

IMPROVED TANK LOCOMOTIVE.

Owing to the light construction of the narrow gage railways which are being built throughout the country, it is necessary that rolling stock be employed thereon which shall be in accordance with the general strength and capacity of the roads. Inventions therefore which will economize dead weight and at the same time afford a maximum quantity of power are required, and in view of this need the attention of mechanical engineers has, of late, been directed, in no inconsiderable degree, to the introduction of devices for meeting the same.

The locomotive represented in our engraving is the invention of Mr. M. N. Forney, a well known mechanical engineer of this city, and is intended for service on roads which do a light traffic and run frequent trains. We may add that the inventor believes it suitable for use in cities for the traction of street cars, in place of the dummy engine; but in this opinion we can hardly concur, although the machine is obviously fitted for light, or as we above remarked, narrow gage use. The boiler, it will be seen is vertical and, with the machinery, imposes the greatest

weight on the driving wheels, so that their constant adhesion is ensured. This arrangement is much superior to the method of placing the coal and water in a similar position, because, the supply of both being constantly changing, the consequent adhesive load varies all the way from an overplus to an insufficiency. In this machine a loading truck on the forward portion affords space for a large quantity of both water and fuel. In view of the employment of the locomotive on street railroads, the inventor suggests that a condensing apparatus may be easily added so that the operation of the engine would be noiseless.

The design seems to us economical in construction and doubtless will prove efficient in practical use. It may be built of almost any capacity from a few tons up to a weight of thirty or forty tons. The smaller sizes can, we are informed, be made to traverse curves of from thirty to forty feet radius.

AUTOMATIC BOAT DETACHING APPARATUS.

It is an odd coincidence that, within a few days after the publication of our editorial directing the attention of inventors to the urgent need of an automatic and safe means of detaching boats, we find ourselves called upon to describe and illustrate a device which seems to completely solve the long-vexed problem. The reader who has never been to sea, and is consequently unfamiliar with nautical appliances, will at first doubtless fail to appreciate the great importance of the invention. It is not an apparatus to be employed in the ordinary hoisting and lowering of the boat, for this is done by the heavy falls provided for the purpose; but in time of emergencies, when not a second can be wasted, its value is pre-eminent. A man overboard, with the ship under full steam or sail, necessitates the promptest action; the life buoy dropped, a boat must be lowered instantly, with its crew in their places, oars in hand and ready for immediate service. If a heavy and dangerous sea be running, and the vessel is under much headway, to accomplish the lowering of the boat by the falls is practically impossible, apart from the time that would be occupied in so doing; the frail structure would be swamped, and the crew lost almost to a certainty, while even if the waves be only moderately high, and the ship hove to or at anchor, it is a perilous and difficult proceeding to unhook the lower blocks while the bow and stern of the boat alternate in pointing nearly to the zenith.

An automatic mode of detachment is therefore required which will safely drop the boat bodily, allowing it to fall through a short distance just before it reaches the water. Based on this principle, numerous inventions—many highly ingenious—have been introduced. Space forbids our entering into the description of these devices; suffice it that it is a defect, common to all, that the apparatus must be operated by a hand in the boat. Either a pin must be pulled out, a lever moved or a screw turned at just the proper moment. It is a noncommon event for the person charged with this duty to become nervous or excited when all is hurry and confusion

