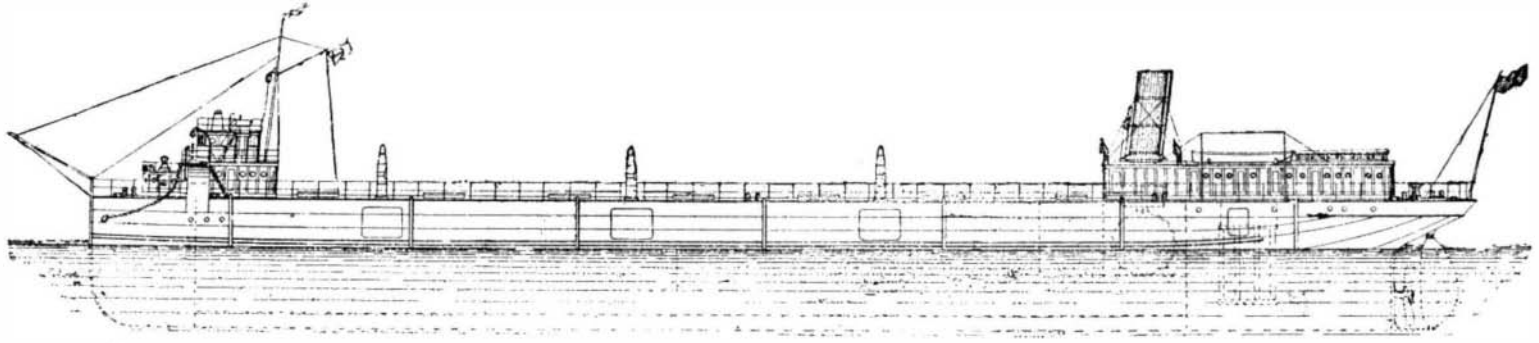


NEW LAKE STEAMERS.

A view of the style of boat for which the Anchor line has let contracts with the Union Dry Dock Company, of Buffalo, Globe Iron Works Company, of Cleveland, and Detroit Dry Dock Company, of Detroit, is here presented. According to a late change in arrangements above deck, the forward house will be moved aft about 20 or 30 feet, leaving the space forward for anchors, capstan, etc.

A new feature in the boats, which are to be duplicates in all respects, with the exception of probably a slight difference in the proportion of engines, is the absence of sheer in their construction. They will be built without any sheer, that is, they will be the same depth at ends as in the middle, and the gunwale will

latter fly having a double crank, and the arrangement being such that the incline or grade of the chute may be readily changed. The two vertically aligning flies are placed in such relation to the swinging branch chute that, if both are opened, the coal will drop directly through the two fly openings. At a point above these flies is hinged another inclined chute, adjustably supported by a cable from a winding drum, and at the upper end of this chute is a fly operated by a handle rod, leading to the top, there being just over this fly a similar fly in the floor of the angular chute above, so that by opening both of these flies, and closing that of the first swinging branch-chute, the coal may be delivered into another car, and, at the same time, be properly screened. Still another fly is also provided



NEW LAKE STEAMERS.

be a level line. In this there is said to be a saving of \$12,000 to \$15,000 on boats of this class. The boats are to be 275 feet keel, 40 feet beam, and 26 feet depth from base line to top of spar deck beams at side. The boats to be built by the Globe Company, of Cleveland, and the Detroit Dry Dock Company will be engined by these companies, but H. G. Trout & Co., of Buffalo, will build the engines for the steamer to be built by the Union Dry Dock Company, and the Lake Erie Boiler Works, also of Buffalo, will build the boilers. The engines to be built by Trout will be 20, 33, and 54 inches by 45 inches stroke. The two boilers will be 12 feet long and 14 feet diameter, to be allowed 160 pounds of steam. The boats will have steam capstans, windlasses, steers, and line shafting for hoisting purposes, together with electric lighting plants and all modern arrangements for rapid work in port. They are expected to carry 2,700 tons of freight on 15½ feet of water, and their cost is given out at \$178,000 each.—*Marine Review*.

A TIPPLE FOR SEPARATING AND DELIVERING COAL.

