

through the latter. Thus equal but reverse motion is secured in the two shafts.

Each shaft carries a propeller screw made of light metallic frame work, with blades of canvas stretched over skeleton frames of iron. The arms of the wings or blades are of hollow brass tubing, tapering from their junction with the shafts to the extremities of the wings. They are braced laterally and vertically by small iron rods. We judge the diameter of the counter propellers thus formed to be about twenty feet.

The object of giving them reverse motion is evidently to prevent the machine from spinning around on its vertical axis, as would be the case if only one propeller were employed.

These propellers must, if revolved rapidly, exert considerable elevating power, but the weight of the machine is evidently greater than their capacity, unless they are revolved at a velocity that would break some part of the machinery.

We long ago said that the solution of the problem of flying machines would be found in the discovery of materials of combined strength and lightness, yet unknown to science, and also in the invention of a motor having a power, in proportion to weight, comparable to that of the pectoral muscles of birds. Those who seek success in aerial navigation must first solve these preliminary problems, which, as every experiment in artificial flight demonstrates, are yet without solution.

THE EAST RIVER BRIDGE.—REPORT OF THE CHIEF ENGINEER.

Each step in the progress of this great structure increases public confidence in its ultimate successful completion, and demonstrates the ability of the controlling mind in charge of the work. It is evident that the mantle of the late John A. Roebling, to whose genius the plan of the bridge is due, has fallen upon the shoulders of his son, Col. W. A. Roebling, who is now the Chief Engineer.

The reports made by this gentleman are characteristic of the man. They are like him in the absence of all attempt at vain display of technical knowledge, and in reliance upon the merits of actual performance as a basis for enduring reputation. When errors have been committed, they are frankly acknowledged; and where successful experiments have been tried, they are set forth in a moderate statement of facts, without undue elaboration, or any attempt at self-glorification, all the more praiseworthy as coming from a man who, though comparatively young, is building a monument to his own genius that will rank as one of the greatest, if not the greatest, of the gigantic works of the age.

One of the topics discussed at greatest length in the report, is that of the blowing out of the east caisson, "the legitimate result," as Mr. Roebling himself states, "of carelessness, brought about by an over confidence in supposing that matters would take care of themselves."

Our readers will find the account of this occurrence in another column, extracted from the report. As a graphic description of a very exciting and alarming event, it is scarcely inferior to anything we have met with.

We shall, as occasion offers, give further extracts from this interesting document.

WHITEWASH FOR OUTSIDE WORK.—Slake half a bushel of lime with boiling water, keeping it covered during the process. Strain, and add a peck of salt, dissolved in warm water; three pounds of ground rice put in boiling water, and boiled to a thin paste; half a pound of powdered Spanish whiting, and a pound of clear glue, dissolved in warm water; mix well together, and let the mixture stand several days. Put it on hot.

All the Leading Newspapers

Published in the United States may be found on file at the Advertising Agency of Geo. P. Rowell & Co., No. 40 Park Row, New York.

Business and Personal.

The Charge for Insertion under this head is One Dollar a Line. If the Notice exceed Four Lines, One Dollar and a Half per Line will be charged.

The paper that meets the eye of manufacturers throughout the United States—Boston Bulletin, \$4 00 a year. Advertisements 17c. a line.

Kansas Brick Machine.—Wm. Whiteford, Kansas City, Mo., challenges any manufacturer to compete with his patent machine for making brick faster and cheaper.

Air Cylinder Graining Machine.—A perfect tool for House Painters and Manufacturers of all kinds of Decorated Ware. Complete Machine for \$50.00. Send stamp for Circular. The Heath & Smith Manufacturing Co., 44 Murray street, New York.

To Manufacturers and Inventors.—We have established a General Purchasing Agency for Mississippi. Best references given. Please send Circulars and Price Lists. O'Sullivan & Bro., Jackson, Miss.

Lyman's Gear Chart, with full directions for laying out the teeth of gear wheels, sent for 50 cents. Address Edward Lyman, New Haven, Conn.

Wickersly Grindstones. Mitchell, Philadelphia.

File Grinders' Grindstones. Mitchell, Philadelphia.

Ohio Grindstones. J. E. Mitchell, Philadelphia.

Railroad Law in every number of the RAILROAD GAZETTE.

For the most perfect Band Instruments in the world, send to Isaac Fiske, Worcester, Mass. Illustrated Catalogues free on application.

Manufacturers of Patent Inserted Tooth Saws, and Saw Mill Manufacturers, send Circulars to W. A. Helms, Shady Hills P. O., Henderson County, West Tennessee.

Soap Stone Packing, in large or small quantities. Greene, Tweed & Co., 18 Park Place.