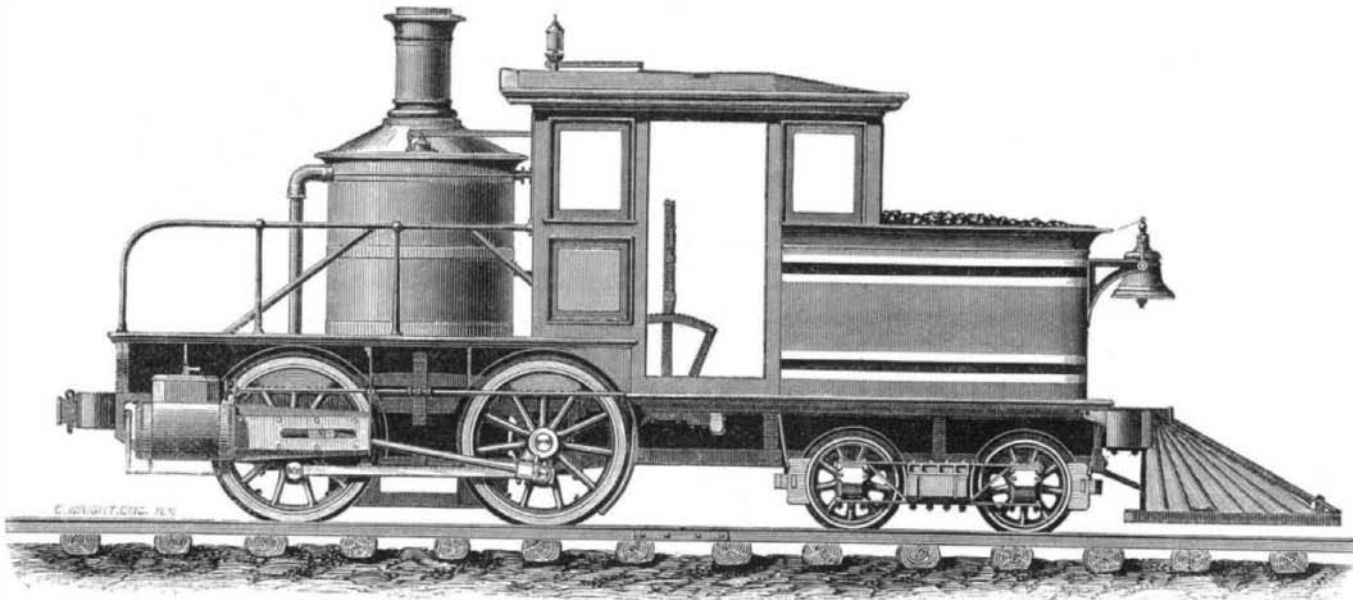
around him; he is being lowered rapidly to the water, and it is difficult for him to judge his distance above the varying surface; he may let go a minute too soon and fall down into the trough of a wave, or he may hold on so long that, before the boat can be cleared, it is dashed and stove against the side of the ship. In our own experience, we have seen one of the best known inventions, now largely used in the navy, fail again and again to detach both ends of the boat at the same moment, and we know it to be a common accident for an entire crew to be thrown headlong out through some fouling of the gear, or for a premature detachment to cause the boat to

tain point, when they will become taut. The boat continuing to descend, the whole strain is brought to bear on the pins B B, which, being but loosely inserted, are instantly withdrawn, the bars on the lower blocks slip out of the boxes, and the boat drops detached and clear. The lowering is rapidly effected by allowing the rope to unwind from the drum, the revolving motion of the latter being governed by the friction brake, shown in the hand of the figure on the deck of the vessel in the illustration.

Of course, the length of the detaching chains must be such as to pull out the pins when the boat reaches a certain de-

termined distance from the water. This length is marked by shackles attached to the proper links on the chains, so that the mistake of hooking the latter too short or too long need never be made. In dropping the boat while the vessel is in motion, when it is advisable to allow the stern to fall a little in advance of the bow, a second shackle, D, may be added to the after chain, rendering the same somewhat the shorter of the two.

The extreme simplicity of this device will, we think, impress every one as favorably as it has ourselves. There is no complicated series of hooks and levers to become

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swing vertically by its bow or stern from a davit head.

Our illustration represents an apparatus which is the simplest and apparently the safest we have ever seen. To the lower blocks of the regular falls (the large tackles which are shown supporting the boat), instead of the ordinary hooks, are attached bent or rather curved bars of metal, as shown at A A, in the lower and horizontal parts of which slots are cut. These bars slip into metal boxes, firmly secured at either extremity of the boat, and are held therein by pins, B B. From the engraving it will be seen that the boat-falls are not rove in the usual manner, that is, the standing parts are not made fast to the lower blocks, but to cleats on the davits. The running ends are carried to a horizontal drum, C, and are wound around the same in opposite directions. The drum is actuated by a crank, and is provided with a pawl and ratchet wheel, so that it may be retained in any desired position. By turning the crank in the proper direction, the rope will be wound about the drum cylinder, and the boat thus hoisted from the water.

Attached to the pins, B B, will be noticed chains, which, in

jammed; the action is purely automatic and absolutely positive. Nothing is left to the judgment of any of the crew or the lowering hand; and, indeed, it is difficult to foresee a case in which the apparatus would fail to be efficient. The invention has received the official approval, and has elicited high praise from fleet and commanding officers in the navy, from captains of the transatlantic steamers and packets, and last, but not least, from the British Government. Patented through the Scientific American Patent Agency, March 12, 1872. For further particulars, address the inventor, Mr. Christian Quaritius, Canarsie, Kings County, New York.

Patents have also been secured in Great Britain and France through the same source.

Recovered Treasures.

