

Full hints to correspondents were printed at the head of this column in the issue of November 14 or will be sent by mail on request.

(12008) S. L. D. asks: In your column "Answers to Inquiries" will you oblige a 45-year reader of the SCIENTIFIC AMERICAN by stating scientists' explanation of the great weight of the earth? Astronomers say the whole weight is 51/2 times that of water: viz., about 344 pounds per cubic foot. Marble and difference between impulse and reaction tur-the densest granite rarely exceed 180 pounds bines in the accepted commercial sense of those per cubic foot. By far the largest part of the earth known to man is much less in weight than granite; for example, water, earths of all If astronomers are kinds, coal, all woods, etc. correct, a few hundred miles down and thence to the center of the earth there must be great density of matter. A. It is true that the aver- of recent developments is perhaps best shown age density of the materials on the earth's by the introduction almost without comment surface is not greater than three times that of of entropy diagrams laid out in lines of water. The weight of a cubic foot of such constant superheat instead of in constant temmaterials then is not far from 180 pounds per cubic foot. Your inference is the only possible one, that the interior of the earth is much heavier than the surface portions. Nor is this any different from what would be expected, if once the earth were fluid. At that time the heavier substances sank to the bottom of the fluid mass, and are at present nearer the center of the earth.

(12009) E. E. W. asks: In corresponding with an electrical dealer about hand-power for running a 75-watt dynamo, he said that it could not be run by hand-power, it was too large. This dynamo at 1,400 R. P. M. will furnish 40 to 50 volts. In a circular I have there is a 75-watt dynamo advertised. This dynamo will furnish an alternating and direct current at the same time or separate. It will run as a motor on a direct current and at the light lamps by. In all other respects it is the same except in design. The questions in my mind are why cannot the first dynamo be run by hand-power if the one can that I last described? Does it take more power to run a dynamo as you increase the amount of current or the voltage? If a dynamo is run at a higher speed than it was designed to run, would there be a higher voltage or amperage? A. A 75watt dynamo can be run by hand, by one-man power, for a while. It is one-tenth horse-power And a strong man can exert more power than that for a short time. It matters not how the 75 watts are made up-1 ampere at 75 volts, or 3 amperes at 25 volts, or any combination which gives 75 for a product. Power is in watts, and these are the product of volts and amperes. If the speed of a dynamo is increased the volts are increased, but the amperes re main the same. All the amperes flow which the resistance allows to flow. The volts depend upon the rate of cutting lines of force by the revolving armature. This is increased by increased speed. But if 1,400 turns per minute give 15 volts, 2,000 turns per minute can only give 22 volts, and not 40 volts as you give it.

(12010) J. A. B. asks: 1. What are the underlying principles of cloud electricity, that is, where do the clouds obtain their electrical energy, and how? A. The mode of the production of electricity in the atmosphere is not yet well understood. No theory completely explains all the facts. 2. What is the cause of lightning and thunder? A. Lightning is due to an electric discharge between two oppositely electrified masses of clouds. Thunder is the sound produced by the shock of the air rushing back again into the space through which the lightning has just passed. 3. Why are not all clouds accompanied by lightning? A. All clouds do not produce lightning because they are not sufficiently electrified to pierce the air between them and the earth. 4. Do all clouds possess electricity? A. All clouds are electrified, so is the air at all times. 5. Are lightning clouds laden with electricity before there is any lightning flash, or is lightning caused by the friction of the clouds? A. Thunder clouds are more highly electrified than other clouds. Light from the electric discharge is due to the heating of the air through which the lightning flashes. 6. What are clouds? A. Clouds are composed of drops of water in These drops always fall, as do any other drops, but they may evaporate and disappear before they reach the earth. They may be kept up by currents of air under the clouds, raising them and keeping them from coming through to the earth. Otherwise it would rain every time a cloud passes overhead. 7. Steam circulating in pipes condenses and again becomes water. Then why is it that steam escaping into the cold atmosphere rises and finally becomes invisible? Why does it not condense and fall back to the earth in the form of water? A. Clouds are not vapor or steam, but actual drops of water. Steam when it comes out of a pipe and is seen as a cloud is no longer steam but drops of water. If these drops disappear, it is because they evaporate into the air. They often fall as water, wetting the ground below. You would profit by reading some good book on meteorology. \$1.75 by mail.

