under different pressures? I find it stated that 1 cubic | Please describe the machine Nikola Tesla uses to produce inch of water at 70° Fah. under the ordinary atmospheric pressure weighs 0578 ounce. What is the weight of like? A. We refer you to Scientific American, Nos. slightly compressible. For one atmosphere of pressure volume. For 75 pounds above the atmosphere therefore it would increase in weight about 0·00025, giving 0·57814 mately correct.

(5612) E. G. R. asks: 1. Will the No. 2 water motor described in SCIENTIFIC AMERICAN of October 14, page 244, run the hand power dynamo described in "Experimental Science"? A. Yes, if there is sufficient head of water. 2. How large a lamp would the above dynamo run when the field magnets are separately excited with six or eight Bunsen cells? A. Three to five six-candle power lamps, without any cells; with the cells twice as many, especially if you use a drum armature. 3. When field magnets are separately excited as above. 4. What horse power has the No. 2 water motor? A. Address the manufacturers for particulars.

(5613) F. E. K. asks: 1. Can a plastered wall in a house be blackened so as to be used as a crayon beard? If so, how can I prepare a paint to be used to the other two are not affected in the least. There has paint it? A. For a wall blackboard: to 1 pint shellac varnish add 6 drachms lampblack, 1 drachm of ultra-during this time the zincs were covered with a coppermarine blue, 3 ounces ground pumice stone, 2 ounces like substance, which had formed while the battery was rottenstone ground. If not thin enough to spread easily in action. How was it that one zinc was destroyed and the with a brush, add enough alcohol; two or three coats will other two were not affected? A. It seems probable that be needed for a plastered wall. 2. How far is New York the destroyed zinc was more attacked than the others be-City from the deep ocean, and the length of Broadway in fore you laid up the battery. Corrosion would be slow, if the same city? A. About 12 miles in a direct line. the zinc was not in the solution. 2. How much wire on Broadway is about 5 miles long. 3. What is the size the field magnets of the hand power dynamo, No. 161, and weight of the Capstone on Washington monument ? and also how many feet on the armature, as near as you A. The capstone of the Washington monument weighs can judge? A. Five pounds wire for magnets, 100 feet 3,300 pounds. See Scientific American Supplement, for armsture; if drum wound, about 200 feet. 3. Do not the No. 476, for an interesting account of its setting. 4. What is the size of the smallest boat that has crossed the Atlantic Ocean? A. About 18 feet in length.

safe carrying capacity in amperes of a copper wire, No. amperage 14 gauge, B. and S. and how is the carrying capacity of any wire to be found? A. 6'4 amperes. See Sloane's "Arithmetic of Electricity." Allow 2,000 amperes per square inch of section. 2. Is there any book published giving directions for concealed incandescent wiring? A. We can supply Badt or Davis on "Electric Wiring," \$1 each by mail. 3. Is there any instrument on the market for recording the height of water in a tank located some distance from the station supplying it? Could not a common low pressure water gauge be used? A. A pressure gauge could be connected to do this.

(5615) A. E. N. writes: In the Scien-TIFIC AMERICAN SUPPLEMENTS already received from resin and wax between the two sections of the secondary you I find a Wimshurst electric machine (glass friction) advised for the generation of ozone by electricity. But having better opportunities to use other sources of electricity, I should like to know: 1. Whether a galvanic battery or a magneto-electric machine could be substituted for the Wimshurst? A. No. 2. What is the For a large coil, 6 or 8 such disks should be used. For strength of a Wimshurst electric machine (taking as a standard the Daniell cell=about 1 volt) compared to other electric machines, viz., 1, Daniell battery; 2, Davis electro-medical machine? A. It may run up into mil- "Induction Coils," price \$1 mailed. lions of volts. The electro-medical machines probably do not run higher than two or three hurdred volts

(5616) W. F. R. writes: 1. Have you any literature relating to the manufacture of copper oxide plates as used in Edison Lalande battery? A. We have no literature on this. We could supply you with the patents at 25 cents each. 2. Can you inform me as to the best and cheapest method of preparing copper oxide (black)? A. Ignite copper borings to redness in the air. 3. Do you think it would be possible for me to make a boxof blacklead for heating above plates? If so, how should I proceed to prepare such a crucible? A. Use a mixture of clay and plumbago made into a paste with

