well timbers, and around the pipe is an externally threaded tubular screw on which is a beveled cogwheel resting on a collar, the wheel having a hub threaded to fit the screw, and being driven by a pinion on a shaft from any suitable power. Above the tubular screw is a wedgeshaped collar, the wedge entering a clamp by which, as the wedge is forced upward, pivoted dogs clamp the pipe with a pressure corresponding to the pressure on the wedge. The apparatus is strong and inexpensive, may be readily applied, and enables a pipe to be quickly

LOCK.—William W. Davis, East Orange, N. J. This inventor has devised an improvement in that class of locks in which the mechanism is so arranged that when the door is open no parts of the lock will project in such a manner as to catch the person or clothing of those passing near. This lock has no protruding parts, is positive in operation, and little likely to get out of order, and has novel features of internal mechanism.

STERILIZATION.—Albert Hussener. Gelsenkirchen, Germany. For the sterilization of materials in bottles, jars, etc., this inventor has devised an apparatus by which to mechanically close and make perfectly tight against the outer air, by means of a plain tlat cover, vessels of any shape intended for preserving articles of food, the vessels and their contents having been previously sterilized by heating in a hot water bath. The apparatus not only effects the closure, but during and Photographic Times Almanac for 1895, of the Scothe process of sterilization exhausts the air from the interior of the vessels, the outside air not being able to penetrate to the interior of the vessels during or subsequent to the process of sterilization.

SIPHON VALVE. - Frederick Booth, Concord, N. H. A valve body is, according to this invention, fitted to slide on the fixed outlet pipe, and is formed at its lower end with inlet openings for the water, and at its upper end with a vent extending downward outside of the valve body to within a short distance of the bottom of the tank. The invention relates to devices for finshing water closets, urinals, etc., and the valve is very effective and noiseless, and arranged to automatically drain the tank whenever the valve is pulled, at the same time using the discharge pipe for an overflow pipe.

KEY RING AND CIGAR CUTTER.-Edward B. Aiguier, Newark, N. J. This combination device is strong and simple, very ornamental, and is arranged to prevent accidental disengagement of a key when the cutter is being used. The ring has its ends spaced apart and is formed of two hinged sections, a cutter formed of a fixed and a movable section being secured to one of the ring sections, its movable section engaging the other ring section:

Screen.-George W. Cross, Pittston, Pa. In making screen segments, this invention provides a means whereby the screening surface may be formed integrally with ribs, by upsetting or otherwise treating one of the faces, the ribs being so produced that the screen surface may be smoothly and evenly laid on the spiders or framing, the ribs abutting against the spiders. The ribs and screen segments are also so formed that the ribs may be given more or less pitch, as desired. without interfering with the perfect laying of the ends of the segments upon the spiders.

 Jeseph W. SHUTTER FASTENER. -Johnson, Point Pleasant, N. J. This improvement comprises two curved bars, each with a pivot hole and an end extension to serve as a handle, and on the convex side two notches or grooves, with a locking device having at one end a transverse perforation to receive a fastening screw, the other end being adapted to engage any of the grooves. The fastening is also a bower, and may be applied to any ordinary blind or shutter, holding it open in such a way that it cannot become loosened by the action of the wind. It is also adapted to hold the blinds at an angle to the window to enable them to act

IRONING BOARD ATTACHMENT.-Robert N. Boston, Chestertown, Md. This is a device for firmly holding the neck band and bosom of a shirt while being ironed, and is adjustable to neck bands of different sizes. In using this improvement the neck band is held distended and all wrinkles removed, the adjacent portions of the bosom being also held smooth.

STOVE PIPE JOINT. - Josiah E. Smiley, Smiley, Ohio. This is an improvement designed to facilitate the detachment of sections of pipe when desired. One of the pipe sections has notches in one end and intervening elastic portions provided with spiral ribs, the other section having corresponding spiral grooves arranged oppositely, the grooves and ribs corre sponding in arrangement and pitch.

FISH TRAP.—Bernice Wood, Benson, N. C. This invention provides a trap designed to catch a large or small quantity of fish at each operation, and arranged as to collect the large fish and allow the small ones to pass through. The invention is also de- : 13. Miscellaneous contents.—Wood pavement in London. quantity raised will vary as the ratio of the areas and insigned to furnish a method of utilizing swamp or waste lands for fish culture, especially land in which small running streams or gulleys are found, which can be easily turned into ponds by damming.

