

### HINTS TO CORRESPONDENTS.

Names and Address must accompany all letters or no attention will be paid thereto. This is for our information and not for publication.

References to former articles or answers should give date of paper and page or number of question.

Inquiries not answered in reasonable time should be repeated; correspondents will bear in mind that some answers require not a little research, and, though we endeavor to reply to all either by letter or in this department, each must take his turn.

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Minerals sent for examination should be distinctly

Niinerals sent for examination should be distinctly marked or labeled.

(7232) H. G. V. writes: 1. I tried to make some batteries. I cut lead plates about 6×7 and roughened them with a coarse rasp, put red lead paste on each side, with strips of asbestic cloth next to each plate and a piece of cardboard between. Have six to eight plates to each cell on the outside of the bunch. I put thin boards with three hard rubber tubes that pass through all and hold them together; each bunch is put in a bard there any battery of higher voltage than the bichromate rubber jar. I charged them once and got good results; tried to recharge, but could get nothing. Used the same current both times, which is 125 volts and about 4 or 5 amperes. Do not think they are short circuited. Put them in series with alternate fields. What is the in an issue of three or four weeks ago? A See Suppletrouble? A. For charging storage cells use a continuous current; place them in series. Allow 21/2 volts for each cell. The remaining voltage of your current must be disposed of by resistance coils or lamps, arc lights preferred, since they carry more current than incandescent lamps. Thus, if you have 10 cells, 10×2.5 volts=25 volts. If the current is of 125 volts, there remains 100 volts, which two arc lamps in series will use up. Or you points: First we have 7 foot head or 7 feet over the wheel can cheaply make a coil of No. 10 bare iron wire for the and the forebay or water house is 10 feet by 12 square. same purpose. The advantage of the lamps would be that you can do the charging at night, if you have any use if I make the water house larger, or do I gain any power for the light. They should charge in series with the alternator field. If they get 21/2 volts per cell, which you can easily measure; but with only 4 or 5 amperes, it will 'ing the water bay of your wheel. The head or height require 216 to 2 times as long to charge them as with 10 of the surface above the wheel and the quantity of water volts each when in series with the alternator field since is the measure of your water power. If your race is the resistance of the field coil is so great as compared small, so that it does not keep the water in the bay at 2. Should they with the very low resistance of the cells be charged in series or separately? If in series, would I the bay, in order to gain power. get the same voltageper cell as when charged separately? A. Storage cells are always charged in series. Put as many in one series as will use up the voltage of the circuit at 2½ volts per cell. That is, divide the voltage of the circuit by 2.5; the quotient is the number of cells which should be put in one series thus:  $125 + 2 \cdot 5 = 50$  cells. As many such series may be put in multiple as the current can supply. 3. What can I cover the batteries with to keep from spilling the fluid and keep the salts from creeping? A. There is no remedy for spilling, except to keep the battery still. Salts may be kept from creeping by coating the upperedge of the cell with paraffine. Dip the edge of the cell into the melted paraffine. 4 If the field of a motor gets hot on a warm day, would it pay to put an air blast on? A. If the heating is so great as to endanger the insulation, something should be done. It indicates too strong a current in the field. An air blast might cool it: additional external resistance in series with the field will also remedy it.

(7233) A. B. J. asks: 1. Where can I obtain any information regarding size and description of how a solid back telephone transmitter is made, and also what kind of carbon is used in the same? A. See Scientific American, vol. 72, No. 7. 2. Would carbon such as used in arc lights, finely powdered, answer same purpose? A. Yes; but not quite as well as the polished granules. 3. What is meant by kilowatts or watt hours? A. A kilowatt is 1.000 watts. A watt hour is one watt of electric power flowing for one hour through a wire. 4. What is a Wheatstone bridge? A. A Wheatstone bridge is an instrument for measuring electrical resistance. We should advise you to study carefully some text book on electricity. Avery's "School of Physics," chap, 6, is excellent.

(7234) T. B. B. writes: I have a small engine, the cylinder of which is 2×4 inches. Would you kindly tell me how large a boiler I will have to make to work it economically? A. Your engine at 60 pounds boiler pressure, and with 150 revolutions per minute, should be equal to one-half horse power, and will require a boiler with 10 square feet of fire heating surface. You will find a description and scale drawings for safe boilers f the size you require in SCIENTIFIC PLEMENT, No. 702, 10 cents mailed.

