Scientific American.

Business and Personal.

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23 years' experience. Address Plater, Oakville, Conn. Best popular Science Works, 15 cents. Catalogue free.

J. Fitzgerald, 20 Lafayette Place, New York,

Second-hand Weston Dynamo-electric Machine for sale cheap. Address Chas. Perrigo & Co., Groton, N. Y. Graining and imitating woods, finely, rapidly, and

easily. Stamp for catalogue. J. J. Callow, Cleveland, O. Curtis Pressure Regulator and Steam Trap. See p.78.

For Pat. Safety Elevators, Hoisting Engines, Friction Clutch Pulleys, Cut-off Coupling, see Frisbie's ad. p. 78

For Mill Mach'y & Mill Furnishing, see illus. adv. p.76.

Mineral Lands Prospected, Artesian Wells Bored, by Pa. Diamond Drill Co. Box 423. Pottsville, Pa. See p. 77.

Lightning Screw Plates, Labor-saving Tools, p. 78.

Hollar's Safe and Lock Co., York, Pa., manufacturers of improved Fire and Burglar-proof Safes, Bank and Safe Deposit Vaults and Locks. See adv. p. 61.

25" Lathes of the best design. Calvin Carr's Cornice Machinery. G. A. Ohl & Co., East Newark, N. J.

The Ide Automatic Engine, A. L. Ide, Springfield, Ill.

Brush Electric Arc Lights and Storage Batteries. Twenty thousand Arc Lights already sold. Our largest machine gives 65 Arc Lights with 35 horse power. Our Storage Battery is the only practical one in the market. Brush Electric Co., Cleveland, O.

Best Squaring Shears, Tinners', and Canners' Tools at Niagara Stamping and Tool Company, Buffalo, N. Y.

Lathes 14 in. swing, with and without back gears and screw J. Birkenhead, Mansfield. Mass.

The Best.-The Dueber Watch Case.

If an invention has not been patented in the United States for more than one year. it may still be patented in Canada. Cost for Canadian patent, \$40. Various other foreign patents may also be obtained. For instructions address Munn & Co., SCIENTIFIC AMERICAN Patent Agency. 261 Broadway, New York.

Guild & Garrison's Steam Pump Works, Brooklyn, N. Y. Steam Pumping Machinery of every description. Send for catalogue

Nickel Plating .- Sole manufacturers cast nickel and odes pure nickel salts, polishing compositions, etc. Com-plete outfit for plating, etc. Hanson & Van Winkle, Newark, N. J., and 92 and 94 Liberty St., New York.

Lists 29, 30 & 31, describing 4,000 newand 2d-hand Ma chines ready for distribution. State just what machines wanted. Forsaith & Co., Manchester, N. H., & N. Y. city, For Power & Economy, Alcott's Turbine, Mt.Holly, N. J. "Abbe" Bolt Forging Machines and "Palmer" Power

Hammers a specialty. Forsaith & Co., Manchester, N.H. Railway and Machine Shop Equipment.

Send for Monthly Machinery List

to the George Place Machinery Company, 121 Chambers and 103 Reade Streets, New York

"How to Keep Boilers Clean." Book sent free by James F. Hotchkiss 84 John St., New York.

Wanted,-Patented articles or machinery to make and introduce. Gaynor & Fitzgerald. New Haven. Conn. Water purified for all purposes, from household sup-

plies to those of largest citles, by the improved filters manufactured by the Newark Filtering Co., 177 Com merce St. Newark, N. J.

Latest Improved Diamond Drills. Send for circular to M. C. Bullock Mfg. Co., 80 to 88 Market St., Chicago, Ill. Ice Making Machines and Machines for Cooling Breweries, etc. Pictet Artificial Ice Co. (Limited), 142

Greenwich Street. P. O. Box 3083. New York city Presses & Dies. Ferracute Mach. Co., Bridgeton. N. J

Machinery for Light Manufacturing, on hand and built to order. E. E. Garvin & Co., 139 Center St., N. Y. Split Polleys at low prices, and of same strength and

appearance as Whole Pulleys. Yocom & Son's Shafting Works. Drinker St., Philadelphia, Pa.

Supplement Catalogue.-Persons in pursuit of information on any special engineering. mechanical, or scientific subject, can have catalogue of contents of the Sci-ENTIFIC AMERICAN SUPPLEMENT sent to them free The SUPPLEMENT contains lengthy articles embracing the whole range of engineering, mechanics, and physi cal science. Address Munn & Co., Publishers, New York Improved Skinner Portable Engines. Erie, Pa.

C. B. Rogers & Co., Norwich, Conn., Wood Working Machinery of every kind. See adv., page 62.

Am. Twist Drill Co., Meredith, N. H., make Pat. Chuck Jaws, Emery Wheels, Grinders, automatic Knife Grinders. American Fruit Drier. Free Pamphlet. See ad., p. 94.

Brass & Copper in sheets, wire & blanks. See ad.p. 92. The Chester Steel Castings Co., office 407 Library St.,

office. Price 10 cents each.

NEW BOOKS AND PUBLICATIONS. THE STRAINS IN FRAMED STRUCTURES. By A. Jay Du Bois, C.E., Ph.D., Professor

Scientific School of Yale College. Wiley & Sons, New York, 1883.

This work is intended as a practical guide to the civil engineer as well as a text book to the student. It lons of copper solution, spoiled by putting it in a pitch-Gold, Silver, Nickel, and BrassPlaterwants position; gives the principles of all calculations for framed edvat, the pitch becoming dissolved in the solution. structures, whether of wood or iron; applies these calculations by examples to existing specimens of work; shows simple and combination construction of bridge and roof girders; treats on the continuous girder, pivot or swing bridge, and braced arch; considers the suspension system of bridges at length, and contains a full appendix for the advanced student and the engineer filustrated by plates and accompanied by mathematical calculations. A specimen contract for a railway bridge, with specifications, will be fund of use

THE IROQUOIS BOOK OF RITES. Edited by Horatio Hale, M.A., author of the "Eth-nography and Philology of the United States Exploring Expedition." D. G. Brinton, Philadelphia.

