ENGINEERING INVENTIONS.

A railway signal has been patented by Mr. David Tapley, of Woodstock, New Brunswick Canada. It is a semaphore so constructed that the signal may be set at any distance from the station, and operated by a boy over two thousand feet of wire passing around curves, the invention covering various new and useful improvements.

Mr. Adam Rosenkranz, of Allegheny, Pa. The engine case is formed with four cylinders, set opposite each movement on the mast, with wings adapted to open other in pairs in the form of a cross, and all opening and close as the planes are reciprocated, combined with into a common central chamber in which rotates the crank of the engine shaft, being intended to rotate the driving shaft in either direction, operating under control of a single rotatory valve, and fitted with ports and a slide valve to allow instant reversal.

MECHANICAL INVENTION.

An auger bit has been patented by Mr. Charles H. Irwin, of Martinsville, Ohio. It has a solid center stem formed with a single convoluted blade, terminating at its lower end in a single chisel on one side of the stem, with a short additional convoluted blade at the same end of the stem, terminating at its outer end in an additional chisel on the opposite side of the stem, making a partially double and a single twist central stem auger bit applicable for hand and machine

AGRICULTURAL INVENTIONS.

A check row planter has been patented by Messrs. August F. Tiede and Jairus Wilcox, of Preston, Iowa. The invention covers a novel construction and combination of parts, the machine being intended to space off the dropping of the seed to secure accurate check row planting over uneven ground, and to distinctly mark the earth so that the regularity of the planting may be tested as the work progre

A farm gate has been patented by Mr. Philip Ramminger, of Greenwood, Wis. It is so con structed that when the gate swings either way, a toothed plate on the base of the posts intermeshing with a toothed segment on the gate causes the outer end of the gate to rise gradually, in such a way that it will close automatically by the effect of gravity, the construction being simple and the gate swinging very

A combined cotton seed planter and fertilizer distributer has been patented by Mr. John I. Boswell, of near Chase City, Va. The machine has an opening plow, and is so constructed that the seed and the fertilizer will be guided into the bottom of the furrow opened by the plow, the amount of fertilizer discharged being easily regulated, with other novel features, the invention being an improvement on a former patented invention of the same inventor.

MISCELLANEOUS INVENTIONS.

A pocket protector has been patented by Mr. David J. Scott, of Ridgeway, N. C. It is a novel form of cheap and simple device, to attach to a garment without disfiguring it, for retaining the mouth of a pocket in a closed position, preventing the falling out of pencils, cigars, pocket books, etc

A shirt has been patented by Mr. William B. Brokaw, of Newburg, N. Y. This invention provides an improved mode of uniting the bosom portions over the breast of the wearer, whereby the fastenings may be readily and quickly detached, thereby permitting the shirt to be conveniently washed, free of any obstructions.

A vehicle for delivering coal oil, etc., has been patented by Mr. Charles H. Weygant, of Newburg, N. Y. In connection with a vehicle adanted to carry a tank or barrels is a pump, measuring tank, and hose and reel, by which the liquid may be measured and conveniently transferred to some distance, and delivered above or below the vehicle

A bookbinder's gold cleaning and saving machine has been patented by Mr. John N. Ives, of Brooklyn, N. Y. Wipers of soft rubber or other suitable material are employed, carried by a rotating frame inclosed in a box or suitable casing to retain the par ticles of gold removed by the wipers, the invention covering a novel construction, arrangement, and combination of parts

A chute for cleaning coal has been natented by Mr. Peter F. Henigan, of Pittston, Pa. This invention covers a novel construction and arrange. ment of the longitudinal bars in a screening chute, providing for the automatic clearance of the slate as well as the culm, making the device a slate picker as

A composition of building material for architectural purposes has been patented by Mr. Carl Straub, of Syracuse, N. Y. It consists of glue, water, boiled linseed oil, and muriatic and sulphuric acids, to be used with calcined sulphate of lime and calcined carbonate of lime, the compounding and use to be in a specially prescribed way.

A fire escape has been patented by Mr. John Dittrick, of Perth, Ontario, Canada. It has a shaft with two drums, cog wheel, and fan governor, and another shaft with cog wheels in combination with a drum and two descending ropes, to be placed in a building near a window frame, and operating so that each descent serves to set the opposite rope ready for another descent.

A hat holder has been patented by Mr. Edmund B. Culver, of Great Barrington, Mass. It consists of a spring strip, a hook, and an elastic band, the latter serving as a connection between the strip and hook in such way that the hat may thereby be suspended from the clothing of the person or from any fixed

A guard for windows and doors has been patented by Mr. Alfred Heath, of Jersey City, It consists of a single wire formed into a series of overlapping loops, with indentations formed at their points of intersection, and with screw-threaded ends and nuts, making an easily detachable guard for windows and the like, to prevent children from falling out, etc.

An air ship has been patented by Mr. A steam engine has been patented by James M. Wheeler, of Fish's Eddy, N. Y. It consists of a boat with a mast, and aeroplanes fitted for bodily a cylinder containing expansive fluid nnder pressure, with a piston and rod connections therefrom for operating the aeroplanes.

> 'A telephone has been patented by Mr. Charles S. Bell, of Columbus, Ohio. The invention covers a multipolar magnet, composed of a permanent magnet having a longitudinal bore, with a soft iron core inserted therein, and an insulating cylinder of nonmagnetic material surrounding the core, with a helix surrounding the parts, in combination with the diaphragmof a telephonic instrument, and is intended to work inanyplaceand way wher a telephone connected with a battery can be worked.

Business and Personal.

The charge for Insertion under this head One Dollar a line for each insertion; about eight words to a line. Advertisements must be received at publication office as early as Thursday morning to appear in next issue.

Inventors' and Manufacturers' Exhibition, Boston, Parties having inventions for sale, r wishing to exhibit their goods, address Chas. Babson, Jr., 24 Congress St. Boston, Mass.

For Sale—A good paying saw manufactory business, or a part interest. Address "Saws," P. O. box 770, Nev

Power, 113 Liberty St., N.Y. \$1 per yr. Samples free. Get estimates from Christiana Machine Co., 206 North 4th St., Philadelphia, Pa., for shafting, pulleys, hangers, and gearing before ordering elsewhere

An A No. 1 patternmaker wanted. Steady work and first class wages to a good man. Address L. C. & Son., P. O. box 773, New York.

Just Published.-A new and enlarged catalogue of scientific books, furnished free of charge on application by addressing Munn & Co., 361 Broadway, N. Y.