(7235) E. D. A. asks: Will you give the formula for a lasting luminous paint? A. We can send you five papers on the subject of luminous paint on receipt of fifty cents, which will give you all the neces-

(7236) W. C. asks: How to wind the 8 light dynamo described in Scientific American Sup-PLEMENT No. 600, to convert the same into a 550 volt motor for direct current? A. You should not attempt to convert the dynamo of Supplement No. 600 into a motor for a 550 volt direct current. The design is not fitted for it: the number of turns for the armature coils would have to be too great, and the commutator could not stand the current. The armature would require 40 turns in each coil of No. 28 wire. The same field could probably be used with a regulator of about 400 ohms.

(7237) G. E. R. writes: Will you kindly inform me through Notes and Queries how to prepare a solution to be used as a flux for brazing? What kind of solution or mixture can be applied to remove borax easily after brazing? I have been using borax as a flux, but find some difficulty in getting the spelter to flow into the joints, as the borax seems to fill and keep out the spelter. Bicycle alarm, C. Schonlank.

I also find the melted borax is very hard to remove after brazing; of course dipping the hot parts into water would remove the surplus flux after brazing, but it tempers the steel, which I want to guard against. Borax is the only suitable finx for brazing. It should be ground with water to a creamy consistence on a small slab of stone made slightly hollow on the surface to hold the mixture. Hard slate or a fine hard sandstone is most suitable. Use a small brush and smear the surfaces that are to be brazed, with enough outside to hold the spelter from falling off. A small piece of brass laid on the upper side of the joint will often flow through better than the loose spelter. Use hydrocbloric acid and water equal parts to clear the joint of borax. Have it hot and dip the work when cooled just below the red; then the steel will not harden. If the borax is not all removed, it may be thoroughly cleaned off by boiling the joint a few minutes in the acid water. See "A New Book on Bicycle Repairing," by Burr, \$1 by mail, which fully describes the best methods of brazing.

(7238) J. T. B. asks (1) whether it would not be better to wind the induction coil (Supple-MENT, No. 160) all the way across with silk covered wire. A. No; the wire wouldcost more than it would be worth the gain would be almost nothing in length of spark. 2. Would not adhesive tape be better for insulating purposes? A. No. Adhesive tape soon dries, and is of no more value than a porous cloth would be: the spark would pass through it easily. 3. Would it be any thinner? A. That would depend on the quantity you used, but it is not a suitable material for the purpose. The insulation of the primary coil must be impervious to air. 4. Is cell? A. No practical battery. The bichromate battery is the best for your purpose. 5. Have you any issue of your paper describing some experiments with alternating electricity, for which I could use the alternator described MENT, Nos. 762, 763, 792, 847 and 855. 6. Can you give me a formula for a liquid to remove rust from a bicycle A. Try Kerosene oil.

(7239) W. G. M. says: I write you for a little information. I am repairing a water mill with a turbine wheel, and want your advice on the following Now what I want to know is, shall I have any more power over the wheel? A. You can gain no power by enlarg-The probability is that the cells do not get 21/2 that you can make effective on the buckets of the wheel nearly full head, the race should be made larger, and not

> (7240) S. L. asks: Which contains the greater number heat units-one ton of coal or one barrel of petroleum? A. A ton of coal (2,000 pounds) has a heating capacity of about 28,000,000 heat units. A barrel of petroleum (42 gallons, or about 275 pounds) has a heating capacity of about 3,500,000 heat units, or 1/8 as much as a ton of coal.

> (7241) T. O. S. asks for the formula of D. W. C. Hoover's pyro and potash developer:

Water..... 12 ounces.

Sulphite soda crystals 2 "
Citric acid
Bromide ammonium20 "
Pyro 1 ounce.
No. 2.
Water12 ounces.
Sulphite soda crystals 2 "
Carbonate of potash 3
o develop, take
No. 1 1 drachm.
No. 2 1 **
Water

To develop a 5×8 plate take water, 4 ounces; No. 1 2 drachms; No. 2, 2 drachms. If more intensity is re quired, add more of Nos. 1 and 2. More of No. 1 will restrain and of No. 2 will accelerate.

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For which Letters Patent of the United States were Granted

NOVEMBER 9, 1807,

AND EACH BEARING THAT DATE

| See note at end of list about copies of these patents.

