Heavy Keel for a Small Yacht.

A thirty-three ton lead keel was cast, March 30, by Mr. Henry Pipegras, of Brooklyn, for a cutter which he is building for Mr. Archibald Rogers, of the Seawanhaka Yacht Club. The heaviest keel previously cast in this country was for the cutter Oriva, and weighed twelve tons. The heaviest cast in England is said to be that of the sloop Valkyr, weighing twenty-four tons.

The casting of the keel was performed in the following manner: The oak keel was turned upside down, and a wooden mould constructed upon it of the exact size and shape of the proposed keel of lead. Then two furnaces of brick were constructed alongside of it, which sustained the pots in which the lead was melted, these pots being sufficiently elevated to allow the lead to flow from their bottoms into the mould. The two pots were needed in this instance, because of a doubt whether the melted lead would flow freely for the full length of the mould, about thirty-five feet. It is necessary that the melted lead shall be only raised to a temperature high enough to permit of its free flow, as, if it is made too hot, there is danger of its burning the wood. It was therefore necessary, after liquefying the first lead thrown into the pots, to cool the mass by constantly adding pigs of solid lead. The desired shape being that of a rocker, the ends of the mould would of course fill first, and unless restrained would overflow. Men were stationed along the whole length of the proposed keel, with pieces of heavy plank, ready to spike them on as soon as the lead reached the top of the mould. So promptly was this done that scarcely a particle of the molten metal overflowed until the extreme top of the arch was reached and filled. Mr. Pipegras will soon cast the keel of another cutter, to weigh twenty-one tons. In casting keels herctofore the bolts were first placed in position through the wooden keel, and the lead run in around them, but it was found that, as the lead cooled, it shrank away from the bolts and made the job an imperfect one. The plan followed by Mr. Pipegras is to bore the holes for the bolts through wood and lead together after the casting; then to drive the bolts and secure them with nuts and plates on top of the keel. The keel is then turned over and the work of fitting the frames goes on.

An Arctic Ocean Cable.

The project of connecting Europe and America by telegraph cables passing over Greenland, Iceland, and the Färöe Islands, entertained as far back as 1853, is again revived. At a recent meeting of the Danish Geographical Society, Mr. E. L. Madsen, an eminent telegraph statistician, read an interesting paper on the subject. The scheme of Mr. Madsen differs from that devised by Colonel Taliaferro P. Shaffner, who was the first to propose a North Atlantic cable, inasmuch as the line from the Färöe Islands to Norway was abandoned, the far shorter and more important line to Scotland, and another from Scotland to Norway, being substituted. Further, he would use almost exclusively submarine cables, while Shaffner in his plan included as many overland lines as possible. The essential reasons for avoiding long overland lines were the difficulty in keeping them in working order in the desert and impassable regions of Labrador, Iceland, and the Färöe Islands, and again the frequent appearance of the aurora borealis. Mr. Madsen explained that his landing places were selected so as to protect the cable against the waves of the ocean. At Iceland he would land it twenty miles south of Reykjavik, running it underground to that city. Thence it is to go south of Cape Farewell to Julianshope, Greenland. Quebec would be the American terminus of the North Atlantic cable, whence connections would be established with all American telegraph lines.

MISCELLANEOUS INVENTIONS.

A novel cattle car, patented by Mr. John G. Klett, of Brooklyn, N. Y., is provided with standards on which gates are hung, having at the top and bottom spring latches fitting in apertures in the top and bottom of the car, whereby the gates can be locked at any desired inclination to form stalls for the animals. The standards are connected by transverse bars carrying hay racks and a water pipe, and also carrying longitudinal rails on which troughs slide.

Mr. Martin Sedlacek, of Troy, Mo., has patented an improvement in riding saddletrees. This saddletree is made of two or more thicknesses of leather moulded into the form of a saddle and secured together, and provided with the front stay, inserted and secured between the layers of the leather.

A novel double acting bellows for milk aerators has been patented by Mr. Norman G. Stebbins, of Rome, N. Y. This is a device by means of which a continuous current of air may be forced into and through a body of milk for cooling the milk and for driving off the animal odors. The invention consists of double-acting bellows formed with a chambered central partition, into which, through valved openings, air from both chambers of the bellows is forced, and from thence, through a suitable conduit, into the body of the milk.