The object of this volume. which is "No. 2 of Brinton's Aboriginal American Literature," is to show that the Indian races on this continent have a history: or at least that in the confederacy of the five nations-afterward the six nations-existed the materials for an article off "The Manufacture of Candles," SCIENTIFIC unbroken history; almost if not quite connecting the AMERICAN of December 17, 1881 present Indians with the mound builders. The compiler of these Indian fragments of an unwritten history endeavors to show that what otherwise would have degenerated into corrupted tradition, became, by the usages of the Huron-Iroquois people, reliable and credi ble history, the oral records being repeated in public on stated occasions, each special and separate event being symbolized by a string, of wampum of particular arrangement of colors, which was exhibited at the timeof the recitation, thus forming a system of mnemonics subject to public criticism. These nations also allowed the equal legal rights of women, according them an important part as to duty and privilege in public affairs aud far more freedom in domestic life than is given to the women of some European countries in our day. These six nations had a federal system quite simpar in important particulars to our own, and like the unlon the book is full of interesting facts about a people whose posterity and representatives have received scant justice at our hands either as individuals or as to keep it in a dry house at 90° after it is dried. A. survivors of a social and political system worthy the at- A temperature of 90° Fah. does not affect lumber for tention of ethnologists.

DIE KRIEGSSCHIFFBAUTEN, 1881-1882. By Wien, Pesth, Leipzig, 1883.

This work is a continuation of a former work by the author on the "Floating Craft of the Naval Powers;" and in this continuation he describes the men of war, torpedo boats, etc., built by the several powers during the years 1881 and 1882. The naval powers are arranged alphabetically, and receive more or less attention according to the greater or less number of vessels built during these two years. England. Italy, and Russia take the lead, as they have increased their navies more than any of the other nations. The author has also devoted considerable space to the navy of the United States, giving a description of the partly completed vessels, and the construction and armament of the new steel cruisers. contracts for which are about to be given out. This work is provided with eighty-two wood cuts.



HINTS TO CORRESPONDENTS

No attention will be paid to communications unless accompanied with the full name and address of the writer.

Names and addresses of correspondents will not be given to inquirers.

We renew our request that correspondents, in referring to former answers or articles, will be kind enough to name the date of the paper and the page, or the number of the question.

Correspondents whose inquiries do not appear after a reasonable time should repeat them. If not then published, they may conclude that, for good reasons, the Editor declines them.

Persons desiring special information which is purely of a personal character, and not of general interest, should remit from \$1 to \$5, according to the subject, as we cannot be expected to spend time and labor to obtain such information without remuneration

Any numbers of the SCIENTIFIC AMERICAN SUPPLE-

Correspondents sending

(4) A. M. J. asks: Will you give a simple method for bleaching straw? A. The cheapest method for bleaching straw consists in exposing the material in of Dynamic Engineering in the Sheffield a closed chamber to the fumes of burning sulpbur. A John more expensive way is to dip the straw in caustic soda, and then treat with Javelle water or calcium chloride.

> (5) H. E. W. writes: I have about 25 gal-Can you tell me through the columns or your paper a way to extract the pitch or in any way utilize the solution, and will you please tell how to prevent nickel salts from crystallizing on the anodes and from settling at the bottom of the vat? A. The copper can be recovered by precipitating it with iron, or by throwing it down by the battery. The nickel salts should not settle to the bottom, norshould they crystallize on the anodes. It is probable that your current is too strong. Consul article on nickel plating, SCIENTIFIC AMERICAN SUPPLE MENT, NO. 310.

(6) J. F. writes: I have a lot of candle wick on hand of which the preparation has evaporate in course of time, and now it does not consume while burning. I wish to make it useful; can you give me a receipt for preparing bleached wick for beeswax can dies? A. There are various solutions used. Among others, 11b. of boracic acid dissolved in 75 pints of water

(7) L. P. S. asks: 1. In running two balance wheels, one weighing one ton and the other two tons, but so arranged that each would have the same amount of friction in the boxes and in the air, and both of same speed and diameter. which would require most power? A. Having the same friction, not in proportion to weight, but total amount, and the same ai resistance, there would be no difference in power. 2. In doubling the speed of a balance wheel, how much is gained in momentum? A. To double the velocity of your fly wheel increases its "regulating power" or mo mentum four times; the regulating power is as the square of the velocity.

(8) C. R.-Zinc has the greatest degree of expansion of any of the metals. A bar9 inches long will expand to 9026 when heated from 32° to 212° of the States capable of indefinite expansion. In fact, and in proportion for intermediate amounts of change in temperature. It melts at 740° Fahr.

> (9) J. E. M. asks if it is injurious to lumber a short time, but will make it brittle and hard to work after several months.

> (10) A. W. W. writes: I have a boiler I desire to test; please inform me if the test by wate expanded by heat is good, and to what extent I should carry it to insure 100 pounds steam. A. We do not recommend the testing of boilers by the expansion of water at temperatures up to 212°. If there is the least leak. you have no means of supplying the loss. If you heat the water hot enough to supply leakage by the generation of steam, you will run all the risk that will occur in raising steam to the required test. The best way is to test with a pump to a pressure 50 per cent greater than the working pressure.

(11) A. K. writes: We have a round discharge pipe 60 feet long, of 40 inches diameter. A head of three feet of water can be maintained, without any fall at discharging end. What kind of a wheel would be most convenient and powerful, and what equivalent in horse power could be obtained? A. If you have no fall at the discharging end, you can only use a current or flutter wheel. With such a wheel you will not be able to obtain more than 3 to 4 horse power.

