

A New Feature in Puddling Furnaces.

The *London Mining Journal* describes a recent English invention for economizing fuel in puddling, heating, and steam generating furnaces, which consists in making openings in the smoke stack, and in the sides of the furnace near the fireplace, and connecting them by pipes or tubes, furnished with valves or dampers for regulating the passage of gas.

By the combustion in the furnace a powerful ascending current of the products of combustion and gaseous matters from the furnace is produced; this gaseous current, when the damper at the top of the stack is raised to its full extent, passes into the atmosphere, but when the damper is lowered so far as to obstruct the ascending current, part of it descends the tubes described, and, re-entering the furnace, any unburned gaseous fuel contained in it is burned. Considerable economy in fuel is claimed for this method, and complete control over the working of the furnace.

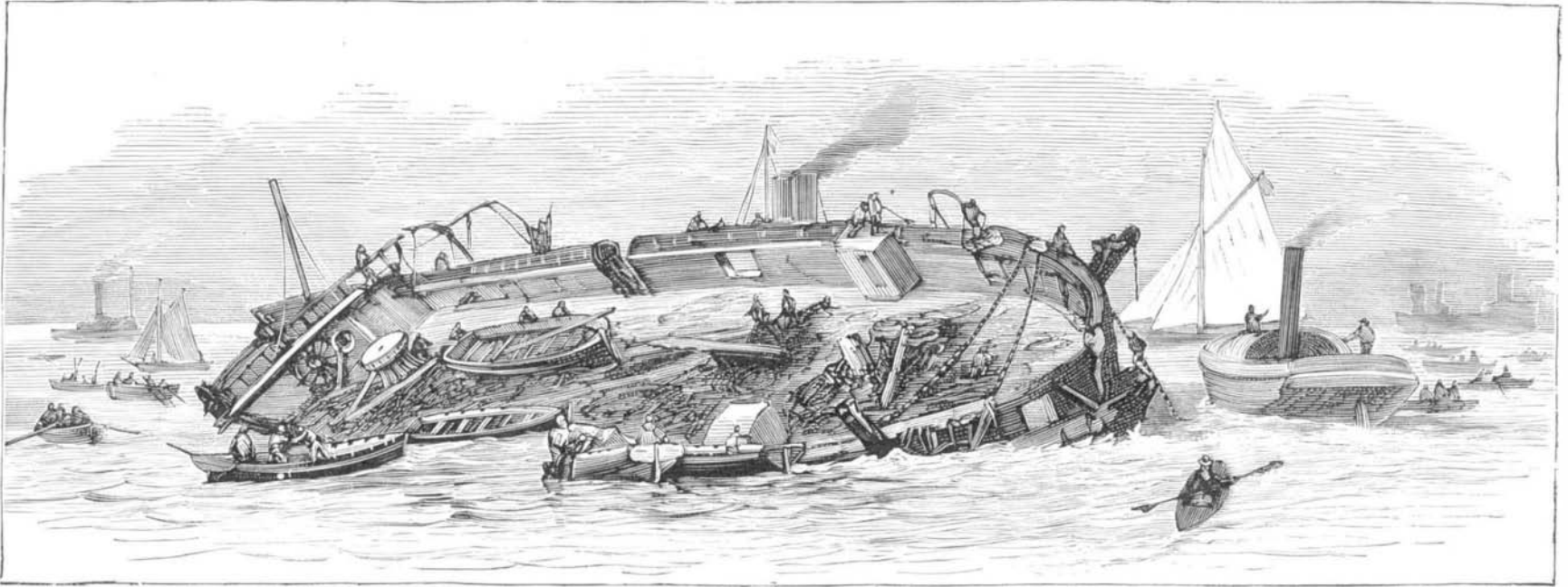
The return to the furnace of the products of imperfect combustion, which are produced in large quantities in the process of puddling iron, should, we think, effect good economies; but we question if these products could be induced to return to the furnace simply by the closing or partial closing of the damper on the stack, for the more the damper is closed the less powerful becomes the furnace draught, upon which the return flow of the gases depends.

This precise method was patented here in 1870, but with the added improvement of an exhaust and force fan for withdrawing the gases from the stack and returning them through the fireplace. Probably this has been laid aside to await the returning prosperity of the iron industry.