For Sale-Machine shop plant, in operation. Best tools. Address Chas. W. Griggs, 175 Dearborn, Chicago. Engines and boilers, 1 to 4 H. P. Washburn Engine Co., Medina, O.

The Australian-American Trading Co., 20 Collins St. West Melbourne. Sole agencies for American novelties desired. Correspondence solicited. Care of Henry W. Peabody & Co., Boston.

The Knowles Steam Pump Works, 113 Federal St., Boston, and 93 Liberty St., New York, have just issued a new catalogue, in which are many new and improved forms of Pumping Machinery of the single and duplex, steam and power type. This catalogue will be mailed free of charge on application.

For the latest improved diamond prospecting drills, address the M. C. Bullock Manfg. Co., 158 Lake St., Chicago, Ill.

Link Belting and Wheels. Link Belt M. Co., Chicago The Railroad Gazette, handsomely illustrated, published weekly, at 73 Broadway, New York. Specimen copies free. Send for catalogue of railroad books. Protection for Watches.

Anti-magnetic shields—an absolute protection from all electric and magnetic influences. Can be applied to any watch. Experimental exhibition and explanation at "Anti-Magnetic Shield & Watch Case Co.," 18 John St., New York. F. S. Giles. Agt., or Giles Bro. & Co., Chicago, where full assortment of Anti-Magnetic Watches can be had. Send for full descriptive circular.

Presses & Dies. Ferracute Mach. Co., Bridgeton, N. J. Supplement Catalogue.—Persons in pursuit of information of any special engineering, mechanical, or scien tific subject, can have catalogue of contents of the Sci ENTIFIC AMERICAN SUPPLEMENT sent to them free The SUPPLEMENT contains lengthy articles empracing the whole range of engineering, mechanics, and physical science. Address Munn & Co., Publishers, New York.

Woodworking Machinery of all kinds. The Bentel & Margedant Co., 116 Fourth St., Hamilton, O.

Nickel Plating.-Sole manufacturers cast nickel an odes, pure nickel salts, polishing compositions, etc. \$100
"Little Wonder." A perfect Electro Plating Machine.
Sole manufacturers of the new Dip Lacquer Kristaline. Complete outfit for plating, etc. Hanson, Van Winkle & Co., Newark, N. J., and 92 and 94 Liberty St., New York.

Iron Planer, Lathe, Drill, and other machine tools of modern design. New Haven Mfg. Co., New Haven, Conn. Catalogue of books on civil and mechanical engineer ing, electricity, arts, trades, and manufactures, 116 pages sent free. F. & F. N. Spon. 85 Murray St., New York.

Guild & Garrison's Steam Pump Works, Brooklyn, N. Y. Pumps for liquids, air, and gases. New catalogue

Curtis Pressure Regulator and Steam Trap. See p. 45. Cushman's Chucks can be found in stock in all large cities. Send for catalogue. Cushman Chuck Co., Hart

Half interest in foreign patents of an article of universal household utility given for cost of such patents J. D. H., 3620 Spring Garden St., Philadelphia, Pa.

The Improved Hydraulic Jacks, Punches, and Tube Expanders. R. Dudgeon, 24 Columbia St., New York. Friction Clutch Pulleys. D. Frisbie & Co., N.Y. city.

Veneer Machines, with latest improvements. Farrel Fdry. Mach. Co., Ansonia, Conn. Send for circular. Tight and Slack Barrel Machinery a specialty. John

Greenwood & Co., Rochester, N.Y. See illus. adv., p. 28. Automatic taper lathes. Heading and box board machines. Rollstone Machine Co., Fitchburg, Mass.

Iron and Steel Wire, Wire Rope, Wire Rope Tram ways. Trenton Iron Company, Trenton, N. J. Lick Telescope and all smaller sizes built by Warner & Swasey, Cleveland, Ohio.

Send for new and complete catalogue of Scientific Books for sale by Munn & Co., 361 Broadway, N. Y. Free on application.

SCIENTIFIC AMERICAN BUILDING EDITION.

MAY NUMBER.

TABLE OF CONTENTS.

Plate in Colors of a Country House, in perspective, enlarged and improved at moderate expense, with floor plans, also sheet of details, specifications, bills of estimate, etc.

2. Plate in Colors of a Dwelling at Orange, N. J., with plans, sheet of details, description, etc.

The Queen of England's Cottage at Cannes, with ha f page engraving.
 A Twenty-five Hundred Dollar Cottage. Page engraving, showing perspective, and floor plans.

5. New Apartment House in Brooklyn, with perspective view and floor plans.

A Two Thousand Dollar House, with three-quarter page engravings, including perspec-tive and floor plans.

7. An E stlake Cottage, with el vation and floor 8. The New Law Courts Birmingham, page engraving—a splendid example f recent architecture.

9. Design for Local Offices. Half page engraving. A Double Cottage of Moderate Cost, two pages of engravings, with elevations floor plans, and partial specifications.

A Thirty-five Hundred Doll r Cottage, with elevation and floor plans.

12. New Hotel at Mentone, page ngraving, show ing perspective and plans. A Dwelling of Moderate Cost, page engraving, perspective and floor plans.

Design for a Seaside Cottage, perspective view and plans.

A Country Church costing \$5,000, a picturesque design in perspective, with floor plan.

A Church in Stone, to cost from \$20,000 up. An elegant design, with plans. 17. Shop Fronts in Birmingham, a suggestive and

elegant design. 18. The Ponce de Leon Hotel, at St. Augustine, Fla. An elegant and unique specimen of architecture; two engravings.

Mode of Raising and Repairing the old U. S. Court House at Roston, with three engravings.
 The Arch of Triumph at Karlsruhe. Designed by Prof. Gotz. Half page engraving.
 Design for a Monument and Mausoleum to Gen. Grant, by George Matthias; ha f page engraving.

Gen. Grant, by George Matthias; ha f page engraving.