(12) D. A. O. writes: Cistern builders here wall them up with brick, laid in cement, but they invariably crack and leak. I have heard of cisterns being made by cementing on the earth, using no brick ex cept at top, which gave good results; please give me a method for building the cement cistern. A. Brick cisterns leak because they are not well backed up with cement puddle and rammed, so that the pressure does not gradually bulge the walls out. Build cement cisterns with a puddle of sharp coarse sand and cement rammed between the crib and the earth wall. A cis tern with the earth walls plastered with cement is not reliable. In the brick cisterns the brick wall may be only 4 inches thick, and only act as a crib, which must be thoroughly backed. The face plastering of cemen helps, but is not alone reliable for tightness

(13) C. R. I. asks how to remove the tarnish from German silver drawing instruments. A. Use very fine emery paper, or crocus paper.

(14) E. H. D. asks for a wash or size that can be applied to whitewashed walls to make wall paper stick, or else something to soften the whitewash ment referred to in these columns may be had at the so that it will readily scrape off. I have used nearly all of the sizes common to paper hangers; but my work

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

J. H. P.-The specimen is pyrite (iron sulphide). It may carry gold.-A.-S. B.-No. 1 is an alloy, probably lead and zinc. No. 2 is iron pyrites (iron sulphide). No. 3 is quartz carrying the pyrite; it probably carries gold. No. 4 is the rock in which the pyrite occurs; it is of slaty nature

INDEX OF INVENTIONS For which Letters Patent of the United States were Granted

July 31, 1883 AND EACH BEARING THAT DATE. [See note at end of list about copies of these patents.]

