centrally in the tank from its bottom, extending between the front and rear walls.

DISPLAY STAND. — Jefferson D. Goddard, Kaneas City, Mo. This stand comprises a base and vertical standard carrying at its top a pennant, while midway is an irregular, box-like figure with open sides and vertical partitions, the central portions of the top and bottom of the box-like figure being higher than the side portions.

TRIMMING. - Friedrich Hassenpflug, New York City. According to this design, loop-like wings extend at augles one to the other, in groups, radiating from a common center.

Note.—Copies of any of the above patents will be furnished by Munn & Co., for 25 cents each. Please send name of the patentee, title of invention, and date

NEW BOOKS AND PUBLICATIONS.

THE METALLURGY OF IRON AND STEEL. trations. Price \$5.

This is a volume of Griffin's Metallurgical Series, which is edited by Professor W. C. Roberts-Austen. C.B., F.R.S. The present work is one of a series of treatises on metallurgy written by associates of the Royal School of Mines. The history of the manufacture of iron and steel is treated more fully than is usual in metallurgical treatises, as is also the section dealing with foundry practice and with the reactions of the puddling furnace. The author has paid particular attention to these branches of the subject. A special chapter has been devoted to the corrosion of iron and steel, as this is a subject of great importance in connection with the permanence of modern structures. The special bibliographies are of great value, giving references not only to books, but to periodical literature as well. The work abounds with tables and other data, some of it heretofore unpublished, which cannot but prove of value to all who are engaged in manufacturing iron, and to the student of metallurgy as well.

XT BOOK OF THE PRINCIPLES OF PHYSICS. By Alfred Daniell. M.A., LL.B., etc. New York and London: Macmillan & Company. 1895. Pp. 782. 8vo. 257 illustrations. Price \$4 TEXT

This is the third edition of Daniell's Physics, a work which, since the publication of the first edition in 1884, has achieved a most enviable reputation. The work is a recognized standard wherever the English language is understood. It is withal one of the most readable works on physics among those not intended for popular ase. The plan of the work is that of a gradual progression from the simpler to the more complex subjects. No preliminary knowledge of principles is assumed, and every effort is made to attain lucidity of expression. The aim of theauthor has not been to build up a mere compendium of physical facts, but rather to put the reader in possession of such principles as will enable him with small difficulty to apprehend and appreciate these facts. The present edition includes the sixth thousand, which speaks very well for a scientific book which does not appeal to a popular reader. The arrangement is admirable, and many of the facts printed in small type are of the greatest value. An excellent bibliography is pro-

IRRIGATION FARMING: A HANDBOOK FOR THE PRACTICAL APPLICATION OF WATER IN THE PRODUCTION OF CROPS. By Lute Wilcox. New York: Orange Judd Company. 1895. Pp. 213 312. 12mo. 95 illustrations. Price \$2.

Irrigation has become an important factor in modern agricultural pursuits, and it is becoming more or less essential in all parts of the country, so that the need of more specific knowledge regarding it has led the author to write the present book. By means of this work any one can set about constructing an irrigating plant of any given capacity and can proceed to irrigate his land in telligently and correctly. The book is primarily written for and adapted to the use of our Western farmers, but it will prove equally valuable to the farmers of the South and othersections of the country. The text is clear and concise and cannot but be of value to the farmer. The concluding portions of the book give an admirable review of the common law of irrigation and a glossary of

A GUIDE TO SYSTEMATIC READINGS IN THE ENCYCLOPEDIA BRITANNICA. By James Baldwin, Ph.D. Chicago and New York: The Werner Company. 1895. Pp. 316. 8vo. Price \$2.

Although the Britannica has long been recognized as one of the greatest of reference books, and although its ssors may never have consulted it without complete satisfaction, its full value has seldom been recognized. It is usually regarded simply as a repository of general information to be kept at hand for consultation as occa sion may demand. While this is the ordinary use of the Britannica, it may be utilized in such manner as to perform the office of a great educational agent. The pres ent work shows how this may be done. The plan has been to direct each individual how to draw from this great storehouse of knowledge that which will cover with all desirable completeness the line of work in which he is most interested. This is done by an elaborate series of references which have been arranged according to the subject. The work is an admirable one and is worthy of great success.

PRIMER OF PHILOSOPHY. By Dr. Paul Carus. Chicago: The Open Court Publishing Company. 1895. Pp. 232. 12mo. Price 25 cents.