The illustration represents an improved tippie for conveying nut or other fine coal to any desired car. It has been patented by Mr. Thomas B. Murphey, of West Elizabeth, Pa. The top chute, made in sections, is supported from a scale on top of the frame, and connected with a winding drum by a chain, the upper portion of the chute having screen bars. The chute below this has finer screen bars, and leading rearwardly from its upper portion is an angular chute, supported by a hanger, beneath which is another chute, with an extended end section, while opening from the latter chute is an adjustably supported branch chute. Opening from the upper portion of the angular chute is a swinging branch chute, at the upper end of which is a pivoted fly, controlled by a crank, from which a

at the upper end of the chute, below the angular chute, for diverting the passage of the coal as may be expedient, the improvement providing for the convenient screening and sorting of the ordinary run of mine coal, and its delivery into different cars as desired.

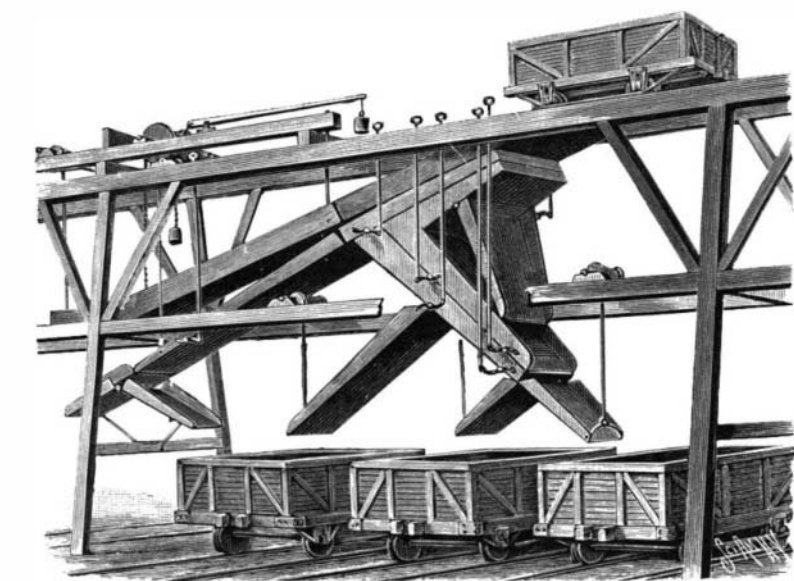
Scientific Progress.

Intellect is the great factor in commercial success, whether of individuals or nations. Take the case of the skilled bricklayer and the hod carrier. The first is using brains on his work; the second is using brute force. When he goes up the ladder with his hod of bricks he has also to carry his own weight, thus wastefully expending force. Some one notices this, and substitutes for the brute force of the human that of the horse; then the horse is displaced by the mechanical force of the steam engine, which can do the work of 15 men or of 2 horses in the same time. Coal converted into heat is doing all the work. The coal mined each year in the United States represents in actual work more than the sum of the force of the total population of the globe, assuming all to be strong men. Thus the substitution of a natural force for human power vastly increases the productive capacity of the human race.

Guided by intellect, taught by science, the natural forces can do in a few hours what the unaided labor of many men could not do in a lifetime. It was not prophecy, but a flash of genius, that drew from Stephenson the assertion that it is the sun that drives the locomotive engine by being liberated from the coal in which it has been stored for ages. But man can neither create forces nor endow anything with properties. All that he can do is to convert and combine them into utilities. The man that does this with knowledge is spared the dismal failures of ignorance, but he that tries to use powers without understanding them is inevitably punished for his rash presumption. It is this presumption that causes the mortality and disease that follow in the wake of civilization. Natural law, like the civil, never admits ignorance as an excuse.

In this century three scientists have revolutionized commerce—Oersted, of Copenhagen, and Faraday and Wheatstone, of London. It was of Faraday that Huxley said, in effect, that any nation would do well to spend \$500,000 in discovering such a man, and an equal amount in educating and setting him to work. Bessemer, studying away at steel, has revolutionized ship building. Dr. Joule's studies in the mechanical equivalent of heat produced the compound engine, by which the necessary amount of coal for carrying a given cargo has been reduced more than 40 times; that is, a steamship that in 1850 carried a cargo at an expenditure of 14,500 pounds of coal to a ton now does

the same work by burning about 350 pounds. Joule's studies in heat have made it possible for a cube of coal that will pass through a ring the size of a twenty-five cent piece to drive one ton of cargo for two miles in one of the most improved steamships. In 1880 the rate of grain from New York to Liverpool was 9¼ pence; in 1886 it was 1 penny a bushel. The reduction was primarily due to the scientist.—*Aluminum Age*.