MiscellaneousContents: Heatingby Hot Water, illustrated.—Architectural Wood Turning, illustrated.—Architectural Wood Turning, illustrated.—Iron Ceilings, with illustrationa.—Rose covered Porches, with engraving.—Tin Roofing, with an engraving.—Planing Mill Construction, with diagrams.—Roservoir with Automatic Valve, engraving.—How to make Good Roads.—How to make Good Roads.—How to make a Cold Room for Eggs, etc.—New way of building Concrete Walls under Water.—How to remove Paint.—Embossed Wood, how made.—Knotting, and Its Uses.—Strength of Pl ster of Paris.—Water Back Explosions.—Stone Filters.—Experiments in Drying Woods.—Shrinking of Seasoned Timber.—Cement Buildings.—The Acropolis of Athens.—Architectural Excellence.—Artificial Rubies.—Gelatine Moulds for reproducing Carvings.—Paper Roofs.—Floors and Ceilings, Ancient and Modern, by C. Powell Karr.—Built-up Doors.—Staining Wood.—Shelter Belts and Hedge Screens. Building Constructions under Water.—How to Finish in Natural Wood.—Best Arrangement of Plumbing.—Bursting of Lead Pipes.—Costs of Different Kinds of Walls.—Imitation Stone.—How to Grain Walnut.

The Scientific American Architects and Builders dittion is in Menthly 2250 a veer Single engraving.

How to Grain Wainut.

The Scientific American Architects and Builders Edition is i ued monthly. \$2.50 a year. Single copies, 25 cents. Forty large quarto pages, equal to about two hundred ordinary book pages; forming, practically, a large and splendid MAGAZINE of ARCHITECTURE, richly adorned with elegant plates in colors and with fine engravings, illustrating the most interesting examples of Modern Architectural Construction and allied subjects.

The Fullness, Richne, Cheapness, and Convenience of this work have won for it the LARGEST CIRCULATION of any Architectural publication in the world. Sold by all newsdealers.

MUNN & CO., PUBLISHERS, 361 Broadway, New York.

INDEX OF INVENTIONS

For which Letters Patent of the United States were Granted

April 19, 1887,

AND EACH BEARING THAT DATE.

[See note at end of list about copies of these patents.]

ı		
ı	Aerial vessel. J. Neubrand	361,442
ı	Air box, cold, Short & Kellogg	361,457
ı	Air ship, J. M. Wheeler	361,475
ı	Album clasp, W. Lowery	361,364
ı	Alkaline phosphates, producing soluble, T.	
ı	Twynam	361,656
ı	Anchor tripping device, W. T. Oliver	361,539
Į	Aprons, supporting band for, A. M. Morrison	361,537
ı	Auger bit, C. H. Irwin	361,522
Į	Axle boxes, dust guard for car, W. S. G. Baker	361,255
ı	Axle, car, C. S. Bates	361,391
ı	Bag. See Tobacco bag.	
ı	Bag holder. A. H. Smith	361,461
ı	Ball. See Tube welding ball.	
ı	Bar. See Grate bar.	
ı	Bayonet. C. Schillo	361,328
ı	Beating-out machine, C. E. Holland	361,628
ı	Bedclothes fastener, J. D. Mitchell	361,440
ı	Bedstead, J. E. England	361,496
ı	Bell and letter box, combined door, J. H. Pierce	361,448
ı	Belt tightener, C. G. Lott	361,303
ı	Berry box, E. M. Thompson	361,557
ı	Bevel, miter, L. H. Lewis	361,532
ı	Bicycle, L. B. Gaylor	361,280
ı	Bicycle, Monnin & Filliez	361,310
ı	Bicycle backbone bending machine, Jeffery & Cot-	
ı	tle	961,523
ı	Bit. See Auger bit.	
ı	Bit brace, J. L. Osgood	361,368
ı	Bit stock, Cilley & Carroll	361,488
Į	Board. See Stove board.	
	Boiler. See Locomotive boller.	

	299
	Bollers, preventing incrustation of steam, H.
	Gregg
1	Bolts, machine for turning, E. P. Baville 361,571 B okbinder's gold cleaning and saving machine,
	J. N. Ives
ł	Books, cutting attachment for check, S. W. Paine
	Boots or shoes, manufacture of, W. Damer 361,263 Boots or shoes, seamless upper for, Balcom &
.	Allen, Jr
	1. Monahan
1	Bottle stopper, D. S. Hitchcock 361,285
۱,	Bottle stopper, L. S. Hoyt. 361,417 Bottle stopper, E. H. Rice. 361,547
,	Box. See Air box. Berry box. Packing box. Tree box.
	Box, A. Wuensch
Ï	spring, C. O. Wilder
	Box fastener, C. W. Beehler
•	Brace. See Bit brace. Bracket hook, O. S. Judd
	Brake. See Car brake. Vehicle brake. Brake block, Johnson & Rickenbacher 361,422
	Bran and other articles, packer for, S. T. Lock- wood (r)
3	Brick, paving, J. Scott
ı	R. Stanley
	H. & C. R. Johnson
,	draw, Johnson
	Brusher, win w, J. C. Flower
,	Buckle, harness or trace R. B. Ashley 361,258 Building material for architectural purposes,
ı	composition of, C. Straub
ı	Burial casket, Heuchan & Mason. 361,518 Bustle, F. P. Marsh. 361,432
	Bustle, S. A. Munson. 361,314 Bustle, T. P. Taylor. 361,336
ì	Button, J. Costello 361,490 Button and fastener, F. A. Smith, Jr. 361,462
	Button, collar, G. H. Rose
l	Camera. See Photographic camera. Can. See Sealed can.
)	Can opener, W. Phillips
,	Car brake, G. P. Campbell 361,576 Car brake, J. F. Clark 361,264
•	Car coupling, T. Andress. 361,343 Car coupling, F. T. McKenney. 361,437
	Car coupling, W. T. Rodgers
l	Car heater, J. M. Thayer. 361,465 Car wheel, W. W. Snow. 961,332
3	Car wheels, machine for rolling, T. W. Bean 361,479 Cars, motor mechanism for, F. R. Estlow 361,354
ľ	Carding machines, mechanism for reciprocating the tumblers of, G. Dawson
	Cards, machine for stitching together Jacquard, W. V. Gee
i	Carpet beater, A. Lyon 361,638 Carpet stretcher, M. F. Gutierrez 361,233
l -	Cash carrying apparatus, D. E. Kempster 361,295 Cash carrying apparatus, elevator for, F. Pope 361,371
1	Casting tube heads, mould for, A. H. Raynal 361,373 Ceiling, wall, or panel, sheet metal, F. Mesker 361,498
ľ	Chair, P. Charbonneau
3	Churn, I. L. Singer 961,458 Churn motor, M. E. Johnson 361,421
ì	Chute for cleaning coal, P. F. Henigan
	Clamp or press, G. W. Weaver
1	Clay sharpening instrument, G. E. Treadwell 361,559 Cleaner. See Grain cleaner. Tube cleaner.
	Clock and alarm for hotels, etc., combined, A. B. Harford
ı	Coffee pot, Cornish & Moore
	Coffee separator, F. W. Holbrook
:	Collar, horse. W. W. Youmans
}	ler
	Converter, F. W. Gordon
	bert
	Cornet or other valve instrument, Shepard & Field
	Corset and dress protector, M. Dewey
	Coupling. See Car coupling. Cremation furnace, Geronimi & Venini
-	Crosstie and means for attaching the rails there- of, meta lic, P. J. Severac
2	Cultivator, P. P. Mast. 361,307 Cultivator, C. A. Yont. 361,476
; i	Cultivator, wheel, J. McGee (r)
	Cutton Roa Bolt autton

Damper regulator, automatic electric, E. N. Dick-

Digger. See Potato digger.