NEW BOOKS, ETC.

THE STEAM TURBINE. By James Ambrose Moyer, S.B., A.M. New York: John Wiley & Sons, 1908. 8vo.; pp. 370; 225 ill. Price, \$4 net.

It is the aim of the author to give what ractical engineers and students desire to know about the steam turbine and not merely a résumé of as much of thermodynamics and mechanics as is necessary coupled with particulars from manufacturers' catalogues. The result, while essentially a book for the engineer is eminently practical, more for the designer and builder than for the theoretical mathematician and sufficiently lucid to be interesting to the amateur. Nothing could be clearer, for instance, than the author's explanation of the names, a distinction so confusing to many on account of the misleading nature of the terms, practically all successful turbines using both impulse and reaction in their exact sense. The summary of the difficulties of design for gas turbines is also admirably clear. The rapidity perature and by the quite unimpassioned assumption that no reciprocating engines will in future be used for large electric power plants. The presentation of the most important statements in bold-faced type is an innovation reminiscent of advertising circulars, but is useful in making the subjects visible at a glance. PEERLESS ALASKA. Our Cache Near the

Pole. By Charles Hallock, M.A. New York: Broadway Publishing Company, 1908. 16mo.; pp. 224. Price, **\$1.25**.

This is Mr. Hallock's latest work, written in his 75th year. It is a timely and very furnish 15 to 20 volts; at 2,000 R. P. M. will entertaining volume of 250 pages, comprising a comprehensive outline of the physiography, ethnology, natural history, products, railroads, government enterprises, experimental farms, and economic resources of Alaska and its development from cession to date, and furnishes same time furnish an alternating current to a useful and trustworthy vade mecum for intending homesteaders, miners, mushers, commercial fishermen, sportsmen, missionaries, and all persons interested in its settlement and advancement. There is an introductory send-off by Rev. Sheldon Jackson, of the U. S. Bureau of Education, vouching for its accuracy and

> LABORATORY ARTS. By George H. Woollatt, Ph.D., F.I.C. New York: Longmans, Green & Co., 1908. 12mo.; pp. 192; 119 diagrams.

> This is a teacher's handbook, adapted particularly for the science teacher who has to take care of and repair his own instruments. The work is thoroughly practical, and is based upon the personal experience of the author in caring for his laboratory apparatus. book abounds with useful suggestions, which clearly show the resourcefulness of the author. The purpose is not to show the standard trade methods, but the best way for the man of limited skill and a poor equipment of tools to make the necessary repairs.

