Business and Personal.

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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 This is for our information and not for publication.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.

Special Written Information on matters of personal rather than general interest cannot be expected without remimeration.

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Books referred to promptly supplied on receipt of Minerals sent for examination should be distinctly marked or labeled.

(5151) C. W. S.—The care of a gravity cell is very simple. Two things are necessary; one is to keep the zincs clean, the other is to keep the line of demarkation of the copper solution and the zinc sulphate about half way between the zinc and copper solutions of the battery. This you can do hyregulating the resistance of the circuit. If you find your cells running down too rapidly, connect them up in series of two or three in parallel; if on the other hand, level of the blue liquid rises into close proximity with the zinc, it indicates too much resistance in the circuit, the remedy for which is obvious to decrease the resistance of the external circuit.

(5152) J. J. M. says: Some time ago I saw a man who made it his business writing names and designs on glassware. I am acquainted with the process using the vapors of fluoric acid, but this man used a fluid with pen and brush. Would you kindly let me know under queries of vonr valuable paper what kind of a solution he probably used? A. 1. The preparation may be made by mixing sulphate of bartum and fluoride of ammonium in the proportion of three parts of the former to one part of the latter, with sufficient sulphuric acid to decompose the ammoninm and bring the mixture to the consistency of rich milk. The mixture should be made in a receptacle of lead, and kept in a bottle of the same material, or of gutta percha. 2. Since fluoric preparations have been produced at reasonable prices the decoration of glass by their means has steadily made its way. Etched glass is now to be found everywhere, and glass etching runs glass cutting very hard. It is very easy to understand that well etched objects appear actually more beautiful than those which have been cut, The cost of production is cheaper, and since M. Hock, a Viennese chemist, has given us an elaborate work upon the technic of glass etching, the difficulties attending this kind of work have been reduced to a minimum. As is well known, fluoric acid usually etches smooth, while other fluoric preparations yield a matt surface. The most beautiful ornamentation is obtained when certain parts of the glass surface are rendered matt by means of flouride of ammonium which has been slightly acidified hy means of acetic acid. The matt appearance is not always the same with different kinds of glass, but varies much in beauty. This effect is governed by the composi-

tion of the glass, lead glasses being easily acted upon and furnishing a very fine matt surface. 3. Where it is de sired to have the surface of the glass not altogether matt, but shining like ice, as in the case of window glass, this may be attained in a simple manner by placing the glass plate in a perfectly horizontal position and covering it with fine groats. Then very dilute fluoric acid is poured upon it. The groats act as a shield and produce upon the giass raised points.—"Cyclopedia of Receipts, Notes and Queries.

(5153) J. M. says: Will you please advise a subscriber how to finish an oak front to adwelling that is exposed to the weather, where the finish will standany reasonable length of time and not come off, bleach out and fade? All fronts to dwellings and stores in this part of the State that I have noticed do not stand the weather. Also please advise how to make a glue that will hold a joint that is exposed to the weather, A. An oak front should be thoroughly oiled with raw linseed oil as soon as finished, and rubbed down with woolen cloths In a few days, or as soon as the raw oil has struck in and dry enough, apply a coat of boiled tineeed oil, and when dry a second coat. A good weather glue is made by boiling the glue with skimmed milk, in the propor tion of half a pound of dry glue to a quart of skimmed milk. Swell the glue in the milk before boiling.

(5154) P. McL. writes: I am about to erect two batteries of boilers, four boilers in each battery. Size of first battery 26 feet long by 38 inches diameter two 15 inch flues in each boiler. Size of second battery 32 feet long by 42 inches diameter, two 15 inch flues in each boiler. Will you please through your Notes and Queries inform me the distance grate bars should be below shell of boiler, also distance from bridge wall to shell of boilers, depth of combustion chamber, and style of back wall, whether staight wall or should it be racked off in front? Boilers to burn Pittshnrg coal and can use all steam they can make. Also please give me beight and diameter for iron smoke stack for each battery? A The grate for soft coal should be 3 feet below boilers in both batteries. Bridge wall, one foot below the boilers Size of grate for each boiler of the first battery should be 40 inches wide,414 feet long. Size of grate for each boiler of second battery should be 44 inches wide, 5 feet long Bridge wall should be vertical for 9 inches above the grate, then racked off or beveled to the top at about 45°. Iron smoke stack of first battery 38 inchesdiameter by 60 feet in height. For second battery 44 inches diameter by 60 feet high.