For Sale.—An interest in a Patented Propelling Wheel for Canal Boats; or wanted, a partner with means to bring it before the New York State Canal Commission. Address H. F. Fenton, Cleveland, Ohio.

The Patent for the best Hydrant, or Fire Plug ever invented, for sale. For descriptions, terms, etc., address Lock Box 356, Lockport, N. Y.

Wanted.—A practical Mechanic, of experience, as foreman of a Door, Sash, and Blind Factory. Address Door, Sash, and Blind Co. Box 229, Columbus, Ohio.

Wanted.—The latest improved Machinery for manufacturing Horse Shoes, Horse Nails, Cut Nails, Pressed Spikes. Full particulars as regards capacity, etc., with lowest cash price. Address A. B., Box 83, Perth, Ont.

Oak Tanned Leather Belting and Manufacturers' supplies. Greene, Tweed & Co., 18 Park Place.

Diamond Carbon, of all sizes and shapes furnished for drilling rock, sawing and turning stone, conglomerates, or other hard substances also Glazier's Diamonds, by John Dickinson, 64 Nassau st., New York.

Peck's Patent Drop Press. Milo Peck & Co., New Haven, Ct.

For the best 15-in. swing Screw Cutting Engine Lathe, for the least money, address Star Tool Company, Providence, R. I.

Railroad Bonds.—Whether you wish to buy or sell, write to Charles W. Hassler, 7 Wall street, New York.

Experimental Machinery and Models, all sizes of Turned Shafting, Paper Box, Paper Collar, and Bosom Plaiting Machines, Self-operating Spinning Jack Attachments. W. H. Tolhurst, Machine Shop, Troy, N. Y.

Best Scales.—Fair Prices. Jones, Binghamton, N. Y.

Steam Watch Case Manufactory, J. C. Dueber, Cincinnati, Ohio. Every style of case on hand, and made to special order.

L. & J. W. Feuchtwanger, Chemists, 55 Cedar st., New York, manufacturers of Silicates of Soda and Potash, and Soluble Glass.

For Hydraulic Jacks, Punches, or Presses, write for circular to E. Lyon, 470 Grand st., New York.

A. G. Bissell & Co. manufacture packing boxes in shooks at East Saginaw, Mich.

For mining, wrecking, pumping, drainage, and irrigating machinery, see advertisement of Andrews' Patents in another column.

The new Stem Winding (and Stem Setting) Movements of E. Howard & Co., Boston, are acknowledged to be, in all respects, the most desirable Stem Winding Watch yet offered, either of European or American manufacture. Office, 15 Maiden Lane, New York.

Belting that is Belting.—Always send for the Best Philadelphia Oak-Tanned, to C. W. Army, Manufacturer, 331 Cherry st., Phila.

Send your address to Howard & Co., No. 835 Broadway, New York, and by return mail you will receive their Descriptive Price List of Waltham Watches. All prices reduced since February 1st.

Ashcroft's Low Water Detector, \$15; thousands in use; can be applied for less than \$1. Names of corporations having thirty in use can be given. Send or circular. E. H. Ashcroft, Boston, Mass.

To Cotton Pressers, Storage Men, and Freighters.—35-horse Engine and Boiler, with two Hydraulic Cotton Presses, capable of pressing 35 bales an hour. Machinery first class. Price extremely low. Wm. D. Andrews & Bro., 414 Water st., New York.

Tin Presses & Hardware Drills, Ferracute Works, Bridgton, N. J.

Brown's Coal Yard Quarry & Contractors' Apparatus for hoisting and conveying material by iron cable. W. D. Andrews & Bro., 414 Water st., N. Y.

Twelve-horse Engine and Boiler, Paint Grinding Machinery Feed Pumps, two Mirtin Boiler suitable for Fish Factory. Wm. D. Andrews & Bro., 414 Water st., New York.

Improved Foot Lathes, Hand Planers, etc. Many a reader of this paper has one of them. Selling in all parts of the country, Canada, Europe, etc. Catalogue free. N. H. Baldwin, Laconia, N. H.

Presses, Dies, and Tinner's Tools. Conor & Mays, late Mays & Bliss, 4 to 8 Water st., opposite Fulton Ferry, Brooklyn, N. Y.

For Fruit-Can Tools, Presses, Dies for all Metals, apply to Bliss & Williams, successor to May & Bliss, 118, 123, and 122 Plymouth st., Brooklyn, N. Y. Send for catalogue.

Cold Rolled-Shafting, piston rods, pump rods, Collins pat. double compression couplings, manufactured by Jones & Laughlins, Pittsburgh, Pa.

For Solid Wrought-iron Beams, etc., see advertisement. Address Union Iron Mills, Pittsburgh, Pa., for lithograph, etc.