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ready for, Hennequin & Plagnes Printing press bed motion, Hodgman & Hall	911,497 911,498
Printing press feeding machine attachment, J. Kleidmann Projectile, R. Naglo.	911,133 911,430
Printing press feeding machine attachment, J. Kleidmann Projectile, R. Naglo. Projectile, explosive, M. C. Maunsell. Proteids from buttermilk, producing certain, L. H. Reuter. Pulley, cut-out suspension, C. S. Moon. Pulp screen, B. W. Boyd. Purse or bag frame lock, B. vom Eigen. Puzzle, H. F. Trout. Radiator foot rest, G. W. Gage, Sr. Rail bond protector, W. B. Cleveland. Rail solupling, steel, J. O. Thompson. Rail fastener, W. J. Allin. Rail spike, J. M. Scott.	911,420
tain, L. H. Reuter	911,269 911,252 911,469
Purse or bag frame lock, B. vom Eigen Puzzle, H. F. Trout	911,386 911,461
Rail bond protector, W. B. Cleveland Rail coupling, steel, J. O. Thompson	911,488 911,209 911.092
Rail fastener, W. J. Allin	911,359 911,273 911,022
Railway cross tie, F. E. Abbott	911,237
_ Dickerson	911,298 911,118 911,129
Railway switch, automatic, F. Wolf Railway tie, J. G. Wittwer	911.190
Railway tie, G. L. Bower	911,279 911,371 911,242 911,054
Railway signal system, R. B. Davis.  Railway switch, automatic, R. E. Johnson.  Railway stie, J. G. Wittwer.  Railway tie, G. L. Bower.  Railway tie and rail joint, C. Fenkins.  Railway track frog, J. E. Lewis.  Razor, electric safety, L. Brunacci.  Receptacle support, adjustable, W. L.  Latou.	911,472
Recording device, Bradford & Paris	911,413 911,435
and rivers, device for cutting away, F. C. Ziemsen Register, C. W. Winfler	911,357 911,102 911,524
and rivers, device for cutting away, F. C. Ziemsen Register. C. W. Winder. Retort closure, P. Plantinga. Ribbon, etc., displacing device, H. Wixon. Road culvert, Blakestad & Anderson. Roadway, composition, B. F. Richardson Roll, drawing off, J. R. Milson. Rotary engine, C. Hetherington.	911,524 911,280
Road culvert, Blakestad & Anderson Roadway, composition, B. F. Richardson Roll, drawing off. J. R. Milson	911,368 911,445 911.317
Root digging machine, T. H. Maley Rotary engine, C. Hetherington	911,417 911,127
Saddle, harness, F. E. Edelbrock Sand blast apparatus, D. A. Nichols	911,270 911,299 911,431
Sash fastener, J. W. Rykard Sash holder, A. H. Mix	911,076 911,515 911,454
Sash weight, P. G. Wiegert Scoop handle, G. A. Byor	911,352 911,291
Root digging machine, T. H. Maley. Rotary engine, C. Hetherington. Rouge holder, A. Schneider. Saddle, harness, F. E. Edelbrock. Sand blast apparatus, D. A. Nichols. Sash fastener, J. W. Rykard. Sash holder, A. H. Mix. Sash, sliding and swinging, N. P. Sjobring. Sash weight, P. G. Wiegert. Scoop handle, G. A. Byor. Score board, G. E. Baird. Screen. See Pulp screen. Seal press, H. S. Maidhoff. Sealing receptacles from which air or gas has	911,363 911,251
hear arhanated harmatically T Figan	
stein Sewage ejector, W. McClintock Sewing machine, buttonhole, C. A. Dahl	911,387 911,321 911,551
Sheet metal putty container, H. Ross Sheet steel keg, C. Stellberg	911,163 911,085 911,084
Shingle painting device, A. L. Condray Shoe sole, antislipping, Doughty & Sanford.	911,381 911,479
stein Stein Stein W. McClintock. Sewage ejector, W. McClintock. Sewage machine, buttonhole, C. A. Dahl Sheet metal putty container, H. Ross Sheet steel keg, C. Stollberg Shoet steel vessel, C. Stollberg Shingle painting device, A. L. Condray Shoe sole, antislipping, Doughty & Sanford. Shoe stretcher, C. B. Kosters Shoulder and body brace, combined, J. D. Orear	911,506 911,324
Shovel, surface cultivating, L. B. Penton Sickle bar attachment. McDermott & Yan-	911,437
Sifter, flour, C. L. Jones	911,322 911,130
mann Sifter, one hand, Gould & Jensen. Sign, illuminated, A. H. Hawkes. Signs, letters, and designs, manufacture and	911,258 911,493 911,557
Signs, letters, and designs, manufacture and painting of, G. M. Ferguson	911,933