(5155) F. W. M. asks: Is there any need of a flux in casting brass? If there is, what is the best to use? A. No flux is used in casting brass. A little powdered charcoal is put on the surface in the crurible to prevent oxidizing.

(5156) J. J. P.—We do not think a fan blower is adapted to organ blowing, on account of the vi bration of the column of air, which would affect the sounds produced by the pipes

(5157) C. H. asks: 1. I have just made two storage batteries, 4 plates, each 4×5 inches, coated with red lead mixed with sulphuric acid and water. I want to charge them from a 50 volt, 16 candle power socket. Is the voltage too high? A. By introducing your battery, together with some resistance, into your 50 volt circuit, you can charge it. 2. How can I reduce the voltage from the socket low enough to charge the cells to the best advantage? A. Use a wire rheostat or a bank of lamps for resistance. 8. How many gravity batteries will it take to charge the storage batteries so as to burn a 1 candle power lamp 15 to 20 mlnntes each evening, using the gravity cells during the day time to charge them? A. Four gravity batteries to each cell of sto age battery. The proposed lamp is rather small; you might use 2 or 8 cells with a larger lamp and run it for a much longer time.

(5158) W. M. writes: I have constructed a pair of receivers of the Bell telephone pattern, merely as an experiment. When I tried them I found that the sounds were very low and indistinct. Can you tell me what the cause of this is? A. Possibly you may have placed the diaphragm at too great a distance from the pole of the magnet, or you may have used a weak magnet. Possibly you have not sufficient length of wire on your spools, or the wire may be short-circuited.

(5159) B. M. C. V. asks: 1. What is the rule to know the charging time of a given accumulator Has the number of plates anything to do with it, or the surface of the plates as represented by square inches A. Charge your batteries until the positive plates look like wet slate nearly black: when partly discharged they become dark red, chocolate or plum color. It requires about 7 or 8 hours to charge a battery. 2. I have an accumulator for medical use, composed of four separate accumulators to be charged, connected in parallel with 2 Runsens 20 cells for 8 hours. I want to know how many hours it will take to charge them with 4 telegraph cells A. Four gravity cells to each cell of storage battery will charge storage cells in about the same time, 7 to 8 hours. 3. I have two large Bunsens (2 gallons) with two zinc plates each; one of the plates in each cell is nearly de troved by little use. The connections are prop the 2 zincs in each cell and one of them with the carbon of the neighboring cell; the plates are thoroughly amalga mated, the screws firmly attached, nevertheless the brows ing is very strong in both the mentioned plates. Can you help me with your advice in preventing such a trouble? I use for charging 1 part strong sulphuric acid to 12 of water by volume. A. The only way to prevent the destruction of the zincs is to remove them from the cell when the battery is not in use. 4. How can I know the amperage and amperehours of a given accumulator ? A. You can determine this only by trial, or addressing the maker, if it is one which is on the market,

Replies to Euquiries.

The following replies relate to enquiries published in the SCIENTIFIC AMERICAN, and to the numbers therein

BORING GLASS.-In the May 6, 1893, number of the Scientific American, a correspondent M., tells of a very good way to drill glass plate. His methodis a good one, but if a saturated solution of camphor in turpentine be used as a lubricant, the drill will cutmore rapidly.—C. R. Jours, M.D.

INDEX OF INVENTIONS | Fish plate, Davis & Dick | Fishing rod, A. Cable. | Flagge wrench, J. W. Kellam. | Fluid heater, Page & Hausheer |

For which Letters Patent of the United States were Granted

AND EACH BEARING THAT DATE.

