Scientific American

automatic carbureter. The Gobron-Brillié motor was one of the first to be adapted to the use of alcohol for fuel. The motor on the record-breaking racer is said to develop in reality nearly 130 horse-power.

All three of the machines illustrated are prospective contestants in the Gordon Bennett Cup Race to be held in Germany in June.

The last event of the day was the third annual hillclimbing contest for the De Caters cup. This cup was first won by Serpollet in 1902, the contest being that year held over a kilometer course on the long Nice-La Turbie hill on the Corniche road, and Serpollet's time being 59 seconds. Last year the test was made over a like distance on Laffrey hill, and Rigolly, on the same Gobron-Brillié machine which Duray is driving this year, cut nine seconds off Serpollet's record. The test this year was over a 500meter (547-yard) course on the Nice-La Turbie hill, which has an average gradient of about 10 per cent. Duray, on the three-speed machine that won last year, won again this time in 26 seconds, Rigolly, on the four-speed Gobron-Brillié, taking one second longer. Werner, on the 80-horse-power Mercedes, was fourth in 28 seconds. Another Mercedes came in fourth in 28 3-5 seconds, while the Napier racer took fifth place in exactly half a minute. Fletcher and Jenatzy, on Mercedes cars, made a dead heat in 301-5 seconds.

The motor-boat races, which were sailed over a hexa-

gonal course 12.5 kilometers (7.84 miles) in length in the Bay of Monaco, began on April 5 with a 150-kilometer (93.15-mile) race for the large, powerful racing boats less than 8 meters (261/4 feet) in length and having a total cylinder capacity less than 7.5 liters (457.66 cubic inches); and with a 60-kilometer (371/4mile) race for the smaller cruising launches less than 6.5 meters (21.32 feet) long and with a cylinder capacity of less than 2.5 liters (152.55 cubic inches). A special traveling crane conveyed the boats from the exhibition space to the water's edge, and laid them upon a long incline running out into the water, down into which they were readily slid.

The 150-kilometer race was won in 41/2 hours, 221-5 seconds by "La Râpée III.," a 7.98-meter (26.18-foot) boat built by Tellier and fitted with a Panhard & Levassor, four-cylinder, 35-horse-power motor having a cylinder capacity of 7.363 liters (449.30 cubic inches). The "Princess Elizabeth," which came in second in 5 hours, 18 minutes, and 4 seconds, is exactly the same type and length of boat, and is fitted with a four-cylinder Delahaye motor having a cylinder capacity of 7.443 liters (454.186 cubic inches).

Out of seven racers and six cruisers which started, only three of the former completed the race, while five of the latter succeeded in finishing. This shows that the ordinary launch with an engine of moderate horsepower is much more reliable than the light racing

shell propelled by a high-power motor and generally termed an automobile, or motor, boat.

The winner of the 200-kilometer (124.2-mile) racethe "Trèfle-à-Quatre"—as well as "La Râpée III.," are shown in the photographs taken during the race. An idea of the fine lines of these boats can be had by noting the bow wave, which is so thin as to be quite transparent, the waterline of the boat being readily seen through it. The "Trèfle-à-Quatre" is fitted with a Georges Richard-Brazier four-cylinder motor. Its time for the 200 kilometers was 5 hours, 16 minutes, 51 3-5 seconds.

The motor-boat races were carried out successfully and with but one serious accident. This happened to the "Parisienne II.," a very long raper equipped with three motors of about 70 horse-power each. This boat caught fire from a gasoline leak, and the gasoline in her tanks made a furious flame. The three men of the crew escaped by jumping overboard, and two of them were badly burned. As the boat had a steel hull, it was not destroyed, although the engines were

There are said to be 42,000 locomotives in this country, and of these about 3,200 are supplied with electric headlights, while 1,650 are equipped with acetylene generators. The remainder of these engines are making use of oil for the headlight illuminant.

RECENTLY PATENTED INVENTIONS. Electrical Devices.

PRINTING-TELEGRAPH RECEIVER. D. WHITE, 50 Clanricarde Gardens, London, England. The present receiver differs in various ways from a simple form of printing-telegraph receiver and one more complex described in two former patents granted to Mr. The mechanism is operated by opposite polarity sent along the same wire; but the operation is not limited to this particular device. It may also be operated by any of the other electro-mchanical devices used in receivers to rotate type wheels and to effect

RELAY-MAGNET .- W. PALMER, JR., Rincon, New Mexico. The object in this case is to provide a simple and practical relay-magnet of a kind designed to enable the current from a local battery to be directed at will through either one of two electromagnets by merely reversing the polarity of the current on the main line at a remote point.

MEGAPLEX RELAY.-R. A. ENGLER, Dubuque, Iowa. In Mr. Engler's invention the improvement relates to relays, and more particularly to a type of relay for increasing the effect of feeble currents-such for instance, as are employed in telephony. The structure is such as to increase the effect in various ways. and especially to permit several distinct devices to act cumulatively.

Hardware.