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Silo, A. A. Doty	911,217 911,346
Silo, A. A. Doty. Skate, Tait & Nicoll. Sliding gate, G. P. Janes. Small arm, recoil operated. P. Mauser. Snap fastener, G. A. Holmes. Sole rounding machine, Mayo & Buckminster	911,043 911,315 911,042
Sole rounding machine, Mayo & Buckmin- ster	
ster Spinning and doubling machine spindle, W. T. Smith Spring clip construction, M. L. Senderling. Spring construction, F. E. Holland. Spring forming tool, spiral, H. M. Daniels. Sprinkling machine, rotary barrel, J. Muller, Jr. Square, R. M. & R. R. Randall.	911,170 911,545
Spring construction, F. E. Holland	911,499 911,296
Station or street indicator, E. W. Mc-Cutchen Steam trap, T. J. Cookson. Steam trap, J. E. Purser. Steamer and cooker, R. R. Jensen. Stereotype matrices, machine for the production of, F. Maurer. Street sweeping apparatus, Baker & McLennan	911,320 911,330
Station or street indicator, E. W. Mc- Cutchen	911,059 911,031
Steam trap, J. E. Purser	911,268 911,408
tion of, F. MaurerStreet sweeping apparatus, Baker & McLen-	911,421
nan Stuffing box, safety, J. H. Keeter Surfaces, treating, J. Spelta Swing, T. D. Montague.	911,196 911,047 911,171
Swing, T. D. Montague Switches and for other purposes, mechanism for controlling time, Reynolds & Bud-	911,426
dington	911,072 911,523 911,306
dington Syringe, antiseptic, C. Piers. Tag, S. C. Hull Tag, shipping, G. C. Carman Talking machine automatic brake, G. Buelna	911,306 911,206 911,202
Tank lug, J. Reichert	911,071
Telephone apparatus, Viggards & Stolz Telephone, intercommunicating, H. C. Thom-	911,384 911,531
Telephone receiver, H. W. Sullivan	911,181 911,178 911,438
Telephone switchboard connecting jack, C. H. Smith	911,338 911,231
Telephone trunking system, C. S. Winston Therapeutical apparatus, A. H. Shoemaker.	911,188 911,528
Thermo-electric pile, A. Rittershaussen Thresher tooth, G. H. Rechtenbach Ticket. E. A. Hoen.	911,446 911,157 911,406
Tie plate, W. Goldie, Jr	911,406 911,230 911,245 911,208
Tire, L. M. Nelson. Tire mold, P. D. Thropp	911,257 911,182
Tire, pneumatic, E. J. Hicks	911,041 911,203 911,312 911,300
Toilet case, E. Erlekson	911,300 911,404 911,537
Tooth, artificial, F. Sheinman	911,078 911,398
Telephone receiver, W. E. Feters. Telephone switchboard connecting jack, C. H. Smith Telephone testing system, H. C. Goldrick. Telephone trunking system, C. S. Winston. Therapeutical apparatus, A. H. Shoemaker. Thermo-electric pile, A. Rittershaussen. Thresher tooth, G. H. Rechtenbach. Ticket, E. A. Hoen. Ticket, E. A. Hoen. Tile plate, W. Goldie, Jr. Tile machine plunger, Keil & Mickelson. Timber tie, R. R. Clem Tire, D. M. Nelson. Tire mold, P. D. Thropp. Tire, pneumatic, E. J. Hicks. Tire shield, J. Burmeister Tobacco press, lump, C. R. Mahone. Toilet case, E. Erickson. Tool, board setting, W. R. Harris. Tool holder, C. E. Brown. Tooth, artificial, J. W. Ivory. Toothpick, A. C. Perkins. Tooth, alcohol, A. W. Straight. Tourist's and traveler's cap, Harrison & O'Brien Toy, Schweida & Stapf.	911.068 911,227 911,086
Tourist's and traveler's cap, Harrison & O'Brien	911,126 911,451
O'Brien Toy, Schweida & Stapf. Toy, A. C. Tytler. Toy flying machine, E. H. Eichenfels. Trace holder, J. S. Douglass. Tracker board, R. W. Pain. Train signal and stonging system automatic	911,462 911,538 911,218
Trace noider, J. S. Douglass	911,218 911,0 <b>64</b>
compressed air, R. B. Robinson Transmitting instrument. G. E. Winslow Trinod. L. C. & E. C. Roehlk	911,161 911,354 911,544