Carpenters wanted—\$10 per day—to sell the Burglar Proof Sash Lock. Address G. S. Lacey, 27 Park Row, New York.

Glynn's Anti-Incrustator for Steam Boilers—The only reliable preventive. No foaming, and does not attack metals of boilers. Price 25 cents per lb. C. D. Fredricks, 587 Broadway, New York.

The Merriman Bolt Cutter—the best made. Send for circulars. H. B. Brown & Co., 25 Whitney ave., New Haven, Conn.

Taft's Portable Hot Air, Vapor and Shower Bathing Apparatus. Address Portable Bath Co., Sag Harbor, N. Y. (Send for Circular.)

Winans' Boiler Powder.—15 years' practical use proves this a cheap, efficient, safe prevention of Incrustations. 11 Wall st., New York.

To Ascertain where there will be a demand for new machinery or manufacturers' supplies read Boston Commercial Bulletin's Manufacturing News of the United States. Terms \$4 00 a year.

Inventions Patented in England by Americans.

May 16 to May 23, 1871, inclusive.

[Compiled from the Commissioners of Patents' Journal.]

BATTERY GUN.—A. H. Townsend, Georgetown, Col.
CAB COWLING.—J. Crane, Cranford, N. J.
CARPET LININGS, ETC.—J. R. Harrington, Brooklyn, N. Y.
COVERING LEATHER.—G. W. McDaniel, Georgetown, D. C.
DECOLORIZING SIRUPS.—J. Brough, W. H. Gilson, New York city.
DRESSING LEATHER.—H. C. Havemeyer, New York city.
ELECTRO-MAGNETIC ENGINES.—H. Paine, Newark, N. J., and M. S. Frost, New York city.
FERTILIZER.—C. Moritt, Baltimore, Md.
FIREARM.—H. Berdan, New York city.
GENERATING GAS.—C. D. Elmer, Southold, N. Y.
HOLLOW WARE.—N. Thompson, Brooklyn, N. Y.
HULLS OF VESSELS.—E. M. Strange, New York city.
INSULATING WIRE.—A. G. Day, Seymour, Conn.
LAMP.—J. W. Bartlett, New York city.
NITRO-GLYCERIN.—H. D. Berrett, Washington, D. C.
PADDLE WHEEL.—E. Pratt, New York city.
PAPER PULP.—V. E. Keegan, Boston, Mass.
PICKING WASTE.—G. Palmer, Rochester, N. Y.
PREVENTING INCRUSTATION.—J. Perkins, Baltimore, Md.
PRINTING TELEGRAPH.—G. B. Field, E. W. Andrews, New York city.
RAILWAY CAR WHEELS.—R. M. Allen, L. W. Kimball, Pittsford, Vt., and W. H. Mallory, E. L. Butterfield, New York city.

REAPING AND MOWING MACHINE.—W. A. Wood, Hoosick Falls, N. Y.
REFINING SUGAR.—R. W. Bender, Boston, Mass.
STEAM ENGINE.—G. H. Babcock, New York city.
STEAM ENGINE.—J. Brandt, R. Lehr, Baltimore, Md., and C. G. Fisher, T. C. Brecht, Washington, D. C.
TRANSPORTING LIQUIDS.—W. G. Warden, Philadelphia, Pa.

Foreign Patents.

The population of Great Britain, is 31,000,000; of France, 37,000,000 Belgium, 5,000,000; Austria, 36,000,000; Prussia, 40,000,000; and Russia, 70,000,000. Patents may be secured by American citizens in all of these countries. Now is the time, while business is dull at home, to take advantage of these immense foreign fields. Mechanical improvements of all kinds are always in demand in Europe. There will never be a better time than the present to take patents abroad. We have reliable business connections with the principal capitals of Europe. A large share of all the patents secured in foreign countries by Americans are obtained through our Agency. Address MUNN & Co., 37 Park Row, New York. Circulars, with full information on foreign patents, furnished free.

Answers to Correspondents.

SPECIAL NOTE.—This column is designed for the general interest and instruction of our readers, not for gratuitous replies to questions of a purely business or personal nature. We will publish such inquiries, however, when paid for as advertisements at 100 a line, under the head of "Business and Personal."

ALL reference to back numbers must be by volume and page.