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	Canender Dox, seir-oning. H. L. Behrens Can washing macine, V. Barker Candelabrum, F. A. Kittell Candel mould gauge, G. P. Vicken Cane mill, A. J. Manny. Car conake, J. H. Pitard Car coupling, W. I. Byard Car coupling, A. A Stetson Car unloading apparatus, Simar & Dale Carriage, J. S. G. F. Hörcher Carriage coupling, R. G. Wood Carriage coupling, R. G. Wood Carriage curtain strap fastening, F. A. Neider Carriage curtain window, F. A. Neider Carriage system, Z. S. Holbrook Case. See Burial C.se. Lock case. Sheave case. Cash and parcel carriers, track for, G. P. Walker 282.416 to Cash carrier, G. P. Walker	282,151 282,454 282,458 282,458 282,133 282,399 282,292 282,438 282,397 282,397 282,354 282,081 282,408 282,419 282,419 282,419 282,419
	Canender Dox, seir-oning. H. L. Behrens	282,151 282,454 282,458 282,133 282,339 282,222 282,438 283,397 282,324 282,125 282,081 282,486 282,486 282,486 282,419 282,355 282,319 282,421 282,421 282,821
	Canender Dox, seir-oning. H. L. Behrens Can washing macine, V. Barker Candelabrum, F. A. Kittell Cance mill, A. J. Manny. Car brake, J. H. Pitard Car coupling, W. I. Byard Car coupling, M. J. Byard Car caniway. W. Hubbard. Car unloading apparatus, Simar & Dale Carriage out and separatus, Simar & Dale Carriage coupling, R. G. Wood. Carriage curtain strap fastening, F. A. Neider Carriage curtain strap fastening, F. A. Neider Carriage curtain window, F. A. Neider Carriage system, Z. S. Holbrook Carse. See Burial C.se. Lock case. Sheave case. Cash carrier, G. P. Walker	282,151 282,458 282,458 282,458 282,222 282,222 282,438 282,397 282,324 282,125 282,081 282,456 282,456 282,456 282,354 282,354 282,354 282,354 282,419 282,419 282,421 282,221 282,099
	Canender Dox, seir-oning. H. L. Behrens Can washing macine, V. Barker Candelabrum, F. A. Kittell Candel mould gauge, G. P. Vicken Cane mill, A. J. Manny Car coupling, W. I. Byard Car coupling, W. I. Byard Car coupling, A. A Stetson Car, railway. W. Hubbard. Car unloading apparatus, Simar & Dale Carriage, J. S. G. F. Hörcher Carriage coupling, R. G. Wood Carriage coupling, R. G. Wood Carriage curtain strap fastening, F. A. Neider Carriage curtain strap fastening, F. A. Neider Carriage system, Z. S. Holbrook Case. See Burial C.se. Lock case. Sheave case. Cash and parcel carriers, track for, G. P. Walker. 282.416 to Cash carrier, G. P. Walker 282.420, Caster, H. McDonald Castering, apattern and flask for producing, S. C.	282,151 282,454 282,458 282,458 282,222 282,222 282,438 282,397 282,324 282,397 282,428 282,419 282,419 282,419 282,419 282,419 282,421 282,231 282,099
	Cancender Dox, seir-oning. H. L. Behrens	282,151 282,454 282,458 282,133 282,399 282,222 282,399 282,222 282,397 282,397 282,394 282,125 282,081 282,486 282,495 282,455 282,355 282,319 282,419 282,421 283,403
	Canender Dox, seir-oning. H. L. Behrens Can washing macine, V. Barker Candelabrum, F. A. Kittell Cance mill, A. J. Manny Car brake, J. H. Pitard Car coupling, W. I. Byard Car coupling, W. I. Byard Car coupling, A. A Stetson Car caiway. W. Hubbard Carriage ody hanger, J. Bowser Carriage body hanger, J. Bowser Carriage courtain strap fastening, F. A. Neider Carriage curtain strap fastening, F. A. Neider Carriage curtain window, F. A. Neider Carriage curtain window, F. A. Neider Carriage system, Z. S. Holbrook Case. See Burial C.se. Lock case. Sheave case. Cash and parcel carriers, track for, G. P. Walker. Cash carrier, G. P. Walker	282,151 282,458 282,458 282,458 282,222 282,222 282,438 282,397 282,324 282,125 282,081 282,496 282,456 282,655 282,619 282,419 282,419 282,421 282,54 282,54 282,599 282,403 282,403
	Canender Dox, seir-oning. H. L. Behrens Can washing macine, V. Barker Candelabrum, F. A. Kittell Cande mould gauge, G. P. Vicken Cane mill, A. J. Manny Car coupling, W. I. Byard Car coupling, W. I. Byard Car coupling, A. A Stetson Car, railway. W. Hubbard. Car unloading apparatus, Simar & Dale Carriage body hanger, J. Bowser Carriage coupling, R. G. Wood Carriage coupling, R. G. Wood Carriage curtain strap fastening, F. A. Neider Carriage curtain window, F. A. Neider Carriage system, Z. S. Holbrook Case. See Burial C.se. Lock case. Sheave case. Cash and parcel carriers, track for, G. P. Walker. 282.416 to Caster, H. McDonald Castangs, pattern and flask for producing, S. C. Tatum Catappenial sack. L. Lange	282,151 282,454 282,458 282,458 282,222 282,222 282,438 282,397 282,922 282,428 282,081 282,408 282,419 282,419 282,419 282,419 282,421 282,231 282,209 283,403 282,201 282,203
	Canender Dox, seir-oning. H. L. Behrens Can washing macine, V. Barker Candelabrum, F. A. Kittell Candel mould gauge, G. P. Vicken Cane mill, A. J. Manny. Car coupling, W. I. Byard Car coupling, W. I. Byard Car coupling, A. A Stetson Car, railway. W. Hubbard. Car unioading apparatus, Simar & Dale Carriage, J. S. G. F. Hörcher. Carriage coupling, R. G. Wood Carriage coupling, R. G. Wood Carriage curtain strap fastening, F. A. Neider Carriage curtain strap fastening, F. A. Neider Carriage system, Z. S. Holbrook Case. See Burial c.se. Lock case. Sheave case. Cash carrier, G. P. Walker 282,416 to Cash carrier, G. P. Walker 282,420, Cash carrier, G. P. Walker 282,420, Cash carrier, automatic. Z. S. Holbrook Castings, pattern and fask for producing, S. C. Tatum Catalungs. pattern and fask for producing, S. C. Tatum Catings. with constant of the second second second second Catings. Settern and fask for producing, S. C. Tatum Catings. W. S. Cogswell Celluloid, etc process of and apparatus for	282,151 282,454 282,458 282,133 282,339 282,222 282,329 282,222 282,125 282,081 282,486 282,486 282,486 282,354 282,354 282,354 282,354 282,354 282,21 282,419 282,421 282,221 282,099 283,403 282,201 282,407
	Canender Dox, seir-oning. H. L. Behrens Can washing macine, V. Barker Candelabrum, F. A. Kittell Cande mould gauge, G. P. Vicken Cane mill, A. J. Manny Car cavaling, W. I. Byard Car coupling, W. I. Byard Car coupling, A. A Stetson Car caiway. W. Hubbard Car railway. W. Hubbard Carriage ody hanger, J. Bowser Carriage courbing, R. G. Wood Carriage curtain strap fastening, F. A. Neider Carriage curtain window, F. A. Neider Carriage system, Z. S. Holbrook Case. See Burial C.se. Lock case. Sheave case. Cash and parcel carriers, track for, G. P. Walker. Castings. pattern and fask for producing, S. C. Tatum Catanenial sack. L. Lange Celling, W. S. Cogswell Celluloid, etc process of and apparatus for moulding holiow articles from, J. R. Furman.	282,151 282,454 282,458 282,458 282,222 282,222 282,438 282,397 282,324 282,125 282,081 282,456 282,456 282,451 282,451 282,451 282,451 282,451