SASH-FASTENER.-J. A. Long, Spokane, Wash. In this patent the invention relates to a device for securing the meeting-rails of an cal direction. One object is to provide an improved form of sash-fastener that will engage the under face of the upper-sash rail and not be dependent upon the means of securing one portion of the sash-fastener to said rail. Another, to provide an improved form of device prevent unauthorized operation of the window

WIRE-FENCE TOOL .- J. A. MILLER, Avondale Col. In the present case the invention pertains to tools employed in the erection and repair of wire fences, and has for its object to provide a tool of that character having details implement.

LEVEL, PLUMB. AND INCLINOMETER. J. HAPPLE, Cleveland, N. Y. The purpose in tion for a device which adapts it for convenient and reliable service to determine if an object or surface that may be fixed or movable is plumb, level or inclined, and define the degree of inclination or deviation from a perpendicular or horizontal plane.

SASH-LOCK .- C. W. RANDALL, Lockport, N. Y. In this lock the object in view is to provide a device which may be applied to one of the meeting-rails of a pair of sashes, said device serving to hold the sash or sashes in adjudged positions for preventing rattling thereof under the pressure of wind, the device being readily adjustable to sashes of different thicknesses in order that it may be used generally on different sizes and styles of sashes.

Household Utilities.

SAD-IRON .-- M. JOYCE, Salt Lake City, Utah. To enable this iron to compete commercially with cheaper irons, the inventor casts the body in one integral piece, with guide-lugs projecthandle with a metallic connection-plate adapted to lie between the lugs of the iron-body and the invention, and date of this paper.

separated from the handle by a non-conducting shield, said plate having a stop-bar and a spring-dog connected with a headed pin or screw fastened on the upper side of the ironbody. The invention relates to irons of the type disclosed in two prior patents granted Mr.

BED-COVERING .- E. W. Brown, New York, N. Y. Mr. Brown's invention relates to covelectro-mechanical device by which the rotation erings for beds, couches, cribs, and cots. His improvements enable the bed-clothing to be of the type-cylinder is effected by currents of improvements enable the bed-clothing to be one polarity sent along a single wire, while the other cylinder is operated by currents of the the covering cannot be "kicked off," thus after the covering cannot be "kicked off," the covering can fording protection to the sleeper. Covering may be suspended in elevated position and in a way form a drapery, which depends from the suspended covering to the sides and foot end of the bed, thus keeping from coming in contact with the person, while protecting from drafts.

Of General Interest.

SELF-LOCKING TACKLE-BLOCK.—J. O. Walton, Boston, Mass. The present invention consists in a simple guard combined with or formed on the block on its rear side just behind the cramping-pulley, so that the run of this part of the rope will be thrown laterally away from the cramping-face on the rear side, but will not interfere with the locking of the rope on the front side. A self-locking pulleyblock has been shown and described in a former patent granted to Capt. Walton.

WINDOW-CLEANER.—J. C. G. FRITZ, New York, N. Y. The object of the invention is to provide a window-cleaner more especially designed for use on windows of locomotive-cabs, platform-windows of street-cars, and other vehicles and arranged to permit the engineer, motorman, driver, or other person to keep the outlook-window perfectly clear from frost, ordinary window-sash that operates in a vertivehicle to avoid collisions.

NON-REFILLABLE BOTTLE.—W. C. BEAL. Fernandina, Fla. In this patent the improvement refers to a class of liquid-packages that are provided with means to expose or prevent that will securely hold the rails together and the reuse of the receptacle after the contents have been removed, and has for its object to purovide novel details of construction for a bottle and its closure which will effectively prevent the refilling of the bottle after the contents have been partially or wholly decanted.

GARMENT-SUPPORTER FOR MEN.-W. A. of construction that adapt it for efficient ser- WRIGHT, New York, N. Y. The purpose in vice as a wire-stretcher and a staple-pulling this case is to provide a form of garment-supporter especially adapted for use in connection with trousers and so constructed that it will include a button or stud to receive a suspenderthis instance is to provide details of construca pair of trousers, a member, if so desired, adapted to prevent the upward movement of a belt, and whereby to apply device to the inner face of the trousers waistband.

STEERING AND STEADYING MECHANISM FOR BOATS .- W. H. Young, Troy, N. Y. In this patent the invention has reference to improvements in steering and steadying mechanism for marine vessels, the object in view being the provision of a simple means whereby the boat may be easily steered and also prevented to a great extent from rocking and pitching.

CIGARETTE OR CIGAR BOX.—A. G. PSIAKI, New York, N. Y. The present invention has reference to improvements in cigarette or cigar boxes of the kind in which cigarettes or cigars are originally packed for sale; and an object is to provide a box of novel construction and having a receptacle for holding matches furnished with each package.

Note.-Copies of any of these patents will be ing upward therefrom, and provides a wooden furnished by Munn & Co. for ten cents each. Please state the name of the patentee, title of

Business and Personal Wants.

READ THIS COLUMN CAREFULLY,-You READ THIS COLUMN CAREFULLY.—You will find inquiries for certain classes of articles numbered in consecutive order. If you manufacture these goods write us at once and we will send you the name and address of the party desiring themformation. In every case it is necessary to give the number of the inquiry.