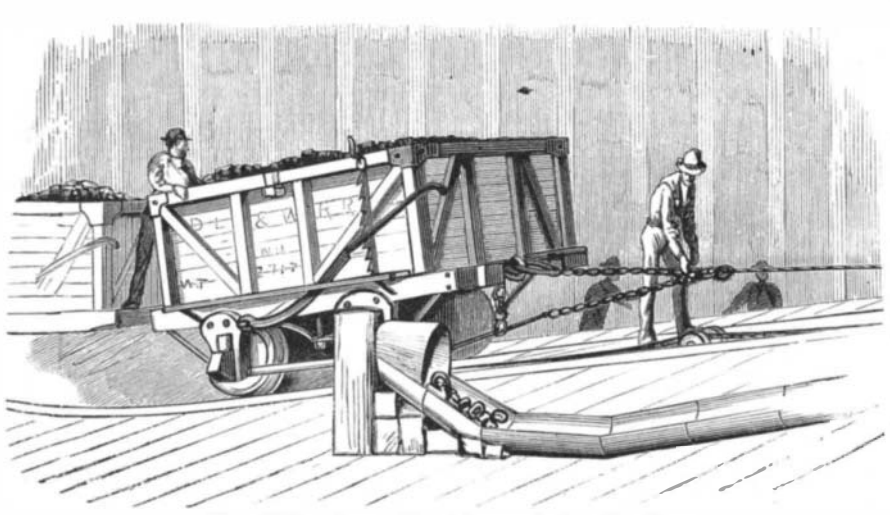
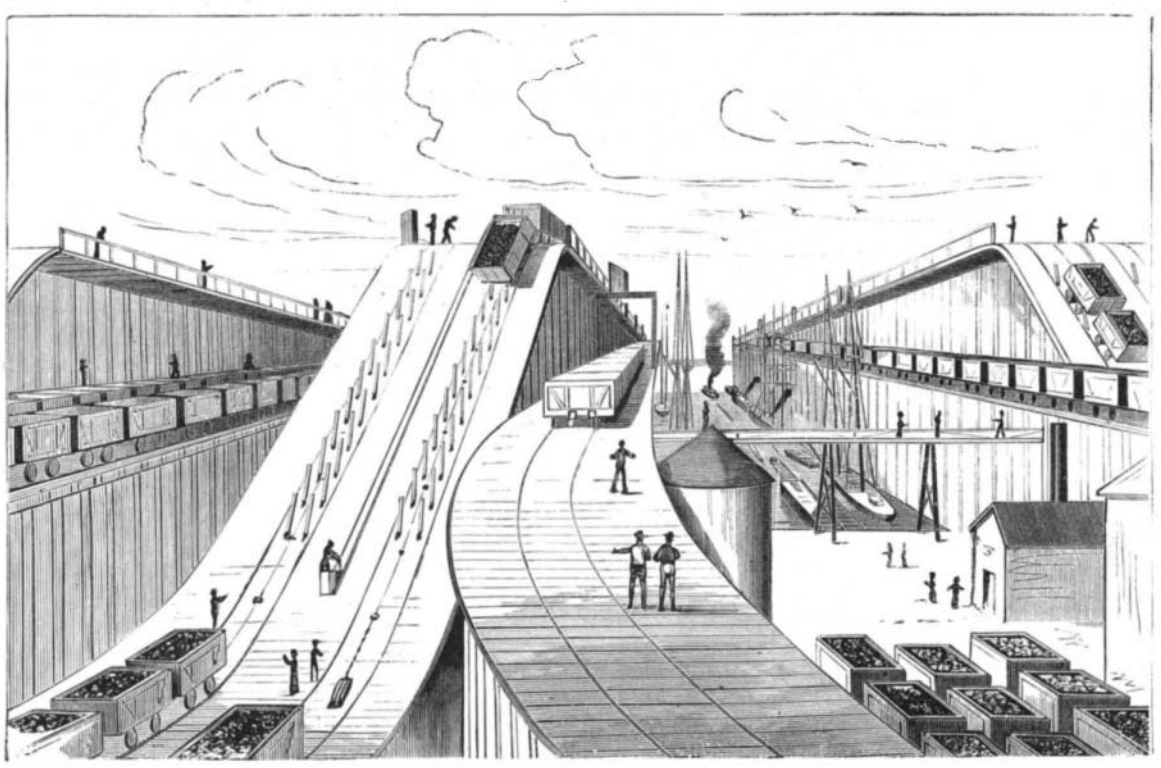


Fig. 4.—CONNECTING WITH THE CABLE SYSTEM.

A combined blacking-box holder and foot rest has been patented by Mr. Jacob Rees, of Cleveland, Ohio. This invention consists in hinging the blacking-box holder under the foot rest, and in constructing the foot rest and cover of the box holder, and combining the same in such manner that the cover will be automatically opened and closed upon the withdrawal of the box holder from and returning it under the foot rest.