	Canender DOX, SEIT-OHING, H. L. BEHFENB	282,151 282,454 282,458 282,458 282,239 282,239 282,232 282,438 282,397 282,325 282,081 282,408 282,419 282,419 282,419 282,419 282,419 282,419 282,419 282,419 282,421 282,231 282,099 283,403 283,201 282,241 282,231
	Canender DOX, SEIT-OHIDE, H. L. BEHFENB	282,151 282,454 282,458 282,458 282,133 282,399 282,222 282,397 282,324 282,397 282,324 282,081 282,486 282,486 282,354 282,354 282,354 282,354 282,354 282,419 282,421 282,201 282,421 282,201 282,421 282,201 282,421 282,201 282,421 282,201 282,421 282,201 282,421 282,201 282,421 282,201 282,421 282,201 282,421 282,201 282,421 282,201 282,421 282,201 282,421 282,201 282,421 282,201 282,42
	Canender Dox, seir-oning. H. L. Behrens Can washing macine, V. Barker Candelabrum, F. A. Kittell Cande mould gauge, G. P. Vicken Care mill, A. J. Manny Car coupling, W. I. Byard Car coupling, W. I. Byard Car coupling, M. J. Byard Car coupling, A. A Stetson Car aniway. W. Hubbard. Carriage, J. S. G. F. Hörcher Carriage coupling, R. G. Wood. Carriage curtain strap fastening, F. A. Neider Carriage curtain window, F. A. Neider Carrier, See Cash carrier. Shear carrier. Carse. See Burial C.se. Lock case. Sheave case. Cash and parcel carriers, track for, G. P. Walker. Castings. pattern and fask for producing, S. C. Tatum Catanenial sack. L. Lange Celluloid, etc process of and apparatus for moulding hollow articles from, J. R. Furman. Chain, W. H. Dickey Chain, W. H. Dickey	282,151 282,454 282,458 282,458 282,252 282,222 282,428 282,222 282,438 282,397 282,424 282,125 282,081 282,454 282,455 282,655 282,651 282,451 282,201 282,451 282,451 282,451 282,261 282,277 282,451
	Canender DOX, SEIT-OHING, H. L. BEHFENB	282,151 282,454 282,458 282,458 282,239 282,239 282,239 282,239 282,239 282,397 282,397 282,397 282,397 282,418 282,419 282,419 282,419 282,419 282,419 282,231 282,20
	Canender DOX, SEIT-OHIDG, H. L. BEHFENS	282,151 282,454 282,458 282,458 282,133 282,399 282,222 282,329 282,329 282,324 282,081 282,081 282,405 282,405 282,354 282,354 282,354 282,354 282,354 282,419 282,421 282,421 282,221 282,421 282,221 282,421 282,380 282,421 282,380 282,421 282,380 282,380 282,380 282,380 282,380
	Canender Dox, seir-oning. H. L. Behrens Can washing macine, V. Barker Candelabrum, F. A. Kittell Cance and Rauge, G. P. Vicken Care mill, A. J. Manny Car coupling, W. I. Byard Car coupling, W. I. Byard Car coupling, A. A Stetson Car can way. W. Hubbard Car unloading apparatus, Simar & Dale Carriage, J. S. G. F. Hörcher Carriage coupling, R. G. Wood Carriage curtain strap fastening, F. A. Neider Carriage curtain window, F. A. Neider Carrige curtain window, F. A. Neider Carrier, See Cash carrier. Sheaf carrier. Carse. See Burial C.se. Lock case. Sheave case. Cash and parcel carriers, track for, G. P. Walker. Cash carrier, G. P. Walker 282.416 to Cash carrier, automatic. Z. S. Holbrook Catange, pattern and fask for producing, S. C. Tatum Celluloid, etc process of and apparatus for moulding hollow articles from, J. R. Furman. Center board for boats, E. L. Sibley Chain, W. H. Dickey Chair, cot, and bed, combined, S. McClelland Charrier, Charling timber, apparatus for J. D. Stanlev	282,151 282,434 282,458 282,458 282,133 282,399 282,222 282,438 282,397 282,428 282,125 282,081 282,496 282,455 282,651 282,651 282,419 282,421 282,554 282,554 282,554 282,554 282,554 282,201 282,451 282,201 282,451 282,267 282,267 282,267 282,277 282,286 282,277 282,285
	Canender DOX, SEIT-OHING, H. L. BEHFENB	282,151 282,454 282,458 282,458 282,222 282,428 282,222 282,438 282,397 282,97 282,428 282,97 282,418 282,419 282,419 282,419 282,419 282,419 282,251 282,201
	Canender Dox, Self-Ollog, H. L. Behrens Can washing macine, V. Barker Candelabrum, F. A. Kittell Candel mould gauge, G. P. Vicken Cane mill, A. J. Manny. Car coupling, W. I. Byard Car coupling, W. I. Byard Car coupling, A. A Stetson Car rolading apparatus, Simar & Dale Carriage, J. S. G. F. Hörcher. Carriage coupling, R. G. Wood Carriage coupling, R. G. Wood Carriage coupling, R. G. Wood Carriage curtain strap fastening, F. A. Neider Carriage curtain strap fastening, F. A. Neider Carriage system, Z. S. Holbrock Case. See Burial C.se. Lock case. Sheave case. Cash and parcel carriers, track for, G. P. Walker. 282,416 to Caster, G. P. Walker Caster, H. McDonald Castage, pattern and flask for producing, S. C. Tatum Catamenial sack. L. Lange Celling, W. S. Cogswell Celluloid, etc process of and apparatus for moulding hollow articles from, J. R. Furman. Center board for boats, E. L. Sibley Chain, w. H. Dickey Chain, w. H. Dickey Chair. See Folding chair. Reelining chair. Chair, Sen Folding chair. Reelining chair. Chair, Stanper, apparatus for, J. D. Stanley Chimmey cap. R. J. Smith	282,151 282,454 282,458 282,458 282,133 282,339 282,232 282,324 282,327 282,324 282,061 282,061 282,405 282,061 282,419 282,354 282,354 282,354 282,354 282,354 282,419 282,421 282,320 282,421 282,320 282,32
	Canender Dox, Self-Ollog, H. L. Behrens Can washing macine, V. Barker Candelabrum, F. A. Kittell Cance and Rauge, G. P. Vicken Care mill, A. J. Manny Car coupling, W. I. Byard Car coupling, W. I. Byard Car coupling, A. A Stetson Car can way. W. Hubbard. Car unloading apparatus, Simar & Dale Carriage, J. S. G. F. Hörcher Carriage coupling, R. G. Wood. Carriage curtain strap fastening, F. A. Neider Carriage curtain window, F. A. Neider Carrier, See Cash carrier. Sheaf carrier. Carse. See Burial C.se. Lock case. Sheave case. Cash and parcel carriers, track for, G. P. Walker. Cash carrier, G. P. Walker. Castings, pattern and fask for producing, S. C. Tatum Catanenial sack. L. Lange Celluloid, etc., process of and apparatus for moulding hollow articles from, J. R. Furman. Center board for boats, E. L. Sibley Chain, W. H. Dickey Chair. See Folding chair. Reclining chair. Chair, cot, and bed, combined, S. McCielland Charrier, Churn, D. T. Bruek Churn, D. T. Bruek	282,151 282,434 282,458 282,458 282,252 282,222 282,222 282,222 282,222 282,222 282,224 282,125 282,081 282,496 282,495 282,451 282,354 282,354 282,354 282,354 282,201 282,202 282,20