(5617) T. G. S.—The photograph sent by you shows a fresh water lizard, probably Triton tigrinus. Green. It is an amuatic species not rare, and well known. The horns you mention are branchial appendages which grow out and are shed. See N. Y. Natural History Survey, Zoology, Fishes and Reptiles, page $83; \ \mbox{in illustrations, plate 15, Fig. 32.}$

(5618) C. C. N. writes: How many storage batteries of a given size would it take to run a 40 horse power motor? How long would it take to charge them with a 10 horse power dynamo, and also a 2 horse power dynamo? How long would it take to discharge them? Also, is the power being used up when not running? A. You may allow 425 cells to run the motor 10 hours. It will take four and a quarter times and twentyfive times the period of running to charge with the 10 horse power and 2 horse power dynamos respectively. It will very slowly lose its charge when not working.

tricians call a multiplier, and in what capacity is it used? A. A galvanometer is sometimes called a multiplier. 2. Is there a multiplier, so called, that can increase the efficiency of a dynamo from 75 to 100 per cent? A. No. This would be in the line of perpetual motion. There is room, however, for inventions in increasing the efficiency of dynamos.

tin electroplating solution for plating on copper. A. We quote the following from the "Scientific American Cyclopedia of Receipts, Notes, and Queries:" "Deposition of Tin by Simple Immersion or Dipping.—For this purpose a saturated solution of cream of tartar is made with boiling water; in this solution small brass or copper articles, such as brass pins for example, are placed between sheets of grain tin and the liquid is boiled until the desired result is obtained—a beautifully white coating of tin upon the brass or copper surfaces. Ordinary brass pins are coated in this way. A little chloride of tin may be added to the bath to facilitate the whitening. The articles are afterward washed in clean water and brightened by being shaken in a leathern bag with bran." 2. Bu

high alternating currents. What is its armature made same when under a pressure of 75 pounds as indi- 9, 11, and 13, vol. 66; also Supplement, Nos. 792, 902, cated by a Crosby water gauge? A. Water is very 831, 692, 847, 855. 3. What is the highest number alternations in a magneto-dynamo, such as is used for shock-(14.7 pounds), it is compressed 000005 of it original ing purposes? A. From a few hundred up to two thousand or more a minute. There is no "highest number." 4. Suppose an electric battery be made by making ounce instead of 0.578 ounce. The above rule is approxi- a lead tray 6 × 6 and 4 inches deep. In the bottom is put sulphate of copper 1 inch deep, and over that 1 inch saw dust. A zinc plate on the sawdust as positive pole; binding screw on tray and one on zinc. Solution used, water. What voltage and amperage would it give? Would it give continuous current? How long would such a battery last (if used every day of twenty-four hours) before becoming exhausted? A. About one volt. The continuous current will be, perhaps, half an ampere. Its period of running would depend on the resistance of the outer circuit. 5. Will a bichromate battery, with porous cup filled with bichromate potash and outside vessel filled with a solution of common salt, continue would the dynamo charge two storage cells? A. Yes. in action for a greater number of hoursthan the ordinary one-solution bichromate battery? A. It might run longer, but would give a far less total of electric energy.

(5621) A. H. writes: 1. One of my zincs of a Daniell gravity cell has been almost destroyed, while been no solution in the jars for about one month, and brushes have to touch one commutator segment before it leaves the other? A. No. 4. Can a Porter's motor, No. 1. he used as a dynamo? A. You will not get much re-(5614) H. L. B. asks: 1. What is the sult, we think. We have no figures as to its voltage and

> (5622) N. T. asks: Of the various kinds of batteries, such as storage cell and plunge, which is the strongest? A. Storage batteries are far the strongest. How to make them is told in Supplement, No. 845. Other batteries, 157, 158, 159, and 792. Also see storage batteries in Supplement, No. 838. These we can supply for 10 cents each.

(5623) E. A. E. writes: I would like to build an induction coil that will produce a 4 or 5 inch spark. Can I follow directions as given in Supplement, No. 160, and are there any changes I can make that will be a benefit to it? What is the object of the insulation of coil? Also, have you any books or papers from which I can get information on this subject? A. You will find it quite difficult to make a successful 5 inch spark induction coil. The object of the disk is to separate portions other coils, see our Supplement, Nos. 229 and 569, and SCIENTIFIC AMERICAN, No. 14, vol. 66, all of which we can supply for 30 cents. Also, "Induction Coils-How & Kidder magneto-electric machine; 3, Gaiffe's pocket Made and How Used," price 50 cents; also Bonney's

TO INVENTORS.

