

(8737) C. F. H. asks: Can you give me any information as to the mixture used in binding coal screenings together that are made into briquettes? A. The best material for binding coal fines into briquettes, and the one most largely used, is pitch. Asphalt has had a limited use. Starch paste, residues from starch manufacture, dextrine, molasses, etc., have been used from time to time experimentally, but are not practicable. Various mineral substances, such as clays, lime, water-glass, etc., have also been proposed, but naturally have the drawback of adding just so much ash. Occasionally, oxidizing materials, such as niter, are added, when it is desired to produce a very quickly burning briquette for the rapid generation of high temperatures.

(8738) W. J. C. wishes to know how to remove indelible ink marking from clothing. A. Indelible inks are of such variable character that it is quite impossible to reply. Many of these inks have nitrate of silver as a basis; in this case, a solution of hyposulphite of soda might help. Some other inks might possibly be bleached out with javelle water and weak muriatic acid; this can be used only on white goods, as most dyes would be destroyed. Possibly also a solution of sulphurous acid might be of service.

(8739) S. R. asks for a good receipt for making a reliable fire extinguisher in powder form, one that is easy to prepare. A. For a cheap, dry powder fire extinguisher, bicarbonate of soda will serve; it may advantageously be mixed with 5 per cent to 10 per cent in some powdered mineral, as flint, tripoli, chalk, etc., to prevent caking in damp air. A mixture of dry bicarbonate of soda with dry sal-ammoniac, and kept in a dry place, will do better, as it would yield both carbonic acid and ammonia. In a confined space fire extinguishers of a type similar to gunpowder have proved effective; the object being to fill the room with carbon dioxide, sulphur dioxide and nitrogen gases and thus choke the fire. A good formula for this type of extinguisher is niter, 60 parts; sulphur, 36 parts, charcoal, 4 parts.

(8740) W. R. asks what the different gases are which, if introduced into an inclosed arc lamp will turn the color red, green, yellow, blue, etc. A. Colored electric lights are ordinarily produced by coating the globe with an aniline dye, made in alcoholic solution, and mixed with a little varnish. We do not know any gas which could withstand the heat of the arc for any time and which could color the arc. Some color can be imparted to the arc by soaking the carbons in solutions of sodium chloride, strontium chloride, or lithium chloride, and drying them thoroughly before using. The light of the arc itself is so intense that it is very difficult to overcome it with any other colored light.

(8741) H. M. asks: Can you give me information as to what a transformer is and what it is used for? I have been informed that it is much on the scale of an induction coil. If so, can you give me some scale by which to transform a 110-volt current into amperes? A. A transformer changes an alternating current from one voltage to another and from one current strength to another. It cannot change volts into amperes. In that respect they resemble induction coils. An induction coil is a particular sort of transformer, provided with a condenser, interrupter, etc. It is used almost entirely for raising the voltage. You will find a good chapter upon Transformers in Houston and Kennelly's "Alternating Currents." 2. Also please tell me how many volts it will take to each ampere, and a scale of how it should be wound, what size wire to use, and if the fine wire should be used outside or in? A. It is impossible to change amperes into volts. And as to the winding, each one is wound for the work it is to do. There is no general winding.

(8742) G. W. L. asks: 1. What is the most economical method of generating carbonic acid gas—not necessarily pure—in large quantities? A. The commercial sources of carbonic acid, on a manufacturing scale, are as follows. 1. By the burning of limestone. 2. By the action of acids in limestone (calcium carbonate), magnesite (magnesium carbonate) or dolomite (calcium magnesium carbonate). The acid used is sulphuric. This method is used by the manufacturers of bottled effervescing waters. 3. By collecting the carbonic acid gas generated in the fermentation vats of large breweries. This source is largely used in Germany. In addition, the gas coming from many of the natural springs is collected. This practice is also largely used in Germany. 2. Are there any known chemicals, or other substances, that will decompose water, aside from the alkaline metals? A. Besides the alkaline metals, water is decomposed by many of the hydrides and carbides of the different metals. Thus calcium carbide decomposes water with the formation of lime and acetylene. Also, vapor of water passed through red-hot tubes of different metals is decomposed into its constituents. Vapor of water passed through red-hot coal is decomposed, with formation of carbon monoxide and dioxide, hydrogen, marsh gas (CH₄) and other hydrocarbons; this is the basis of the industrial manufacture of water gas, which has displaced coal gas in most cities.

INDEX OF INVENTIONS For which Letters Patent of the United States were Issued for the Week Ending October 28, 1902, AND EACH BEARING THAT DATE. (See note at end of list about copies of these patents.)