	Canender Dox, Self-Ollog, H. L. Behrens Can washing macine, V. Barker Candelabrum, F. A. Kittell Candel mould gauge, G. P. Vicken Cane mill, A. J. Manny Car coupling, W. I. Byard Car coupling, W. I. Byard Car coupling, A. A Stetson Car canway. W. Hubbard. Car unloading apparatus, Simar & Dale Carriage, J. S. G. F. Hörcher Carriage coupling, R. G. Wood Carriage coupling, R. G. Wood Carriage curtain strap fastening, F. A. Neider Carriage curtain window, F. A. Neider Carriage curtain window, F. A. Neider Carring system, Z. S. Holbrook Case. See Cash carrier. Sheaf carrier. Case. See Burial C.se. Lock case. Sheave case. Cash and parcel carriers, track for, G. P. Walker Caster, H. McDonaid Castengs, pattern and flask for producing, S. C. Tatum Celluloid, etc process of and apparatus for moulding hollow articles from, J. R. Furman. Center board for boats, E. L. Sibley Chain, w. H. Dickey Chain, conamental, S. Davidson Chair, cot, and bed, combined, S. McClelland Chair, cot, mousting the sporatus for J. D. Stanley Chinney cap, R. J. Smith Churn, W. W. Kitchen	282,151 282,434 282,458 282,458 282,133 282,399 282,292 282,438 282,397 282,429 282,419 282,419 282,419 282,419 282,419 282,419 282,419 282,251 282,201 282,217 282,201 282,20
	Canender Dox, Self-Ollog, H. L. Behrens Can washing macine, V. Barker Candelabrum, F. A. Kittell Cance mill, A. J. Manny Car coupling, M. I. Byard Car coupling, M. I. Byard Car coupling, M. I. Byard Car coupling, A. Stetson Car calway. W. Hubbard Car unloading apparatus, Simar & Dale Carriage body hanger, J. Bowser Carriage oupling, R. G. Wood Carriage curtain strap fastening, F. A. Neider Carriage curtain strap fastening, F. A. Neider Carriage curtain strap fastening, F. A. Neider Carriage curtain window, F. A. Neider Carriage curtain strap fastening, F. A. Neider Carriage curtain strap fastening, F. A. Neider Carriage curtain window, F. A. Neider Carriage settern, S. S. Holbrook Case. See Burlai C.se. Lock case. Sheave case. Cash and parcel carriers, track for, G. P. Walker 282,416 to Cash carrier, G. P. Walker 282,420, Cash carrier, automatic. Z. S. Holbrook Catapnenial sack, L. Lange Cetluloid, etc process of and apparatus for moulding hollow articles from, J. R. Furman. Center board for boats, E. L. Sibley Chain, w. H. Dickey Chain, ornamental, S. Davidson Chair, See Folding chair. Reelining chair. Chair, Supparatus for, J. D. Stanley Chenn, D. T. Bruck Churn, D. N. Berfon	282,151 282,434 282,458 282,458 282,458 282,239 282,232 282,397 282,324 282,397 282,324 282,397 282,324 282,397 282,419 282,419 282,419 282,421 282,251 282,20
	Canender Dox, Self-Ollog, H. L. Behrens	282,151 282,434 282,458 282,458 282,239 282,239 282,232 282,232 282,232 282,239 282,239 282,239 282,239 282,242 282,255 282,061 282,452 282,455 282,451 282,355 282,355 282,201 282,202 282,20
	Canender DOX, SEIT-OHING, H. L. BEHFENB	282,151 282,434 282,458 282,458 282,233 282,339 282,339 282,339 282,397 282,438 282,397 282,418 282,419 282,419 282,419 282,419 282,419 282,419 282,419 282,419 282,419 282,231 282,231 282,231 282,231 282,231 282,231 282,231 282,231 282,230 282,241 282,230 282,230 282,230 282,345 282,35
	Canender Dox, Self-Ollog, H. L. Behrens	282,151 282,434 282,458 282,458 282,458 282,239 282,339 282,322 282,324 282,397 282,324 282,397 282,324 282,397 282,324 282,354 282,354 282,354 282,354 282,319 282,419 282,421 282,521 282,209 282,419 282,421 282,221 282,324 282,235 282,241 282,354 282,241 282,354 282,241 282,354 282,241 282,355 282,255 282,25
	Canender Dox, Self-Ollog, H. L. Behrens	282,151 282,434 282,458 282,458 282,458 282,222 282,222 282,222 282,222 282,222 282,222 282,224 282,239 282,297 282,201 282,451 282,202 282,20
	Canender Dox, Self-Ollog, H. L. Behrens Can washing macine, V. Barker Candelabrum, F. A. Kittell Cande mould gauge, G. P. Vicken Care mill, A. J. Manny Car coupling, W. I. Byard Car coupling, W. I. Byard Car coupling, A. A Stetson Car canway. W. Hubbard. Car unloading apparatus, Simar & Dale Carriage body hanger, J. Bowser Carriage coupling, R. G. Wood Carriage coupling, R. G. Wood Carriage coupling, R. G. Wood Carriage curtain strap fastening, F. A. Neider Carriage curtain window, F. A. Neider Carriage system, Z. S. Holbrook Case. See Burial C.se. Lock case. Sheave case. Cash and parcel carriers, track for, G. P. Walker Caster, H. McDonaid Castengs, pattern and flask for producing, S. C. Tatum Celluloid, etc process of and apparatus for mouding hollow articles from, J. R. Furman. Center board for boats, E. L. Sibley Chain, ornamental, S. Davidson Chair, cot, and bed, combined, S. McCleiland Chair, cot, and bed, combined, S. McCleiland Chair, cot, and bed, combined, S. McCleiland Chair, W. K. Dickey Chain, ornamental, S. Davidson Chair, W. K. Sorgaue Chairn, W. K. Sheith Chair, W. K. Sheith Chair, W. K. Sheith Churn, W. W. Kitchen Churn, W. K. Southard Churn, W. K. Southard Curn moutor, G. B. & G. H. Smith Churn, W. F. Southard Churn, D. B. Wooster Ciurn, D. B. Wooster Ciurn, C. B. & G. H. Smith Churn, W. F. Southard Churn, C. B. & G. H. Smith Churn, D. B. Wooster Ciurn, D. B. Wooster Ciurn, D. B. Wooster Ciurn, D. B. Kooster Ciurn, C. B. & G. H. Smith Churn, W. F. Southard Churn, W. F. Southard Churn, C. B. & G. H. Smith Churn, W. F. Southard Churn, D. B. Wooster Churn, M. G. B. & G. H. Smith Churn, D. B. Wooster Churn, D. B. Wooster Churn, Churn, Churn, Churn, Churn, Churn, W	282,151 282,434 282,458 282,458 282,133 282,399 282,292 282,438 282,397 282,97 282,438 282,397 282,418 282,419 282,419 282,419 282,419 282,419 282,419 282,419 282,251 282,355 282,319 282,419 282,419 282,419 282,419 282,251 282,355 282,319 282,417 282,251 282,291 282,291 282,292 282,418 282,292 282,418 282,395
	Canender Dox, Self-Ollog, H. L. Behrens	282,151 282,434 282,458 282,458 282,458 282,239 282,339 282,232 282,397 282,397 282,397 282,397 282,397 282,397 282,397 282,397 282,397 282,397 282,397 282,397 282,397 282,354 282,354 282,354 282,354 282,354 282,419 282,421 282,421 282,521 282,299 282,403 282,201 282,245 282,395 282,241 282,395 282,395 282,395 282,395 282,241 282,395 282,241 282,395 282,241 282,395 282,241 282,295 282,241 282,295 282,241 282,295 282,245 282,245 282,245 282,245 282,245 282,255 282,245 282,245 282,255 282,245 282,255 282,245 282,255 282,245 282,255 282,245 282,255 282,245 282,255 282,245 282,255 282,245 282,255 282,245 282,255 282,245 282,255 282,245 282,255 282,245 282,255 282,245 282,255 282,245 282,255 282,245 282,255 282,245 282,25
	Canender Dox, Self-Ollog, H. L. Behrens	282,151 282,434 282,458 282,458 282,239 282,222 282,222 282,222 282,222 282,248 282,397 282,297 282,458 282,459 282,451 282,255 282,201 282,202 282,201 282,202 282,202 282,203 282,203 282,203 282,203 282,203 282,201 282,203 282,20