MUNN & CO.

Marine Iron Works. Chicago. Catalogue free. Inquiry No. 5438.—For makers of armatura core punchings in sheet metal, of the ring type.

AUTOS .- Duryea Power Co., Reading, Pa.

Inquiry No. 5439.—For clocks for a factory, which are electrically controlled from one master clock.

For hoisting engines. J. S. Mundy, Newark, N. J. Inquiry No. 5440.—For the makers of the "Merritt" typewriter, or dealers in repair parts therefor.

"U. S." Metal Polish. Indianapolis. Samples free.

Inquiry No. 5441.—For parties engaged in the nanufacture or designing of clock cases. Handle & Spoke Mchy. Ober Mfg. Co., 10 Bell St.,

Chagrin Falls, O. Inquiry No. 5442.—For manufacturers of light rooden and metal specialties.

Sawmill machinery and outfits manufactured by the

Lane Mfg. Co., Box 13, Montpelier, Vt.

Inquiry No. 5443.—For manufacturers of vulcanized fiber specialties.

American inventions negotiated in Europe. Wenzel & Hamburger, Equitable Building, Berlin, Germany. Inquiry No. 5444.—For manufacturers of machines for turning and boring hub blocks.

Send for new and complete catalogue of Scientific nd other Books for sale by Munn & Co., 361 Broadway New York. Free on application

Inquiry No. 5445.-For manufacturers of balloons. Fine machine work of all kinds. Electrical instruments a specialty. Models built to order. Page Machine Co., 812 Greenwich Street, New York.

Inquiry No. 5446.—For woodworking machines for such work as dowels, skewers, etc.

The largest manufacturer in the world of merry-gorounds, shooting galleries and hand organs. For prices and terms write to C. W. Parker, Abilene, Kan.

Inquiry No. 5447.—For manufacturers of heavy orded webbing.

The celebrated "Horns by-Akroyd" Patent Safety Oil Engine is built by the De La Vergne Refrigerating Machine Company. Foot of East 138th Street, New York.

Inquiry No. 5448.—For machinery for making earthenware water pipes. In buying or selling patents money may be saved and time gained by writing Chas. A. Scott, 340 Cuttler Building, Rochester, New York.

Highest references. Inquiry No. 5449.—For the addr. ss of the Furber Patent Shoe Company.

Manufacturers of patent articles, dies, metal stampery and tools. Quadriga Manufacturing Company, 18 South Canal Street, Chicago.

Inquiry No. 5450.—For the address of the U. S. Silver Co., also of the Crown Silver Co.

Patentable, combined working machine for sale. For of 12 different apparatus. Foot power. Also a working bench to match. All rights to buyer. Sold separately or together. Buddig, Eustis, Neb.

Inquiry No. 5451.—For manufacturers of machin-ery for making tooth brushes.

FOR SALE. -35 H. P. Berger Gas Engine. A splendid engine at a bargain. Burrell & Morgan., Elkhart, Ind. Inquiry No. 5452.—For fhe address of the Pyle National Electric Headlight Co.

FOR SALE -Home and foreign patent rights covering Combination Pastry Knife. Comprises five utilities. Cost 3 cents to manufacture. Adapted to mail order custom, F. A. Tobler, Bisbee, Arizona.

Inquiry No. 5453.—For makers of a bower-barffing equipment.

Inquiry No. 5454.-For dealers in sulphuric acid in tank cars in quantities.

Inquiry No. 5455.—For a small ice machine, which is not expensive, and which is realy suitable for amily use.

Inquiry No. 5456.-For the address of Geo. W. Shaw, manufacturer of wooden mantels, coal and gas

Inquiry No. 5457.—For an electrical device by means of which the number of feet of water in a reservoir or tank can be ascertained at a distance of 4 or 5 miles.

Inquiry No. 5458.—For manufacturers of stamped steel cellings. Inquiry No. 5459.—For machines for making paper boxes and cartons.



HINTS TO CORRESPONDENTS.

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

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

Buyers wishing to purchase any article not adverin our columns will be furnished with sses of houses manufacturing or carrying

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

Scientific American Supplements referred to may be had at the office. Price 10 cents each. Books' referred to promptly supplied on receipt of price.

Minerals sent for examination should be distinctly marked or labeled.