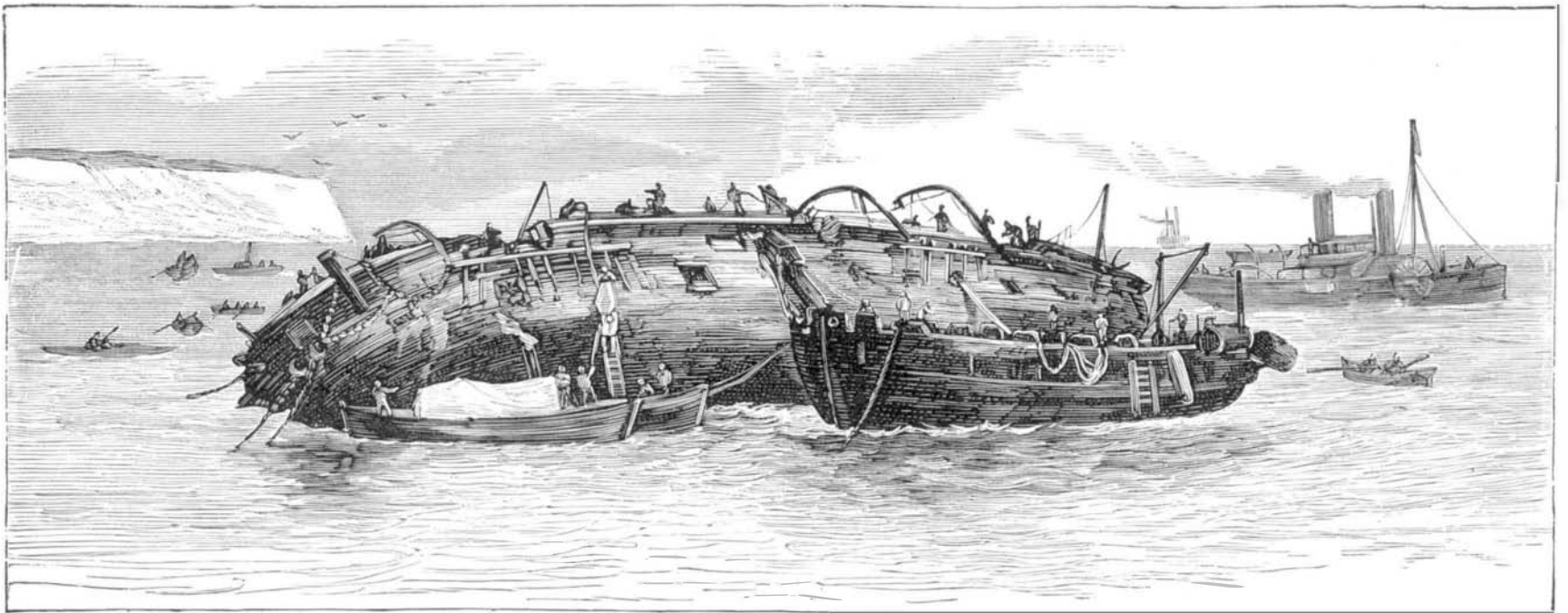
THE RAISING OF THE EURYDICE.

After four months of arduous labor, the wreck of H.M.S. Eurydice has been successfully beached at Sandown Bay. The positions of the vessels employed in the lifting process