LIQUID GLUES.—S. F. (query No. 8, May 27th) can make an excellent liquid glue by dissolving his glue in nitric ether. The ether will only dissolve a certain amount of the glue; consequently he need have no fears about making the solution too thick. The glue thus made is about the consistency of molasses, and is doubly as tenacious as that made with hot water. If a few bits of india-rubber, cut into scraps the size of a buck shot, be added, and the solution allowed to stand a few days, being stirred frequently, it will be all the better; and will resist dampness twice as well as glue made with water. The best liquid glue that I have any knowledge of is made as follows: Take of gum shellac three parts, caoutchouc (india-rubber) one part, by weight. Dissolve the caoutchouc and shellac, in separate vessels, in ether free from alcohol, applying a gentle heat. When thoroughly dissolved, mix the two solutions, and keep in a bottle tightly stoppered. This glue is called marine glue, and resists the action of water both hot and cold, and most of the acids and alkalis. Pieces of wood, leather or other substances, joined together by it, will part at any other point than at the joint thus made. If the glue be thinned by the admixture of ether, and applied as a varnish to leather, along the seams where it is sewed together, it renders the joint or seam water tight, and almost impossible to separate. The natives of the Maldives and Laccadive islands, and the Malays, of the coasts of Borneo and Sumatra, have a glue which they make as follows: They take the scales of a kind of fish, called by English and American sailors, salt water trout (identical with the salt water trout of the Gulf of Mexico), and after thoroughly washing them, place them in a glazed earthen jar, which they stopper tightly, and weight so that it will remain under water. They put this jar in a pot of water, and boil it until the scales are reduced to a semi-transparent viscous mass. This requires several hours boiling. Care should be taken that no water or extraneous matter, fluid or solid, be allowed to get into the jar with the scales. The glue thus made is the most tenacious, and at the same time, the most transparent and beautiful that I have ever seen. I have made it in this country from the scales of perch, trout, and bass. I am informed that a similar glue is made from the bladders of various fishes.—F. L. J., of Ark.

LEATHER FOR VISE JAWS.—C. A. W. wishes to know the best material for sticking leather to vise jaws. I have used, for years, pulverized rosin on the flesh side of clean dry leather, with entire satisfaction.—E. J. O., of N. Y.

NOISY GEARS.—If S. R. will make one of his large gears with wooden teeth, keeping the wooden teeth well lubricated with tallow, he will find that in place of a noisy gear, he has something that will run smoothly. I have seen large bevel gears, running very quietly, made in this way.—A. G., of Mass.

MOTHS.—If E. A. T. will use gum camphor, red cedar shavings, or spirits of turpentine, around the edges of his room under his carpet, he will find it a preventive against moths.—A. G., of Mass.

BOILS.—W. E. asks for a preventive for boils. He will find it in the beech drop, (*Epiphagus Virgiana*) a curious little plant found only under beech trees, as it is a parasite of the root of the beech. It is about one foot high, leafless, with a root covered with short brittle fibers, and appears only a short time before frost, which destroys its properties. Make a tea of the whole plant, and drink warm or cold instead of other drinks. If used liberally, it will remove boils, even after they have become painful, and is excellent whenever the blood is impure.—H. S., of Ohio.

BOILS.—If when W. E. first sees the little hard red bunch appear, he will take a sharp penknife, and cut into it, he will not have further trouble; at the same time keeping his bowels open (not with the knife) but by some kind of aperient. I like the saline effervescent aperients the best. I am not a physician, but I speak from experience.—F. C., of Mass.

MORE BOILS.—Apply a little dampened saleratus, about the size of a kernel of wheat, when the boil first shows itself; let it remain an hour or thereabouts.—J. G. C. P., of N. Y.

NOISY GEARS.—Let S. R. fill his gears tightly with some soft wood between arms, hub, and rim, and their noise will not trouble him.—G. D., of Va.

NOISY GEARS.—I would say to S. R. that it is a difficult matter for any one to tell the cause of the noisy gears, unless he is provided with diagrams of at least three teeth of each wheel. To test the gears properly, it is as well to know the number of teeth on each wheel, or their respective diameters and the depth they are geared at.—J. W., of Pa.

PLUMB RULE.—To your "Maine Carpenter" it is only necessary to say that the question was "how to make a plumb rule," not whether there was anything better. At the risk of being called ancient, I will say that at times I prefer a plumb rule to a spirit plumb level, particularly when great exactness is required. The best way to prove a plumb rule is to see that the edge is straight, and the center line parallel to it; and it will then prove itself most effectually. "That's practical."—J. H., of N. J.

DRILLING GLASS.—I have used a tin tube for drilling glass, arming it with spirits of turpentine and emery, and manipulating as your correspondents describe for brass tubes. The tin tubes work excellently in this way.—L. H. B., of N. H.

N. E. Y., of Mass.—While it is necessary for canal boats running in the same direction to pass each other occasionally, this is comparatively not of frequent occurrence. The loading or unloading of boats is not confined to either bank of the canal. Your other query has been already answered.

E. G. H., of Texas.—A life boat with air compartments would, by exhausting the air from the compartments, be rendered more buoyant, according to the weight of the air removed.

F. C., of Mass.—Your plan for propelling canal boats is essentially that of the Belgian system, prohibited in the prize competition.