An experience of forty-four years, and the preparation of more than one hundred thousand applications for patents at home and abroad, enable us to understand the laws and practice on both continents, and to possess unequaled facilities for procuring patents everywhere. A synopsis of the patent laws of the United States and all foreign countries may be had on application, and persons contemplating the securing of patents, either at home or abroad, are invited to write to this office for prices which are low, in accordance with the times and our extensive facilities for conducting the business. Address MUNN & CO., office Scientific American, 361 Broadway, New York.

INDEX OF INVENTIONS

For which Letters Patent of the United States were Granted

December 12, 1893.

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

Adding machine, F. Shanisey.
Advertising device, J. Harrison.
Aerial camera. C. B. Adams.
Air brake, J. Erdody.
Air brake, J. Erdody.
Air brake regulator, M. L. E. Duval.
Air brake regulator, M. L. E. Duval.
Animal trap, M. Carpenter.
Balling press, J. A. Mealer.
Balling press, J. M. Sanders.
Balloon, J. A. Sumovski.
Barrounding and straightening machine, Wagner & Beauregard.
Barrel, ventilated, W. R. Bright.
Batt room standing platform, J. Dellar.
Battery, See Electric battery. A Beauregard 510.454 Bath room standing platform. J. Delar 510.459 B

	Butter moulding machine, J. Tobin. 51(Cable road signal, E. W. Edwards. 51(Cable transway, W. N. Colam. 50(Camera. See Aerial camera. W. M. Cable 1988)),458 1),593 1),469 1	Horse Ha
	Camera Sec Ácrial camera. Camera shutter, photographic, W. H. Lewis. 510 Can filling machine, C. W. Shedd. 510 Can filling machine, H. R. Stickney. 5510 Car automatic sa fety guard, I. P. Clarke. 5110 Car body bolster, L. K. Jewett. 5110 Car brake, J. McGee. 510 Car coupling, C. H. Snyder. 5110 Car coupling, C. Frost. 5110 Car coupling, C. Frost. 5110 Car coupling, C. W. C. Watson. 5110 Car, and righing, J. W. Allison. 5110 Car, non-telescopic railway, J. Page. 5110 Cars, speed reducing and power multiplying bydraulic gear for electric railway, W. Hochhausen. 5110),805 1),652 - 1 0,618 : 1	Horse Hub, Ice cro Illusio Indica
	Car body bolster, L. K. Jewett 510 Car brake, J. McGee 511 Car coupling, C. H. Snyder 510 Car coupling, C. Frost 511	0,429 1 0,702 1 0,719 3 0,854 3	Insula Iron, 1 Jack. Journ
	Car coupling, W. C. Watson 51(Car draw rigging, J. W. Allison 51(Car, non-telescopic railway, J. E. Page 51(Cars, speed reducing and power multiplying hy-	0,660 0,828 0,816	Kiln. Kitch Knitt Knitt
	draulic gear for electric railway, W. Hoch- hausen 510 Cars, system of dumping, D. P. Cameron 510 Carbonaceous m inerals, utilizing, E. B. Coxe 510	0,600 1 0,674 1 0,586	Knitti Knitti Ladde G.
	hausen 511 Cars, system of dumping, D. P. Cameron, 511 Carsonaceous m inerals, utilizing, E. B. Coxe. 511 Carding engines, apparatus for grinding the revolving flats of, Platt & Fidler 511 Carousal, M. T. Weston. 510,746, 511 Carriage, child's A. Woodward. 511 Carriage screen, J. H. Caffrey. 511	0,611 1 0,747 0,461 1	Lamp Lamp Lamp Lamp Land