	Canender Dox, Self-Ollog, H. L. Behrens	282,151 282,454 282,458 282,458 282,232 282,232 282,232 282,232 282,232 282,239 282,397 282,291 282,291 282,291 282,395 282,35
	Canender Dox, Self-Ollog, H. L. Behrens	282,151 282,434 282,458 282,458 282,458 282,339 282,329 282,324 282,397 282,324 282,397 282,324 282,397 282,324 282,397 282,324 282,325 282,319 282,419 282,419 282,419 282,421 282,354 282,321 282,201 282,417 282,421 282,321 282,209 282,416 282,417 282,321 282,320 282,2167 282,328 282,335 282,335 282,335 282,339 282,345 282,339 282,345 282,339 282,345 282,339 282,345 282,339 282,345 282,339 282,345 282,339 282,345 282,339 282,345 282,339 282,345 282,339 282,345 282,339 282,345 282,339 282,345 282,339 282,345 282,339 282,247 282,224 282,222 282,143 282,255 282,143 282,155 282,479
	Canender Dox, Self-Ollog, H. L. Behrens	282,151 282,434 282,458 282,458 282,458 282,222 282,222 282,222 282,222 282,222 282,222 282,224 282,235 282,081 282,495 282,495 282,495 282,495 282,419 282,419 282,419 282,201 282,202 282,20
	Canender Dox, Self-Ollog, H. L. Behrens	282,151 282,434 282,458 282,458 282,232 282,232 282,232 282,232 282,232 282,239 282,397 282,397 282,397 282,397 282,397 282,397 282,397 282,397 282,397 282,419 282,419 282,419 282,251 282,355 282,319 282,201 282,201 282,201 282,201 282,201 282,201 282,201 282,201 282,201 282,201 282,201 282,201 282,201 282,201 282,201 282,201 282,201 282,201 282,201 282,395 282,215 282,395 282,40
	Canender Dox, Self-OHIDE, H. L. BEHFENB	282,151 282,434 282,458 282,458 282,458 282,232 282,339 282,232 282,324 282,397 282,324 282,397 282,324 282,397 282,428 282,397 282,428 282,355 282,319 282,419 282,419 282,419 282,419 282,419 282,419 282,419 282,419 282,419 282,419 282,419 282,419 282,410 282,201 282,321 282,320 282,345 282,35
	Canender Dox, Self-Ollog, H. L. Behrens	282,151 282,434 282,458 282,458 282,252 282,222 282,222 282,222 282,222 282,222 282,222 282,224 282,235 282,081 282,997 282,455 282,081 282,455 282,451 282,255 282,201 282,201 282,201 282,201 282,201 282,201 282,201 282,201 282,201 282,201 282,201 282,201 282,201 282,201 282,201 282,201 282,201 282,201 282,205 282,205 282,205 282,205 282,205 282,205 282,205 282,205 282,205 282,215 282,205 282,21
	Canender Dox, Self-Ollog, H. L. Behrens	282,151 282,444 282,458 282,458 282,458 282,222 282,428 282,222 282,428 282,397 282,97 282,428 282,397 282,428 282,397 282,428 282,397 282,428 282,397 282,419 282,419 282,419 282,419 282,251 282,251 282,251 282,251 282,251 282,251 282,251 282,251 282,250 282,251 282,395 282,455
	Canender Dox, Self-OHIDE, H. L. BEHFENB	282,151 282,434 282,458 282,458 282,458 282,222 282,438 282,397 282,322 282,428 282,397 282,324 282,397 282,419 282,41
	Canender Dox, Self-OHIDE, H. L. BEHFENB	282,151 282,434 282,458 282,458 282,252 282,222 282,222 282,222 282,222 282,222 282,222 282,222 282,235 282,081 282,997 282,297 282,498 282,498 282,498 282,355 282,619 282,419 282,419 282,421 282,354 282,355 282,399 282,201 282,201 282,201 282,167 282,201 282,201 282,201 282,201 282,201 282,201 282,392 282,392 282,392 282,392 282,392 282,392 282,392 282,392 282,392 282,392 282,392 282,392 282,392 282,393 282,393 282,393 282,393 282,393 282,393 282,393 282,393 282,479 282,403 282,404 282,403 282,403 282,404 282,403 282,404 282,403 282,404 282,40
	Canender Dox, Self-OHID, H. L. Béhrens	282,151 282,434 282,458 282,458 282,232 282,232 282,232 282,239 282,239 282,239 282,239 282,239 282,239 282,241 282,255 282,081 282,285 282,297 282,261 282,255 282,319 282,419 282,419 282,419 282,251 282,251 282,291 282,291 282,291 282,291 282,291 282,291 282,293 282,395 282,407 282,163 282,177 282,264 282,264 282,450 282,450 281,117 282,154
	Canender Dox, Self-OHIDE, H. L. BEHFENB	282,151 282,434 282,458 282,458 282,123 282,222 282,222 282,222 282,222 282,248 282,222 282,247 282,125 282,081 282,297 282,408 282,212 282,419 282,455 282,555 282,655 282,655 282,655 282,201 282,201 282,201 282,201 282,201 282,201 282,201 282,201 282,201 282,201 282,201 282,201 282,201 282,201 282,201 282,201 282,201 282,201 282,205 282,305 282,305 282,305 282,204 282,215 282,205 282,215 282,205 282,215 282,205 282,215 282,205 282,215 282,205 282,205 282,205 282,205 282,206 282,402 282,402 282,402
	Canender Dox, Self-OHIDE, H. L. BEHFENB	282,151 282,434 282,458 282,458 282,458 282,222 282,222 282,222 282,222 282,222 282,222 282,222 282,224 282,255 282,061 282,459 282,451 282,451 282,251 282,20
	Canender Dox, Self-OHIDE, H. L. BEHFENB	282,151 282,434 282,458 282,458 282,222 282,428 282,222 282,428 282,222 282,428 282,297 282,428 282,297 282,429 282,419 282,419 282,419 282,419 282,419 282,419 282,421 282,555 282,355 282,355 282,359 282,421 282,421 282,221 282,299 282,403 282,201 282,167 282,356 282,356 282,359 282,407 282,163 282,177 282,264 282,407 282,164 282,479 282,402 282,402 282,402 282,402 282,403 282,402 282,403 282,403 282,403 282,403 282,403 282,404 282,403
	Canender Dox, Self-OHIDE, H. L. BEHFENB	282,151 282,434 282,458 282,458 282,458 282,222 282,458 282,222 282,458 282,97 282,97 282,924 282,97 282,97 282,97 282,97 282,97 282,97 282,97 282,97 282,97 282,355 282,319 282,419 282,419 282,251 282,261 282,261 282,209 282,401 282,261 282,280 282,241 282,280 282,241 282,280 282,241 282,280 282,241 282,280 282,241 282,280 282,245 282,392 282,448 282,281 282,282 282,183 282,155 282,479 282,402 282,402 282,402 282,402 282,402 282,402 282,402 282,402 282,402 282,402 282,402 282,402 282,402 282,402 282,402 282,402 282,402 282,402 282,404 282,036 282,404 282,402 282,402 282,404 282,405 2
	Canender Dox, Self-OHIDE, H. L. Béhrens	282,151 282,434 282,458 282,458 282,458 282,222 282,428 282,222 282,428 282,222 282,428 282,125 282,081 282,429 282,421 282,355 282,611 282,419 282,421 282,354 282,551 282,099 282,421 282,201 282,421 282,521 282,099 282,421 282,201 282,419 282,421 282,356 282,201 282,419 282,421 282,356 282,419 282,414 282,419 282,414 282,419 282,414 282,419 282,414 282,414 282,415 282,414 282,414 282,414 282,414 282,415 282,414 282,444 282,44
	Canender Dox, Self-OHID, H. L. Béhrens	282,151 282,434 282,458 282,458 282,232 282,232 282,232 282,232 282,232 282,232 282,232 282,232 282,237 282,237 282,237 282,237 282,237 282,237 282,237 282,237 282,237 282,237 282,237 282,237 282,237 282,347 282,347 282,447 282,337 282,337 282,337 282,337 282,447 282,337 282,337 282,337 282,447 282,337 282,337 282,337 282,337 282,447 282,337 282,337 282,337 282,337 282,447 282,33