[See note at end of list about copies of these pate	ents.
Adjustable, wrench, Griffin & Nichols499,919, Advertising clock, L. Peterson	499,920 499,931 499,712
Alarm. See Grave alarm. Alum leaf, photographic, S. Posen	499,986
Alloys by electro deposition, production of C. K. Fletcher Animal shears, A. D. Reynolds. Anisolia and making it, P. Monnet. Automatic wrench. J. H. Montgomery. Ax making die, C. W. Hubbard. Axes, manufacture of. J. Taylor. Balette, H. C. Tully. Ballot box registering, W. S. Black.	499,725 499,938 499,927 500,025
Ax making die, C. W. Hubbard Axes, manufacture of. J. Taylor Baletie, H. C. Tully	600.084 (
Axes, manufacture of J. Taylor. Axes, manufacture of J. Taylor. Ballot box, registering, W. S. Black. Ballot registering device, U. G. Hes. Barrels or casks, machineforsetting upand wind- lassing, L. M. Greit Basket, pitcher carrying, H. T. Blake Battery. See Secondary battery. Bearing, sbatt, A. H. Reid,	499,809 499,869 500,000 499,787
Basket, pitcher carrying, H. T. Blake Battery. See Secondary battery. Bearing, shaft, A. H. Reid.	499,775
Battery. See Secondary Dattery. Bearing, shaft, A. H. Reid, Bearing, wagon roller, F. W. Nagel. Bed botton, spring, W. Schmitt. Bed chair, J. C. Wood. Bedclothes clamp, J. H. Schroeder. Bedcouch, J. C. Wood. Bell, electric, W. J. Murdock. Belt, J. A. Ferginson.	499,762 499,847 499,941 500,091
Bedcouch, J. C. Wood. Bell, electric, W. J. Murdock Belt, J. A. Ferguson	499,855 499,982 500,027 499,978 499,880
Beit, J. A. Ferguson. Beit fasteni g. C. D. Fuller. Bicycle frame. etc., F. H. Bolte. Bicycle lock and support combined, J. E. Davis. Binder, R. R. Vernon Boiler. See Steam boller.	499,880 499,707 499,876 499,899
Boiler. See Steam boiler. Boot tree, M. Spuhr. Bottle stopper, F. S. Towle.	499,761 499,898
Boot tree, M. Spuhr. Bottle stopper, F. S. Towle. Bottles, device for preventing the fraudulent filling of, J. J. Dafour. Box. See Ballot box. Brake. See Car brake.	500,057
Brake support, J. A. Brill	499,709 500,047
Bridge gate, draw, H. W. Yerrington	499,867 499,842
Vapor burner. See cas burner. Hydrocarbon burner. Vapor burner. Burning fuel, E. B. Coxe Bush and bung, combined, Phillips & Deurlam Camera. See Photographic camera. Can. See Preserving can. Can heading machine, M. A. Wheaton Cane and wmbrella. combined. W. B. Blake	499,715 499,932
Can. See Preserving can. Can heading machine, M. A. Wheaton Cane and umbrella. combined, W. B. Blake	499,949 500,051 499,725
Can heading machine, M. A. Wheaton. Cane and umbrella. combined, W. B. Blake. Car brake, G. J. F. erguson. Car coupling, C. A. Dunn. Car coupling, Goff & Joiner. Car coupling, B. Nash. Car coupling, B. Nash. Car coupling, B. Nash. Car coupling, B. Willinger. Car fender, J. W. Dellinger. Car fender, J. N. Wieczorek. Car fender, railway, F. Groshaus. Car roof. non-conductor compound, P. H. Murphy.	499,725 600,098 499,827 500,074
Car coupling, J. H. Swindell. Car door, J. W. Dellinger. Car fender, J. N. Wieczorek.	199,947 199,909 199,812 199,882
Car roof, non-conductor compound, P. H. Murphy. Car, safety, B. F. Brow	499,819
Murphy. Car, safety, B. F. Brow Car safety attachment, street, L. E. Dubois. Car seat beater, railway, H. H. Forsyth, Jr. Car seats, device for turning the backs of, J. E. Groves.	500.059
Groves. Car, street, J. A. Mehling (r). Carwheel, H. E. Butts. Cars, trused trolley boardfor electric, H. Cochran Carpet beater, F. L. Goodenough. 499.987. Carpet cleaner, F. H. Good. Cartage, H. P. Wells. Cart. Jones & Gillies.	50C,063 11,346 499,778 499,871
Carpet beater, F. L. Goodenough	499,968 499,966 499,769 499,740
Cart top, H. Bunker. Case. See Egg shipping case. Cash register E. K. Heller. Cash registering and account checking, method of and means for. J. T. Hicks. Caster, F. W. Frank.	499,963 499,885
casa registering and account cacking, method of and means for J. T. Hicks. Caster, F. W. Frank. Chain, drive, J. O. Brown	600,071 499,783 499,961