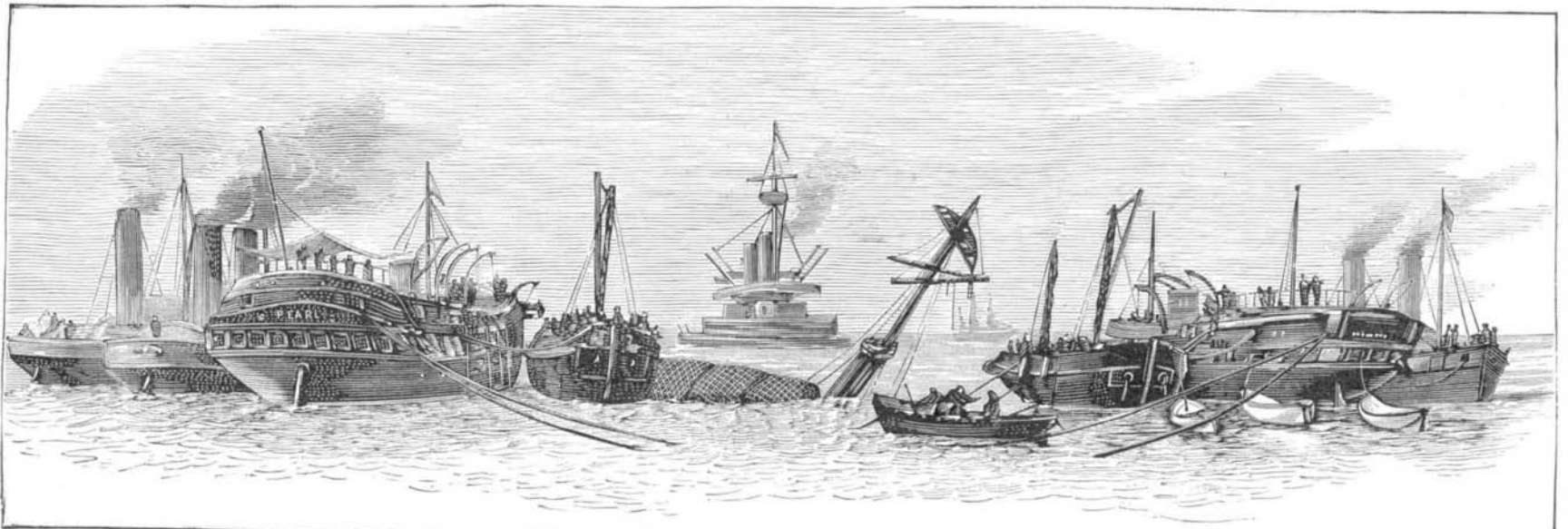
are shown in the engravings and in the accompanying diagrams, a reference to which will enable our readers to understand the somewhat complicated arrangements which were necessary for the accomplishment of the work, which has all along been of the most difficult character. One great point must be borne in mind, that everything depended upon the divers, and that they could only work at slack tides and in very fine weather, the under currents on the Isle of Wight coast being exceptionally strong. The ship lay at first in seven fathoms and a half of water, and to this must be added eight or nine feet of mud in which the wreck was embedded, making in all a depth of about fifty-six feet from the surface. Wire ropes were from time to time attached to the inner sides of the ports by means of "toggles," pieces of timber six feet long by twelve in diameter, which acted as buttons; the other ends of the ropes were made fast to the four floating hulls placed over and across the Eurydice; and, when everything was ready, and the tide at



RAISING THE EURYDICE.—THE WRECK BEACHED IN SANDOWN BAY—DIVERS CLOSING THE LEE PORTS.



PORT SIDE OF THE EURYDICE AFTER THE LAST LIFT—REMOVING THE BODIES.



Pearl. Swan. Popoff Bag. Thunderer. Wave. Rinaldo.

METHOD OF LIFTING THE WRECK OUT OF DEEP WATER.

its lowest ebb, the process of pinning down was commenced—that is, the ropes were hauled taut, and made fast to the lifting vessels, so that, as the tide gradually rose to its highest point, the whole mass of lighters with the sunken vessel lifted as well. Then it was that the steam tugs took up their positions, and towed the ill-fated craft toward shallower water, till she was left on a bank under the Culver Cliff, with one side and her upper deck above the water at low tide. Many times all would be ready for lifting, when the sea roughened and everything had to be abandoned, the lighters returning to Portsmouth.

The deck of the vessel, when beached, presented the utmost confusion, the whole surface being almost covered with ropes: the hull, with the exception of the bows, carried away by the Thunderer, and a portion of the quarter, torn by the iron ropes, was but little damaged; and two boats, in an undamaged state, were found almost in their proper places. More than a dozen bodies were found, but many a score remain below. The last lift was effected by means of steel hawsers passed under the wreck.

Cast Steel without Crucibles.

A new method of producing cast steel, which dispenses with fusion and conversion in crucibles or melting pots, has recently been brought to public notice. On account of the superior cheapness and quality of the metal, the articles are preferably manufactured from Siemens-Martin or Bessemer steel, rolled or forged into the required form, then, finished as to shape, they are placed in iron boxes, and recarbonized by the ordinary cementation process.