Adjustable wrench, M. M. Funk	593,354
Air brake hose coupling, Bragg & Moyers	593,531
Alarm. See Bicycle alarm. Fire alarm.	-
Ash pit, C. Jackson	593,540
Bag See Clothes bag. Punching bag.	
Baking pan, G. J. Cave. Baling press, A. Barrett	593,390
Baling press, A. Barrett	593,506
bailing press. E. J. Surriev	593,383
Ball. See Rubber ball.	
Ballot box, G. J. Murphy	593,487
Barrels, etc., device for rolling. W. P. Cherrington	
ton	593,294
Bath. See Douche bath.	
Battery cup, J. A. Britten	593,193
Battery zinc. D. Ogden	593,332
Bearing, shaft, M. H. Barker	593,189
Bed insect guard, Toal & Wilson	593,445
Bedstead clamp, J. F. Dunnigan	593,352
Bedstead fastening, E. F. Tilley	593,444
Bedstead rail grip joint, L. C. Neff	593,330
Bell. door, W. B. McAshan	593,233
Bicycle, L. L. Moe	593,363
Bicycle alarm, C. Schonlank	593,336

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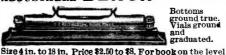
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Chimney, A. Lemke. Churn, F. W. Alden. Cigarette making machine, J. H. Venners Circuit breaker, automatic, W. G. Lowrie. Circuit breaker, magnetic, D. M. Moore Clamp. See Beetsteal clamp. Cleaner. See Vessel cleaner.	593,303 593,317 593,385 593,481 593,230
Case. See Egg case. Centrifugal machine, J. Schroeder. Chair. See Window chair. Chair. See Window chair. Chair. See Window chair. Chair. H. M. Willis. Cheese cutting apparatus, A. Saunders. Chimney, A. Lemke. Churn, F. W. Alden. Cigarette making machine, J. H. Venners Circuit breaker, automatic, W. G. Lowrie. Circuit breaker, magnetic, D. M. Moore Clamp. See Bedstead clamp. Cleaner. See Vessel cleaner. Clock repeating mechanism, G. W. Ander Cloth cutting machine, J. J. Scholfield. Clothes bag, motb proof, F. W. Baehn. Clothes drainer, washboiler, L. Cooke. Clothes drainer, washboiler, L. Cooke. Clothes line fastener, G. S. Velie. Clutch, C. B. Schultz. Coffee pot, H. L. Mitchell. Coffin handle, E. A. Post. Commutator bars, apparatus for asseml H. Short.	593,265 593,55 <b>6</b> 593,346 596,271 593,186 593,256 593,313
Coffin handle, E. A. Post. Commutator bars, apparatus for assemi H. Short. Commutator end rings, construction of Short. Conductor pipe, W. W. Baird. Confectioner's filling and separating n	593,239 bling, S. 593,282 F, S. H. 593,283 593,185 nachine,
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Furnace. See Blast furnace. Heating ft Cage. See Punch gage. Game apparatus, A. W. Whitney. Game board. W. Mumbrauer. Game counter, Brodeur & Thayer. Garbage receptacle, L. R. Houchens. Garbage treating apparatus. C. C. Currier Garment supporter, I. L. Haight. Gas and air mixer, E. Meredith. Gas burner, H. W. Billington. Gas burner, Verler & Richardson. Gas burner, incandescent, S. H. Moore. Gate. T. C. Greene.	593,525 593,198 593,210 593,276 593,453 593,342 593,364 592,294
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Heels, machine for making boot or shoe, J Holes, W. Hedges. Heisen, apparatus, W. H. Thompson, Holk, See Grip wok. Snap book. Hose coupling, F. J. Bernhardt, Hose coupling, F. J. Bernhardt, Hose water accumulator, W. Kouznezoff, Hub attaching device, J. F. Smith et al. (Continued on page 334)