Chain of canie kith G. Gaknon	100,001
Chair. See Bed chair. Dental chair. Knockdown chair. Chaise, J. C. Hugghis. Channeling machine, French & Meyer. Chart displayer, W. S. Temple. Chopper. See Meat chopper. Churn, T. J. Missildine. Cigar bunching machine, F. C. Smaletig. Clamb. See Bedclothes clamb. Hose clamb.	499,738 500,060 499,764
Chopper. See Meat chopper. Churn, T. J. Missildine Cigar bunching machine. F. C. Miller Cigar bunching machine. F. C. Smalstig	500,021 500,020 500,083
Clamp. See Bedclothes clamp. Hose clamp. Cleaner. See Carpet cleaner. Clp. See Paper clip.	499,737
Cloth cutting machine, O. Froemert	499,917 499.839
Coffin signal, A. Kwiatkowski	500,013 499,397 499,803 500,015
College Beautiful College College College Beautiful College Co	499.736 490.999
R. Savage. Cooker, steam, G. Goff. Cooler. See Milk cooler. Cony holder. E. H. Carr	499,890 499,984 499,966
Cooler, See Milk cooler. Copy bolder, E. H. Car Fortney. Copy bolder, E. H. Car Fortney. Colynoger See Car Coupling. Thill coupling. Cutivator, D. F. Inweede. Cutivator, disk. Rower & Knaub. Cutivator, disk. E. Miller. Cutivator, disk. E. Miller. Cutivator, disk. E. Miller. Cutivator on bolder H. Story. Cutivator on bolder H. Story. Cutivator & See Stake or trash cutter. Cycle. carrier, J. Warrick. Damner G. T. Mee.	199,801
Cultivator, disk, Brown & Knaub	499,719 499,711 499,814 499,991
Curling iron bolder, H. Story	500,108 499,930 499,930
Desdcentere, device for overcoming, C. A. Van	500.044
Alien Dentalchair, D. A. Nash. Desk switch, D. J. Willis Die. See Ax making die. Dies appearatus for making G. F. Chammay	500,103 499,770 499,821
Dies, apparatus for making, G. F. Champney Dies, machine for making, G. F. Champney Dies, making, G. F. Champney Digger. See Post hole digger.	499,822 499,820
Directory holder and operator, A. F. George Districting device, G. N. & F. G. Botsford. Dist hatpener, H. Casey. Display rack, D. Goldstein. Door holding device, M. W. Reseves. Door, silding, H. J. Lohmen. Door, sidding, T. J. Vander Bent Drainer, disb, C. S. Baird.	600,099 499,957 499,907 499,881
Door holding device, M. W. Reeves Door, sliding, H. J. Lohman Door, sliding, T. J. Vander Bent	500,0%6 500,018 499,766 499,951
Drill. See Grain drill. Dust collector, T. & G. M. Parkinson Egg beater, H. F. Juergens	499,799 499.741
Egg shipping case, J. H. Bowley Electric converter, G. & A. Pfannkuche Electric lighting system, C. L. Morey Electric motor-regulator, C. L. Whitimham	499,708 499,862 500,026 499,769
Drainer, dish, C. S. Baird. Drill. See Grain drill. Drill. See Grain drill. Dust collector, T. & G. M. Parkinson. Egg beater, H. F. Juergens. Egg shipping case, J. H. Bowley. Electric converter, G. & A. Pfannkuche. Electric dighting system, C. L. Morey. Electric motor regulator, G. H. Whittingham. Electric matter and applying, F. G. Corning. Electrical energy by natural force, means for storing and supplying, F. G. Corning. Electron, N. Beckwith. Electron, N. Beckwith.	500,041 429.780 499.700
Engine See Gee engine Steem engine	499,700 500,038 500,017
Eye former, W. E. L. Rodgers. Eyeglasses, F. G. Schmidt. Fan, rotary, J. H. Jones.	600.017 499,802 499,756 500.006 499,962
Far ergister, C. L. Logan Fare register, C. L. Logan Feedwa ter heater and condenser, J. P. Stone Fence, I. P. Osborn	499,952 499,748 499,946 500,032
Reedwa ter heater and condenser, J. P. Stone. Fence, I. P. Osborn. Fence, J. T. Patton Fence building machine, B. O. Jobnson. Fender. See Car fender. Fertilizer, M. A. Goloseleff. Fifth wheel, F. W. Miller. Filter, A. Williams Filtering apparatus for beer or wine, J. Hornung Finger fing, M. E. Oppenheimer. Finger tips, device for reducing distorted, F. B. Dante.	500,033 500,004 500,100
Fifth wheel, F. W. Miller. Filter, A. Williams. Filtering apparatus for beer or wine, J. Hornung	600.100 499,791 499,815 499,883
Fire escape, G. Lowenstein	499,928 500,066 600,019
Pin occope I I) Nichem	enn nen l