Tracker board, R. W. Fain. Train signal and stopping system, automatic compressed air, R. B. Robinson. Transmitting instrument. G. E. Winslow. Tripod, L. C. & E. C. Roehlk. Trolley, Rosskamp & Kellermann. Trolley, detachable conveying, R. J. Ells-worth	911,448 911,221
Truck, loading, T. S. Chesnutt	911,111
tholomaus Tutbe joint, G. Politz	911,107 911,156 911,376
Turbine, E. I. Braddock	911,470
Turbine blade fixing machine, S. Z. de Ferranti Turbine steam packing, C. P. Wetherbee. Typewriting machine, A. T. Brown. Typewriting machine, A. W. Smith. Umbrella notch, F. A. Smith. Valve, Shields & Webster Valve, check, C. I. Williams. Valve, pas engine, W. S. Huyette. Valve, pipe, W. B. Vestal Varnishing machine, B. L. Bradley. Vault, burial, R. J. Bratton. Vegetable cutter, R. L. Dorsey. Vegetable parer and cutter, M. L. Hawks. Vegetation destroying composition, P. Murphyle P. N. Morre.	911,222 911,350
Typewriting machine, A. W. Smith Umbrella notch, F. A. Smith	911,275 911,169
Valve, Shields & Webster	911,546   911,353   911,503
Valve, pipe, W. B. Vestal	911,095 911,471 911,027
Vegetable cutter, R. L. Dorsey	911,478 911,239
vegetation destroying composition, P. Mur- phy	911,130
phy Vehicle, R. N. Martz. Vehicle axle, R. C. Martin. Vehicle running gear frame section, G. Higley	911,142
Vehicle running gear frame section, G. Higley Vehicle spring, M. M. McIntyre Vehicle spring shock-absorbing mechanism, W. P. Kidder. Vehicle wheel rim tightener, J. Hamilton Vehicle machine, H. A. Thexton Ventilating louver, A. W. Stewart Ventilator, C. C. Knauss Vessel closure, R. M. Whitson Vessel closure, R. M. Whitson Wagon bed protector, G. I. Fornwalt Wagon brake rod connection, O. Wooten Wagon brake rod connection, O. Wooten Wagon seat, N. Beatty Watch bow attachment, C. Arthur Water and gas box for service pipes, T. P. Fitzgerald Water closet coupling, W. H. Foulois	911,240 911,151 911,402
Vehicle wheel rim tightener, J. Hamilton Vending machine, H. A. Thexton	911,403   911,091
Ventilator, C. C. Knauss	911,457 911,541 911,099
Voting machine, J. H. Dean	911,099 911,552 911,301 911,355
Wagon seat, N. Beatty	911,024 911,361
Fitzgerald Water closet coupling, W. H. Foulois	911,485 911,486
Fitzgerald Water closet coupling, W. H. Foulois Water cooling apparatus, J. B. Clanton Water heater, Swindell & Holloway Wattmeter, integrating, Getchell & Smith	911,207 911,087 911,036
Wheel. See Fly-wheel. Wheel rim, F. C. Miller Wheel tire chain mat. B. J. Morehouse	911,425 911,427
Wheel. See Fly-wheel. Wheel rim, F. C. Miller Wheel trim, F. C. Miller Wheel trie chain mat, B. J. Morehouse Whip lock, W. G. Lieser Window box or casing, N. P. Sjobring Window cleaner, H. L. Bailey Window fastening device, storm, C. W. Coffin	911,427 911,309 911,455
Window fastening device, storm, C. W.	911,194 911,477
Coffin  Window frame and sash, P. G. Wiegert  Window pane fastener, S. Roush  Window screen, A. H. Mix  Wire drawing machine inverted drum, J. A.  Horton	911,477 911,351 911,164 911,318
Wire drawing machine inverted drum, J. A.  Horton	911,305
Wire or cables for electric or other purposes, apparatus for the manufacture of lead incased, C. Tatham	911,459
water vant	911,344 911,536 911,200
Wool and other fibrous materials, machine for cleaning, F. G. Sargent	911,200
wool and other similar fibers, combing ma- chine for, J. Cooper, et al911,114, Wrapping and pasting machine, C. Owens	911,115 911,542
Wrench, J. King	911,048 911,096 911 154
Wrench, J. King	911,452 911,326
	σ11,112
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Box, C. M. Pease. Diaphragm actuated horns, diaphragm case and resonator for, M. R. Hutchison Emblem, G. S. Merrill.	39,801
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Medal, W. H. Heath	39,803 39,799