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	Scientit	ic .	6
R	Hydrocarbon burner, P. Schneideretal	593,243 593,322 593,530	
)  -   -	Ice creeper, safety, E. L. & A. F. Wagner	593,315 593,365 593,203	1
ý: t: 4	Index. Laue & Pierce Insect trap, G. F. Davidson Insulating Joint, Lau & Bredsvold	595,526 596,515 593,381 503,599	l
je it	Iron snaper, J. A. Glodings Joint. See Electric cable joint. Insulating joint. Rail joint. Kaleidoscope, W. Reeves	593,405	١,
f f	Kaleidoscope, W. Reeves. Knitting machine, straight, F. Raven. Knob attachment, C. Bayer. Lamp, J. G. A. Kitchen.	593,3 <b>0</b> 9 593,5 <b>0</b> 7 593,39 <b>6</b>	_
ŭ   d	Lamp burner, G. A. Roden. Lamp burner, incandescent, T. H. Mulch. Lamp, vapor, G. Washington.	593,454 593,251 593,257	
s, i ie rt j	Knob attachment, C. Bayer. Lamp, J. G. A. Kitchen. Lamp burner, G. A. Rodies. Lamp burner, it.ca-descent, T. H. Mulch. Lamp burner, it.ca-descent, T. H. Mulch. Lamp burner, it.ca-descent, T. H. Mulch. Lamp vapor, G. Washington Lantern, bicycle, Ø. Schwarz. Lasting machine, H. Von Kalinowski. Latch, gate, W. J. Reynolds. Latch, taper, W. Ledge. Lemon squeezer, Baumgarten & Redlinger Lifter. See Stove lidlifter. Lime, kiln or furnace for burning, Simmonds & Lime, kiln or furnace for burning, Simmonds &	593,356 593,241 593,359	
s	Lemon squeezer, Baumgarten & Redlinger Lifter. See Stove lidlifter. Lime, kiln or furnace for burning, Simmonds &	593,548	
	Delaney. Liquids, method of and apparatus for purifying, Cook & McEwen.	593,246 593,371	
1 4. S	separating, R. H. Park.  Lock, T. A. T. Rydberg	593,333 593,436 593,335	-
g s.	Delaney. Liquids, method of and apparatus for purifying, Cook & McEwen. Liquids of different specific gravity, device for separating, R. H. Park. Lock, T. A. T. Rydberg. Lock circuit claser, C. E. Pierce. Locomotive, snow, B. F. Glover. Looping machine, C. Holly. Lunch box, H. Hess, J. Mat. See Door mat.	593,2 <b>6</b> 5 593,2 <b>1</b> 8	
n	Match safe, Flanders & Stearns	593,353	1
n K	Match safe, Flanders & Stearns. Matthe safe, Flanders & Stearns. Matthe of other furnace products, apparatus for Mattress, spring, G. W. Murray. Measure, dressmaker's, A. M. Van Derwerp, Metal structures, treating, F. Shuman. Metal work, trimming device for struck-up, S. B.	593,447 593,279 593,555	н
re			3
E   c-   d	Milling machine, I. D. Lengel	593,541 593,259	1
s.	Miner's tool, J. D. Campbell Moulds, apparatus for forming sand, S. J. Adams.  Motor. See Carriage or cycle motor. Rotary mo-	593,459 593,267	 
	tor.  Mucilage reserveir cever, T. S. Lewis.  Musical instrument, G. H. Graham.  Musical instrument damper mechanism, W. Ger-	593,480 5 <b>9</b> 3,4 <b>6</b> 8	B
	Musical instrument keyboards, touch regulator	593,204 593,451	-
			-
•	nand matriment with motor, F. W. Hedgeland.  Nail and corn trimmer, E. R. Helbig.  Nailing machine, J. N. Kline  Necktie fastener, G. Selowsky.  Nut lock, J. W. B. Cook.  oil and gas engine, J. J. Heilmann.  oil can, D. True.  ordnance, automatic loading, mechanism for.	593,379 593,438 593,515	