It is probable that the repeated heatings and workings of the metal during the process of shaping the article so thoroughly expel the occluded gases, the retention of which in the iron invariably creates blisters in all other cemented steel, that a smooth and uniform surface may, in many instances, result; but though this method may be exceedingly economical for the production of a certain class of small articles, it may reasonably be doubted if the character of the grain of the steel can be under perfect control, and whether the process would apply to manufactured articles of any considerable size, or to those of unequal thickness of parts.

Experiments in the manner of packing, however, may determine that some of these objections may be overcome.

New Inventions.

An improved Machine for Stretching, Dipping, and Drying Fabrics has been patented by Mr. John D. McLean, of New York city. The object of this invention is to furnish an improved machine for straightening, stretching, and spreading fabrics in handling and finishing them.

Mr. Charles W. Blake, of Lyndon, Kan., has patented an improved Machine for Attaching Paper Fasteners, particularly the well known McGill fasteners. This device has a spring portion, carrying at the lower or base part a guard for the paper, and a bed plate with rear recess for the slitting knife, and front groove or seat for the fastener, and at its top part the slitting knife, hammer plate, and spreader.

Mr. Daniel L. Holden, of Philadelphia, Pa., has patented an Apparatus for Curing Meat by a circulating current of refrigerated pickle. It consists in the improved arrangement of pipes and tanks for securing an economy of time and labor in the manipulation of the meat and pickle.

An improved Bottle Corking Machine has been patented by Mr. J. C. M. Braun, of Baraboo, Wis. This invention relates to an improvement in that class of apparatus for inserting corks into bottles by which the corks are compressed in a funnel or tapered tube, and forced through it into the necks of the bottles by means of a plunger, which is operated by suitable devices.

An improved Vehicle Wheel Hub has been patented by Mr. George Bartlett, of Gananoque, Ontario, Canada. The object of this invention is to furnish a strong and easily attachable hub for the wheels of vehicles, the application of which will insure a true wheel.

Mr. Henry L. Mennerich, of Sioux City, Iowa, has patented an improved Horse Collar, having loops for attachment of the hames, whereby the usual hame rim on the collar is dispensed with and the hames may be adjusted. The collar

is formed in two parts, buckled together at the top, and when on the horse it is held together at the bottom and in place by the hame strap.

An improved Tobacco Hoister has been patented by Mr. John M. Wadlington, of Upton Station, Ky. The object of this invention is to furnish an improved device for hoisting green leaf tobacco into place in the drying house.

Messrs. Julius Sues and Sylvester W. Raplee, of Louisville, Ky., have patented an improved Children's Carriage. This invention covers improvements in children's carriages by which the back may be changed in a very simple manner from an upright to a reclining position. The carriage is thus readily converted into a bed, giving in either position a

complete and comfortable support to the child's body, with the advantage that all the parts remain within the body of the carriage.

invention is to furnish for ladies' and gentlemen's garments an improved adjustable shoulder pad, which is to be used in place of padding at the shoulders, to impart a better fit and a firm, square build at the shoulders.

Mr. William G. Fink, of Minnesota City, Minn., has devised an improved Wagon Brake, which is so arranged that the driver can apply the brake with his foot, leaving his hands free to guide and control his team, and so that the brake lever will be entirely out of the way in getting into and out of the wagon and in loading and unloading it.

An improved Vapor Bath has been patented by Mr. Geo. W. Carpenter, of South Bend, Ind. This invention relates to an improvement in electro-thermal medicated baths, designed to apply steam, electricity, and medicated vapors, either separately or conjointly, for the cure of diseases.

Mr. D. L. Holden, of Philadelphia, Pa., has patented an improvement upon that feature of an Ice Machine known as the Congealer, or apparatus in which the congelation of the water is effected. It relates more particularly to that form of congealer in which receptacles containing a cold non-congealable liquid are immersed in a tank of pure water, so as to freeze upon the outside of said receptacles blocks of ice without incorporating the impurities of water.

Mr. John Barth, Jr., of Evansville, Ill., has patented an improved Insecticide, composed of cassia, carbonate of ammonia, camphor, and bicarbonate of soda.