	Surfaces, treating, J. Spelta.  Swing, T. D. Montague.  Switches and for other purposes, mechanism	911,17 911,42
	i for controlling time, Reynolds & Bud-	911,07
	dington Syringe, antiseptic, C. Piers. Tag, S. C. Hull. Tag, shipping, G. C. Carman. Taking machine automatic brake, G. Buelna	911,52 911,30 911,20
		911,20 911,07
	Telegraph transmitter, keyboard, P. B. Delany Telephone apparatus, Viggards & Stolz Telephone, intercommunicating, H. C. Thom-	911,38 911,53
	Telephone receiver, H. W. Sullivan	911,18 911,17
	Telephone receiver, W. E. Peters Telephone switchboard connecting jack, C. H. Smith	911,43 911,33
	Telephone testing system, H. C. Goldrick Telephone trunking system, C. S. Winston	911,33 911,23 911,18
	Telephone switchboard connecting jack, C. H. Smith Telephone testing system, H. C. Goldrick Telephone trunking system, C. S. Winston Therapeutical apparatus, A. H. Shoemaker. Thermo-electric pile, A. Rittershaussen Thresher tooth, G. H. Rechtenbach Ticket, E. A. Hoen	911,52 911,44
	Thresher tooth, G. H. Rechtenbach	911,15 911,40 911,23
	Thresher tooth, G. H. Rechtenbach	911,24 911,20
	Tire, L. M. Nelson Tire mold, P. D. Thropp. Tire, pneumatic, E. J. Hicks.	911,25 911,18
	Tree mold, P. D. Thropp. Tire, pneumatic, E. J. Hicks. Tire shield, J. Burmeister. Tobacco press, lump, C. R. Mahone. Tollet case, E. Erickson. Tool, board setting, W. R. Harris. Tool holder, C. E. Brown. Tooth, artificial, F. Sheinman. Tooth, artificial, J. W. Ivory.	911,04 911,20 911,31
	Toolet case, E. Erickson	911,30
	Tool holder, C. E. Brown	911,40 911,53 911,07
	Tooth, artificial, J. W. Ivory	911,39 911,06
	Torch, alcohol, A. W. Straight	911,22 911,08
	Tourist's and traveler's cap, Harrison & O'Brien Toy, Schweida & Stapf	911.12
	Toy, Schweida & Stapf	911,45 911,46
ļ	Toy, A. C. Tytler.  Toy flying machine, E. H. Eichenfels.  Trace holder, J. S. Douglass.  Tracker board, R. W. Pain.  Train signal and stopping system, automatic compressed air R. B. Robinson.	911,53 911,21
	Train signal and stopping system, automatic	911,06
	Transmitting instrument, G. E. Winslow	911,16 911,35 911,54
	Train signal and stopping system, automatic compressed air, R. B. Robinson.  Transmitting instrument G. E. Winslow  Tripod, L. C. & E. C. Roehik  Trolley, Rosskamp & Kellermann  Trolley, detachable conveying, R. J. Elisworth	911,44
	Truck, loading, T. S. Chesnutt	911,22 911,11
	Tube and rod cutting mechanism, R. Bartholomaus Tube joint, G. Politz Tutting machine, W. E. Buser Turbine, E. I. Braddock	911,10
	Turting machine, W. E. Buser	911,15 911,37 911,47
	Turbine, R. H. Goldsborough	911,49
	ranti	911,22 911,35
i	Typewriting machine, A. T. Brown Typewriting machine, A. W. Smith	911,35 911,19 911,27
	Valve, Shields & Webster	911,16 911,54
	Valve, gas engine, W. S. Huyette	911,35 911,50 911,09
	ranti Turbine state m packing, C. P. Wetherbee. Typewriting machine, A. T. Brown. Typewriting machine, A. W. Smith. Umbrella notch, F. A. Smith. Valve, Shields & Webster. Valve, check, C. I. Williams. Valve, gas engine, W. S. Huyette. Valve, pipe, W. B. Vestal. Varnishing machine, B. L. Bradley. Vault, burial, R. J. Bratton. Vagetable cutter, R. L. Dorsey.	911,47 911,02
	Vegetable parer and cutter, M. L. Hawks	911,47 911,23
	Vegetation destroying composition, P. Murphy	911,25 911 14
	Vehicle axle, R. C. Martin	911,14 911,14
	Vehicle axle, R. C. Martin. Vehicle running gear frame section, G. Higley Vehicle spring, M. M. McIntyre. Vehicle spring shock-absorbing mechanism, W. P. Kidder Vehicle wheel rim tightener, J. Hamilton. Vending machine, H. A. Thexton. Ventilating louver, A. W. Stewart Ventilator, C. C. Knauss	911,24 911,15
	W. P. Kidder	911,40 911.40
	Vending machine, H. A. Thexton Ventilating louver, A. W. Stewart	911,09 911,45
!	Ventilator, C. C. Knauss	911,54 911,09
!	Wagon bed protector, G. I. Fornwalt  Wagon broke red connection O Wooten	911,30 911,30
	Wagon seat, N. Beatty	911,02 911,36
I	Ventilator, C. C. Knauss. Vessel closure, R. M. Whitson. Voting machine, J. H. Dean. Wagon bed protector, G. I. Fornwalt. Wagon brake rod connection, O. Wooten Wagon seat, N. Beatty Watch bow attachment, C. Arthur. Water and gas box for service pipes, T. P. Fitzgerald Water closet coupling, W. H. Foulois. Water cooling apparatus, J. B. Clanton. Water theater, Swindell & Holloway. Wattmeter, integrating, Getchell & Smith. Wheel. See Fly-wheel	911,48
	Water cooling apparatus, J. B. Clanton	911,48 911,20
	Water heater, Swindell & Holloway Water heater, integrating, Getchell & Smith	911,08 911,03
	Wheel rim, F. C. Miller	911,42 911,42
	Whip lock, W. G. Lieser	911,30 911,45
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	Window frame and sash, P. G. Wiegert	911,47 911,35 911,16 911,31
	Window fastening device, storm, C. W. Coffin	911,31
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	apparatus for the manufacture of lead incased, C. Tatham	911,45
İ	wood scraper, J. H. Banke	911,34 911,53
	Woodworking machine, C. Bruderlein Wool and other fibrous materials, machine	
	Wool and other fibrous materials, machine for cleaning, F. G. Sargent Wool and other similar fibers, combing machine for, J. Cooper, et al911,114, Wrapping and pasting machine, C. Owens.	911,33
1	Wrench J. King	911,54 911,64
İ	Wrench, C. Waller	911,09 911,15
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į	Yoke, neck, Christensen & Noonen	911,111