or which Letters Patent of the	Flange wrench, J. W. Kellam	,712 ,850 ,000 ,722
United States were Granted	Fumigator, Dickinson & Sasser. 499, Fur trimmings, artificial claw for, A. & J. Jacob- 80n. 500. 500. 500.	,671 ,002
June 20, 1893,	Furnace, E. B. Coxe. 499, Furnace grate bar, W. H. Heeson. 499, Garment supporter, G. E. Adams. 499,	,716 ,732 ,773
EACH BEARING THAT DATE.	Gas englie, C. W. Pinkney	,731 , 98 5
ote at end of list about copies of these patents.	Garment supporter, G. E. Adams. Gas burner, Hartmann & McKee. Gaste, Supporter, G. E. Adams. Gas burner, Hartmann & McKee. Gate. See Bridge gate. End gate, Raliway gate. Gate. See Bridge gate. End gate, Raliway gate. Gate. N. J. Bishop. Gate. W. D. Culwell. Generator. See Steam generator. Glass. china, or eart benware, means for connecting metallic fittings to, O. E. & J. F. Green. Gore marker. elastic. J. Kent. Governor, engine, W. T. Davis. Grain baoder, M. Kane. Grain baoder, M. Morse. Grain baoder, M. Gevening. Hanger. See Trolley wire bangar. Harmonica case. M. Hobune. Grain baoder, M. Kane. Harrow and roller, F. Wells. Harvester, beat, F. F. Wells. Harvester, beat, G. A. Karrall Harvester, beat, G. A. Karrall Harvester, Dect, G. A. Karrall Harvester, Dect, G. A. Karrall Harvester platform adjustment, M. Kane. Harve	,060 ,970
cable, wrench, Griffin & Nichols499,919, 499,920 tising clock, L. Peterson	Glass, china, or eart benware, means for connecting metallic fittings to, O. E. & J. F. Green 499. Glove, boxing, J. Bennett	.918 .049 .007
See Grave alarm. eaf, photographic, S. Posen	Governor, engine, W. T. Davis. 499, Governor, engine, R. H. Matber. 500, Grain bioder, M. Kane. 499,	.876 .019 .888
tcher 499,726 I shears, A. D. Reynolds. 499,838 in a nd making it, P. Monnet 499,927 actic granch J. H. Montgomery 500,926	Grain drill, Migent & Gilbert	,849 ,796 ,914 ,003
king die, C. W. Hubbard	Grave alarm, A. Lindquist	,706 ,714
box, registering, W. S. Black	Hanger. See Trolley wire banger. Harmonica case, M. Hobner	1,831 1,863 1,064
pitcher carrying, H. T. Blake	Harvester, bean, P. F. Wells 500. Harvester, beet, G. A. Farrall 493. Harvester, corn, G. N. Cleveland 500.	1,089 1,782 1,066
g, wagon roller, F. W. Nagel	Harvester cutter, W. E. Ball 499. Harvester platform adjustment, M. Kape. 499. Heater. See Feedwater heater. Fluid heater.	,9 53 ,837
nuch, J. C. Wood. 499,912 lectric, W. J. Murdock 500,027 A. Ferguson. 499,978	Holdback attachment, vehicle, F. O. Frasher 999 Hock See Snap book Horseshield, C. B. Tuttle	0,980 0,085
esteni g, C. D. Fuller	Horseshoe, A. Fechner	1,976 1,985 1,760 1,020
See Steam boiler 499,761 stopper, F. S. Towle. 499,898	Hot air furna cpc. A. Lat son. 600 Hot air purps, J. P. Schaffer. 999. Hub boring machine, J. Zimmermann. 499.	906 864 772