(9378) H. L. J. says: I was recently shown an optical illusion which puzzles me. A chicken feather was placed near my eye, and looking through it at my hand with fingers slightly opened, and distant about 15 inches, I saw the bones in my fingers, as clear and distinct in outline as with the X-ray. So did others of the party. Again, the feather held in same manner between the eye and the sun when near the setting horizon, showed all the colors of the rainbow in same order and position. Please give the philosophy of all this. A. The experiment you made in looking through the meshes in the feather was an experiment in diffraction. When you looked at your finger held at a distance from the feather you saw a fringe or shadow which followed the outline of the edges of the finger. It did not resemble the outline of the bones at all, as they are seen on 'the fluorescent screen by X-rays. By the X-ray you see the bones as shadows, larger at the joints; you see the tapering shafts of the bones also. Here you only see the outline of the flesh of the fingers in a double.line on each side of the finger. To test the matter use a lead pencil or a stick of about the size of the finger, and you can see the bone in a stick exactly as well as in your finger. There has been a very ingenious toy called the 'bonescope" made on this basis. A piece of fine cloth is stretched over a half-inch hole in a bit of wood, which may be two inches across and a half inch thick. On looking through the hole in the center you may see all that you abinet makers, machinists, amateurs. Has capacity describe. The colors seen on the horizon and in looking at the setting sun are due to the interference of light. You will find all these appearances described, under "Diffraction and Interference of Light." The experiment is very curious, but is explained without difficulty. See Weight's "Light," which we can furnish for \$2

> (9379) G. E. C. asks: 1. How many cubic feet capacity would be necessary in a tank or other reservoir, holding compressed air at a pressure of 200 pounds to the square inch, at the start, to run an engine furnishing 1 horse-power one hour? How large if the pressure was only 100 pounds at start? A. An engine running at a uniform air pressure of 50 pounds per square inch, at one half cut-off, requires 13 1/2 cubic feet of free air per minute, delivered at ordinary temperature. The supply of air from a high-pressure tank, say of 200 pounds to 50 pounds, reduces the temperature over 300 deg. F. with an expansion of about two and one-half volumes; so that if heat can be added to the air after expansion from the tank, a considerable economy may be obtained in using compressed air from both pressures. The tank must have a reserve ca-

pacity for the engine running pressure at 50 Burglar and fire alarm, M. Nickels 757,490 pounds, and, therefore, the relative volumes being 14 1-3 at 200 pounds and 4 1-3 at 50 pounds, we find that the tank should have a capacity of 81 cubic feet at 200 pounds pressure, or say 3 feet diameter by 12 feet in length; and for 100 pounds initial pressure, a tank twice the capacity, or 4 feet diameter by 13 feet long. 2. Could a windmill be used for compresing the air, thus conveying the energy of the wind to the engine, and thence to a dynamo, for electric lighting, etc.? Would we not by so doing convert the unsteady, jerky metion of a windmill to an even, steady motion suitable for any purpose? A. A windmill can be used for compressing air to run a motor for driving a dynamo, and with ample storage the 24-hour day's work of the windmill may be stored for supplying the evening light current, either by compressed air or by direct driving of a dynamo and charging storage batteries. See SCIENTIFIC AMERICAN SUPPLEMENT Nos. 709, 606, on windmills for electric supply. 3. About what power would one get for use on the dynamo from an ordinary 8-foot windmill with the speed of wind at which it would do satisfactory work pumping from an \$0-foot well? A. An 81/2-foot windmill is only equal to one-tenth of a horse-power in a 16-mile-perhour wind, and is totally unfit for transmission of pneumatic or electric power for any available work. A 30-foot mill is a useful source of power for such work, or equal to 3 horsepower in a 16-mile wind. 4. How many gallons of water flowing from an elevation of 50 feet, when applied to a water motor, will give 1 horse-power for one hour? If I could not use the compressed air as above suggested, could not the wind and water method be used? A. Four thousand gallons of water falling 50 feet in one hour are equal to one theoretical horse-power, and in the way you suggest may be made available for constant power by a reservoir of 12,000 or more gallons. A windmill 25 feet diameter, which has a capacity of 6,000 gallons per hour, 50 feet high, in a 16mile wind, and with an adjustable pump which will work in any wind down to 8 miles per hour, may be made a useful source of power.

INDEX OF INVENTIONS

For which Letters Patent of the United States were Issued for the Week Ending April 19, 1904.