GAME BOARD.-Jay F. Beaman, Antwerp, N. Y. This is an improvement in checker or draught boards, and the playing blocks or spaces are hexagonal, with blank triangular spaces between them. The corners of the playing field are similar, thus avoiding the "double corner," and rendering impossible the well known "parallel move" in such corner, so that a game cannot be made a draw or tie. The game is played in very much the same manner as checkers, but the invention provides for a large sized board for use by a num-

MUSTACHE CURLER. - Charles C. Burgio, Brooklyn, N. Y. This is a small and inexpensive device, to be applied in pairs to the ends of the mustache, to curl them without heating, the device being examples of Modern Architectural Construction and annoyance to housekeepers. Throughout the summer it applied to the dry mustache and allowed to remain in position for a few minutes,

send name of the patentee, title of invention, and date all newsdealers. MUNN & CO., Publishers, of this paper.

#### NEW BOOKS AND PUBLICATIONS.

PRAY'S STEAM TABLES AND ENGINE CONSTANTS. By Thomas Pray, Jr.,
C.C. and M.E. New York: D. Van
Nostrand Co. London: E. & F.
N. Spon. 1894. Pp. 85. 8vo, cloth.

The charge for Insertion under this head is 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 the following week's issue Price \$2.

The present work is uniform with "Twenty Years with the Indicator." The author is the well known consulting engineer and electrician of Boston. The value of a table, especially in those relating to steam, is in its accuracy, and the amount of labor necessary to prepare the present work must have been very great. The result is a collection of tables in which nothing is offered which has not been proved. In this book we have in a compact form the most useful data for computations for boiler testing, duty performance of pumping engines, and answers to the many inquiries which spring from the use of the indicator. No theories of any kind are considered or expressed intentionally. Each table is accompanied with explanatory notes showing how problems are worked out in connection with the tables. The work includes steam tables, Regnault's tables, heat of steam, pressure temperature, volume and density of steam, factors of evaporation, hyperbolic logarithms, engine constants, etc.

The American Annual of Photography vill & Adams Company (New York), has attained the dignity inherent to a volume of over 500 pages. It has a great variety of information useful to the photographer, either amateur or professional, who wishes to keep pace with the times, including also a carefully compiled selection of standard formulas and useful recipes. The two hundred or more illustrations which embellish its pages likewise present some fine examples of photo-engraving and photo-mechanical printing.

# SCIENTIFIC AMERICAN BUILDING EDITION.

#### NOVEMBER, 1894.—(No. 109.)

TABLE OF CONTENTS.

- 1. Elegant plate in colors showing a cottage at Bronxville, N. Y., recently erected for B. L. Clark, Esq. Two perspective elevations and floor plans. Estimated cost \$5,000. Mr. William A. Lambert, architect. New York City. A modern and pleasing de-
- 2. Plate in colors showing the residence of John Cottier, Esq., at Bensonhurst, L. I. Three perspective elevations and floor plans. Cost \$6.750 complete. A good example of Colonial architecture. Messrs. Parfitt Bros., architects, Brooklyn, N. Y.
- A dwelling at Edison Park, Ill. Cost \$1,700. Architect, Mr. F. W. Langworthy, Chicago, Ill. A model design for its class and cost. Two perspective elevations and floor plans.
- A very attractive residence recently erected for A. C. Garsia, Esq., at Flatbush, L. I. Two perspective elevations and floor plans. Mr. John E. Baker architect, Newark, N. J. A modern design.
- 5. An \$800 summer cottage built for A. R. Doten, Esq., at Casco Bay, near Portland, Me. Perspective elevation and floor plans. Mr. Antoine Dorticos, architect, Portland, Me.
- 6. Perspective elevations and floor plans of a handsome residence recently completed for George W. Catt, Esq., at Bensonhurst, L. I. A very picturesque design. Cost \$8,100 complete. Mr. S. S. Covert, architect. New York.
- A church at Short Hills, N. J., built entirely of rubble stone. Estimated cost \$6,000. Perspective elevation and floor plan. Messrs. Lamb & Rich, architects, New York City.
- 8. The house of Francis I. at Abbeville, France,
- A stable and conservatory attached to the residence of John Cottier, Esq., at Bensonhurst, L. I. Perspective elevation and ground plan. Messrs. Parfitt Bros., architects, Brooklyn, N. Y.
- 10. A residence at Ardmore, Pa., in the Queen Anne style. Perspective elevation and floor plans. Cost complete \$6,750. Architects and builders, Messrs. J. B. Cornell & Sons, Philadelphia, Pa.
- A cottage at Edgewater, Ill., erected for Edgar Smith, Esq. A unique design in the Colonial style. Cost \$7,800 complete. Two perspective elevations and floor plans. Mr. G. W. Maher, architect, Chicago,
- An attractive cottage at Bath Beach, Long Island, N. Y., recently erected for G. W. Snook, Esq. Two Emmett, architect, Bath Beach, Long Island.
- -Preservation of wood.-Methods of constructing passing of red brick.—Long distance house mov- pipes ing.—Carved and fancy mouldings, illustrated. -A cent. We have no literature on this subject. new sash lock.—Automatic heat regulation in Curiosities about wood.—Cement water tanks.— Animproved hot water heater, illustrated.—How to cool a cellar.—A new woodworking machine. illustrated. - An improved stage bracket iron, illus trated.—Party walls.—Architectural metal ornaments, illustrated.