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label their specimens so as to avoid error in their identification.

(1) F. E. B. asks for a receipt for a stone color whitewash for an asphalt pavement, the color of which is objectionable. Will white Portland cement stick if made into a wash? A. A thin coat of Portland Tight and Slack Barrel Machinery a specialty. John cement is, probably, the best thing. It must be applied of such consistency that it will not flake.

> (2) G. L. M. asks: 1. Arethebinding posts of the electrical machine described in SUPPLEMENT 16] insulated? A. Yes, they are insulated by the wooden base of the machine. 2. How are the wires connected with the posts? A. Clamped by means of screws entering the posts from the bottom. 3. Is the soft iron used for electro magnets common cast iron? A. Soft gray cast iron.

(3) W. M. M. asks: 1. What weight will two air tight boxes carry; the boxes being 6 x 10, 12 feet long? A. 45,000 lb., including their own weight. 2. Also, the weight required to sink them onef ootin water? vious to ink? I wish to use the cardboard as a stencil to make very small round dots. A. Try paraffin.

most entirely on ceilings, and generally they hav for examination, should be careful to distinctly mark or about an eighth of an inch of whitewash on them, which is very hard and sometimes impossible to get off. A Wet the walls, and remove the whitewash by scraping. (15) F. H. asks: What will destroy cockroaches in pantry, commodes, or in any place where care that anything dangerous to the persons occupying house should be taken? A. It is said that powdered sugar and borax strewn about the places frequented by the cockroaches will destroy them. (16) J. H. G. writes: I have an electro medical battery. It has a current so strong that a man cannot hold it, but it can be made lighter at will. Can I use this battery current for gold, silver, and nickel plating? How can I make a gold or silver solution? A. Your battery disconnected from the coil might an swer for plating small articles. The current you mention as being so strong that a man cannot bear it, is not adapted to plating. For instructions in plating, see SUPPLEMENT No. 310. (17) C. E. A. asks: What can be put on perforated cardboard, so as to render the same imper-