564 189,564 189,564 189,564 189,564 189,564 189,564 189,564 189,564 189,564 189,564 189,564 189,564 189,564 189,564 189,564 189,564 189,564 189,564 189,564 189,564 189,564 189,564 189,564 189,564 189,564 189,564 189,564 189,564 189,564 189,564 189,564 189,564
Sad iron, S. J. Bugh	7,602 189,642 189,564 189,564 189,564 189,564 189,563 189,565 189,652 189,653 189,653 189,654 189,782 189,671 189,683 189,564 189,783 189,564 189,564 189,564 189,564 189,564 189,564 189,564 189,564 189,564 189,564 189,564 189,564 189,564 189,564 189,564 189,564 189,564 189,564 189,564 189,564 189,564 189,564 189,564 189,564 189,564 189,564 189,564 189,564 189,564 189,564 189,564 189,564 189,564 189,564 189,564 189,564 189,564 189,564 189,564 189,564 189,564 189,564 189,564 189,564 189,564 189,564 189,564 189,564 189,774 189,564 189,785 189,686 189,786 189,686 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786 189,786
Sad iron, S. J. Bugh	7,600 189,560 189,564 189,782 189,562 189,638 189,622 189,638 189,621 189,764 189,762 189,762 189,762 189,763 189,764 189,764 189,764 189,764 189,764 189,764 189,767 189,767 189,768 189,768 189,768 189,768 189,768 189,768 189,768 189,768 189,768 189,768 189,768 189,768 189,768 189,768 189,768 189,768 189,768 189,768 189,768 189,768 189,778 189,768 189,778 189,788 189,788 189,788 189,788 189,788 189,788 189,788 189,788 189,788 189,788 189,788 189,788 189,788 189,788 189,788 189,788 189,788 189,788 189,788 189,788 189,788 189,788 189,788 189,788 189,788 189,788 189,788 189,788 189,788 189,788 189,788 189,788 189,788 189,788 189,788 189,788 189,788 189,788 189,788 189,788 189,788 189,788 189,788 189,788 189,788 189,788 189,788 189,788 189,788 189,788 189,788
Sad iron, S. J. Bugh	7,602 189,564 189,562 189,564 189,562 189,563 189,563 189,563 189,563 189,563 189,563 189,563 189,563 189,563 189,563 189,563 189,563 189,563 189,563 189,563 189,563 189,563 189,563 189,563 189,563 189,563 189,563 189,563 189,563 189,563 189,563 189,563 189,563 189,563 189,563 189,563 189,563 189,563 189,563 189,563 189,563 189,563 189,563 189,563 189,563 189,563 189,563 189,563 189,563 189,563 189,563 189,563 189,563 189,563 189,563 189,563 189,563 189,563 189,563 189,563 189,563 189,563 189,563 189,563 189,563 189,563 189,563 189,563 189,563 189,563 189,563 189,563 189,563 189,563 189,563 189,563 189,563 189,563
Sad iron, S. J. Bugh	7,602 189,564 189,562 189,564 189,562 189,563 189,662 189,663 189,663 189,663 189,663 189,663 189,663 189,663 189,764 189,762 189,673 189,763 189,763 189,763 189,763 189,763 189,763 189,763 189,763 189,763 189,763 189,763 189,763 189,763 189,763 189,763 189,763 189,763 189,673 189,673 189,673 189,673 189,673 189,673 189,673 189,673 189,673 189,763 189,763 189,763 189,763 189,763 189,763 189,763 189,763 189,763 189,763 189,763 189,763 189,763 189,763 189,763 189,763 189,763 189,763 189,763 189,763 189,763 189,763 189,763 189,763 189,763 189,763 189,763 189,763 189,763 189,763 189,763 189,763 189,763 189,763 189,763 189,763 189,763

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