	oil and gas engine, J. J. Heilmann  oil can, D. True  ordnance, automatic loading mechanism for,	593,296 593,446	:
.y	oil and gas engine, J. J. Heilmann. oil can, D. True. ordnance, automatic loading mechanism for, quick firing, H. S. Maxim. organ protector, S. R. oliver. organ, reed, O. Spaethe oscillatory mechanism, J. J. Reagan. Pad. See Truss Pad. Pan. See Baking pan. Paper feeding machine, A. D. Rowe.	593,382 593,498 593,310	
ic of	Pad. See Truss pad. Pan. See Baking pan. Dust pan. Paper feeding machine. A. D. Rowe. Paper sock, C. B. Randall	593,554	
ne nt	Paper sock, C. B. Randall. Pea or bean shelling machine, H. H. Brakeley. Piano action, J. H. Buder. Pipe. See Conductor pipe. Water service pipe. Pipe cleaning apparatus, A. B. Macklin. Pipe thimble, J. R. Bostwick. Plantor, convisioned check row and drill cover. C. H.	593,426 593,552	
1 <b>d</b>	rianter, combined check low and drin corn, c. 11.		
t- d- ig	Dooley. Planting and seeding machine, L. W. Powell. Plow, L. B. Wells. Plow reversible, W. A. Miles. Poker for gas furnaces, mechanical, L. Armison. Poker for gas furnaces. L. F. Loavier.		
ie s-	Poker for gas furnaces, mechanical, L. Armison. Polishing apparatus, J. E. Leavitt. Pertable elevator, W. E. Fitch Pet. See Coffee Pot.	593,546 593,302 593,392	
y, n-	son.	593,384	•
s-	Press. See Baling press. Printing press sheet adjusting device, G. W. Small	593,497	ti H
es. is.	Press. See Baling press. Printing press sheet adjusting device, G. W. Small. Pruner handle, tree. W. H. Smith. Pruner handle, tree. W. H. Smith. Pulley, belt, H. R. Tillison. Pulley, split, J. P. Lavig ne. Punching bag, can go ddie & Hesse. Punching bag, can controlled athletic, L. D. Haskell, J. Quilting frame, N. More. Race starting machine, V. Carandini. Rack. See Bottle and graduate rack. Skirt rack. Rail joint and forming same, W. J. Austin. Rail joint or rail coupling. J. G. Miller. Rail joint or rail coupling. J. G. Miller. Rail joint, splice or truss, Zern & Milhone. Railway brakes, automatic slack adjuster for, Nicholson & De Freese. Railway carriage, gravity, J. W. Cawdery. Railway track, J. W. Dowden. Railway track, J. W. Dowden.	593,337 593,366 593,398 593,490	
as n-	Punch gage, gang, W. H. Thomas Punching bag, coin controlled athletic, L. D. Haskell, Jr.	593,341 593,469	: te
1 <b>d</b> 1 <b>d</b>	Quilting frame, N. More Race starting machine, V. Carandini Rack. See Bottle and graduate rack. Skirt rack. Rail loint and forming same W. I. Austin	593,485 593,460 593,345	G
	Rail joint or rail coupling, J. G. Miller	593,42 <b>0</b> 593,5 <b>0</b> 5	IV al
	Railway carriage, gravity, J. W. Cawdery	593,553 593,413 593,520	
t	Railways, return wire connection for electric, J. H. Bickford Reaping machine, M. Alexandreseu Recorder. See Time recorder. Recording instrument, A. Steinbart	593,369 593,449	
у, х-	Pofloston Plondol & Harondoki	502 249	
R- 1 <b>d</b>	Refrigerator for storing and transporting eggs, meats, fruits, etc., J. H. Bowley. Rein guard, neck yoke, B. A. Fisher. Ripping and stitch picking tool, J. Darmody. Rock drill, J. M. Hamor. Rod separating and feeding device, A. C. Camp-	593,509 593,427 593,461 593,214	
