



class establishments) somewhat above concert pitch, and are kept there by repeated tunings, until the piano-forte has settled and the strings have fully stretched, which is known by the instrument remaining at precisely the same pitch for some time.

(13) G. R. B. asks: 1. Can you inform me if an induction coil is required with the pan telephone described on page 162, No. 11, current series of the SCIENTIFIC AMERICAN? A. Yes.

(14) R. R. R. writes: In the Faradic battery operated by an open Smee's cell, I believe the primary wire of the induction coil is composed of two layers of No. 16 or No. 14 cotton covered copper wire. I wish to make an induction coil with the core of the same length and same diameter to be operated with a small Grenet cell.

(15) "Honolulu" writes: I saw a notice in SCIENTIFIC AMERICAN some time ago of the application of electricity to growing crops. Will you let me know the best method of applying it?

(16) A. G. N. asks: What style and size battery would be the most economical to run one electric light on the incandescent principle?

(17) W. A. McA. writes: I have a specimen which I think contains lead and silver. Will you give in the Notes and Queries of the SCIENTIFIC AMERICAN the most simple tests by which these two metals may be made to tell their presence?

(18) F. D. C. asks (1) how to saw petrified wood or other flinty material for sleeve buttons. A. Apply diamond dust moistened with brick oil to the edge of a thin iron disk revolved in the lathe.

(19) "Subscriber" asks how to make a black ink suitable for staining leather. A. Use a moderately strong aqueous solution of copperas.

(20) V. B. H. asks for a good black paint or something else that will answer to black small castings by dipping them in something that will varnish.

(21) L. C. C. asks: 1. Can you inform me where to purchase the ammonia used by the ice machines (not the common aqua-ammonia), think it is called gaseous ammonia, which is liquefied by pressure?

(22) G. W. L. asks what the difference is between tin crystals and tin salts, as used in dyeing. A. Both refer to stannous chloride or protochloride of tin.

(23) E. A. J. asks how to remove the scale from brass castings, to give a surface on which solder may be flowed with a hot copper. A. Dissolve 6 oz. bichromate of potash in three pints of warm water, when cool, add 6 fluid oz. of sulphuric acid.

(24) F. R. G. asks how to paint a smoke stack on a small portable engine. It requires something that will resist the action of heat. I have been advised to use asphaltum dissolved in turpentine.

(25) H. M. A. asks: What is the best "stickum" for labels on boxes, also label on casks: something to make them stick and not cackle or wash off easily? A. Soften glue in cold water and dissolve it in strong vinegar.

starch about equal to the glue taken, first having boiled it with water sufficient to form a paste. It works better when warm.

(26) W. J. H. asks if there is any preparation for polishing or staining India-rubber. A. We know of no satisfactory way of staining rubber. Hard rubber may be polished with a little pumice stone and oil.

(27) H. F. P. asks how to make gold ink for writing and printing. A. Triturate gold leaf with a little honey in a mortar until the metal is reduced to a fine state of subdivision; dissolve out the honey with warm water, and mix the gold with a little gum water, used for writing and illuminating.

(28) H. L. S. asks: 1. Is there any known substance that if a thin piece of it, say like a piece of paper, window glass, or tin, were placed between a permanent magnet and piece of soft iron would prevent the magnet from attracting the iron?

(29) W. E. M. asks: Can you inform me of any metal or alloy that will dissolve by the application of some of the acids (such as sulphuric, hydrochloric, or nitric), and at the same time the acid used to be incapable of any action on fatty substances (such as oils)?

(30) J. E. S. writes: I wish to make a hollow prism to hold carbon bisulphide, but have not found a cement that will resist it. Can you tell me what to cement the glass with?

(31) J. E. S. asks: Is there any rapid and practical purpose by which bright copper can be made to acquire the dark rich color that is seen on copper coins unused for many years?

(32) T. R. W. asks: What will take aniline violet and aniline black ink stains out of linen and bleached cotton fabrics? The salts of lemon and oxalic acid seem to have but little influence on it.