mall arm, recoil operated, P. Mauser nap fastener, G. A. Holmes lole rounding machine, Mayo & Buckmin-	911,315 911,042	
pinning and coubling machine spindle, W. T. Smith T. Smith T. Smith T. Smith T. Smith T. Senderling. The construction, M. L. Senderling. The construction, F. E. Holland The company to the construction, spiral, H. M. Daniels. The construction of the construction of the coupling to the construction of the construction of the coupling to the construction of the coupling to the coupl	911,545 911,499	
pring forming tool, spiral, H. M. Daniels. prinkling machine, rotary barrel, J. Muller, Jr.	911,296 911 320	İ
quare, B. M. & R. R. Randalltation or street indicator, E. W. Mc-	911,330	i
Jr. Jr. M. & R. R. Randall	911,031 911,268	
teamer and cooker, R. R. Jensen tereotype matrices, machine for the produc-	911,408	
treet sweeping apparatus, Baker & McLen- nan	911,196	
tufing box, safety, J. H. Keeterurfaces, treating, J. Spelta wing, T. D. Montague. witches and for other purposes, mechanism	911,047 911,171 911,426	ĺ
for controlling time, Reynolds & Bud-	911,072	
dington yringe, antiseptic, C. Piers. ag, S. C. Hull. ag, shipping, G. C. Carman	911,523 911,306	
ag, snipping, G. C. Carman	911,206 911,202 911,071	
alking machine automatic brake, G. Buelna ank lug, J. Reichert. elegraph transmitter, keyboard, P. B. De- lany elephone apparatus, Viggards & Stolz	911,384 911,531	
'elephone, intercommunicating, H. C. Thom-	911,181	
son elephone receiver, H. W. Sullivan elephone receiver, W. E. Peters. elephone switchboard connecting jack, C. H. Smith	911,178 911,438	١.
H. Smith  H. Smith  H. C. Goldrick  Lelephone trunking system, H. C. Goldrick  Lelephone trunking system C. S. Winston	911,338 911,231 911 188	١,
herapeutical apparatus, A. H. Shoemaker. hermo-electric pile, A. Rittershaussen	911,528 911,446	
icket, E. A. Hoenie plate, W. Goldie, Jrie	911,157 911,406 911,230	
ile machine plunger, Keil & Mickelson imber tie, R. R. Clem	911,245 911,208 911,257	
elephone switchboard connecting jack, C. H. Smith elephone testing system, H. C. Goldrick. elephone trunking system, C. S. Winston. herapeutical apparatus, A. H. Shoemaker. hermo-electric pile, A. Rittershaussen. hresher tooth, G. H. Rechtenbach. icket, E. A. Hoen. ite plate, W. Goldie, Jr. ile machine plunger, Keil & Mickelson. imber tie, R. Clem. ire, pneumatic, E. J. Hicks. ire shield, J. Burmeister.	911,182 911,041	
obacco press, lump, C. R. Mahoneoliet case, E. Erickson	911,203 911,312 911,300	
ool, board setting, W. R. Harrislool holder, C. E. Brownlooth artificial F. Sheinman	911,404 911,537 911,078	
ooth, artificial, J. W. Ivoryoothpick, A. C. Perkins	911,398 911.068	