s, device for preventing the fraudulent ng of, J. J. Dufour	Hydrocarbon burner, W. H. Clarke. 499. Hydrocarbon burner, J. Darby 499. Incubator, J. B. Halfin 499. Index rotating R. W. Brooks 499.	,968 ,720 ,989
support, J. A. Brill	Indicator. See Station indicator. Kitchen cabinet. T. R. Chambers. 500. Knife or fork scourer, S. R. & H. Hackman. 499	,054),884
80n. 500,047 gate, draw, H. W. Yerrington. 499,867 paint, D. W. Long. 499,842 a suspender A. E. Lones 498,842	Knitting fashioned webbing, method of and ma- chine for, H. J. Griswold).729).921
s, susp ender, H. D. Sha ckelford	Knob attachment, L. P. Humphrey 499 Knob attachment, T. E. Wardwell 499 Knockdown chair, F. D. O'Keefe 499	1,834 1,900 9,798
por burner. 18 fuel, E. B. Coxe	Ladder, Messer & COX. Ladder, Messer & COX. Ladder, extension step, P. & R. C. Poertner	9,887),751), 053
See Preserving can. ading machine, M. A. Wheaton,	Lamp, incandescent electric, Nickerson & Carr 500 Lamp stand. electric, J. Cathrein),079),077),908
ake, G. J. Fergugon 494,725 upling, C.A. Dunn, 600,006 upling, Goff & Joiner 492,827 upling, R. Nash	Lamps, mode of and means for renewing the ma- ments of electric incandescent, G. A. Frei	916 929 1976
upil ng, J. H. Swindell. 193,947 or, J. W. Dellinger. 193,909 nder, J. N. Wieczorek. 199,812	Level, builder's W. Nisbett	0,031
nder, railway, F. Groshaus	Locomotive ash pan, J. Williams),966),966),067
ety attachment, street, L. E. Dubois	Loom shuttle, self-threading, J. A. Gendron	0.784 0,870 0,777
yes. 500,063 reet, J. A. Mehling (r). 11.346 leet, H. E. Butts. 499,778 russed trolley board for electric. H. Cochran 499,871	Match making machine, C. M. Bowman. 499 Matches, making, C. M. Bowman. 499 Measuring instrument, distance, J. L. Balilie. 499 Meast chopper, C. G. Schmidt. 499 Meat chopper, C. Schleichert. 499 Meat holder, F. C. Schleichert. 499 Metal bending and twisting machine, J. C. Herran	755 -804
beater, F. L. Goodenough 499,997, 499,998 cleaner, F. H. Good 499,996 ge, H. P. Wells 499,769	Metal bending and twisting machine, J. C. Herman, Metal heating apparatus and process, electric bath. Burton & Angell	,783
ones & Unites	batb. Burton & Angell. 459 Metal, machine for folding and cutting sheets of, T. L. Thomas 459 Metals, testing rolled or forged, A. E. Hunt 459	.907
reet, J. A. Mehling (r). 10.38 11.38 12.48 12.48 13.48 13.48 13.48 13.48 149.987 149.987 149.987 149.987 149.987 149.987 149.987 149.987 149.987 149.988 149.988 149.988 149.888 159.888 159.888 159.888 159.888 159.888 159.888 159.8888 159.8888 159.8888 159.8888 159.8888 159.8888 159.88888 159.88888 159.88888 159.8888 159.88888 159.8888 159.88888 159.88888 159.8	Metals, testing rolled or forged, A. E. Hunt. 499 Milk coler, C. L. Kneeland. 499 Mill. See Fanning mill. Wire rolling mill. Muering and joining monidings, etc., table for, C. Thuener. 500	n nu o