l's er	Rock drill, J. M. Hamor  Rod separating and feeding device, A. C. Campbell	593,214 593,532	
ng ily	bell. Rotary engine, J. A. House. Rotary motor, H. Chaudun. Rotary steam engine, E. S. Hagen. Rubber ball, soft, H. G. Wolcott. Ruler and tracer for arcs of circles, E. B. Noyes. Saddle post and handle bar adjusting mechanism, S. F. Estell.	593,514 593,375 593,264	!
ts re	Ruler and tracer for arcs of circles, E. B. Noyes Saddle post and handle bar adjusting mechanism, S. F. Estell	593,236 593,373	!
nt E-	Sand in harbors, etc., means for preventing accumulation of, P. \(\Theta\)'Meara  Scales, recording weigh beam for, S. T. Braley	593,430 593,320	- 
he he de	S. F. Estell.  Safe or vault, G. L. Damon.  Sand in harbors, etc., means for preventing accumulation of, P. • Meara.  Scales, recording weigh beam for, S. T. Braley.  Scraper, drag, M. G. Bunnell.  Self playing instrument, F. W. Hedgeland.  Separator. See Cream Separator.	593,270 593,216	
At	Sewing machine quilting frame, E. W. Heacker. Shade bracket, extension, N. Hammer. Shade hanger, F. E. Stahlhut. Shaft or pole fastener, H. R. Harris. Sign, W. Reynolds. Signal. See Block signal.	593,523 593,417 593,441 593,355	1
ю <del>-</del> æ.	Sign, W. W. Reynolds. Signal. See Block signal. Signaling system. C. B. Sterling.	593,433 593,314	ļ -
te nt	Signaling system. C. B. Sterling. Skate, E. C. Moulton. Skate, G. W. Prouty Skirt rack, Devlin & Cowles. Snap hook, C. T. Redfield.	593,278 593,494 593,519	
th	Snap hook, C. T. Redfield. Snap hooks, means for mounting, J. Hand. Soles. etc., from sheet material, machine for cutting boot or shoe, Gooding & Beaure gard. Spanner wrench, H. B. Rose. Speed changing a spijance. H. R. Van Eyck.	593.537	
	Spinning and twisting machine spindle, Whitaker	•	
	& Chadwick.  Spring. See Wagon bolster spring.  Stairways, construction of, A. N. Petersen.  Stop ad justing device, T. W. Gibert.  Stopper. See Bottle stopper.  Stopper. See Bottle stopper.		
n	Stove lid lifter, A. D. Coles	593,458 593,196 593,539	
ns ng ec-	Stoves, furnace valve for hot blast, J. Kennedy. Sulfid ores as lead zinc ores, treating, S. Ganelin Sulfid ores, treating, S. Ganelin. Switch. See Electric switch.	593,476 593,415 5 <b>9</b> 3,416	
d- x-	Switch beard system, multiple, Hughes & Kelley Switch mechanism, electrically actuated, W. S.	502 200	
ns ty	Table. See Extension table. Table implement. W. Irmscher	593,223 593,391	
er at-			
ue on as			5
де. Эе-	ner Telephone system, W. W. Dean. Telephone transmitter, J. W. Thomson. Thermometer, automatically recording, M. L. W. Rinner. Thread package, F. E. Hall Time check, workman's, F. Brook.	593,503 593,211 593,457	3
es. ies	Time recorder, workman's, F. Brook	593,456 593,351 593,483	;   }
	Tire, pneumatic. A. B. Shaw.  Tire punctures, means for closing, R. W. O. Rehmenklau.  Tire tightener, C. E. Brookhart.		
	(Continued on page 335)	,400	