MURPHEY'S COAL TIPPLE.

handle rod extends to the top of the frame. This branch chute delivers into the lower portion of the angular chute, and facilitates the rapid handling of the fine coal or slack. Near the lower end of the main section of the angular chute is a fly, having a crank connection with a rod leading to the top, and beneath this fly is another in the chute below, also having a crank connection with a rod leading to the top, the

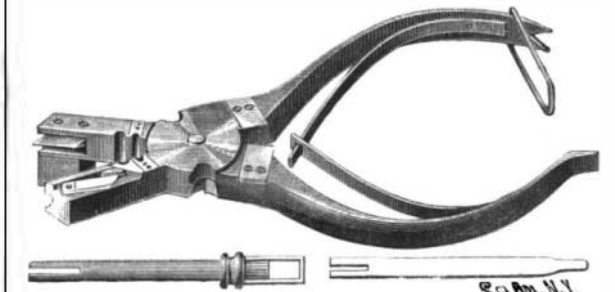
A Novel Advertising Scheme.

In racking one's brain for some device to catch the shy and wary customer, the following may serve as a suggestion. It is the story told by the *Sentinel*, of Indianapolis, of a druggist of that city. He found a stray nickel on the floor of his store one morning, and resolved to post this notice on the window of his store: "A sum of money found on Tuesday last in this establishment. The owner will receive same within upon describing the money." The scheme worked like a charm. Hundreds of citizens came in daily for over a week while the notice was left on the window, describing their losses and bewailing their misfortune. Invariably every applicant for the lost money bought a cigar. Some were satisfied with five cent straight whiffs,

but the great majority, anxious to impress the drug man favorably toward their claims, invested in two for a quarter. So great was the rush that the fortunate druggist had to order a fresh consignment of choice brands. None of the applicants ever applied for the nickel.

A TOOL FOR MINERS AND BLASTERS.

The combination tool shown below has been patented by Mr. Richard A. McVitty, of Portland, Oregon, and is designed to embrace all the implements necessary for use in the treatment of fuses, or for the attachment of caps to fuses, or for inserting the capped fuse in a cartridge. The small view shows a fuse provided with a cap, and one end of a fuse compressed to enter a cap. The handles of the tool are normally held apart by



McVITTY'S MINERS' AND BLASTERS' TOOL.

interlocked springs, one handle member having a screw-driver point while the other is formed as a tack-puller, there being pivoted to the latter member a link adapted to be passed over the end of the other member. Near the pivot of the tool, in the handle section, are recesses in which are removably secured cutters, to be employed for trimming the ends of fuses, and at opposite sides of the pivotal connection in the outer edges are semicircular recesses, aligning when the handle sections are held apart, but having cutting edges for operating upon a fuse or for cutting wire when the handle sections are brought toward each other. In the upper face of the head section of one member is a horizontal recess, in which is pivoted a knife blade, held in position by a spring after the manner of an ordinary pocket knife. In the inner faces of both head sections are longitudinal semicircular grooves, in one of which a cutter is removably secured, the grooves and the knife being adapted to cut the end of a fuse, as shown in the small view, to facilitate lighting the fuse. Nearer the pivotal point, in the inner faces of the head sections of both members, are two transverse recesses, one of which is adapted for use in crimping ribs upon a cap, to fasten it on the fuse, while the other is for reducing, by compression, the end of a fuse to be inserted in a cap. Each head section also has a downwardly extending lug, capable of use as a hammer.

Chromic Acid an Antidote to Snake Poison.

Prof. Kaufman, of the Veterinary College at Atford, has discovered that chromic acid, used hypodermatically, will destroy the poison of snakes and other venomous reptiles.

The treatment consists in the cautious employment of a one per cent solution by the ordinary hypodermatic syringe; and, at the same time, where the bite happens to be at one of the extremities, the limb should be ligatured, in order that the medicament may have an opportunity of being diffused throughout the tissues.