İ	Carriage screen, J. H. Caffrey 51 Case. See Map case. 51 Case book and bandle, D. V. Butler 51 Cash and package carrier, E. C. Gipe 51 Cash register and indicator, E. T. Taylor 51 Chains, means for manufacturing, C. While 51 Chair. See Rocking chair. 51 Cinder shovel, S. J. Besthoft 51 Circuit controller, automatic, C. L. Maybew 51 Cilp. See Hame cilp.	0,526 0,505	Land Latch Lathe Lawn Light:
İ	Chains, means for manufacturing, C. While	0,748 0,765 0,646	Lock. Locor Log to Loom
	Clock motor, S. B. Wortmann	0,754 0,717	Loom jo Loom u f
	Coat cutting machine, wanting & Johnson	0,452 0,448 0,673	Loom Loom Loom Loom Loom
i	Composite material for mouldings, etc., and making same, S. Grimstad. 51 Conduit, pass, W. A. Sweet. 51 Conveyer, J. G. Zeller 51 Cooker, steam canning, S. D. Smith. 51 Cooker, steam canning, S. D. Smith. 51 Corks by grin ding and machinery for the purpose, manufacture of, J. E. Howard. 51 Cotton opening machine. W. Hurst. 51 Coupling. See Car coupling. Pipe coupling. 51 Cultivator, Nieman & Hieronymus. 51	0,855 0,450 0,626 0,798	W Lubri Lubri Map c
	Cooker, steam canning, S. D. Smith. 51 Copying machine, roller, Hurwitz & Schapiro 51 Corks by grinding and machinery for the purpose, manufacture of, J. E. Howard. 51	0,718 0,643 0,539	Marbi en Matcl &
	Current Imachines regulating parallel_circuited		Mattr Mattr Mech Medic
!	Current motor, alternating, W. Hochbausen	0,60 1 0,584	Melor Metal Metal Metal
	Cutter. See Stark cutter. Dental engine, L. S. Pfouts	0,484 0,856	Metal Metal Metal Co
	Disinfecting apparatus, Stratton & Murdock 51	0,825	Micro Milki: Mill. Moist
ļ	Display baner. E. W. Buell. Distilling and concentrating glycerine and heavy oils, apparatus for, A. F. Trageser. Door both, H. Gaedtke. 51 Door check, W. E. Shepard. 51 Draught equalizer, J. H. Richford. 51 Draught spring, H. Barber. 51 Drainage tube, C. B. Dolge. 52 Drawer, hardware, J. D. Warren. 53 Dredger, W. T. Urie. 54 Dredger suction pipe, W. J. Dyer. 55 Drill. See Ratchet drill.	0,734 0,781 0,715 0,710	fo Mould Motor tri
	Drainage tube, C. B. Dolge 51 Drawer, hardware, J. D. Warren 51 Dredger, W. T. Urie 51 Dredger suction nine, W. J. Dver 51	0.413 0.744 0.736 0.591	Mowe Mud p Music Nail c
	Drill. See Ratchet drill. Drill press. W. Moore	0,648 0,762 0,515	Nailir News
'	Drill press. W. Moore	0,604 0,457 0,64 0 10,487	Nut le Nut le Nut le Nut le Ordna
	Reed. 51 Electric light tower, H. Jones. 51 Electric machine, dynamo, R. Eickemeyer 51 Electric machine, dynamo, D. H. Wilson 51	10,613 10,479	Organ st Packs Pail, Paint
	Electric machine regulator, dynamo, L. Bell. 51 Electric motor, C. F. Winkler. 51 Electric motor reversing switch, J. G. Germann. 51	10,465 10,662 10,596	Paint Pan. Paper m
	Johnson	10,603 10,602 11,895	Paper Paper H Paper
	Electric scap switch, G. W. Hart (r). Electric scap switch, G. Gibbs. H. R. Gale. Flevator gate operating attachment, A. P. Gould 5. Elevator gate operating device, A. P. Gould 5. Elevator gate operating device, A. P. Gould 5. Elevator safety gate, A. T. Brown. 51 Emery wheels, composition for producing artificial I Dutrey.	0,638 10,475 10,476 10,770	Pape Pape Pape Pen, Penh