Decorticating machine, B. Thoens...... 361,381

 Die press, E. Jordan
 \$61,638

 Die press, gang, J. G. Hodgson
 361,286

Dielectric composition, C. T. Crowell............ 361,347

Doubling and twisting machine, P. Hebbelynck.. 361,588

Dumb waiter, G. W. Cannon...... Electric current wires or cables, subway for, J.

Engine. See Rotary engine. Steam engine.

Farm and garden implement, D. P. Hewitt. 361,519 Farm gate, P. Ramminger. 361,409 Farm gate, P. Ramminger. 361,409 Farm gate, P. Ramminger. 361,609 Farm gate, P. Ram						_
Tatement and B. J. Davis	Envelopes, banding, F. H. Richards 361,	.548	Organs, swell for pipe, H. D. Wilkins	361,562	Stump puller, G. R. Ives	
Western Company Comp			M. Somers	361,652		;
Property	Fabric. See Wire fabric. Woven fabric. Farm and garden implement, D. P. Hewitt 361,	.519 :				I
Property Company Com	Farm gate, P. Ramminger, 361	,449	Pantaloons stretcher, G. Brinton	361,260	Switch and signal interlocking apparatus, J.T.	, Ta
Proc. Section Sectio	l'aucets in vessels, device for adjusting, G. W.		Paper roll, wrapping or toilet, 3. Wheeler	361,603	Table. See Extension table. Nursery and sew-	l t
No. 1. 1. 1. 1. 1. 1. 1.	Fence, C. F. Beebe	,480	Pen, fountain, D. C. Demarest	361.493	Tag and tag fastener, J. S. Rathbone 361,451	i
Proceedings	Fence machine, wire, Watts & Cooper 361	,561	Pen or pencil holder, S. J. Merrick	3 61,535	Larish	
The company 1. A. of the Hanner 1. Section 1. Sec	Fence post, F. L. Fairchild 361.	.497	Photographic camera, S. Wing	361,387	Telegraphy, duplex, G. W. Gardanier 361,356	3 .
College Coll			Pianos, stringing, C. S. Weber	361-384	Telephone line hanger, mechanical, C. W. Lord 361,302	;
Catherine	Fences, apparatus for making wire and picket, F. Kaufman	.362				
Section of the control of the contro	Fences, tension device for use in making, A. N. Caldwell	.395				
Marchael	Fertilizer distributer, J. Follmer		Pipe wrench, S. J. Benson	361.258	Tie. See Cross tie.	1
The canalysis of the Company of the	Marshall		Pipes, forming screw couplings for. J. T. Hambay	361,508	Tile. roofing, E. C. Lindemann 361,42	5 I
The Control of Control	Fire escape, J. Dittrick	,580	wood, W. H. Gray	361,506	Tonic, nutritive, W. Henley 361,35	Вί
For appendix 1.5 March	Fish trap. T. Thompson 361	470	seed, J. I, Boswell	361,484		' <i> </i>
Transe de place from est the surface antables, R. P. Species (1987). A hallow proposed of the surface and choice, Species						, J.
Marchane	Fork. See Hay fork. Frame adapted for use with various machines, E.			, ,		
Territories of the problem and coloring Very Belley From Section Very		,534			Trap. See Fish trap.	ı
W. M. Comman.	furnace.	1	Plow, sulky, I. W. Beckwith	361,257	Tricycle, S. C. Ellis	1]
Column C	W. M. Bowman		Post. See Fence post. Lamp post.	002,-01	Truck, rock and earth, C. A. Anderson 361.47	7
Demonstration, Mores & A Notes 1865 1975 1985 1	Gauge. See Saw table gauge.	,,,,,,	Potato digger, H. Strait	361,335	Tube expander, J. A. Giles 361,503, 361,503	4 :
Cash B. D. Noble	illuminating, Myers & Altice 361	1,641	Printing machine, J. T. King			
Class, Art. machinery for positioning, P. Bernard, S. Markey (1997) Control student, H. B. Professor (1997) Control student, H. B. Co	Gate, B. B. Eddy 361		Newsum	361,638		
Ferting Standard Column			· · · · · · · · · · · · · · · · · · ·		Valve, balanced slide, A. Thomson 361,38	2
Grate Search, J. M. Hundermach. 50.00 Propelling and electric reveals, J. F. Survey. 50.00 10.00 Propelling and description. Procket protection. Head 10.00 Propelling and description. Procket protection. Head 10.00 Propelling and description. Procket protection. Head 10.00 Propelling and description. Procket protection. Procket procket.					Vehicle brake, J. H. Irwin	
Computer (see April 1997) Control Contro	Grain cleaner, J. M. Hendershot	1,413	Propelling and steering vessels, J. F. Sargent	361,54 9	gant 361,47	
Gente Marie, Clark & Haynes	Grappling tool, Chapman & Eustice 361	1,614	protector. Pocket protector.	•	Vehicle, two-wheeled, C. W. Noyes 361.31	7
Strickling and in the J. S. A.s.h. S. July Polluys to Sharks, device for essenting, F. Rechow, B. Black Polluys to Sharks, device for essenting, F. Rechow, B. Black Polluys to Sharks, device for essenting, F. Rechow, B. Black Polluys to Sharks, device for essenting, F. Rechow, B. Black Polluys to Sharks, device for essenting, F. Rechow, B. Black Polluys to Sharks, device for essenting, F. Rechow, B. Black Polluys to Sharks, device for essenting, F. Rechow, B. Black Polluys to Sharks, device for essenting, F. Black Polluys Polluys to Sharks, device for essenting for essent	Grate shaker, Clark & Haynes 361	1,345	Pulley, friction clutch, J. E. Hunter		Velocipede, C. Kramer 361,53	0
Harger, N. H. Larger, N. D.	Grinding mill disk, J. S. Ash		Pulleys to shafts, device for securing, F. Rochow.	. 361,32 3		
Received, comp. 6, 1 + 2, 1 Roselland, Received, comp. 6, 1 + 3, 1 Roselland, Received, comp. 6, 1 + 4, 1 Roselland, Received, comp. 6, 1 + 4, 1 Roselland, Received, comp. 6, 1 + 4, 1 Roselland, Received, Recei						
Harvestier, core, G. G. F. & J. F. Bowell. Mill. 18 Link children, patched in the Activity signals, h. J. Greich. Mill. 20 Link children, S. H. Catter Mill. 20 Link children, S. H.					Vise and drill, combined, E. C. Strange 361,60	0
Hat-Polity granted before (result & Frunch			Railway signal, D. Tapley	3 61, 4 67	Wash stand, J. J. Graf	5 .
Halts amendment for blocking and shaping. II. Rickers Saction	Hat feltingmachine. Grant & Brush 361	1,586	Sisum	. 361,378	Washing machine, A. L. Montague 361.31	1
Hart of the No.	Hats, machine for blocking and shaping, R. Eicke-		Railways, switch for three-rail, W. B. Mack		Watch key, G. Hoffmann 361,62	7
Head rest, G. M. Kansojan — 80,125 heart size and heat— 180 are and steam heat	Hay fork, G. M. Ross	1,650	Razor, safety, C. H. Shaw	. 361,377	Watch, stem winding and setting, Wheeler &	
Heater, 1 M. Thuy Pre. 19,105				361,472		
Heater J. M. Thartw. 19388 Revolving frames for chemical processes. J. 1. Water healet, P. H. D. Secondard Computer Compu					Water closets, flushing apparatus for, J. E.	Ť