25 cents. Forty large quarto pages, equal to about two hundred ordinary book pages; forming, practiallied subjects.

The Fullness, Richness, Cheapness, and Convenience NOTE.—Copies of any of the above patents will be of this work have won for it the LARGEST CIRCULATION tracted from the bark and trunk of which it subsists. furnished by Munn & Co., for 25 cents each. Please of any Architectural Publication in the world. Sold by In the late summer it may be frequently noticed in dense

361 Broadway, New York.

# Business and Personal.

"U.S." metal polish. Indianapolis. Samples free. Stave machinery Trevor Mfg. Co., Lockport, N. Y. Our loose pulley oiler will save you money. Kridler Manufacturing Company, Grand Rapids, Mich.

Screw machines, milling machines, and drill presses. The Garvin Mach. Co., Laight and Canal Sts., New York.

Centrifugal Pumps, Capacity, 100 to 40,000 gals, per minute. All sizes in stock. Irvin Van Wie, Syracuse, N.Y. Guild & Garrison, Brooklyn, N. V., manufacture steam pumps, vacuum pumps, vacuum apparatus, air pumps, acid blowers, filter press pumps, etc.

Theoretical and Practical Ammonia Refrigeration, J J. Redwood. Illustrated, tables. Clotb (in the press), \$1. Spon & Chamberlain, 12 Cortlandt St., New York.

Emerson, Smith & Co., Ltd., saw manufacturers Beaver Falls, Pa., will send Sawyers' Hand Book on Circulars and Band Saws free to any address in the world.

Thebest book for electricians and beginners in electricity is "Experimental Science," by Geo. M. Hopkins. By mail. \$4; Munn & Co., publishers, 361 Broadway, N. Y.

For the original Bogardus Universal Eccentric Mill, Foot and Power Presses, Drills, Shears, etc., address J. S. & G. F. Simpson, 26 to 36 Rodney St., Brooklyn, N. Y

Woven wire brushes.-The Belknap Motor Co., of Portland, Me., are the patentees and manufacturers of the best woven wire commutator brush on the market.

Competent persons who desire agencies for a new popular book, of ready sale, with handsome profit, may the gelatine will be solid and may be removed. It can apply to Munn & Co., Scientific American office. 361 Broadway, New York.

The Imperial Power Building, of Pittsburg, Pa., will be completed March 1. It is a new, eight story factory building, fitted up as a model plant, with the finest ma chinery, electric dynamos and motors obtainable, making it desirable for manufacturers. The proprietor proposes to rent space as may be required by a manufacturer. Each floor contains 7,500 square feet, capable of subdivision, with exterior windows all around and power and appliances to meet any wants and give conveniences not obtainable elsewhere. Located in the heart of the city, within thirty feet of the Pennsylvania R. R. freight depot. Manufacturers desiring to lessen expenses and be surrounded by every convenience should address J. J. Vendergrift. Pittsburg, Pa.

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



## 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 give date of paper and page or number of question.

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 advertised in our columns will be furnished with addresses of houses manufacturing or carrying the same.

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

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.

6313) G. M., Los Angeles, asks: What proportional size shall I make the pressure jet and throat of a water jet pump to raise water 12 feet, with a fall of 60 feet? To what fractional height of pressure jet can water be forced by a jet pump, and about what is the percentage of efficiency? Where can I find directions for designing jet pumps? A. The relative areas in a water jet for the conditions as stated should be as 1 to 1.75 with the nozzle drawn to a thin edge and the neck piece with curved or bell-shaped internal surface. The nozzle should be placed just within the commencement of the curve of the neck piece. If well made with smooth frictional surfaces, water can be raised to from one-sixth to perspective elevations and floor plans. Mr. Percey one half the height of the supply head, by varying the proportions of the areas of the nozzle and neck. The versely as the height. The efficiency depends upon the chimney flues and pipes at Paris, illustrated.—The provision for eliminating the friction of thewater in the