An improvement in ornamental chains has been patented by Mr. Salomon Davidson, of New York city. This invention relates to links of ornamental chains, which have heretofore been made by the combination of interlaced rings or loops covered by tubing and bands of ornamental character, the general object of such construction being to dispense with the use of solder for connecting the parts. This invention consists in a cap or band applied as a finish or ornament to the ends of the links and retained in place by a shoulder on the cap.



REAR VIEW OF PIERS.—RETURN INCLINE.

Mr. William H. Ertell, of New York city, has patented a portable trunk rack, with which a trunk can be readily moved from one room to another, however large and heavy the trunk may be. With it there is no danger of injuring the carpet or floor; when desired it may be adapted to be used as a table by simply removing the trunk and placing the center piece or top in the space formerly occupied by the trunk.

An improved draught equalizer has been patented by Mr. Joseph M. Langston, of Waverly, Ill. The invention consists principally of intermediate bars pivoted centrally upon the ends of the main doubletree, to the inner ends of which the lead-horses are to be attached by means of a rod or suitable chains, the wheel-horses being attached to the outer ends of the bars.

THE GRAVITY COAL PIERS AT HOBOKEN.

Among the peculiar conditions of the enormous traffic in coal carried on at this port there are two which are chiefly instrumental in determining how the work must be done.

The quantity of the material delivered in any unit of time is comparatively very great; and the value of the coal, compared in bulk or weight with other commodities, is very small. Hence the necessity of employing broad, cheap, and rapid methods of handling large quantities at once, with the least outlay of mechanical power and manual skill.

A typical illustration of the means which have been devised for meeting the larger necessities of this great traffic may be found in the docks and piers of the Delaware, Lackawanna, and Western Railroad Co., at Hoboken. This corporation, as our readers are aware, is one of the half dozen great coal mining and transporting companies of the country. The Eastern or New York terminus of its road lies just south of Ferry street, Hoboken, occupying a large block of the made land which covers what was once a broad shallow bay between the Hoboken ferry landing and the slips of Jersey City ferry. The property outside the old shore line comprises eighty-five acres, and is divided about midway by a basin or dock, running back to near the line of the original shore, something over half a mile from the present river front. South of this basin lie the tracks, piers, wharves, and docks used in the coal traffic. A fair idea of the extent of these appliances for the delivery of coal may be obtained from an inspection of the larger illustrations herewith. The method of handling the coal, or, to speak more exactly, of delivering it without handling it, will need perhaps a more extended description. Standing at the point of view of Fig. 2, and looking riverward over the sea of coal cars, some full, some empty; some moving, some at rest; and, whether rolling toward the delivery piers or returning empty, nearly all pursuing their course unattended and for the most part without visible means of propulsion, it is hard to realize that the vast movement is under perfect control, and with all its seeming complication is in reality very simple.

A little closer inspection will discover that the grade of all the tracks carrying loaded cars descends slightly toward the river, so that the long trains are, as it were, eagerly pushing riverward for deliverance, urged on by their own gravity. At the further end of the line car after car is seen to leave the press and (still without visible means of propulsion) to climb the steep grade to the top of the elevated pier and then roll forward along the higher level to the point of discharge.

We change our point of view to the foot of the slope. Here we find a weighing shed and an engine house, in which is a stationary engine operating a cable system by means of which the cars are hauled one by one up the slope to the top of the pier. The hitching of the car to the cable, and, after weighing, its passage up the slope, are shown in Figs. 3, 4, and 5.

We climb to the top of the pier, some sixty feet or so above the water. The pier carries four tracks, two descending at a slight grade toward the river end of the pier; and other two (for the return of empty cars shoreward) descending from the river end toward the original starting point over half a mile inland, the viaducts for return passing at an easy grade far to the rear of the foot of the more steeply ascending slopes.

From the top of the ascending slope the pier extends a thousand feet into the Hudson, flanked on both sides by docks, in each of which float a varied fleet of canal boats, barges, schooners, square rigged vessels, and other shipping, receiving coal or waiting their turn to haul alongside the delivering chutes for the reception of a cargo. From forty to fifty vessels find berth room in each of the docks between the five coal wharves, and perhaps as many as in all of them together in the long basin first mentioned.

As soon as a place is vacant at one of the chutes the brakes are loosened on three or four cars, and they move forward, as of their own volition, to the openings over the place of discharge, where they are arrested by an application of the brakes. The car has scarcely come to rest before two workmen attack the lock which holds its movable bottom in place. A sharp blow or two upon the fastening, a turn of a wrench, and the halves of the car bottom fall apart like two hinged doors, and the coal drops into the screening box leading to the iron chute which projects at a low angle from