Heat procedency I. I. Sanford.					Water heater, Helm & Sweaney 361.51	16
Boltzeiten geachierer, C.W. Hund.	Heel protector, I. R. Sanford	1,826	Rivet, M. Arnold		Wheel. See Car wheel. Metal wheel. Water	
Holder No. Perceit holder	Hoisting apparatus, J. W. Seigh (r) 10	0,829	Roller mill, J. Walker		Windmill, J. C. C. Smith	
Start holder Sterestype plate holder	Holder. See Bag holder. Book holder. Hat	1,410	Rolling wire rods, E. S. Lenox	3 61,591	Wire cloth, wire netting, etc., galvanizing and tin-	- {
Hook R. W. Jones	Staff holder. Stereotype plate holder.		Rotary meter, W. G. Kent	. 361,529		
Horseshoe J. Kress. Section Se	Hook. R. W. Jones					
Description Solida Solid		1,635			Woven fabric, R. H. H. Hunt	
Rankin		1,350			Wrench, Hookey & Reiter 361,2	
Induction apparatus, electrical, M. H. Gross. 201567 Sand apper head, J. Pavis. Society						~
Jack. See Lifting jack. 30,450 Jewelry J. Peltit. 30,450 Jewelry J. Balova. 30,160 Journals, annothecture of lubricating. C. Parmer. 30,160 Journals, annothice for clipping. 30,160 Journals, an	Induction apparatus, electrical, M. H. Gross 36	1,587	Salter, stock, T. Ferguson	. 361,621	DESIGNS.	-
Sewer, J. Bulova	Jack. See Lifting jack.		Saw setting device, J. M. Flower	. 361,27 8		
tier — — — — — — — — — — — — — — — — — — —	Jewelry, J. Bulova 36		Saws, device for sharpening, Boughton & Snidow	. 361,485	Radiator, L. H. Prentice	70
Serew cutting machine, R. P. Baville	tier	1,318	Scales, electric signal for weighing, E. S. Enyart.	. 361,275	Spoons, etc., ornamentation for the handles of, W.	
Ladder ralls, machine for dressing and forming, J. H. McCollys. Saled can, hermetically, Hannigan & Miller. Salids Lambrequin, curtain, and shade support, adjust able, J. A. Hatcher. 301,534 Lamp, F. Rhind. Salids. Salid					Suspender end, W. F. Osborne 17,2	69 Ĵ
Ladle for molten metal, C. J. Donovan		1,563			Wagor body, I. P. Walden	6
Lambrequin, curtain, and shade support, adjustable, able, J. A. Hatcher. 361,545 Lamp, P. Rhind. 361,545 Lamp, P. Rhind. 361,545 Lamp, P. Rhind. 361,545 Lamp for use in mines and other places, safety, M. Settle. 361,645 Lamp post, M. N. Diall. 361,545 Lamp post, M. N. Diall. 361,545 Lasting machine, S. N. Washburn. 361,645 Lasting machine S. N. Washb			Seam, metallic, C. Dauwalter	. 361,349	TRADE MARKS.	-
Lamp, P. Rhind.	Lambrequin, curtain, and shade support, adjust-		F. M. Bowell		Chains, watch, A. Kohn & Co 14,2	
Amp port with mines and other places, safety, M. Settlie.	Lamp, F. Rhind	1,545	Sewerage system for buildings, C. H. Shepherd		Cotton and woolen fabrics, China and Japan Trad-	- 1
Settlemp, hanging, F. Rhind	Lamp for use in mines and other places, safety,		Sewing machine shuttle, J. Tripp	. 361,337	Disinfectant, balls of medicated, Harford &	
Lasting machine, C. H. Keiley	Lamp, hanging. F. Rhind 36	51,54 6	Sewing machine trimming attachment, P. Diehl			
Lathes, diriying dog for, G. T. Reiss. 30143 Signal. Lathes, diriying dog for, G. T. Reiss. 30145 Signal See Fog signal. Railway signal. Signal See Fog signal. Railway signal. Signal See Fog signal Railway signal. Signal See Fog signal See Fog signal Railway signal. Signal See Fog signal Signal See Fog signal See Fog signal See Fog signal See Fog signal Signal See Fog signal Signal See Fog	Lasting machine, C. H. Kelley 36	31.363	Shirt, W. B. Brokaw		Flour, N. Gregg	06
Litting jack, J. Wilson				. 361,296	Lubricating compound, Kearney & Hoffman 14,3	
Lighthing rod, C. F. Hill. 361,520 Limbs, tendon for artificial, G. R. Fuller 361,405 Lock, and F. H. Howes. 361,259 Lock and F. H. Howes. 361,259 Lock motive compound, A. Von Borries. 361,451 Looms, pattern chain for, I. F. Cornog. 361,616 Looms, pattern chain for, I. F. Cornog. 361,455 Looms, pattern chain for, I. F. Cornog. 361,456 Looms, pattern chain for, I. F. Cornog. 361,451 Looms, pattern chain for, I. F. Cornog. 361,454 Labricator attachment, E. McCoy. 361,454 Labricator attachment, E. McCoy. 361,454 Marine motor, F. Luchini. 361,395 Measure, tallor's, H. A. Jackson. 361,222 Mechanical movement, G. Potts. 361,472 Metal wheel, J. R. Little. 361,357 Meter. See Roller mill. 361,395 Mourment, grave, A. G. Brandner. 361,230 Monument, grave, A. G. Brandner. 361,230 Monument, grave, A. G. Brandner. 361,230 Monument, grave, A. G. Brandner. 361,305 Mover or reaper attachment for, E. Sueur. 361,535 Moscial instrument. mechanical, C. A. Kuster, 361,535 Missic boxes, zither attachment for, E. Sueur. 361,535 Moscial instrument, mechanical, C. A. Kuster, 361,537 Music alignment for the fore solutions, and the fore this office for the pattern desired, and remit to Munn & Co., 361,737 Music label, J. Conn. 361,339, 361,305 Morey and several table, J. Conn. 361,339, 361,305 Morey and several table, J. Conn. 361,339, 361,305 Morey and several table, J. Conn. 361,330, 361,330 Morey or reaper attachment for, E. Sueur. 361,339 Morey and several table, J. Conn. 361,330, 361,330 Morey and several table, J. Conn. 361,					cholera, Bragdon Manufacturing Company 14,2	93
Lock, nut, P. H. Howes			Sled, bob, E. Warsaw	361,560	pany 14,3	
Locomotive boiler, Woothen & Bell 31.81 Locomotive, compound, A. Von Borries. 561.471 Locomotive delegation for, I. P. Cornog. 561.481 Locomotive delegation for, I. P. Cornog. 561.481 Locomotive delegation for, I. P. Cornog. 561.481 Locomotive delegation for, I. H. Frasch. 561.585 Locomotive delegation for, I. L. Shining spindles, bolster for, Butrick & Flan	Lock. See Indicator lock. Nut lock. Seal lock.		M.Hendershot	. 361,626		
Looms, picker stick and shuttle cushioner for, J. H. Paige	Locomotive boiler, Wootten & Bell 36	1,661	the manufacture of, H. Frasch	. 361,622		
H. Paige	Looms, pattern chain for, 1. P. Cornog 36		H. Frasch	. 361,355		
Malting machine, G. Parker	H. Paige 36		Spectacle bridges, cushion securing device for, C	₹.	Tobacco, fine plug and twist, Wemple, Ellerson &	94