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

	Copper and zinc from ores, electrolytically	engineering. Price 10 cents each, by mail. Munn & I
Acids, making ortho-exy-carbon, G. Wich-	extracting. S. Laszczynski	Co., 361 Broadway, New York City, and all newsdealers.
mann	Cream separator, C. T. McCarrell 757,669	
Martin 758,013	Crusher. See Cane crusher. Cultivater, •. H. Cleyd	WORK SHOPS
Advertising and exhibiting paints, wall finishes, etc., device or means for, J.	Curtain and shade relier helder, com- bined window, A. F. Gilbert 757,547	
F. Gould 757,549	Curtain drying and stretching frame lace	of Wood and Metal Workers, with- out steam power, equipped with
Air compressor, J. C. Williams	G. F. Hullings 757,838 Curtain fastener, F. P. Pfleghar 757,838 Dam, portable pewer, T. F. Gilliland 757,909 Dental appliance, W. T. Lyon 757,338	BARNES' FOOT POWER
hurst	Dam, pertable power, T. F. Gilliland 757,899	MACHINERY
Air purifier, J. S. Macardle	Dental appliance, W. T. Lyon	allow lower bids on jobs, and give
Thempsen	Desk, hetel register, J. I. Haycraft 757,920 Disinfecting apparatus, A. Giersiepen 757,806	greater profit on the work. Machines sent on trial if desired. Catalog Free.
Apron, sterm, G. A. Hughes	Display rack or case, C. D. Allen 757,643	W. F & JOHN BARNES CO.
Automobile fender, A. Miesse	Distillation of wood and production of char- coal, apparatus for the, H. A. Mackie 757,939	Established 1872.
Automobile fender, A. Miesse	coal, apparatus for the, H. A. Mackie 757,939 Draft and buffing mechanism, F. W. Ritter, Jr	
Aylswerth	Draft device, C. R. Davis 757,995	FOR LIGHT AND MEDIUM WORK
Axle, J. H. Entrekin	Draft equalizer, E. F. Meran	this new 14 inch
ering therefor for, W. Hornich, Jr 757,744	wine	D D DADNES
Bag. See Oderproof bag.	Drilling and automatic centering device, McElwain & Young	B. F. BARNES
Band or strap brake, Middleton & Smith 757,480 Barrel, kraut dispensing, T. W. McFarland. 757,951	Dust guard, E. Jacquemin 757, 188	Upright Drill is the best tool made.
Both adjustable frame, combined automatic shower and vapor, Linendell & Houghten 757,933	Dyeing apparatus, automatic, J. Marshall., 757,178 Electric are rupturing device, S. H. Short, 757,782	Substantial, well built, up to date. The driving power is strong and positive—the
Bath spray, V. C. Van't Woud	Electric controller. A. C. Eastwood 757.598	five step cone gives wide range of speeds 1
Bath tales, etc., leg fastening for, T. W.	Electric furnace, Herry & Price	windrin from 1/10-inch to 34-inch. Read-
Simeos	Turbayne 757,695	B. F. BARNES COMPANY, Rockford, III.
Bijur 757,719	Electric meter, reciprecating, A. F. Christmas	TO MINE OMNEDCES
Battery plates, making storage, J. Bijur 757,718 Bedelethes helder, F. L. Germain 757,451	Electric resistance furnace, E. F. Price 757,634	TO MINE OWNERS You need a Hoisting Engine.
Bedstead and chest, folding, W. A. Arnold. 757,430	Electric switch, G. H. Whittingham 757,853 Electric switch, C. F. Hopewell 757,925	You want the best, strongest, safest, most up-to-date engine
Bedstead fastener, H. H. Hirsch 757,924 Belt fastener, Junkin & Alexander 757,662	Electric switches or the like, means for	that is made—the most durchly to the transfer
Belt fastening implement, W. W. Woodley 757,589	Electric switches or the like, means for protecting live parts of, W. McDevitt. 757,830 Electrical generating system, W. A. Bole. 757,436	and yet the greatest saver of money. Sood for our free datalogue and state the size of and
Belting and making same, machine, B. G. Harley	Electrolytic deposition apparatus, W. J.	for our free chialogue
Binder, loose leaf, J. W. Husing	ι & J. H. Jerv	and state the size of an egine you want. We build them for mines, quarries and docks. Both
Binder, temperary, W. J. Rife	Electrotype plates, mechanism for holding, C. W. Eberhard	quarries and docks. Both
Binding post, S. C. Houghton 757,809	Elevater brake mechanism, A. Sundh 757,789	heist, 6 to 150 H P