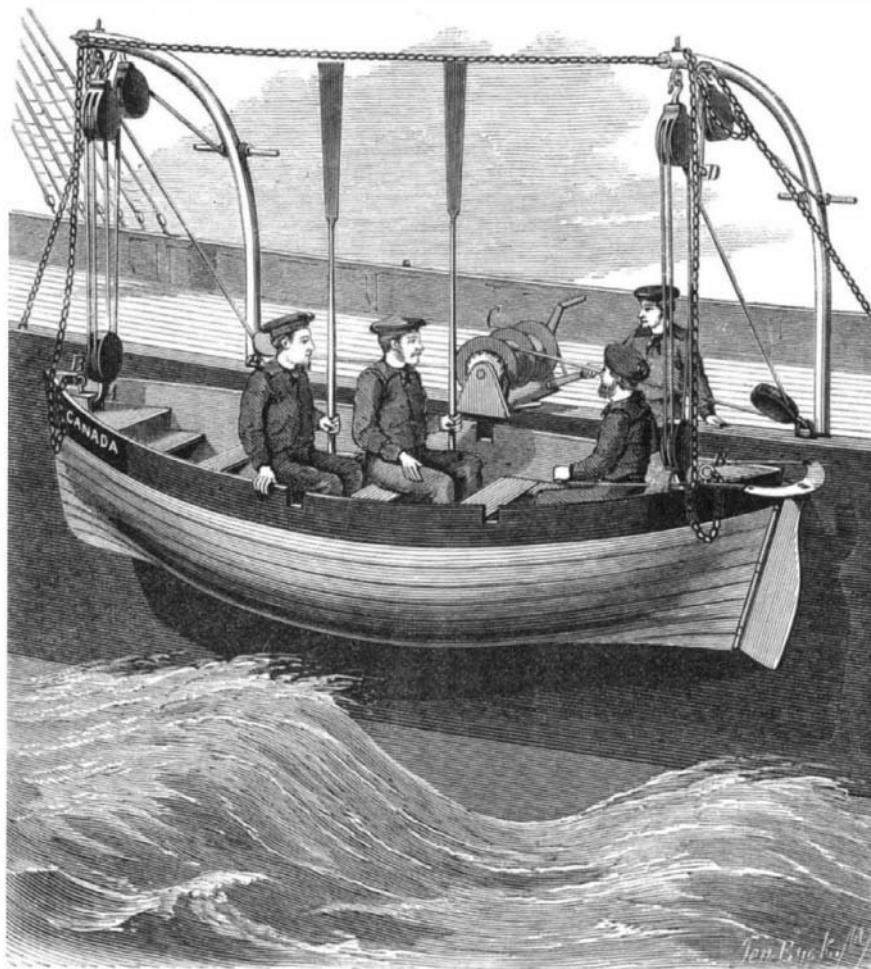
It will be remembered that the large steamship America, plying between Panama and San Francisco, was burned a few years ago, on the Pacific coast. Since that time various efforts have been made to recover the treasure which was on board. According to the San Francisco *Bulletin*, some of these recent efforts have been attended with success, and the precious metal has been delivered at the Assay Office in that city.

Twenty-three boxes of melted coin, weighing from 200 to 400 pounds each, were scattered about the floor of the room, and besides there were piles of bars and irregular masses of valuable metal lying around loose. Two pieces of the melted mass, with a length each of about three feet, and a width of eighteen inches, weighing one hundred pounds, looked like a section of frozen clay bristling with oysters. These oysters were twenty dollar pieces, Mexican dollars and half dollars of American coinage, with dimes and half dimes for young oysters, and iron spikes, bits of brass and steel to represent the shell fish that are wont to burrow in the bed of the ocean, the whole forming a valuable specimen of crustacea. In some instances the coins are only welded together in rolls, and at other times they form one lava-like gob. The melted matter and the coins are of a deep green color.

The large bars of bullion were less affected by the fire than the coin, and do not appear to have lost much in weight. The metal is to be recoined. Two twenty dollar pieces in the lot were kindly donated to the representatives of the press, who were among the reliable persons present, and had not the coins been welded to a bar, they would have been taken away. Three hundred thousand dollars worth of treasure, half melted, colored by fire and the action of the water, is a curiosity that few people have ever had an opportunity to see.

A UNIVERSITY OF ARTS AND TRADES.—A prominent citizen of Toledo, Ohio, has matured a plan and donated to the city a building site for the establishment of a "University of Arts and Trades," for the promotion of knowledge in these and the related sciences by means of

lectures and oral instruction; of models and representative works of art; of museums of the mechanic arts, and of whatsoever else may serve to furnish artists and artisans with the best facilities for high culture in their respective occupations, in addition to those which are furnished by the public schools. This is a most excellent movement.

**QUARITIUS' AUTOMATIC BOAT DETACHING APPARATUS.**

the engraving, hang loosely over the gunwale of the boat, and, extending upwards, are secured to pins on the davits. These chains are a little shorter than the distance, from the boat when hoisted, to its position when floating on the surface of the water. Consequently, when the boat is lowered by the falls, the chains will allow the descent but to a cer-