Mesure, tailor's, H. A. Jackson. 361.292 Mesure, tailor's, H. A. Jackson. 361.292 Mechanical movement, G. Potts. 361.393 Mether. See Rotary meter. 361.693 Mill. See Roller mill. 591.394 Motor. See Churn motor. Electric motor. Marine motor. Velocipede motor. Mower, W. R. Baker 361.695 Mosical instrument. mechanical, C. A. Kuster, 361.695 Musical instruments, bow for, D. Nettekoven. 361.494 Nest, hen's, T. W. Russell. 361.595 Musical instruments, bow for D. Nettekoven. 361.494 Nest, hen's, T. W. Russell. 361.597 Nursery and sewing table, J. Conn. 361.367 Mestina movement, G. Potts. 361.392 Sprining spindles, bolster for, Buttrick & Flanders. 361.611 Whisky, C. Goldsborough. 14,237 Whisk, p. G. L. Wolf 14,312 Whisk, C. Goldsborough. 14,238 Whisk, C. Goldsborough. 14,239 Whisk, C. Goldsborough. 14,231 Whisk, C. Goldsborough. 14,239 Whisk, C. Goldsborough. 14,231 Whisk, C. Goldsborough. 14,235 Whise, G. L. Wolf 14,312 Whisk, C. Goldsborough. 14,235 Whise, G. L. Wolf 14,312 Whisk, C. Goldsborough. 14,235 Whise, G. L. Wolf 14,312 Whisk, C. Goldsborough. 14,235 Whisk, C. Goldsborough. 14,235 Whise, G. L. Wolf 14,312 Whisk, C. Goldsborough. 14,235 Whisk, C. Goldsborough. 14,311 Whisk, C. Goldsborough. 14,235 Whisk, C. Goldsborough. 14,311 Whisk, C. Goldsborough. 14,235 All 12,287 Whisk, C. Goldsborough. 14,235 Whisk, C. Goldsborough. 14,235 Sprinking apparatus, G. F. Jaisle. 361,263 Staff holder, J. Husband. 361,650 Staff holder, J. Husband	Malting machine, G. Parker 36	61,642	Spinning machines, spindle support for, W	V.	Co	104
Mechanical movement, G. Potts. 361,372 Metal wheel, J. R. Little. 361,637 Meter. See Rotary meter. 361,637 Mill. See Roller mill. 361,386 Mirror, P. Wiederer. 361,259 Moument, grave, A. G. Brandner. 361,259 Motor. See Churn motor. Electric motor. Marine motor. Velocipede motor. Mower, W. R. Baker. 361,607 Mower, W. R. Baker. 361,607 Mower or reaper attachment for, E. Sueur. 361,655 Music boxes, zither attachment for, E. Sueur. 361,655 Musical instrument. mechanical, C. A. Kuster, 361,299, 361,300 Musical instruments, bow for, D. Nettekoven. 361,441 Nest, hen's, T. W. Russell. 361,657 Nuser, hen's, T. W. Russell. 361,657 Nusery andsewing table, J. Conn. 361,267 Nursery andsewing table, J. Conn. 361,267 Nursery andsewing table, J. Conn. 361,267 Stoves for warmer for, S. A. Harryman. 361,411 Spring, S. A. Kilmer. 361,261 Spring, S. A. Kilmer. 361,261 Spring, S. A. Kilmer. 361,262 Sprinkling apparatus, G. F. Jaisle. 361,252 Staff holder, J. Husband. 361,263 Staff holder, J. Husband. 361,363 Stamp affixing device, I. Randall. 361,450 Stamp affixi	Measure, tailor's, H. A. Jackson 3	61.292	Spinning spindles, bolster for, Buttrick & Flan		hops, P. Best Brewing Company 14,3	
Meter. See Rotary meter. Mill. See Roller mill. Mirror, P. Wiederer	Mechanical movement, G. Potts 36	61,372	ders	361,611	Wine, G. L. Wolf	312
Mirror, P. Wiederer	Meter. See Rotary meter.		Sprinkling apparatus, G.F. Jaisle	361,293	Wines, champagne, Chandon & Co	_
Motor. See Churn motor. Electric motor. Marine motor. Velocipede motor. Mower, W. R. Baker	Mirror, P. Wiederer 3		Stamp affixing device, I. Randall		A Printed copy of the specifications and drawing	
Mower, W. R. Baker	Motor. See Churn motor. Electric motor. Ma-	الاستهداد	Steam engine, A. Rosenkranz		issued since 1886, will be furnished from this office for	25
Music boxes, zither attachment for, E. Sueur. 361,654 Musical instrument, mechanical, C. A. Kuster, 361,299, 361,300 Musical instruments, bow for, D. Nettekoven. 361,441 Nest, hen's, T. W. Russell. 361,651 Nest, hen's, T. W. Russell. 361,651 Nght soil, apparatus for treating, R. W. E. MacLyor. 361,367 Nursery and sewing table, J. Conn. 361,267 Stoves, foot warmer for, S. A. Harryman. 361,412 Stoves, foot warmer for, S. A. Harryman. 361,412 This instruments print to 1886; but at increased cost, as the specifications, not being printed, must be copied by apparatus for treating. R. W. E. Store service switch, D. H. Rice. 361,527 Nursery and sewing table, J. Conn. 361,267 Stoves, foot warmer for, S. A. Harryman. 361,412 This instructions address Munn & Co., 361 Broadway, but at increased cost, as the specifications, not being printed, must be copied by apparatus for treating, not being printed, must be copied by form. 361,267 Store service switch, D. H. Rice. 361,527 Store service switch, D. H. Rice. 361,427 Nursery and sewing table, J. Conn. 361,267 Store service switch, D. H. Rice. 361,427 Store service switch, D. H. Rice. 361,527 Store service swi	Mower, W. R. Baker 3		Steel, apparatus for manufacturing, B. Baylis	8,	of the patent desired, and remit to Munn & Co.,	3 61
Musical instruments, how for, D. Nettekoven. 361,299, 361,300 Stool, folding pocket, G. M. Kazanjian. 361,277 Musical instruments, how for, D. Nettekoven. 361,441 Stool, folding pocket, G. M. Kazanjian. 361,527 Canadian Patents may now be obtained by the Nest, hen's, T. W. Riussell. 361,507 Store service switch, D. H. Rice. 361,409 significant patents may now be obtained by the Inventors for any of the inventions named in the foremand of the fore	Music boxes, zither attachment for, E. Sueur 3		Steel plant, V. O. Strobel	361.659	granted prior to 1866; but at increased cost, as t	he
Musicalinstruments, bow for, D. Nettekoven. 361,441 Nest, hen's, T. W. Riussell. 361,651 Night soil, apparatus for treating, R. W. E. MacLvor. 361,367 Nursery and sewing table, J. Conn. 361,267 Stoves, foot warmer for, S. A. Harryman. 361,412 Stool, folding pocket, G. M. Kazanjian. 361,657 Stopper. See Bottle stopper. Stoppe	361,299, 3		Stool, folding, E. H. Forssell	361,279	hand.	
Night soil, apparatus for treating, R. W. E. Store service switch, D. H. Rice	Musicalinstruments, bow for, D. Nettekoven 3	61,441	Stool, folding pocket, G. M. Kazanjian		Canadian Patents may now be obtained by t	
Nursery and sewing table, J. Conn	Night soil, apparatus for treating. R. W. E.		Store service switch, D. H. Rice		going list, provided they are simple, at a cost of	\$40
	Nursery and sewing table, J. Conn	61,267	Stoves, foot warmer for, S. A. Harryman	361,412	full instructions address Munn & Co., 361 Broadwa	аy,