It is not expressly designed to give instructions to beginners in philosophy, but it is nevertheless available for that purpose. The uninitiated student will not be bewil.

of this heater is oval in plan, and a transverse arch rises dered or mystified, in perusing its pages, by unintelligible phrases. The subject is presented with great simplicity, so that the leading idea may be gathered by a glance at its contents. The most essential technical terms are explained, and the high practical importance of philosophy is never lost sight of. The point of view adopted by the author is new to the extent that it cannot he classified among the schools of recent thought. It represents rather a critical reconciliation of rival philosophies of the type of Kantian apriorism and John Stuart Mill's empiricism.

> JUSTUS VON LIEBIG: HIS LIFE AND WORK, 1803-1873. By W. A. Shen-stone, F.I.C. New York: Macmillan & Company, 1895. Pp. 219. 16mo. Portrait. Price \$1.25.

The name of Liebig is familiar to all who are in any vay acquainted with the science of chemistry, but many will doubtless like to have had a clear idea of why chemists admire and esteem him. The author has found that the prevailing impression concerning Liebig was that he was a man who gained a large fortune by making By Thomas Turner, Associate of the Royal School of Mines. Vol. I. The Metallurgy of Iron. London: Charles Griffin & Company, Limited. Philadelphia: J. B. Lippincott Company, 1895. Pp. 367. 8vo. 80 illustrations. Price \$5 extract of beef. He has, therefore. made it his object in work is written in admirable style and gives details of his great discoveries in pure chemistry, fermentation and agricultural and physiological chemistry.

> WASHINGTON; OR, THE REVOLUTION.
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> A drama founded upon historic events of the war for American independence. Part I. By Ethan Allen. Chicago: F. T. Neely. 1895. Pp. 212. 12uo. Illustrated. Price 50 cents. cents.

> This drama is divided into two parts; each part con sists of five acts. The chief aim of the author has been to secure to the reader a personal intimacy with the actor in the great struggle which made the United States of

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OCTOBER, 1895.-(No. 120.)

TABLE OF CONTENTS.

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(6629) J. R. says: Will you kindly tell me through your valuable columns how to make a hair stain from walnuts? A. The simplest form is the expressed juice of the bark or shell of green walnuts. To preserve the juice, a little alcohol is commonly added to it with a few bruised cloves, and the whole digested together, with occasional agitation, for a week or fortnight, when the clear portion is decanted, and, if necessary, filtered. Sometimes a little common salt is added with the same intention. It should be kept in a cool place. The most convenient way of application is by means of a

(6630) G. W. H. says: Will you kindly publish the process of making beef, iron and wine? A. Liebig's extract of beef 3/2 ounce avoirdupois, ammoniocitrate of iron 256 grains, spirit of orange 1/6 fluid ounce, distilled water 11/2 fluid ounce, sherry wine sufficient to make 16 fluid ounces. Dissolve the ammonio-citrate of iron in the water, dissolve the extract of beef in the sherry wine, add the spirit of orange and mix the soln-

(6631) J. E. S. asks: Does a wheel go around the axle? Does the outside of a wheel go around the hub? A. There is much misapprehension in the numerous phases of this class of questions. A wheel as a whole does not go around the axle, although all of its parts revolve around the axle where it is running. The hub turns with the rim, and although there is no change of relative position of parts of rim and hub, yet it may be truly said the rim goes around the hub, for every part of the rim is consecutively on every side of the hub

(6632) H. E. H. asks how to estimate 10. A Colonial cottage at Bronxville, N. Y., recently the force of a blow made by a steam hammer, when the end of piston serves as the hammer; also would there be much diminution of the force of th through another piece of metal held tightly against the object to be hammered? Is there any way by which the force of a blow from a hammer actuated by a spring can be determined? A. The force of a blow in a steam hammer, and other forces, are explained and the method of computation carried out with examples in Scientific AMERICAN SUPPLEMENT, No. 862. There will be a considerable diminution of the force in transmitting a blow through another body, depending upon its weight and rigidity. Cast steel, when hardened, being the most rigid of the metals for transmitting a blow. The force of a blow from a hammer actuated by a spring may be known by the method of computation for a steam hammer; the weight and the actual pressure of the spring. with the acquired velocity, being the elements for computation, as shown in the article on "Impact or the Force of Percussion," in the Scientific American Supplement as above named.

> (6633) G. M. asks for a rule used for calculating the contents of a barrel. A. To find the volume of a cask of any form. Add together 39 times the square of the bung diameter, 25 times the square of the head diameter, and 26 times the product of the diameters. Multiply the snm by the length, and divide by 26,470 for United States gallons.