Mr. Samuel B. Shultz, of Princeton, Ill., has patented an improved Washing Machine, which will wash clothes quickly and thoroughly, and will enable any parts of the

clothes which are soiled more than others to be especially rubbed. It will allow the dirty water to readily flow away from the clothes, and will adjust itself to any unevenness in the thickness of the clothes being operated upon.

Mr. Enoch Prouty, of Boscobel, Wis., is the inventor of an improved Cylinder Printing Machine, which is adapted as well for newspaper work as for job printing, admitting the printing of large and small sheets with equal facility, and being therefore specially adapted for smaller offices in which printing of great variety has to be done.

Messrs. David Wickersham and Thomas B. Brown, of Fairfield (New Waterford P. O.), Ohio, have patented an improved Machine for manufacturing Basket Splints for making quart berry-baskets and other small baskets. It is simple and convenient, and will form the splints rapidly.

Mr. George S. Snell, of St. Louis, Mo., has patented a simple and reliable Door and Safe Lock, in which no springs are used, the bolt, tumblers, and necessary catches being actuated by the force of their own gravity.

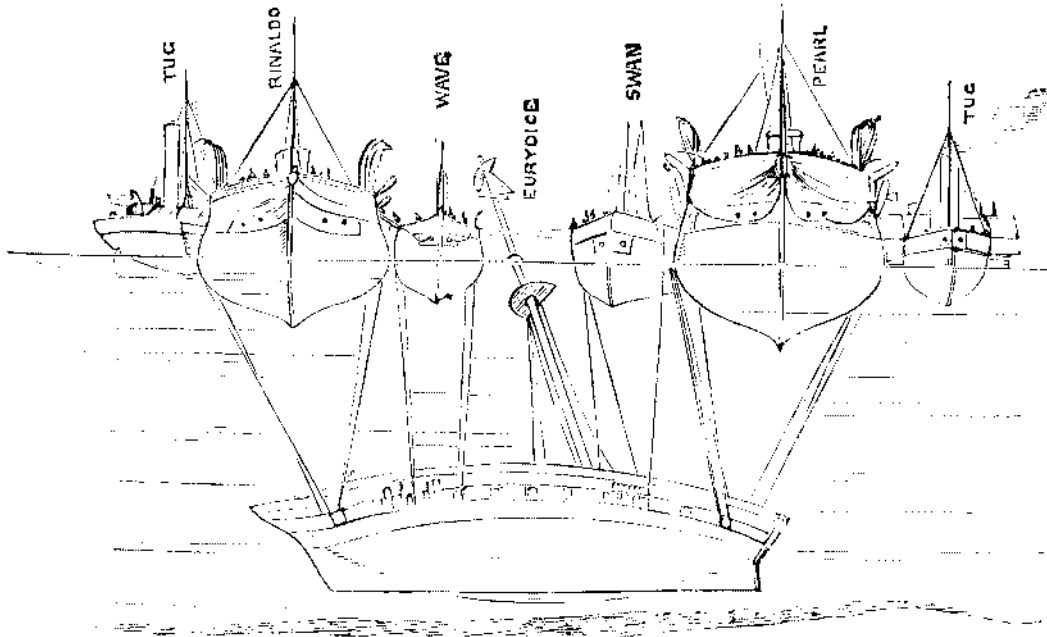
Mr. Robert R. Moore, of Lewisville, Ark., has patented an improved Vehicle Axle Lubricator, which consists in certain novel details of construction, arrangement, and combination of a thimble skein, an oil reservoir, and devices employed in connection therewith, whereby provision is made for attaching and removing them, for holding them securely when in place, and for insuring the proper working of the parts.

Mr. Clinton Stevenson, of Southwest Oswego, N. Y., has patented an improved Hay Rack, which may be applied to a wagon for use in loading hay, and when not desired for use may be readily taken apart for laying away in a compact form. It consists in connecting the parts of a hay rack together by dovetail joints and mortises, and in such a manner that the removal of the wedges

which bind the main frame will permit the parts of the rack to be separated.

Mr. Elie Martin, of Paris, France, has patented an ingenious Automatic Swimming Figure or Toy which will go through the motions of swimming with facility.

Messrs. Joseph M. Searle and Gideon G. Palmer, of Stanhope, N. J., have patented an improved Rotary Exhaust Cylinder for Steam Engines, in which a positive exhaust is obtained at any or all points of the cut-off, as the exhaust ports remain open during the entire return stroke of the piston. After the steam is exhausted the exhaust ports stay open until the piston makes the entire length of its stroke, so as to get the full benefit of the expansion, and do away entirely with back pressure.