drive, J. O. Brown. 499,561 links, macbine for separating, F. L. White. 499,901 or cable grip, G. Gagnon. 499,961 See Bed chair. Dental chair. Knock-	Moulding compound, J. Rowbotham	,753 1,864 1,965
wn chair. , J. C. Hugghis	Mowing or reaping machine cutting apparatus, I. Case	987
rs. See Meat chopper. T. J. Missildine	Musical instrument, C. Warren),095),727
er. See Seat Coopper. T. J. Missildine. 500,021 unching machine, F. C. Miller. 500,020 unching machine, F. C. Smalstig. 600,083 See Bedclothes clamp. Hose clamp. Tr. See Carpet cleaner.	Organ believe, means for operating, klock & Stevens	1.003
See Beductures camp. See Carpet cleaner. See Paper clip. See Paper clip. See Carpet cleaner. See Milk coder.	ens. 500 Organs, swell pedal action for pipe, E. M. Skinner. 500 Pad. See Stair pad. Truss pad. Padlock, H. H. Orne. 499 Pail, milk, C. Bennett. 500	
ding lox for, D. R. Kinyon 493.839 signal, A. Kwiatkowaki 500,013 t, trimming table for, S. S. Hotchkles 499,997 ontrolled lock, W. S. Rogers 499,903	Pail, mik, C. Bennett	,094),073
ontrolled machine, J. A. Light hipe	Pain, mix, C. Bennett. 500 Paints, agitator for mixed, C. J. McLennan. 500 Pain. See Lecomotive ash pan. Vacuum pan. Paperclip, J. M. Keep. 600 Paper clead by machine, T. A. Briggs. 600 Paber feeding machine, T. A. Briggs. 499 Papermaking machines, press roll stand for, A. Aldrich. 490 Paucil, lead. B. B. Goldsmith. 500	1,224 1,061 1,818
idionery kettles, apparatus for operating, Savage	Papermantos maccines, press roll stand for, A. Aldrich	9,696 9,061 1,879
older, E. H. Carr. 49,966 older, Potter & Fortney. 49,801 ng. See Car coupling. Thill coupling.	Photograph hold er, D. T. Eimer	1,975 1,023 1,763
nicie reaci coupijus. ator, D. F. Lawrence	Pipe. See Hot air pipe. Pipe wrench, A. E. Upton	,765 9,765
ator tooth, F. B. Harvey. 499,991 g iron bolder, H. Story. 500,106 it, electric, O. F. Persson. 499,830	mons. 499. Planter, check row, A. G. Anderson. 499. Planter, corn, R. Boyd. 499. Planter, corn, P. Boyd. 499.	,856 ,697 ,168
. See Stak of trash cutter. carrier, J. Warrick. 499,810 er, G. T. Moe. 499,747 enters, device for overcoming, C. A. Van	Plants, receptacle for growing. C. Hoffman	0.998 1,710 1,106
hicle read: coupling. ator, D. F. Lawrence	Papermaking machines, press roll stand for, A. Aldrich. Aldrich. Peucit, lead, B. B. Goldsmith. 600. Phonograph, T. A. Edison. 9499. Photographic D. T. Elmer. 9499. Photographic parers, B. G. P. Moller. 9499. Photographic plate holder, R. B. Taffer. 9499. Pillow sham holder, N. W. Stearus. 9499. Pipe. See Hotair pipe. 9499. Planter and distributer, combined, J. A. Simmons. 9499. Planter, corn. Upp & Young. 9499. Plow. sulky, J. Willmann. 9499. Plow. sulky, J. Willmann. 9499. Pouncing poll. B. G. Berrien. Jr. 9499. Power transmitting mechanism, J. C. Henry. 9499. Presserving can. G. P. Herndon. 9499. Presserving dan. G. P. Perndon. 9499.	9,863 9,828 9,868