Blanks, mechanism for feeding thin flat flexible, L. A. Mayall	Elevator hoisting gear, A. Sundh	All parts easily interchangeable. WEBER GAS & GASOLINE ENGINE CO. P. O. Box 1114-a, Kansas City, Mo.
Blasting compound, J. Tollner 757,693	Embessing machine platens, retary support for, H. S. Maidhof	EASTERN OFFICE, 115 Liberty Street, New York City.
Block system emergency apparatus, F. V. Thompson	End gate, ●. B. Reyn•lds 757,680	A A BRIAINIE
Blotter attachment, desk, J. I. Haycraft. 757,921	Engine whistle attachment, gas, W. L. Paul 757,673	
Board for building purposes, A. B. Keyes 757,812 Boards from structures, implement for de-	Engines, flywheel for quick-running inter- nal combustion, F. Reischenbach 757,636	S15. 養婦婦 UAS CRUINE
tacking, F. Guenther	Envelop and Sheet of paper, combined, R. N. Wilt	- 通過機動 ICMITEDC :
Boat, J. C. Nichel	Envelop fastener, G. D. Barber 757,716	IGNITERS
mer 757.839	Envelop or expanding wallet, A. Bushnell, Jr	for Marine, Stationary and
Book leaf raiser, Sebastian & Stoebe 757,779 Boot or shoe for athletic purposes, P. A.	Excavators, car placing attachment for, H.	Automobile engines. Will a save their cost many times
Vaile	H. George, Jr	over in one year.
Bering machine, C. E. Gadfield	Excavaters, car placing attachment for power, H. H. George, Jr. 757,449 Exercising apparatus, G. Yoerger 757,709 Explosive compound, J. P. Arneld 757,713 Explosive engine, H. R. Palmer 757,632	Write for circulars. The Carlisle & Finch Co
Bottle, Blue & Hernden 757,647	Exercising apparatus, G. Yeerger 757,705 Explosive compound. J. P. Arnold 757,713	233 E. Cliften Ave., Cincinnati, O
Bettle, J. Auld	Explosive engine, H. R. Palmer 757,632	
Bettle, nen-refillable, T. M. Wood. 757,707 Bettle, non-refillable, A. Oullie 757,955	Extension table, J. & F. Debredenka 757,544 Eye shade, N. R. Wickersham 757,854 Eyelet, J. C. Engels 757,695 Fan, F. N. Reekrich 757,774	Volt Ammeters
Bettle scaking apparatus, W. B. Wright 757,535 Bottle stopper and opener, F. Goodrich 757,548	Eyelet, J. C. Engels	Pocket size, but large enough for accuracy
Bewling alley, A. Herbst 757,922	Fan, electric, F. N. Roehrich	and practical use. Various ranges for testing batteries, electric light, telephone and
Box, M. F. Middleton	Fan for disinfecting purposes, W. W. Ross-	other circuits, etc. Also, Voltmeters and
combined. F. D. Scott	iter	Ammeters for general measurements.
Box forming machine, S. Y. High 757,870 Bracelet. expansive, M. S. Rodenberg 757,772	Food water heater, I E. Lewis 757.665	L. M. PIGNOLET,
Bracket for universal stands or supports,	Feed water neater, S. W. Simpson 757,837	80 Cortlandi St., New York, N.Y.
A. L. Rebbins	Feed water heater, S. W. Simpson 757,846 Feed water regulator, J. B. Perkins 757,837 Fence pest, V. E. Randall 757,962 Fence pest, M. C. Wix 757,985	THE MIETZ & WEISS KEROSENE
Brake handle, C. J. Keplinger	Fence post, M. C. Wix	
Brick machine, Randall & Vanneman. 757,961 Brick mold, Crapp & Finch. 757,726	Fence weaving machine, wire, A. E. Blas-	1 to 60 H.P. and GAS ENGINE durns KEROSENE cheaper and
Bridge, E. L. & J. C. Dildine 757,804	hill	after than gaseline. Automatic.
Bridge construction, S. W. Hill	Fender. See Automobile fender. Car fender. Fire alarm, T. F. Litaker	
Rridle hit C G Olin 757 654		tion. Belted or directly coupled to dynamo for electric lighting, charg
Broner, J. Frye	bull	mg storage batteries, pumping and all power purposes.
Brush, floor or like, F. Neidenbach 757,831	Fish line reel, E. D. Rockwell	all power purposes. A. MIETZ. 198-188 Mort Sr., New York. A DOPTED RY
Breiler, J. Frye	J. J. Reyle	ADOPTED BY
brush helder, antiseptic teeth, J. A. Cech-	operating on finely-divided, J. Luhne. 757,757 Folding table, W. R. Montgomery 757,481	Highest Award, direct coupled 1 Generator Set, Paris Expession, 1900.
rane	Folding table, W. R. Montgomery 767,481 Food products, apparatus for preparing	Gold Medal, Pan American Ex-
Brush with washing device, teeth, F. Fritz. 757,997 Bucket or pail fastener, R. Steidl 757,848	cereal, J. H. Miller 757,945	position, 1901. Gold Medal, Charleston, S. C., Exposition, 1902.