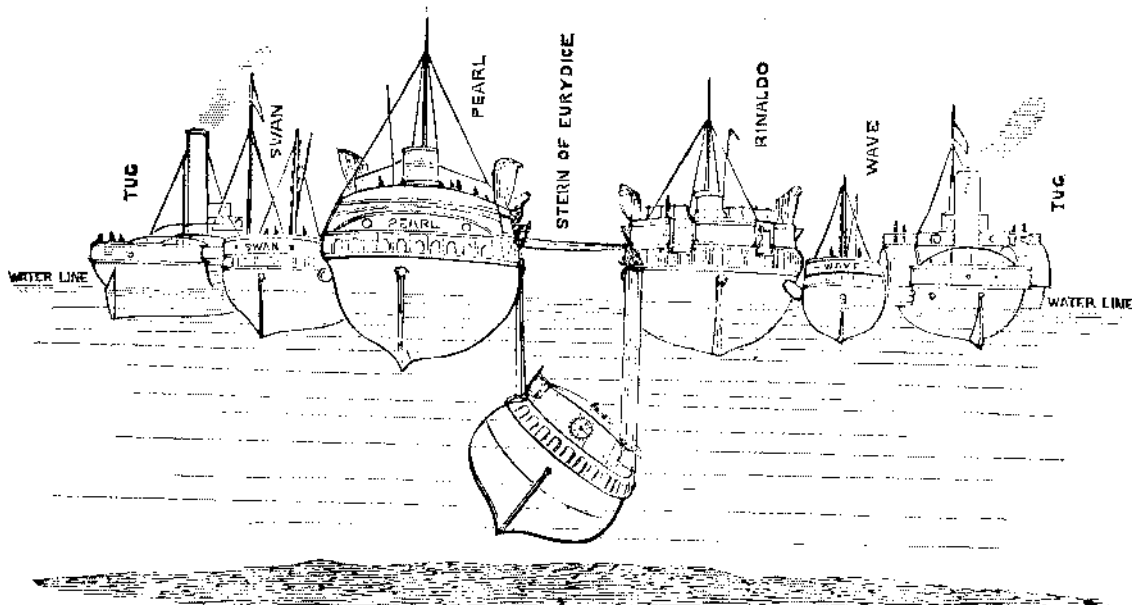
THE LIFT BEFORE THE MAST WAS OUT—LIFTING VESSELS ATWART SHIPS.

complete and comfortable support to the child's body, with the advantage that all the parts remain within the body of the carriage.

Mr. John A. Brown, of Tyler, Texas, has patented an improved Copying Roller, for the purpose of moistening the leaves of letter books to take impressions, so as to dispense with the hair brush and other devices used at present. It admits of taking a large number of impressions without being dipped into water as with a brush.

An improved Life Boat has been patented by Mr. Frank Dunn, of Gloucester, Mass. This invention has for its object, first, to provide for sea-going vessels a life boat which will be light, strong, capacious, and safe, and which may be propelled by oars or a sail; and, second, to provide means for safely and expeditiously detaching such boat from the ship, which detaching apparatus will permit the boat to be compactly stowed on the vessel in such a position that the passengers may enter the boat without danger of getting overboard.

An improved Metallurgic Gas Furnace has been patented



STERN VIEW OF LIFTING VESSELS AND WRECK—THE MAST TAKEN OUT TO AVOID CONTACT WITH SHIPS.

by Mr. Carl Gröbe, of Berlin, Prussia. This invention is an improvement in that class of gas generators for furnaces, or in iron smelting or puddling gas furnaces, in which the gases evolved from coking coal are caused to mingle with the gases of combustion in the fireplace, and they are together forced into and through the iron smelting or puddling chamber.

Mr. Sylvester W. Sheldon, of New York city, has patented a Removable Cover for Barrels, and it consists in a cover made in three hinged sections, one of which is provided with a clamping device for securing it to the barrel, and the other two are arranged to fold together, and also to fold upon the fixed portion.

An improved Shoulder Pad has been patented by Mr. Gottlob J. Scheu, of Washington, Pa. The object of this