INDEX OF INVENTIONS

Por which Letters Patent of the United States were Granted

October 1, 1895,

AND EACH BEARING THAT DATE

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

-1		
	Air brake, W. A. Harris. Air brake, J. M. Hurst. Air compressor, wave power. 'I'. Duffy	547,253 547,351 547,338
	Air brake, W. A. Harris. Air brake, J. M. Hurst. Air compressor, wave power, T. Duffy. Alarm. See Burglar alarm. Album, rotary photograph E. Brewer. Amalgamator, E. S. Bennett. Amalgamator, Hawin & Gonyeau	546.995 547.239
	Amangamator, Hamlin & Gonyeau Ammoniacal products, process of and apparatus for obtaining, L. Mond.	547,116
	Ayle shoulders machine for recutting S D	
	North. Baby chair, P Bimeler Baling press, C. E. Whitman. Ball. See Foot-ball.	547,198 547,651
	Barrel attachment, Oakman & Rushton	547,026 547.167
	Bed of Crib, Cabinet, H. Karp. Bedpan, side, S. C. Woltskill. Bed, sofa, C. S. Coombs.	547,314 547,314 547,371
	Bell. car, W. O. Snyder. Bell. door, I. E. Shaw	547,091 547,186 547,345
	Bicycle training appliance, J. Hutson Bicycles, child's seat for, C. D. Williams. Bicycles, manufacturing, S. Palmiter	547,168 547,1 02 547,400
	Batiery. See Stamper battery. Bearing, antifriction, J. B. Hanlon. Bed or crib, cabinet, H. Karp. Bedpan, side, S. C. Woltskill. Bed sofa, C. S. Coombs. Beehive, F. Danzenbaker. Beell, car, W. O. Shyder. Bell, door I. E. Shaw Bicycle support, folding, W. T. French. Bicycle support, folding, W. T. French. Bicycle training appliance, J. Hutson Bicycles, cnild's seat for, C. D. Williams. Bicycles, cnild's seat for, C. D. Williams. Bicycles, manufacturing, S. Palmiter Binding corn shocks etc., device for, J. L. Dean. Blasting shield, M. J. Magnure. Blower, automatic flue, A. Rafiner Boiler, See Steam boiler. Water tube boiler. Boiler furnace, C. A. Anderson	547,000 547,172 547,287
	Bolt clipper, J. C. Burgess	547 328
	Bowl or spice box, self-measuring sugar, A. W.	547,204 547,334
	Box. See File tox. Fruit box. Matco box. Box nailing machine attachment, B. S. Atwood Brake beam. J. N. Barr.	547,108 547,136
	purposes, C. H. Barker. Buckle, R. Claughton. Buckle, back band, W. F. Anthony. Burglar alarm, H. & W. F. Holding. Burner See Hydrocarbon burner. Oil burner. Button W. Bourke.	546.988 547,013
	Button, W Bourke. Button collar, J. J. Fitzgerald. Button collar, J. A. Trendel. Button setting machines, tube loader for, A. W.	547,060 547,376 547,161
		011,400
	Cake beater and batter dropper, E. L. D. Hoyle. Can. See Milk can. Oil can. Can body forming machine. J. Haas. Can bottom, J. R. McLaughlin. Can lateling machine label holder, J. C. Collins. Car brake. J. A. Webber. Car coupling, A. J. Clark. Car coupling, H. D. Dunlap. Car coupling, H. D. Dunlap. Car coupling, M. O. Niebols. Car, dum cing, Sutcliffe & Collins. Car, dum cing, Sutcliffe & Collins. Car, dum cing, Sutcliffe & Collins. Car, dum cing, P. Wbilden.	547,348 547,225 547,203
	Car brake. J. A. Webber. Car coupling, A. J. Clark. Car coupling, H. L. Dunlap.	547,308 547,333 547,065
	Car coupling, I. Fetters. Car coupling, M. O. Nichols. Car, dumping, Sutcliffe & Collins.	547,248 547,279 547,095
	Car dumping apparatus, A. E. Williams	547,305 547,052 547,321 547,166
	Car fender, A. S. Williams. Car fender, W. Wossoff. Car fender, street, Lamb & Chapman.	547,312 547,366 547,218
	Car, dum cing, Sutcliffe & Collins. Car, dum cing, J. P. Woliden. Car dumping apparatus, A. E. Williams. Car fender, Black & Keeler. Car fender, W. Grunow, Jr. Car fender, W. Wossoff. Car fender, W. Wossoff. Car fender, street, Lamb & Cbapman. Car guard, S. A. Politsky. Car register, street or other railway, J. J. May. Car rifle case, railway, M. Z. Levy. Car safety guard, H. H. Henjey. Car safety guard, street, C. Eidmann. Car switch operating device, street J. A. Cran-	547,157 547,018 547,354