(33) A. L. H. asks: What effect does galvanized iron pipes have on drinking water—good or bad? A. Bad, with certain kinds of water, and especially if allowed to stand in the pipes for any length of time, very bad.

(34) J. C. asks: 1. How can I harden plaster of Paris after making a mortar out of it with water? A. After the plaster becomes thoroughly dry you may soak it in glue size. When this becomes dry the plaster will be quite hard.

(35) M. C. S. asks: What substances are best to absorb the moisture in a refrigerator? Is crude chloride of calcium (bittern) good? Is lime good?

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

C. S. C.—It consists principally of sulphides of copper, and possibly carries a trace of gold.—J. W. M.—A silicious kaolin.

INDEX OF INVENTIONS FOR WHICH Letters Patent of the United States were Granted in the Week Ending November 30, 1880, AND EACH BEARING THAT DATE.

[Those marked (r) are reissued patents.] A printed copy of the specification and drawing of any patent in the annexed list, also of any patent issued since 1866, will be furnished from this office for one dollar.

Accountant instrument, mechanical, H. Johnson 234,875 Aerial apparatus, F. W. Breary 234,947 Aeriform fluids, apparatus for mixing, J. F. Barker 234,904 Album, etc., clasp, C. Posen 235,016 Annunciator, electrical, T. W. Lane 234,993 Axle box, car, W. P. Wyly 234,901 Bale tie, J. G. Battelle 234,943 Barrel heater, Cook, Chase & Beard 234,908 Band cutter, Bielm & Weldauer 234,944 Bath box for chemical and photographic purposes, ventilated, J. C. Macurdy 234,879 Bells with brass, coating stock, O. B. Wilson 234,900

Table listing various inventions and their patent numbers, including items like Belt, driving, E. & C. Poullain, Binder for papers, etc., M. King, Blotting pad, C. M. Lothrop, Boiler and other furnaces, W. Ennis, Boot and shoe sole edge trimmer, C. H. Helms, etc.

DESIGNS.

Table listing designs and their numbers, including items like Bell, box, H. Thau, Carpet, H. Horan, Carpet, H. Hunt, Carpet, T. J. Stearns, Corset, M. P. Bray, Fire iron, etc., stand, R. Christesen, Furniture seat and back, G. W. Rich, etc.

TRADE MARKS.

Table listing trade marks and their numbers, including items like Crackers, E. W. Albee, Medical compound for dysmenorrhoea, M. J. Fuzard, Pharmaceutical preparation, certain, G. Evanovitch, Razors, knives, shears, scissors, and surgical instruments, G. Knecht, Tobacco and cigarettes, plug and smoking, Oliver & Robinson.

English Patents Issued to Americans.

Table listing English patents issued to Americans from November 23 to November 30, 1880, inclusive, including items like Beverage, A. W. Armstrong New York city, Celluloid, decorating, A. Hart et al. New York city, Crayon holder, J. Reckendorfer, New York city, Electric light apparatus, H. S. Maxim, Brooklyn, N. Y., Flax breaker, G. Milliken, Philadelphia, Pa., Furnace, J. Wolstenholme Buffalo, N. Y., Gas making apparatus, C. F. Dietrich, Baltimore, Md., Heel stiffeners, S. L. Bailey, New York city, Hoisting machine, T. McCabe, Philadelphia, Pa., Lamp, W. B. Robins, Cincinnati, Ohio, Loom, J. Lyall, New York city, Oil extracting apparatus, J. E. Borne, Brooklyn, N. Y., Packing, metallic, E. P. Monroe, New York city, Pliers, J. F. Cranston, Springfield, Mass., Pumps, ship, J. Edson, Boston, Mass., Sheeting machine, J. Herts, Brooklyn, N. Y., Telephone switch, C. D. Haskins, New York city, Ventilating apparatus, P. Mehan, Chelsea, Mass.