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27,827,	27,828
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Complexion beautifier, T. A. Metz.  30,830, 30,821  30,831  Complexion beautifier, T. A. Metz.  30,832, 30,833  Dress protectors, H. Feder.  30,832  Dress protectors, H. Feder.  30,833  Dress protectors, H. Feder.  30,833  Dress protectors, H. Feder.  30,833  Hoops, bands, strips, ties, and blades, Export Iron and Steel Company.  Jewelry and silver plated ware, E. G. Webster & Son.  Knit underwear, Little Falls Knitting Mill Company.  Lamps, bicycle, E. P. Breckenridge Company.  30,831  Leather, Russia, Herman Zohrlaut Leather Company.  Oysters, meats, fruits, vegetables, and cereals in glass, earthenware, and cans hermetically sealed, Assau, Baines Company.  70 wder for the skin, G. W. Hoyer.  Powder for the skin, G. W. Hoyer.  Starch Manufacturing Company.  30,803	Smith's Sons  Beer and malt extracts, lager, M. K. Goetz Brew-	
Company	Bicycles, Thorsen Company	
Sprague, Warner & Company.  Canned salmon, Alaska Fackers' Association.  30,820, 30,820, 30,820, 30,820, 30,820  Cutlery and edge tools, Firm of H. Taylor	Brushes, cleaning or scrubbing, Palmetto Fiber	· 1
Complexion beautifier, T. A. Metz.  Outlery and edge tools, Firm of H. Taylor  Jo.834 Dress protectors, H. Feder Dress shields, Canfield Rubber Company Gum, chewing, T. B. Dunn Company Harvesters, binders, mowers, rakes, harrows, cultivators, and similar machines and their Hoops, bands, strips, ties, and blades, Export Iron and Steel Company.  Jewelry and silver plated ware, E. G. Webster & Son.  Son.  Lamps, blaycle, E. P. Breckenridge Company.  Jeany, Dany, Dany	Sprague. Warner & Company	30,819
Harvesters, binders, mowers, rakes, harrows, cultivators, and similar machines and their several parts, D. M. Osborne & Company.  Hoops, bands, strips, ties, and blades, Export Iron and Steel Company.  Jewelry and silver plated ware, E. G. Webster & Son.  Knit underwear, Little Falls Knitting Mill Company.  Lamps bitsycle, E. P. Breckenridge Company.  Jewelry and silver plated ware, E. G. Webster & 30,803  Lamps, bitsycle, E. P. Breckenridge Company.  Jewelry and silver plated ware, E. G. Webster & 30,803  Lamps, bitsycle, E. P. Breckenridge Company.  Jewelry and silver plated ware, E. G. Webster & 30,803  Lamps, bitsycle, E. P. Breckenridge Company.  Jewelry and silver plated ware, E. G. Webster & 30,803  Lamps, bitsycle, E. P. Breckenridge Company.  Jokson and Company.  Jokson A. Wester and Co	Canned salmon, Alaska Fackers' Association. 30,820,	30,821 30,804
Harvesters, binders, mowers, rakes, harrows, cultivators, and similar machines and their several parts, D. M. Osborne & Company.  Hoops, bands, strips, ties, and blades, Export Iron and Steel Company.  Jewelry and silver plated ware, E. G. Webster & Son.  Knit underwear, Little Falls Knitting Mill Company.  Lamps bitsycle, E. P. Breckenridge Company.  Jewelry and silver plated ware, E. G. Webster & 30,803  Lamps, bitsycle, E. P. Breckenridge Company.  Jewelry and silver plated ware, E. G. Webster & 30,803  Lamps, bitsycle, E. P. Breckenridge Company.  Jewelry and silver plated ware, E. G. Webster & 30,803  Lamps, bitsycle, E. P. Breckenridge Company.  Jewelry and silver plated ware, E. G. Webster & 30,803  Lamps, bitsycle, E. P. Breckenridge Company.  Jokson and Company.  Jokson A. Wester and Co	Cutlery and edge tools, Firm of H. Taylor Dress protectors, H. Feder. Dress shields. Canfield Rubber Company	30,834 30,798 30,797
several parts, D. M. Osborne & Company	Harvesters, binders, mowers, rakes, harrows, cul-	30,815
Jeweiry and silver plated ware, E. G. Webster & Son.  Knit underwear, Little Falls Knitting Mill Company.  Lamps bloycle, E. P. Breckenridge Company 30,831 Leather, Russia, Herman Zohrlaut Leather Company.  Oats and oatmeal, rolled, Muscatine Oat Meal Company.  Oysters, meats, fruits, vegetables, and cereals in glass, earthenware, and cans hermetically sealed, Assau, Baines Company.  Powder for the skin, G. W. Hoyer.  Powder for the skin, G. W. Hoyer.  Powder for use on plants and vines, Danforth Chemical Company.  Starch for food and laundry purposes, National Starch Manufacturing Company.  Starch Manufacturing Company.  Starch Manufacturing Company.  Tin plate or terne plate, being sheet iron coated with tin or lead or by a mixture of both, United States Iron and Tin Plate Manufacting Company.  Tobaccos and cigarettes, smoking and chewing, Liggett & Myers Tobacco Company.  30,801  30,802  30,807	several parts, D. M. Osborne & Company Hoops, bands, strips, ties, and blades, Export Iron	1
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Liggett & Myers Tobacce Company. 30,810 Toy banks, C. Smyth. 30,804 Velocipedes, R. H. Wolff & Company. 30,830 Whisky, Carstairs, McCall & Company. 30,814 Wines, C. A Baldwin. 30,813 Yarns and threads and knitted and crotcheted		
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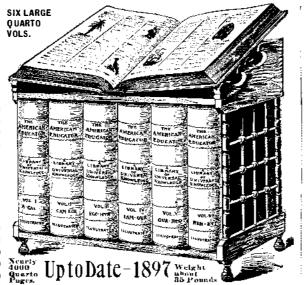
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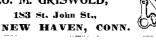


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