,	Engine. See Dental engine. Gas or oil motor engine. Rotary engine. Steam engine. Trac-	0,874	Penci Penci Perm Petro
,	tion engine. Engine, Kehlberger & Fouque	10,480 .0,787 10,415 10.466	G. Photo Piano Picki Pile o
1	Fan, railway car, W. J. Dougherty	10,081 10,814 10,615 10,767	Pin. Pipe. Pipe Pipe
	Fence post, C. D. Wright	10,625 -0,704 0,408 0,756	Pipes G. Plani Plant Plant
	Filter, water, J. B. & J. F. Ziegler	10,649 10,727	Plant Plow
	Folding chair, G. H. Tuttle 51 Folding chair, J. Walton 51 Folding machine, L. C. Crowell 55 Folding table, C. C. Hastings 51 Forge, portable bellows, F. Myers 51 Fuel burner, pulverized, F. H. Hawkins 51	10,735 10,659 10,527	Plum Pneu Porti Posit
,	Forge, portable bellows, F. Myers	10,858 10,760 10,788	Post. Preci in Press
	Furnace, E. B. Coxe. 10,572, 340,574, 510,577, 510,581, 510,584, 510,587, 51 Furnace, F. H. Richards	10,588 10,556 10,786 10,571 10,580	Print Print ar Prop
	Furnace R. H. Hebards	10,589 10,575	Pumi Push Pyro:
	Gauge. See Micrometer gauge. Garbage receptacle, W. H. Barry	10,737 10,464 10,406	Radia H Rail
2	water, O. N. Guldlin	10,506 10,462	Rail i Railw Railw Railw Railw
	Gas scrubber, W. R. Beal 51 Gasoline heater, odoriess, W. E. Robbins 51 Gate. See Elevator safety gate. Stock yard gate.	10,712 10,396 10,520	Raily Rang Ratel
1	Gate, Leonard & Carter. 55 Gate, E. D. Pugb 51 Generator. See Gas generator.	10,802 10,689 10,445	Reco Regis Regu
3	Glass annealing and flattening furnace, George & Shortle. 51 Glass, machine for embedding wire in, F. Shuman 51 Glass, machine for manufacturing wire, F. Shu-	10,784 10,716	Road Road Road
3	man 5. Glass, manufacturing wire. F. Shuman 51. Glass, ornamenting, Q . Guillaume. 52. Glass tile, C. Lewy 55.	10,822 10,597 10,644	Rock Rock Rolle
1	Gluing machine, T. Dean. 55	10.630 10.768 10,769 10,656	Rock Rock Rolli S
0	Grate, F. H. Richards. 9. Grate, C. W bitfield. 9. Grate bar. E. B. Coxe. 6. Grate, traveling, Coxe & Richards. 5. Grave border and protector, G. R. Mease. 5. Hame clip and section, combined, L. Knight. 5.	10,547 10,623 10,579 10,573	Rule, Sadd Salts di
6	Hammer and nail extracting device, C. M. Biy- denburgh	10 ,52 5	Sash Sash Sash
6	Hanger. See Display hanger. Harbor and river bars and shoals and preventing the formation of the same, apparatus for re-	10.7710	Sash Sawn Sawn Sawn Sawin Scou
7151	moving, R. M. Scott. 51 Harp, I. Hammerl 51 Harrow, J. W. Jackson 55 Harvester, cotton, G. N. Todd 510,730, 51	10,713 10,857 10,793 10,731 10,699	Scour Scour Scree Seale
9	Hay stacker, N. Zitterberg. 5. Hay stacker, N. Zitterberg. 5. Heater. See Gasoline heater. Heating plant, E. B. Coxe. 5. Hinge, A. C. Johnson. 5.	10,495 10,570 10,864	Seat Sewin
8	Hinge, AC. Johnson. 5. Hook. See Case hook. 5. Hoop for boxes, etc., W. W. Miner. 5. Horses from cribbing, device for preventing, P. L. Stombaugh. 6.	10,436 10,722	Sewi Sewi Sewi