(6314) A. C. P. says: I take the liberty houses, etc., illustrated.—Woodwork vs. flame. - to ask for the name of inclosed insect. They have appeared here within the last thirty days in great numbers, and as no one seems to remember of having ever seen them before, they have aroused my curiosity. So would be very thankful for a name for same, also a general explanation of their sudden appearance. A. Answer by C. L. Marlatt, Acting Entemologist United States Depart-The Scientific American Architects and Builders ment of Agriculture.—The insect referred to is what is Edition is issued monthly. \$2.50 a year. Single copies, generally known throughout the West as the box elder bug (Leptocoris trivittatus, Say). Of late years this insect has been enormously abundant every fall thoughout cally, a large and splendid MAGAZINE OF ARCHITEC- the upper Mississippi Valley, collecting in great numbers TURE. richly adorned with elegant plates in colors and on the sunny sides of buildings and frequently gaining with fine engravings, illustrating the most interesting entrance into dwellings in such numbers as to be a serious may be found in different stages of development, chiefly on the box elder (Negundo aceroides), upon juices expatches on the trunks of these trees. It also occurs however, upon other trees, particularly ash. Later, it Carpet rolls, means for supporting, C. L. Taylor. 529,973

leaves its summer breeding places and seeks hibernating quarters for the winter, crawling into crevices in walls and outbuildings or wherever it may receive protection from the cold and storms. Wherever they are collected in masses as described they may easily be destroyed by crushing with a stiff brush or by dousing with scalding water or by the use of any of the oily insecticides in very strong dilution.

(6315) B. A. J. says: Will you kindly For coal hoisting engines. J.S. Mundy, Newark, N.J. inform me how halation may be prevented? A. Hala-Engine castings and parts. E.P.Ryder, Brooklyn, N. Y. tion is the term given to the halo which often surrounds windows in photographs of interiors, and blocks up the details. It is, too, often found to occur in landscapes taken in a strong light, the tops of trees and other objects which are surrounded by strong light being lost in a mist, or entirely obliterated. It is caused by reflection from the back of the plate, and occurs most strikingly in plates of the cheap class, which are thinly coated. very thickly coated plates it rarely occurs, except when taking brightly lighted interiors. To prevent it the back of the plate may be coated with a mixture of powdered burnt sienna, ½ oz.; gum arabic, ½ oz.; glycerine, 1 oz.; water, 5 oz. This is readily washed off before de velopment. A special ready-made preparation is sold for this purpose by Tylar, if preferred. Another way is cut dead black needle paper, or black American cloth, to the size of the plate, coat it with glycerine, and squeegee it on to the back of the plate when placing it in the slide.

> (6316) W. C. P. asks how gelatine sheets are made. A. Dissolve fine glue or isinglass in water so that the solution when cold may be consistent. Pour it hot on a plate of glass (previously warmed with steam and slightly greased) fitted in a metallic frame whose edges are just as high as the wafer should be thick. Lay on the surface a second glass plate, also hot and greased. so as to touch every point of the gelatine while resting on the edges of the frame. By its pressure the thin cake is rendered uniform. When the glass plates have cooled, then be cut into disks by punches, etc. It can, of course, be colored by adding suitable coloring material, aniline colors, for instance.