ire mold, P. D. Thropp. ire, pneumatic, E. J. Hicks. ire shield, J. Burmeister. obacco press, lump, C. R. Mahone. oilet case, E. Erickson. ool, board setting, W. R. Harris. ool holder, C. E. Brown. ooth, artificial, J. W. Ivory. oothpick, A. C. Perkins. oothpick boxing machine, C. C. Freeman. orch, alcohol, A. W. Straight. ourlist's and traveler's cap, Harrison & O'Brien.	911,227 911,086	
O'Brien Oy, Schweida & Stapf	911,126 911,451 911,462	
oy fiying machine, E. H. Eichenfels race holder, J. S. Douglass	911,538 911,218	١.
racker board, R. W. Pain rain signal and stopping system, automatic compressed air, R. B. Robinson	911,0 <b>64</b> 911,161	İ
ourist's and traveler's cap, Harrison & O'Brien oy, Schweida & Stapf. oy, A. C. Tytler. oy flying machine, E. H. Eichenfels. race holder, J. S. Douglass. racker board, R. W. Pain. rain signal and stopping system, automatic compressed air, R. B. Robinson. ransmitting instrument. G. E. Winslow. rripod, L. C. & E. C. Roehlk. rolley, Rosskamp & Kellermann. rolley, detachable conveying, R. J. Elisworth.	911,354 911,544 911,448	
rolley, detachable conveying, R. J. Ellsworth	911,221	
worth 'ruck, loading, T. S. Chesnutt ube and rod cutting mechanism, R. Bar- tholomaus	911,111 911,10 <b>7</b>	
tholomaus ube joint, G. Politz. utting machine, W. E. Buser. urbine, E. I. Braddock.	911,156 911,376 911,470	
urbine. R. H. Goldsborough	911.492	
urbine steam packing, C. P. Wetherbee ypewriting machine, A. <u>T</u> . Brown	911,222 911,350 911,198	
ypewriting machine, A. W. Smith	911,275 911,169 911,546	
alve, check, C. I. Williamsalve, gas engine, W. S. Huyette	911,546   911,353 911,503   911,095	
arnishing machine, B. L. Bradleyault, burial, R. J. Bratton	911,471 911,027	
egetable cutter, R. L. Dorseyegetable parer and cutter, M. L. Hawks.egetation destroying composition, P. Mur-	911,027 911,478 911,239	
urbine blade fixing mackine, S. Z. de Ferranti urbine steam packing, C. P. Wetherbee, ypewriting machine, A. T. Brown. ypewriting machine, A. W. Smith. mbrella notch, F. A. Smith. alve, Shields & Webster. alve, gas engine, W. S. Huyette. alve, pipe, W. B. Vestal. arnishing machine, B. L. Bradley. ault, burial, R. J. Bratton. egetable cutter, R. L. Dorsey. egetable parer and cutter, M. L. Hawks. egetation destroying composition, P. Murbine, P. M. M. M. M. M. M. M. M. M. M. M. M. M.	911,255   911,143   911,142	
ehicle running gear frame section, G. Higley	911,240	ļ
ehicle spring, M. M. McIntyre ehicle spring shock-absorbing mechanism, W. P. Kidder	911,402	
ehicle wheel rim tightener, J. Hamilton Yending machine, H. A. Thexton entilating louver. A. W. Stewart	911,403 911,091 911,457	
entilator, C. C. Knaussessel closure, R. M. Whitson	911,541 911,099 911,559	
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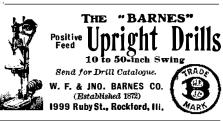
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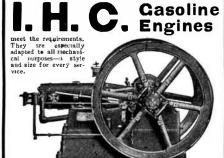
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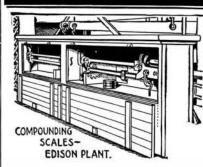
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