			_
kins 36	61,562	Stump puller, G. R. Ives	
nd, combined, D. 30	61,652	Sugar in blocks, apparatus for the manufacture of, T. C. A. Carre	
36 y 36		Surgical implements, handle for, F. Nuessle 361,315 Switch. See Store service switch.	1
	61,260	Switch and signal interlocking apparatus, J.T.	,
30 Wheeler 30	61,603	Hambay	1
rring, I. Marks 36		ing table. Tag and tag fastener, J. S. Rathbone 361,451	1
	61,468	Telegraph circuits, calling apparatus for, J. W.	
8 1		Larish	
	61,387	Telegraphy, duplex, G. W. Gardanier 361,356	
der for, S. Wing 3	61.384	Telephone, C. S. Bell	
wnson 30 J. T. Hambay 30		Telephone, mechanical, M. Garl	
aniels 36	61,398	Tetrazodiphenyl chloride with resorcin, combina-	!
рау 36 3		tion of, P. Friedlaender	İ
3 or. J. T. Hambay 3		Tile laying machine, J. McMullin 361,309 Tile. roofing, E. C. Lindemann 361,425	
presser bar for		Tobacco bag, W. J. Cussen	
combined cotton		Tonic, nutritive, W. Henley	ĺ
3	61,484	Torpedoes, apparatus for launching, E. Kaselow-	l
ox		sky	ļ
3 3		Kaselowsky	l
3	61,366	Toy, C. A. Bailey	l
le 3 3		Tree box, J. Donaldson 361,351 Tricycle, S. C. Ellis 361.581	ł
3 ost.		Truck. fire, O. R. Olsen	1
		Truck, rock and earth, C. A. Anderson 361.477 Tube cleaner, L. A. Woodbury 361,389	
3	61,335	Tube expander, J. A. Giles 361,503, 361,504	:
	61,423	Tube welding ball, S. J. Adams	i
gle cylinder, G.	61,638	Underground conduit, I. Paxson	į
hanism for cylin-	. !	Valve, balanced slide, A. Thomson 361,382	
ery and folding	į	Vault, grave, D. N. Stinson 361,406 Vehicle brake, J. H. Irwin 361,589	
3 J. F. Sargent 3		Vehicle for delivering coal oil, etc. C. H. Weygant	
protector. Heel)	Vehicle, two-wheeled, H. G. M. Howard 361,288	ŀ
•		Vehicle, two-wheeled, C. W. Noyes	ŀ
nter 3 3		Velocipede, C. Kramer 361,530	
ring, F. Rochow. 3	61 ,32 3	Velocipede motor, J. Witt	l
J. Rider 3		Violin tuning peg, J. H. Gardner 361,500 Vise, J. Parkinson 861,445	l
Richardson 8	61,321	Vise and drill, combined, E. C. Strange 361,600	Ī
8 8		Wagon dump and elevator, J. S. Kidd	
f cable, W. H. H.	361.378	Washing machine, A. W. Chamberlin	ļ
elisle 8	361,608	Watch dust band, D. Druen 361.625	
W. B. Mack 3	361,428	Watch key, G. Hoffmann	
	361,377	Watch, stem winding and setting, Wheeler &	l
or. 8	361,472	Barbier	
conveying, A. J.	361.599	Water closets, flushing apparatus for, J. E.	į
cal processes, J.	i	Boyle (r)	ı
	361,429 361,390	Water wheel, J. S. Teed	l
	361 999	wheel.	İ
J. & J. B. Holgate 3	361.416	Windmill, J. C. C. Smith	ì
		Wire cloth, wire netting, etc., galvanizing and tin-	ł
;		ning, B. Scarles 361,550 Wire fabric, D. C. Stover 361,334	I
and controlling for filtering bags	361,277	Wire making, mill plant for, E. S. Lenox	1
for filtering bags		Woven fabric, R. H. H. Hunt	
;	361,282	Wrench. See Pipe wrench. Wrench, Hookey & Reiter	
s, frame work for,		Yarns, etc., making worsted, D. E. Coe 361,266	
		DEGLONG	
	361,399	DESIGNS. Carpet, H. Horan	
r	361,605	Carpet, E. G. Sauer	
ughton & Snidow. C. Miller	361,485	Radiator, L. H. Prentice	
ing, E. S. Enyart	361,275	Spoons, etc., ornamentation for the handles of, W.	
aville		Wilkinson 17,277 Suspender end, W. F. Osborne 17,269	ĺ,
·····•	361,434	Wagor body, I. P. Walden	
gan & Miller			
ne for extracting,	361.344	TRADE MARKS.	ł
r.		Chains, watch, A. Kohn & Co	
C. H. Shepherd 361,426,		Cotton and woolen fabrics, China and Japan Trading Company	
p & Garvie	361,337	Disinfectant, balls of medicated, Harford &	
chment, P. Diehl		Reeves	
	361,486	Flour, N. Gregg	;
••••••••	361,296	Liniment, M. M. Lagrant	
y signal. cables, method of		Medicine for the prevention and cure of hog cholera, Bragdon Manufacturing Company 14,293	3
mer		Medicine, liquid proprietary, EvansChemical Com-	
ilway tracks of, J.		pany	
and apparatus for		Paper and envelopes, note, G. B. Hurd Co 14,308	3
s, manufacture of,		Perfumery, Young, Ladd & Coffin	l
	361,355	Silk and part silk goods, E. Niepmann & Co 14,300 Tobacco and cigars, manufactured, S. B. Minnich 14,298	
r ring device for, G.		Tobacco, cut smoking, F. B. Case 14,294	
	361,385	Tobacco, fine plug and twist, Wemple, Ellerson & Co	4
support for, W.		Tonic preparation hased on extracts of malt and	
Pattriob & Die-			•