: 1	Horses to vehicles, device for attaching, M. T.	
	Hancock Horseshoe, compound, M. L. Chamberlain Horseshoe, rubber tread, M. L. Chamberlain Hub, vehicle wheel, J. Ragoucy Ice cream freezer, A. J. Rudell Illusion annaratus. A. Lake.	510,537 510,403 510,402 510,519
:	Ice cream freezer, A. J. Rudell. Illusion apparatus, A. Lake Indicator See Range indicator. Insulator pin, F. M. Locke Iron, hox pile for making bar, J. B. Baugh	510,489 510,883
)	Journal bearing, W. S. Livengood	510,809 510,763 510,807
3	Kitchen cabinet, J. M. Curtice. Knitting machine, A. Auwarter Knitting machine, circular, C. J. Appleton Knitting machine, circular, F. Buckhalter Knitting machine stop mechanism, F. Crawford.	510,678 510,760 510,829 510,401
5		510,839 510,471 510,791
! !	Lamp, electric arc, J. F. Kester Lamp, engineer's, W. Rowe. Lamp support, electric, J. J. Reneban Land roller, D. A. Grant.	510,605 510,711 510,486 5 0,785 5 0,397
5	G. H. Cram. Lamp chimney cleaner M. F. Hotham Lamp, electric arc. J. F. Kester Lamp, engineer's, W. Rowe Lamp support. electric, J. J. Reneban Land roller, D. A. Grant Latch, door, H. C. Beardsley. Latbe dog, E. C. Derby Lawn sprinkler, C. Anderson Lightning rod ornament, J. J. Cole. Lock. See Permutation lock. Loc comotive fire kindler, C. T. Smith Log turner, G. M. Hinkley	5 0,397 510,412 510,496 510,837
5	Lock. See Permutation lock. Locomotive fire kindler, C. T. Smith. Log turner, G. M. Hinkley. Loom, L. W. Lombard. Loom, for weaving tufted fabries, W. Young-	510,447 510,790 510,431
1	Loom for weaving tufted fabrics, W. Young- jobns Loom picking bands, etc., apparatus for the man- ufacture of, T. Clarke Loom picking motion, J. & A. Moss	510,755 510,500
3	Loom picking motion, J. & A. Moss. Loom shedding mechanism, J. H. Tschopp. Loom shuttle motion, S. C. Bailey. Loom temple, F. E. D. Field. Loom warp thread operating mechanism, F. A.	510,608 510,657 510,830 510,851
506	Loom warp thread operating mechanism, F. A. Woodhead	510,752 510,633 510,779
8	Woodnead Lubricator, J. Desmond	510,607 510,832
2	& Wright. Mattress frame. Kenney & Taber Mattress, ventilated, H. S. Sternberger. Mechanical movement, N. M. Saati. Medicated suspension perch, H. A. Doud Meion carrier, M. J. Ward Metal bending machine, C. A. Bertsch Metal bending marstus G. Moete	510,778 510,541 510,490 510,557
2 1 4	Medicated suspension perch, H. A. Doud. Melon carrier, M. J. Ward. Metal bending machine, C. A. Bertsch. Metal pickling apparatus, G. Mesta.	510,847 510,456 510,764 510,697
7 4	Metal pickling apparatus, G. Mesta Metal plates or sheets, machine for crimping, W. E. Williams. Metal tubes, machine for forming, W. Kegler Metal working machine, J. P. Lee. Metals electrically, apparatus for beating, C. L.	510,559 510,796 510,512
5	COMM Micrometer gauge, J. P. Lavigne Milking machine, L. Steenstrup Mill Sea Windmill	510,777 510,688 510,449
4	Mill. See Windmill. Moistening and sealing envelope flaps, apparatus for, G. Schneider	510,616 510,865
934		510.753
1	Mower, lawn, A. R. Woodyatt Mud p an, H. R. June Music or book leaf turner, F. W. Kline Nail driver, magnetic, R. Boeklen Nailing implement. band, A. F. Preston. Newspaper folding, and staple binding machine,	510,794 510,801 510,467 510,442
2 5 4 7	Nut lock S.O. Doane. Nut lock S.O. Doane. Nut lock, G. Gibson. Nut lock, A. A. Johnson. Nut lock, A. H. Read.	510,528 510,501 510,683 510,510
• 7 3	Organice, recoil check, H. Schneider	510,510 510,708 510,650 510,521
9 2 0 5	Package, sealed, B. B. Van Derveer	510,621
ž 6 3	Pan. See Mud pan. Paper and paper board, manufacturing parchmentized, T. Hanna. Paper bag machine, L. C. Crowell. Paper board, manufacturing parchmentized, T. Hanna. Paper bouter, W. P. Stabba	510,422 510,410
2 5 3	Paper board, manufacturing parchmentized, T. Hanna. 510.421, 510.423, Paper holder, W. P. Stibbs. Paper boder and cutter, D. F. Walker.	510,424 510,721 510,742