Table listing inventions with patent numbers and dates. Includes items like 'Acid, making formylmethylanthranilic', 'Air brake', 'Adjustable switch', 'Advertising device', 'Alloy of silver', 'Alum, obtaining', 'Amusement device', 'Animal trap', 'Apron', 'Armature for dynamo electric machines', 'Atomizer', 'Automobile alarm', 'Bag or satchel frame', 'Bale tie', 'Balling press', 'Barrel or cask', 'Battery plate separator', 'Bean cutter', 'Bearing side', 'Bed, folding', 'Belt, distributor or conveyor', 'Belt dressing to belts', 'Belt holder', 'Bier, knockdown', 'Billet heating furnace', 'Binder', 'Blender', 'Blank furnace', 'Blower, furnace', 'Blowpipe, automatic', 'Boiler fire boxes', 'Bolt or spike extractor', 'Bottle brushing machine', 'Bottle filling apparatus', 'Bottle lock', 'Bottle, non-refillable', 'Bottle, non-refillable', 'Bottle washer', 'Bottle washing machine', 'Bowling ball', 'Box', 'Brake mechanism', 'Brick kiln air box', 'Bricks for building purposes', 'Brush, cylindrical', 'Buckle, tug', 'Bung and gasket for barrels', 'Burglar alarm', 'Burial tomb', 'Burners', 'Busy test system', 'Button', 'Cable signal, traveling', 'Calcium sulfate and by products', 'Calculating machine', 'Camera, divided bed photographic', 'Camera, swing-back photographic', 'Cameras, running bridge for extension front photographic', 'Can opener', 'Candle stick or holder', 'Car, aerated', 'Car brake', 'Car coupling', 'Car door fastening', 'Car door, grain', 'Car door winding shaft', 'Car side bearing', 'Carburetor', 'Carburetor', 'Carriage nursing bottle holder', 'Carrying roll', 'Centrifugal separator', 'Chain wrench', 'Chalk line self-chalking holder', 'Cheek-expanding pad', 'Cigar wrapping table', 'Cigar wrapping table suction valve', 'Cigarette forming, wrapping and ironing appliance', 'Cigarettes from continuous cigarette rods', 'Clay pulverizer and separator', 'Clock, electric', 'Cloth finishing machine', 'Clutch', 'Clutch operating mechanism for winding drums', 'Cock, gage', 'Coin receptacle', 'Column capital and attachment', 'Combing machine', 'Commutator leads, means for attaching', 'Compressor valve mechanism', 'Conveyer', 'Corset', 'Cot. folding', 'Cotton cleaner', 'Couch, rocking', 'Cream separator', 'Cultivator', 'Cultivator', 'Curd mill', 'Curtain pole', 'Cut out, thermal', 'Cycle', 'Cycle seat', 'Cylinder lock', 'Dentist's electrical and annealing furnace', 'Diamond cutting', 'Die stock reaming attachment', 'Digester', 'Display device', 'Distilled spent residues, apparatus for the treatment of', 'Door, J. L. Young', 'Door holder', 'Dough mixing machine', 'Draft equalizer', 'Draft preventer', 'Dredge', 'Dress shield', 'Drier', 'Drier for ores', 'Drill', 'Drink shaker', 'Drinking fountain', 'Driving mechanism', 'Drum, heating', 'Dump shovel', 'Dye and making same', 'Dye and making same', 'In, O. Sobst

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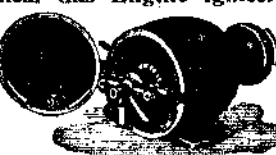
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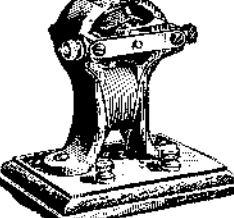


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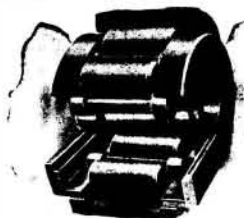


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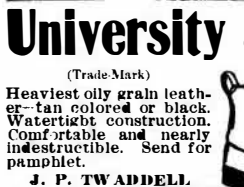
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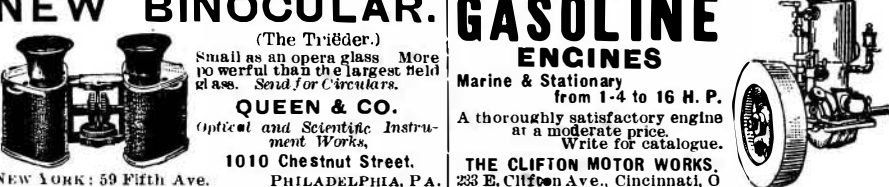
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CLOUDS AND WEATHER SIGNS. By Commander D. Wilson-Barker, R.N.R. London: Office of "Knowledge." 1902. 16mo. Pp. 31.