	Cars, device for controlling speed of electric, J.	547,096
	Brady. Cars. electric motor for street, W. Stine Cars. exhaust ventilator for railway, R. M. Pan- coast. Card grinding apparatus, L. W. Penney Card grinding machine, C. Mills	
	Carriage body, A. H. Houston	547,275 547,311 547,075
	Cartridge A. Maxim	547,222 547,058 547,303
	Cartridge loading machine, J. H. Bariow. Cash, register, R. P. Thompson. Casting compound insots for armor plates, process of and mould for, T. Hampton. Casting compound ingots, mould for, T. Hampton.	547,009
	ton Cattle rack, G. Hoffman. Centrifugal machine, T. H. Springer Centrifugal separator, T. H. Springer Chain bars, machine for separating links from, O.	547,011 547,262 547,404 547,403
		547,268
	Chair. See Baby chair. Elevating chair. Chair fan attachment, rocking, W. J. Ferguson Charcoal kiln. continuous, E. J. Ljungberg Cigarette moutbpieces, machine for making, J. S. Beeman.	547,375 547,271 547,196
	Clamp. See Tire and felly clamp. Cleaning device for kid gloves, etc., C. J. Bailey Clock synchronizer, electric, H. S. Prentiss	547,057 547,358 547,386
	Clutch, R. F. Stewart. Clutch and motor connection for same, Kings- land & Sanger.	547,386 547,121
	Coal, jig for separating slate and rock from, D. E. Phillips	547,129 547,339
	Coating metals with aluminum or alloys thereof, R. McKnight. Cock ball, W. H. Rawe. Collar, horse, T. J. Bouch-Tremayne	547,381 547,384 547,325
	Color effects, method of and apparatus for pro- ducing, A. W. Rimington	
	Classical I B Carallan	547,359 547,382 547,062 547,174 547,326 547,336
	Coupling. See Car coupling. Thill coupling.	547.367
	Creamer, centrifuga O. Anderson Cross tie, metallic, O. T. Bedeil. Cultivator, disk, W. J. Harris Curling iron, W. Hill Curtain bolding device, Piper & Davis	546,991 547,254 547,212
	Curtain bolding device, Piper & Davis. Curtain pole. J. A. Ferg. Curved surfaces, apparatus for forming, T. M. Clark.	547,088 547,341 547,138
	Cutter. See Bott cutter. Rotary cutter. Cutter bead, S. J. Shimer Damper for beating stoves or furnaces, E. W.	547,298
1	Anthony	547,235 547,033 547,032 547,195 547,374
	Decoy, folding, J. Ross. Dental articul ator, R. H. Antes. Dental engine friction clutch, F. F. Ellis. Dilator rectal, E. Hubbell. Dish cleaner, T. J. Vollkommer. Distillation and breaking up of liquid bydrocar-	547,374 547,976 547,307
	Ditching machine, orchard, F. E. Odell	547,332 547,154
	Drill. See Electric drill. Ratchet drill. Dyeing machine, J. Grime Educational appliance, E. Ketchum	547,004
	Electric engine, reciprocating, F. B. Rae	547,347 5 7,217 547,215 547,383 547,323
	Electric switch, N. Marsball Electric switch, automatic, Russell, Jr., & Officer. Electric switch, automatic, Russell, Jr., & State Electrical currents, rectifier for, W. J. Still. Electrical indicating mechanism, F. J. Russell.	547,149 547,230 547,034
	Electrical currents, rectifier for, W J. Still. Electrical indicating mechanism, F. J. Russell Electrical junction box, W. S. Johnson. Elevating Chair, W. B. Mann. Elevator See Hod elevator.	547.043 547,035 547,078 547,221
	Elevating coair, W. B. Mann. Elevator See Hod elevator. Elevator door. Crane & Heermans Elevator safety attachment, C. B. Labatt Engine. See Electric engine. Traction engine.	
	Excavator, Rhodes & Crouse Excavator, earth. W. H. Finlayson	547,030
3	Fastener, metalic, F. W. Starr. Fastening device, L. H. Morgan Felted fabrics apparatus for manufacturing. R.	547,277
	Heaton Fence wire stretcher and repairer, A. S. Murchi- son Fertilizer distributer, J. F. & E. J. Williams File box or document holder, E. W. Woodruff.	547.021 547,054