Advertisements.

Inside Page, each insertion - - - 75 cents a line. Back Page, each insertion - - - \$1.00 a line.

The above are charges per agate line—about eight words per line. This notice shows the width of the line, and is set in agate type. Engravings may head advertisements at the same rate per agate line, by measurement, as the letter press. Advertisements must be received at publication office as early as Thursday morning to appear in next issue.



EXCELLENT BLACK COPIES of anything written of drawn with a y Pen (or Type Writer) by the Patent Only equalled by Lithography. Specimens Free. Autocopyist Co., 3 Thomas Street, New York.



ELECTRICAL. Edward P. Thompson, Solicitor of Electrical Patents, 3 Beekman Street, N. Y. Write for testimonials and instructions.



tion of two ingenious systems for the electric carriage of small packages. Illustrated with 13 engravings. Con-464. Price 10 cents. To be had at this office and from all newsdealers. ELECTRIC CONVEYORS.—DESCRIP-



INGERSOLL ROCK DRILL CO., 10PARK PLACE, NEW YORK. Improved "Ecilpse"

OCK DRILLS

For Mining, Tunneling, Shaft-Sinking, Quarrying, Submarine drilling, and for all kinds of rock ex-Cavation.

"Straight Line" Ark Compress-ons, Hollers, Steam and Horse Power Hoists, Electric Blasting Batteres and General Mining Machinery, Send for full descriptive Catalogue.







Special Machines for Car Work, and the latest improved Wood Working Machinery of all kinds.



STEAM ENGINES.

Horizontal and Vertical. Dredging Machinery, Flour, Powder, Slate and Flint Mill Machinery, Tur-bine Water Wheels. YorkMfg Co., York, Pa. U.S.A.



PHEET METAL COORS, Stiles & Parker Press Co.

Branch Office and Factory, 203, 200 & 207 Center St., N. Y. Lists sent.

N.Y. Machinery Depot,
Bridge Stare No. 15,
Frankfort Street, N. Y.



Wiley & Russell Mfg Co., Greenfield, Mass.

To Business Men.

The value of the SCIENTIFIC AMERICAN as an advertising medium cannot be overestimated. Its circulation is many times greater than that of any similar journal now published. It goes into all the States and Territories, and is read in all the principal libraries and reading rooms of the world. A business man wants something more than to see his advertisement in a printed newepaper. He wants circulation. This he has when he advertises in the SCIENTIFIC AMERICAN. And do not let the advertising agent influence you to substitute some other paper for the SCIENTIFIC AMERICAN, when selecting a list of publications in which you decide it is for your interest to advertise. This is frequently done, for the reason that the agent gets a larger commission from the papers having a small circulation than is allowed on the SCIENTIFIC AMERICAN.

For rates see top of first column of this page, or address

MUNN & CO., Publishers,

MUNN & CO., Publishers.

361 Broadway, New York.

Of Arc and Incandescent Lighting.
Electric Light and Power.
Motors, Dynamos, Lamps, and Batteries in all varieties,
Electro-Dynamic Co., 22 Carier St., Philadelphia.
W.W. Griscom, Consulting Electrical Engineer.