We are glad to see that Commander D. Wilson-Barker's admirable papers on clouds, contributed to the pages of "Knowledge," have been republished in book form and that they are thus given a more permanent value. Commander Wilson-Barker has illustrated his book with admirable pictures of various cloud forms and has presented the subject in a most attractive manner.

THE SCHOOL OF ARCHITECTURE. University of Pennsylvania. Second Series. Part III., Part V. Large quarto.

It would be difficult to devise a more persuasive setting forth of a university course of study than is shown in the biennial review of the School of Architecture at the University of Pennsylvania. The unusual combination of type and paper, the rubricated margins, the inset illustrations, the specially designed title page and cover, together with the size of the page itself, unite in giving the review a unique position in the category of university announcements.

Confessedly planned upon new lines for the purpose of presenting a comprehensive account of the character and environments of architectural training at Pennsylvania, the review sets forth in detail the requirements of the course from the entrance examination to the completion of the fifth or "graduate" year. To this end, typical problems have been selected whose demands are printed in full together with one or two of the best solutions offered in each case by the students.

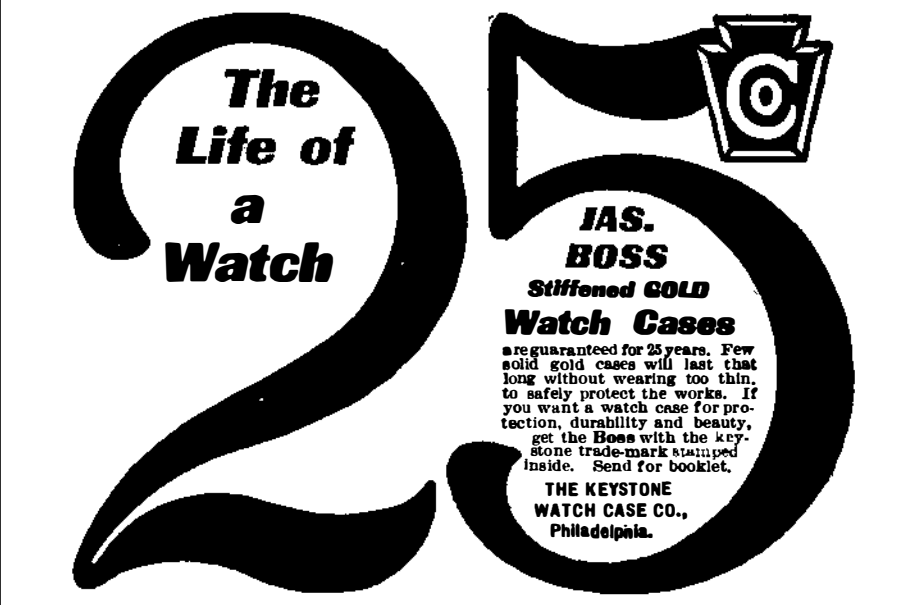
The scope of the work in design ranges from the simpler composition problems of the second year—among which we notice "An Entrance to a Small Public Library," a "Mausoleum for a Country Estate," a "Restaurant for a Fashionable Watering Place"—to the severer tasks imposed in the fourth and graduate years. Of the former, "A Nautical Amphitheater," "A Presidential Mansion," "A Municipal Hospital for the Insane," sufficiently indicate the interests considered. The work of the graduate year is more mature, and indicates extended tests of the student's powers of composition as well as his discrimination in handling the practical details of competition work of the highest class. Mr. Thornton Oakley's "Study for a University Group," and Mr. Julian Abele's "Metropolitan Cathedral," are typical examples of this and reflect the highest credit on both instructor and pupil.

THE AMERICAN TRANSITION. (Via the Buckler and Boss.) From a Republic to a Theocracy. Copyrighted 1902 by the Equinoctial Press, State of New York. 1902. Pp. 118.

STATISTICS OF MANUFACTURES. Comparisons: 1895, 1900. By Horace G. Wallin. Boston. 1902. Pp. 39.

TWENTY-FIFTH ANNIVERSARY OF THE COMPOUND LOCOMOTIVE, 1877-1902. Paris. Pp. 4.

NATURAL PHILOSOPHY. A System of Our Knowledge of Nature. With an Attempt to Explain the Mysteries. By James Ferguson. New Edition. Complete in one volume. New York: The Alliance Publishing Co. 1902. Pp. 112.



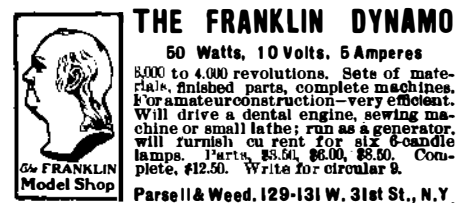
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