#### TO INVENTORS.

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

## INDEX OF INVENTIONS

For which Letters Patent of the United States were Granted

November 27, 1894,

## AND EACH BEARING THAT DATE.

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

[See note at end of list about copies of these pate	
Adding machine, H. B. Martin Alarm. See Burglar alarm. Armatures and field magnets and making same, conductor coil for, Alexander & Groswith. Armor plate, P. R. D. D'Humy Auger bit, E. C. Philips. Awning and fire and burglar proof shutter, com- Axle waster, the state of the sta	590 700
Alarm. See Burglar alarm.	528,188
Armatures and field magnets and making same,	F00 000
conductor coil for, Alexander & Groswith	529,992
Auger bit. E. C. Phillips	529.832
Awning and fire and burglar proof shutter, com-	
bined. W. Lash	529,737
Axle washer vehicle. Peckham & Swan	529,920
Back brace, J. Gallegos	530,038
Bag. See Packing bag.	520 011
Raling machine, cotton, C. L. Bessonett	530,000
Baling machine, cotton, Smith & Dare	529,968
Baling machines, core holding mechanism for	F00 008
Raling pross H E Smith	529,967 520,960
Ballot box, registering, L. M. Foster	530,034
Band cutter and feeder, C. W. Bond	529,850
Gordon Gordon	590 795
Basket making machine, E. Horton	530,048
Bearing, roller thrust, J. R. Burdick	529,853
Bed, Iolding, T. Opel	529,944
Ballot box, registering, L. M. Foster Band cutter and feeder, C. W. Bond. Barrel heads in place, device for securing, O. P. Gordon. Basket making machine, E. Horton. Bearing, roller thrust, J. R. Burdick. Bed, folding, T. Opel. Bed, folding, T. Opel. Bed, subjensory, E. J. Pike. Ricycle, S. Brauut. Bicycle, J. Gillingham. Bicycle driving gear, Schaum & Alvord. Bicycle, J. Gillingham. Bicycle driving gear, Schaum & Alvord. Bicycle pedals, toe clip for, C. F. Porter. Bicycle pedals, toe clip for, C. F. Porter. Bicycle sets, R. J. Noderer. Billiard cue, G. Gestwendiner. Billiard cue, G. Gestwendiner. Billiard cue tip, C. N. Briggs. Billiard cue, G. Gestwendiner. Bi	529,700
Bicycle, P. J. Deacon	529,717
Blevele, J. Gillingham	530,042
Bicycle pedals, toe clip for C. F. Porter	529,951
Bicycle rest, R. J. Noderer	529,939
Bicycle stand. I. I. Fonda	529,827
Billiard cue tin C. N. Briggs	529 775
Bin. See Dust bin.	020,110
Bit. See Auger bit. Bridle bit.	F00 ===0
Block See Paying block	529,770
Blotter, self-binding, R. L. Boyd	529.892
Board. See Mixing board. Switch board.	
Boat, G. L. Godfrey	529,786
Roiler, J. J. Bohner.	530.006
Boiler furnace and boiler, steam, E. D. Meier	529,741
Boiler tube or pipe cleaner, Lawrence & Bromell.	529,798
W. Shipmee	529.880
Boot or shoe, waterproof, C. W. Shippee	529,881
Boring machine, multiple, C. Cristadoro	529,712
Rottle W Von Rokern	529,702
Bottle, drenching, J. T. Turner	529,978
Bottle forming machine. R. T. Beckett	529,693
Bottle stopper, C. B. Sneldon	529,815 529,823
Box. See Ballot box.	020,020
Brace. See Back brace.	
Boot or shoe and making same, waterproof, C. W. Shippee. Boot or shoe, waterproof, C. W. Shippee. Boring machine, multiple, C. Cristadoro Bottle, C. H. Van Wie. Bottle, G. H. Van Wie. Bottle, G. H. Van Wie. Bottle, W. Von Bokern Bottle, G. H. Van Wie. Bottle, G. W. Shippee. Bottle forming machine, R. T. Beckett. Bottle stopper, C. B. Sheldon. Bottle washer, A. R. Wiens. Box. See Ballot box. Bracke. See Ballot box. Bracke. See Ballot box. Bracke. See Engine brake. Brake. See Engine brake. Inkroller brake. Vebicle brake. Vessel brake. Brake shoe, F. Chiff. Brick with furnace, B. W. May. Bridle bit, R. A. Shute. Brood bjin, D. Metzger. Button fastener, H. Thier Calendar, perpetual, C. E. Vawter. Can bodies, etc., machine for making, W. H. Smyth. Smyth. Can poen er, J. Bien.	
bicle brake. Vessel brake.	
Brake shoe, E. Cliff.	529,897
Brick All: Hirnace, B. W. May	529,931 529 e14
Brooch pin, D. Metzger	529,743
Burglar alarm, detonating, L. B. Burrill	530,012
Button blank forming machine, E. J. Pope	529.950
Calendar perpetual C. F Vawter	529,914 529,910
Can bodies, etc., machine for making, W. H.	0,0,010
Smyth	529,815
Candy whistles manufacture of C & Gordiner	530.439
Car bolster, railway, C. T. Schuen,	529,869
Car buffer, C. A. Gould	529.857
Car combined sleeping and parlor, L. F. Ruth	529;9ff] <b>520</b> 085
Car coupling, J. Lessard	529,924
Car coupling, H. Raymond	530,055
Smyth. Can open er, J. Bien. Canuly whistles, manufacture of, C. E. Gardiner Carloster, railway C. T. Schoen. Car coupling, E. R. Burden. Car coupling, E. R. Burden. Car coupling, J. Lessard. Car coupling, H. Raymond. Car fender, street. H. Grieser. Car beater, E. H. Gold. Car register, street. Catlin & Rein. Carbonating liquids, apparatus for, H. S. Ferry. Carbonating liquids, method of and means for, H. S. Ferry.	520,726
Carrecister street Catlin & Rain	529,723 530,067
Carbonating liquids, apparatus for, H. S. Ferry	530,071
Carbonating liquids, method of and means for, H.	F00.0=
S. Ferry	530,070