	Burglar and fire alarm. M. Nickels	757,490	
;	Burglar and fire alarm, M. Nickels Burner. See Gas burner. Burner, J. D. Green	101,005	
	Butten, combination collar and cuff, A. E. Strang	757,978 757,576	
	Strang Butten, garment, R. Steiner Cabinet, L. Pedersen Cable gris, T. J. Cook	757,957 757,721	
	Cabinet, L. Pederson Cable grip, T. J. Cook Cable tension regulator, everhead, J. F. & D. J. McKay Camera focusing device, M. Schell Camera, photographic, H. P. Tattersall. Camera, photographic, J. A. Pautasse Can capping machine, J. T. Wilmore Cans, apparatus for exhausting air from fruit, R. C. Davis	757,952	
	Camera fecusing device, M. Schell	757,968 757,091 757,830 757,842	i
	Can capping machine, F. Rogers	757,842 758,684	ļ-
	Cans, apparatus for exhausting air from fruit, R. C. Davis	757,895	
	Candy flatting machine, H. G. Lange Cane crusher, sugar, Wilson & Crumbly	767,472 767,988	
	Car brake, W. Gessett	767,910	י -
	Cans, apparatus for exhausting air from fruit, R. C. Davis. Candy flatting machine, H. G. Lange. Cane crusher, sugar, Wilson & Crumbly. Car brake, W. Gossett Car brake and starter, combined, Kellogg & Swain Car, dump, A. King Car engines, apparatus for controlling the speed of motor, A. Krebs. Car fender, H. Howe Car fender, E. Sherwood Car friction and direct-acting spring draft-	757,811 757,753	
	speed of motor, A. Krebs	757,815 757,746	ļ
	Car fender, E. Sherwood	757,845	ĺ
	Car, meter, W. G. Wilsen	757,533	
	Car, ere, C. Canclini	757,860 757,902	
	Car or engine replacer, F. J. Fewings Car, ore, C. Canclini Car replacer, C. A. Fischer Car wheels, making, H. V. Loss. Cars, flexible metal pipe coupling for connecting the air and steam pipes of railway, G. D. Pettingell Carbid, producing, W. S. Horry Carbureter, S. A. Lockhart Cashiers, registers, and recorders, keyboard mechanism for mechanical, Dement & Hull	757,819	
	necting the air and steam pipes of railway, G. D. Pettingell	75 7 ,4 9 3	\
	Carbureter, S. A. Leckhart	757,935	N
	mechanism for mechanical, Dement &	757.601	Be
	Hull Casting machine, J. Bijur Casting open-work structures, apparatus for, J. Bijur Cement kiln cleaning machine, C. J. Van	757,601 757,720	
	J. Bijur Cement kiln cleaning machine, C. J. Van	757,721	
	Cementing material and making same, T.	757,522 757,883	•
	Chain, drive, E. F. Morse	757,7 6 2	n
	J. F. Yehe	757,857 757,488 757,869	ti
	Unristmas tree candle holder, H. G. Hess Chuck, C. R. Moon	757,8 69 757,5 6 1	v
	organ manufacturing machine, B. Wertheimer Cigars with smake improving martians are	757,584	-
	Cement kiln cleaning mackine, C. J. Van Deren Cementing material and making same, T. W. Cappen Chain, drive, E. F. Mørse Chair fan er mirrer attachment, recking, J. F. Yehe Chepping block, butcher's, J. T. Nichels. Christmas tree candle helder, H. G. Hess. Chuck, C. R. Meen Cigar manufacturing machine, B. Wertheimer Cigars with smeke impreving pertiens, pre- viding, H. F. M. Thems Circuit centreller for induction cells, R. Varley	757,514	:
	Varley Clethes drier, P. A. Ringnell Cluster socket, J. H. Dale Clutch mechanism, Ford-Smith & Coventry	757,4 9 7	-
	Cluster secket, J. H. Dale Clutch mechanism, Ford-Smith & Coventry	757,441 757,8●5	1
	Cock safety attachment, gas. B. F. Ed-	757,732 757, 6 52	
	wards Coffee roaster, J. E. Herriett Coin centrelled apparatus, W. Webber Coin centrelled dispensing apparatus, D. Sullivan	757,652 757,743 757,530	
		75 7 ,6 9 0	
	Coin counting and packaging machine, E. N. Gilfillan	757, 6 12 757, 7 41	ĵ
	Coke oven, retort, A. C. Kloman	757,469 757,509	E
	Coloring machine, A. C. Hough	757,5 09 757,554 757, 9 42	١.
	Compound engine, S. Rethschild	757,9 6 5 757,5 0 8	В
	N. Gilfillan Coin detecter, F. G. Hartell Coke oven, retert, A. C. Kloman Coke oven, retert, W. M. Scett Coloring machine, A. C. Hough Commutater, automatic, J. H. Mercadier. Computating machine, Scett & Taylor Concrete piles, sectional cere for making, G. H. Foor Conveyer spout coupling, sectional, C. F. Spencer	757,767	
	Conveying apparatus, material, H. Marcus,	757,573 757,477 757,555	S
	Cooking retort or kettle, O. Hubbell Cooling apparatus, E. P. F. Magniez Copper and zinc from ores, electrolytically	757,555 757, 822	a
	extracting. S. Laszczynski	757,817 758,008	č
	Cream separator, C. T. McCarrell Crusher. See Can crusher.	757,669 757,862	1
	Crusher. See Cane crusher. Cultivater, O. H. Cleyd. Curtain and shade relier helder, com- bined window, A. F. Gilbert	757,547	o
	Curtain drying and stretching frame, lace, G. F. Hullings	757,93 0 757,838	່ດາ
	Dam, pertable pewer, T. F. Gilliland Dental appliance. W. T. Lyen	757,909 757,938	· N
	Desk, hetel register, J. I. Haycraft Disinfecting apparatus, A. Giersiepen	757,920 757,806	gi