See Ax making die. Apparatus for making, G. F. Champney 499.821 Apparatus for making, G. F. Champney 499.821 Making, G. F. Champney 499.820	Portfolio, C. M. Carna han 999 Post hole digger, R. Budd 489 Pouncing roll, B. G. Berrien, Jr. 489	906 962 9703
See Ax making die. 199821 199821 199821 199821 199821 199821 199821 199821 199821 199821 199821 199822	Preserving can. G. P. Herndon	0,069 9,734
yrack, D. Goldstein	Press. See Printing press. Pressure devices, apparatus for operating fluid. T. J. Hogan	1,735 1,912 1,749
stiding, T. J. Vander Bent 499,766 or, disb, C. S. Baird 499,951 See Grain drill.	Propeller or blower, C. E. A. Rateau. 600 Pruding im plement, I. L. Bee kly. 499 Pulley covering, Seltz & McDulty. 499 Published Stock and 499 Published Stock and 499	,080 ,701 ,758
ontector, T. & G. M. Parkinson. 433,139 eater, H. F. Juergens. 499,741 hipping case, J. H. Bowley 499,708 hic converter, G. & A. Pfannkuche 499,862	Railway construction, R. W. King. 499 Railway gate, R. C. Douglass. 499 Railway grade crossing device, electric, J. B.	9,9 25 9,878
ic lighting system, C. L. Morey	Stewart. 428 Railway 6ystem. electric, J. C. Henry. 500, Railway 8ystem, electric, C. J. Reed. 500 Railway trolley, electric, J. C. Henry. 500, Railways, closed conduit for electric, J. C. Henry Recorder. See Time recorder	1,806 1,068 1,104
rong and supplying, F. G. Corning. 492.780 or, N. Beckwith 492.700 ate, wagon, N. Shell 500,038	Railways, closed conduit for electric, J. C. Henry 500, Recorder. See Time recorder Rafrikerating apparatus, M. Wanner 500,088, 500, Rafrikerator attactment, beer barrel, A. B.	,065 ,107
See Grain drill.	Refrigerator attachment, beer barrel, A. B. Kokernot. 500, Refrigerator, beer barrel, A. B. Kokernot. 500, Refrigerator ice supporting rack, G. L. Lobsitz. 429,	,012 ,014 ,014
rmer, W. E. L. Rodgers. 99,800 18868, F. G. Schmidt. 49,756 totary J. H. Jones. 500,006 18 mill, T. M. Bales 49,952 exister, C. L. Logan 49,766 1. P. Osborn 500,003 1. J. T. Patton 500,003 building machine, B. O. Johnson 500,003	Register. See Fare register. Regulator. See Electric motor regulator. Wind- mill regulator.	
a ver neater and condenser, J. P. Stone	Ring. See Finger ring. Grinding ring. Rocket stand, W. H. Mesdower of	
Dividink machine, B. U. Johnson	Roundabout, L. P. Perew	0.956 0.800 0.048
ting device for make sing distorted to the	Sash fastener, J. N. Enwer 499. Saw set, G. W. Eddy 499. Saw setting device C. M. Kardell 490.	(913),825 735
Dicape, G. Lowenstein	Boalfold, ports bless. Barnes. 490	(896 1005
scape, portable folding, W, H, Millett, 499,793	Scale, weighing, J. J. Hickey	,#63