8 5 6 0	Paper, etc., machine for coating. F. M. Cossitt Paper serving apparatus. T. Gaskins. Pen, fountain, G. S. Parker. Penholder guard, A. Lowy	510,564 510,782 510,439 510,690
4	Hanna. Paper hotler, W. P. Stibbs. Paper hotler, W. P. Stibbs. Paper hotler and cutter, D. F. Walker. Paper, etc., machine for coating, F. M. Cossitt Paper serving apparatus. T. Gaskins. Pen, fountain, G. S. Parker. Penholder guard. A. Lowy. Pencil sharpener, W. G. Price. Permutation lock. T. D. Morris. Petroleum products, obtaining sweet residual, E. G. Brown et. al. G. Brown et. al. G. Brown et. al.	510,609 510,518 510,514
0 7 5 6	G. Brown et al. Photogrammetry, C. B. Adams. Piano touch regulator, H. A. Tobelman Picking roller, J. Marsball Pile driver, triple, W. Baptist. Pin See Insulator nin	510,672 510,758 510,729 510,695
1457	Pipe. See Dredger suction pipe. Pipe coupling, J. C. !Mitchell	510,437 510,806
5 4 8	G. C. Blackmore	510,833 510,693 510,498
6 6 9	Diantora anchor for a healt row D. Aumilles	510,000
7 5 9 7	Plow, gang, N. J. John son. Plow, sulky, C. E. Tower. Plumber's tool, C. E. Eckel. Pneumatic dispatch tube, W. G. Collins.	510,733 510,682 510,470 510,590
8 0 8	Portiere, rope, B. Dreyfus Position finder, B. A. Fiske Post. See Fence post. Precious stones, apparatus for cutting and polishing. R. Passmore.	
8 6 1	ing, E. Passmore Press. See Baling press. Drill press. Printing machine folding and staple binding delivery mechanism, L. C. Crowell. Printing machine staple binding delivery mechanism, L. C. Crowell. 510,841 to Propelling mechanism, vessel, F. Taff. Pump, T. W. Heermans Push button R. M. Hunter	510,840
9	anism, L. C. Crowell	510,845 510,725 510,859 510,540
5 17	Pyroxyline compounds, manufacture of, Stevens & Axtell. Radiator, pertable combined steam and bot air, H. Filnt.	510,617 510,852
14 16 15	Rail brace and fastener, combined, W. R. Gerhart. Rail joint, C. E. Swingle. Railway and tramway crossing, J. E. Billups	510,419 510,724 510,399
62260	Rail brace and fastener, combined, W. R. Gerhart. Rail joint, C. E. Swingle. Railway and tramway crossing, J. E. Billups. Railway conduit, electric, W. R. De Voe. Railway, conduit electric, J. P. Michieli. Railway lock switch, Wilson & Hain. Railways, closed conduit system for electric, R. H. Elliott. Range indicator, B. A. Fiske. Ratchet drill R. M. Kepler.	510,647 510,750
	Recorder. See Fare and time recorder. Time	510,850 510,417 510,542
12 12 15 14	recorder. Register. See Cash register. Regulator. See Air brake regulator. Air brake pressure regulator. Electric regulator. Piano touch regulator. Windmill regulator.	
16	Roads and other surfaces, apparatus for breaking up, Voysey & Hosack	510,739 510,738
3 2 7 14 80	Rock drilling machine, Pearsall & Walker Roller. See Land roller. Picking roller.	510,500 510,517 510,799
30 18 19 17		510,460
3936	Sweet. Hotary engine, J. F. McElroy	510,494 510,684 510,834
37 25	Sashfastener, J. S. Coey. Sash fastener, H. W. Hood. Sash fastener, F. J. Loudin. Sash bolder, J. Robertson.	510,776 510,626 510,432 510,614
30	Saw frame, E. Chaquette, Sawmill feed mechanism, T. J. Reamy, Saw sbarpening device, T. S. Disston, Sawing machine, back, Stover & Hoefer	510,774 510,818 510,846 510,619
3 7 3 1	dissociating soluble, H. S. Blackmore. Sashfastener, J. S. Coey. Sash fastener, H. W. Hood. Sash fastener, F. J. Loudin. Sash holder, I. Robertson. Saw frame, E. Chaquette. Sawmill feed mechanism, T. J. Reamy. Saw sb arpening device, T. S. Disston. Sawing machine, back, Stover & Hoefer. Scourier, See Grain scourer. Scouring, polishing, and buffing machine. combined, N. Nelson. Sereen. See Carriage screen. Window screen.	510,438
28 25 70	Sealed bucket, hermetically, S. N. Long	510,867 510,838 510,771
34	Sewing machine feeding mechanism, W. A. Mach	. 510,793 510,86
36 22		510.433