	bined window, A. F. Gilbert Curtain drying and stretching frame, lace, G. F. Hullings Curtain fastener, F. P. Pfleghar Dam, poettable pewer, T. F. Gilliland. Dental appliance, W. T. Lyon Desk, betel register, J. I. Haycraft. Disinfecting apparatus, A. Giersiepen. Display rack or case, C. D. Allen Distillation of wood and production of charceal, apparatus for the, H. A. Mackie Draft and builing mechanism, F. W. Ritter, Jr. Draft device, C. R. Davis Draft equalizer, E. F. Moran Dredger or shaker, powder, C. E. Grape- wine	757.939	
	Draft and buffing mechanism, F. W. Ritter, Jr.	757,841	
	Draft device, C. R. Davis Draft equalizer, E. F. Meran	757, 9 95 757, 76 1	
	wine Drilling and automatic centering device.	757,912	
	McElwain & Young	767,960 757,466	•
	wine Drilling and automatic centering device, McElwain & Young Dust guard, E. Jacquemin Dyeing apparatus, automatic, J. Marshall. Electric are rupturing device, S. H. Short. Electric furnace, Herry & Price. Electric lighting and power system, W. A. Turbayne	757,178 757,782	
	Electric controller, A. C. Eastwood Electric furnace, Horry & Price Electric lighting and mawer system W. A.	757,621	ď
	Tall and the state of the state		
	mass Blectric resistance furnace, E. F. Price. Electric switch, G. H. Whittingham. Electric switch, C. F. Hopewell Electric switches or the like, means fer protecting live parts of, W. McDevitt. Electrical generating system, W. A. Bole. Electrolytic deposition apparatus, W. J. & J. H. Jery	757,991 757,634 757,853	Y
	Electric switch, C. F. Hepewell	757, 8 53 757, 9 25	sa:
:	protecting live parts of, W. McDevitt. Electrical generating system, W. A. Bele.	757,830 757,436	an
-			an gi
1	C. W. Eberhard	757,603 757.789	f r
	Elevator hoisting gear, A. Sundh	757,603 757,789 757,788 757,758	he Al E
	Embessing machine platens, retary support for, H. S. Maidhof	757,759 757,680	_
1	Engine whistle attachment, gas, W. L. Paul Engines, flywheel for cuick-running inter-	757,680 757,673	P.
6	Electrotype plates, mechanism for holding, C. W. Eberhard Elevator brake mechanism, A. Sundh Elevator hoisting gear, A. Sundh Embossing machine, H. S. Maidhof for, H. S. Maidhof End gate, O. B. Reynolds Engine whistle attachment, gas, W. L. Paul Engines, flywhel for quick-running internal combustion, F. Reischenbach Envelop and Sheet of paper, combined, R. N. Wilt	757,636	و
	N. Wilt Envelop fastener, G. D. Barber Envelop or expanding wallet, A. Bushnell,	757,8 0 1 757,71 6	
	Jr.,	757,596	í
	Excavators, car placing attachment for, H. H. George, Jr. Excavators, car placing attachment for power, H. H. George, Jr. Exercising apparatus, G. Yoerger Explosive engine, H. R. Palmer Extension table, J. & F. Dobrodenka. Eye shade, N. R. Wickersham. Eyelet, J. C. Engels Fan, F. N. Roehrich. Fan, electric, F. N. Roehrich Fan for disinfecting purposes, W. W. Rossiter	757,45 0	ļ
1	Exercising apparatus, G. Yoerger Explosive compound, J. P. Arneld	757,449 757,709 757,713	
	Explosive engine, H. R. Palmer Extension table, J. & F. Debrodenka	757,713 757,632 757,544 757,854	1
	Eyelet, J. C. Engels Fan. F. N. Raehrich	757,854 757,605 757,774	P
	Fan, electric, F. N. Reehrich	757,773	an in
	iter Feed cutter, F. Hamachek Feed water heater I E Lewis	757,684 757,614 757,665	A
	iter Feed cutter, F. Hamachek Feed water heater, J. E. Lewis Feed water heater, S. W. Simpsen Feed water regulator, J. B. Perkins Fence post, V. E. Randall Fence post, M. C. Wix. Fence post, H. J. Banabee	757, 66 5 757, 8 46 757, 8 37	8
	Fence post, V. E. Randall Fence post, M. C. Wix. Fence post, H. J. Donahoe	757,962 757,989	Ť
	Fence Weaving machine wire, A. E. Blas-	.00,002	
	hill Fender, Wire, W. B. Hughes Fender, See Automobile fender. Car fender Fire alarm, T. F. Litaker Fireproof building construction, G. A. Turn-	757,928 r.	,
	Fire alarm, T. F. Litaker	757, 9 34 757,519	
	Fish line reel, E. D. Rockwell	757,964	
	J. J. Reyle	767.602	4
J	operating on finely-divided, J. Luhne Folding table, W. R. Montgomery	797,767	ı





tial Saving Gone?

True happiness lies in the use of SCHEREN BELTING, and its cost isn't so much. Dixie Belt Leather Book tells.

Star" Foot and Power Screw Cutting

Cross Feed Lathes

F R FINE, ACCURATE WORK

Send for Catalogue B.

SENECA FALLS MFG. CO.

695 Water Street, Seneca Palls, N.Y., U.S.A.

You Drink Down Disease



every time you take a draught of water that has not been filtered. Impurity lurks in it. Germs of disease caunct be seen, but they cannot pass through the cele-brated

Berkefeld Filter

because it is so scientifically constructed as to suppressevery atom of solid matter in the water, thoroughly purifying it. Will give one gallon of pure water in 4 minutes minutes.
No trouble to clean or keep in order.

BERKEFELD FILTER CO., 4 Cedar Street, New York

STEAM TURBINES. — THEIR CON-STILLIM CONTROL OF THE STRUCTURE OF THE







Volt Ammeters





